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"Current Trends in Young Scientists' Research"

VI International Scientific and Practical Conference

Book of Papers

April 11, 2019

Zhytomyr

VI International Scientific and Practical Conference

"Current Trends in Young Scientists' Research"

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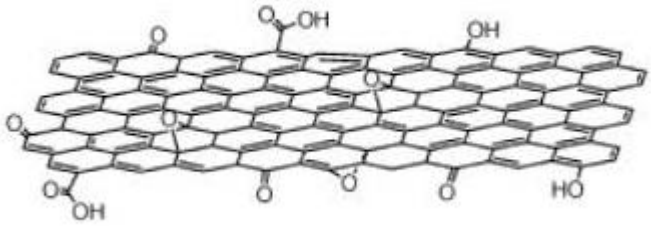
NEW METHODS OF WATER FILTRATION

Water is the main element of our lives. Without it, nobody could evolve or survive. Nowadays, we have only 3% of drinking water. The rest is seawater, which cannot drink by living organisms. Large enterprises pollute the water, small people throw garbage into the oceans, moreover, the main danger is not only chemicals, but also namely plastic. Hazardous chemical elements pass into the aquatic environment and it is a particular danger. After a long time in water, it begins to decompose into small parts and it continues until it becomes completely petty. As we know small particles are harder to catch and filter out of the ocean. All of these factors are going to create an ecological danger for everyone. However, there is a solution.

Graphene is a material that solves many issues of the topics of electrical conductivity, weight reduction, heat transfer, and many others. But he has another property - the ability to filter. In its structure, graphene is a thin, monatomic layer of crystalline carbon that has the form of connected hexagons. You can get acquainted with its view of Figure 1. At the moment, there is no technology that will allow graphene to be obtained on a large scale, so all this material will be produced only in laboratories, very long and with high prices. However, recently, based on knowledge of "pure" graphene, scientists have created a variety of this material that is cheaper and easier to create - "soy graphene." The technology of its production is based on the use of soybean oil.



The oil is heated to a certain temperature and it releases carbon. With a sharp cooling of gaseous carbon it can be applied to nickel foil.

This graphene has decided to use as a membrane of a conventional filter for water purification. To check the opportunity of work, scientists decided to filter salty water from the ocean. An experimental study showed that water was completely purified from the first filtration. That is precisely what solves the problem of drinking water. According to UN data till 2025, 14% of humanity will fill lack of clear water. Another great plus of this technology, after cleaning the membrane analysis showed that it clogs more slowly than the same existing analogues in the world. Which makes it possible to reuse and not rarely replace the membrane. This makes it possible to save money.

Summing up, this technology allows us to address the issue of water scarcity in many regions of our planet, saving thousands of lives and clearing the Earth from garbage. From a financial point of view, graphene is based on soybean oil cheaper than pure graphene. That`s why it is easy to realized from economical side. Moreover, the term and quality of the filter work are times larger than the rest of the cleaning technology.

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TRENDS IN THE DEVELOPMENT OF DRYING TECHNOLOGY

Adjustment and control of moisture levels in materials through drying is a critical process in the manufacture of many types of products.

Drying may be defined as the vaporization and removal of water or other liquids from a solution, suspension, or other solid-liquid mixture to form a dry solid. It is a complicated process that involves simultaneous heat and mass transfer, accompanied by physicochemical transformations. Drying occurs as a result of the vaporization of liquid by supplying heat to wet feedstock, granules, filter cakes and so on. Based on the mechanism of heat transfer that is employed, drying is

categorized into direct (convection), indirect or contact (conduction), radiant (radiation) and dielectric or microwave (radio frequency) drying.

There are different methods of drying which depend upon many factors. For example, gases may be dried by passing them through solutions such as calcium chloride or by passing them over absorbent materials such as silica gel. Air is sometimes dried by passing it over refrigerating coils which remove water or ice out of it. A great variety of drying operations has led to a great many devices used. They may be classified as rotary, drum, vacuum, spray, etc. driers. This classification is based on the form in which material to be dried is handled through the process.

Improvement in drying technology involves:

1) technical and economic indicators (decrease energy consumption, process of transfer of productivity, decrease hardware size, processor control field);

2) taking into account environmental aspects (minimizing consumption energy, reduction of harmful emissions in the atmosphere safety of production);

3) improvement of product quality (homogeneity of drying, minimization chemical changes in the product, preservation of food value) [1].

Trends in the development of drying technology lies in the intensification of the drying process due to: an increase in the area separation surface for heat transfer and mass transfer; using high-frequency heating; drying overheated steam; increase free flow turbulence; application: fluctuations and vibrations, two-phase drying agent, acoustic field of high sound pressure level, ultrasound area, high-frequency heating, electrokinetic phenomena, synergistic effects, multi-stage drying process.

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INNOVATIONS IN MODERN AVIATION AND THE WAY IT MIGHT LOOK IN NEAR FUTURE

The aim of this work was to show the reader the main directions aviation is moving today and possible outcomes it might end up with in the not that distant future. The work examines such topics as the question of fuel economy, ways of decreasing the pollution engines produce and the question of the fuel itself. The

second topic is the materials aircrafts are built with in the first place and different ways of improving our proficiency in applying those materials into our flying constructions.

Nowadays, with customers investing so much time in their financial situation and hence in their traveling expenses particularly on the longer flights, airlines are willing to invest more time and money in efficiency, stability and new cutting-edge technologies to progress in delivering passengers as efficient as possible.

In our time when gas emissions produced by aircrafts make up from 4 to 9 percent of all emissions, it is crucial more then ever to think of new ways of propelling our aircrafts up and forward into air. One of the best solutions we have is electric power, which replaces combustion engines with quiet and clean motors.

Two best-known ways to sustain these motors with energy are batteries and solar power. And while solar power may seem quite promising with, for example, solar-powered sailplanes that are already able to fly around the Earth it is still too rudimentary to be used in the short term. For the time being, batteries promise a little more realistic future for the electric powered aircrafts. For example, a company called Zanum Aero just revealed their plans on producing a battery-powered commercial jet with help from such aviation giants as Boeing and JetBlue Ventures. A full working hybrid prototype is believed to be ready as soon as 2020 [1, p. 54].

A discussion about aeronautical innovations cannot possibly exist without mentioning smart materials. Even though new types of aircrafts are constantly emerging, it is just as well possible to create a new and efficient plane with just the classic models but with changed materials used and technologies applied. Thinking about future, graphene seems like a thing that is going to change it for the aviation and for a lot of other industries as well. With just one atom thick, it was discovered in 2004 by two scientists who were experimenting with graphite and peeling away layers from it [2, p. 614]. This innovation will find usage everywhere but specifically in aeronautics it will help to line the wings and especially prevent them from taking on water. Still, graphene seems like a long-term solution to currently existing problems and more short-term innovations might be explored until it finds it way to every plane that takes off from Earth.

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LASER CUTTING OF METAL

Laser cutting is technology of thermal cutting and decomposition of materials, in which a high-power laser is used as a power source [2]. The tool in this process is a laser beam, which is usually invisible, is generated in the laser source and directed to the cutting head by mirrors, where it is concentrated (focused) by a lens to a small spot (Figure 1). Depending on the process, the spot is placed on the surface of the workpiece or on the material to be cut. The intense light beam quickly heats up the workpiece and melts the material. The assist gas (also called cutting gas) is applied to protect and cool the focusing lens and to remove the molten metal from the cut kerf at the same time [5].

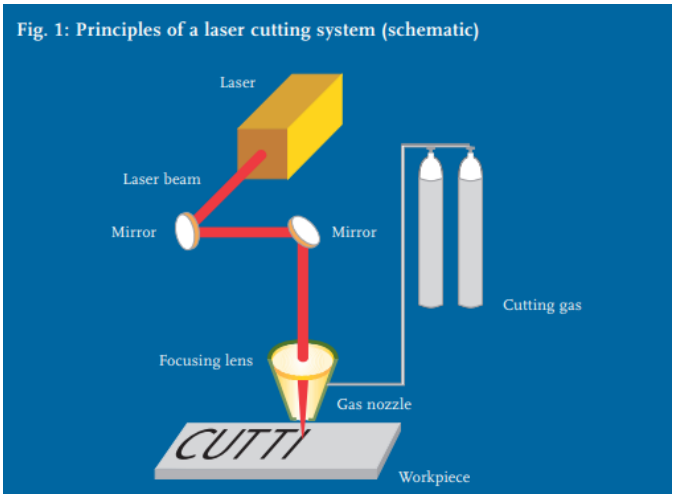

Figure 1. Principles of a laser cutting system

During processing, the focus of the laser beam may be located above the surface of the workpiece, or below the surface, depending on the thickness and properties of the material. Due to its high power density, the laser beam heats, melts and / or evaporates material. In the process of cutting, a gas jet emerges coaxially from the nozzle under pressure, which removes material from the slot formed during cutting. That is why this process was called «gas laser cutting». With the help of such technology it is possible to get narrow notch with a minimum area of thermal influence. Laser cutting is distinguished by the lack of mechanical influence on material during treatment, thus, deformations arising both during the cutting process and the residual after complete cooling are minimal. Therefore, laser cutting, even lightly deformed and non-rigid billets and parts, can be carried out with a high degree of accuracy. Due to the high power of laser radiation, the high performance of the process is ensured in combination with the high quality of the cutting surfaces. Easy control of the movement of the laser radiation source allows laser cutting along the complex contour of flat and bulk details (blanks) for a high degree of automation of the process [1].

There are two cutting processes, depending on the type of assist gas used:

1) when cutting with oxygen, the material is burned and vaporised after being heated up to ignition temperature by the laser beam. The reaction between the oxygen and the metal actually creates additional energy in the form of heat, which supports the cutting process. These exothermic reactions are the reason why oxygen enables penetration of thick and reflective materials when it is used as a cutting gas;

2) when cutting with non-reactive (inert) gases such as nitrogen or argon, the material is melted solely by the laser power and blown out of the cut kerf by the kinetic energy of the gas jet. As nonreactive gases do not react with the molten metal, and no additional heat is generated, the laser power required is usually much higher than in oxygen cutting of the same thickness. Cutting with nonreactive gases is often referred to as clean cutting or high-pressure cutting.

Vaporisation cutting is another cutting process. In vaporisation cutting, the solid material is converted into vapor without passing through a liquid phase. Gases are used to support the process and remove vapor.

In «cold» cutting, the energy of the laser beam breaks the chemical bonds of the material to be cut, thereby producing powdery residues. Laser beam energy and chemical bond energy must match, and cutting gas is often not needed [5].

Focused laser beam, controlled by the CNC system, provides a high concentration of energy and allows removing almost any material, regardless of it thermophysical properties. Radiation, with energy parameters sufficient for the use of lasers in the process of cutting, has a range of wavelengths from 0.4 to 10.6 microns. In particular, for cutting different materials, the greatest effect is given by a wavelength of 10.6 microns, which is generated by gas CO_2-lasers with an active medium of a mixture of carbon dioxide with nitrogen and helium. Radiation with this wavelength is well absorbed by most nonmetallic materials and, with lesser extent, by metal alloys. Materials with a high reflection coefficient (copper, aluminum) are worse exposed to laser cutting.

In laser cutting of metals, technological installations are used on the basis of solid-state, fiber lasers and carbon dioxide lasers, which can operate in both continuous and pulsed-periodic modes of radiation. The industrial application of gas-laser cutting is constantly increasing, although this process can not completely replace the traditional methods of separating metal blanks. In comparison with other equipment for cutting in production, the cost of laser cutting equipment is quite high, although there has been a tendency to decrease it. In this regard, the laser cutting process becomes effective only with a reasonable choice of application, when the use of traditional methods is labor-consuming or even impossible at all.

When cutting in a pulsed mode, a continuous cut is obtained as a result of successive overlaps one after another. The impulse character of the processing provides the minimum depth of material warming up.

The lasers of continuous action on carbon dioxide, from a few hundred watts to several kilowatts, are used for gas-laser cutting, in which a jet of gas is fed into the laser beam. The gas is chosen depending on the type of material being processed. During cutting wood, plywood, plastics, paper, cardboard, textile materials into the

processing area, air or inert gas is fed to the area that cools the edges of the cut and prevents the material from burning and expanding the slit. When cutting most metals, glass, ceramics, a gas jet blows from the zone of action of the beam molten material, which allows obtaining surfaces with a low roughness and provides high accuracy of cutting. During cutting low-carbon or alloy steels and titanium, a stream of oxygen is fed into the heating zone. As a result of the exothermic reaction of metal oxidation extra heat is released, which can significantly increase the cutting speed.

Carbon dioxide lasers are used to cut brittle materials (glass, ceramics) by controlled thermal decomposition. At local heating of the material along the trajectory of the ray motion, a thermal stress exceeds the material strength limit. The resulting fracture develops following a beam whose trajectory may have a complex form. The cutting speed reaches several m / min. Controlled thermal cracking is used when cutting glass tubes in the production of electric vacuum devices, ceramic substrates of integrated circuits, for cutting sheet and shaped glass [3].

There are three technological processes of laser cutting: sublimation, fusion cutting and gas-oxygen cutting.

In sublimation cutting, the material is evaporated in the cut zone under the action of laser radiation. To ensure the minimum width of the slot, the radiation power must be high to reduce heat conduction losses. This process uses inert or chemically passive gases, for example, nitrogen (N_2), helium (He), argon (Ar). The result of sublimation cutting are: smooth edges of the cut, the minimum thermal effect on the material, the absence of oxidation of the cut. The disadvantage is the low cutting speed and limiting the thickness of the material to 1 mm. The described process is applicable both to metal processing and to materials that melt slightly or have no molten state at all, for example, wood, paper, ceramics and plastics.

Laser fusion cutting is used for machining high-alloy steels and non-ferrous metals. It is characterized by the transition of the metal to the molten state in the region of the formed slot, after which the melt is removed by a stream of inert gas (argon, nitrogen). This method allows the use of higher cutting speeds, since no evaporation of the material is required. The choice of gas used can prevent oxidation of the edges of the cut. Laser fusion cutting with gas supply under pressure over 6 bar allows to increase the speed of removal of molten material from the slot, which prevents the formation of burrs and slag sticking to the edges of the cut. Nitrogen is used to prevent oxidation of the edges. High pressure gas laser fusion cutting is mainly used for stainless steel and alloys of aluminum.

Gas-oxygen cutting differs from laser fusion cutting. The melted material is removed from the cutting zone with an oxygen jet. As a result of the interaction of oxygen with melted and partially evaporated metal several times increases the supply of energy to the zone of interaction of the laser beam and the workpiece. The advantages of gas-oxygen cutting include the possibility of separating sheets of metal with a large thickness, high processing speed. There are also disadvantages of this method – the cutting edge has significant irregularities and is oxidized, which creates the need for further processing. This process is used to separate metals only [2].

There are many different methods in cutting using lasers, with different types used to cut different material. Some of the methods are vaporization, melt and blow, melt blow and burn, thermal stress cracking, scribing, cold cutting and burning stabilized laser cutting [4].

The advanced equipment has a number of settings. For example, a cutting operator can specify the depth of penetration of the laser beam, as well as its power. And this extends the area of the use of machine tools, allowing them to use not only cutting, but also engraving the material. In addition, you can make products of the desired configuration, after which the equipment to carry out their marking in the minimum terms.

Over the past decade, laser cutting has developed into state-of-the-art technology. It is estimated that more than 25,000 cutting systems are used for the high-power cutting of metals and non-metals worldwide. When including e.g. low power applications, such as plastics cutting and paper cutting, the numbers are even higher.

Impressive examples of modern laser cutting applications are: 1) cutting of hydro-formed parts and tubes; 2) high speed cutting of thin-sheet metal; 3) cutting of thick section-material.

Developing lasers with higher output powers without sacrificing beam quality has been one important goal in the past. Other efforts focused on improving the drive technology of the motion system and enhancing material handling around the cutting table.

Predictions are that laser cutting based on improved cutting speeds, little tool wear and unlimited flexibility will further replace competing technologies. There are market surveys suggesting that the number of flatbed laser cutter installations will double over the next ten years. In addition, laser manufacturers will address new markets such as cutting tubes and pipes. The gases used to generate the laser beam and expel the molten metal out of the cut kerf are important consumables during laser operations. They can prolong the lifetime of the optical component, increase the cutting speed and improve the cutting quality. All the above contribute to more profitable laser operation [5].

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AUXILIARY TOOL FOR HIGH-SPEED AND HIGH-PERFORMANCE PROCESSING

High Speed Machining (HSM) and High Performance Machining (HPM) are progressive technologies for processing structural and tool materials that reduce production time, improve product accuracy, and dramatically improve productivity. They are widely used in machine tool, automobile, aviation and other branches of mechanical engineering.

HSM technology involves increasing the speed of metal removal from the treated material only by increasing the cutting speed V, and HPM technology - mainly due to the increase of feeds S and (or) the depth of cutting t.

The advantages of the HSM and HPM are recognized in all developed countries of the world: high speed of cutting 400 - 3000 m / min, high spindle speed of 10 000 - 40 000 revolutions per minute, which helps to reduce production cycle time by 50% and more, significant increase of labor productivity, ensuring high quality of the treated surface (as with grinding).

The high interest of mechanical engineers in the prospects for the development and implementation of technologies by the HSM and the HPM is caused by the following:

1) the need for high-performance and precision machining of parts made of non-ferrous alloys, aluminum, graphite, plastics, etc., high-strength alloyed and tempered steels and alloys, alloys made of nickel, titanium, ceramic materials that are difficult to process, etc.

2) the need for high-performance and precision machining of small-size parts for high-tech machines and devices (so-called microprocessing);

3) the emergence of new instrumental materials (cermets, cubic boron nitride, polycrystalline diamond, ceramics based on silicon nitride, etc.), resistant to wear, high temperatures and oxidation, and the ability to work at high cutting speeds;

4) the emergence of new types of cutting disc tool plates with universal and specialized multilayer Physical Vapor Deposition (PVD) and Chemical Vapor Deposition (CVD) coatings, as well as tools with high strength of their cases for bending and rupture, high resistance to the action of centrifugal forces, which parameters are optimized to the conditions of the technology of the HSM and HPM.

The increase of the efficiency of the technologies of the HSM and the HPM helps to make the right choice of all the factors involved in this process - CAD / CAM systems, CNC systems with the corresponding software, the design of the machine and its spindle, auxiliary tool (clamping cartridges and mandrels) for securing the cutting tool.

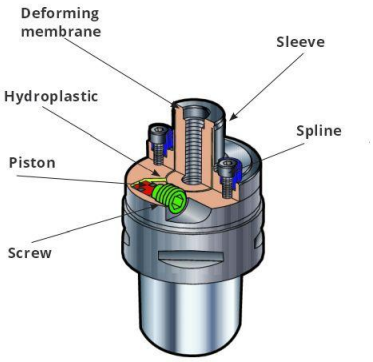


Fig.1. High-speed hydrofoil mandrel (HydroGrip)

At present, machine-building enterprises are the most widespread high-speed milling with end and face mills, drilling, turning and boring.

In modern conditions, the technology of the HSM and HPM is intensively introduced into the production for the processing of complex configuration components from hard-working materials. In general, the required level of cutting speed v is extremely high and reaches: for billets of colored alloys v = 7000 ... 9000 m / min .; for billets of hardened steels v ≤ 2000 m / min .; for iron billet v ≤ 4000 m / min.

High cutting speeds require research into the effect on the design of the part under the HSM and the HPM of factors such as the size of the instrument beating, vibration, inertial loads, force and tool durability.

A significant reduction in the vibration of the tool can be achieved not only with the increase in the frequency of rotation of the end tool with the output to determine the frequency ranges, but also by adjusting its magnitude of departure from the spindle, depending on the diameter, number of grooves, type of fastening and other factors.

In most cases, the stability of the tool is related to the size of the beating the cutting edges relative to the axis of rotation. The beating, measured even by hundredths of a millimeter, has a significant effect on the stability of the instrument. If we talk about the finishing operations with the use of solid carbide mills, this effect is especially great (every 0.01 mm on medium-sized carbide mills reduces the durability of the tool twice). That is why the level of accuracy of tool holders is important not only in relation to the quality of processing, but also in relation to the stability of the tool and the predictability of the process.

With an increase in the spindle speed, the degree of imbalance becomes also a determining factor. Therefore, at high-speed processing, the huge advantage is the cartridges with individual balancing.

When milling the process of high-speed processing can be arranged at a small depth and high cutting speed at a small cross section of chips.

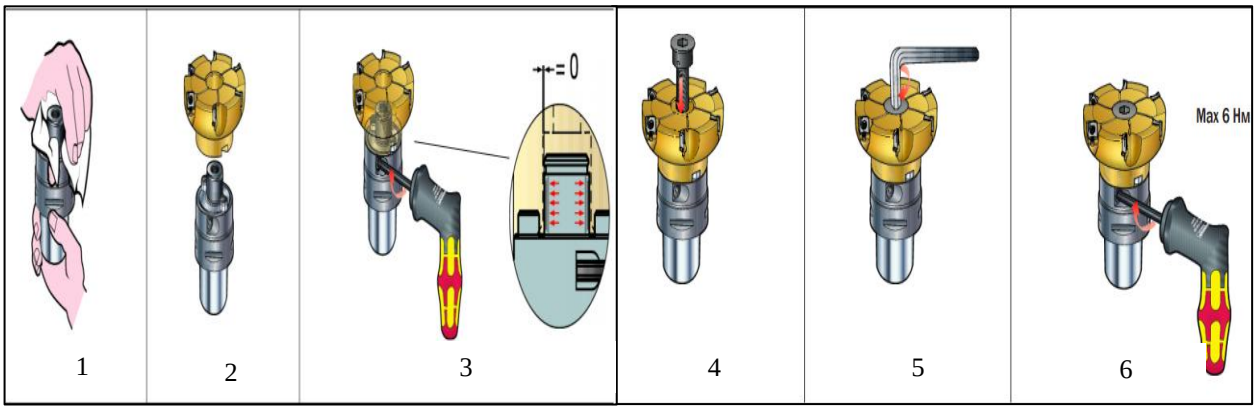
Work at such high revolutions raises the increased requirements for the use of equipment with the magnitude of imbalance. However, when rotating on separate elements of the axial tool holder, a centrifugal force acts and at high speed its value is already very large.

In order to provide high requirements for the installation of a tool at the HSM and HPM, HydroGrip and HydroMagic CoroGrip, clamping cartridges and mandrels from Sandvik Coromat (Sweden) are widely used to attach it to the spindles of modern high-speed milling machines.

Hydraulic and hydromechanical cartridges and mandrels are based on the principle of elastic properties of the material and allow to ensure high accuracy of the installation of the instrument and its minimum beating. The mechanism of operation of such cartridges is based on the properties of elastic deformation of a thin-walled steel membrane. The hydroplast itself is compressed under the action of the hydraulic pressure of the liquid, which is sprayed into the cartridge when the tool is fixed by turning the key. The hydraulic mandrel, expanding, provides centering of the cutter, which minimizes radial beating.

Figure 1 shows the construction of a hydro-plating mandrel (HydroGrip) for the installation of end mills on modern high-speed milling machines.

The advantages of such a clamping system are an increase of 2-3 times the life of the tool, small radial beating (0.003 mm), reliable transmission of the rotating torque at high processing speeds.



Thanks to the balancing, reliable fastening of the tool and the high effort transmitted such cartridges are recommended for use at a frequency up to 25 thousand min^{-1}. The sequence of setting the end cutter on the high speed HydroGrip is shown on Fig.2.

The high efforts and precision of fastening, combined with the individual

Fig.2 Sequence of installation of the face cutter on the HydroGrip mandrel:
1. Clean the surface of the milling cutter and the mandrel from the dirt and bolt; 2. Loosen the screw on the mandrel; 3. Plant the mill on the mandrel; 4. Insert screw fastening cutter; 5. Tighten the screw fastening cutter; 6. Tighten the screw on the hydraulic mandrel with a torque wrench (max torque 6 Nm).

balancing of the brackets, makes them most effective at high speed processing.

Thus, the advantages of HydroGrip hydro-level cartridges are an increase of 2-3 times the life of the tool, the precise installation of the instrument with radial beats up to 0.003 mm; transmission of high rotating moments (up to 980 Nm) with the optimized design of a thin-walled membrane and a screw that transmits a high clamping force; effective application at high cutting speeds; absence of centrifugal forces due to the absence of fastening elements; Minimum beating, providing low roughness of the treated surface and stability of the size; quick tool change; optimum stability of the tool; extinguishing vibrations due to the hydroplastic medium.

Consequently, in order to increase the efficiency of modern HSM and HPM, special attention should be paid to the development and implementation of new auxiliary systems (clamping tool chucks and mandrels) that provide reliable fixing of the cutting tool on the machine tools and is an urgent task for the further development of modern HSM and HPM technologies.

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CHARACTERISTICS OF THE CRUSHING EQUIPMENT

Nowadays, various types of crushing machines are created. According to the classification of A.P. Garshin, V.M. Gropianov and Yu.V. Lagunov, the equipment on the principle of mechanical action on crushed material is divided into such groups.

The first group is shredders for crushing. The crushing in them occurs by crushing or erasing, as a rule, with a low rate of action on the material that is crushed. This class of crushing equipment includes run, jaw, roll crushers. The equipment has a high performance (0,1 ... 40 t/h) and allows to get a product with a particle size of 2 ... 5 mm, which is most often used for further crushing on equipment of the second type.

The second group is spice grinding machines, intended for medium and fine grinding. The grinding in them occurs due to the impact and washing action on the material, unprotected crushed bodies. This group of crushers primarily includes ball, rod, tube and gravity mills. The productivity of these mills is 0.1 ... 10 t/h.

The third group is shredders, intended for rough, medium and fine crushing of materials of average plasticity. Crushing occurs due to a shock or crushing effect on the grinding material, rigidly or hinged fixed grinding elements, the relative speed of which has a high value. Such aggregates include hammer crushers, disintegrators, as well as mid-range ball and roller mills, reflecting rotary mills.

The fourth group is shredders for small and fine (colloidal) crushing of brittle and solid materials. At the heart of the process, as a rule, is the washing effect of the crushed bodies on the material that is shredded, or a shock effect with a high frequency. The final size of the powder particles at the same time is 0.5 ... 60 microns. The productivity lies within 10^{-3} ... 10^{-2} t/h. This group includes vibration, attitudinal and planetary mills.

Fifth group is shredders with a stationary crushed body. Applicable for fine shredding of plastic materials. The crushing takes place due to the free impact on the stationary obstacle (plate) of particles of the source material moving at a speed of 200 ... 250 m/s. This group includes pneumatic reflective mills and blasting mills.

The sixth group is shredders, in which the material is crushed by the coils of particles of the source material, which move at high speed, in free flight. The size of the resulting powder particles is generally less than 60 microns. This group includes vortex and jet mills.

The seventh group is shredders, in which the crushing occurs due to vibrational cavitation effect on the particles in the liquid. High-frequency (1 ... 103 Hz) vibrational cavitation effects are generated by the rotation of discs, rolls, gear wheels moving in a liquid, or electric discharge in a liquid. Such shredders include vibrocloid, cavitation and electrohydraulic mills [1; 2].

In addition to the considered, there are two more groups of shredders, which are becoming more and more used in practice. They are ultrasonic and electroerosive shredders.

Most often in the production of ball, vibration, atritor, vortex and jet mills are used, and as equipment for preliminary preparation of raw materials are jaw and hammer crushers.

The crushing is widely used in the processing and food industry to produce raw materials or semi-finished products with parts of such size that can significantly facilitate or accelerate heat treatment, transfer, transportation, dosing and other processing processes.

The crushing of raw materials or foodstuffs takes place by crushing, cutting, wiping and impacting.

Preferably, the crushing is carried out under the action of a combination of one or another method. So the crushing of solid materials is carried out by crushing and impact, and viscous materials is carried out by crushing and rubbing.

It is possible to carry out the following classification of equipment for grinding food raw materials:

- roller machines;
- crusher (disk, hammer, pin);
- mill (ball, combined, disk, pin, hammer);
- cutting machines (vegetable cutters, beetroot cutters, mandoline);
- meat grinders (cutters, colloidal mills);
- homogenizers (valve, disk, ultrasound) [3].

However, the analysis of existing methods shows that universal mills that could effectively replace the existing types have not yet been created. Mills in industrial practice as well as for research work should be selected taking into account the specific properties of the crushing material and the necessary characteristics of the final product.

Of course, the development or selection of a different machine, based on the optimal values of the finished product of the given dispersion per unit of energy consumption. That is why the energy hold-up for optimum run-off of the crushing mode is significant.

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MODERN TRENDS IN THE CONFECTIONERY INDUSTRY OF UKRAINE

Confectionery industry is one of the most developed branches of food industry in Ukraine. The confectionery industry now has many confectionery factories. In addition, confectionery products are made by specialized shops of bakery factories, vegetable canning factories, as well as catering enterprises.

In future, a significant increase in the production of confectionery products is expected, including a sharp increase in the production of products that are in high demand in the population: soft glazed sweets, waffles, paste and marmalade products; the production of wrapped and packaged confectionery products will increase significantly.

Today, the problems of the confectionery industry can be divided into four groups:

1. Financial problems.
2. Problems related to the domestic policy of the state: the growth of sugar prices as a consequence of the state's attempt to help the sugar industry to exit the crisis.
3. Problems associated with the Russian market of sales: the imposition of goods by import duty at 21% per 1 kg and the introduction of 20% VAT on Ukrainian confectionery products.
4. Problems related to packaging of confectionery products.
5. Modernization of equipment and quality assurance [2].

The research of problems of modernization and high-tech development of leading sectors of the economy, and in particular the food industry, is devoted to a number of scientific works of domestic and foreign scientists and researchers, including O. Amosh, V. Boyko, B. Danilishin, L. Daineko, D. Krisanov.

The most important problems of the present in the development of the food industry are the structural imbalance of the industry, the strengthening of interdisciplinary processes polarization in terms of providing basic assets and their depreciation, price disproportions for different food products, loss-making activities, and stable encouraging economic performance in others. The limited state investment in the industry and the lack of domestic resources for the renewal and modernization of the production of food, beverages and tobacco products, as well as the existence of problems with the attraction of loans, the importance of foreign direct investments for the further development of the industry is increasing. The achievement of stable production, high competitiveness and economic efficiency of the food industry requires constant renewal of fixed assets, which requires active search of sources of funding from enterprises, and the creation of conditions for investment from the state.

The food industry occupies one of the first places in terms of foreign investment, which amounts to almost one third of total investment in the Ukrainian economy.

To modernize production, the strategic task should be a technological renewal of their material base with the use of high technologies.

The processing equipment of the confectionery factories is very diverse. However, many groups of machines and devices have common features. The classification of equipment can be based on the following classification characteristics: the nature of the impact on the product, the nature of the working cycle, the degree of mechanization and automation, the functional purpose of equipment.

By the nature of the impact on the product equipment can be divided into machines and apparatus.

The machine has a mechanical effect on the product. In this case, the properties of the product or material do not change. Only the shape, size, and other physical parameters change. The peculiarity of the machine is the presence of moving working bodies, which directly affect the product mechanically.

The devices carry thermal, electrical, physico-chemical, biochemical and other actions that cause changes in physical or chemical properties or aggregate state of the processed product. A characteristic feature of the apparatus is the presence of a reaction space or a working chamber.

By the nature of the working cycle, machines and apparatus are divided into machines and apparatus of periodic and continuous operation.

In machines and apparatuses of periodic action, the product can be processed for a certain period of time (cycle) and then removed from the machine or apparatus. After that, the process cycle is restored. The mode of operation of the working bodies of such equipment during the cycle is continuous, continuously changing.

In machines and apparatuses of continuous action, the process proceeds continuously, under steady state conditions, with the simultaneous continuous supply of narrow raw materials and the output of the finished product. The working bodies of the tax equipment operate in a stable environment.

By the level of mechanization and automation, machines and apparatus are divided into machines and non-automatic operation devices, semi-automatic and automatic.

In the non-automatic operation of loading, unloading, transfer, control, as well as individual technological operations carried out by workers with direct influence on the object being processed.

In semi-automatic equipment, all major technological operations are performed by a machine. Some auxiliary operations (for example, transportation, loading and unloading), as well as operations of control, adjustment and supervision remain.

In automatic equipment, all technological, auxiliary and control operations are carried out automatically according to a predefined program. Manual operations remain the debugging and monitoring of the operation of the machine [3; 4].

By functional purpose, technological equipment of confectionery factories can be divided into the following main groups:

1. Machines and assemblies for preparation of raw materials and preparation of semi-finished products. This group includes machines and assemblies for scouring and screening of raw materials, machines for its crushing, dosing devices, machines for mixing raw materials and obtaining semi-finished products.

2. Apparatus and machines for heat treatment of raw materials, semi-finished products and finished products. This group of technological equipment includes various heat exchangers for heating, boiling or cooling of raw materials and semi-finished products, chambers for cooling semi-finished products or molded products, as well as furnaces for baking flour confectionery products.

3. Machines and assemblies for forming products or their blanks. This group of equipment includes machines and units for stamping products, cutting machines and machines for casting billets of products.

4. Machines and assemblies for twisting, packing and packaging of finished products [1].

In the confectionery industry, fully automated lines have not yet been created, there are only partially automated lines.

These tasks are solved in the confectionery industry mainly on the basis of the creation and introduction of new high-performance equipment, advanced technology and the further transition to a more perfect form of production – mechanized and automated flow lines. In accordance with this, the main direction of technological progress in the confectionery industry is the creation, implementation and further improvement of mechanized and automated flow lines, aggregates and automatic machines for the production of various confectionery products.

The introduction of mechanized flow lines and high-performance aggregates and automatic machines in the confectionery industry can increase the efficiency of production: increase labor productivity, mechanize labor-intensive manual processes, reduce production areas by 1,5-2 times, reduce the loss of valuable raw materials, eliminate intermediate packagings, significantly improve the quality of products and sanitary and hygienic conditions of production.

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APPLICATION OF CRUSHERS IN THE FOOD INDUSTRY

Crushing is important process in the food industry. The crusher was originally intended for grinding brown coal and peat, but later its wide application was found in other areas of activity.

Crushing of materials improves the conditions for their mixing and transportation. During crushing, the surface of the material increases, it intensifies the thermal, mass-exchange and biochemical processes with further processing.

The crushing process is used in the processing and receiving of food products in the cereals production for crushing grain into flour; fermentation – for crushing barley, malt, potatoes; confectionery – for crushing cocoa-grains, sugar, fatty semi-finished products; meat processing – for crushing blowing, bones; in sugar – for grinding beets, canning, baking and other manufactures.

The degree of crushing depends on the structure of the material and the degree of crushing. The main types of crushers used in the food industry are:

1) roll crusher grinds the material by crushing between two working surfaces, for which the most often used is a pair of rollers rotating towards each other;

2) hammer mill crusher is used in the food industry for crushing grain, malt, potatoes. While rotating a shaft, the material is repeatedly hammered, crushed, passed through the sieve and discharged;

3) the toothed crusher is used in the canning industry for crushing fruits and tomatoes.

Hammer mill crushers are the main crushers in the feed industry. Such crushers process almost 95 percent of all grain in the world. To accelerate this process, pneumatic devices are applied.

The material intended for crushing is sucked by the pneumatic system from the drain and is directed along a flexible hose, through the magnetic catch on the front cover, into the hammer chamber.

In the hammers chamber the material is crushed under the impact of quick-turning hammers.

The crushed material, after passing through a sieve, enters the fan chamber and is thrown into the exhaust pipe, from the exhaust pipe the crushed material is transferred to the mixer of the feed by the pneumatic system [1].

So grinding is a very important process that is widely used in many industries and is irreplaceable in food technology. First of all, it allows to intensify all subsequent stages of processing, which greatly affects the cost of energy.

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ANALYSIS OF THE CHOICE OF MINING EQUIPMENT UNDER CONDITIONS OF MEZHYRICHAN DEPOSIT OF GRANITES

Mezhyrichan deposit of granites is located 0.8 km. to the East from the village of Mezhyrichka in Korosten district of Zhytomyr region. The average granite capacity ranges from 23.4 to 62.8 m. according to exploration wells. The main decorative properties of granite are a color, a texture, and polishing. Granites are easy to process, they are cut up without considerable pricked-out edges, and polished on advanced technologies. The rocks of the deposit meet the requirements of the NRB and are suitable for the production of building materials in all types of construction without restrictions. Granite is in high demand in the Ukrainian market. Therefore, at present, the issue of rational extraction is relevant. The mining technology involves the following principal operations:

- separation of a block (monolith) of granite from a massif;
- disassembly of the monolith on the marketable blocks of a smaller size and blanks; separation the parts (from the blocks) unsuitable for cutting (passivation);
- removal of waste from the quarry.

The DIAMOND WIRE MACHINE of "TSY 37 G" model with the main engine power of 55 kW is the cable machine used for separating the monolith from a massif together with the drilling-in-air method in this field. The rope machine has the ability to create separating cracks both in the vertical and horizontal plane. "TSY 37 G" is operated by a remote control located outside the dangerous zone, which has a radius of 10 m. The efficiency of this equipment cannot always ensure the stable operation of the enterprise. Therefore, it is necessary to examine other cable machines presented in the market of the block stone extraction equipment.

To conduct the comparison, we selected the cable machines of Huada brand of DWS-90AX-8P model, which have the optimal correlation of price and technological characteristics. They are developed with the touch screen for greater ease of use. This type of machine wins the above-mentioned one because of its main engine power. Due to the low percentage of failures, these machines allow you to control the tension force during the rope feed. When the rope saw functions in automatic mode, it continuously adjusts its speed according to the load on the place of the mine. Because of this, one can achieve stable and high labor efficiency. The safety features provide

maximum protection in case of rope breakage, phase loss, and overload. The running gear operates at two speeds, providing a maximum speed of 3 m. per min.

The table presents the comparison of the technical characteristics of two cable machines, one of them is DIAMOND WIRE MACHINE of "TSY 37 G" model and the other one belongs to "Huada" brand with DWS-90AX-8P model.

Technical characteristics of the cable machines

Model	Main engine power	Cable saw length (m)	Linear speed (m / s)	Weigh t	Notes
DIAMOND WIRE MACHINE TSY 37 G	55 kW	30-145	0-40	2 t	Used to develop a mine
HUADA DWS-90AX-8P	90 kW	30-160	0-50	1.95 t	Used to develop a mine

So, studying the characteristics of the modern equipment and taking into account the basic parameters, we propose to use the cable machines of Huada brand of DWS-90AX-8P model for the conditions of Mezhyrichan granite deposit.

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FLIGHT SUITABILITY OF EUROPEAN "BLANIK" GLIDERS

"Blanik L-13" is a very famous glider which was designed in Czech Republic and used in many countries for different purposes. Nowadays in Ukraine we have a great opportunity to operate those gliders and use them for training pilots and for excursions. But are they really safe and good enough to be used?

In general, many catastrophes were caused by weather conditions, but most of the main factors were human. This is confirmed by world statistics, which shows that most crashes occur precisely because of the wrong actions of people who were somehow involved in the process of the flight or preparation. Also, a significant number of catastrophes with fatal consequences were due to structural damage or fatigue of materials. All of the catastrophes L-13, which are associated with the destruction of the longeron, occurred in Europe, where the average flight time of "Blanik L-13" exceeded the 5 thousand hours, which in combination with the start of powerful winches and acrobatic flights intensively reduces the safety margin. And the last straw of all this was the catastrophe in Austria, it happened with the glider wich was built of 1972, had more than 5,000 landings and 2,318 flight hours, of which

over the past 400 hours accounted for 8% of acrobatic flights. At the same time, the nature of the flights of the first 2,000 hours is unknown.

The European gliders of "Blanik" model have been flying quite a lot with more powerful winches than the "Hercules", so the gliders gain altitude with a much larger angle than the "Hercules", and hence, with a larger equivalent overload.

Acrobatics on Blanc has its own peculiarities: the glider does not like the negative and interchangeable overloads, which is indirectly reflected in the rules in the form of a ban on the flight on the back and the controlled barrel in a double variant (a controlled barrel requires the creation of a negative overload in an inverted position, permissible the value of which is easily exceeded in its uncorrected performance) - while the glider easily performs a simple complex of figures, the overload in which does not exceed 2.5:

- corkscrew
- corkscrew coup
- a loop
- turn on the hill.

It is believed that the latest EASA directives are so rigorous that they took into account, first of all, the European peculiarities of the operation of Blanic.

Given all of the foregoing, it is considered that “Blanik” gliders, having average raids of about 1,500 hours and used in the CIS countries, performed fewer aerobatics (usually only 1 turn of a corkscrew for educational purposes), even when used with a winch (for example, "Hercules-3") the danger in the form of destruction of a spar box is not threatened.

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GIS MONITORING OF LANDS DISTURBED BY OPEN-CUT MINING

The development of mining and industrial complexes leads to the increase of negative impact on land resources. It can cause mechanical damage of lands and geochemical pollution of the territory. Open-cut mining influences a complete or partial destruction of primary vegetation and soils, as well as sharp breakdown of

ecological productivity. The restructuring of pre-existing relief and the creation of new non-specific man-made forms of the territory occur in the process of minerals extraction under the influence of technogenesis. The processes of exogenous relief formation take place on disturbed and remediated lands, as well as in a zone of the mining influence. Monitoring of these lands is necessary for the development of measures for limitation and elimination of mentioned above processes.

Monitoring tasks are solved by creating a GIS project that includes cartographic and attributive information. The analysis of monitoring data results in a cartographic conclusion, showing the map, the stages of monitoring, attributive and additional information. The use of GIS technologies for land monitoring allows you creating maps directly in digital form by coordinates obtained as a result of land measurements, or in the processing of the remote sensing data.

The process of creating maps in GIS is simple and flexible, unlike the traditional methods of manual or automatic mapping. Also, geospatial modeling can be performed in GIS environment. The flexibility of the process of creating maps in GIS is ensured with: the convenience of input and editing coordinated data; the possibility of making the required number of attributive and geometric information; scale transfer; the general and multiple data usage. It is possible to copy and transfer data over local and global networks quickly.

The remote sensing is a set of various methods for recording natural environment with a scanner, with photographic, radar and other special equipment, as well as visual observations. The main qualities of the remote imaging are the following: zoom, simultaneous coverage of large territories, possibility to get repeated pictures, the study of inaccessible areas, the information possible in any scale and the wide range of registered parameters.

The Earth's remote sensing is carried out by a large number of shooting systems that allow obtaining images of spatial resolution from 10 to 0.5 m in different spectral ranges. The choice of remote sensing data type depends on the task.

The key components of the monitoring are the monitoring indicators (values or ranges of object status). These indicators are needed to interpret the monitoring data, to support the decision-making in the area of resource management and for objective assessment of the state (when compared with normative indicators). The benchmarks should take into account the ecological potential of the landscape.

One of the main tasks of monitoring is the need to create and maintain an informational database on lands disturbed by open-cut mining which will detect, in fact, unrecorded land plots that are being used and include them into the taxable base; to create a monitoring system for these lands and for their recultivation using GIS technologies; to form a grounded system of measures for rational land usage and the development of mechanisms for regulation of the effective usage of lands in the district.

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CLASSIFICATION OF HELICAL SURFACES

In modern engineering, products with complex surfaces are widely used, the whole variety of which can be divided into tools for reproducing similar parts and the actual parts by their use in engineering and technology. Often the tool has a more complex surface than the workpiece. A significant part of complex surfaces are screw surfaces.

For the first time, the questions of the theory of helical surfaces in the design of cutting tools and the classification of helical surfaces (Figure 1.) were outlined in the work of V.S. Lukshin.

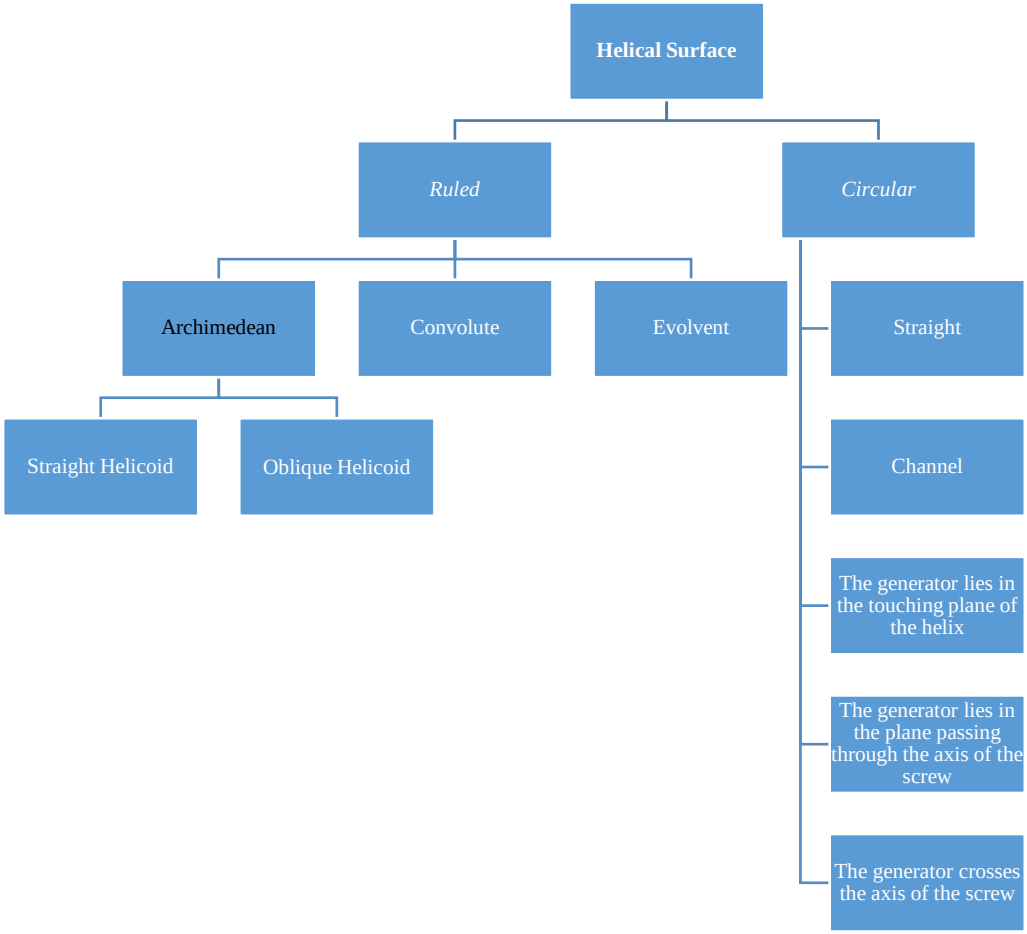

Figure 1. The classification of helical surfaces

In this work, a cylindrical helical surface, both ruled and circular, was considered [1]. A helical surface is defined as a surface described by a line that rotates at a constant angular velocity around a fixed axis and simultaneously moves translationally at a constant speed along this axis. Helical motion is considered to be a complex motion, which consists of a translational motion, parallel to the axis and at the same time rotational movement around this axis. Any screw surface can move by itself and through bending can be superimposed on the surface of rotation [2; 3]. When crossing the axis of rotation, which forms the axis of rotation, it is accepted to

call the helical surface closed, otherwise open. By the form forming the helical surface are also circular and ruled. In addition, the helical surface is divided by position relative to the screw axis of the generator. The surface formed by the ordinary helical movement of the line forming is called the ordinary helical surface. Ruled helical surfaces are the surface, which forms a straight line. When the closed helical surface is crossed by an end plane, an Archimedean spiral or Archimedean helicoid is formed in the cross section. A helicoid is called straight when the axis of the propeller is perpendicular (screw conoid), in other cases − oblique helicoid (Figure 2.).

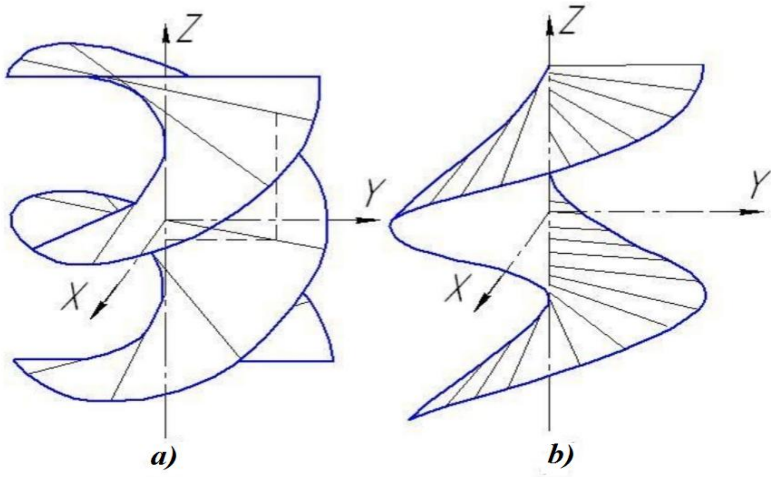

Figure 2. Helicoid (a - straight; b - oblique)

When crossing the end plane of an open ruled helical surface in cross section, an evolvent is obtained. In the case of an ordinary involute, the surface is called an involute, otherwise, in the case when the involute is elongated or shortened, it is convolute. Thus, a convolute screw surface can be considered the most common case.

Circular helical surfaces are surfaces whose L is a circle (Figure 3.). A channel helical surface is obtained under the condition that the surface that goes around the sphere and has a radius in its helical motion. If the axis of the screw is perpendicular to the plane of the circle, we obtain a helical surface of the direct type.

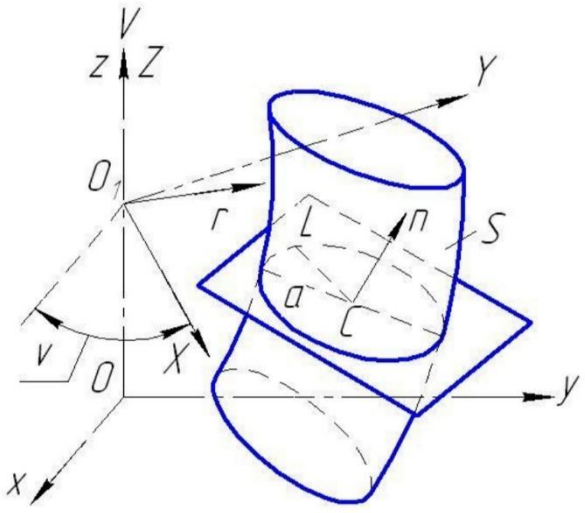

Figure 3. Circular helical surface

A complex motion, which consists of a rotational motion around a constant axis and simultaneously translational parallel to this axis, is a helical surface with variable pitch, which are cylindrical and conical.

Complex helical surfaces are characterized by variable generatrix and variable pitch, which also includes the helical surface on the sphere. Variable parameters are the pitch H and the angle ω of the helical groove angle. At a constant angle of inclination, the pitch of the screw groove changes, and, conversely, at a constant pitch, the angle of inclination is a variable parameter.

Among the variety of tools with a screw surface, a large group consists of spherical mills, which are used for machining radius sections of body parts, dies and molds. Modern industry, widely using machine tools with numerical control, currently needs a large number of spherical cutters with high performance at the lowest possible cost.

Grinding wheels are mainly used for machining helical surfaces, the profiling of which, provided there are no undercuts and incomplete formation of the groove profile, is one of the most labor-intensive tasks in instrumental production since the profile of the helical surface in any of the sections does not correspond to the profile of the forming grinding the circle. In addition, the method of crossing a sphere with a direct Archimedean helicoid is used to determine the guiding helical surface, which itself is a complex surface and leads to complex calculations. Methods for determining the production profile of the grinding wheel are designed for conical and cylindrical surfaces, while the most common and complex is the helical surface on the sphere.

To exclude the zone with zero speeds, there is a technique for designing and manufacturing a spherical cutter with a group arrangement of the helical flute. However, this design has significant drawbacks in the form of complexity in manufacturing and a small number of teeth on the end, which is caused by the number of groups. Some manufacturers of spherical mills with the same arrangement of the helical chip groove zone with zero speeds are avoided by making a center hole on the end. In this case, the zone with zero speeds is excluded, but over time the hole is clogged with chips.

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APPLICATIONS AND USES OF INDUSTRIAL CENTRIFUGES

A centrifuge is a piece of equipment that puts an object in rotation around a fixed axis, applying a force perpendicular to the axis of spin that can be very strong. The centrifuge works using the sedimentation principle, where the centrifugal acceleration causes denser substances and particles to move outward in the radial direction. At the same time, objects that are less dense are displaced and move to the center. There are three types of centrifuge designed for different applications.

Industrial scale centrifuges are commonly used in manufacturing and waste processing to sediment suspended solids, or to separate immiscible liquids. An example is the cream separator found in dairies. Very high speed centrifuges and ultracentrifuges able to provide very high accelerations can separate fine particles down to the nano-scale, and molecules of different masses.

Large centrifuges are used to simulate high gravity or acceleration environments. Medium-sized centrifuges are used in washing machines and at some swimming pools to wring water out of fabrics [1].

English military engineer Benjamin Robins (1707–1751) invented a whirling arm apparatus to determine drag. In 1864, Antonin Prandtl proposed the idea of a dairy centrifuge to separate cream from milk. The idea was subsequently put into practice by his brother, Alexander Prandtl, who made improvements to his brother's design, and exhibited a working butterfat extraction machine in 1875 [2].

By the nature of the processes occurring at centrifugation, the centrifuges are distributed to the filtering and precipitating. Centrifuges are equipped with perforated rotors of conical configuration, located horizontally or vertically. In the process of filtration centrifugation distinguishes three periods: the formation of sediment, its consolidation and mechanical drying. The sediment is unloaded by rotor vibration or by screw. In the screw sediment centrifuge, after the deposition of the axle parts, the auger is transported along the rotor and simultaneously dewatered. Fugate flows along the spiral screw channel in the deposition zone. In centrifuge with a screw deployment, the axial velocity of the movement of eyepieces is determined relative to the rotational speed of the shank, the average diameter of the rotor, the length of the screw. In a vibration scan centrifuge, the average speed of movement across the pole is from the frequency and amplitude of its oscillation, diameter, angle of inclination, frequency of rotation, as well as the density and coefficient of external choice of output and anhydrous products.

The spiny part of the centrifuge is called a rotor. Rotors have a finite lifetime. They undergo tremendous forces. Being made of metal, they can suffer from fatigue over time, causing the rotor to suddenly fly apart. The more slowly the rotor spins, the more inherently safe it is. Rotor failure at very high speeds can be deadly [1].

Depending on the particular application, centrifuges differ in their overall design and size. There are five major types of centrifuges. They are: 1) small bench centrifuges; 2) large capacity refrigerated centrifuges; 3) high speed refrigerated

centrifuges; 4) ultracentrifuges (preparative ultracentrifuge and analytical ultracentrifuge).

The «speed» of a centrifuge is measured in revolutions per minute, or rpm. Centrifuges are generally divided into 3 categories based on their maximum attainable speed: 1) «Low-speed»: to maximum of ~ 5 x 103 rpm; 2) «High-speed»: to maximum of ~2 x 104 rpm; 3) «Ultracentrifuges»: to maximum of ~105 rpm.

Centrifuges are either refrigerated or not refrigerated. Refrigerated centrifuges have a built-in refrigeration unit surrounding the rotor, with a temperature sensor and thermostat permitting selection of a particular temperature or a permissible temperature range that is maintained during centrifugation. Many biological samples are temperature sensitive, and centrifugation in the cold (1-4^{o}C) is frequently required.

Centrifuges that are not refrigerated are normally used at whatever temperature the room they are in happens to be. This is typically described in research reports as «room temperature» or «ambient temperature», which sounds somewhat scientific. In fact, such terminology means that the temperature was probably somewhere above 20^{o}C but is actually unknown. For purposes of repeatability, it is a good idea to measure «room temperature» in your room with a thermometer. It should be noted, however, that such measurement will provide only an estimate, because the spinning of the centrifuge itself can generate heat that warms up the centrifuge and any samples contained within. If samples must be kept cold and a refrigerated centrifuge is not available, a non-refrigerated centrifuge is frequently pre-cooled and run in a temperature controlled room («cold-room»).

Centrifuges can be used for a multitude of applications, because there are many different types available in today's market. Some common applications for centrifuges are: 1) separation of mixtures with close densities; 2) separate immiscible liquids; 3) sediment suspended solids; 4) separation of blood; 5) separation insoluble particles (e.g. insoluble proteins in a protein solution); 6) isotope separation; 7) gravity simulation environments for astronauts; 8) separating creams; 9) washing machine spin function; 10) separation of wastewater sludge; 11) material synthesis in a high gravity environment [3].

Today, centrifuges are controlled by microprocessors. Some can be used under high pressure or super cooled.

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IDENTIFICATION OF THE VIBRATIONAL ERROR OF THE ACCELEROMETER THROUGH THE BENCH TESTS

Introduction. One of the most requirements for accelerometers is vibration stability. It is characterized by the ability of an accelerometer to provide the correct information about measured acceleration with a certain accuracy during vibration.

The criterion of vibration stability in the case of an accelerometer is named vibratory error, which is characterized as a change of the constant component of the output signal. It is difficult to calculate and compensate for the vibrational errors of an object, because it is highly dependent on the vibration profile experienced by the accelerometer, and it can vary from one application to the other.

All currently available methods for identifying vibrational errors are based on dynamic accelerometer tests (mainly on the vibration stand), which allow us to investigate its work in conditions close to the real ones. However, such tests require expensive equipment and have numerous factors which deteriorate the accuracy of the estimation. Therefore, our task is to develop such method, which requires only static tests.

Objectives. To develop the static method of determining the additional constant component of the output signal of the navigational accelerometer under the action of deterministic and random vibrations on it.

Methods. The output signal of the accelerometer (fig. 1) can be expressed as a function of the input acceleration as follows:

$$U = K_1 \left\{ \begin{array}{l} k_0 + \left(1 + \dfrac{k_1'}{2}\operatorname{sign} a_{\mathrm{IA}}\right)\cdot a_{\mathrm{IA}} + \sum\limits_{n\geq 2} k_n a_{\mathrm{IA}}^n + \delta_{\mathrm{OA}} a_{\mathrm{PA}} + \delta_{\mathrm{PA}} a_{\mathrm{OA}} + \\ + k_{\mathrm{IP}} a_{\mathrm{IA}} a_{\mathrm{PA}} + k_{\mathrm{IO}} a_{\mathrm{IA}} a_{\mathrm{OA}} + k_{\mathrm{PO}} a_{\mathrm{PA}} a_{\mathrm{OA}} + k_{\mathrm{PP}} a_{\mathrm{PA}}^2 + k_{\mathrm{OO}} a_{\mathrm{OA}}^2 + \varepsilon \end{array} \right\} \qquad (1)$$

where K_1 – accelerometer sensitivity; k_0 – offset; k_1' – asymmetry of sensitivity; δ_{OA}, δ_{PA} –non-orthogonality of the accelerometer instrumental axes; $k_n\,(n \geq 2)$ – n-th order coefficient of nonlinearity; k_{IP}, k_{IO}, k_{PO} – cross-sensitivity; ε – measurement noise. Consider the case of a simple sinusoidal input acceleration

$$\begin{bmatrix} a_{\mathrm{PA}}^* & a_{\mathrm{IA}}^* & a_{\mathrm{OA}}^* \end{bmatrix}^{\mathrm{T}} = \begin{bmatrix} a_{\mathrm{PA}} & a_{\mathrm{IA}} & a_{\mathrm{OA}} \end{bmatrix}^{\mathrm{T}} + \begin{bmatrix} w_{\mathrm{PA}} & w_{\mathrm{IA}} & w_{\mathrm{OA}} \end{bmatrix}^{\mathrm{T}} \sin \omega t \qquad (2)$$

where $a_{\mathrm{PA}}, a_{\mathrm{IA}}, a_{\mathrm{OA}}$ –acceleration projections; $w_{\mathrm{PA}}, w_{\mathrm{IA}}, w_{\mathrm{OA}}$ –vibration projections; $\omega = 2\pi f$ – vibration frequency. The time-averaged value of this input is zero. The time-

averaged output is equal to the sum of the time-averaged values of all components on the right side of the equation (1). The odd order terms average out to zero:

$$e = \frac{k_2}{2} w_{\text{IA}}^2 + \frac{3}{2} k_3 w_{\text{IA}}^2 a_{\text{IA}} + 3k_4 a_{\text{IA}}^2 w_{\text{IA}}^2 + \frac{3}{8} k_4 w_{\text{IA}}^4 + \frac{k_{\text{IO}}}{2} w_{\text{IA}} w_{\text{OA}} + \frac{k_{\text{IP}}}{2} w_{\text{IA}} w_{\text{PA}} +$$
$$+ \frac{k_{\text{PO}}}{2} w_{\text{PA}} w_{\text{OA}} + \begin{cases} 0, \text{when} \left| a_{\text{IA}} \right| \geq \left| w_{\text{IA}} \right|; \\ \frac{k_1'}{\pi} \left[\arcsin \frac{a_{\text{IA}}}{w_{\text{IA}}} + \sqrt{w_{\text{IA}}^2 - a_{\text{IA}}^2} - \frac{\pi \left| a_{\text{IA}} \right|}{2} \right], \text{when} \left| a_{\text{IA}} \right| < \left| w_{\text{IA}} \right|. \end{cases} \quad (3)$$

The obtained model of vibration error is the function of asymmetry, even nonlinearity and cross-sensitivity. These coefficients are subject to experimental determination during the tests according to the next method.

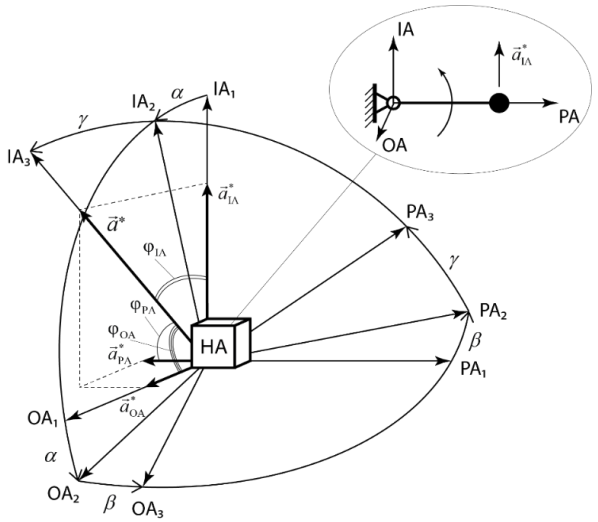

Fig. 1. Orientation of the acceleration vector relative to the accelerometer instrumental axes

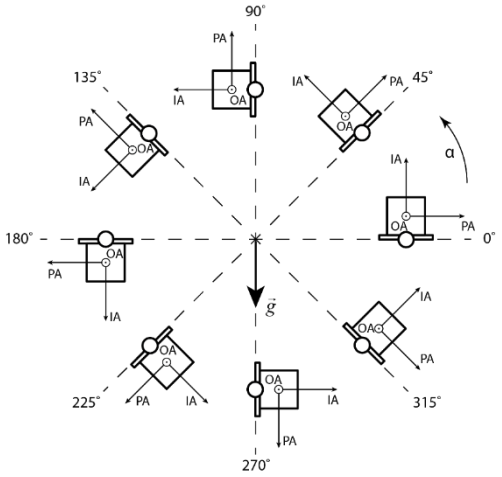

Fig.2. Test positions of NA

The test positions of accelerometer are divided into three series, depending on which axle accelerometer is parallel to the axis of rotation (Fig. 2). We measure accelerometer's output signal U_{ij} in these positions and find coefficients of the model (1) using next equations:

$$k_3 = \frac{\sqrt{2}}{\tilde{K}_1} \left(U_{16} - U_{12} - \frac{\sqrt{2}}{2} \left(U_{17} - U_{13} \right) \right) - 2; \; k_0 = \frac{1}{12 \cdot K_1} \left(\sum_{i=1}^{2} U_{i3} + \sum_{i=1}^{2} U_{i7} + \sum_{i=1}^{8} U_{3i} \right);$$

$$k_4 = \frac{1}{K_1} \left[U_{11} + U_{15} - \left(U_{12} + U_{14} + U_{16} + U_{18} \right) \right] + 2k_0 + \left(2\sqrt{2} - 1 \right) \tilde{k}_1';$$

$$k_{\text{IP}} = \frac{1}{2K_1} \left(U_{12} + U_{16} - \left(U_{14} + U_{18} \right) \right); \; k_{\text{IO}} = \frac{1}{2K_1} \left(U_{22} + U_{26} - \left(U_{24} + U_{28} \right) \right);$$

$$k_{\text{PO}} = \frac{1}{2K_1}\ U_{32} + U_{36} - \ U_{34} + U_{38} \quad ;\ k_2 = \frac{1}{K_1}\left(\sum_{i=2}^{8} U_{1i} - \frac{U_{11} + U_{15}}{2}\right) - 3k_0 + \frac{1-2\sqrt{2}}{2}\tilde{k}_1',$$

$$\tilde{K}_1 \approx \frac{1}{6}\left[\ U_{15} - U_{11}\ + \sqrt{2}\ U_{14} + U_{16}\ - \sqrt{2}\ U_{12} + U_{18}\ \right]$$

The sources of instrumental errors in the measurement of the output signals of the NA on the static calibration stand are the systematic angular errors of the initial orientation and the random angular error of the test angles. The combined effect of these errors is expressed in the deviation of the projections acceleration on the instrumental axes of the accelerometer as follows:

$$\Delta U_i = \frac{\partial U_i}{\partial a_{\text{PA}i}} \Delta a_{\text{PA}i} + \frac{\partial U_i}{\partial a_{\text{IA}i}} \Delta a_{\text{IA}i} + \frac{\partial U_i}{\partial a_{\text{OA}i}} \Delta a_{\text{OA}i}$$

Results. One of the main requirements is the ability to get a large array of accelerometer's output values signal in a small time interval. It is achieved by high-speed ADC. In the experiment, the numerical values of MM's NA coefficients were determined. After that, the errors of their identification were calculated by subtraction from the founded numerical coefficients values their reference values. The dependence of the integral on the measured acceleration during the vibration action is approximately linear, which is confirmed by the fact that the vibration error of the NA for the duration of the vibration is constant in magnitude. The variable and noise components in the signal integrated over time are significantly lower than in the output signal NA, which allows us to see the effect of vibration on the accelerometer.

Conclusion. The calculations based on the developed mathematical model (3) of vibrational error coincides with experimental results, which confirms the correctness of our considerations about the form of functional dependence (3). However, we don't take into account the frequency dependence of the magnitude of the vibration. Exploring this dependency is possible only during dynamic tests.

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RESEARCH OF THE STRATOSPHERIC OZONE LAYER POLARIZATION COMPOSITION OF EARTH USING ULTRAVIOLET PICOPOLARIMETER

Introduction. Factors that determine global climate formation on the Earth is a stratospheric aerosol. Weather and climate changes of the Earth depend on the temperature balance of the planet, radiation that comes from the Sun and the radiant by the Earth into outer space. Transmittance and reflection coefficients changes are decisive in breaking this balance. Variations of gas and aerosol components of the atmosphere make a significant contribution to violation of this balance. A special attention should be paid to the atmosphere and its ozone layer that protects the Earth from rigid ultraviolet radiation.

Objectives. The general objective of the project is to conduct the research on the diffusion polarization components of solar radiation reflected by the stratosphere. Such data can be obtained using the space ultraviolet polarimeter (UVP) operating in the wavelength range of 230-290 nm. This device is currently being developed at the National Technical University of Ukraine «Igor Sikorsky Kyiv Polytechnic Institute» and the Main Astronomical Observatory of the National Academy of Sciences of Ukraine.

Methods. The input value for the entire instrument and its optical part as the primary converter is UV radiation. According to the terms of reference, we need to design an on-board UPS with overall dimensions not more than 100x100x100 mm. Regarding the registration system the conversion function should have a linear appearance. The radiation intensity measurement range is preferably 10^4. The measured value is the intensity of the radiation light flux I [W / m²], which is the initial value of the optical part of the device.

Weight control and design. Weight is a major factor in aerospace aircraft design, construction and operation. Excessive weight reduces the efficiency of aerospace aircraft and the safety margin available if an emergency condition should arise. When an aerospace aircraft is designed, efforts are made to minimize weight while maintaining strength and durability. Designer should minimize the weight in their designs in order to ensure the aircraft can meet its mission requirements. The less the aircraft weights; the farther it can travel; the higher it can fly; the less fuel it will use.

Physical and visual access for inspection of the aircraft must also be considered. When determining attach-point locations and equipment access, it is important to understand how the fabricator is going to install each component and how they will be serviced and maintained.

Results. The data obtained by such space experiment will allow us to come closer to solving the problem of aerosol component impact on changes in the Earth

ozone layer. Such the ultra-violet picopolarimeter (UVP) is scheduled to be installed on board the satellite's peak "South".

The general view of the structural scheme is presented in Fig. 1. The UVP has a two-channel structure, it does not have moving elements and consists of:

- Optical parts (diaphragm, lens, Wollaston prism, light filters);
- Registration block of the useful signal and the processing of the received information (photovoltaic receivers (photodiodes), temperature and pressure sensors, frequency meter (signal correction block), ADC, control unit (on-board calculator));
- Unit for transmitting information to Earth (encoder, radio transmitter, radio channel, etc.).

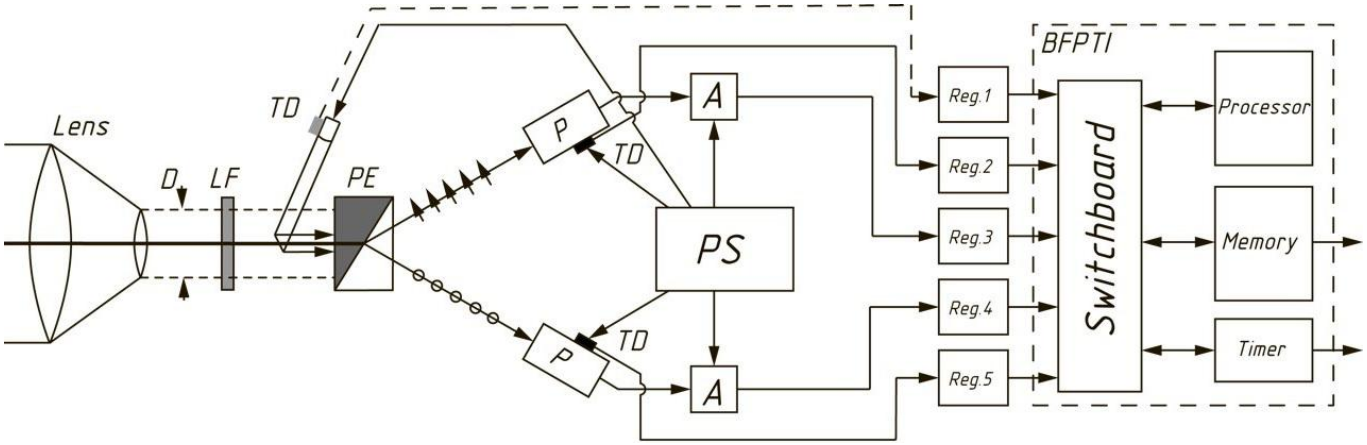

Fig. 1 The block diagram of the UFP

D - diaphragm, LF - light filters, TD - thermal sensors, PE - polarization element, P - photodiode, A - amplifier, PS - power supply, Reg. - register, BFPTI - block of formation, processing and transmission of information

Conclusion. As a result of this work, a model of the electrical part of the UVP is developed on the basis of an ultraviolet photodiode. Structural and functional diagrams of the device are developed. The efficiency of the design is substantiated by calculations.

Structure is significantly revised to integrate with new BFPTI structure. It is also re-gauged due to revised temperature loads.

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COMPARATIVE ANALYSIS OF 3D PRINTING TECHNOLOGIES FOR THE PROTOTYPING OF QUADCOPTER PARTS

We are faced with the task of manufacturing the part of the beam of the quadcopter of optimal design.

The classic method of manufacturing a component is based on the "subtraction/difference". Take care of the desired material. From the workpiece, cut off the unwanted material to get the part. Nowadays new technologies of manufacturing of details are included. New technologies include additive technologies (Additive Fabrication (AF) or Additive Manufacturing (AM)). Addictive technology is based on the creation of a component through its layer-layer synthesis. The item /product is created from scratch. The material is added layer by layer.

Together with additive technologies, the term "rapid prototyping" (Rapid Prototyping) is common. Developers of the first technologies of 3D printing considered their use for prototypes and models of products. Nowadays, modern additive technologies can print a high-quality finished product.

The more famous name of additive technology is 3D printing. The name came from the printing of images on flat materials (paper, film) using an inkjet printer. [1]

The following factors have contributed to the new technology: the growing popularity of 3D printing, the availability of desktop 3D printers, the development of reliable software for design and modeling, the introduction of new reliable materials.

3D printing technology is becoming widespread. Users adapt it to different needs. 3D printing technology is developing to meet socio-technical and infrastructural issues. [2]

Creating a 3D component consists of three stages: image creation / modeling, post-processing image, 3D printing.

Modeling an image is a very important stage in the production. The quality of the 3D component directly depends on the quality of the data. Post-processing images split the image into segments and then apply a grid. For this stage there is a special software. The contours of a segmented region of interest can be converted computingly into 3d TriangleMesh. The grid data can be further processed using CAD (Computer-Aided Design) software. This may include automatic grid optimization or manual geometry modification. After these two steps, data is sent to a 3D printer. Third stage 3D printing. At this stage, three-dimensional figures are printed on a digital 3D model. The machine reads the data from the CAD drawing and sequentially lays out layers of liquid, powder or sheet material, and thus accumulates the model from a series of cross-sections. These layers create the final shape. The advantage of additive manufacturing is its ability to create almost any complex form or geometric feature. [3]

A 3D printer is a peripheral device for printing 3D shapes on a digital 3D model. Printing is carried out by way of spherical expansion of a bulk physical object.

The 3D printer has the following components:

- body;
- extruder - printing head;
- actuator extruder;
- printed platform - the surface on which the object is printed;
- control module;
- power supply unit.

The publications [2,4,5] concerning 3D printing technologies were analyzed. One can conclude that the most commonly used 3D printing technologies are SLA, SLS and FDM.

SLA (Stereolithography, laser sterolithography) - A three-dimensional figure is formed from a liquid photopolymer, which hardens under the influence of a laser.

The advantages of SLA technology are as follows: high print accuracy; manufacturing of complex models with lots of small parts; possibility to get large and heavy goods (150x75x55cm, up to 150 kg); small amount of waste; the simplicity of finishing (polishing), which in many cases is not required.

The disadvantages of SLA technology are as follows: a small print speed; a large proportion and size; low durability of created objects; high cost of printer and consumables; limited range of materials; color printing is not provided.

SLS (selective laser sintering) - the formation of a three-dimensional object made of powder material, which melts under the influence of a laser.

Advantages of SLS technology: a wide range of materials (plastic, metal, foundry wax, ceramics, glass); the opportunity to get complex objects; suitability for small-scale production; painting is possible; minimal finish; higher print speeds than SLA printers; unlike other technologies, does not require supporting structures when printing products of complex configuration (the role of support is played by the powder itself).

Disadvantages of SLS technology: requires a sealed chamber and a powerful laser; small size of received objects (up to 55x55x75cm); the resulting products require finishing; less precision compared to SLA devices; unsuitability to work at home.

FDM (PJP, FFF, layered surfacing) - the formation of a three-dimensional object made of plastic or metal yarn. Household printers are provided with one extruder, and industrial - two or more. Printers with similar technology often meet.

Advantages of FDM technology: low cost of printer and consumables; compactness and small weight of the printer; good print quality; color printing; a wide range of materials (plastic, tin, various alloys and even chocolate).

Disadvantages of FDM Technology: Low Speed Printing; complexity with fixing an object on the desktop; the tendency of products to shrink (reduction of the size of the object after cooling); manufactured models require finish processing; great constraints in geometry; possible defects in printing; a large amount of waste. [6]

Given the popular 3D printing technology, we can conclude that SLS will be the optimum technology for printing of ray the quadcopter. Because the 3D printers of SLS technology have good print quality, the ability to print complex geometry and small parts, do not require post processing. But, despite all the benefits of having a very high cost. SLA technology also has a high cost and has limitations in the need to create supporting designs and a small print area.

With FDM technology, designing 3D models for printing is limited and the creation of the component takes a lot of time due to the low speed of printing and long processing of the part. The main advantage is the presence of such a printer in our lab. FDM technology has low cost and a large selection of printing materials. Therefore, it is suggested to use FDM technology to print of ray the quadcopter.[1]

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SPINDLE ASSEMBLY DESIGNS

The spindle assembly is one of the most critical components of any metalworking machine, always participating in the shaping movement and entering the drive of the main movement. It accounts for from 50 to 80% of errors in the overall balance of accuracy of the machine. The quality of the spindle assembly has the most significant impact on the accuracy, reliability, performance of the entire machine. Thus, the dynamic quality of the spindle assembly directly affects the quality of the products.

A spindle assembly consists of a spindle, its supports and a drive element, enclosed, as a rule, in a separate housing. In essence, the spindle assembly is a rotor system with its own design features, determined primarily by the scope.

The design of the spindle is determined by the following features:

a) the size of the spindle, the distance between the supports, the presence of holes for the passage of materials or other purposes;

b) drive parts (gears, pulleys) and their location on the spindle;

c) bearing design and type of bearings;

d) method of fixing devices for parts or tools that affect the design of the front end of the spindle.

The spindle dimensions, its length and diameter, the distance between the supports, the elastic and damping parameters of the supports determine the inertial and intrinsic stiffness and dissipative characteristics of the spindle assembly and form its own amplitude-frequency response of the spindle assembly.

The rolling bearings of the ballast unit have a high-speed (short-term up to 200-300 thousand rpm) acceptable for most tasks, and a high load capacity. An important role in their wide use is played by the speed of replacement and maintainability, which positively affects the reliability of the spindle assembly as a whole [1].

The works of V.S. Balasanyan, V.B. Balmont, V.V. Bushuev, A. Jones, T. Harris, Z.M. Levina, A.M. Figatner, V.E. Push, A.V. Push and many other scientists are devoted to the design and development of spindle rolling bearings.

Extensive use in modern control systems has found a pattern of application in one support of several identical bearings. Depending on the number of bearings in the

support, there are two types of installation types: duplex, triplex and quad. Bearings can be assembled together in several ways depending on the desired characteristics.

Analysis of modern spindle assembly designs shows that about three quarters of spindle assemblies with rolling bearings have angular contact ball bearings of the "triplex" type in the front support and that the use of angular contact ball bearings in spindle assembly machines constantly increases.

For spindle rotation frequencies above 15000 rpm, spindle assemblies with an integrated motor or spindle motor are used (Figure 1.).

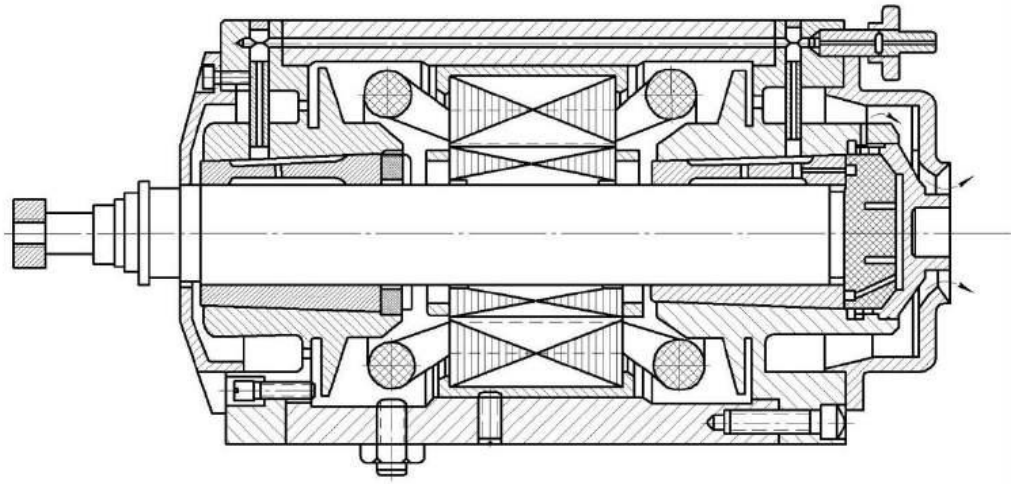

Figure 1. Spindle assembly with integrated motor

Often, the spindle assemblies of this design are also called electrical spindles. The motor is integrated into the housing of the spindle assembly and ensures the transmission of torque without restrictions due to belt or gear transmissions. The motor spindle consists of a spindle shaft mounted on bearings, a motor and a tool clamping system. Air-oil lubrication allows to achieve higher – by 20% and higher – rotation speeds. The power of the motor spindle is determined by the power of the motor. Asynchronous and synchronous electric motors are most often used as a motor.

Electric motors are powered by frequency converters, the current form of which allows to achieve high stability of the rotation frequency [2].

With the current trend in designing high-speed spindle assembly, when the spindle is taken as an absolutely rigid shaft on elastic supports, the dynamic quality of the spindle assembly will be completely determined by the elastic-damping characteristics of its bearings, which in 90-95% of cases for the spindle assembly of the machine park consist of rolling bearings. The elastic-damping characteristics of the spindle assembly largely depend on the choice of the optimal preload value of the bearing supports, and its practical implementation is one of the most difficult problems of designing and manufacturing spindle assemblies. Thus, the efforts of the preload determine the dynamic quality of the spindle assembly, and the task of developing methods for its assessment, especially without disassembling the spindle assembly, is relevant.

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ENGINEERING TRAINING OF THE PROFESSIONAL MACHINE-BUILDING

Nowadays the question concerning the professional training of engineering and technical specialists, namely, "Do I need engineering training in technical higher education institutions?" is raised. This issue is relevant not only for technical institutions of higher education, but also for the enterprises of the machine-building industry.

The quality of higher technical education and the competitiveness of young professionals in the modern economy depend on the solution of such issues as staffing in the domestic industry with qualified engineers and technicians, interaction of higher education institutions (HEI) and enterprises in the field of engineering and technical cooperation, the necessity to improve the qualification of teachers of engineering and technical disciplines, the development of material and technical base of HEI.

The future product concept creating is the most important and complex stage, in which the transition from awareness or setting up the need for some products to its conceptual model is provided. Engineering accelerates the development of mechanical engineering, provides opportunities to stay in the modern market, where new goods and services win. Computer engineering enables the acceleration of the advent of innovation.

The age of drawings has rather seen its day. The rate around the world is bet on digital technology, in particular computer systems CAD and CAE.The first one is responsible for constructing and design, the second one is responsible for calculations and engineering analysis. If earlier the process of designing a new model could involve hundreds of people, now the problem can be solved by one person.

The key concept of system engineering design is the Product Life Cycle (PLC). The life cycle of the industrial products consists of a series of stages, starting with the

appearance of the new product idea before being disposed of after the expiration date of its exploitation.

Therefore, modern technologies of virtual engineering offer new approaches to both the design and the production activity. They allow to evaluate the possibility of manufacturing various design options (including assessment of the quality of assemblage or performance of projected products); to optimize the production process (by the digital imitation method); to customize the product to customer requirements easily; to accumulate a wide knowledge base effectively; to provide a basis for the collaborative project development.

The main components of virtual production are a virtual design, a digital imitation, a virtual prototyping, and a virtual factory. Virtual design provides the ability to create and modify its components, to manage different devices and interact with virtual objects in the virtual environment. The designer can see the stereoscopic image of virtual objects and hear spatial realistic sound.

In order to reduce the time-consuming and costs of the product development, the team of developers constantly needs to optimize their design concepts. After all, using only 2D or 3D concepts when creating a product is less effective than their interaction.

For certain types of designs, 2D-shredding models are more effective, because they provide a "level of critical information" quickly; make it easy to implement big, unpredictable changes, since there is no need to take into account the structure and created dependencies; 3D usually requires a preliminary elaboration of the structure and connections. Organization of 3D CAD-modeling throughout the entire enterprise allows the involvement of a large circle of workers in the development process, providing users with the choice of the modeling method.

It should also be mentioned that the current stage of development of CAD software is characterized by a constant expansion of system functionality. The more complex software is used, the higher the qualification requirements of specialists working with these programs are.

Due to the dissemination of the "heavy" CAD, the staffing problem in enterprises is exacerbated, because the maintenance of highly skilled professionals who have skills in working with systems does not cost the enterprise dearly; the dependence of teams on such specialists is formed. Therefore, it is difficult to find qualified specialists, to provide the employment that requires special skills and abilities.

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INCREASING THE RELIABILITY OF THE MEASURING SYSTEMS HIGHLIGHTS OF AIRCRAFT

The urgency of the research of the problem is caused by the solution of the task of increasing the reliability of the barometric altimeter at low altitudes, which have a short flight time and occur during the flight of the multicopter.

The aim of the research is to develop a method for increasing the functional reliability of the miniature barometric altimeter of a multicopter by complexing the altimeter with a platformless inertial system (PINS) and a satellite navigation system (SNS).

The research used Arduino-uno microcontroller and a barometric altimeter, developed on the basis of a digital piezoresistive atmospheric pressure sensor (module with barometer as BMP-280 from BOSCH). The module BMP-280 also has a built-in sensor of temperature.

The new scientific and technical results include the choice of the most effective method of increasing reliability – the method of functional redundancy and complexing systems.

Therefore, to increase the reliability of the barometric altimeter, a functional complexating method was chosen, when redundancy in the system is created by redundancy of the main function of the object according to the purpose.

Such main function of the barometric altimeter is a measurement of altitude of the multicopter flight.

Thus, as a functional reserve, all on-board measuring systems of multicopter can be considered, which give an opportunity to obtain information about the flight altitude.

There is a knew integrated navigation system for unmanned aerial vehicles, which consists of the BINS navigation complex based on micromechanical sensors (MEMS) and SNS, which has high reliability indicators.

The system is implemented as a loosely coupled scheme based on the optimal Kalman filter, which allows both the development of independent solutions in the BINS & SNS, as the complex solution obtaining on the basis of the Kalman filter according to the SNS and BINS data.

This research suggests a complexing of the miniature barometric altimeter based on a piezoresistive pressure sensor with this system.

A miniature barometric altimeter is designed for its practical application onboard of aircraft (multicopter). In addition, using the developed complex flight altitude measurement system with platformless inertial system and a satellite navigation system will improve the reliability of both the altimeter and the aircraft in general.

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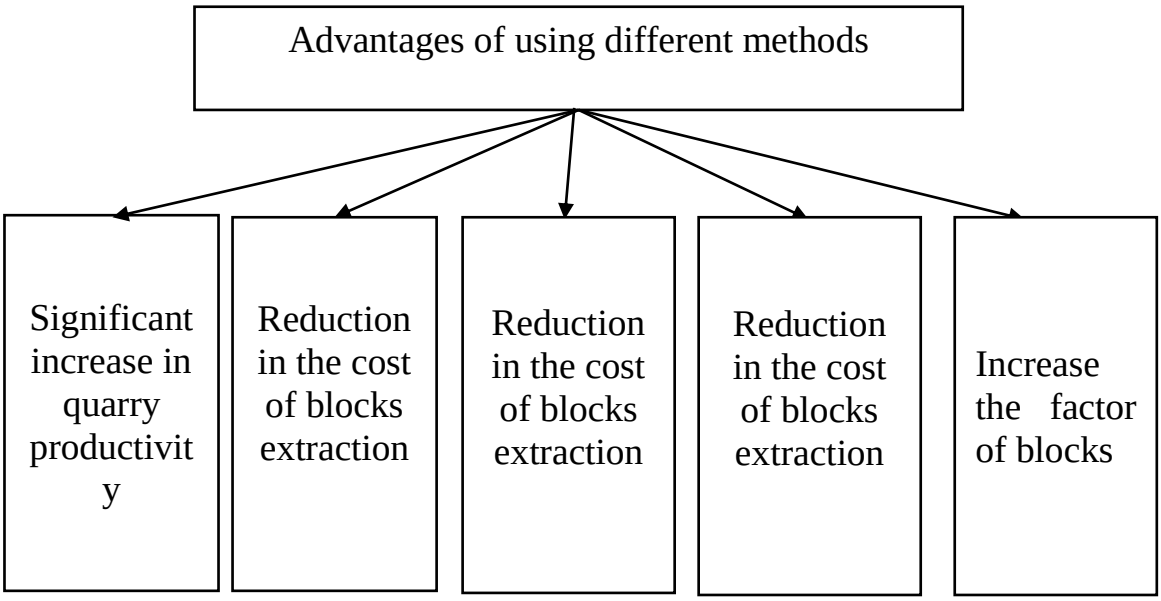
METHODOLOGY FOR SEPARATION OF QUARRY FIELDS INTO TECHNOLOGICAL ZONES AND THEIR GEOMETRIC ANALYSIS

The variety of methods and technologies to prepare stone for removal and the possibility of using these methods with a wide variation of the rocks properties significantly complicate their choice for the conditions of a specific deposit and even for certain parts of the field. This problem is especially topical in the case of extraction of gabroid rocks for which there are significant variations in properties. The use of only one technological complex in different areas of quarry field leads to the decrease of productivity, worsening of technical and economic indicators of the quarry, which manifests itself in reducing the coefficient of blocks output and deteriorating their quality. Therefore, the division of the quarry field into technological zones with stable properties (intensity of jointing, blockiness, strength characteristics, decorativeness and ore content) allows determining the parameters of elements of the development (the direction of removing the layers of minerals, the structure of equipment complexes) for each zone. It can ensure the removal of natural stone blocks with minimal losses and minimal cost.

As for major rock deposits, there are significant variations of the properties in space, then there is a need to use several methods of extraction, depending on the physical and technical properties of the individual site, and therefore, to use several technological complexes.



In accordance with the described methods and taking into account specific features of blocks extraction, it is necessary to divide the extraction array into certain areas. In this case, the initial information must be presented in models of rocks indicators which characterize the difficulty and expediency of extracting blocks by a given technological complex and in the form of equations (1), graphs or various diagrams:

$$\begin{cases} \sigma_m = f_1(x, y, z) \\ K_m = f_2(x, y, z) \\ a_a = f_3(x, y, z) \\ B_{cp} = f_4(x, y, z) \\ K_p = f_5(x, y, z) \\ D = f_6(x, y, z) \end{cases} \quad (1)$$

$\sigma_m = f_1(x, y, z)$ – strength characteristics;

$K_m = f_2(x, y, z)$ – coefficient of jointing;

$a_a = f_3(x, y, z)$ – coefficient of anisotropy;

$B_{cp} = f_4(x, y, z)$ – coefficient of block output;

$K_p = f_5(x, y, z)$ – the content of ore components, various inclusions and effects;

$D = f_6(x, y, z)$ – decorativeness is expressed in points and supplemented by a variety of electronic applications,

where x, y, z – spatial coordinates of the field.

All data must be integrated on the basis of standard GIS.

Then it is necessary to consider the data of the site as certain systems with their respective properties (stable on each given site).

Blockiness of each section of the array is determined during the exploration of the field and the coefficient of product blocks output is determined for each method:

$$B_{бі} = B_{mi} \cdot k_{зі} \cdot k_a, \quad (2)$$

$$k_a = -0{,}0003x^2 + 0{,}0241x - 0{,}0513, \quad (3)$$

where $B_{бі}$ – blockiness in the method of extraction;

B_{mi} – the blockiness of the same site;

$k_{зі}$ – the coefficient taking into account technological losses when using the i-technological complex.

k_a – a coefficient that takes into account the dependence of specific losses of raw materials on the coincidence (x) of anisotropy directions and the front of extractive works.

Consequently, due to these methods, it is possible to ensure the removal of blocks of natural stone with minimal losses and minimal cost, as well as possible increase in the productivity of the quarry.

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ANALYSIS OF MODERN BIOLOGICAL METHODS OF PLASTIC DESTRUCTION AND PROSPECTS FOR THEIR USING

Plastic is a broad name given to different polymers with high molecular weight, which can be degraded by various processes. However, considering their abundance in the environment and their specificity in attacking plastics, biodegradation of plastics by microorganisms and enzymes seems to be the most effective process. When plastics are used as substrates for microorganisms, evaluation of their biodegradability should not only be based on their chemical structure, but also on their physical properties (melting point, glass transition temperature, crystallinity, storage modulus etc.). Today, the prospects of different methods use for biodegradation of plastic are investigated in different countries of the world, namely:

- degradation by fungus Aspergillus tubingensis. This fungus secretes enzymes, which are destructive for chemical bonds in polymers. That is, it feeds on plastic in the same way as other living organisms feed on substances of plant and animal origin. The rate of decomposition of plastic under the action of the fungus is influenced by temperature and acid-base balance. (Temperature and acid-base balance infuelnce on the rate of decomposition of plastic under the action of the fungus). [1]

- using a thermophilic bacterium Brevibaccillus borstelensis strain 707 (isolated from soil) utilized branched low density polyethylene as the sole carbon source and degraded it. Incubation of polyethylene with B. borstelensis (30 days, 50°C) reduced its gravimetric and molecular weights by 11 and 30% respectively. Maximal biodegradation was obtained in combination with photo oxidation, which showed that carbonyl residues formed by photo oxidation play a role in biodegradation. Biodegradation of plastic is accelerated using mannitol and potassium nitrate.

Table 1. Effect of mannitol and potassium nitrate concentration on the biodegradation of (u.v. irradiated, for 60 h) polyethylene (LDPEL0235) by Brevibacillus borstelensis strain 707 after 30 days of incubation at 50°C [2]

Nutrient composition	Mannitol* (%)	KNO_3* (%)	Dry weight loss of polyethylene ± (%)**
Complete medium (control)	100	100	6.2 ± 1.2
Carbon limitation	50	100	5.7 ± 0.1
	20	100	6.8 ± 0.4
	0	100	11.0 ± 1.1
Nitrogen limitation	100	50	8·0 ± 0.6
	100	20	9.7 ± 0.7
	100	0	7.2 ± 0.1
Carbon and nitrogen limitation	50	50	6.9 ± 0.4
	20	20	6.8 ± 0.7
	0	0	7.9 ± 0.7

*Maximal concentrations (100%) of mannitol and potassium nitrate in VB medium were 5 and 2 g l^{-1} respectively.

**Experimentally obtained values minus values for noninoculated control, which were normally <0.2%, are given (n = 3);

- a method with the use of intestinal bacteria from moth larvae (Bacillus and Enterobacter), which intensively reproduce on polyethylene as a single source of carbon. These species caused polyethylene degradation after 28 days of their incubation on small sheets of the material: their tensile strength dropped by 50%, and their ability to repel water droplets fell by 30%. And after the microbes grew on the polyethylene for 60 days, the mass of the plastic films decreased by 10%, and the molecular weights of the polymer chains dropped by 13%; [3]

- the use of Plodia interpunctella larvae. Two bacterial strains capable of degrading PE were isolated from this worm's gut, Enterobacter asburiae YT1 and Bacillus sp. YP1. Over a 28-day incubation period of the two strains on PE films, viable biofilms formed, and the PE films' hydrophobicity decreased. Obvious damage, including pits and cavities (0.3–0.4 μm in depth); [4]

- the use of wax moth larvae. In tests, was found that about 100 wax moth larvae can eat about 92 milligrams of a normal grocery bag in twelve hours. Under optimal conditions and at temperatures around 30 degrees Celsius, bacteria can successfully degrade polyethylene terephthalate (PET). [5]

Biodegradable plastic is an innovative means of solving the plastic disposal problem from the standpoint of development of new materials. Today, the use of fungus Aspergillus tubingensis is the most interesting and poorly investigated method of biodegradation. This fungus is present in small quantities in rotten vegetables and fruits, and polyethylene can be used as an additional source of carbon. Aspergillus tubingensis does not form harmful substances in the process of decomposition; it is not harmful to flora, fauna and humans, which opens the prospect of further research.

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PORTABLE VEHICLE SAFETY ISSUES

Nowadays portable vehicles on electric motors become more and more popular. Very often you can see people on the streets riding self-balancing scooters, mono-wheels and electric scooters. They gradually take their place next to bicycles and roller skates.

But along with the popularization of such devices, there is a big question of security.

Let's start with self-balancing scooters, or hoverboards, as they are also called. They are quite simple to manage. They are able to develop a sufficiently high speed and have high maneuverability. At the same time, they are also relatively affordable in terms of price. This is due to the mass production of self-balancing scooters by Korean and Chinese companies. In the process of cheapening, unreliable materials and malfunctioning electronics began to be used. The result was that the hoverboard became dangerous to use, even exploding.

Next on the list are monocoles. Their design is simpler, and therefore they are more reliable. They are not explosive, rarely to break, and due to their small size and high maneuverability they are safer to operate. However, they are much more complex to manage, and they allow to develop a higher speed, which does not simplify their management. In addition, a collision even with a small obstacle can lead to a crash of the pilot. They have more simple and reliable design, but more complex management.

Furthermore, I consider it necessary to write about electric scooters. Unlike the two previous devices, they do not use gyrostabilizers for control. In addition, they have a clear advantage in the form of the possibility of using them without wasting a charge or even with a discharged battery in the so-called “muscular” mode. Electric scooters are capable of driving at high speed, but have moderate maneuverability. They are more reliable on the road due to high stability, but have a big disadvantage in the form of the relative fragility of the steering wheel, which during the operation takes into account the main load.

Last but not least I would like to mention segveis. They are much more reliable than the devices described earlier. They are easy to manage, stable, fast. Their main disadvantages are significantly larger dimensions, which create difficulties in transportation, as well as a high price comparable to a cheap car. Thus, they are simply less accessible.

In general, I would like to say that such portable vehicles will continue to gain popularity. They provide an opportunity for people to move faster and over long distances without exerting any extra effort. However, it is worth remembering that in addition to the increasing availability of these devices, the danger from their use will also increase. I believe that, just as in some countries of the world, it is worth gradually limiting their use in order to protect both pedestrians and users themselves.

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PROBLEMS WITH DRILLING IN UNSTABLE CLAY DEPOSITS

When drilling oil and gas wells there are complications associated with the loss of stability of the shaft consisting of clay and clay shale. In a complex of sedimentary deposits clay rocks lie at different depths and make up 80-82% of the entire thickness of rocks.

By the nature of the behaviour in the process of drilling, these deposits are divided into 4 groups:

- tough rock;
- swelling, high-plastic and those that easily pass into a drilling mud, clay;
- soft rock, clay slates that fall down;
- strongly moistened clay with overlaps of salts that form cavities, bridges and downfalls.

These categories of sedimentary clay rocks cause complications; they often lead to the loss of shaft or to the elimination of wells.

The behaviour of potentially unstable clay is determined by two main factors: physical or physical and chemical.

Based on the analysis of possible causes of violation of the stability of well walls, they can be divided into three main groups:

- mining-geological (humidity, plasticity, texture, tectonic disturbances, corners of layers formation);

- physical and chemical (wettability of rock, mineralization of pore fluid and drilling mud, composition of the dispersed phase);

- technological (density, water efficiency, speed of drilling, hydrodynamic oscillations in the well).

At the moment, inhibitive drilling fluids (substances that slow down or stop the flow of chemical reactions, biochemical and physiological processes) are created to prevent accidents and complications associated with bridges and downfalls of unstable clay.

From a wide range of inhibitive drilling fluids, potassium, silicate, calcium, lime and gypsum solutions are the most widely used. But it should be noted that all inhibitive systems have a number of disadvantages:

- high materials content and cost of solutions;
- complicated regulation of rheological and filtration properties;
- the necessity to adhere to the strict technology of solutions preparation;
- possible overuse of weight;
- increased crust and foam formation.

Polymer and polymer-based solutions are applied now to improve the stability of clay on the well walls. These systems, due to the low solids content in drilling mud, can increase the mechanical speed of drilling, improve the wear resistance of chisels, and reduce the cost of sinking. The advantages of polymeric solutions are the following: improved antiwear and lubricating properties, a wide range of filtration properties, as well as inhibitive ability in relation to clay rocks.

Thus, at the moment, the optimal dealing with this problem is the use of polymer and polymer-based solutions. In comparison with other inhibitive solutions, mentioned above substances are of affordable price, they can regulate filtration properties and have good inhibitive ability.

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COMPUTER PROCESSING OF SCANNED IMAGES FOR DETERMINING DECORATIVENESS OF GABBRO

The rational methods of researching the quality of natural facing stone will allow bringing down its prime cost and improve quality. Stone decorativeness at Kamianobridskyi field of gabbro is chosen as an object of research.

The uniform black coloring is chosen as a criterion of decorativeness estimation. Both, the degree of blackness of gabbro and basic aesthetic indexes of wares made from it, determine a market value of stone.

The quality of a block of raw material is determined by the presence of defects, the energy intensity of the process, as well as decorative and corrosion resistance of products wares that will be produced from it.

Samples for this comparison are taken from different fields of the deposit. The distance between sampling points is in the range from 10 m to 35 m. There were 6 samples selected; these samples were preliminary polished before research (fig. 1.).

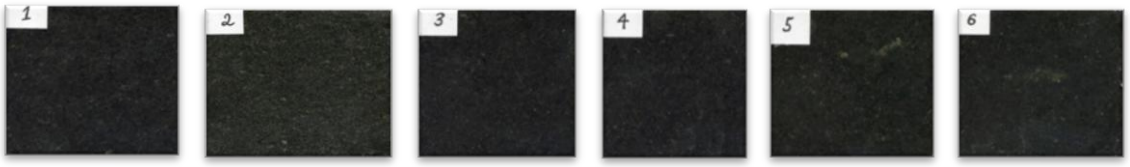

Fig.1 Scanned images of samples of gabbro for research

Mentioned above samples were further processed with a scintiscanner. Obtained images were processed with MdiStone program; relative areas of a zone of uniformly black color were determined in RGB colour system by means of mask imposition. Got next results in percents:

sample 1 – 40 %;
sample 2 – 20 %;
sample 3 – 45 %;
sample 4 – 43 %;
sample 5 – 27 %;
sample 6 – 30 %.

The varieties of natural stone should be chosen not only taking into account the aesthetic reasoning but also physical and technical descriptions of stone, its mineralogical composition and various inclusions.

By means of the offered methodology it is possible to educe various inclusions and estimate the degree of defectiveness.

The criterion for determining the degree of decorativeness of a stone is its uniform black coloring. Both, the degree of blackness of gabbro and basic aesthetic indexes of wares made from it determine a market value of stone.Therefore, we recommend to introduce computer processing of scanned images for analysis and expert estimation of stone in relation to its facing properties.

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CONTACTLESS OPTICAL SYSTEM FOR CALCULATING PATHS OF SMALL-SCALE UNMANNED AERIAL VEHICLE

Introduction. During the territory monitoring there are situations, when the volume of priory information is not sufficient when the aircraft is moving on a small altitude or in an area where there is no way to contact satellites (e.g., in the city or in the mountains). That is why it is necessary to develop the alternative methods of targeting ultralight UAVs on the basis of the external factors analysis in the real time.

Objectives. The purpose of the project is to develop an alternative method of targeting ultralight UAVs based on obtaining information about the terrain from a camera without using the information received from satellites of the global navigation system.

Methods. The method of calculating the traversed path based on the analysis of streaming video is used, since this method does not require additional, pre-prepared data on the terrain.

Results. Such a system is able to specify its location, to hold or to continue task without a signal from satellites of the global navigation system, to make corrections to the course in the absence of regular updating the exact data about its location. And also such a system does not consume a lot of energy resources of the small UAV and do not require additional equipment.

Conclusion. The analytical review of the current state of the path calculating system is conducted and the system based on the method of generating and processing the flow of photos locally is developed. The drawbacks and strengths of such a system are identified. The research identifies factors that influence inaccuracies as a result of random errors.

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EQUIPMENT FOR THE DAIRY INDUSTRY

Dairy equipment or equipment for the dairy industry is a special technique, equipment and devices used at various dairy enterprises: dairy and dairy canning factories, butter plants, cheese factories, and others. These enterprises combine raw materials; produce milk and dairy products (milk, sour cream, kefir, sour milk, yoghurts, cheese, butter, condensed milk, ice cream, etc.) [1].

Equipment of dairy enterprises can be classified into the following categories: 1) transportation of raw materials and finished products; 2) technological; 3) refrigerating; 4) energy; 5) general.

Technological equipment is classified:

– for receiving and storing milk;

– for the processing and cleaning of milk from mechanical impurities, for neutralization and for obtaining stable products for storage, homogenization;

– for the processing of milk and the production of dairy products with the storage of all dry milk substances – the development of condensed and dry dairy products;

– for the processing of milk and the production of dairy products from individual parts of milk – the production of cream and the separation of mixtures in the production of butter, casein, cheese, curd and ice cream;

– for bottling, dosing and packaging of dairy products;

– for washing containers and equipment.

Technical equipment is divided into general and specialized.

General equipment of enterprises of the dairy industry is independent regardless of the profile of the enterprise, including milk receiving equipment, weights, separators, milk cleaners, reservoirs and pumps.

Specialized equipment is installed at the enterprises depending on the profile: the dairy factory, butter factory, cheese factory, the factory of dry and condensed milk, etc [6].

General requirements to dairy equipment are:

1) Machines and apparatus for dairy industry should be manufactured in such a way that disassembly and assembly before work can be carried out with minimal effort and time.

2) The moving parts of the machine must be protected from water, milk and washing liquids, and machine lubricants should not be released into the product.

3) The machines should be suitable for washing, cleaning and cleanliness control.

4) Parts of machines in contact with milk and dairy products are made from materials that do not have a harmful effect on products and allow cleaning, washing and disinfection of equipment.

5) The location and design of the knots and mechanisms of machines, starting and braking devices should provide free and convenient access to them, safety during installation, operation and repair.

6) Controls are designed to exclude their accidental or random activation and shutdown.

7) All hazardous areas (driving, transfer and executive mechanisms) are fenced. Enclosures should be lightweight, durable, securely fastened, but easy to remove during cleaning, inspection and repair.

8) All machines should at work minimize noise and vibration.

9) All machines and apparatuses for which dust, steam or gases are released shall be equipped with devices for capturing and removing them from the premises.

10) Hot surfaces of machines must be insulated. The insulation must be smooth, resistant to moisture and mechanical influences.

11) Technological equipment must be equipped with control valves and control and measuring devices.

12) Isolation valve (rectifiers, cranes, valves, etc.) should have reliable seals that do not allow the passage of liquid or vapor.

13) All machines must be securely grounded.

14) The external and internal surfaces of machines must be smooth, streamlined, with smooth transitions to depressions and rounded corners, which facilitates their maintenance in the proper sanitary-and-hygienic condition [5].

Complexity of equipment can be different at different enterprises. This is mainly influenced by the organization of production, the processes that must be performed: reception milk, fatness normalization, homogenization, pasteurization, cooling, packaging, transportation, etc. Technological volumes depend on the scale of the plant.

Main equipment is storage tanks for production components, purifiers, centrifugal and degreasing separators, coolers and pasteurizers, packing equipment, sinks, milk receiving plants, refrigerators and other aggregates that require the specifics of a particular production process [2].

And now let's take a closer look at some of the devices that are important in this area.

Recently, reservoirs (tanks and baths) are used for collecting, cooling and storing milk. The milk in the tanks is cooled to a given temperature. At the same time, much less milk loss than when cooled by other methods. Reduced labor costs for cooling, do not require a permanent presence of a person.

Purification is an integral part of the general technology of production of milk and dairy products. The most common way of cleaning is filtering. This requires filters.

At modern milk plants, milk is cleaned in a cleaner mounted directly on the milk pipeline. In the extended part of the milk pipe insert a tube, which is fixed with a rubber stopper. At the end of the tube is attached a nozzle made of metal rods, connected by rings. The nozzle is fitted with a filter cloth cover, which is attached

with a rubber ring. The milk first passes through the filter, and then enters the vacuum cooler.

Milk filtration, even with the use of the finest filtering materials, does not ensure its complete purification from mechanical impurities, as the filtered residues are blurred by the flow of milk to small particles passing through the filter's pores into milk.

Centrifugal milk cleaners are more ideal for cleaning milk from mechanical impurities and they are widely used in the dairy industry. The centrifugal milk cleaner is a separator with a modified drum and milk dispensing equipment. The drum has an increased amount of dirt, there is no distributor plate. Its plates without holes. The drum spins at a speed of 6000-8000 rpm.

During cleaning cold milk, which has an increased viscosity, the rate of separation of suspended particles decreases and the quality of cleaning deteriorates. At high temperatures (80-85°C), the particle separation rate increases, but the quality of cleaning does not improve, as part of the contaminants dissolves in hot milk and can not be isolated by the action of centrifugal force. The optimum milk temperature for centrifugal purification is assumed to be 35-45°C.

Separation is a process of separating milk into cream and skim milk by the application of separators. Separators are divided into open, semi-open and closed. In open separators, milk enters the drum, and separated cream and skim milk come out when the mass contacts with air; in semi-open – the milk is fed into the drum with an open stream, and cream and skim milk are in closed pipelines; in closed − milk is fed into a drum, cream and skim milk are diverted into a closed flow. Intended for separation, the milk is heated to a temperature of 40-50°C [3; 4].

Dairy production is a large branch of industry, which is designed to provide consumers with high-quality milk and dairy products. In order to organize this, it is necessary to complete the shops and laboratories with all types of equipment. And here everything is important: from the amount of technology to its quality and functionality.

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DESIGN AND ANALYSIS OF THE ACCURACY OF SUPPORTING NETWORK OF MYROPIL DEPOSIT OF GNEISSOID GRANITES

Gneissoid granites are rocks that crystallize deeply in the earth's crust, or during the cooling of magmatic melt under pressure, or during the movement of magma, resulting in a parallel arrangement of mica (more rarely, of other minerals). Taking into account the conditions of Myropil deposit of gneissoid granites, we will build a supporting network around the quarry. Laying the supporting points, we take into consideration not only the existing terrain, but also the shape of the developing deposit, the consistent direction and the final development of mining operations and waste heaps, as well as the design and terms of construction of basic technical facilities, and transport communications.

The moves are laid between two output characters in the form of single moves or the system of moves with one or several nodal points. It is not allowed to lay the closed moves supported by both ends on the same source mark.

The precision of the projected move will be characterized by the marginal error of the point in the weakest place of the move after its alignment. In the polygonal path, before the alignment takes place, the greatest error will characterize the point set at the end of the path. When linking the end of the path to the starting point, the smallest accuracy after the alignment of the coordinates will have the point set in the middle of the run as the most distant from both starting points.

The supporting network of Myropil deposit of gneissoid granites is the network of referencing stations of UA-EUPOS / ZAKPOS, the coordinates of the points determined by the RTK method (GPS + GLONASS) in the coordinate system SK-63 zone 2. The height of the points is determined in accordance with the requirements of level IV leveling, the point coordinates are determined with the accuracy that corresponds to polygonometry of rank 2 (Fig. 1).

Table 1

Comparative table of the proposed parameters of the planned polygonometric network and the corresponding indicators specified in the instruction

№	Function	Polygonometry of rank 2	Known indicators
1	Perimeter of ground, km	12	2,1
2	Length of move side, km • Biggest • Smallest • Average	 0,5 0,08 0,2	 0,41 0,17 0,24
3	Number of sides per move, no more	15	7
4	Relative error of move, no more	1:5000	1:2000
5	Angular misalignment of move, angular seconds, no more, where "n" is the number of angles per move	$20\ \overline{n}$	52,95
6	Average square error of measured angle, angular seconds, no more	10	2
7	Average square error of measurement of side length, cm up to 500 m 500 m –1000 m more than 1000 m	 1 - -	 1 - -

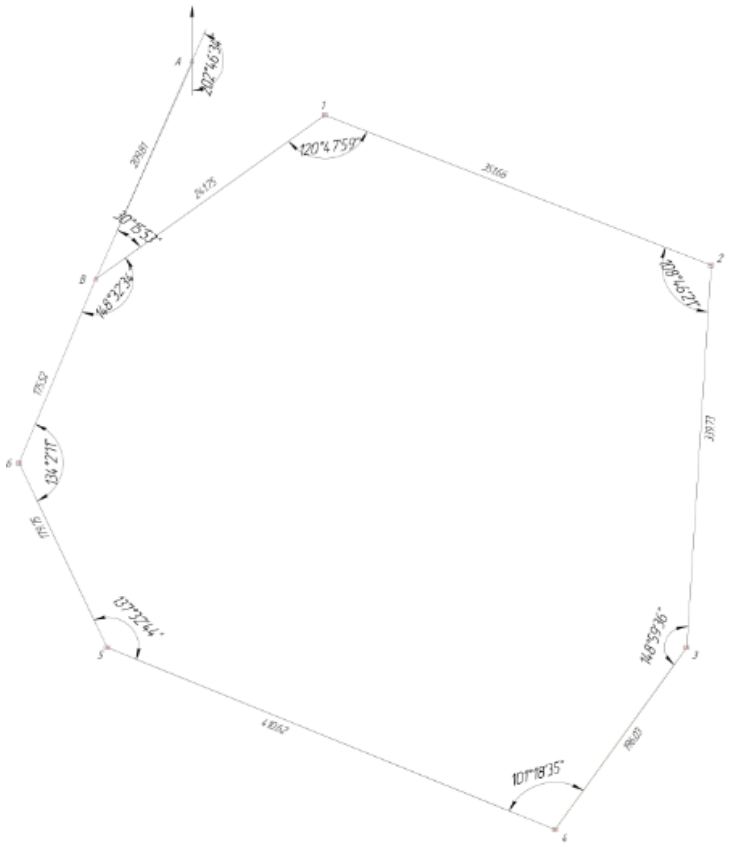

Fig. 1 Polygonometry network scheme of Myropil deposit

We perform the analysis of the accuracy of the supporting network using the measured and calculated values and then determine the general error of the point place:

$$M = \pm\sqrt{M_X^2 + M_Y^2} = \pm\sqrt{0{,}035^2 + 0{,}034^2} = \pm 0{,}049 m;$$

$$M_X = \pm\sqrt{m_{X_\beta}^2 + m_{X_S}^2} = \pm\sqrt{0{,}026^2 + 0{,}024^2} = \pm 0{,}035\, m;$$

$$M_Y = \pm\sqrt{m_{Y_\beta}^2 + m_{Y_S}^2} = \pm\sqrt{0{,}028^2 + 0{,}019^2} = \pm 0{,}034\, m;$$

where: Mx, My – average square errors of the coordinates of the point;

$m_{X_\beta}^2$, $m_{X_S}^2$ - errors of the coordinates of the point, and the errors depend on the measurement of the angles;

$m_{Y_\beta}^2$, $m_{Y_S}^2$ - errors of the coordinates of the point, and the errors depend on the errors of measurements of the lengths of the sides.

The value of the expected error is calculated by the formula:

$$M_{OЧ} \le 3M$$

$$M_{OЧ} \le 3 \times 0{,}049 = 0{,}146\, m$$

The allowable error is calculated on the basis of the "Instructions on surveying performance". According to this document, the allowable error should not exceed 0.4 mm. on the plan, that is, 0.8 m for M1: 2000.

Due to the conducted analysis of the accuracy of the supporting network of Myropil deposit of gneissoid granites, we determined that the established geodesic network meets the requirements specified in the instructions for the networks of this

type. As a result, we got the error of 0.146 m., which does not exceed the allowable error.

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DETERMINATION OF ANISOTROPY OF ARRAYS AND ITS INFLUENCE ON THE EXTRACTION OF GABBROID ROCKS

At present, the task of determining the plane of the best disintegration for deposits of facing stone and gabroid breeds in particular is still relevant. There is a small number of theoretical and experimental studies of the mechanism of determining the anisotropy at the given time, which, moreover, are imperfect and time-consuming.

Anisotropy, that is, different properties in different directions, is the main characteristic feature of crystalline rocks. As noted earlier, an array of rocks in most of them is characterized by the presence of highly developed ordered fracturing, the cause of which is the anisotropy of its structure.

When using natural stone anisotropy in the process of extraction of blocks from deposits, it is possible to significantly increase the efficiency of work without increasing costs, but only due to the optimal location of mining faces and the optimal choice of the direction of the front of the mining operations. For example, in the case of wedge-shaped destruction of monoliths (or division into blocks), the number of strokes for separating the block from the array along the direction of the best split is two times less than that perpendicular to it and five times smaller than the oblique angle. This feature is nothing but a mechanical manifestation of a certain orientation of crystals of minerals in natural stone. The anisotropy of the properties in this case is conditioned by so-called static surfaces, which are determined by the orientation of the crystal lattices of the minerals.

Despite considerable research on the problem of determining the direction of anisotropy of the massif, the current practice of extracting a block stone in quarries of igneous rocks does not yet provide appropriate recommendations regarding the choice of the optimal direction of the split line at the separation of blocks and monoliths and is mainly based on the experience of workers. Therefore, the task of using modern research methods to determine the mechanical properties of a natural stone, taking into account its anisotropy, is relevant.

In order to ensure the high-yielding of blocks of natural stone of the appropriate quality, it is necessary to take into account the natural anisotropic properties of rocks in the operation of the deposit, that is, their uneven ability to split in different directions.

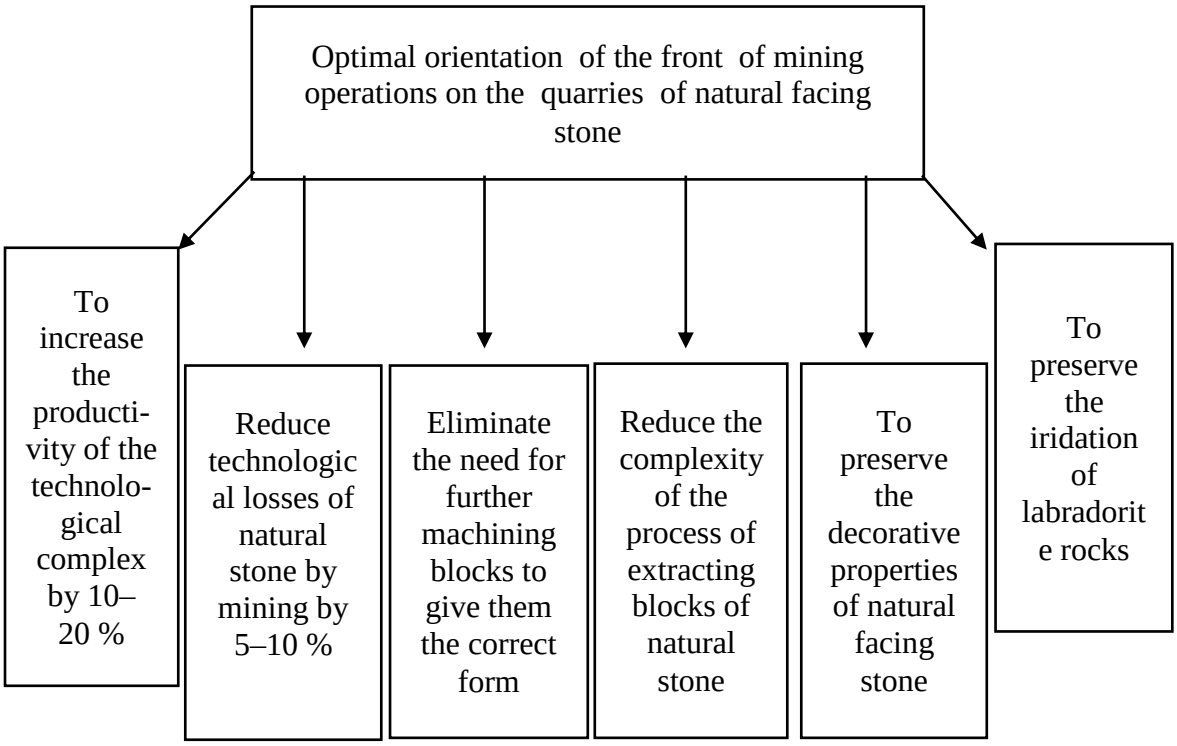
According to the research results, it was established that:

- for the Golovin, Kamenobrydi and Kamianopichi labradorites, the weakness of the minerals is manifested between the crystals of plagioclase and pyroxene, whose forms are elongated in the direction from the northwest to the southeast;

- for Slipchitsky, Bukinsky, Torchinsky, Gorbulu and Slobodskoe gabbornites - between crystals of plagioclase and pyroxene grains oriented from the northwest to the southeast.

All studies during geological exploration and the creation of a project for the development of deposits give an average value regarding the choice of the direction of the ascent of the mine and the direction of the anisotropy of the array.

The study of the anisotropy of mechanical properties of natural stone arrays and the development of an express method for its determination allows us to choose the optimal direction of mining operations and the direction of separation of the monolith into blocks with a two-stage extraction scheme. The direction that minimizes labor and energy costs to separate blocks from an array of natural stone, as well as an increase in the percentage of the output of blocks of natural stone, which has natural fracture, is considered to be the optimal one.



As a result of the use of the proposed methodology for investigating the anisotropy of mechanical properties of natural stone, azimuths of the best fragmentation for a number of rocks of the Korosten pluton.

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STRUCTURAL AND TECHNOLOGICAL FEATURES OF GEARS

A gear is a kind of machine element in which teeth are cut around cylindrical or cone shaped surfaces with equal spacing. By meshing a pair of these elements, they are used to transmit rotations and forces from the driving shaft to the driven shaft. Gears can be classified by shape as involute, cycloidal and trochoidal gears. Also, they can be classified by shaft positions as parallel shaft gears, intersecting shaft gears, and non-parallel and non-intersecting shaft gears. The history of gears is old and the use of gears already appears in ancient Greece in B.C. in the writing of Archimedes.

A gear tooth consists of a head and a leg of a tooth, and the surface separating the head of a tooth from its leg is a separating surface. The most important elements of gears, transmitting rotation, are the profiles of the teeth. The gears were known as early as the 1st century BC; however, the theory of the hooking of the tooth profiles was developed only at the end of the 17th century. In the 1950s a gear with a convex-concave shape of the tooth profile was proposed [1].

Gears got wide distribution due to greater reliability, to the structural features providing the less sizes of drive. The first gears were wooden and used in devices to transmit or transform mechanical energy from a natural source, for example in irrigator devices, millstones mills, pumps.

There are many types of gears such as spur gears, helical gears, bevel gears, worm gears, gear rack, etc. These can be broadly classified by looking at the positions of axes such as parallel shafts, intersecting shafts and non-intersecting shafts.

It is necessary to accurately understand the differences among gear types to accomplish necessary force transmission in mechanical designs. Even after choosing the general type, it is important to consider factors such as: dimensions (module, number of teeth, helix angle, face width, etc.), standard of precision grade (ISO, AGMA, DIN), need for teeth grinding and/or heat treating, allowable torque and efficiency, etc [2].

To compensate for future errors in manufacturing, assembly and deformation, affecting the drive robot, at the stage of manufacturing gear wheels distort the geometry of the tooth profile with a deviation from the main surface, which according to GOST (technical standards) 16530-83 is called a modification. GOST 16530-83 distinguishes between longitudinal modification (along the line of the tooth), profile (along the profile of the tooth), and other types of modification. Under the profile modification of the gear teeth, we mean the change in the gearing geometry, which improves the actual gearing process and increases the strength of the structural elements and the reliability of the gears. Modification of a gear tooth with parallel axes of rotation along the length of the tooth reduces the sensitivity of the

gear to assembly errors, and in height it softens the interaction of the teeth at the moment when one pair leaves the gear and the other enters. There are both experimental methods and theoretical methods for determining the magnitude of the modification. The practical method is more accurate, but costly and time consuming, besides the wrong choice of modification can lead to the destruction of not only the gearbox, but also the engine. Various forms of modified tooth profiles are known. As a rule, the profile modification is reduced to the replacement of the side surface area of the tooth with a straight, involute or second order curve. A non-rounded, sharp edge of the teeth without modification may contribute to the formation of an adjacent tooth on the leg, which can make the transfer robot unpredictable. GOST 13755-81 provides for the modification of the original tool contour with a straight line depending on the gear module [3].

Sometimes, two or more gears are made to mesh with each other to transmit power from one shaft to another. Such a combination is called gear train or train of toothed wheels. A gear train is a mechanical system formed by mounting gears on a frame so the teeth of the gears engage. The purpose of gear train is a transmission or rotation. The nature of the train used depends upon the velocity ratio required and the relative position of the axes of shafts. A gear train may consist of spur, bevel or spiral gears. In gear train, combination of two or gears are used to transmit power.

The gear train is classified into following types:

– Simple gear train – there is only one gear is mounted on each shaft.
– Compound gear train – two or more gears are mounted on each shaft.
– Riveted gear train – the compound gear train in which input and output shafts are collinear to each other.
– Epicyclic gear train – one gear is moving upon and around another gear.

In the first three types of gear trains, the axes of the shafts over which the gears are mounted are fixed relative to each other. But in case of epicyclic gear trains, the axes of the shafts on which the gears are mounted may move relative to a fixed axis [1].

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OPTIMIZATION OF THE NON-SEARCH DIGITAL METHOD OF CORRELATION-INTERFEROMETRIC DIRECTION FINDING

In nowadays automated systems of radio-monitoring, the direction finding of radio-electronic means is carried out under conditions of the complex electromagnetic environment, a great a priori uncertainty as to the parameters of radio frequencies, as well as in a timescale realization [1, p. 475].

Correlation-interferometric direction finding is usually implemented by the search compensatory method. The disadvantage of this method is large time or hardware consuming. The effectiveness of the directionfinding mechanisms is significantly determined by the ratio of their accuracy, speed, noise immunity and corresponding hardware losses. Therefore, the development and optimization of the high-speed digital correlation-interferometric radio direction equipment, which performs a direct correlation estimation of the direction on the source of radiation with the use of digital processing of complex spectra of the received mixture of radio frequencies, is an actual scientific aim [1, 2].

The purpose of the study is to research and optimize the non-search digital method of the correlation-interferometric direction finding with the reconstruction of the spatial analytical signal [3].

The analysis of peculiarities of realization and accuracy of the investigated method of the direction finding, as well as analytical optimization of the non-search digital method of correlation-interferometric bearings with reconstruction of the spatial analytical signal is studied; which of the parameters included in the equation of the error of estimation of the direction of the source of radio emission for a non-search digital method of correlation-interferometric direction finding with the reconstruction of the spatial analytical signal are to be optimized is determined.

It is shown that the main parameters that are appropriate to optimize are the values of diversity between the selected elements of the array antenna, for the spatial positions of which the reconstruction of a complex analytical signal is carried out, their numbers, as well as the value of the spatial weight function of the window, that determine the method of implementation of the procedure for reconstructing a complex analytical signal.

The theoretical optimization of the parameters of the investigated method, as well as the comparative analytical calculations with the results of modeling, was carried out. As a result of the simulation, the dependence of the methodical error of the bearing estimation and the mean square bearing evaluation on the action of normal Gaussian noise from the values of optimized parameters is obtained.

In order to optimize the parameters of the studied method, the form of the target and communication functions is determined; an analysis of the features of the optimized bearings method implementation is performed.

Analysis of the equation for the dispersion of the error of direction finding essentially depends on the method of a complex analytical signal reconstructing procedure within the aperture of the antenna array. In this case, the parameters of the directionfinder, as the number Z directional radio channels of the antenna array, their bandwidth of the analysis, radio channels and sensitivity have significant constraints in optimizing, taking into account the possibilities of modern technical implementation and requirements for compactness and price of the bearer.

Such parameters as spatial weight functions of the window, amount of signal group are determined by the requirements for impedance protection in the conditions of the complex electromagnetic environment to provide effective frequency and spatial selection of station noises and re-reflection obstacles.

Therefore, their variation is also substantially limited in order to optimize the noise immunity of the banding.

The radiation parameters of the incident source, such as the average or carrier frequency of the time energy spectrum and the direction the arrival of radio emission on the paging algorithm, in turn, is not affected and only the global constraints on the range of operating frequencies and the width of the directional sector are limited.

Duration of the radio emission analysis process, taken simultaneously within the band of analysis frequencies radio channels, significantly affects the noise immunity and the speed of the bearings, but does not affect the implementation of the algorithm as a whole and the procedures for reconstructing the complex analytical signal.

Conclusions. The theoretical optimization of the parameters of the investigated method is carried out and the appropriateness to use the symmetric spacing z = 28 in order to minimize the error of the estimation of the direction of error on the source of radiation and to ensure the maximum accuracy of the positioning is determined.

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ANALYSIS OF THE FEATURES OF DECORATIVE GABBRO

One of the main properties of a natural stone, which gives it uniqueness and soleness is decorative value. On this exponent depends: the value of the facing stone, an objective idea of the possible cost and liquidity of future products, as well as the choice of areas of application of natural stone. Especially these indicators are of concern of potential subsoil users and investors.

The assessment of decorative value of the natural stones and the image of its dynamics in the area of the deposit is essential for the certification of raw materials, the justification of home trademarks, the possibility of extracting natural stone with given characteristics and identifying optimal technological complexes for the development of various parts of the deposit.

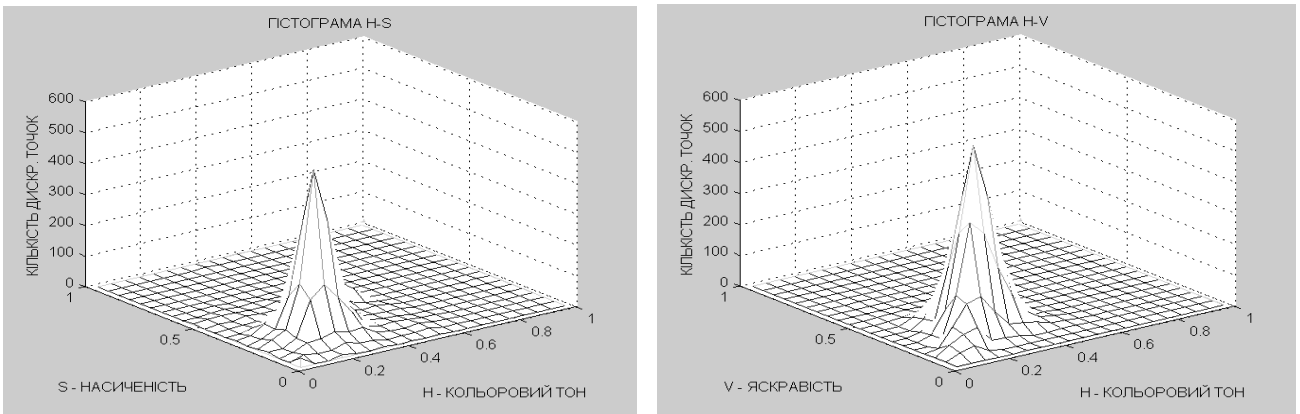
The analysis was carried out using a complex methodology developed by the Institute of building materials and, also, a method for determining the artistic and aesthetic qualities of a decorative stone.

The first one is based on the hierarchical scheme of additive consideration of certain attributes of decorative value expressed in the three main groups of characteristic parameters that are responsible for the natural color, natural texture and surface texture.

The second one is based on the assessment of the decorative quality of stoneswas solved in the context of their use for certain types of products, taking into account the existing historical and cultural traditions.

For the measurements, target samples were selected from the northern and southern faces of the Torchinsky deposit according to the necessary requirements.

In fig. 1 shows two-dimensional histograms for the distribution of the values of the color tone H, the saturation S of the color tone and the brightness V for all points of the investigated image.



a b

Fig. 1. Volume diagrams decorative

As a result of the analysis of the received colorimetric diagrams, certain features of decorative values of gabbro were revealed.

As for samples of all three directions, the gabbro has a clearly distinct green component, which slightly less manifests itself in a plane oriented perpendicular to the plane fracture.

Deposits of gabbroid stones are known to occur in the amphibolization of pyroxenes, substitution by their epidemic and other secondary minerals, etc.

The maximum saturation of colors of all three directions is shifted towards the values of the indicator ~ 0,3. It is observed in samples from the southern and northern faces.

A fairly complex distribution of saturation is specific for these samples (the maximum is within the range of values 0,3-0,4). Irisation is the best shown in the samples taken in sections 1 and 2 (the plane parallel to the formation of the crack plane and the formation plane)

This indicates a greater decorative value of the stones in these fields. Maximum brightness values tend to be 0.2 for all analyzed samples.

This is especially clearly seen on the H-S and H-V histograms, which are more vivid for comparing the decorative features of different samples (lot) of one deposit.

Thus, the analysis showed the regularity of the distribution of secondary mineralization from the crack in all directions. And also feature of gabbro in the demonstration of irisation to shift the indicators of color tone in the direction of the green-blue component, but partly red component is traced.

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POLISHING SIMULATION

SPR (Simulation of Polishing Result) is a two-dimensional geometric simulator designed to reproduce the macroscopic effect of a stone polishing tool. The SPR divides the stone and instrument surfaces into tiny two-dimensional sections, the so-called pixels, and assumes that the accumulated contact between the pixels of both surfaces, that is, surface grinding, can be used to determine the main aspects of the polishing process.

Different polishing tools can be simulated by simply determining the amount of erosion for each instrument pixel, from 0 (no contact) to any positive number. For example, the surface of the tool can be designed to have a predetermined distribution of diamond and connecting pixels.

Figure 1 shows three different polishing tools, each of which consists of six Frankfurt abrasives, which are commonly used for polishing marbles: 320TX, 400T and 5Extra.

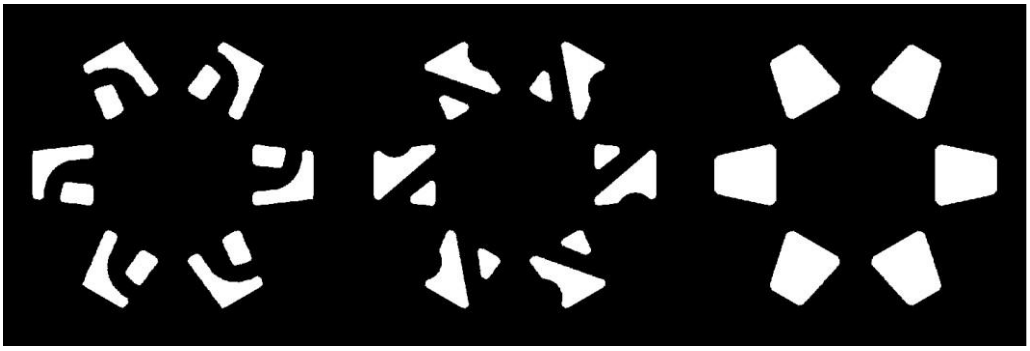

Fig. 1. Simulation of polishing abrasives: 320TX (left), 400T (center) and 5Extra (right).

Different sections of the simulation, with different tools, different speeds and movement of the instrument can be created, even with different time steps. Figure 2 shows the results of polishing obtained using the same tools as in FIG. 1, after one rotation at 10 rev / s (without moving) in increments of 0.001 s, corresponding to an angle of 3.6 degrees between each reflection.

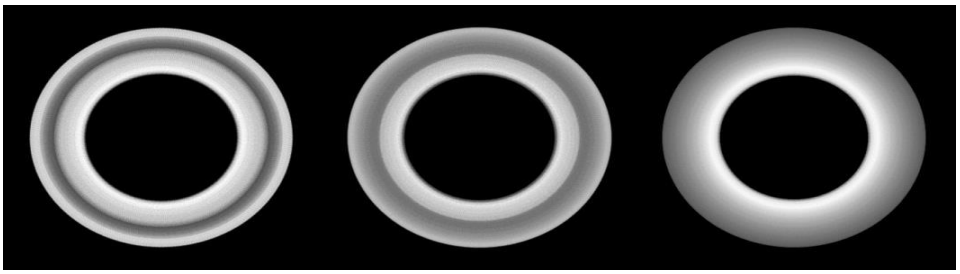

Fig. 2. Simulated polishing by the same tools as in Fig. 1, with abrasives: 320TX (left), 400T (center) and 5Extra (right), after one rotation at 10 rps, with a time step of 0.001 s.

SPR provides a very simple (only five instructions) But powerful advice to determine the path through which a stone tool should move, including multi-level loops and random sequences of linear segments and arcs of a circle, which operate in a wide range of parameters. This feature allows users to explore virtually unlimited number of trajectories. Figure 3 shows the polishing results obtained with a simple tool disk for two different polishing paths: mostly linear trajectory polishing and a more complex, mostly circular trajectory.

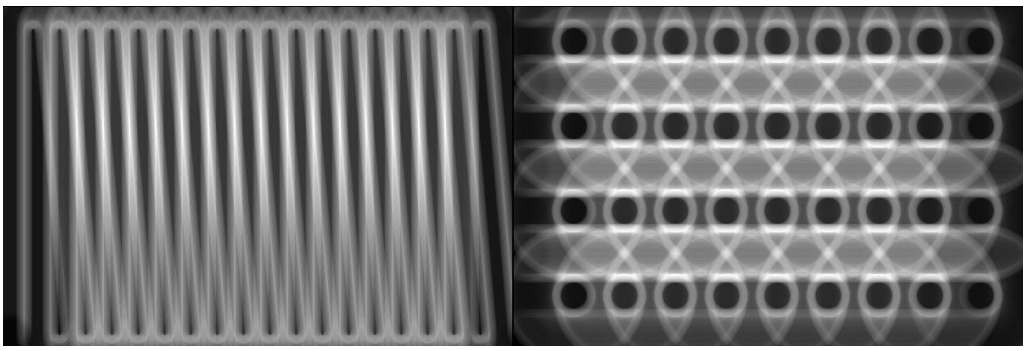

Fig. 3. Simulated polishing by a simple circular disk, for two different tool trajectories. Left: a mostly linear, up-and-down trajectory, circular on the borders. Right: a complex, four-row trajectory, mostly formed by circular movements, simulating multi-level circular hand polishing.

The accumulated simulation results for each pixel of a stone are stored in files describing five properties, which are one of the determining factors in the polishing process: 1) general abrasion; 2-3) shifts in pixels (in horizontal and vertical directions) between each polished pixel and the central pixel of the instrument; 4-5) average distance and standard deviation between the polished pixel and the center pixel of the instrument.

The main goal we want to achieve with PAM is to create a simulation laboratory that will help us to optimize: 1) polishing tracks, automatically generated by a controlled algorithm for cutting machines (based on robot and CNC) in industrial conditions; 2) the shape and texture of new polishing tools, which can be modelled primarily to eliminate bad designs, before real prototypes of tools are made and experimental experiments begin.

To obtain a properly polished surface of the stone, it is not enough to achieve high levels of abrasion across the entire surface of the stone: the erosion should be as homogeneous as possible and applied accidentally, to avoid scratches and other visual defects on the surface. For economic reasons, the polishing trajectory should be as short and quick as possible, and the surface of the stone should not be excessively polished.

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IMPLEMENTATION OF ECOLOGICAL AND ECONOMIC MANAGEMENT SYSTEM OF HANDLING WITH WOOD WASTE AT SE «EMILCHIN FORESTRY»

Wood waste is an important ecological problem of forest enterprises. SE «Emilchin forestry» is engaged in forestry and logging, hunting, as well as industrial, social, innovative, foreign trade, trade in retail, wholesale trade and agricultural activities.

SE «Emilchin forestry» is mainly a producer of raw materials and products of primary processing. The largest amount of forest waste, about 18.5 tons per m^3 , is generated in the process of production of finished products. It includes branches, leaves, needles and bark. Wood processing and sawmilling waste amounts to 10 tons per m^3 (lump wood waste, sawdust, shavings and grinding dust).

The main disadvantage of technological processes of production is the formation of a large number of wood waste. Close utilization of wood waste is very important problem today. The use of non-waste technologies, and the production of finished products can help solving this problem.

The amount of waste generated during wood processing at all technological stages is the following:

- 13% - during harvesting of wood (as a rule, it remains in the forest and is not taken into account when determining the gross amount of harvested wood);
- 30% - during sawing logs (is sold to the population for use as solid fuel);
- 35% - during the manufacture of finished products from lumber;
- 60% - of the generated wood waste is used by other sectors of the economy (the production of wood-fiber boards, paper industry).

The widespread problem for woodworking enterprises is the use and disposal of sawdust, which is due to the large amount of waste generated. At present, sawdust waste is transported to landfills and stored in the open air. Besides transportation costs, the enterprise pays monetary compensation to agricultural enterprises.

Part of the waste, such as sawdust, shavings and bark, is not used for technological purposes and can be used as fuel. At SE «Emilchin forestry» sawdust is used for own needs of the enterprise (feedstock for boiler-houses for heating administrative premises, and for drying chambers). Their increased production is hampered by the low transport capability and complexity during dosing and storage. The process of waste granulating can improve the situation. Biomass today replaces approximately 1200 million tons of conventional fuel. It accounts for about 15% of primary energy resources in the world. The advantage of biomass as a fuel is in its renewable nature, low ash content, insignificant amount of emissions and maintaining the balance of carbon dioxide in the atmosphere. Energy products of biomass

processing can be used in conventional power plants as a traditional fuel. One of the most common types of biomass of organic origin is wood. The disintegration of wood into the main energy elements gives about 50% of carbon, 6% of hydrogen and 44% of oxygen. The heat capacity of wood is about 14 to 17 MJ / kg.

Prospects for expanding the assortment at the enterprises in the forestry complex are being opened at the complex processing of wood raw materials, while organizing waste management and waste treatment operations for sawmilling and wood processing, which can provide growth of commodity output by at least 10-15%. The accumulation of huge stocks of secondary raw materials requires solving the problem of their integrated use. Therefore, it is extremely important to modernize existing production, to organize deep chemical-mechanical and wood-chemical processing of secondary raw materials while simultaneously producing products of a low volume and high cost at the site, as well as with the full use of low-quality raw materials.

There are several ways to solve the problem of using wood waste:

- Recycling wastes into the energy carrier of different compositions, purpose and properties (pellets, briquettes, alcohols, ethers).
- production of consumer goods (various composite materials, furniture, decorative elements for the arrangement of premises of different purposes).
- use of wood waste in the production of construction materials with the addition of cement mortars (arbolite, fibrolite, wood-concrete).

The creation of energy pellets production on the basis of the state enterprise «Emilchin forestry»can become an effective solution to the problem of using waste wood. The necessary condition for the technological processes of waste processing is their ecological and economic efficiency.

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THE ACCURACY IN SETTING OUT THE DRAFT OF BLASTING OPERATIONS INTO THE SITE AND ITS IMPACT ON THE EFFICIENCY OF THE EXTRACTION PROCESS

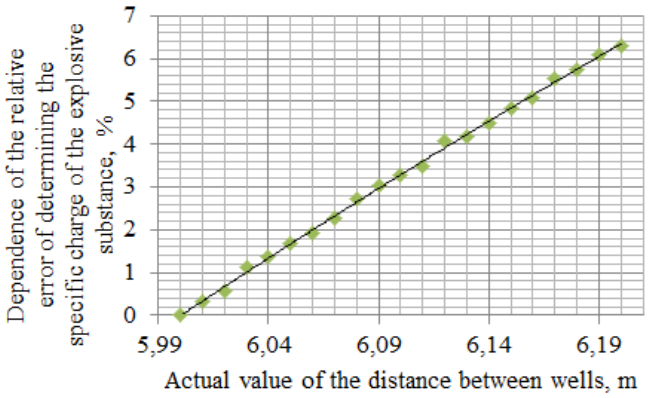
Control of the intensity of rocks destruction by explosion is one of the most important scientific and practical tasks in the mining industry. The topicality of this research direction is confirmed by a large number of scientific publications. The process of realization of blasting operations in the conditions of Private Joint-Stock Company "Ushitsky Combine of Building Materials", which develops a deposit of granite "Bobrova Gora", was selected as a research object. Obtaining a high-quality crushed mining mass is possible provided that the optimum parameters of the blasting

operations are met: the height of the bench, the diameter of the wells, the location of the wells, the type of explosives, etc. Any deviation from these parameters leads to deterioration of the quality of the rock mass (an increase in the percentage of oversized output, crushing), deviation of project marks of the benche-floor, increased danger of execution of blasting operations.

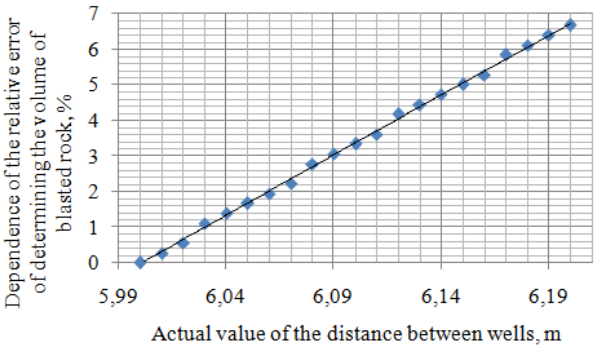
An important parameter for blasting is the distance between the wells. It should be noted that deviations from the designed values of the distances between the wells take place sometimes due to the errors in setting out the draft into the site when performing blasting and drilling operations. The deviation of the actual values of the distances between the wells in the range of 0.17% to 3.33% was modeled to evaluate the influence of the above-mentioned factors. In calculations, the following technological parameters were used: explosive substance: Grammonite 79/21; power coefficient e = 1,02; charging density: 0,85-0,9 g / cm^3; weight of explosive in one meter of well: 34-36 kg; height of bench: 12m, 15m; length of drilling wells $L_п$ we accept: at H = 12 m., $L_п$ = 2,5 m; при H = 15 m., $L_п$ = 3,0 m.; length of wells:

$l_{св}$ = 14,5 m, 18,0 m; actual diameter of wells: 225 mm; the estimated specific charge of the explosive substance in the conditions of the development of «Bobrova Gora» deposit is equal to k = 0.43-0.9 kg/ha^3. Calculation is carried out on the reference explosive substance - ammonite №6 ZHV. The replacement of ammonite with other explosives is carried out taking into account the transfer coefficients of power (e) in the ideal operation of the explosion.

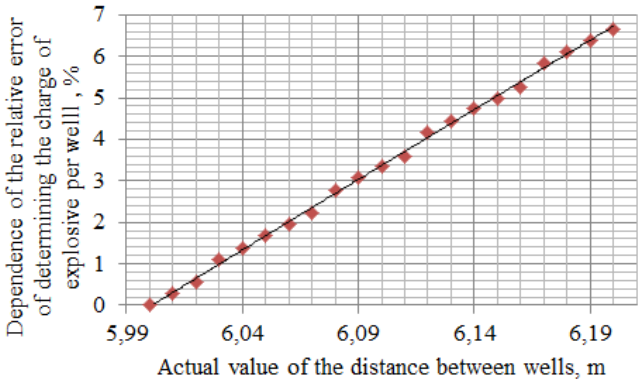
According to the results of the modelling, the graphic dependences were obtained (Pictures 1, 2 and 3).



Pic. 1. Dependence of the relative error of determining the specific charge of the explosive substance to the actual distance between the boreholes, %



Pic. 2. Dependence of the relative error of determining the volume of the blasted mass to the actual distance between the wells,%



Pic. 3. Dependence of the relative error of determining the charge of explosive per well to the actual distance between the boreholes,%

As a result of carried out research, empirical dependencies in the form of second-order polynomials of the following form were established:

for the dependence of the relative error of determining the specific charge of the explosive to the actual distance between the wells: $y = -11,54x^2 + 172,5x - 619,9$;

for the dependence of the relative error of determining the volume of the blasted mass to the actual distance between the wells: $y = -2,517x^2 + 64,52x - 296,5$;

for the dependence of the relative error of determining the charge of explosive per well to the actual distance between the wells: $y = -2,698x^2 + 66,69x - 303,0$.

In general, the analysis of modeling results showed that the deviation of the actual values of the indicators of blasting operations may reach 7%; although it is within the tolerances of normative documents, but it can lead to complications in planning and implementating certain technological operations, in particular - logistics of transportation of explosive substances.

Strict observance of the parameters of wells and the grid of charges arrangement on blocks will enable high quality and efficiency of blasting operations.

The main method of research used in carrying out this work is based on the analysis of scientific, technical and reference literature sources devoted to the

study and development of methods for controlling the effective operation of industrial blasting works. At the same time, the studies to improve the quality of blasting without significantly disrupting the existing technological process of blasting operation and its economic statistics were thoroughly analysed.

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USING FRAMEWORKS IN THE DEVELOPMENT OF THE PROJECT ON PHP

From database queries to visualization of the user interface, most web apps have much in common with each other. It is difficult to present a complete system for example without registration and authorization. By highlighting the common features and core application architecture and combining them into reusable templates and library sets, the architecture allows developers to focus more on how will the project differentiate against the background of others [1].

In fact, when developers use previous designs as the basis for developing new ones, while not developing similar elements from scratch, so-called templates, that is, frameworks are used. Framing is a workpiece or template for a software platform that provides its structure, software, facilitates development and combines various software project modules. Popular PHP frameworks such as Laravel, Yii, or Symfony use all of these approaches, paying particular attention to developing architectures and tools that will then be used by other developers in projects. But it is not always better to use the framework in the development. Sometimes it makes sense to write from scratch without using anything other than a simple, clean PHP code [2].

Using PHP-frames helps in developing web applications:

- Rapid development is one of the key requirements of the customer who wants to get the finished product as soon as possible for quick commissioning. Therefore, the use of a ready-made framework is one way to increase the speed of project development significantly. In order not to waste time planning the architecture of the application and evaluating different libraries, the developer begins to work on a fully functional template, with the ability to create a functionality, which is specific to a particular project, immediately.

- The framework makes the application more robust: solutions included in modern frameworks are constantly tested by a large number of developers on various projects using frameworks. Since templates have an open source code, issues related to reliability and security that can be skipped during a project development on a pure PHP code are quickly noticed and fixed.

- More simple support for the project: By providing a robust framework for the application and pushing for advanced techniques and templates in software development, the framework sends developers to write closely-related code with minimal repetition. Virtually all of the popular today PHP-based frameworks are based on object-oriented programming and development based on automatic testing. In other words, the project is easy to read, test, maintain and develop in the future.

- Classes, methods, functions and their use: without knowledge of design decisions and complete documentation, it will be difficult to enter the development of the project. That is why the use of frameworks will help new developers start work on the project faster. And even if the structure is unfamiliar, then the documentation for the framework and familiar templates will help you to master the material more quickly with minimal effort.

- A significant advantage of the use of the frameworks is provided by an active community of developers. All modern frameworks draw attention of open source developers; widgets, libraries and additional components are constantly being developed, so developers can use ready-made solutions in projects. Also, educational materials, videos are created to explain the subtlety of how to achieve the best results by using one or another framework in the development.

Modern frameworks are a powerful tool in software development, they can save the developer time and effort. But do not forget that each project is, to a degree, unique and even a framework that is perfect for one project, may not succeed in developing another at all. Therefore, the main idea is to choose the right tool for future development.

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DEVELOPMENT OF THE METHODOLOGY OF MINE SURVEYING MANAGEMENT OF LOSSES OF RUBBLE RAW MATERIALS AND THEIR ACCOUNTING

Despite the high security of our state mineral raw materials, it should always be born in mind that it is non-revolving, and therefore its rational use without the assumption of unjustifiably high losses becomes very relevant.

Before considering definitions, accounting for losses and depletion of minerals in the course of its extraction, it is necessary beforehand to have an idea of the classification of losses.

Losses of minerals are part of the balance reserves of minerals, which inevitably disappears in the development of deposits and processing of minerals.

In the process of extraction and processing of minerals, the following losses occur:

- losses and depletion during extraction;
- loss of useful minerals in its enrichment;
- losses in metallurgical processing.

By sources of occurrence distinguish the following types of losses and depletion:

- under underground development - losses on the area in the hills near the preparatory workings (inter-block, over-stretch, sub-trapezoidal) and in the supporting hills inside the excavation areas; in the extracted parts or apophyses of ore bodies; by power - in packs of minerals left in a sole or a roof, between layers at the ball or selective design; repulsed minerals in the produced space and in the lodge, and also taken out with the breed in the dump; depletion as a result of cuttings of lateral rocks to create the required width of the treatment space; because of the inclusion in the contour of the working block of layers of rocks, not included in the stock of the block; at the release of ore on its contact with the decomposed pores-ladies of spent blocks (sections); a common occurrence of losses and depletion in the development of tectonically broken sections of deposits (layers) and ore bodies (coal seams) of complex configuration; due to the complexity of the contact of the minerals under the collapsed and overlying rocks;

- with open development - losses during excavation, loading and transportation; joint appearance of losses and depletion during extraction in contour zones; on the contacts of minerals from the breed-layers that are not included in the estimated reserves; in blasting works.

All of the above types of losses and impurities are subject to determination, valuation, planning and accounting.

The most common methods for determining rubble losses are direct, indirect and combined.

The essence of the direct (main) accounting method is to determine losses and depletion on the basis of sampling and measurements, volumes of losses of minerals and impurities; comparison of contours of bodies or coal-bearing layers, depicted in geological surveying plans and sections, with contours of actual disposal. The quality of lost stocks is determined by direct testing. Losses and depletion along the contour of the body or the formation are determined by measuring the areas of the outcrop of minerals and the areas of off-beaten and layered rocks. The power of the lost part of the body is determined by measuring and testing the mines, hollows and wells passed on the contact. Indirect methods of determining losses are used only when it is impossible to determine loss and depletion of the ore directly by direct measurement. Indirect methods include determining losses and depletion of ore by the difference between the amount of recovered balance stocks and extracted ore and the content of useful components in them, as well as petrographic, weight, graph-analytical

methods, etc. The petrographic method for determining the combustion of ore is used provided the visual difference between the ore and the rock contained in the pre-tracked ore mass. From the extracted mass, a sample is taken and a large fraction (greater than 5-7 mm) is allocated, which is sorted into ore and nourishing breeds. The weight determination method for determining the depletion of ore is mainly used for operational control. It is based on the difference of masses of trolleys with pure and impure ore. The technology of crushed stone production on granite quarries includes the following technological processes: drilling operations, crushing of the oversized fraction, transportation of rock mass by self-propelled cams to crusher of primary crushing in the working area of the quarry, primary grinding in a gravity crusher and transporting crushed miner from Primary crushing crusher for secondary crushing crusher with a steep inclined conveyor. In order to minimize the loss of raw materials, the drilling and drilling operations are proposed to be carried out on an expanded network of wells, which will provide a fractional composition of the rock mass (the size of the oversized steel is more than 1300 mm, the output of the oversized volume is less than 8%), which corresponds to the technological capabilities of high-performance primary crushing crushing equipment.

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GENERAL ASPECTS OF FASHION DETAILS TEXTILE PROCESSING

An important task of mechanical engineering is to improve production. To do this, it is necessary to improve the production technology, by introducing advanced methods for obtaining billets, improving their mechanical processing. It is also necessary to remember the reduction of production costs and productivity. Implementation of unmanned, non-waste and energy-saving technologies, saving of raw materials and energy resources, improvement of equipment will increase the durability of products and the flawless perfomance.

Thus, in order to succeed in the market nowadays, an industrial enterprise is forced to work on shortening the production period, reducing its cost and quality. The rapid development of computer and information technology has led to the emergence of CAD / CAM systems, which are the most productive tools for solving these problems.

CAD-systems (computer-aided design) is implied by the software that automates the work of the design engineer and allows to solve the constructing tasks of products and the processing of technical documentation using a personal computer.

CAM systems (computer-aided manufacturing) automate calculations of the tool moving trajectories for machining on CNC machines and provide the issuance of control programs managed by a computer.

Most of the parts in the machine building, needed for the production of machines, are processed on metal-working machines. The effectiveness of their manufacturing is determined by the efficiency of obtaining parts of the given shape, size and surface quality on the existing machine tools at the company with the minimum possible time, energy and money costs.

The effectiveness of lathe turning depends on many factors, in particular, on the perturbations that are effective in turning the workpiece. These perturbations can be conventionally divided into fast-moving (the constancy of the cutting process, the precision of forming in the cross section of the part, the uneven hardness of the material of the workpiece) and the slow-moving (gradual dimensional dipletion of tools, the change in the accuracy of molding in the longitudinal direction of the part), wherein the significant impact on the output properties of the processing (precision and roughness) has the fast-moving. The main ones are the changes in the size of the dropping force, the hardness of the finished workpiece and the state of the tool.

As you can see, the effects of the perturbations change the values of the performance of the processing. One of the possible ways to increase efficiency is the management that is carried out in processing the speeds of machine working lathes, as well as the development of cutting process control systems that increase the efficiency of machining on lathes both with numerical control (CNC) and without it.

Consequently, the machine-building industry needs to improve the details processing on lathes. However, this is constrained by the lack of appropriate management methods and principles for building control systems for working machines. And this gives grounds to state that the study of this issue is an actual scientific and applied problem, the solution of which will contribute to increase productivity, to reduce the cost and energy losses when turning, in particular, shaped parts on metal-working machines and to increase the competitiveness of products of the machine-building industry.

Turning lathes are mostly used to handle the bodies of rotation. When performing operations on these machines, obtaining external and internal cylindrical and conical surfaces, shaped surfaces, end planes, etc is provided.

Shaped surfaces of parts (both external and internal) formed by a curvilinear creator, a combination of rectilinear creations, located at different angles to the axis of the part, or a combination of curvilinear and rectilinear creations, are treated with special shaped cutters with cross-sectional feeding of the support.

Let's study the existing methods of formation of shaped surfaces on lathes more detailed, namely, using manual transverse and longitudinal feed of the cutter relative to the workpiece with the fitting of the profile of the treated surface on the pattern; machined shaped cutters, profile of which corresponds to the profile of the finished part; using a transverse and longitudinal feed of the cutter relative to the workpiece, as well as a device and a copier device, allowing to process the surfaces of a given profile; by combining the above methods to improve the accuracy and processing performance.

The main tool for working on a lathe-screw machine is a lathe cutter. There are a large number of them, there are individual incisors for sharpening, trimming,

cutting off conical and cylindrical surfaces, and also cutting tools with which you can cut both the external and the inside through. They can move longitudinally, across and at an angle to the axis of rotation of the part. The combination of such movements of the details and the cutting tool - the cutter allows to receive various surfaces of the cut such as cylindrical, tapered, shaped, screw etc.

Shaped cutters are chisels in which the cutting edge coincides with the curvilinear or stepped profile of the treated surface. Based upon our study, we will examine in more detail the types of shaped incisors and their purposes.

Shaped cutter for processing concave surfaces. The advantage of such incisors is the simplicity and relatively low cost of manufacturing. Their significant disadvantage is that after several, and sometimes two or three, reorientations on the front surface (and for preservation of the profile, they can be redeployed only on the front surface) plate is wasted, the height on the center during the installation decreases and the cutter becomes unfit for further work. Therefore, rod shaped cutters are used mainly in cases where the work is not massive and the profile of chisels is simple.

Prismatic shaped cutter. The front surface is the face of the bar, from which the cutter is made, and the rear corner is formed due to the sloping position of the cutter in the punch. For fastening in a punch the prismatic cutter along the entire length (from the back side) has a projection in the form of a swallowtail, which is a part of the same groove punch. The punch is knotted, so when tightening the screw, it is compressed and the cutter holds it firmly. Lack of cutter - the complexity of manufacturing.

Disc shaped cutter. The front surface of the disk cutter is located below its axis by a value h, which creates the required rear angle. If this decrease is equal to 1/10 of the diameter of the cutter, its rear angle is about 12 °. The front angle of the shaped incisors in most cases is 0 °. Under this condition it is simplified to manufacture a cutter; in addition, the cutter is not tightened into a piece and the surface is processed of high quality. The width of the shaped cutters does not exceed 40 mm, but sometimes the shaped cutters are used up to 100 mm in width.

To get the correct profile of the treated surface, the shaper cutter must be installed so that its cutting edge is exactly at the height of the center of the machine. The position of the shaped cutter, if you look at it from above, should be checked with a small corner.

When fastening shaped incisors it is necessary to observe carefully the general rules of incisors fastening.

The feed of a shaped cutter in most cases is done manually. It should be uniform and not to exceed 0.05 mm / s for the width of the cutter 10-20 mm and 0,03 mm / s for a width of more than 20 mm. It should be noted that the feed should be less than the smaller diameter of the workpiece. When machining the part of the piece, located closely to the patron (or to the backbone), the feed can be taken more than when processing a site located relatively far from the patron (or from the backbone).

The mechanical processing of shaped surfaces with the simultaneous action of the longitudinal and transverse manual feeds of the cutter is carried out with a small amount of machined parts or with relatively large sizes of shaped surfaces. In the first case, even the manufacture of a regular shaped cutter is inappropriate, in the second case, it would be necessary to have a very wide cutter, the perfomance of which would inevitably cause the vibration of parts.

Removal of the abseil is carried out with a needle-nose finishing or passable cutter. To do this, you need to move (manually) longitudinal guides to the left and simultaneously the transverse guides of the carriage forward and backward. When processing relatively small shaped surfaces, the longitudinal feed is carried out using the upper guides of the support, mounted so that their guides are parallel to the center line of the machine; For transverse feeding the transverse guides of the support are used. In all cases, the vertex of the cutter will move along the curve. After several passes of the cutter and at the correct ratio of feed quantities (longitudinal and transverse), the treated surface receives the required shape. This operation requires skills. Experienced lathers, processing shaped surfaces in this way, use an automatic longitudinal feed, manually moving the transverse caliper simultaneously.

It should also be noted that the shaped cutters operate in difficult conditions, since they cut a wide chip. Therefore, the transverse feed for them should be selected in an understated range of 0,02-0,08 mm / o depending on the stiffness of the part. Due to the small depths of the shaped profile, the feeding of the cutter is usually done manually. To clean the treated surface at the end of the working stroke of the cutter it is recommended to make a slight stamina, and then remove it from the part.

Summarizing the foregoing, in order to obtain the turning processing of the shaped part of the given accuracy, it is necessary, ultimately, to provide a stable relative shaping movement of the workpiece and the tool using the CAD / CAM system.

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AUTOMATION OF PRODUCTION IN THE FOOD INDUSTRY

The production of food products in most cases is carried out by the current method. The current production method is based on the transfer of products from one technological operation to another using conveyors. Conveyors establish and regulate the rate of production, ensure its rhythm, contribute to increased productivity and increase output.

In the food industry in the technological processes for the transportation of any goods used stationary and mobile conveyors, lamellar, tape, scraper-bucket, hanging, screw, etc. To prevent injury to people, moving parts of the conveyor to which the

access of service staff and persons operating near conveyors, should be fenced with metal casings or a grid.

The food industry conveyor must meet the following criteria:

- chemical neutrality with respect to a product transported along the line;
- the simplicity and convenience of cleaning after the end of work;
- simplicity of design;
- high reliability.

Conveyor is a continuous machine designed for transportation of loaded cargos such as minerals, rocks, laying materials, etc. It is widely used in quarries, in mines, in concentrating factories [1].

Main types of conveyors are screw, roller: driven and non-driven (gravity), ribbon, tape-cable, tape-chain, scraper, vibration, lamellar and others.

Conveyors also include elevators and escalators.

Basic elements of the conveyor are traction, cargo or tugs; supporting and guiding elements; conveyor belt, pickup truck.

By structural features conveyors are distinguished with a flexible pulling body and without a traction organ. In the first conveyors, the load moves together with the traction organ on its working branch (tape, tape-cable, tape-chain, scraper, lamellar conveyors, elevators). In other conveyors, the forward movement of the cargo is carried out with oscillating or rotary motion of the working elements (inertial, vibrating, screw, roller conveyors). For feeding of conveyors electric, less often hydraulic and pneumatic energy is used.

At the angle of rise distinguish horizontal and weakly oblique, sloping, steep bending conveyors [2].

The conveyor line can be both straightforward and curvilinear, becoming a conveyor of constant or variable length. Conveyors are stationary, semi-stationary and mobile, for purpose are for underground, open mines, general purpose, special (for example, feeders, reloaders, etc.). A special kind of conveyor is a conveyor train.

The conveyor section is part of the conveyor construction. For the belt conveyor consists of supports with attached roller bearings of the cargo and idle branches. The main element of the section of the scraper conveyor is the cistern.

Other elements of conveyor construction: knife cutter, scraper, conveyor belt.

Advantages of conveyors are continuity of moving of loads, loading and unloading without stops, high productivity, long transport time, high degree of automation, maintenance of work safety conditions, high technical and economic indicators.

For example, in belt conveyors, the biggest disadvantage is the difficulty in transporting piles, hot and heavy pieces of cargo, and also at the angles of inclination of the route, which exceeds 18-20°C [3].

In Ukraine, conveyors are produced by the Production Association Yuzhny Machine-Building Plant named after A.M. Makarov, the Lviv Conveyor Factory, the Kharkov «Svet Shakhtera» (Miner's Light) Plant and other enterprises.

For the first time, the streaming system based on the maximum conveyorization of production was used by the largest American businessman G. Ford. He united the technological process into small operations, the execution of

which required the workers only the simplest, mechanically repetitive movements. Such system completely ignored the subjective «human factor» which is the attitude of man to his work, so already in the early 1970's. There was a reassessment in the nature of the use of the conveyor. His negative features, such as rigid regulation of the rhythm, high speed, narrow specialization and monotony of executed operations, insufficiency or lack of creative elements, limited prospects for professional growth, have become very noticeable. The attitude of workers to work got worse, the economic output of production decreased. As a result, more and more people began to receive conveyors with intermittent action. To eliminate the monotony, large single conveyors with forced rhythm were divided into several «mini conveyors» at a lower speed. Each occupied group of workers whose functions are periodically changed, for which the workers master several operations, their work becomes more meaningful, more creative. Current production was based on different methods of group technology. Changing operations, performed by the workers, eliminated the monotony of their work, reduced fatigue. Increased level of tasks solved at the level of the master, the brigade. They were able to independently manage the activity of the site, the brigade, to exercise control functions, define the organizing of work. Due to this job satisfaction is growing, public significance of staff is increasing [1].

Growing rates of productivity, requirements for improving quality and expanding the range of products at industrial enterprises have created the need for the creation and implementation of complex mechanized and automated lines.

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FEATURES OF END MILLS FOR HIGH-SPEED PROCESSING

The current level of industry development requires the improvement of the quality of manufacturing details, in particular, their geometric accuracy and surface quality. The frame of mechanisms, devices, apparatus, as well as supports, frames, beds make up more than 13% of all products of mechanical engineering and metalworking. In the technological processes of manufacturing parts from 10% to

50% of the parts must have a roughness of the treated surfaces not more than 1.6 microns.

Milling is the process of machining using rotary cutters to remove material by advancing a cutter into a workpiece. This may be done varying direction on one or several axes, cutter head speed, and pressure. Milling covers a wide variety of different operations and machines, on scales from small individual parts to large, heavy-duty gang milling operations. It is one of the most commonly used processes for machining custom parts to precise tolerances.

Milling is a cutting process that uses a milling cutter to remove material from the surface of a workpiece. The milling cutter is a rotary cutting tool, often with multiple cutting points.

There are two major classes of milling process:

– In face milling, the cutting action occurs primarily at the end corners of the milling cutter. Face milling is used to cut flat surfaces (faces) into the workpiece, or to cut flat-bottomed cavities.

– In peripheral milling, the cutting action occurs primarily along the circumference of the cutter, so that the cross section of the milled surface ends up receiving the shape of the cutter. In this case the blades of the cutter can be seen as scooping out material from the work piece. Peripheral milling is well suited to the cutting of deep slots, threads, and gear teeth.

Many different types of cutting tools are used in the milling process. Milling cutters such as endmills may have cutting surfaces across their entire end surface, so that they can be drilled into the workpiece (plunging). Milling cutters may also have extended cutting surfaces on their sides to allow for peripheral milling. Tools optimized for face milling tend to have only small cutters at their end corners.

The cutting surfaces of a milling cutter are generally made of a hard and temperature-resistant material, so that they wear slowly. A low cost cutter may have surfaces made of high speed steel. More expensive but slower-wearing materials include cemented carbide. Thin film coatings may be applied to decrease friction or further increase hardness.

Recently, the finishing of flat surfaces is increasingly executed by end milling, as a rule, standard end mills, which have a number of shortcomings. Removing these shortcomings is an important task that can be addressed in several areas. One of the directions of the solution of the task is to design more advanced designs of mills with combined cutting patterns that meet the requirements and take into account the accumulated experience and results of modern scientific research, with the aim of further application of such mills in production.

When designing special end mills with combined cutting patterns, the main goal is to establish rational structural parameters of milling and operating modes. In addition, the use of cleaning end mills with combined cutting patterns makes it necessary to study the features of the kinematics of processing.

Expansion of the areas of use of a blade tool equipped with inserts of superhard materials is one of the main areas of increasing productivity and intensifying the processing of metals by cutting. One of these areas is the increase in the size of the

dropping out, due to the use of progressive structures of cutting tools. Thus, with end milling, the use of spiral-step stages of cutting allows to cut up to 6-8 mm tolerance, in the processing of gray and high-strength cast iron.

End mills equipped with superhard materials allow:

– to realize the motion of the profile cutting knife on a straight line trajectory perpendicular to the feed vector of the workpiece and to align the roughness of the machining in the width of the milling;

– to cut the main part of the inclination with the cutting knives moving relative to the surface to be machined along the circular trajectories and fixed stationary in the mill cutter;

– due to the stepped arrangement of cutting blades, increase the maximum depth of cutting and combine roughing and finishing operations in one pass;

– to adjust the axial departure of the cutting knives, if necessary, to adjust the depth of cutting;

– significantly improve the quality of the treated surface, the tool's stability and processing performance;

– to provide oblique cutting, which makes it possible to reduce the specific loads per unit length of the cutting edges of knives, and thus greatly increase the stability of the cutting blades;

– to implement cutting schemes with the preliminary plastic deformation of the treated surface;

– to use mill cutters for processing flat surfaces on milling and grinding machines [1; 2; 3].

During high-speed milling, the main requirements for end mills are:

1) need to optimize the designs of end mills, the geometry of their cutting knives, as well as cutting modes;

2) creation of reliable means of control of the condition of face mills (with the possibility of replacing worn elements) and quality during processing;

3) determination of rational tool materials for processed materials with different physical and mechanical characteristics;

4) application of tool designs with the possibility of balancing;

5) use tools with minimal radial and axial beats;

6) during operation, the milling cutter must not exceed the maximum speed specified for this tool;

7) handle parts as much as possible with smaller outings of tools;

8) apply mill cutters with a minimum slip of cutting elements from the tool casing;

9) minimize the contact area of the edge with the part to reduce the risk of vibration;

10) apply symmetric tools if possible;

11) use a balanced auxiliary tool with a steep cone (power chamber cartridges, hydrophilic cartridges, cartridges for drills and cylindrical shaft mills) [2; 4; 5].

The main direction of mechanical processing development is the concentration of technological transitions, which allows to reduce the complexity of manufacturing

parts, increase productivity, reduce the cost of processing. At the lowest cost, the concentration of technological transitions is carried out with the use of a combined cutting tool, the benefits of which are:

1) reduction of the number of technological transitions for the processing of the part;

2) the possibility of improving the accuracy of processing by reducing the error of the base, in connection with the decrease in the number of reinstalls;

3) reduction of energy costs;

4) reduction of the number of machine tools;

5) reduction of the number of required instrument [3].

Research and solving the questions of improving the productivity and quality of flat surfaces processing of parts is an actual task and is of great importance at the present stage of development of instrumental production and machine building in general.

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THE USE OF GENERAL-PURPOSE SOFTWARE FOR MINERAL-GEOMETRIC CALCULATIONS AT THE PROJECTION OF

SURFACE MINING

One of the most time-consuming processes in the design of quarries is mining-geometric calculations that are carried out during the assessment and calculation of all types of stocks, justification of the folds and order of working out, mining-geometric analysis of the quarry field, determination of the volume of mining operations, drawing up a calendar plan of mining operations etc. Formally, the part of GGR in the total mining and technological project is about 45%, in practice, in the case of designing the development of deposits with complex mining and geological and mining-technological conditions of working off, in terms of labor costs and time expenditure, mining and geometric calculations can reach 70% of the entire process designing. Especially clear is the tendency to increase labor costs and time expenditure to perform mining and technological calculations, if it is necessary, the study of several variants of mining.

The popularization and widespread use of computer technology and constantly upgrading software, provides users with new opportunities, driven by the need of improvement of theoretical and methodological approaches to the solution of mining and geometric tasks. Due to this, the development of computer technology of mining and geometric calculations is an relevant research task.

The greatest part of labor cost and time expediture in the process of automated GGR introduces the stage of creating models of deposits and mining, on the basis of which GGR is performed. The technology of modeling of geological objects, the choice of software tools and development method of the output data are determined by the conditions of deposit position and the technology of further development: for flat-dipping and horizontal deposits it is expedient to use a polygonal modeling system, for awry and steep dipping - spline modeling system.

During modeling the deposit surfaces, the output data about mineable minerals should be presented in the form of a database, which includes the coordinates of the mouth of the geological wells (X, Y, Z), data about the thickness of the cover stones and working thickness, various characteristics of the object. As a rule, this kind of data, is given to designers in the case of designing horizontal and flat-dipping deposits. On the basis of the output data base, a set of three-dimensional surfaces of the relief of the deposit is formed and roof and soil of the mineable minerals, which contoures by future mining operations are marked.

Based on the analysis of the software market, which allows to solve the problems of mining and geometric evaluation of the deposit, the study considered the possible use of several budget-friendly, suitable to the technical basis and level of training of users of software packages. In these programs, the sequence of solid-state modeling of relief, ore body and deposit is systematic work with graphics and table documents. Polygonal modeling is supported in the Surfer software package, solid state spline - in Mechanical DeskTop. A combination of polygonal and solid-state modeling is recommended for Mechanical DeskTop and AutoCAD Survey.

Computer technology of mining-geometric calculations is based on modular use of publicly available software and allows to carry out mining-geometric

calculations within the acceptable error and reduce their labour intencity by 20-30% compared to traditional methods. Computer technology consists of six main stages: 1 - analysis of output data, software selection; 2 - formalization of the output data for the choice of software; 3 - creation of geoinformation models of the deposit and mining; 4 - estimation of model error; 5 - execution of mining-geometric calculations; 6 - evaluation of the results of the GGR. The error of the results of mining-geometric calculations which were performed on the basis of developed computer technology directly depends on the geoinformational density of the output data.

Thus, the use of general-purpose software for mining and geometric calculations significantly reduces time for processing information and its analysis, labor costs, accuracy and possibility of automated creation of models of deposits.

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THE THEORY OF MACHINES AND MECHANISMS. ADVANCED APPROACH

The rapid progress in technology over the past few decades has lead to an increase acceptance of the theory of machines and mechanisms as an important constituent of mechanical engineering. Great advanced have been made in automatic control where mechanisms incorporate pneumatic, hydraulic, and electronic components. This requires contributions from the sciences of automatic control, aerodynamics, hydraulics, gas dynamics, electronics, and electrical engineering, but also from the theories of elasticity and vibrations. These advances in basic theories have promoted the design of ingenious new machines.

The operating speed of machines has increased considerably, which has lead to corresponding increases not only in the dynamic loads on mechanisms and machine components but also in the levels of vibration and noise. Since vibration and noise are ubiquitous whenever a machine is operated they have been investigated extensively, and measures to reduce them have been examined particularly thoroughly in recent years. Another line of studies has dealt with the dynamics of systems comprising humans, machines and their environment.

In general, modern industrial production is reduced in the end to the execution of a great number of diverse working processes. Most processes are associated with treatment and transformation of initial raw materials into half- or fully finished products; such working processes are referred to as technological. Technological processes involve transportation of materials to the place of utilization as well as energy processes, i.e. generation and transformation of energy in forms most convenient for the respective process. Also, information processes, i.e. transmission and transformation of information are of great importance in modern production,

ensuring execution of operations associated with control and organization of production.

The accomplishment of many working processes requires realization of certain mechanical motions. For instance, material processing on a lathe requires shifting the blank and the instrument; transportation of raw materials and of finished products is reduced to mechanical shifting; transformation of heat energy into electric energy requires rotations steam turbines and generators, and so on. The execution of working processes is also associated with the application of forces to materials in process in order to balance the weight of transported objects. A person is able to realize directly mechanical motions which allow him to carry out certain working processes manually. In modern production, however, the overwhelming majority of working processes associated with the realization of mechanical motions is carried out by machines.

We call machine (or machine aggregate) a system designed to realize mechanical motions and force actions related to the execution of one or another working process. Machines are divided into technological, transport, energy converting and information machines depending on the kind of working process.

In industrial production, in addition to machines, various apparatuses are used which are not directly associated with mechanical motion but with chemical, thermal and other processes or with transmission and transformation of information. Sometimes some of them are called machines, as well (e.g., electronic computing devices); however, the term "machine" will be used only in the indicated sense.

As for engineering mechanisms, which are simple devices that make a huge difference in our day-to-day lives (often without us even realizing it), we can identify six really important ones:

1. Actuators: Actuators are devices that convert some type of stored energy into motion. The stored energy is usually in the form of compressed air (pneumatic pressure), electrical potential, or liquid (hydraulic) pressure.

2. Cams: Cams are mechanical devices that convert rotational motion into linear motion. Different designs result in different types of motion in the cam follower. Circular cams cause smooth linear motion, heart cams maintain a uniform velocity in the cam follower, and drop cams produce a rapid and discontinuous linear motion.

3. Gears: Gears are one of the most common and diverse types of mechanical devices. The primary function of gears is to transmit torque and to adjust rotational velocity.

4. Levers: A lever is a mechanical device used to transmit and amplify force by fixing the input and output about a fulcrum or pivot point. There's a great quote from the ancient Greek mathematician Archimedes that succinctly summarizes the foundational principle of levers: "Give me a place to stand, and I shall move the Earth with it [a lever]."

5. Ratchets: Ratchets are the handy-man and mechanic's best friend. Anyone who has ever rented a UHaul to move between cities has probably used a ratchet to tighten down stored goods or to keep the wheels of their car strapped to the trailer.

The neat thing about ratchets is that they lock in one direction allowing the user to tighten without fear of literally “going backwards.”

6. Springs: Springs are mechanical devices that store and dissipate energy.

Thus, mechanical engineering has become a complex science dealing with the problems of structure, kinematics, and dynamics of machines. The analysis and synthesis of machines are closely linked to the questions of control and optimum design, and are strongly supported by recent advances in the computer and other interrelated sciences.

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USE OF MODERN TECHNOLOGIES IN THE FOOD INDUSTRY BY THE EXAMPLE OF LLC «BERDYCHIV BEVERAGE PLANT»

In the face of growing competition in consumer markets, with the constant rise in the cost of energy and the shortage of skilled labor, innovation is needed by enterprises as a growth factor and stronger positions in the market by acquiring significant competitive advantages.

At the same time, innovation is the only resource that is unique to any enterprise, which is very difficult to copy competitors. However, innovation can become not only a basic competitive advantage, but also a source of comprehensive development of the enterprise.

Economic growth requires the creation of a strong food industry in Ukraine that can meet the needs of the domestic market, provide food security of the state, and create sufficient export potential. The food industry is among the leading industries – it has the second place (after metallurgy and metalworking) in terms of sales.

The material and technical base of the industry, its technical and technological level are crucial for accelerated development, increase of production volumes, increase of its competitiveness. At the same time, fixed assets and technical equipment of the industry are characterized by high moral and physical wear and tear, the use of outdated technologies in production – the degree of depreciation of fixed assets in 2018 – 40.7% [1].

To date, modern machine-building for the food industry is moving forward with great speed. Compared to domestic machines, today most young enterprises are more likely to turn to innovative devices, machines, and aggregates, which in turn conquer the world market. They are not only easy to operate, but also in service

(replacement of parts, units, individual worn parts), but also significantly improve the speed and quality of products.

The upgrade of the production unit should be carried out at a high technical and technological level, based on an innovative development model.

Problems of innovation and their implementation are devoted to the scientific works of national scientists A. Galchinsky, V. Geyets, S. Ilyashenko, V. Landyk, as well as foreign K. Prahalad, D. O'Neill, G. Thomas, H. Khemel, F. Jansen . Concerning the problems of innovations in the food industry, it is worth determining P. Antonyuk, K. Astapov, R. Mayro, M. Miliev, M. Pashuta, I. Sanda, M. Sychevsky, L. Tarasov, A. Shalatonov.

P. Antoniuk, O. Antoniuk analyze the state and ways of intensification of innovations in the food industry, which determine the conditions for overcoming the low technical and technological level of the industry [2, p.5].

Providing competitive advantages and stable development of an enterprise is impossible without constant updating of its material and technical base and introduction of new progressive technological processes. Most Ukrainian industrial enterprises are characterized by a high degree of deterioration of fixed assets, and the update rate remains rather low, as a result of which the quality of products is decreasing, and its cost price is increasing. Therefore, domestic enterprises need to become on the path of technical and technological development.

Technological and technological development, on the one hand, allows us to maintain in good condition and improve the technical and technological basis of the industrial enterprise (modernization, technical re-equipment, reconstruction, expansion, new construction), and on the other hand, it is aimed at the use of new advanced technologies (technological innovations).

The reasons for the low level of technical and technological development of the enterprise are caused both external and internal factors. These include: imperfect state support for innovation, technical and technological backwardness, inefficient depreciation policy, instability of the tax system, insufficient level of investment, insufficiently skilled personnel, low innovation activity, imperfect legal framework, imperfect leasing mechanisms, etc. [3, p.165].

After studying the development history of LLC «Berdychiv Brewery Plant», we can call this enterprise progressive and innovative. It constantly develops and implements innovative projects that have a positive impact on the performance of its work, whose qualitative results are confirmed by numerous awards.

Among the innovative projects implemented by LLC «Berdychiv Brewery Plant» are the following: 1) reconstruction of the refrigeration unit and installation of the water treatment plant; 2) reconstruction of steel fermentation department; 3) the reconstruction of the shop of winery using German equipment, which not only helps to improve the quality of products, but also allows to increase the volume of beer production. (While the work is done manually, factory workers have mastered the new equipment, but in the future their work will replace the computer, the process will be fully automated); 4) reconstruction of the steam boiler; 5) installation of automated compressors; 6) introduction of equipment for compensation of reactive power; 7) conducting of adjustment and adjustment works on steam boilers; 8) isolation of steam lines.

Thus, LLC «Berdychiv Brewery Plant» is an enterprise which carries out one of the greatest innovations in the direction of modernization and expansion of production, pays attention to the development of new products, the introduction of advanced technologies, modern equipment.

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APPLICATION OF THE CUTTING TOOL WITH WEAR RESISTANT COATINGS IN FACE MILLING OPERATIONS ON PLAINSURFACES

One of the promising ways to improve the efficiency of the cutting tool is to apply wear-resistant coatings on its workingsurface. The condensation of matter in vacuum with ionic bombardment (CIB method) is the most widely used methodfor the application of coatings developed in our country.The CIB method is universal in terms of the application of wear-resistant coatings of various composition and structure, which allows to change the properties of the surface layer of both the carbide and quick-cutting tool in wide range. Application of coatings obtained with the CIB method can significantly increase the endurance of the cutting tool in the processing of workpieces from structural materials. In recent years, the development of CIB technology is directed towards the development of multilayer coatings, which are the most promising and increasingly used in tool manufacture.

Despite the extended applicationof CIB wear-resistant coatings in the industry, including the use of multi-layered ones, the issue of their design and components selection remains open. The absence of scientifically substantiated principles for the formation of multilayer coatings leads to the fact that the same coatings are often recommended for different processing conditions, and conversely, different types of coatings are used under the same conditions of cutting.

This article considers the possible ways to increase the effectiveness of the cutting tool with the coating on operations of face milling.

In view of the fact that the contact processes occurring on the work surfaces of the cutting tool depend on the cutting conditions, the requirements for wear-resistant coatings must be determined by the type of machining process. Thus, with continuous turning, it is necessary to ensure, first of all, high hardness of the coating, its inertia in relation to the material being processed. At the same time, with discontinuous cutting, the formation of discrete chips and the fluctuation of cutting marginthe following requirements dominate, such as high fatigue strength and impact strength of the coating material. Taking into account that the main reasons for the destruction of a cutting tool while face milling: the formation of crack network in the coating and tool base and the detachment of the coating as a result of the influence of the alternating heat and power loads and the separation of the stagnant zone when there is no contact of the tool with the workpiece, it is possible to highlight the following main areas for improving the effectiveness of the tool:

1) increase of the crack strength and durability of the coating material and the composition "coating - tool base" in general, which can be ensured by improving and optimizing the technological process of its application, change in the composition and design of the coating;

2) reduction of the adhesive interaction of the contact areas of the tool with the treated material by choosing the coating material or the directional change in its properties, which will reduce the intensity of the processes of the incrustation of the volume of the tool material as a result of the separation of chips from the front surface when there is no contact of the tool with the workpiece;

That is, in order to maximize the efficiency of the cutting tool in face milling, it is necessary to create a coating that at the same time has high strength and crack resistance, low adhesion to the treated material and the ability to minimize the level of thermal and power loads on the tool.

Accordingly, the mechanical properties of the coating are determined by its composition and structural parameters (grain size, phase composition, presence of defects, texture, residual strain), which in their turn are determined by the technological parameters of the deposition process.

Thus, in the works of the following scientists Biakova A.V., Vereshchaka A.S., Moiseev V.F. the influence of the pressure of the reaction gas on the microhardness and the resistance to cracking of TiN coating, the strength of adherence of coatingswith the base, the magnitude of residual strainhas been investigated. It is shown that by changing of the pressure of the reaction gas it is impossible to simultaneously achieve the greatest microhardness and plasticity of the coating, the strength of its adhesion to the base, the maximum value of residual compressive strain in the coating and minimal adhesion to the treated material. Similar results were obtained by the researcher Tabakov V. P., who investigated the relationship between the condensation temperatureand the structure, residual strain, microhardness of the coating, the strength of itsadhesion to the base and the tool endurance .

The structure, properties of the coating and the working capacity of the tool depends on the thickness of the coating. The conducted researches have established,

that with decrease in the thickness of the coating, its plasticity and thestrength of adhesion with the base increase, the number of defects and the size of the grain decrease, and the residual strainlevelchanges. The effect of the thickness of the coating on its properties is reflected in its optimum value for different cutting conditions.

A more promising direction of increasing the strength and crack resistance of the composition "cover - instrumental material" is the creation of composite coatings. Coverage of the complex composition allows to vary the properties of the composition "cover - instrumental material" more broadly and increase the efficiency of the cutting tool for different types of processing and cutting various materials. This is due to the fact that complex compounds have high thermodynamic stability, hardness and durability, a wide area of homogeneity, which allows them to change their properties in wide limits by changing the composition.

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ROBOTICS ENGINEERING

The development of science has its roots in ancient times. People researched and explored everything around them. Modern science is quite well-developed and one of the main directions of its development is the study of IT sphere, in particular robots and robotics.

Robots are used in various applications. There are many jobs which humans would rather leave to robots. The job may be boring, such as domestic cleaning, or dangerous, such as exploring inside a volcano.

Today's robots assist in high precision surgeries such as brain and heart surgery. They are also used to test quality control in pharmaceuticals.

A lot of people consider robots to be dangerous. The best example of what may happen if robots become uncontrollable is the movie "Terminator". But other people consider them to be very useful and safe. The main supporter of this idea is Isaac Asimov. He is a science fiction writer who is considered to be one of the fathers of robotics. In one of his most famous series, made of 38 short stories and 5 novels, Asimov built a universe and unified history promoting the themes of the interaction of humans, robots, and morality. Starting with "I, Robot" in 1950, the series would see the birth of two important concepts: positronic robots and robotics. Indeed, the Oxford English Dictionary credits Asimov for inventing both these words. While the Robot word originated from the Karel Čapek's play "R.U.R" in 1920, the term Robotics only appeared in 1941 in "Liar!" (published in "Astounding Science

Fiction"). But not only Asimov coined the term, he also wrote the essential rules of this field of science. They are also known as the Thee Laws or Asimov's Laws. They define the ground principles for modern robotics. While being introduced in his 1942 short story "Runaround", they have been hinted at during various stories:

1. A robot may not injure a human being or, through inaction, allow a human being to come to harm.
2. A robot must obey the orders given it by human beings except where such orders would conflict with the First Law.
3. A robot must protect its own existence as long as such protection does not conflict with the First or Second Laws

A fourth or more precisely zeroth law was added by Asimov himself later:

A robot may not harm humanity, or, by inaction, allow humanity to come to harm.

Modern definition of robotics and robots gives us Encyclopaedia Britannica: "Robotics as a science is design, construction, and use of machines (robots) to perform tasks done traditionally by human beings. Robots are widely used in such industries as automobile manufacture to perform simple repetitive tasks, and in industries where work must be performed in environments hazardous to humans. Many aspects of robotics involve artificial intelligence; robots may be equipped with the equivalent of human senses such as vision, touch, and the ability to sense temperature. Some are even capable of simple decision making, and current robotics research is geared toward devising robots with a degree of self-sufficiency that will permit mobility and decision-making in an unstructured environment. Today's industrial robots do not resemble human beings; a robot in human form is called an android."

Today we have a separate branch of engineering, which is called robotics engineering. It is the interdisciplinary branch of engineering and science that includes mechanical engineering, electrical engineering, computer science, and others.

It deals with the design, construction, operation, and use of robots, as well as computer systems for their control, sensory feedback, and information processing.

A robotics engineer is a specialized type of engineer, also known as: automation engineer, robotics and automation engineer, automation robotics engineer.

Most robotics engineers are employed by private robot manufacturers or robot users. Some engineers work in military and space programs.

A robotics engineer is a behind-the-scenes designer, who is responsible for creating robots and robotic systems that are able to perform duties that humans are either unable or prefer not to complete.

So what are the future trends of robotics?

Toyota recently revealed T-HR3, a robot that follows the movements of a human pilot from a "remote maneuvering system."

The SnakeBot, developed at Carnegie Mellon University, may not have any digits, but it moves similarly to an actual snake and is already being used in search and rescue missions.

On the AI side of things, Sophia, built by Hanson Robotics, was given citizenship in Saudi Ariba in October 2017. Sophia is a celebrity in her own right, appearing on shows like *The Tonight Show with Jimmy Fallon.* She was interviewed

by *Khaleej Times* and expressed interest in starting a family in the future, even going as far to say she'd name her daughter after herself. Not long after, she announced plans to start a crowdfund for her AI, called SingularityNET.

These advancements have worried more than a few experts, however. Founder of PayPal and CEO of Tesla, Inc., Elon Musk, tweeted his concerns about Atlas in particular, saying "in a few years, that bot will move so fast you'll need a strobe light to see it." He also suggested regulating them, similar to how we regulate food and aircrafts. Fei-Fei Li, chief scientist of AI/ML at Google Cloud, is much more optimistic, tweeting that cooperation between humans and artificial intelligence is the key to the future. She also said that, as of this moment, "we are closer to a wash machine than the Terminator."

She has a point. Ocado, an online food retailer, revealed their latest robot to the public: an oversized arm that specializes in grabbing and placing groceries. By using suction technology and a camera, the bot can identify which product to pick up and which bag to put it in. The advantage of using automaton over a human- they currently both perform at about the same speed- would be efficiency, including the ability to work 24/7 without breaks.

Similar cases of robots replacing repetitive and menial jobs have sparked debates in both the academic and economic communities. For now, though, your bagger at your local grocery store will remain flesh-and-bone. Suction works fantastic for cans and boxes, but fresh produce is easily damaged.

Nevertheless, these advancements in robotics are worth analyzing. We're getting closer to a truly automated world where robots and humans coexist (whether peacefully or not). For now, though, the fear of a robot uprising is still some ways off. It may be more pressing to worry about seeing a robot gymnast at the 2020 Olympics.

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REASONING THE PARAMETERS FOR OVERHEAD WORKINGS ON BLOCK QUARRIES BY DIAMOND-ROPE CUTTING

The high strength and hardness of rocks such as granite cause low productivity and high cost of work on the extraction of granite blocks, therefore it is necessary to choose right methods for its extraction. The practice evidences that the use of the drilling and explosive method leads to a number of problems including the appearance in the massif the different types of cracks that reduce its strength. That is why it is relevant to determine the main parameters for conducting the technology of capital trenches using diamond-rope cutting and to determine the optimal angle of drilling for dipping the rope.

It is reasonable to dig a split trench parallel to longitudinal cracks, and to dig a cut one along transversal cracks. The breaking off a monolith or a block should be done in the way its longer side could be parallel to the longitudinal cracks. Analyzing the literature, we have found out that split and cut trenches have to be digged between the vertical cracks of the same principal system.

The use of the cable rig will help extract marketable blocks several times more in the quarries. It is proposed to open the trenches with the cable rig without using drilling and explosive operations. It is proposed to dig the trenches using a cable saw according to the scheme (fig. 1).

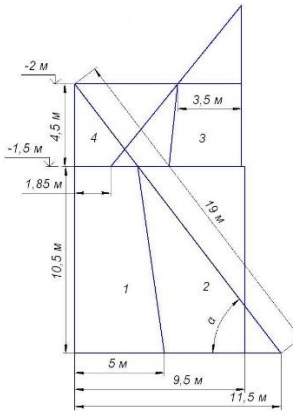

Fig. 1.

First, they perform the cutting of the lateral surfaces (fig. 1), then drill holes at an angle to the surface, pour a non-explosive destroying mixture in them and using pneumatic pillows or hydro-jacks, this wedge is removed. Next, the separation of the vertical part of this block is carried out with the help of the installation of continuous drilling, the separation of the remaining parts of the massif with the diamond-rope rig is performed and the removal of the rock is carried out. The process is repeated until the required length is reached. This method of digging trenches helps reduce the number of man-caused cracks and re-crushing, the quality of raw materials significantly increases as well as the subsequent separation of the blocks from the massif, and the possible use of the rock located on the site of the trench.

It is reasonable to install trenches in the areas with a lower quality of a stone, which is characterized by a denser network of vertical cracks. When choosing the width of the trench, one should take into account the overall width of the loader. The width should be 3 m. greater than the width of the loader.

In order to reduce the losses and economic costs that arise when digging the trench, the most optimal width is chosen. This width will allow safe work and reduce the losses of facing stone. The calculations are shown in fig. 2. and fig. 3.

$$\alpha = -3{,}779 \cdot n + 87{,}5$$

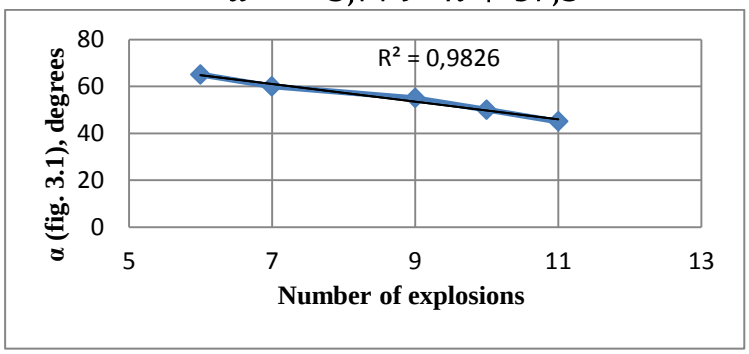

Fig. 2. Number of explosions depending on the angle of dipping the rope for reaching the designed depth of 6 m.

The most economical result will be achieved with the least number of explosions and the lower starting trench width. Therefore, we accept the optimal angle of 65 °.

$$\alpha = 16{,}44 \cdot n + 189{,}2$$

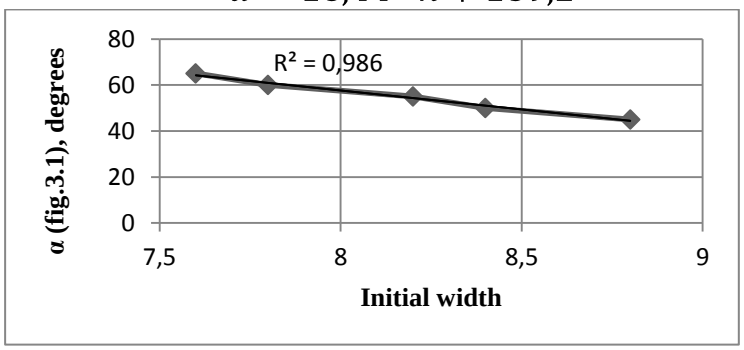

Fig. 3. Dependence of the initial width on the angle of rope dipping to achieve the designed width of 6 m.

The graph shows that the increase in the dipping angle results in the decrease in the initial width of the trench. The optimal angle will be 65 °, but one should take into account the condition.

The most economical effect will be achieved with the least number of explosions and the lower starting trench width. In addition, due to the diamond-rope method of digging the trenches, the integrity of the massif is preserved, therefore, the method can be used for digging the trenches on block quarries of Zhytomyr Region as well as other areas.

Session work №2

CURRENT RESEARCH IN THE FIELD OF INFORMATION COMPUTER TECHNOLOGIES

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EXOTIC PROGRAMMING LANGUAGES

The word “exotic” is defined by the Oxford dictionary as “of a kind not ordinarily encountered”. If that is so, what is meant by exotic programming languages? These are languages that are not used for commercial purposes or even for anything “useful”. This definition can be applied a little loosely and, hence, many different types of programming languages can be classified as “exotic”. So, after some consideration, I have included three types of languages as belonging to this category. Exotic programming languages include languages that are intentionally designed to be difficult to learn and program with. Such languages are often used to analyse the power of programming languages. They are known as esoteric programming languages. Some exotic languages, known as joke languages, are created for the sake of fun. And the third type includes non – English – based programming languages. The definition clearly mentions that these languages do not serve any practical purpose. Then what’s all the fuss about exotic programming languages? To understand their importance, we need to first understand what makes a programming language a programming language.

The “Turing completeness” of programming languages

A language qualifies as a programming language in the true sense only if it is “Turing complete” [1, c. 4]. A language that is Turing complete can be used to represent any computable algorithm. Many of the so called languages are, in fact, not languages, in the true sense. Examples of tools that are not Turing complete and hence not languages in the strict sense include HTML, XML, JSON, etc. But it is often quite surprising to come across Turing complete languages in the most unexpected places. Indeed, it was surprising for me to learn that tools like Vim, sed, AWK, etc, are Turing complete. This knowledge about Turing completeness can be used to shed some light on exotic programming languages. Esoteric programming languages are tiny programming languages that are Turing complete. In layman’s

terms we can say that esoteric languages are powerful enough to do any task that is achievable by heavyweight languages like C, C++, Java, etc. Some of the joke languages and most of the non –English – based languages are also Turing complete.

The importance and relevance of exotic programming languages

Now we know that the languages we will be discussing here are Turing complete and are worthy of being called a "programming language". What about their relevance in the open source arena? In my opinion, these languages truly capture the ethos of open source program development. They neither have any commercial applications nor will they ever allow the developer to earn even a single rupee. No profit – seeking company will ever develop any of these languages. But each and every one of these languages has a small but fervent group of supporters responsible for development and maintenance. This underlines the fact that the real value of open source development is broadening the frontiers of knowledge and not just monetary benefit.

Another question that needs an answer is regarding the uses of exotic programming languages. If these languages are not widely used then why study or write about them? For starters, programming is not always about developing applications. Programming can also be used to test the skills of a potential candidate in an interview, to create puzzles that will baffle even the most accomplished programmer, for recreational purposes, etc. So, in essence, exotic programming languages are somewhat similar to crossword puzzles or word jumble games; they offer very good exercise for the mind. Over the years, thousands of pages have been filled about the features of different programming language paradigms like object oriented programming, structured programming, functional programming and logic programming. Also, computer magazines have published volumes about different languages like C, C++, Java, Python, etc. But none of them ever considered exotic programming languages seriously. So it will be pure fun for readers to get to know these weird languages.

Esoteric programming languages

Esoteric programming languages (also known as esolangs) are Turing complete languages in which program development is done with a tiny set of tokens. These languages are created to test the patience and perseverance of potential geeks. The sheer variety of languages available is quite amazing. In this section we will discuss just five esoteric programming languages. In fact, there are more than 750 entries in the wiki page about esoteric languages. We will discuss esolangs called Ook!, Piet and Whitespace.

Ook!

Ook! [2, c. 4] is not an independent programming language. It is a derivative language of another exotic programming language. What makes Ook! interesting is the fact that there are only three keywords — Ook., Ook?, and Ook!. These three keywords are taken in pairs to form the eight keywords of another exotic programming language. The three keywords of the language Ook! are created in such a way that they are supposed to be writable and readable even by orangutans. There are some online interpreters freely available for Ook!. The size of programs tends to

become even more longer with Ook!. The following is an Ook! program to print "Hello World!" on the screen.

Ook. Ook? Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook! Ook? Ook? Ook. Ook. Ook. Ook. Ook. and etc.

The program is too large for debugging and comprehension; hence, all we can do is hope and pray that the program gives the correct output.

Piet

Piet [3, c. 4] is an even more bizarre esolang. The programs in Piet do not use any text – based keywords; instead, Piet uses coloured blocks as keywords. The final program obtained in the Piet language will look like an abstract painting. This is the reason why it's named after the Dutch painter Piet Mondarin, who is the pioneer of geometric abstract art. The extension of a Piet program is .ppm (Portable Pixelmap Graphics), which is an open graphics file format. The most widely used IDE for Piet is the open source Piet Creator. Here's how "Hello World!" would look like:

Whitespace

In almost every programming language, whitespace characters are ignored by the compilers and interpreters or have minor implications. But Whitespace [4, c. 4] is an exception to this rule. It is an esoteric programming language in which the whitespace characters alone are used to generate the program. Every non – whitespace character used in the program is considered as a comment and ignored by the compiler. This language can never be included in the academic curriculum because the answer script containing the correct Whitespace programs will look exactly like the one without any answer – it will be blank! The programs are generated by using spaces, tabs and line feeds alone. The five commands in the language Whitespace are described below. [Space] is used for stack manipulation. The combination [Tab][Space] is used for arithmetic operation. The combination [Tab][Tab] is used for heap access. [Linefeed] is used for flow control, and the combination [Tab][Linefeed] is used for I/O manipulation. Since Whitespace ignores all the non – whitespace characters, programs can be easily embedded inside other free form languages like C. Thus Whitespace can be used to generate *polyglot programs,* which are programs written in a valid form of multiple programming languages.

Joke languages

Joke languages are those exotic languages that do not serve any practical purpose other than the potential fun that can be had by dabbling with them. They are mostly generated from existing esoteric programming languages and not usable even in theoretical scenarios. Sometimes, joke languages are created by ingenious

programmers to win certain contests. There are about hundred entries in the wiki page about joke languages with languages even named *###, ***, COW, FIFTH*, etc. Many of these joke languages are not Turing complete and are not programming languages in the true sense. Joke languages include those used to generate programs that will serve just a single purpose. For example, a joke language called 99 is used only to generate the lyrics of the song "99 bottles of beer". Joke languages also include languages like Malbolge [5, c. 4], often considered the most difficult language ever invented to write an executable program with.

This precise has discussed some of the weirdest programming languages that have ever been created by humans. On the surface, it may seem that these languages are purposeless and a waste of time. But, in reality, they are useful in many different ways. They expand our knowledge of how programming languages work, they offer challenging puzzles to budding programmers and they also represent the real spirit of open source development.

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NANOROBOTICS

Nanorobotics is a trendy direction in nanotechnology. It is also very popular in medicine. Doctors say that nanorobots are very promising, with their help they will be able to perform more complex and responsible operations, to diagnose the most dangerous diseases in the early stages.

Nanorobotics is the technology of creating machines or robots, close to the microscopic scale of a nanometer (10−9 meters). Nanorobotics refers to nanotechnology – an engineering discipline for designing and building nanorobots.

Scientists set specific tasks for nanorobots, and the work on their development is under the way. I'll dwell on the modern trends in robotics in a more detailed way.

Suppose you visit a doctor for a common disease treatment, instead of giving treatment he/she sends you to a special team who implants tiny robots in your bloodstream. These robots will recognise the cause of your illness and provide a dose of medication directly to an infected area. It feels awesome, when you get to know quickly about the cause of your problem. These robots are known

as **nanorobots,** which greatly influence the future of **healthcare** and eventually cure everything from cancer to haemophilia.

According to research theories, nanorobots will possess at least two-way communication. These robots will receive power or even reprogramming instructions via sound waves from an external source and respond to **acoustic signals**. A special network of stationery nanorobots will be positioned throughout the body. It will keep track of each active nanorobot and then report the results. Physicians can not only monitor a patient's examination, but they can also change the instructions of nanorobots in vivo to the stage of recovery. After the treatment these nanorobots will be taken out from the body immediately.

Surgical nanorobots are inserted into the human body through the vascular system. They act as semi-autonomous on-site surgeons inside the human body and are programmed or directed by a human surgeon. These programmed surgical nanorobots perform various functions like searching for pathogens, and then diagnosis and correction of lesions by nano-manipulation, synchronized by an on-board computer while contacting with the supervisory surgeon via coded ultrasound signals.

Nowadays, the earlier forms of cellular nano-surgery are being explored. For example, a micropipette rapidly vibrates at a rate of 100 Hz micropipette, comparatively less than 1 micron tip diameter is used to cut dendrites from single neurons. This process is not going to damage the cell capability.

Medical nanorobots are used for diagnosing, testing and monitoring of microorganisms, tissues and cells in blood. They are capable of making records and reporting some vital signs such as temperature, pressure and immune system's parameters of different parts of the human body.

Nanorobots are also used for treating genetic diseases, by relating the molecular structures of DNA and proteins in the cell. The modifications and irregularities in the DNA and protein sequences are then corrected. The chromosomal replacement therapy is very efficient compared to the cell repair. An inserted repair vessel is inbuilt in the human body to perform the maintenance of genetics by floating inside the nucleus of a cell.

The supercoil of DNA is enlarged within its lower pair by robotic arms, the nanomachine pulls the strand which is unwounded for analysis; meanwhile the upper arms detach the proteins from the chain. The information which is stored in the large nanocomputer's database is placed outside the nucleus and compared with the molecular structures of both DNA and proteins that are connected through the communication link with the cell repair part. Abnormalities found in the structures are corrected, and the proteins are reattached with the Deoxy Nucleic Acid chain once again which reforms into their original form.

Blood clots can cause a number of troubles such as gangrene and paralysis. Nanorobots will be able to move to the thrombus and break it. This process is one of the most dangerous applications of nanorobots - the robot should be able to remove the bunch without losing any part of the blood stream that could hit the body and

cause great problems. Nanorobot should also be small enough not to become an obstacle in blood.

Kidney stones can be extremely painful. The more a stone, the harder it is to get rid of it. Doctors remove large stones with ultrasound, but this is not always effective. A nanorobot could remove a kidney stone using a small laser.

All these things seem fantastic, but sooner or later nanotechnology will help to find the man his immortality. Another thing is whom these technologies will be available for and not.

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VIRTUAL MODEL OF A ROBOTIC BOTTLE PALLETIZING COMPLEX DEVELOPMENT BASED ON KUKA.SIM PRO SOFTWARE

Rapid development of robotics in the industrial sector is presupposed by the productivity increase, better economic performances and higher product quality due to robotic technologies implementation. Expenses on automation of production due to industry robots (IR) are especially justified on the separate labor-intense stages, one of which is the primary packaging of a wide range of products. The packaging process includes product unit arrangements and their placement according to the adopted scheme on the standard-sized pallet by forming intermediate levels to the height defined by the transportation and integrity conditions with the film packaging. This process is called palletizing and serves for convenient transportation and products quality preservation [1]. In the modern production of beverages performed by the companies such as “Myrhorodska”, “Morshynska”, “Cola-Cola” etc., beverages packed into the plastic bottle containers according to the main technological process by using automatic loaders, semi-automatic and automatic

palletizers (stackers), positional elevating machines and rarely industrial robots due to the novelty and the initial difficulties in robotic technologies implementation [2].

However, the experience of the industrial companies in the field of special-purpose equipment certifies that flexible workcells have a range of advantages such as ability to manipulate separate large-sized loads, flexibility in servicing a few production lines simultaneously, products grab adaptation to the size and shape of packaging, multitasking of single and group production processes servicing, rapid introduction of new equipment into the packaging process.

In order to accelerate the process of robotic technologies implementation, modern software implements Virtual Reality Technologies (VR) at the stages of robotic tasks efficiency estimation through modeling and further programming. With the help of VR it is possible to recreate the model of technological equipment units functioning and implement the PR programming through the teaching method preventing syntactic errors.

The aim of the paper is to develop a robotic system for palletizing bottled products and packaging for transport and storage production systems. The automation object is the area of packaging. The packaging area consists of assembly lines for transportation of beverages in plastic bottles, pallets transportation, and two dispensers for empty pallets and items for packaging products. The packaging area is separated by a protection net according to the IR working area. Plastic bottles of the same geometric parameters, 5 litres each, are moving along the assembly line by two. The objects, arranged in a row, are sent to the robot's loading area by means of a linear positioner and the presence of soldering in the IR gripping the packaging element – installing the product's packaging element- products placement on the pallet (second layer) loading area is monitored by means of an infra-red sensor of the object's presence. Soldering by two bottles is a technological solution for palletizing taking into account geometric parameters of the pallet where they are separated from the main batch using a limiter. In order to increase productivity two unloading areas of the IR with two pallets are used. Each of the pallet is loaded into three layers of bottles and then it is forwarded to the automated stretch-firm packer with the help of a roller assembly line. Due to the successive operations the total amount of time for products packaging is decreasing.

On the first stage of robotic technology implementation, the process scene of VR space is planned according to the defined scheme and drawing of the basic and additional equipment placement taking into consideration geometric and kinematic characteristics. VR gives an opportunity to estimate and clarify their placement in order to prevent collisions and IR inaccessibility to the equipment's working areas. KUKA.Sim Pro software is one of the most advanced means in VR reproduction for creating robotic complexes. KUKA.Sim Pro is designed for autonomous and virtual KUKA robots programming, allowing analyze the cycle duration and generate programs for industrial robots, establish real-time connection to KUKA.OfficeLite being a virtual control system for KUKA IR [3]. A working space for the packaging area was created in the result of using KUKA.Sim Pro, depicted in Figure 1.

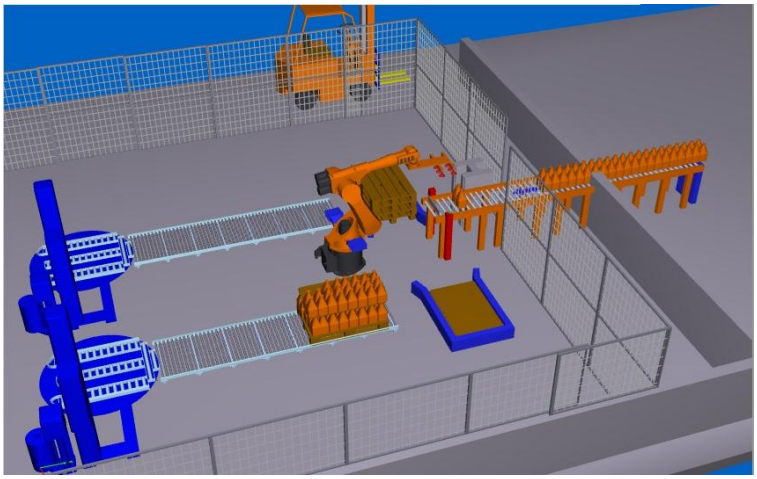

Figure1.1. Working space of packaging area

The equipment parts are selected from the software visual components library according to specification and are located in the scopes of the IR KUKA KR60 working area by using the coordinate's system binding. IR KUKA KR60 has a high accuracy of positioning, repetition, mobility and is the fastest model in its caliber [4]. Selection of a gripping device (GD) compatible with the console and IR control system was performed in order to manipulate soldering of bottles by two.

Gripping device with pneumatic mechanical heads allows grip the bottles and packaging elements softly from within or without, reliably holding them horizontally [5].

The IR performance is arranged in the following cycle: the grip of an empty pallet from the dispenser – installing the pallet on the roller assembly line – waiting for the product in the loading area of the robot – gripping the product – placing the product on the pallet according to the provided in advance palletizing scheme – products placement on the pallet (first layer) – gripping the packaging element – installing the product's packaging element – products placement on the pallet (second layer) – gripping the product – gripping the packaging element – installing the product's packaging element – products placement on the pallet (third layer). As soon as the cycle is over on the first line, the pallet is moving to the automatic packaging equipment in order to finish the packaging process while the IR is performing its cycle on the second line.

To imitate the technological process, first and foremost, it is necessary to assign a control device for each IR OUT output port to interact with in the future. For instance, the assembly line object is installed according to the OUT6 and True/False can be chosen. Then a new Sequence object is designed reproducing a set of IR movements. All of the similar objects will take place in the Main cycle. Interface, depicted in Figure 1.2., allows create two types of movements: LIN (linear motion) and PTP (motion from the initial to the given point the fastest possible way). In order to set a new direction it is enough to define the coordinates of the final point and set up 6 parameters X,Y, Z, A,B, C.

There are two ways to define the final point coordinates: manual enter in the specially designated fields or moving the GR with the help of the mouse. The first

way is more exact and the second one will be helpful when the final coordinates are not defined yet. Between the points P46 and P47 it takes movement along the line, and between the points P47 and P48 – the arc movement; between P41 and P46 IR performs a WAIT command – waits for the object moving along the assembly line to reach the loading area of IR. The process is controlled by means of the discrete signal; between P52 i P53 GD is closing and in figure it looks like the process of gripping the product and the block's parameter acquires "1" meaning; between P50 i P55 GD is opening and it defines the stage of placing a product on the pallet, the block's parameters acquires its "0" meaning.

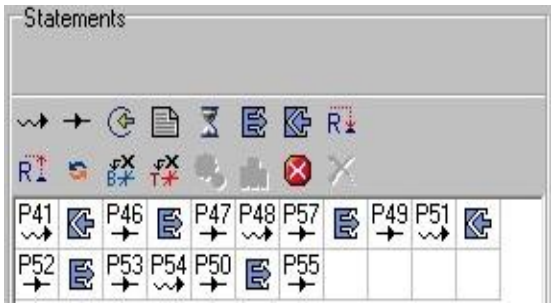

Figure1.2. Sequence object interface

The main advantage of the GD is its simple graphic components import technology. The project development technology is understandable through easy-to-use interface and its graphic programming language IL based on the VR library of commands and parameters. Convenient design and recreation in VR space of working area with the help of electronic catalogue.

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DEVELOPMENT OF THE OZONE SATURATION APPARATUS WITH TIMER AND REMOTE CONTROL

Having analyzed the literature sources of medicine, having studied the materials of the XI Medical Conference and the VII International Congress of IMEOF, as well as investigating the influence of the ozone therapy on living organisms, the following features can be distinguished:

- Powerful antibacterial, antiviral, antifungal, anti-inflammatory properties;
- Improves rheological properties and blood microcirculation;
- Increases the supply of tissue with oxygen, removes the phenomenon of hypoxia of organs;
- Facilitates the treatment of bronchial asthma, tuberculosis, pneumonia, allergies, and otolaryngologic diseases;

There are different types of classifications of modern ozonizers, on the principle of ozone obtaining:

Quiet discharge. Synthesis of gaseous oxygen under the influence of a quiet electric discharge. To this end, air or pure oxygen is passed into the gap between the electrodes connected to the high voltage source. The voltage applied to the electrodes is usually from several thousand to several tens of thousands of volts.

Barrier discharge. The discharge occurs between two dielectrics or a dielectric and a metal in an AC circle, is an efficient and economical ozone generator.

Arc discharge. When receiving ozone it is possible to use arc discharge the same way. The thermal dissociation of molecules increases dramatically with the temperature increase. Thus, at T = 3000K - the content of atomic oxygen is ~ 10%. Such temperatures (several thousand degrees) can be obtained in the arc discharge of atmospheric pressure. However, the formation of O_3 is not feasible at high temperatures, as ozone decomposes faster molecular oxygen, but you can create non-equilibrium conditions like heating the gas in a high-temperature chamber, and then quenching. This makes it possible to balance the ozone formation. Ozone is obtained as an intermediate product when the O_2 + O mixture is transferred to molecular oxygen. The maximum concentration of O_3 in this variant of plasmatron reaches 1%.

Corona discharge. It is formed when the electric field around the conductor is highly heterogeneous, in the air there is an ionization accompanied by glow, the conductor is surrounded by a so-called crown. The glow of the crown does not reach the opposite electrode, fading in the surrounding gas. Depending on the crown electrodes distinguish between the negative and the positive crown, and depending on the mode of supply, that is the crown of the direct and alternating current, pulse, etc. The number of ozone formed in the corona discharge ranges from 15 to 25 g per kWh.

Synthesis under the influence of ultraviolet radiation. It lies in the fact that the oxygen-containing gas is passed through a cooled and transparent ultraviolet radiation (for example, quartz) reactor irradiated by a source of ultraviolet radiation having a corresponding spectrum. The gas, as a rule, is embodied in the form of pure oxygen.

All methods have a number of advantages and disadvantages. For example, ultraviolet light syntheses are simpler to implement, but far less productive than all other methods. Therefore it is not used in industrial devices.

For non-industrial scale, it would be advisable to use the quiet method as its performance is rather high, and the complexity and cost of realization is moderate. The following is a block diagram of the apparatus for generating ozone.

Fig.1:

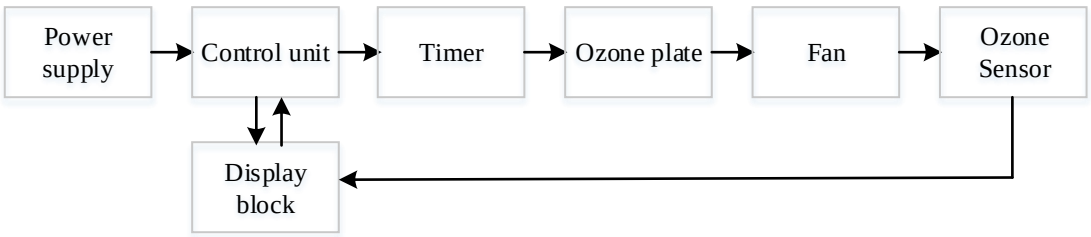

Fig.1: An apparatus for generating ozone

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KEY TRENDS OF SMART HOME DEVELOPMENT

In today's world technology is advancing with a fast pace, radically changing our lives. A lot of companies which produce various household appliances and gadgets implement some kind of artificial intelligence technologies in them. Moreover, these devices can be linked into a single network. This enables them to "communicate" with each other and with the host, thus forming a system of "smart house". Of course, such systems are a far cry from real smart homes from science fiction shows, where systems of artificial intelligence behave like a human, fully in charge of the house and are able to create Virtual Reality. But this is only the beginning. In the past the concept of "smart home" often meant a system of remote control of light, heating and washing machine. Today this concept has become much wider. Nowadays there are "smart" materials, programs for smartphones that allow you to control appliances at a distance. They can do cleaning for you and many more. We have identified three main technologies that can change our houses and become their integral part in the future.

1. Drowning In To-Do Lists

For my smart home podcast series, I've been interviewing my friends to find out what tools they use to manage their list of to-do's. "I keep them in a Google doc,"

one friend told me. “I keep it multiple Google Docs,” said another friend. “Each one is dated, and I when I think I’m no longer serious about following a list, I simply create another one with a new date.” One guy used Evernote. Best of all was a friend of mine who explained how his to-do lists are memorialized with stickies on his bedroom wall, much to the chagrin of his wife.

While the tools were all different, the one thing that everyone seemed to have in common was a general feeling of failure when it came to crossing enough things off their list and an abiding belief that there was too much to do in too little time. Everyone seemed to be searching for a magic elixir that would save them more time

I often wonder how technology can improve our lives. One area in particular that fascinates me is identifying tasks that technology can handle so that they don’t need to appear on my to-do list, and just as importantly, so that they won't occupy space in my mind. I read once about the dressing habits of people like Steve Jobs and Mark Zuckerberg who seemingly wear the same outfit everyday. Upon closer inspection, it turns out that both men have multiple identical pants and identical shirts. The reason for wearing the same outfit every day? If you always wear the same thing, then there is no decision to make. You can then turn to more important decisions and lead a more productive life.

How, you might ask, are to-do lists and clothes connected to the smart home? I've explored how technology like the smart thermostat or smart lighting could save me money if they only turned on when I was in a room in need of heat or air conditioning or light. That’s interesting, but what’s infinitely more exciting to me is if the smart home could offload my decisions and work by completing tasks independently of me. Fewer decisions that I need to make means more time for me to focus on the things that really matter.

2. A Smart Home Driven By Artificial Intelligence

In many industries, when you interview an ambitious leader, he or she will talk with you about how they will reinvent factory-built housing or the fitness space or retail. However, in some, people will talk about how they are part of an ecosystem and how their success is in large part predicated on the success of other companies in the ecosystem. In the case of the smart home, almost all of the players I interviewed talked about a future where the holy grail was a home driven by Artificial Intelligence.

Think of Artificial Intelligence as computing power that is able to perform particularly complex tasks that would otherwise require a human brain to perform. A motion sensor might trigger a light to turn on. But if a home had Artificial Intelligence, it might consider the time of day, the person walking around the home, and where she was walking in deciding which light to turn on and how long to keep it on for. Not every person I spoke to used the words “Artificial Intelligence.” A hot phrase you’ll hear again and again from experts is that a house needs to be “aware” or “contextually aware” before you can bring Artificial Intelligence into the home.

Let’s imagine the universe of things a house can be aware of: it can be aware of the presence of the people who live in the house (along with their personas); it can be aware of what they’re doing; it can even be aware of what every device in the house is doing. If you want the house to think like a human, the house needs to be able to analyze the data a human would analyze before making a decision.

3. Your Home As Your Personal Caretaker

How would it work for a smart home to free me of some of my decision-making? How could it lighten the load for me, literally and figuratively? Let's imagine a day together. You wake up in the morning and your alarm goes off. It's not a buzzer. You want to discover new music on Spotify and this song is on your suggested Discover Weekly list. What's really interesting, though, is not the song. It's the fact that you didn't have to set the alarm the night before.

That's because there is some level of intelligence in the cloud that's watching over you and trying to simplify your life. It knows that today you have a spin class because it checked your workout goals, which then checked availability for a class at SoulCycle, which then purchased the class, which then put it on your calendar. The system was smart enough to calculate travel time and set the alarm appropriately.

You stagger out of bed and walk down the stairs to the kitchen. The coffee just finished brewing. You have your smart home to thank for that. Your yogurt and granola is ready in the exact proportions you want inside the refrigerator. The refrigerator knew earlier in the week that you were running low on breakfast foods and placed an order online. You're in a rush, so you walk out the door and leave for the gym.

There's no time to set the alarm or draw the blinds (which is something you do when you leave the house so that people can't look in while you're away). You don't think to turn off the music or the lights or lower the heat, as you won't need to heat the house to 72 degrees while you're away. It's not that you forget to do all of those things. You just don't have to think about them, because the house knows that you left. It knows to lock the door behind you, to turn off the coffee maker, to pull the blinds, to reduce the heat, to shut off the music, and to turn off the lights.

Today is shopping today. Really, every day is shopping day. The sensors in your drawers measure the toilet paper that is left, and the sensors in the closet monitor cleaning supplies and laundry detergent. You're running low on a few things. The online order is placed. When it arrives, the cameras at your front door will recognize the FedEx truck and coordinate with the lock to pop open your front door. The delivery man's picture will be taken and a gentle voice will come on over your speakers, asking him to set down the packages just inside the house. Cameras will be watching him from beginning to end, and the door will close on its own behind him when he leaves. Your home's robot then proceeds to unpack the items and place them where they belong.

4. A wonderful time for progress ... But there are also difficulties.

Artificial intelligence is a key element of human interaction with a machine. However, the implementation of even simple functions, such as turning on and off the light, is a complicated task, since commands can be formulated very differently: "Turn off the lights in the bedroom" or "Keep the lamp in the baby".

Teaching home assistants to understand different linguistic senses is an important step towards positive user experience. Voice biometrics and intelligent decision-making will help you to come here. For the phrase "Play my favorite song," the home assistant must be able to distinguish the voice of a person and choose music according to their preferences.

To implement the potential of intelligent home systems, market leaders need to collaborate and form unexpected partnerships. This will ensure the emergence of high-quality new devices and services interconnected, which will make the life of the user even easier. Currently, the focus of the experts is the global benefits of smart homes, and for a long time such systems should move from the "bad mother" category to the "must have" category.

In the end, security and reliability are key parameters that should remain at the height of the evolution of technology for housing. For example, given the fact that the voice command can activate the security-related function, it is necessary to ensure the exact delimitation of a certain person's live voice and audio recordings in order not to hit the catchers. And soon we can all have Iron Man technology or a computer to manage our home, car, and home appliances.

Undoubtedly, artificial intelligence and systems of "smart house" are our future. And this is not only convenient, but it also preserves the planet's condition and saves our time.

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METHODS OF TEXT RECOGNITION

In the course of everyday activities, government structures, business, and academic institutions educational institutions use a large number of paper documents, most of which are handwritten. A large amount of data and knowledge is contained in printed or handwritten documents that are archived. The need is growing digitization of paper documents in order to further process their content computerized computer systems.

Text recognition can be divided into several areas that are sufficient significantly differ in their methods of solving. The text can be printed either manuscript. Any of them can be extra structured. For example, Formulas can contain different levels of records, such as superscripts, sublines, special marks for mathematical actions, etc.

To date, there are a number of methods that solve the problem print text recognition, but there are still no systems capable of to recognize any handwritten

text [1]. Existing systems can suffice not qualitatively recognize specific handwriting. Therefore, the task of development is relevant handwriting recognition method that will allow you to process it handwritten documents.

Before the text is recognized, there is always a previous one processing the input image. The first step is to improve the quality image. At this stage, increase the contrast and sharpness of the image, as well as filtration from noise. The next step is segmentation [2], by which the structure of the text is determined. Segmentation somewhat different for printed and handwritten text. In both cases lines, words and letters are highlighted, but for the printed text segmentation letters are much simpler and occurs similarly to segmentation of words - for using the method of horizontal and vertical profiles [3]. For handwriting segmentation at the level of the letters is more complex: the letters can merge into one segment or vice versa, one letter disintegrate into several segments. It's greatly complicates the recognition task.

After preliminary preparation, methods of recognition of handwritten and the printed text is more significant. For printed text the comparison of segmented letters with different standards is used fonts. Finding a match with one of them, for example, the first letter, The remainder of the text is cyclically recognized by comparing all the selected ones Segments with letters of a specified font.

There are two approaches to recognizing handwriting recognition online and offline [4]. The first involves recognition directly at a time writing text and using algorithms to write characters that take into account the trajectory of the movement of the pen - the subject of writing. This approach is called online recognition. To date, the task This recognition for most languages can be considered solved. Contemporary Electronic notebooks use it extensively. The second approach is aimed at handwriting recognition that was written in advance. Offline recognition is much more important because the number is already written the text is enormous. The roblem is this recognition in the general case still not resolved.

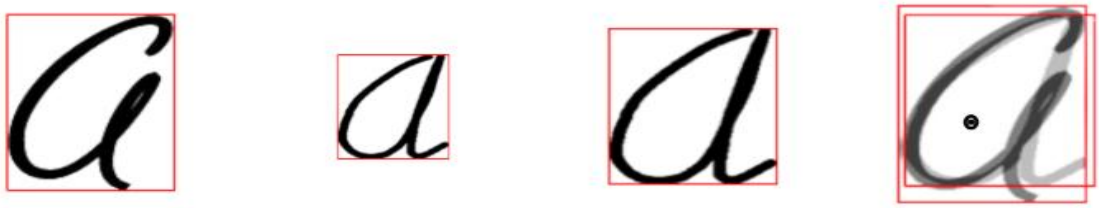
There are two main types of methods for solving the problem of text recognition offline - structural and standards, as well as their combinations [4].

Structural methods are based on the selection and analysis of various structural elements of the symbol, their features and properties. Each letter is divided into knots and curves that connect them. On the basis of a set of such data is done conclusion which letter is written. However, there is a problem with that most of the letters are written not calligraphically and, accordingly, are not clear connections.

First, you need to conduct a preliminary study for each individual sample handwriting by creating the necessary reference base for this purpose. Letters fit into the rectangle in such a way that its sides are tangent to them. The letter shown in Fig.1.a - standard, in fig. 1.b - a letter separated from text using segmentation. An additional condition for comparison is the same scales of letters. Since the size of the selected segment for the letter, which need to recognize, and the letters from the database may differ, then in the second step you need to scale (Fig. 1.c). Often the linear dimensions are highlighted segment and template in horizontal and vertical planes simultaneously may not coincide, as even letters written by one person in part

are different. However, there is enough coincidence horizontally or vertically (Fig. 1.a, 1.c).

The comparison of the selected segment with the standards takes place in such a way that their centers of mass coincide (Fig. 1.d). The litera has the most coincidence with a letter from the base being a copy of it, and may also be added to the base for further training.



a) b) c) d)

Fig.1. An example of horizontal-aligned letters.

The proposed method provides the ability to recognize handwritten text given sample. Its advantage is the ability to compare letters that do not have identical linear sizes. Due to the fact that it is enough to compare only centers of mass, the speed of accurate overlay of letters increases, due to reduce the number of overlays and mutually shifted images for the correct one positioning.

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METHODS OF INTELLECTUAL DATA ANALYSIS

Regression analysis

Regression analysis is the main statistical method for constructing mathematical models, thanks to which the construction of objects and phenomena is carried out on experimental data. This is a section of mathematical statistics that deals with methods for analyzing the dependence of different types of quantities from each other.

The method of regression analysis should be used when the ratio of variables can be expressed quantitatively in the form of some combination of these variables. The combination to be obtained is used to predict the values that can be taken by a dependent variable that is calculated by a given set of values of the independent (input) variables. To solve the simplest cases standard statistical methods are used, for example, such as linear regression. But a large number of real models do not fit into the framework of linear regression[1, p.57]. For example, the stock prices or size of sales are very difficult to predict, because they can depend on a set of interconnections of variables. Thus, comprehensive methods are needed to predict future values.

The regression analysis contains all the results of observations in order to determine the equations that could most accurately fit the size of the variable and the constant components of total costs. While applying this analysis to determine the function of expenditure, the total amount of costs is considered as a variable, which depends on the factor acting as an independent value. The linear relationship between independent and dependent variables can be described using the mathematical expression (regression equation) formula (1):

$$y = a + bx \qquad (1)$$

where u - total costs; a - constant component of total expenses; b - variable costs; x - volume of activity.

The purpose of the regression analysis is to establish a specific analytical dependence of one or several effective indicators from one or more sign factors. As a result, the regression equation is used for a meaningful description of the investigated forecasting process, the choice of an optimal variant. If the factors of the regression are included in the regression equation, taking into account the possible random behavior of the resultant trait, then such an expression is a regression model of a phenomenon or process. Often, the regression equations are used, which reflect the relationship of one resultant sign to one (pair regression) or several (multiple regression) factors-signs[2].

After the statistically significant relationships between the variables and their degree of similarity is found, namely, the correlation analysis is conducted, they usually pass to the use of regression analysis methods, that is, mathematical description of the types of dependencies. For this purpose, a class of functions is selected that connects the result index in y and the arguments $x_1, x_2, \dots x_n$, analyze the accuracy of the equation obtained, and calculate the estimates of the parameters of the communication equation[3].

To determine the formulas, it is rational to use the method of least squares, which allows us to select such parameters of the equation that set the line that is most closely related to the empirical data and allows you to calculate the elements a and b

in the way that the sum of the squares of the distance from all points of the population being studied, before the regression line is the smallest (2).

$$a = \frac{y}{n} - \frac{b\ x}{n};$$

$$b = \frac{n\ \ xy-(\ \ x*\ \ y)}{n\ \ x^2-\ \ x^2} \qquad (2)$$

An example of using the least squares method to calculate enterprise costs.

In order to determine the cost function, we will provide the data in the following form:

Table 1.1

Data for determining the cost function by the least squares method

Month	Product volume thousand pieces (x)	Costs of maintenance of equipment thousand UAH, y	xy	x^2
January	10	15	150	100
February	12	18	216	144
March	20	22	440	400
April	15	17	255	225
May	21	25	525	441
June	13	15	195	169
July	13	15	195	169
August	19	21	399	361
September	11	12	132	121
October	14	16	224	196
November	16	19	304	256
December	18	23	414	324
Together	182	218	3449	2906

Substituting these values into the formula for indicators b and a, we obtain the following values:b = ((12 × 3449) – (182 × 218)) : (12 × 2906) – 182^2 = (41388–39676) : (34872 – 33124) = 1712 : 1748 = 0,97 (UAH);

a = (218 : 12) – 0,97 × (182 : 12) = 18,16 – 14,71 = 3,45 (thd UAH).

Consequently, the cost function calculated on the basis of the least squares method will have the following form (3):

$$y = 3450 + 0{,}97x. \textit{(3)}$$

In statistics, linear regression is a method of modeling relationship between a scalar y and a vector variable x. In the case where the variable x is also a scalar, regression is called idle time.

Linear regression is a model of the dependence of the variable x on one or more other variables (factors, regressors, independent variables) with a linear dependence function.

Лінійна регресія відноситься до задачі визначення «лінії максимальної відповідності умовам» через набір точок даних і стала простим попередником нелінійних методів, які використовують для навчання нейронних мереж.

Linear regression determines the problem of the "line of maximum compliance" through a set of data points and has become a simple precursor to nonlinear methods used to teach neural networks.

The linear regression model is defined as (4):

$$y = B_0 + B_1 x_1 + \cdots + B_k x_k + u \qquad (4)$$

where y is a dependent explanatory variable, $(x_1, x_2 , \dots , x_K)$ - independent explanatory variables, u - random error whose mathematical expectation is zero.

Linear regression should be used in the statistical analysis of manufactured products, for example, to model the dependence of manufactured products, depending on the production period.

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ARTIFICIAL INTELLIGENCE IN MEDICINE

Every generation and every person on this planet would like to be healthy and has always sought to prevent diseases, the number of which is growing every day. Today, with the rapid development of technology, those diseases that previously seemed impossible to cure, due to which entire populations died, are now cured, and rather quickly. However, at the same time there are many diseases that a person is not ready to cope with at that moment. Fortunately, science does not stand still, and with the development of artificial intelligence, people use it not only in the areas of robotics, automation, but also in medicine.

Artificial intelligence began to develop not so long ago in 1956, so it is a rather young area of research [1]. Artificial intelligence provides the opportunity for machines to learn, think, perform various actions and help people, expanding our

possibilities. Scientists and experts who work in the field of developing artificial intelligence believe that it has great potential and in the near future it will be ready to change our lives radically in all its spheres.

Today, artificial intelligence allows researchers and doctors, who deal with problems related to cancer to determine which additional tests should be done to the patient or which treatment would be better to prescribe. This application was developed by IBM and is a self-learning decision support system. This system includes data on all the latest clinical trials in the fight against malignant tumors, recently discovered symptoms of cancer and the results of tests of each participant in clinical trials. The program contains 600 0000 medical reports, including data on molecular and genetic research in the field of oncology. Now the doctor can examine in detail all the information that the program provides him and make further decisions on that basis.

Artificial intelligence could not only provide assistance to doctors whose work is related to oncology problems but also began to be used for diseases associated with heart attacks.

The proofs are two companies IBM and Astrazenek, which, in March 2019, are presented a neural network that will be able to predict the presence of the heart attack. Many studies have been conducted, which resulted in many data on age, sex, bad habits, as well as laboratory results, information on treatment and almost 40 other indicators among 26 986 adults hospitalized from 38 urban and rural hospitals in China.

All the data obtained were loaded into the neural network, the task of which was to find out whether the patient had any heart disease or not, and whether the patient received drugs that reduce the appearance of coronary insufficiency and prevent myocardial infarction and stroke. After that, scientists began to carry out clustering, in order to distribute patients into seven groups based on data obtained by the neural network. Patients who are prone to frequent cardiovascular diseases such as heart attack or stroke but have a low incidence of coronary heart disease were assigned to the first cluster, and patients with severe cardiovascular disease, but without a previous heart attack, was attributed to another cluster.

Based on the research it turned out that for those patients who attributed to the first cluster the main predictor of the next heart attack was the presence of diabetes mellitus, while for patients referred to the second cluster, the main predictors were elderly age and increased systolic blood pressure.

Nevertheless, scientists working on this neural network argue that although clustering plays a role in the prognosis of the disease, it is still not entirely clear whether this data can be effectively used in clinical practice.

However, their work demonstrates that cluster analysis based on artificial intelligence is a promising approach for classifying patients with myocardial infarction, and perhaps in the future, scientists will be able to achieve great success using the capabilities of artificial intelligence. [3, 4]

However, despite the fact that artificial intelligence began to be used rapidly in medicine, there are also concerns about the loss of human participation in such an important and people-oriented profession.

Soon artificial intelligence will be able to replace 60% of professions according to forecasts of researchers at Oxford University. Whole communities of scientists, researchers and futurologists have already formed in the world, who are convinced that the emergence of artificial intelligence will lead to irreparable consequences - the domination of the machine over man in the near future.

Many technology innovators, such as theoretical physicist Stephen Hawking, Microsoft's founder Bill Gates, and Tesla's founder Ilon Musk, have some fear that people might lose control of super intelligent machines, and artificial intelligence will do more harm than good. Therefore, we need to feel the facet and not to overstep it. [5]

Now I believe that it is impossible to evaluate artificial intelligence as something good or bad. Artificial intelligence is positive if it is about replacing the routine work, improving and preventing doctors' mistakes that are related to the human factor. On the other hand, if people strive for something more and want to make artificial intelligence similar to us, then I think it can lead to the negative consequences.

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"P-ALGORITHM" METHOD MODIFICATION

In practical terms problems of locating physical field sources to fixed landing places occur quite often. They arise in industry (optimal placement of sources of pollution, sound), in the design of devices for radio-electronic equipment (providing optimal temperature mode of the chip).

Substantial problem setting

There exist: an area; sources of physical field; landing places and checkpoints. It is necessary to place the sources of the physical field on the seats so that the maximum of the field values at the control points will be the smallest. Each source should occupy one seat and one source should be assigned to one seat.

The physical field generated by the placed sources and the boundary conditions at the margin of the region is described by the linear problem of mathematical physics.

Mathematical model of the problem

Limitation:

$$\begin{cases} \sum_{i=1}^{N} x_{ij} = 1, j \in 1:\mathrm{N}, \\ \sum_{j=1}^{N} x_{ij} = 1, i \in 1:\mathrm{N}, \end{cases} \quad (1)$$

$$x_{ij} \in 0,1, i \in 1:\mathrm{N}, j \in 1:\mathrm{N}, \quad (2)$$

Goal function:

$$f(x) = \max_{k \in 1:K} f_k(x) \to \min, \quad (3)$$

where $f_k(x) = \sum_{i=1}^{N}\sum_{j=1}^{N} c_{ij}^k x_{ij}$, c_{ij}^k – the contribution of the i-source located at the j-landing place to the field values at the k-control point.

Computational scheme of the "P-algorithm" method:

1. The starting basis $\bar{x}_0^0$ for which the point x^0 corresponds is selected.

2. Let be the basis to which the point x^r corresponds, then:

2.1.The set is being constructed:

$$K_{\max}(x^r) = \{k \in 1:K \mid f_k(x^r) = f(x^r)\}.$$

There are $\bar{x}_s^r$ potentials $u_i^k(\bar{x}_s^r), v_j^k(\bar{x}_s^r)$ and ratings $\Delta_{ij}^k(\bar{x}_s^r)\ \forall k \in 1:\mathrm{K}$.

2.2.If at least one $k \in K_{\max}(x^r)$ does not have any positive evaluation, then $x^* = x^r$ it is a global minimum of the task, the end of the algorithm. Otherwise - the transition to p.2.3.

2.3. A set of cells is found $I(\bar{x}_s^r)$, each element of which satisfies the following condition:

$$\forall k^* \in K_{\max}(x^r) \text{ виконується } \Delta_{i^* j^*}^{k^*}(\bar{x}_s^r) > 0.$$

If it is empty, then the transition to p.4 is carried out. Otherwise - the transition to p.2.4.

2.4. Among the elements $I(\bar{x}_s^r)$ of the plural that one is chosen which satisfies the condition: $f_k(x^r) - \Delta_{i^* j^*}^k(\bar{x}_s^r) < f(x^r), \forall k \notin K_{\max}$. If these do not exist, then the

transition to p.4. If there are several such elements, then the one that first leads to a single carriage should be selected. Let's denote it through i^*, j^*.

3. If the value of transportation equals to one, then a new point x^{r+1} to which the basis $\bar{x}_0^{r+1}$ corresponds is obtained. r increases by one, and s is assigned to zero. Otherwise we get the same point x^r, but another basis $\bar{x}_0^{r+1}$. r does not change, but s increases by one. Transition to p.2 is underway.

4. The solution $x^* = x^r$ is chosen. x^* is the stationary point of the method.

The disadvantage of this method is that its performance is greatly reduced by increasing the number of control points. Therefore, a modified "P-algorithm" was developed where the procedure for constructing a cycle that takes most of the time at each step of the solution of the problem is optimized. It is based on the potential method using tree-like structures [1].

To improve the work of the method, it is proposed to use parallel computations in its program implementation. In parallel, the calculation of potentials and estimates at each of the control points at each step of the algorithm is carried out.

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ELECTRONIC COMMERCE

Today more and more people prefer to buy goods via Internet. A lot of different shops have their electronic versions in the Internet. Indeed, it is very convenient way to do shopping and it gives opportunity to make orders from anywhere. E-commerce it is not only about selling products online, but it can also describe any kind of commercial transaction that is facilitated through the Internet.

E-commerce is the activity of buying or selling of products by using online services or over the Internet. Electronic commerce draws on technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory

management systems, and automated data collection systems. Modern electronic commerce typically uses the World Wide Web for at least one part of the transaction's life cycle although it may also use other technologies such as e-mail. Typical e-commerce transactions include the purchase of online books (such as Amazon) and music purchases (music download in the form of digital distribution such as iTunes Store), and to a less extent, customized/personalized online liquor store inventory services [1].

There are four main types of ecommerce models that can describe almost every transaction that takes place between consumers and businesses. Business to consumer (B2C): when a business sells a good or service to an individual consumer. Business to business (B2B): when a business sells a good or service to another business. Consumer to consumer (C2C): when a consumer sells a good or service to another consumer. Consumer to business (C2B): when a consumer sells their own products or services to a business or organization [2].

Online shopping was invented and pioneered in 1979 by Michael Aldrich in the United Kingdom. He connected a modified domestic television via a telephone line to a real-time multi-user transaction processing computer. The system was marketed beginning in 1980 and offered mainly business-to-business systems that were sold in the UK, Ireland, and Spain. One the earliest consumer shopping experiences was Book Stacks Unlimited, an online bookstore created by Charles M. Stack in 1992. Stack's store began as a dial-up bulletin board two years before Amazon was founded by Jeff Bezos. In 1994, Book Stacks Unlimited moved to the Internet as Books.com and was eventually acquired by Barnes & Noble [3].

Amazon and eBay are the two companies responsible for revolutionizing e-commerce. Amazon in particular created one of the first full-scale business models for online retail. Jim Bezos, Amazon's founder and CEO, sold the company's first ever book in July 1995. Within its first month of business, Amazon had sold books to shoppers in every state and 45 countries. During the same year that Bezos launched Amazon, eBay got its start. Pierre Omidyar started a site called AuctionWeb that allowed users to bid on each other's used items. It was innovative in its own way, leveling the playing field so that the average person, rather than just entrepreneurs and tech experts, could sell things online. And the idea really caught on: By 2007, eBay was earning $52.5 billion in auctions and had more than 220 million users [4].

So, e-commerce is the newest way to do business online, shopping and processing online transactions. It is future of selling, buying and promoting products. We don't need going anywhere and looking for appropriate shop, we need only to have the device which supports internet connection. This domain is still developing and growing, so there is a great chance that in future it will get bigger part of market.

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SYSTEM OF AUTOMATIC CONFIGURATION OF TELEMECHANIC DEVICES

The automatic configuration system or the configurator of telemechanic means is a programme (or an application) that functions as an user interface and allows you to create and set up a telemechanics system quickly, conveniently, without highly qualified personnel assistance. Configurator is the implementation of the principle of using templates: if there is a class of typical tasks, they can be solved automatically, with minimal involvement of human resources. But the configurator should not be just a set of ready-made templates.

In particular, there is a whole class of setup tasks, which even a high-level specialist would like to solve in a template mode. This is the initial setup task that occurs when you install the system.

Firstly, during installation, you need to configure all system parameters at once, or at least set them to some default state. The number of such settings is calculated by thousands, and there is always the probability that a person will make a mistake. The use of templates during setup reduces the likelihood of an error, and if even it occurs, then it will have minimal impact, and it can be fixed later.

Secondly, the complete manual prescription of all the modern system parameters, even with the use of appropriate guieds, takes too much time.

Thirdly, the majority (practice shows that about 80%) of default settings, if they are placed automatically or on the basis of a short dialog, are not to be changed. This is the setting of the language, hardware, network, etc.

The main advantage of the configurator is the fulfillment of the user's tasks. The wider the range of these tasks, the more interesting the configurator is.

Since the configurator sets up to the telemechanics system itself, it has a wide range of applications: energy facilities, mines, tramway and trolleybus establishments, city outdoor lighting, railways, undergrounds, large industrial facilities, oilfields, airports, water channels.

The structure of the modern telemechanics system or the one-level information and control telemechanical complex (ICTC) contains the following main components (Figure 1): CTS – central transmitting station (control point device); RTU – remote terminal unit (controlled point device); CSh – controlling shield (or interactive video wall); CC – controller console; SRMCS – sensors of reported, metrological, code signals; EM – executive mechanisms; PC – personal computer; devices can be connected by RCL – radial communication lines; TCL – trunk communication lines; ChCL – chain (or transit) communication lines.

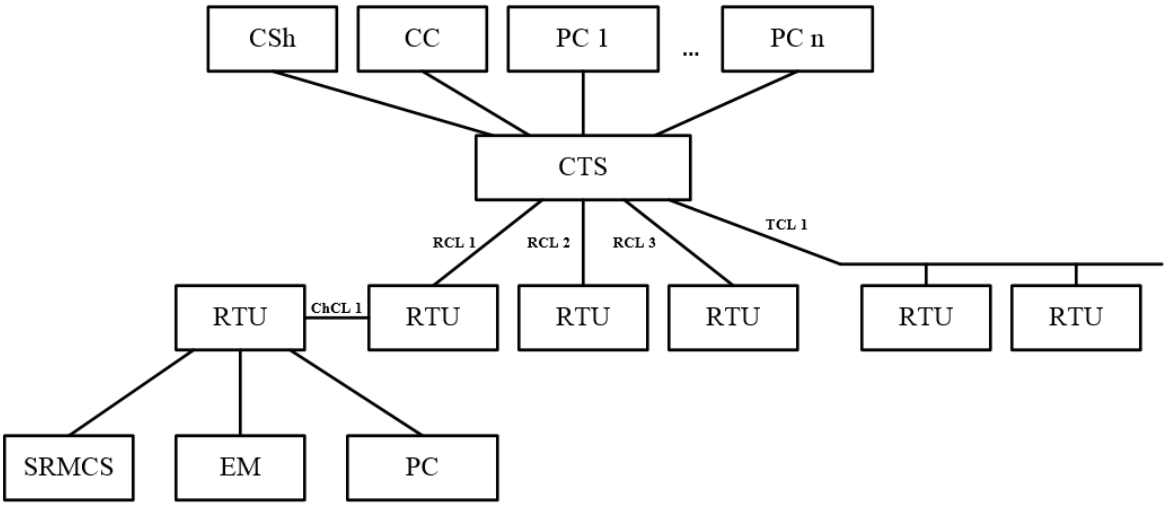

Figure 1 – The structure of one level ICTC

The structure of the multilevel ICTC is characterized by the fact that it consists of two or more CTS. A direct information link has been organized between RTU at different levels. ICTC acquires the rank of the network system. Control point devices RTU can be constructed according to different principles: main-modular, distributed, mixed.

It is proposed to develop a configurator that meets all of the above requirements and works with telemechanical devices in accordance with the protocols IEC 870-5-101, IEC 870-5-104, Modbus RTU, Modbus TCP, Granite, Granite Micro. The device has an ergonomic look and localization in three languages – Ukrainian, English and Russian.

The user familiarizes with the configurator starting with the representation of the main components of the system in a tree-like form. By selecting one of the tree nodes, you can get all information about this object. If the information about the object is too much, then the possibility of opening an additional window with its extended description is provided. For example, for RTU it is implemented in the form of a window where the graphic form clearly depicts the selected RTU, its modules and channels, which it combines with the upper and lower RTU according to the hierarchy. In parallel with this, a more detailed tree structure is displayed and when the node is selected, its full description is also given. Each object in the system has an individual identification number (ID), which allows to work effectively with objects that are not structurally linked. The visibility of the user interface provides an easy way to understand the structure of the telemechanical system and quickly configure the necessary tools, add sensors, expand or vice versa – to remove some devices.

The project is saved in xml format. It provides the ability to easily complete or modify the model without significant costs, which allows the specialist to configure the telemechanical system remotely or analyze it without the use of any specific software. The configurator is designed with the use of C #, because it fully utilizes the new .NET features, supports many modern information display technologies, interactions with different databases, etc.

Possible dependencies between objects of the user and system models are considered as well. When a change in a small part of the upper level leads to a change in the part of the lower level dependent on it, this change will also affect the other parts of the upper level.

A very urgent question is the dependence of the program modules. Therefore, the configurator must be able to fix the situation of modules conflict, otherwise the development of each new addition will be an issue more and more laborious and unreliable.

The "correct" configurator should provide convenient tools for simulating user and system areas, for writing the logic of converting from the top to bottom and the reverse to create the interface, as well as the tools for interaction between the modules and their control.

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INTERNET FROM DREAM TO REALITY

Internet is a worldwide system of integrated computer networks for storing and transmitting information. It is often referred to as the World Wide Web and the Global Network, as well as simply the Web. It is built on the basis of the TCP / IP protocol stack. On the basis of the Internet, the World Wide Web (WWW) and many other data transmission systems operate.

By mid-2015, the number of users reached 3.3 billion people. In many respects this was due to the widespread use of cellular networks with 3G and 4G Internet access, the development of social networks and the reduction in the cost of the Internet traffic.

The first research program in the direction of rapid messaging was introduced by Joseph Liklayder, who published his work of "Galactic Network" in 1962. It was reinforced by the work of Leonard Kleinrock in the theory of packet switching for data transmission (1961-1964). In 1962, Paul Baran of RAND Corporation produced a report “On Distributed Communication Networks”. He suggested using a decentralized system of interconnected computers (all computers on the network are equal), which, even with the destruction of its part, will work. This solved two important tasks, namely ensuring the system working capacity and the indestructibility of data that are stored on computers spaced apart from each other.

It was suggested to transmit messages in digital, rather than in analog form. The message itself was proposed to break into small portions i.e. "packages" and transmit all the packets simultaneously over a distributed network. From the discrete packets received at the destination, the message was "collected" again.

In 1967, Larry Roberts proposed to connect the computers ARPA. Work began on the creation of the first Internet network ARPANet. At the same time, Donald Davis developed the concept of the Network in England and added a significant feature - computer nodes should not only transfer data, but also become translators for various computer systems and languages. It is Davis who introduced the term "package" to refer to fragments of files that are sent separately.

Development of such a network was entrusted to the University of California in Los Angeles, the Stanford Research Center, the University of Utah and the University of California in Santa Barbara. The computer network was named ARPANET (English Advanced Research Projects Agency Network), and in 1969, the network united the four mentioned scientific institutions in the framework of the project. All works were funded by the US Department of Defense. Then the ARPANET network began to grow actively and develop and scientists from various domains began to use it.

The first ARPANET server was installed on September 2, 1969 at the University of California (Los Angeles). Computer Honeywell DP-516 had 24 KB of RAM.

A communication session held October 29, 1969 at 21:00 between the first two nodes of the ARPANET network, located at a distance of 640 km - at the University of California Los Angeles (UCLA) and at the Stanford Research Institute (SRI). Charlie Kline tried to perform a remote connection from Los Angeles to a computer in Stanford. The successful transmission of each symbol was introduced by his colleague Bill Duvall (Bill Duvall) from Stanford confirmed by phone.

For the first time, it was possible to send only two symbols "LO" (originally intended to be transferred to "LOG") after which the network ceased to function. LOG had to mean a LOGIN (logon command). In working condition, the system was returned by 10 p.m., and the next attempt was successful. This date can be considered the birthday of the Internet.

In 1973, the first foreign organizations from Great Britain and Norway were connected to the network via a transatlantic telephone cable, the network became international.

In the 1970s, the network could not easily interact with other networks built on other technical standards. By the end of the 1970s, data transfer protocols began to develop rapidly, which were standardized in 1982-1983. John Postel played an active role in the development and standardization of network protocols. On January 1, 1983, the ARPANET network switched from the NCP (The Network Control Protocol) protocol to TCP / IP (Transmission Control Protocol / Internet Protocol), which has been successfully used so far to unify (or, as they say, "layers") networks. The term "Internet" was assigned to the ARPANET network in 1983 [1].

In 1984, the ARPANET network had a serious rival: the National Science Foundation of the United States (NSF) established an extensive inter-university network NSFNet (English National Science Foundation Network), which was made up of smaller networks (including the then known Usenet and Bitnet networks) and had much greater bandwidth than ARPANET. About 10 thousand computers were connected to this network for a year, the name "Internet" began to smoothly pass to NSFNet [5].

In 1988, the Internet Relay Chat (IRC) protocol was developed, making it possible to communicate real-time (chat) on the Internet.

In 1989, in Europe, within the walls of the European Council for Nuclear Research (CERN), the concept of the World Wide Web was born. It was suggested by the famous British scientist Tim Berners-Lee, who also developed the HTTP protocol, the HTML language and URIs within two years.

In 1990, the ARPANET network ceased to exist, completely losing the competition to NSFNet. In the same year, the first connection to the Internet was recorded over the telephone line (so called "dial-up", English dialup access).

In 1991, the World Wide Web became widely available on the Internet, and in 1993 the famous web browser NCSA Mosaic appeared. The World Wide Web gained popularity.

We can assume that there are two clearly discernible eras in the history of the Web: the era of Mark Andrissen or before Mosaic's browser era and after.

It was the combination of the Web protocol from Tim Berners-Lee, who provided communication, and the browser (Mosaic) from Mark Andrissen, who provided a functionally perfect user interface, created the conditions for the observed explosion (interest in the Web). In the first 24 months that have elapsed since the appearance of the Mosaic browser, the Web has gone through a stage of complete obscurity (beyond the limited number of people within a narrow group of scientists and specialists only one little-known activity profile) to the complete and absolute prevalence all over the world.

In 1995, NSFNet returned to the role of a research network, the routing of all Internet traffic was then handled by network providers, rather than supercomputers of the National Science Foundation [4].

In 1995, the World Wide Web became the main provider of information on the Internet, overtaking the FTP file transfer protocol. The World Wide Web Consortium (W3C) was formed. We can say that the World Wide Web has transformed the Internet and created its modern look. Since 1996, the World Wide Web has almost completely replaced the concept of "Internet"[1].

In the 1990s, the Internet combined most of the networks that existed the, although some, like Fidonet, remained isolated. The union looked attractive due to the lack of unified guidance, and also due to the openness of the technical standards of the Internet, which made the networks independent from business and specific companies. By 1997 there had already been about 10 million computers connected to the Internet, over 1 million domain names were registered. The Internet has become a very popular medium for information exchange.

Currently, you can connect to the Internet through communication satellites, radio channels, cable television, telephone, cellular communications, special fiber-optic lines or electric wires. The global network has become an integral part of life in developed and developing countries.

Within five years, the Internet has reached an audience of over 50 million users. Other means of communication required much more time to achieve this popularity

The idea of applying electrical information communication for business purposes was mentioned in 1908 by Nikola Tesla: “As soon as completed, it will be possible for a business man in New York to dictate instructions, and have them instantly appear in type at his office in London or elsewhere. He will be able to call up, from his desk, and talk to any telephone subscriber on the globe, without any change whatever in the existing equipment. An inexpensive instrument, not bigger than a watch, will enable its bearer to hear anywhere, on sea or land, music or song, the speech of a political leader, the address of an eminent man of science, or the sermon of an eloquent clergyman, delivered in some other place, however distant” [2].

It all started with a small idea about communicating people, accessing information from different parts of the world without the hassle and growing into a

mass culture and the accessibility of all information and services around the world. The connection of the four institutes grew into the World Wide Web, the telephone connection with the 1G, which could be used by people with large incomes, but limited traffic, turned into 4G that anyone can use and not be limited by the access to information and speed. The technology of Wi-Fi overgrows in ViMax with coverage in the whole city. Everything started with a small dream and grew into a social routine.

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AUTOMATION AND COMPUTER-INTEGRATED TECHNOLOGIES

We want to take direct part in the development of information and telecommunication networks, to introduce computer technologies and automated control systems in all spheres of production and human life, and the specialization "Automation and computer-integrated technologies" is exactly for us. Students of this specialty thoroughly study special sections of mathematics, methods of theory of management, decision making and artificial intelligence, modern information technologies, computer systems and networks, methods of processing and protection of information, advanced programming technologies and microprocessor technology. Graduates of the specialty "Automation and Computer-Integrated Technologies" successfully work in design and development organizations, research institutions, computer centers, industrial enterprises in various fields of production, telecommunication enterprises, transport, in the departments of the Ministry for Emergencies, where they apply automation systems, in the emergency system "112",

in the services of telecommunication systems and information technologies maintenance, in the field of software development and management.

The specialty is in all Ukrainian universities. Especially it is widespread in universities in the East, because the branches in which it is used are very common in the Eastern region of Ukraine.

Graduates of the specialty "Automation and Automation on Transport" receive basic scientific and practical training, which allows them to engage in the design and maintenance of automation systems for various technological processes, including automated train control systems. The training of specialists is aimed at studying the principles of building information management and telecommunication systems, studying and improving existing ones, as well as developing new systems of railway automation, studying the technology of operation and repair of such systems.

During study, students acquire knowledge of microelectronics, microprocessor technology, mastering modern computing, information technology, communication systems, microprocessor and relay control systems in railway transport.

All disciplines include a sufficiently serious theoretical part and practical training. Many special disciplines are preceded by the study of natural sciences, mainly physical and mathematical and electrical engineering disciplines.

Theoretical training is supported by laboratory and practical classes. In addition, during their studies, students undergo training, technological production and pre-diploma practice at specialized enterprises and receive appropriate practical skills.

Graduates of the department work in the distances of signaling and communication on railway transport, in design and development organizations, research institutions, computer centers, communication enterprises, various industrial enterprises, where automation systems are used.

Automation – the main technical direction and indicator of the technical level of modern production, because it reflects the content of scientific and technological development of mankind: the replacement of man with technical means directly in the production environment.

The directions of automation of technological processes are quite diverse. The most characteristic features of modernization automation are the rapid development of robotics, rotor and rotor conveyor lines, flexible automated productions that provide high performance.

Robotics – is the creation of technical systems, similar to some of the most important systems of the human body.

In robotics a lot of things are developing, here are just some of them:

• Sensory technology - creation and use of artificial sensory organs for robots;

• section of artificial intelligence and informatics - training of robots for elements of mental activity of a person;

• mechanics – development of mechanical manipulators;

• industrial robotics, or robotics, - designing manipulators ...

Robotics as the highest level of automation of production processes is a prerequisite for the creation of desertuous industries.

The US company Stratasys in 2016 developed a new BD-printer, capable of creating products of various shapes and sizes. Thanks to the three-dimensional Infinite-Build printer, you can not only create the necessary parts in single instances, but also start batch production.

The first Ukrainian auto-mobile unmanned ground on the basis of KrAZ-Spartan successfully passed the test and is ready to replenish the military equipment of the Armed Forces of Ukraine.

The combat machine is operated with the help of the Ukrainian autopilot Pilotdrive. It is equipped with a thermal imaging with automatic zoom function, a video camera with 360 ° coverage, a human presence sensor in the radius of 18 m, rangefinder. These sensors allow you to determine the width of the road and obstacles. The reaction to them is triggered instantly.

You can control a drone using a tablet, "smart gloves" or a camcorder station. Car connection is via WiFi / Wimax, range from 10 to 50 km. In addition, the SmartDrive software and hardware package has the ability to memorize a given route. Its coordinates are transmitted via GPS through the satellite

The new Komatsu dump truck can be called a new generation unmanned car. The driver's cab completely disappeared from the design, which makes the dumper completely unmanned vehicle. In addition, the engineers of the company have developed a new design of the car, which provides more efficient load distribution and road clutter.

Equipped with engines with a total capacity of 2700 hp, an unmanned dump truck is capable of developing a speed of 64 km / h and with a payload of 230 tonnes. It is important that the obstacle detection system can take into account (process) the surrounding environment on all sides of the machine, which gives the ability to dump truck in any direction without the help of the driver or operator.

Now multivarts, washing machines and dishwashers, refrigerators, which can be controlled from a smartphone, a robot vacuum cleaner and even a "smart house", which itself installs and regulates the temperature, light and other modes of life of their masters, is a common reality.

For the first time the term "robot" was used by the Czech writer Karel Chapek in his play "R. U. R "at the beginning of the 20th century, calling so mechanical people.

The first project of human-like work was developed around 1495 by Leo-Nardo da Vinci, whose records contained detailed drawings of a mechanical knight capable of sitting, moving his head and hands, and opened the door.

The first robot-android playing the flute was created in 1738 by a French mechanic and inventor Jacques de Woaksonson. And in 2017, Dubai's first job policemen began to work as field policemen in certain situations.

Robot-humanoid (humanoid robot) is a car, the chassis (chassis) which is executed in the form of a human-like body. Humanoid design is predetermined for a certain purpose: functionality - for use of human instruments or human life environments; with experimental purpose - to study the straightforwardness; with a medical purpose - studying the influence on the body of certain loads, etc. In general,

humanoid work has a torso, head, two hands and two legs; although some types of humanlike robots can only model part of the body, for example, from the head to the waistline. Some human-like work can have a head designed to replicate human facial features (such as eyes and mouth, etc.).

In September 2005, the first human-made works of "Vakamaru" produced by Mitsubishi Company were first released for free sale. A $ 15,000 robot is capable of recognizing individuals, understanding some phrases, giving references, performing some secretary functions, and monitoring premises.

Industrial (industrial) work in recent decades has almost completely replaced human labor in a variety of industries, especially in technological processes, which require precision accuracy, speed and uniformity, the repetition of operations - in engineering and processing of materials, in the production of microprocessors, and even in such technologies as production or drawing up of paper-cardboard containers.

Household robot – a robot designed to help a person in everyday life. At present, the distribution of domestic robots is small, but futurologists predict their widespread use in the near future

The following commercial models of household robots are known:

• work-toys;

• social work that can interact and communicate with people in an autonomous or semi-autonomous mode;

• work assistants, for example:

• work-cleaners (robot-vacuum cleaner, robot for floor washing [6], etc.)

• Robotic lawn mowers

• works for pool cleaning, sewer pipes, etc.

• A combat robot (or Military robot) is an automatic device that can replace a person in battle situations to save lives or to work in conditions of increased difficulty for people for military purposes: reconnaissance, combat operations, demining, etc.

• Combat works are not only machines that partially or completely replace a person and are able to perform anthropomorphic actions, but also those operating in air and water environments (airless unmanned aerial vehicles, submarines and surface ships). The device may be electromechanical, pneumatic, hydraulic or combined.

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PARALLEL COMPUTATIONS IN THE ALGORITHM OF THE GOMORY FOR SOLVING THE PROBLEM OF LOCATING THE PHYSICAL FIELD SOURCES

Large volumes of computation require not only accurate, but also fast results. To increase the efficiency of the calculation of tasks, different approaches and methods of parallelization are used, that is, there is a breakdown of the algorithm into blocks or separate branches that are transmitted to the processors and can be rotated independently of each other.

In order to improve the Gomory algorithm for solving the problems of locating sources of physical field, methods for partitioning the processor capability of a computer have been analyzed and investigated, and one that can be applied to this algorithm is chosen.

The approach that has been chosen is called the Fox algorithm, which includes a conveyor and parallel operations. Its basic principles are:

- parallelization of essentially sequential operations. In this case, this is the transition from one simplex table to another, that is, finding a corner point on the output. By the same principle, the construction of the cut off at each step occurs;
- the connection of processors in such a way that the result of the work of one processor falls on the input of another (linear topology);
- splitting a complex operation into several successive stages, each of which runs its own processor.

We have the basic algorithm:

- processor 1 transmits processor data 2;
- processor 2 adds its data and passes to the processor 3 and so on until the LP solution is obtained. The result is passed to the beginning of the processor 1;
- processor 1 starts checking the integer condition. If the solution does not satisfy the conditions, then a parallel implementation is applied, where each processor calculates its effect, namely, it seeks a fractional part of the free member of the string that does not conform to the integer conditions. And at the end, each processor gives its results of calculations, from which the maximum fractional part is chosen.

- all the results of the calculations of each of the processors are returned to the processor 1, resulting in solving line and the decoupling element;

- the correct cutoff is constructed and the process is repeated again to obtain the optimal solution of the problem: integer or partially integer.

Analysis of the effectiveness of the algorithm. Time Score:

The time of parallel calculations consists of the time of the processor and the time of transfer execution (1):

$$k_e = \frac{\mathbf{T_1}}{T_p} = \frac{\mathbf{1}}{\frac{q}{n} + \frac{\mathbf{2}q(p-\mathbf{1})\boldsymbol{\tau_0} + \boldsymbol{\tau_c}\log_2 p}{\mathbf{2}n^2 - n}} \quad (1)$$

Time to solve m tasks on one processor for the conveyor will look like: $T_1 = mpt$

And its acceleration (2):

$$k_e = \frac{\mathbf{mpt}}{(p-\mathbf{1})t_0 + pt + (m-\mathbf{1})(t+t_0)} \quad (2)$$

After examining the parallelization algorithms, we can conclude that the Fox algorithm, compared with others:

- sufficiently effective at large dimensions of the matrix;
- possibility of parallelization of principally successive operations;
- possibility of simultaneous execution of data transmission and processing (asynchronous operations);
- at parallel use, synchronization is needed, which reduces efficiency. But in this case, the calculations do not contain a large amount of data.

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MACHINE LEARNING

To understand what machine learning is, we need to define the term “artificial neural network”. An Artificial Neural Network (ANN) is an information processing paradigm that is inspired by the way biological nervous systems, such as the brain, process information. The key element of this paradigm is the novel structure of the information processing system. It is composed of a large number of highly interconnected processing elements (neurones) working in unison to solve specific problems. ANNs, like people, learn by example. An ANN is configured for a specific application, such as pattern recognition or data classification, through a learning process. Learning in biological systems involves adjustments to the synaptic connections that exist between the neurones. This is true of ANNs as well.

The first artificial neuron was produced in 1943 by the neurophysiologist Warren McCulloch and the logician Walter Pits. But the technology available at that time did not allow them to do too much. And the first algorithm of machine learning was opened in 1949 by Canadian psychologist Donald Olding Hebb. So this technology is not very old as you see.

So, machine learning is the field of study that gives computers the capability to learn without being explicitly programmed. The basic premise of machine learning is to build algorithms that can receive input data and use statistical analysis to predict an output while updating outputs as new data becomes available. It is one of the most exciting technologies that one would have ever come across.

Machine learning is an extremely useful technology. We can use it in all spheres of our life. In education we can use it to check handwriting by a computer. Let’s take, for example, external independent evaluation in maths, when computer checks handwritten answers. It is also used to study the autopilots of autos, artificial intelligence and different robotic areas. Activities, where machine learning is used, improve their performance in many times. But in Ukraine we can learn this technology only with the help of online courses or in specialized schools. And it is strange, because we have many vacancies connected with machine learning in Ukraine.

So, the field of machine learning is of great importance, because it is the technology of the future! Without it we will lag behind the external IT labor market. Because machine learning is taught by the best educational institutions abroad, such as Carnegie Mellon University (Pittsburgh, PA), Massachusetts Institute of Technology “MIT” (Cambridge, MA), California Institute of Technology (Pasadena, CA) and others. When we start learning it in Ukrainian institutions more hard, we will have a significant improvement of the economy and new foreign investments for our IT field.

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VIRTUAL AND AUGMENTED REALITY – DEFINITION AND SPHERES OF APPLICATION

In recent years, each of us has heard about incredibly fast progress in technology field. Two of the most interesting and most promising technologies that already have many fans and spheres of application are virtual and augmented reality.

Virtual reality or VR represents environment generated by computer that a person can interact with through their visual, auditory, and even tactile perception [1]. This reality can simulate both the influence and the reaction to it. Usually this environment is used to simulate the real-world objects with physical laws (such as gravitation, properties of water, collision etc.). Currently it is increasingly used for entertainment purpose, especially computer games. Nevertheless, sometimes laws of physics and rules of real life are ignored, and users are allowed to do more than in real life.

For today, there are two main types of VR-systems. The first one represents a room with environment projected on the walls. For example, cave automatic virtual environment, better known as CAVE, is an immersive virtual reality environment where projectors are directed to between three and six of the walls of a room-sized cube. And the other, which is the most popular for today, is a headset that contains a display and headphones. For the purpose of interacting through tactile perception special VR equipment is used – gloves usually combined with headset.

Besides gaming, VR is used in numerous spheres of human activity. These include the following: training, watching a video. Training such specialists as pilot of a plane, dispatcher, rescuer, astronaut with real flights and operations is really expensive and sometimes dangerous for life. That's why companies use special VR equipment – simulators, which enable training specialists with lower expenses and risks to life [2]. Watching videos with VR headset gives user an opportunity to immerse in the atmosphere of this video. Games, that use virtual reality allow a person to take their game character`s place. VR technologies have already penetrated in versions of such successful games as The Elder Scrolls V: Skyrim, Star Trek, Doom, Borderlands 2 etc. Also, there a lot of games that simulate races, flights, music instruments, sport games, etc.

Unlike virtual reality (environment that is fully generated by computer), augmented reality, or AR, is a technology that extends real world by augmenting it with some computer-generated objects or information, which also interacts with a user through their visual or auditory perception [3].

These days the most popular items, in which this technology is inserted, are glasses and smartphones. The great example for showing AR inserted in glasses is Google Glass. These glasses are equipped with a built-in computer with display, which enables a user to see some information right before glasses. Nowadays, these

glasses have built-in virtual assistant developed by Google which provides you with an opportunity to perform particular tasks just by voice command. In smartphones AR uses their camera to get and display information or objects, generated by special software.

Where can it be used? In architecture and design AR can help visualize some projects, by inserting computer-generated objects to real-world view from user's smartphone camera. In educational and tourist purposes it can help people by displaying additional information about objects, buildings and monuments, captured by camera of a smartphone. Like VR, AR is also extensively used in computer games, where a player needs to interact with virtual objects or other players etc.

To sum it up, virtual and augmented realities have already become excellent helpers in our lives. In future the sphere of their application will be extended as they have potential of making human lives easier, safer, more interesting and exciting.

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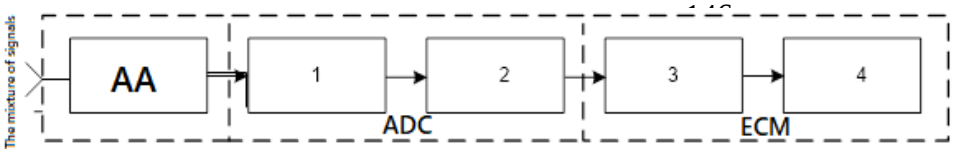
DIGITAL FILTRATION OF A MIXTURE OF ULTRALOW FREQUENCY SIGNALS: METHODS RESEARCH

The most popular methods of separating a mixture of ultralow signals are analog, filtration and spectral. The most appropriate method for each separate task of our research work was chosen. A filtering method was chosen to separate a mixture of signals, and to measure the frequency of signals we chose the spectral method. It is more efficient to use digital methods, that ensure high accuracy and minimum hardware costs.

The main purpose of the study was to allocate the rhythm frequencies of breathing and palpitation. For this purpose, a mathematical model of a mixture of signals was developed. In this case, the signal model should take into account the effect of interference. Also, different frequency correlations of the signal components should be taken into account to determine their parameters more accurately.

The parameters of the signals caused by breathing and heartbeat are significantly different. The developed algorithm for processing the generated signal



and the information that it carries uses these differences. Signal processing is subdivided into analog and digital stages.

Figure 1 - Block diagram of signal processing

AA – analog amplifier;
1,2 – analog and digital part of the analog-to-digital converter;
3 – software driver;
4 – work programg.

List of operations and the procedure for their execution

Analogue information processing:

- Signal reception;
- Strengthening;
- Filtering.

Digital information processing:

- The sampling of the received signal;
- Filtration;
- Determination of harmonic frequencies.

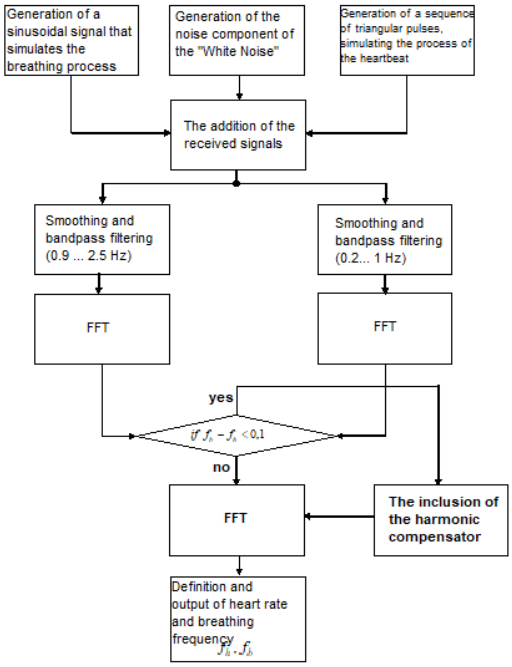


Figure 2 - Algorithm for digital filtering of the signals mixture

Simulation of a low-frequency biometric signal mix

The research is carried out for the following simulation parameters:

- Amplitude and breathing rate respectively $m_b = 0{,}005$ m & $f_b = 0{,}3$ GHz ;
- Amplitude and heart rate respectively $m_h = 0{,}0005$ m & $f_h = 1{,}5$ GHz ;
- Pulse duration of the heart beat $\tau = 0{,}3\ s$;
- The maximum amplitude of noise is 30% of the given breathing amplitude.

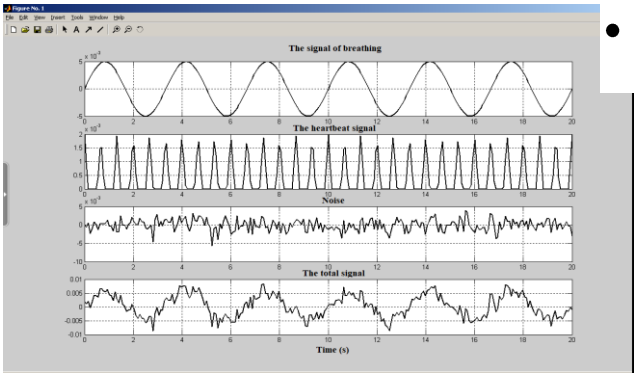


Figure 3 - Time plots for a biometric signal

Investigation of the filtration quality under the influence of own noise

Initial conditions: respiratory rate – $f_b = 0{,}3\,\text{GHz}$, heart rate – $f_h = 1{,}5\,\text{GHz}$, sampling rate – $F_d = 12{,}8\,\text{GHz}$, bit size of fast Fourier transform – $N = 4096$, time of observation – $T_{\max} = 20\ \text{s}$.

Results of the filtering quality and its own noise influence:

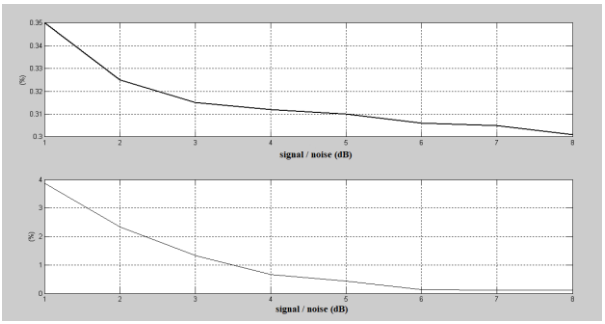


Figure 4 - Dependence of absolute error on signal / noise ratio

Thus, due to the mathematical model, the developed algorithm and the obtaine d results, it can be concluded that calculations, the chosen method and way of filtratio n are correct.

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EXPLOSIVE GENERATOR FOR ELECTRICAL SURGERY TECHNOLOGY

Nowadays, electrosurgery (destruction of biological tissues using alternating current up to 200 kHz to 5.5 MHz) is the most used procedure in the operating room. With the help of a high-frequency current, cutting of biological tissues and coagulation of blood vessels are performed.

In the world, there is a AEHF in almost every operating unit, which is used in all areas of surgery, both in the hospitals and in the offices of private doctors.

There are a number of devices for electrosurgery on the market, among them there is the electrochemical high-quality apparatus EPHCH-E81M "FOTEK" (frequency 440 KHz), Surginon EMC electrosurgical radio-frequency apparatus (frequency 4 MHz).

Electrosurgical equipment is widely used in general surgery, gynecology, cosmetology, dermatology, dentistry, urology, otolaryngology, oncology and proctology.

The basic principle of electrosurgery is the transformation of high-frequency current into thermal energy. The spark generator is a generator of high-frequency pulses with voltage 1.5-3 kV. Modes of its work are characterized by different power, which can be regulated by the change of duty ratio, which determines the relationship between the peak and the average power pulses.

In this paper, it is proposed to develop sources of high-frequency, high-voltage pulses - a spark generator for constructing the structure of an electromagnetic circuit. 1

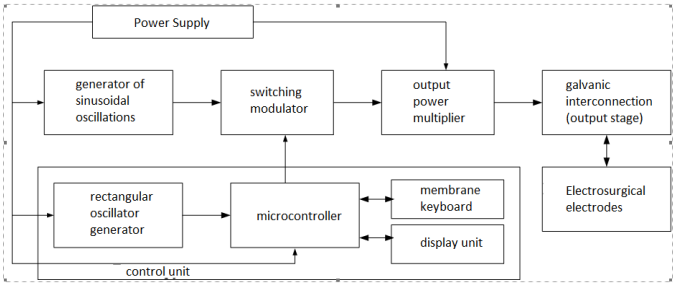

Figure 1 - The block diagram of the spark generator

The example works in the following way: a high frequency sine wave generator generates a signal of a given frequency, which enters the signal input of the switching modulator. The operating time of the switching module is given by a control unit built on the microcontroller, which also provides for the choice of operating modes of the spark generator and its indication. This signal exceeds the output power, which generates an output signal of maximum power for a given operation and through the output stage of electronics for electrochemistry.

Using the microcontroller allows you to simplify pulse-rate control, since it does not require additional delay line design for other modes of operation.

The power supply is a PWM source with control of the output voltage and power, as well as the level of isolation from the 5 kV network (in accordance with the State Standard). This unit, together with the output voltage multiplier, generates an output signal according to the specified parameter control unit.

The generator of sinusoidal oscillations is based on the ATmega8-16AC chip. This microcontroller is based on 8-bit CMOS, based on the RISC AVR architecture. By completing one full instruction per cycle, ATmega8 achieves 1 MIPS per MHz, allowing you to achieve the optimal ratio of productivity and energy that is consumed. Modulation of oscillations will occur with a transistor.

The display unit for monitoring the voltage and current values during operation contains a digital voltmeter and an ammeter. The seven-segment display shows the selected operating mode.

The output cascade represents a bridge high-frequency converter of a constant voltage in the variable with a given frequency of conversion of 440 kHz and the level of output voltage according to the chosen mode of operation.

Thus, the proposed device provides the formation of the normalized output power and expands the functionality of a variety of medical applications.

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THE USAGE OF INTELLIGENT DATA ANALYSIS AND ANALYTICS IN MODERN CRM SYSTEMS

In the business world, the question about effective customer relationship management arises very often. Ultimately, these relationships are transformed into large profits by increasing the number of repeated purchases and reducing the cost to attract customers. However, there is still no unique strategy, following which would help enterprises to build good relations with their customers. In the modern world, so-called CRM systems are widely popular, and they help enterprises very much to solve a lot of issues.

Customer Relationship Management (CRM) is an information term for methodological industries, software, services, data integration, and capabilities that help enterprises organize their customer relationship management. CRM system serves as a kind of business strategy aimed at studying and understanding the needs of existing and potential customers.

CRM systems are successfully implemented in various business areas, and this, undoubtedly, further affects its management. But not all CRM systems can be effective. Of course, if you consider a CRM system that is narrowly targeted, it is hard to say about some kind of universal methods and technologies, which can make it absolutely effective. However, researching modern opportunities and technologies, most scholars are confident that the future of CRM systems is in using intelligent data analysis and analytics.

Analytics in such systems is used to describe the automated methodology of customer data processing in order to make better business decisions. Large companies, during their existence, collect quite a lot of data by tracking their clients, which, directly, becomes an important part of both sales and customer service in general. CRM analytics includes methods that analyze customer data and represent it for making the best and fastest business decisions.

Data integration is an important first step for using analytics. This is why client analytics is considered to be a type of OLAP (On-Line Analytical Processing) – category of software that provides analysis of data stored in a database. This is also an important element of the CRM system.

Companies want to learn as much as possible about the behavior of their clients, but since the number of clients and information about them is too much, this issue is complicated. There are necessary modern and new technologies and tools for managing and analyzing customer information that could help to find valuable knowledge. Data mining technologies provide significant technical support for CRM to analyze large volumes of complex customer data and determine their value.

It should be noted that traditional data analysis is also effective in certain cases. The essential difference between the intellectual and traditional data analysis is that it is a process of studying the relationships between data, in most cases, without any assumptions and prerequisites.

It should also be highlighted that CRM gathers and accumulates a huge amount of information about the market and customers. An important key element to intelligent data analysis is to distinguish truly valuable information and to find links between large data sets. Moreover, the enterprise, thanks to the intelligent analysis of data in CRM, can receive information about business trends, forecast results and

analyze needed key factors for functioning, in order to increase revenue, reduce costs and maintain a competitive position on the market.

Today, more and more companies admit that analyzing data in CRM helps improve sales performance. Let's consider some of the reasons for this phenomenon. Any CRM that includes analytics and forecasting capabilities can predict sales growth, show conversion rates, and how much time a potential customer will need to make a purchase. The use of artificial intelligence is also an extremely important advantage of the CRM system. The implemented artificial intelligence algorithms control the analysis and give reasonable recommendations to the current or potential client based on all the data about him collected by this system.

It means, that forecasting in CRM systems is a very important feature. Due to the prognostic analysis, the system is able to more accurately predict the future costs of the client based on its past behavior. Proceeding from this, the use of predictive analytics can improve the CRM system by the following factors: segmentation of clients in accordance with a certain purpose, monitoring the effectiveness of the marketing company, improving the quality of customer service through constant feedback and customer satisfaction assessment. In other words, companies and organizations, using an analyst, can create accurate profiles for those customers who are more likely to buy their products.

Predicting future trends and behaviors using intelligent data analysis can help companies make right and effective decisions based on their knowledge.

Analytical CRM – is a solid, consistent platform that provides opportunities for forecasting, scaling and optimizing customer relationships. Among the benefits of using analytics, we can distinguish the following: creating a more flexible and profitable client base; help in keeping profitable clients; satisfaction of individual needs of clients. Such systems help to determine which client is best for being invested, which should be treated at an average level, and for whom attention should not be paid at all.

Intelligent data analysis includes a large number of subject areas, most of which are strong, efficient algorithms and techniques of artificial intelligence, such as machine learning, statistics, neural networks and database techniques. As inputs for various methods of statistical analysis and machine learning, the gathered data of the CRM system is used. The most common methods of intelligent data analysis used in modern CRM systems are considered.

Detection of anomalies. This is searching of information that does not meet the expected behavior or predictive pattern. Anomalies help to get useful information because they deviate from the average in the data set.

Learning the rules of association. They represent certain relationships between elements in large data sets. By learning the association rules, you can discover hidden patterns and use the information you get to better understand customers, learn their habits, and predict their decisions.

Clusterization. It defines similar data sets and helps to understand both the similarities and the differences between the data. Data sets that have similar characteristics can be used to increase conversion. For example, if the behavior of

one group of customers is similar to the behavior of another group, they can be simultaneously oriented to similar services or products.

Classification. In the course of the data analysis, the classification is considered as an example of supervised learning, it is training where a set of correctly identified observations is available. As a result of learning, it is determined whether the datasets belong to the appropriate category. This method is used to collect information about data, which would allow these datasets to be categorized according to their respective categories. One example is the distribution of goods as popular, average sales and not popular at all.

Regression. Regression analysis is one of the advanced methods of intelligent data analysis in CRM. Its purpose is to find the relationship between the various data elements and to determine which variables are influenced by other variables. More often, regression analysis evaluates the conditional expectation of a dependent variable taking into account independent variables, it is the average value of a dependent variable when independent variables are fixed. In CRM, this method can be used to determine the level of customer satisfaction and the impact on customer loyalty.

Forecasting. The process of forecasting the future based on past and current data is most often carried out through the analysis of trends. A typical example is the evaluation of some of the variables of interest for a certain future date (holiday, birthday, etc.).

Visualization. The purpose of data visualization is the clear and efficient transmission of information using statistical graphs. Effective visualization helps you analyze data. As a result, complex data becomes more understandable and useful.

So, intelligent data analysis, together with artificial intelligence, will shape the future of CRM and companies in their quest to become more customer-oriented. The combination of CRM tools and intelligent data analysis will increase the level of knowledge and understanding of customers, products and data transactions, thereby enhancing strategic decision making and tactical marketing activities. Enterprises will receive an increase income as a result of improving the ability to respond to each individual person and reduce costs through optimal allocation of resources.

Based on the fact that the main goal of CRM systems is to help improve the quality of services provided to the client, to increase the probability that the client will return to the company, it can be concluded that the using of analytics and data mining is a necessarily part of such systems. Through this component, the system will be able to function properly and fulfill its main goals and objectives, as well as help companies grow, be competitive and get the maximizing profit.

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GRAMMARLY

What is "Grammarly"? Why is it so popular nowadays? What is it used for? Why is it going up in the world? How is it connected with Ukraine? These and other questions I want to answer in this article.

So, "Grammarly" is a cloud based English language writing enhancement platform developed by Grammarly, Inc. It was developed by Alex Shevchenko and Max Lytvyn, in Kyiv. Brad Hoover is the company's chief executive officer.

Ukrainians have been designing this tool since 2009, and now their startup is reaping the rewards, bringing a handy tool to 10 million people worldwide who use Grammarly every day across browsers, word processors, and phones. The service checks over 250 grammar, spelling and punctuation rules.

It is an application that automatically detects potential grammar, spelling, punctuation, word choice, and style mistakes in writing. Its algorithms flag potential issues in the text and suggest context-specific corrections for grammar, spelling, wordiness, style, punctuation, and plagiarism.

It is available via a browser extension for Chrome, Safari, Firefox, and Edge. It is also available as an application for both iOS and Android; for a variety of writing interfaces, including not only browser but desktop integrations to help users in both their personal and professional lives, whether they are communicating through email or social media, applying for jobs, or even filling out online dating profiles. It also increases productivity and efficiency for professionals in a wide range of fields, including marketing, sales, engineering, customer support, and education.

"Grammarly" now has a 150-person team working in Ukraine and across the ocean in the United States. But nine years ago it was just three friends, Max Lytvyn, Alex Shevchenko, and Lider, who constantly had to write in English, which was not their native language.

At the time, the three had been already working on a smart idea to empower computers to check academic works for plagiarism, MyDropBox. They partnered with some U.S. universities, and all went well. But they noticed there was one main reason why people tended to copy another person's text entirely — it's hard to put thoughts in writing, and not everyone can do it well. But because emailing, texting,

writing research papers and reports have become so widespread in the digital age, most people have to be able to communicate well in writing.

The three partners decided to find a way to help out those with similar problems, and natural thought that "technologies might come in handy."

Thus, "Grammarly" was born. The idea, of course, has evolved along the way. The application was first targeted at academics, but just a year later the circle of potential customers was expanded to anyone on the internet who wanted to make their writing flawless. And once the consumer product was up and running, the startup was able to process much more data, which with machine learning meant they could improve the product even faster.

"Grammarly" learns from the vast amount of writing it processes, and it adjusts its recommendations based on usage. The service can also automatically detect what type of English the client wants to use, American or British, and fixes mistakes accordingly.

And the product is evolving even now, improving through analyzing a massive number of texts; adding new features and launching its service across various text-focused online platforms, such as Google Docs.

And with digital communication becoming more and more important for professional and personal success, "Grammarly" expects demand for its product to continue to grow.

The Ukrainian startup has been so successful in helping English speakers to check their writing that they have moved to a new office on the 14th floor of Kyiv's central posh Gulliver business center and mall.

The team started with 10 Ukrainians. Now the company employs 150, more than half of whom work from the Kyiv office; the rest are in San Francisco and New York.

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THE IMPACT OF AI ON THE WORLD OF INFORMATION PROCESSING

The aim of this study was to show resent studies in computer science field named artificial intelligence and show recent researches, that have been made in the

past year. Considered methods can help in different areas — from the military industry to video production industry.

My talk in about AI — artificial intelligence. Today we live in a world where we are surrounded by a lot of computer per square meter. As for me, I see big power and big interest in this, because those computers don't just exists around us — they are getting information about us.

There small computers, that you all have in your pocket, is actually a listening device plus camera. This is impactful not only for us — humans with natural intelligence — but also for AI.

Today AI is relevant to any intellectual task. Modern artificial intelligence techniques are pervasive and are too numerous to talk about them. Frequently, when a technique reaches mainstream use, it is no longer considered artificial intelligence; this phenomenon is described as the AI effect.

Let me tell you about 3 recent researches that AI scientists have made in the resent past.

This paper [1] describes a new technique to visualize the inner workings of a generator neural network. This is a neural network that is is able to create images for us. The key idea here is dissecting this neural network, and looking for agreements between a set of neurons and concepts in the output image, such as trees, sky, clouds, and more. This means, analyzing that some neurons are responsible for buildings to appear in the image, and those will generate clouds.

Interestingly, such agreements can be found, which means way more than just creating a visualizations, that is shown in paper, because it enables us to edit images without any artistic skills.

The editing part works by forcefully activating and deactivating these units and correspond to adding or removing these objects from an image. This means that we can take an already existing image, and ask this technique to remove trees from it, or perhaps add more, the same with domes, doors, and more.

This is already awesome, but there is more. Note that so far, the amount of control we have over the image is quite limited. And fortunately, we can take this further, and select a region of the image where we wish to add something new. This is suddenly so much more granular and useful!

The algorithm seems to understand that trees need to be rooted somewhere and not just appear from thin air. Most of the time anyway. Interestingly, it also understands that bricks don’t really belong here, but if I add it to the side of the building, it continues it in a way that is consistent with its appearance. Most of the time anyway.

Most research works are but a step in a thousand-mile journey, and each of them tries to improve upon the previous paper. This means that a few more papers down the line, this will probably take place in HD, perhaps in real-time, and with much higher quality. This work also builds on previous knowledge on "generative adversarial networks", and whatever the follow-up papers will contain, they will build on knowledge that was found in this work.

You are free to improve this, because the authors kindly made the source code available free for everyone, and not only that, but there is also a web app so you can also try it yourself! This is an excellent way of maximizing the impact of your

research work. I have a feeling that lots of high-quality entertainment materials will surface very soon.

Next AI Senses Humans Through Walls.

Pose estimation is an interesting area of research where we typically have a few images or video footage of humans, and we try to automatically extract the pose a person was taking. In short, the input is one or more photo, and the output is typically a skeleton of the person. So what is this good for? A lot of things. For instance, we can use these skeletons to cheaply transfer the gestures of a human onto a virtual character, fall detection for the elderly, analyzing the motion of athletes, and many others.

This work [2] showcases a neural network that measures how the wifi radio signals bounce around in the room and reflect off of the human body, and from these murky waves, it estimates where we are. Not only that, but it also accurate enough to tell us our pose. As the wifi signal also traverses in the dark, this pose estimation works really well in poor lighting conditions. That is a remarkable feat. But, there is more. We know, that wifi signals go through walls. So perhaps, this means that we can see through walls? And this, what was done in this work. It tracks the pose of this human as he enters the room, and, as he disappears, the algorithm still knows where he is. This means that it can also detect our pose through walls! What kind of wizardry is that?

Now, note that this technique doesn't look at the video feed we are now looking at. It is there for us for visual reference. It is also quite remarkable that the signal being sent out is a thousand times weaker than an actual wifi signal, and it also can detect multiple humans. This is not much of a problem with color images, because we can clearly see everyone in an image, but the radio signals are more difficult to read when they reflect off of multiple bodies in the scene.

The whole technique work through using a «teacher-student network» structure. The teacher is a standard pose estimation neural network that looks at a color image and predicts the pose of the humans therein. So far, so good, nothing new here. However, there is a «student network»б that looks at the correct decisions of the teacher, but has the radio signal as an input instead. As a result, it will learn what the different radio signal distributions mean and how they relate to human positions and poses. As the name says, the teacher shows the student neural network the correct results, and the student learns how to produce them from radio signals instead of images.

If anyone said that, they were working on this problem ten years ago, they would have likely ended up in an asylum. Today, it's reality.

Next AI Learned To Isolate Speech Signals.

This is [3] a neural network-based technique that can perform audio-visual separation. Before we talk about what that is, I will tell you what it is not.

This new technique can clean up an audio signal by suppressing the noise in a busy bar, even if the source of the noise is not seen in the video. It can also enhance the voice of the speaker at the same time.

Alternatively, if we have a skype-meeting with someone in a lab or a busy office where multiple people are speaking nearby, we can also perform a similar speech separation, which would be a godsend for future meetings.

Moreover, I think if you are a parent, the utility this example needs no further explanation. I am not sure if I ever encountered the term "screaming children" in the abstract of an AI paper, so that one was also a first here.

This is a super difficult task, because the AI needs to understand what lip motions correspond to what kind of sounds, which is different for all kinds of languages, age groups, and head positions.

To this end, the authors put together a stupendously large dataset where he have almost 300.000 videos with clean speech signals. This dataset is then run through a multi-stream neural network that detects the number of human faces within the video, generates small thumbnails of them, and observes how they move over time.

It also analyzes the audio signal separately, and then fuses these elements together with a recurrent neural network to output the separated audio waveforms. A key advantage of this architecture and training method is that as opposed to many previous works, this is speaker-independent, therefore we do not need specific training data from the speaker we want to use this on. This is a huge leap in terms of usability.

The paper also contains an excellent demonstration of this concept by taking a piece of footage from Conan O'Brien's show where two comedians were booked for the same time slot and talk over each other.

The result is a performance where it is near impossible to understand what they are saying, but with this technique, we can hear both of them one by one, crystal clear.

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CRM-SYSTEMS IN THE STRUCTURE OF MODERN BUSINESS CONNECTIONS

Customer Relationship Management (CRM) provides the opportunity to solve the issues of internal affairs and management of the company, actualizes the ability to build and automate business processes. Currently, one of the most effective means of solving a given problem is the scientifically grounded implementation of CRM-systems. Their development and use are conditioned by the need to modernize the company's relations with clients, to increase the professionalism level when working with the client data. Here it is worth noting that the effectiveness of the nature of the relationship depends on how well the actual collection of customer data is organized. Modern business has to meet the latest customer needs by investing its revenues in high-quality customer relationship management tools, among which CRM systems occupy a leading position.

In this regard, the purpose of the research is to study CRM-systems as structural components of modern business relationships, modeling such systems and designing ways to implement them.

CRM includes the actions and strategies that companies use to manage relationships with potential customers. The key is "relationships", which ensures loyalty and customer retention. The system includes a set of specific software and technologies designed to record, process, and store customer relationship information. Therefore, CRM-systems are used in business, which involves working with clients. The examples are businesses that trade, provide services; business in the financial and telecommunication spheres.

There are many CRM systems currently available, including open and commercial systems, as well as industry-standard and unified ones. Their main feature is the convenience of using a client base module, a list of counterparties, and business contacts.

CRM systems are divided by the job-specific technology. In particular, some are based on open source software and web technologies, while others are based on the 1C software platform and Microsoft ASP.NET technology. It should be noted that Microsoft ASP.NET technology is a multifunctional platform for web systems.

The main types of system management are operational, analytical and collaborative. The operating system serves to generate and transform information into a specific result. It combines and automates sales, service support, marketing, and customer service. Implementation of the CRM system allows to automate sales, manage the purchasing requests of new buyers. Such systems are used predominantly for financial institutions, which rely on long-term cooperation with clients. Marketing

introduces the marketing process in order to find a better way of advertising and reach more potential customers, which allows you to gain market leadership.

The analytical type of system management is based on intelligent analytical methods, image recognition, correlation and assistance to key specialists in making informed decisions, determining the effectiveness of implementing a CRM system in the company and improving sales support. This kind of management is used for companies that make short-term contracts.

The third type of management is the "joint work", it allows the firm to share information with external process participants, suppliers, and distributors. Combining all these groups through generic information enables to create effective target companies. It is desirable to apply for companies that offer mass delivery of services (advertising agencies, product manufacturers, etc.).

To summarize, it should be noted that each type of management can be implemented separately from others, namely: operational automation of consumer business processes, which helps the personnel to perform their functions with clients; analytical, which consists in the analysis of information about consumers with diverse goals; The collaborative program interacts with consumers without customer involvement.

Considering the above structural analysis we can state that customer relationship management systems are considered as programs for automating sales and customer relationships. Phenomenological characteristics of CRM-systems are their relevance to modern business projects, as well as the demand in modernization of business communications.

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RESEARCH OF INFORMATION SECURITY PROCESSES IN IOT

In June 2018, the Juniper Research company in their IoT market research predicted doubling of the number of IoT devices by 2022. If analysts now estimate that the number of active IoT devices is 21 billion, then in four years their number will exceed 50 billion. Experts in the field of information security are worried about the progress of IoT-technologies. In their opinion the huge number of badly protected Internet devices gives new opportunities to cybercriminals who have already managed to break a number of IoT-systems.

The well-known cyber attack happened in October 2016 when a number of popular resources, services and social networks were found to be inaccessible: Amazon, Pinterest, Twitter, Soundcloud, Spotify, Reddit, GitHub, Starbucks, CNN, The New York Time, etc. Because of the attacks, the owners of the sites that run on the servers of the Dyn company suffered heavy losses. Today, it is known that the attackers used the Mirai programme, which can detect unprotected Internet devices such as routers, surveillance cameras, digital video recorders, etc. According to the Dyn, more than 100,000 unprotected connected devices were integrated into the botnet because they worked without password protection. The work of attacked sites was restored only after 14 hours.

The topicality of the problem is highlighted by incidents, capital losses of which are measured in billions of dollars. Industroyer, BrickerBot, Mirai - and this is just the visible tip of the iceberg.

The HP research data was not aimed at discovering certain dangerous internet devices and expose their developers, but to denfine the problems of IS-risks in the world of IoT as a whole, pay attention to problem both of device owners and problems which developers should solve. So, at the very beginning of the exploitation, a user must necessarily change the default factory password, because the factory passwords are the same on all devices and do not differ in reliability. Since not all devices have built-in IS protection, owners should also install external protection intended for home use so that their Internet devices do not become open gateways to the home network or direct harm tools.

In the course of the HP research, it was found that approximately 70% of the analyzed devices do not encrypt wireless traffic. Web interfaces of 60% of the devices are considered by HP experts as to have a defective access organization and a high risk of cross-site scripting. Most devices have passwords that are insecure. Approximately 90% of devices collect personal information about the owner without their knowledge.

In total, the HP specialists counted about 25 different vulnerabilities in each of the examined devices and their mobile and cloud components.

The HP experts' conclusion is disappointing: there is no single IoT secure system today. A special danger for IoT is hidden in the context of the spread of targeted attacks. If hackers show interest to anyone, our helpers from the world of IoT will turn into traitors and give full access to the world of their owners.

Such weak points of IoT were distinguished:

- passing to IPv6;
- power supply of sensors;
- standardization of architecture and protocols, certification of devices;
- informational security;
- standard accounts from the manufacturer, weak authentication;
- lack of support from the manufacturer for the elimination of vulnerabilities;
- it is difficult or impossible to update the software and OS;
- use of text protocols and useless open ports;
- use the weakness of one gadget, hacker can easily get into the entire network;
- use of unprotected mobile technologies;
- use of unprotected cloud infrastructure;
- use of dangerous software.

Because the issue is extremely acute, tech-design companies, communications devices, network devices, software, and cyber-security companies are busy with the search of solution in information security for IoT devices. One of the leading security companies in IOT is Cisco Systems, which has played a leading role in developing the IOT model at the IoT World Forum (IWF), has developed the IoT security framework, which has become a useful addition to the reference model. Figure 1 illustrates the security environment from an IoT perspective.

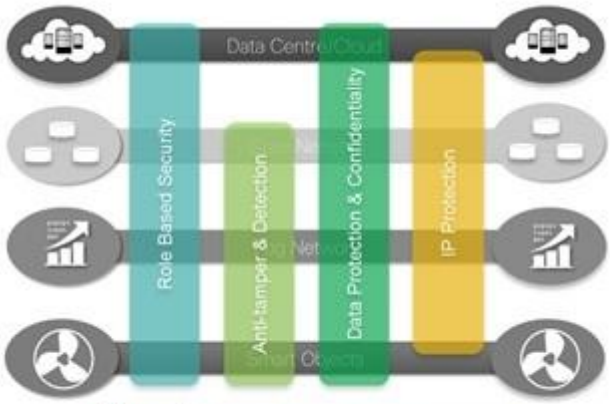

Figure 1 - Security environment from

The Cisco IoT model is a simplified version of the IoT model from the IWF. It consists of the following levels:

1. "Smart" objects and embedded systems: this part of IoT is most vulnerable.
2. Fog or peripheral network: this level includes wired and wireless connections of IoT devices. A key issue is the high variability of network technologies and protocols used by different IoT devices and the necessity to develop and implement a single security policy.
3. Core network: the core network provides paths for data transmission between platforms in the center of the network and IoT devices. Here the security problems are the same as in traditional networks. However, the huge number of end nodes with which the core interacts creates a significant security issue.
4. Data center and cloud services: this level includes platforms for applications, data storage and network management. IoT does not add any new

security issues to this level, except for the need to deal with a huge number of individual end nodes.

With this four-level architecture, the Cisco model defines four general security solutions that cover several levels:

1. Role-based security: role-based access control systems assign role permissions rather than individual users. Users are given different roles, either statically or dynamically, according to their responsibilities.
2. Protection against interventions and detection of interventions: this solution is especially important at the devices level and the foggy network level, but also extends to the core network level. All these levels can use components that are physically located in the area of free access to them by anyone.
3. Data protection and confidentiality: this function covers all levels of architecture.
4. Protection of Internet protocols: data protection from listening and interception is important for all levels.

The Cisco document also proposes an IoT security concept that defines security features for IoT that covers all levels:

1. Authentication: this component covers the elements that initiate access, and primarily identifies IoT devices. Unlike typical corporate network devices, IoT end devices should be equipped with authentication methods that do not require human interaction. These methods include radio-frequency identification (RFID) tags, X.509 certificates or MAC addresses of end-users.
2. Authorization: authorization controls access to devices through the network. This element includes access control. Along with the level of authentication, it generates the necessary parameters to allow the exchange of information between devices and application platforms, thereby providing the work of IoT services
3. Network Enforced Policy: this layer encompasses all elements that route and transport endpoint traffic securely over the infrastructure, whether control, management or actual data traffic.
4. Secure Analytics: this component includes all the features necessary for centralized management of IoT devices. On the basis of visibility, there is the ability to control, including configuration, patches and updates, as well as countermeasures to terminate threats.
5. Visibility and Control: this secure analytics layer defines the services by which all elements (end nodes and network infrastructure, inclusive of data centers) may participate to provide telemetry for the purpose of gaining visibility and eventually controlling the IoT ecosystem. Further, it includes all elements that aggregate and correlate the information, including telemetry, to provide reconnaissance and threat detection. Threat mitigation could vary from automatically shutting down the attacker from accessing further resources to running specialized scripts to initiate proper remedy.

In the process of the research, a set of measures and tools for improving the safety of IoT is being developed. Many companies today have introduced their own information security models that they are constantly trying to standardize, correlate and implement. The research of technologies and security tools in IoT, the search for optimal security models at all levels: the hardware level, the software, the user level

is the most important task today. The task with which the world's IT giants can not cope.

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THE INFORMATIONAL ROUTES (TRANSFER) ANALYSIS SYSTEM OF AN UNDERAGE PERSON ACCORDING TO THE GPS TRACKING DATA

Relevance of research topic. It is necessary to provide modern parents with the ability to control the movement and physical activity of children, through receiving of geodata from a mobile device through the mobile Internet. Such a technology can be used for location identification of an underaged person and locate them on a map, even when searching for a lost one.

The purpose and tasks of the research. To develop models and algorithms of the informational system of geolocation of people using mobile devices. The most difficult tasks, in this case, are an implementation of a filter for correction of input data from errors and an algorithm for determining the location of an underaged person according to data from inertial sensors and GPS.

The geo-location technology that is used by mobile devices requires the installation of client software on the phone to determine its location. This technique determines the location of the device by calculating its location by identifying the cell, the signal strength of the home and adjacent cell that continuously refers to the carrier. In addition, if the phone is also equipped with GPS, much more accurate information about the location is sent from the smartphone.

The software package that was implemented in the research process is based on multi-faceted architecture and consists of three main components: the server part (the server providing the API), the main mobile application (API client), and the subordinate application to collect moving data (client API). The list of basic functionalities of the system is as follows:

1. On the web (mobile) application:

– see the current location of an underage person in real-time;

– watch the history of the movements for the last few days;

– self-updating location settings;

– notifications about disconnection of the GPS navigator;

– low battery consumption during the usage of the application.

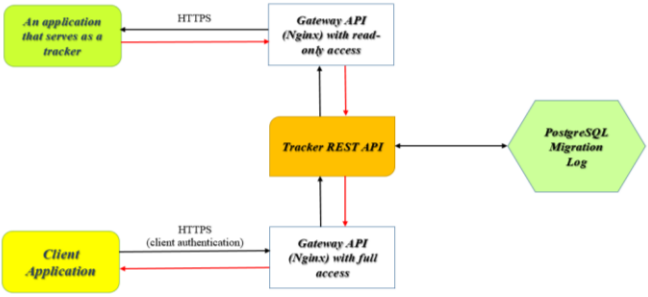
2. On the client application:

– data transmission to the main application about the location of the child or several children at a time;

– send notification of disabling the GPS navigator;

– low battery consumption when using the application.

The mobile application from which the information about movements is taken is the data source and sends it to the server for storage, and the main application is the consumer of data and displays it on the user interface. To get data, the main application sends requests to a server to the REST API (pic. 1).



Pic.1. The architecture of the software complex

On the application level, the server-side portion provides APIs for REST technology. Data is transmitted without the use of additional layers, so REST is considered less resource-intensive since there is no need to do a semantic analysis of the request to understand what it should do and no need to transfer data from one format to another. Data on moving an underaged will be stored in the PostgreSQL location log. The interaction between the components of these applications will take place using the HTTPS protocol. HTTPS is a regular HTTP protocol that runs encrypted TLS transport mechanisms. It must provide the safe transfer of data movement.

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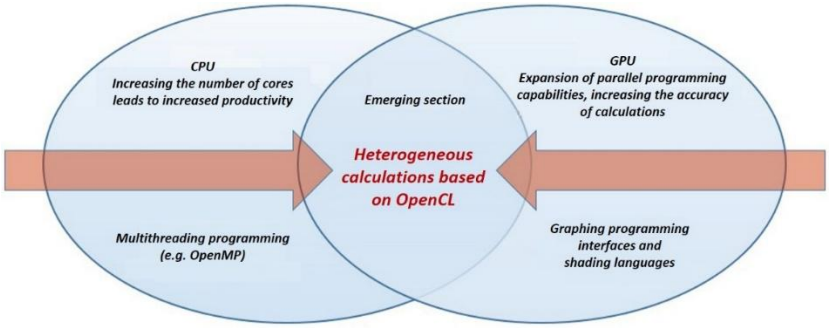
THE USAGE OF OPENCL FOR PARALLEL COMPUTING

Nowadays there are more and more tasks related to the processing of large volumes of information. They relate to various areas of activity: economic calculations, physical modeling, architecture, multimedia, medicine, graphics processing, et cetera. One of the main techniques for solving similar problems is the method of parallelism, when one big task is divided into several subtasks, which are executed in parallel and independently. For systems that solve similar problems a large amount of computing resources is required. Previously, such resources could provide only large clusters in computer centers, however, with the development of technology, computing resources became more affordable and new ways of creating highly productive systems appeared.

OpenCL (Open Computing Language) – is a new industrial standard and framework that implements the GPGPU technology for parallel tasks and parallel data of heterogeneous calculations on various modern processors, graphics

processors, DSPs and other microprocessor designs (pic. 1) that can be found on personal computers, servers, mobile devices and embedded target.



Pic. 1 Scope of OpenCL

Recently, the OpenCL standard has reached a wider audience due to the growing number of devices that support it. At the same time, there is an increase of differences between devices that support this standard. This situation offers developers, who want to reach high level of productivity, a wide range of platforms. Considering the additional parameters of the OpenCL platform along specific application settings, the design space for research is exetremely large. In addition, the availability of more than one kind of device allows to distribute of computing on heterogeneous platforms.

OpenCL applications are intendent to perform calculations on OpenCL 1.1 or higher standard of graphics cards. Modern graphics cards contain hundreds of small specialized processors, which simultaneously perform simple mathematical operations over incoming data streams. OpenCL covers SMP and SIMD levels of parallelism areas. The OpenCL language undertakes the organization of such parallel calculations and allows to achieve great acceleration for a large class of tasks.

The main features of the standard:

1. The source code of the application is easily ported to other platforms.

2. Support of a wide range of devices is achieved through the introduction of generalized data model systems: platform model, memory model, execution model, programming model.

3. All models are abstract (have no bind to specific devices), the implementation is provided by the manufacturer.

The main advantage of OpenCL is the transferability between different computing platforms. Currently OpenCL is a one of this kind tool.

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10 FACTS ABOUT PROGRAMMING YOU PROBABLY DID NOT KNOW

The task of programming is becoming increasingly common, but there are still many facts that people do not know about programmers and programming

itself. This post features 10 little known facts about programming. Like other intellectual activities, the task of programming and how people learn to program computers is well studied. In fact, with more and more people learning to program regardless of language, tool or platform used, it is natural that few people actually know about certain important facts about programming and software development. From an academic standpoint, the areas of software engineering and education bring forward several very interesting studies obtained by experiments whose results are presented in masters' and PhD theses. And based on these results I chose the facts mentioned in this report along with appropriate references. Based on this context, I will present 10 important facts that, unfortunately, are little known by whom programs. But before, a warning: these facts present results of experimental and empirical research that have specific contexts. What I mean is that there is some room for discussion of the applicability and generalization, but knowing what has already been discovered and studied is important and, at least, can instigate discussion and how close that information is to the reality of the reader.

Programmers have a tendency to report their problems incompletely [4].

This fact is related to Psychology field research. The results indicate that when a person has a problem he/she does not report complete information about the problem, especially when it is responsible directly or indirectly. This result has been confirmed experimentally with programmers and one of the main reasons is the following: to fully report a problem is seen as a sign of weakness that can lead to some kind of judgment of skill and proficiency by whoever is listening to the story. This situation is more common when it comes to a fundamental error committed by novices but such mistakes are also allowed by specialists.

Developers seek other forms of help before talking to coworkers [3].

The fact of communication with other people do not have priority when a programmer needs help again is related to the sense of judging of what other people do when they know the difficulty. However, a site like Stack Over flow [5] has flourished exploring this type of behavior by aggregating help in various aspects of communities for developers. This is a rather sad trend that shows that programmers are ready to trust strangers on the Internet but are not ready to trust their colleagues and mentors.

Progress in programming can be classified into 4 stages.

The classification of a programmer progress is important to support multiple metrics involved in software development and also help project managers and other professionals to evaluate how good the project is as a whole.

Moreover, it is also important to know in which phase of the progress the developer is to, among other things, offer some kind of help so that he does not spend too much time stuck in a specific task to the point of delaying any deliveries. An interesting classification identified (automatically) four possible states of progress: Complex Programming b) Making Progress c) Slow Progress d) Stuck.

Developers slow to ask for help when facing problems.

This is related to the way people learn how to program; basically, the act of teaching follows the line of learning Mathematics: a little theory, one or two

examples and many exercises. This format takes learners to try hard on exercises and, quite often, to solve everything themselves without asking for help. This attitude is not bad and is even recommended, but you need to know to what extent should stop trying and ask for some form of help. Large companies often mention the problem that some employees do not report their problems because of fear of bosses and possible removal from large projects

Developers find beatable and unbeatable barriers.

This may seem obvious, but it is very important to be detected, since a programming barrier can lead to serious term, team morale and confidence problems. One of the main difficulties of detecting barriers and classify them is the fact that this information may be subjective. In other words, asking directly to the programmer if he/she is with some beatable or unbeatable barrier already affects the result, as it can not always be sincere. There are also some implications in terms of ego and moral just by identifying this type of barrier on programming.

Programmers spend approximately 30% of the time surfing the source code [1].

People who program know that most of the time relies on a editing source code tool. However, how time is divided between the editing tasks remains unclear from the scientific point of view. According to an important study, it was found that approximately 30% of a programmer working time is not spent editing the text (by including, editing or deleting), but surfing between multiple files along the source code. The navigation involves research, observation, information gathering, memorizing and other activities. That is, you could say that programming is an activity whose third part is just contemplative.

Remote programmer productivity is lower than the productivity of local programmers.

This claim about productivity is controversial, especially when routines such as home office, remote working and global software development projects had become increasingly high. Anyway, there are concrete evidences based on several metrics of software that, in fact, remote programmers do not produce as much as programmers working together in the same place.

But it does make sense to think this way if we analyze the other facts of this list, for example, the preference for the lack of communication with other people. In fact, informal communication is a major factor that influenced the results of this research, because asking that hint in the meeting during a coffee break is very important according to what was found alone.

The main error messages, execution times and runtime compilation errors and the average time to solve them [2].

Error messages are very specific to each language problems and runtime compilation errors. To highlight some cases mention the master's thesis of Suzanne Marie Thompson, as she looked at a lot of Java programmers in different scenarios and collected many interesting facts about them. The tables below include a bit of history about errors and the average time to correct them.

Although the study focus on a very specific context (learning the Java language) is possible to make a comparison with other scenarios and situations and prove that much of the most common errors occur in different contexts.

The software maintenance consumes more than 50% of the effort.

Software maintenance involves the manipulation of legacy code. There is a study about effort that shows as a result that the division is not equal between creation and maintenance. In the study that mention a value of more than 50% of the effort due to software maintenance there is also a great discussion on software evolution towards its maintenance and the necessary tasks for both. Surely is worth taking a look at this reference before making that decision about starting to develop the solution from scratch or working with an existing code base.

The software maintenance consumes between 40% and 90% of costs.

One of the main rules of business people says it is much more expensive to get a new customer than to keep an existing customer. However, according to software engineering researches, the reality is somewhat different when it comes to code: to keep the code running through maintenance tasks can cost up to 90% of all project costs. These statistics are very general and were obtained in a very particular context of the 487 organizations studied for this research (which is from 1980). Certainly there are many factors to consider, but at least there is a starting point for analyzing courses and discusses this topic when talking about software maintenance.

Peer code review can discover up to 60% of bugs.

Code review made by other people, either in the form of pair programming or not, is really effective. There are many studies on this, but one of the key of them indicates that up to 60% of bugs can be discovered (but not necessarily fixed) when more than one person reviews the source code. This study is relatively old and can be said that it is one of the key influencers of techniques involving agile process and other ways of developing software whose main focus is on activities, steps, organization and other skills not as technical as programming.

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RECOMMENDATION SYSTEM FOR POTENTIAL CANDIDATES AND CO-AUTHORS SEARCH: OPEN SOURCE DATA ANALYSIS

With the advent of the global network, the amount of information around the world has grown rapidly, which has led to the need of creation services whose main purpose is to simplify the lives of Internet users. Since it is extremely difficult to navigate such a large amount of information, there are advisory systems as a mechanism for replacing the static recommendation list when searching on websites.

Shortlisting candidates and screening resumes are long time-consuming tasks for the company, especially when 80-90 % of the resumes received for a position are unqualified. That is why today a variety of companies engaged in recruiting activities have begun to widely use advisory systems in their activities.

Nowadays the market is becoming overwhelmed by suppliers that offer identical functionality. The most important differentiators are the convenience of using, customizing, analyzing and managing data. Modern services for finding potential candidates provide a convenient interface and ease of management, but do not solve all the problems of users. The most important aspects are efficiency, expediency and quality. Search for a successful applicant that meets all the requirements takes a lot of time. The best decision in such circumstances is to select a candidate and get acquainted with his skills and knowledge. To implement such a hiring system, there is a need for direct collaboration with web services for hosting IT projects to obtain the necessary information.

The main goal of the project is the development of an online service as a website focused on helping, guide and recruit potential employees and co-authors.

To implement a fault–tolerant, high–available, reliable and operative system it is necessary to analyze a number of technologies and choose the ones that are most suited to the specifics of the operation system. The Java Script programming language was selected to write client and server code.

During the research of the recruitment mechanism, a new approach is proposed for the optimal choice of a potential candidate or co-author. It is based on recommendations from open source data obtained from the web service for hosting IT projects GitHub. Thus, HR will be able to get as much information as possible about a potential employee: get acquainted with his projects, find out what

technology he knows, in which country he is located, how many subscribers he has, etc. And based on these data, a person can choose the right employee or co-author. Such a recruitment algorithm eliminates the need for a resume and additional test tasks to assess candidates' abilities. And this, in turn, greatly accelerates hiring process.

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MODELING OF PULSE WAVES IN THE MARKED AREA OF THE RADIUS ARTERY

The topicality of the study of methods for diagnosing the cardiovascular system is due to the fact that its pathologies are the primary factors of mortality of the population all over the world. In order to identify the first signs of circulatory system diseases and their prevention, it is necessary to provide medical facilities with effective diagnostic techniques and automated systems capable of analyzing the state of the cardiovascular system (CS) and providing information on the presence / absence of its dysfunction. This will accelerate the procedure for diagnosis, improve the efficiency of medical diagnosis, develop measures to prevent circulatory system diseases.

In order to carry out pulse wave modeling, we will introduce restrictions on the age of a person, in particular, we will simulate pulsations for the age group of 20-22 without apparent pathologies from the CS.

General view of the mathematical equation of the pulse wave

$$p = p_a + p_0 \cdot cos\omega \left(t - \frac{1}{v}\right) + p_0' \cdot sin\omega'\left(t - \frac{1}{v} + \varphi'\right) + $$
$$+1{,}5 \cdot p_0'' \cdot sin\omega''\left(t - \frac{1}{v} + \varphi''\right)$$

or taking into account $\omega'' = \omega' = \frac{\omega}{2} = 3{,}30$ and $p_0^{''\text{brachial}} \approx p_0^{'\text{brachial}}$

$$p = p_a + p_0 \cdot cos\omega \left(t - \frac{1}{v}\right) + 1{,}5 \cdot p_0 \cdot sin\frac{\omega}{2}\left(t - \frac{1}{v} + \varphi'\right) + $$
$$+1{,}5 \cdot p_0 \cdot sin\frac{\omega}{2}\left(t - \frac{1}{v} + \varphi''\right)$$

where p_q is atmospheric pressure or pressure in the environment around the vessel,

p_0 is pulse wave amplitude,

$p_0^{'\text{brachial}}$ is amplitude of the dielectric wave,

$p_0^{''\text{brachial}}$ is amplitude of presystolic wave,

ω' is circular frequency of the dicrotic wave,

ω'' is circular frequency of the presistolic wave,

φ' is time delay between systolic and dicrotic components,

φ'' is delay in time between systolic and presystolic components,

v is speed of the pulse wave, m / s,

ω is circular frequency of oscillations,

t is time.

Taking into account the comments to the models that were developed earlier, for the 6 types of pulse, the mathematical equations will look like:

Type of signal "equal pulse"

$$p_{\text{equal}} = 50 + 18{,}75 \cdot cos6{,}61 \cdot \left(t - \frac{0{,}06}{6{,}8}\right) + 28{,}13 \cdot sin3{,}30 \cdot \left(t - \frac{0{,}06}{6{,}8} + 0{,}12\right) +$$

$$+28{,}13 \cdot sin3{,}30 \cdot \left(t - \frac{0{,}06}{6{,}8} + 0{,}30\right) = 50 + 18{,}75 \cdot cos6{,}61 \cdot \left(t - \frac{0{,}06}{6{,}8}\right) +$$

$$+28{,}13 \cdot sin3{,}30 \cdot (t + 0{,}11) + 28{,}13 \cdot sin3.30 \cdot (t + 0{,}29)$$

Type of signal "uneven pulse"

$$p_{\text{uneven}} = 50 + 18{,}75 \cdot cos6{,}61 \cdot \left(t - \frac{0{,}06}{6{,}8}\right) + 28{,}13 \cdot sin3{,}30 \cdot \left(t - \frac{0{,}06}{6{,}8} + 0{,}15\right) +$$

$$+28{,}13 \cdot sin3{,}30 \cdot \left(t - \frac{0{,}06}{6{,}8} + 0{,}22\right) = 50 \ldots 55 + 18{,}75 \cdot cos6{,}61 \cdot (t - 0{,}0088) +$$

$$+28{,}13 \cdot sin3{,}30 \cdot (t + 0{,}14) + 28{,}13 \cdot sin3{,}30 \cdot (t + 0{,}21)$$

Type of signal "high pulse"

$$p_{\text{high}} = 60 + 18{,}75 \cdot cos6{,}61 \cdot \left(t - \frac{0{,}06}{6{,}8}\right) + 28{,}13 \cdot sin3{,}30 \cdot \left(t - \frac{0{,}06}{6{,}8} + 0{,}9\right) +$$

$$+28{,}13 \cdot sin3{,}30 \cdot \left(t - \frac{0{,}06}{6{,}8} + 0{,}32\right) = 60 + 22{,}5 \cdot cos6{,}61 \cdot (t - 0{,}0088) +$$

$$+34{,}6 \cdot sin3{,}30 \cdot (t + 0{,}8) + 34{,}6 \cdot sin3.30 \cdot (t + 0{,}31)$$

Type of signal "low pulse"

$$p_{\text{low}} = 45 + 9{,}4 \cdot cos6{,}61 \cdot \left(t - \frac{0{,}06}{6{,}8}\right) + 33{,}8 \cdot sin3{,}30 \cdot \left(t - \frac{0{,}06}{6{,}8} + 0{,}9\right) +$$

$$+33{,}8 \cdot sin3{,}30 \cdot \left(t - \frac{0{,}06}{6{,}8} + 0{,}2\right) = 45 + 9{,}4 \cdot cos6{,}61 \cdot (t - 0{,}0088) +$$

$$+33{,}8 \cdot sin3{,}30 \cdot (t + 0{,}89) + 33.8 \cdot sin3.30 \cdot (t + 0{,}19)$$

Type of signal "fast pulse"

$$p_{\text{fast}} = 75 + 43{,}13 \cdot cos6{,}61 \cdot \left(t - \frac{0{,}06}{6{,}8}\right) + 28{,}13 \cdot sin3{,}30 \cdot \left(t - \frac{0{,}06}{6{,}8} + 0{,}135\right) +$$

$$+33{,}8 \cdot sin3{,}30 \cdot \left(t - \frac{0{,}06}{6{,}8} + 0{,}06\right) = 75 + 43{,}13 \cdot cos6{,}61 \cdot (t - 0{,}0088) +$$

$$+33{,}8 \cdot sin3{,}30 \cdot (t + 0{,}126) + 33{,}8 \cdot sin3.30 \cdot (t + 0{,}05)$$

Signal type "slow pulse"

$$p_{\text{slow}} = 80 + 20{,}63 \cdot cos6{,}61 \cdot \left(t - \frac{0{,}06}{6{,}8}\right) + 16{,}88 \cdot sin3{,}30 \cdot \left(t - \frac{0{,}06}{6{,}8} + 0{,}075\right)$$

$$+$$

$$+16{,}88 \cdot sin3{,}30 \cdot \left(t - \frac{0{,}06}{6{,}8} + 0{,}55\right) = 80 + 20{,}63 \cdot cos6{,}61 \cdot (t - 0{,}0088) +$$

$$+16{,}88 \cdot sin3{,}30 \cdot (t + 0{,}066) + 16{,}88 \cdot sin3.30 \cdot (t + 0{,}0465)$$

The simulation will provide the opportunity to further create an expert system for diagnosing the state of the CS.

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APPLIED LINGUISTICS IN PROGRAMMING

Linguistics deals with the study of particular languages, and the search for general properties common to all languages or large groups of languages.

Applied Linguistics is using what it is known about language, how it is learned, and how it is used, in order to achieve some purpose or solve some problems in the real world. Applied linguistics includes topics such as language for special purposes: communication problems related to aviation, language disorders, law, medicine, science, language policy, and language and literacy issues. The focus of applied linguistics is on trying to resolve language-based problems that people encounter in everyday life, whether they are learners, teachers, supervisors, academics, lawyers, service providers, those who need social services, test takers, policy developers, dictionary makers, translators, or a whole range of business clients.

A language is a system of communication which consists of a set of sounds and written symbols which are used by the people of a particular country or region for talking or writing.

A programming language is a vocabulary and set of grammar rules for instructing a computer or computing device to perform specific tasks. The term programming language usually refers to C, C++, Java, C#, PHP, javascript, etc.

Applied programming is developing process to solve specific problem. For example, website has been developed to sell products, an integrated development environment (IDE) is a software application that provides comprehensive facilities to computer programmers for software development.

There are a lot of solutions, principles and recommendations that can solve different kinds of problems concerned with programming design. Some of them are design patterns, SOLID principles, inversion of control, architecture patterns, etc. In programming, a design pattern is a general repeatable solution to a commonly occurring problem in software design. A design pattern isn't a completed design that can be transformed directly into code. It is a description or template for how to solve a problem. It can be used in many different situations. Design patterns can speed up the development process by providing tested, proven development paradigms.

Patterns allow developers to communicate using well-known, well understood expressions for software interactions. Common design patterns can be improved over time, making them more robust than ad-hoc designs.

Design patterns are the solutions that are provided by applied linguistics, because:

- it is used to solve practical problems
- language is a central component
- it is concerned with principles and practices on the basis of language.
- It helps to bridge communication gaps between software developers.
- it improves software design

Applied linguistics can be used to solve problems in software development. Knowledge of programming languages can be applied in order to create different solutions that can help to achieve good software design.

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IMPLEMENTATION AND ADVANTAGES OF THE DRIVER GRADING SYSTEM IN THE TROLLEYBUS SIMULATOR

Simulation is an imitation of a particular situation or process, so there is a fairly large variety of simulators and they are used for different purposes:

- practice;
- stuff training;
- testing of a certain technology;
- entertainment.

Usually, simulators are used when interaction with a real object is related to the inaccessibility, danger or high cost of such interaction. The simulator of the trolleybus, which will be discussed further, is used specifically for the purpose of working with the vehicle in a virtual way, since it is dangerous to put an inexperienced driver behind the wheel of a high-class vehicle and to entrust life and health of not only passengers but all road users.

The simulation system implements the trolleybus controlling function and simulates the real events associated with driving such vehicle. The simulation is provided by sets of scripts.

In order to determine the competence of the driver, user actions analysis subsystem has been implemented. Based on existing data, user actions were classificated into four types:

- neutral action
- positive action
- negative action
- warning

Neutral action and *warning* do not affect the driver's rating and are not analyzed. Neutral actions include toggle switches, doors opening etc. Among warnings there are actions like insignificant speeding within the limits of traffic rules.

Positive and *negative actions* affect driver's rating and are analyzed further. Positive actions are proper parking at a stop, driving according to the schedule and so on. Negative actions are speeding, driving with open doors and other driver's actions that can lead to unwanted consequences.

A grading scale was implemented for the driver's final assessment. The final score is a value from 0 to 100. The starting point is 80 points. While testing, points are added or subtracted from the initial value based on different events and actions. For each positive action two points are added. For each negative action five points are subtracted. The final rating scale is shown in Table 1. An excellent result is a value higher than 90 points, good ranges from 70 to 89. If the final score is less than 70 the result is unsatisfactory.

Table 1

Driver's rating scale

Value	0-69	70-79	80-89	90-100
Rating	F (Unsatisfactory)	C (Acceptable)	B (Good)	A (Excellent)

To display the events, popup messages were developed. They are controlled by the corresponding scripts which are responsible for the general status of the popup messages and control the particular message in the queue.

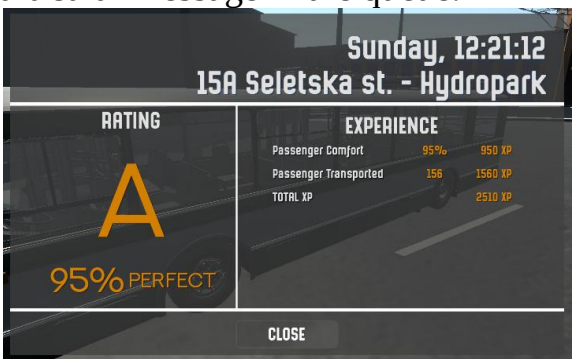

Fig. 1. Result visualization

For more detailed text reporting, a special script was created. It tracks the displaying of popup messages and writes them to a log file. Each file is named according to the date and time of the start of the testing and contains a list of all the messages received by the driver while driving. The header of the file defines the version of the simulator and the date and time of the start of the log. Entries depict

time, type, current grade and message text.

Thus, it is possible to test players and get detailed information about the nature of their driving and predict the prospects for developing their skills using the user grading module.

Session work №3

CURRENT RESEARCH IN THE FIELD OF ECONOMICS

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SEXISM AS ONE OF THE CORE REASONS OF INCOME INEQUALITY AND THE IMPACT OF A PAY GAP ON INDIVIDUALS` WELLBEING

Sexism is prejudice and discrimination based on gender. It is a hotly debated topic nowadays, since the global community tends to establish gender equality in all fields. There were successful attempts to address the issue of sexism in the recent decades. The changes show that community benefits from gender equality by becoming a more stable and safe place for living, provides people with numerous opportunities for personal and professional development and drive the general evolvement of the global community.

Sexism is an important issue nowadays; nonetheless, the evolvement of the global community in the recent decades has significantly contributed to the problem solution while promoting gender equality in all fields. These areas include gender differences, socialization, stereotyping, prejudices, and gender identity. In the 2000s, the scholars investigated gender differences in cultural context, media impact on gender identity, and pay gap. According to UN's Agenda 2030 and its Sustainable Development Goals, by 2030 the global community should be equal in all fields. Nonetheless, nowadays the issue of sexism is a hot-debated topic in all countries. The unequal field from the perspective of gender is science, since women drop out of science careers at doctoral level more often than males. Carleschi [4] indicates that this problem occurs because of the fact that "science exists in a social and cultural context that prioritizes men over women". The issue of sexism these days occurs in various forms, for example, the representatives of both genders experience

discrimination at workplaces. In some countries, the government limits the rights of women, and they do not have access to education. There is a pay gap across the globe that negatively affects representatives of both genders.

The existence of income inequalities significantly influences people`s well-being. Income inequality significantly affects individuals` well-being by changing the patterns of thinking, feeling, and behaving. Nowadays, the social pressure determines people`s mode of conduct. In the modern community, people tend to become successful in all spheres that represent some value according to their interests, preferences, and expectations. Consequently, people implement efforts and time to become more knowledgeable and skillful to achieve the settled goals and follow social expectations that are increasing day by day. Income inequality limits people capabilities by modifying their self-identity and social identity. Van Brunt [3] discusses one of the major themes that are common to the contemporary society. The author assumes that background of people is influential and it significantly affects people patterns of thinking, feeling, and behaving. The author states that people from poor socio-economic background experience the feeling of worthlessness and the implementation of any efforts cannot eliminate the impact of this feeling.

According to the author`s notion, white men that come from rural areas frequently experience a feeling of being unsuccessful, despite the importance of their actual achievements. The researcher states that white men that experienced financial difficulties since childhood or identified themselves as representatives of lower social class since the childhood often do not have a well-developed feeling of self-assurance in adulthood. Brunt [3] resorts to personal experience to prove this notion. He indicates that while he was working in several Pennsylvania prisons in the late 70's, teaching creative-writing workshops, he experienced a feeling to present himself as a man whom he was not actually. Brunt [3] states "when asked where I was from, I lied and told the men I was a native of Manhattan—New York City; so that placed me in a special category of white men". He pretended to create an image of a successful white man that is proud of his background and current way of living. Consequently, he pretended to be successful according to the socially mandated stereotypical expectations. According to Van Brunt [3], in the American community to be white and poor is unforgivable since "to be poor in a country that places a premium on wealth is in itself shameful".

Brunt [3] indicates that there is some social pressure on white men since there is nothing they cannot achieve in the society that cultivates equality and success in all spheres of human endeavor. People feel ashamed if they do not have attributes of a financially successful mode of life. Brunt [3] indicates that "this shame, this feeling of worthlessness, is one of the vilest and most self-destructive emotions to be endured". As a consequence, the feeling of shame and worthlessness impacts the individual`s mode of conduct.

The researcher indicates that people that experience the feeling of worthlessness cannot hide their inner feelings, emotions, and attitudes. They tend to be out of the social group with an intention to hide the personality that they are ashamed of. The socio-economic background and the feeling of worthlessness do not provide them with an opportunity to be able to experience the feeling of self-

assurance that is common to representatives of the upper social class. Brunt [3] states that this is "the legacy of America's poor whites, their only inheritance".

Income inequality also significantly influences people`s psychological well-being. Numerous researchers investigate this issue, and a majority of them contemplate the influence of income inequality from the cognitive perspective and investigate its impact on people`s mental health. According to Kate Pickett [7], income inequality forms a solid basis for the development of serious mental illnesses. The researcher in an exploratory study estimated the influence of two equally important economic factors, living standards and income inequality, on mental illnesses development. According to the results of the study, "income inequality has been linked to physical morbidity, mortality, and such psychosocial outcomes as violence" [7]. The researcher states that a high level of income inequality within the boundaries of the country leads to a high prevalence of mental illnesses among the population.

Araya [1] indicates that poor housing, income inequality, and a lack of opportunities for personal development leads to the development of mental illnesses. Nonetheless, the investigator indicates that socioeconomic factors form a complex set of indicators that influence individuals` physical well-being and this notion eliminates a major influence of income inequality on the evolvement of mental diseases. According to Araya [1], "income inequality negatively affects mental health but the effect sizes are small, and there is marked heterogeneity among studies". The investigator states that income inequality is not a dominant factor that leads to increasing of mental illnesses among the population. Pickett and Wilkinson [8] indicate that "there are threefold differences in the proportion of the population suffering from mental illness between more and less equal countries". The investigators state that income inequality and mode of life common to people determine these differences.

Jason Beckfield [2] indicates that the hypothesis that income inequality negatively influences the mental health of people cannot be supported by realistic data since according to the results of the studies conducted by the researcher there is null evidence that could potentially support this hypothesis. Nonetheless, the results show that income inequality negatively affects people`s sense of self-worthiness, self-identity, confidence, and positive attitudes towards the upcoming changes. A majority of the participants (68%) is not satisfied with their current financial health [2]. The individuals indicated that they experience difficulties with managing their monthly budgets and they are not confident in their future. Thirty-two percent are satisfied with their current financial health. Sixteen percent of this thirty-percent does not have a desire to implement any changes with an intention to benefit the current state of things and the rest of participants out of this thirty-two percent, in spite of the fact that they are satisfied with their financial health, represents a desire to implement some changes with an intention to achieve the settled goals and become more financially independent. The results of the study also show that people with different backgrounds and socioeconomic statuses are open-minded and clear thinking since they represent an in-depth analysis of their financial health. According to the results, income inequality leads to arising of anxiety and stress; nonetheless, there is no evidence that it leads to the development of mental illnesses.

Eric Neumayer and Thomas Plumper [6] state that inequalities of income can significantly affect the people`s quality of life and longevity. The researchers conducted a cross-country to examine the effects of market income inequality and income redistribution on longevity. Neumayer and Plumper [6] used life tables to compute Gini coefficients of longevity inequality for all participants of the study. They "regressed longevity inequality on market income inequality and income redistribution, and we controlled for potential confounders, in a cross-sectional time-series sample of up to 28 predominantly Western developed countries and up to 37 years" [6].

The results show that income inequality before taxes and transfers significantly contribute to longevity inequality. The difference between market income inequality and income inequality after taxes and transfers also affects longevity inequality. The researchers indicate that the government can effectively address the issue of longevity inequality not only via healthcare policies but also via economic and political reforms that contribute to the solution of the problem of market income inequality and the redistribution of incomes.

Lynch et al. [5] also indicate that income inequality is a determinant of population health. The researchers examined 98 aggregate and multilevel studies that relate to the issue of income inequality and its impact on public health. The studies provide limited evidence to the idea that income inequality is a major determinant of people`s health differences. The studies provide evidence to the notion that income inequalities within rich countries and between them contribute to the evolvement of population health differences. The researchers indicate that "despite little support for a direct effect of income inequality on health per se, reducing income inequality by raising the incomes of the most disadvantaged will improve their health, help reduce health inequalities, and generally improve population health" [5].

Income inequality is a significant aspect that shaped people`s mode of life. It also affects people`s patterns of thinking, feeling, and behaving. Income inequality might negatively affect the psychological well-being of people by leading to the occurrence of mental illnesses, depression, and anxiety.

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THE MAIN STEPS OF IMPLEMENTING THE MECHANISM OF MANAGING THE INVESTMENT FLOWS IN THE ENVIRONMENTAL ACTIVITY OF REGIONS IN

One of the thorniest problems of passing to the market relations in Ukraine is a redistribution of plenary powers and rights in the field of investments between the center and regions. The new socio-economic terms of management are determined by the new going near the evaluation of investment potential of regions, put a task to the analysis of monitoring and search of ways to solve the problems related to investment activity on all regional levels [1, p. 69].

For today there is a tendency to decentralization of management of revivifying of economy. It is world tendency, in particular in the field of nature protection activity. Therefore, now all greater attention applies on research of territorial differentiation and regional features of the different publicly economic and natural phenomena. The aim of the state must be leveling of disproportions of the ecological state, that maybe possible by direction of investment streams in those or other regions.

The problems of implementation of investment politics are conditionally divided into organizational and economic. To the organizational problems that can interfere with activation of investment process, the following items should belong:

- subjectivism at determination of decision directions to implement the investment politics and determination of strategic priorities;
- divisions of opinions of participants, taking part in the investment processes on the necessity of near-term investments;
- absence of competent and prepared specialists.

To the economic problems that can interfere with activation of investment process, the following points can belong:

- a high level of scarceness of local budgets;
- subzero naturally-resource potential;
- a high level of social material unwell-being on regional levels;
- economic instability in a region [3, p. 143].

Passing to the certain practical operating under activation of investment process in a region must include:

- obligatory account and socio-economic estimation of natural resources;
- system of planning, financing and logistical support;
- a mechanism of agreements and licenses to complex using nature;
- paying for contamination of natural environment;
- creation of off-budget state ecological funds;
- system of ecological insurance;
- creation of modern mechanism to stimulate the protection of natural environment [2, p.78].

Taking into account the strategic role of industrial regions with ecological crisis the forming qualitatively of new regional politics seems very actual in development of socio-economic stability of the country. In its basis there must be: approach of the systems, scientific validity, competence, competitiveness. Methodological ground to choose the strategic course of nature protection policy gives an opportunity to form the most optimal variant in the solution of ecological and economic problems.

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GLOBAL TRAVEL AND TOURISM INDUSTRY - STATISTICS & FACTS

The purpose of scientific research is a comprehensive and reliable study of the global travel and tourism industry, its statistics and facts.

The travel and tourism industry is one of the world’s largest industries with a global economic contribution (direct, indirect and induced) of over 7.6 trillion U.S. dollars in 2016. The direct economic impact of the industry, including accommodation, transportation, entertainment and attractions, was approximately 2.3 trillion U.S. dollars that year. A number of countries, such as France and the United States, are consistently popular tourism destinations, but other, less well-known countries are quickly emerging in order to reap the economic benefits of the industry.

Worldwide, the tourism industry has experienced steady growth almost every year. International tourist arrivals increased from 528 million in 2005 to 1.19 billion in 2015. Figures were forecasted to exceed 1.8 billion by 2030. Each year, Europe receives the most international tourist arrivals. It also produces the most travelers: with approximately 607 million outbound tourists in 2015, the region had more than double that of the second largest tourist origin, the Asia Pacific region.

In 2015, global international tourism revenue reached approximately 1.26 trillion U.S. dollars, having almost doubled since 2005. That year, China had the largest international tourism expenditure, followed by the United States and Germany. The leading city in international visitor spending was Dubai, where tourists spent more than 31.3 billion U.S. dollars in 2016.

Global travel & tourism industry

A highly valuable industry to the global economy, travel and tourism's contribution has steadily increased for over a decade. North America makes the largest contribution in this area, closely followed by the European Union and North East Asia. Due to their less developed tourism industries, regions such as North and Sub Saharan Africa make a much smaller impact.

However, according to the World Travel and Tourism Council (WTTC), some of the fastest-emerging tourism destinations can be found in Africa, including Namibia, Zambia and Angola. This is perhaps due to the realization of the benefits travel and tourism can provide for a country’s economy, or maybe because of the growing popularity of less-traveled destinations among global tourists. This is not to say travelers are not still visiting well-established tourism destinations in their millions – the number of overseas visitors to the United States, for example, is still increasing each year and is expected to exceed 40 million by 2018.[2, c.8]

Dubai tourism

Dubai is the second largest and second most important and influential emirate of the United Arab Emirates after the capital, Abu Dhabi. Many may associate the Middle Eastern economy with the oil industry, but little of Dubai’s revenue comes from oil. In fact, the most profitable industries in Dubai are tourism, real estate and financial services. The number of tourists in Dubai has increased year-on-year, reaching almost 15 million in 2016. This made Dubai the fourth most visited city destination worldwide after Bangkok, London, and Paris according to the MasterCard Global Destination Cities Index.

Dubai also ranked as the first leading city destination for international visitor spending – tourists spent over 28 billion U.S. dollars there in 2016. That year, Doha was the top feeder city for overnight visitors to Dubai, providing just over one million visitors. Tourists may have been attracted to Dubai to witness the tallest building in the world, the Burj Khalifa.

Despite Dubai’s tourism success, by far the smallest share of global international tourist arrivals can be found in the Middle East. While still retaining the smallest tourism market in the world, international tourist arrivals in the Middle East are expected to triple to almost 150 million by 2030.

Travel and tourism

In 2015, the best ranked country in the Travel & Tourism Competitiveness Index was Spain with a score of 5.31 out of seven. The index was part of "The Travel & Tourism Competitiveness Report 2015: Growth through Shocks." The report assessed worldwide economies on their travel and tourism development efforts and the impact of this on job creation.

Travel and tourism's total contribution to global GDP reached 7.58 trillion U.S. dollars in 2014 - 3.85 trillion of this figure came from leisure spending. In that year, there were 973.8 million international tourist arrivals worldwide, over half of these visiting Europe. This number had increased by around 250 million since 2005 and was forecasted to almost double to 1.81 billion by 2030.

The United States ranked fourth out of 141 on the 2014 Travel & Tourism Competitiveness Index with a score of 5.12 out of seven. Travel and tourism's total contribution to GDP in the U.S. was 1.4 trillion U.S. dollars and, of its direct contribution, just under 80 percent came from domestic tourists. In the same year, the industry directly created 5.3 million jobs in the U.S.[2, c. 431]

International tourism

International tourism is a trillion-dollar market with increasing worldwide revenues. In 2009, the industry generated 851 billion U.S. dollars in revenues globally. This increased to approximately 1.2 trillion U.S. dollars in 2015. In recent years, total global outbound travel spending has increased annually and provisional figures suggest spending increased by six percent in 2014. The growth of travel and tourism is internationally significant due to the industry's economic impact. In 2016, travel and tourism's total contribution to the global economy was 7.61 trillion U.S. dollars, of which, 2.31 trillion U.S. dollars was a direct contribution.

The growth in global tourism spending could be attributed to the increased accessibility of international travel. Since 1995, the total number of international tourist arrivals has more than doubled. China, the country with the highest travel and tourism expenditure, has seen a large increase in outbound tourism. Between 2009 and 2015, the number of Chinese residents visiting the U.S. increased from around 520 thousand visitors to 2.59 million, this was forecasted to reach 5.72 million by 2021. Global expenditure by international Chinese tourists amounted to approximately 261.1 billion U.S. dollars in 2016. This equated to approximately 21.4 percent of the total international tourist spend that year.

According to a ranking by the World Travel and Tourism Council, the regions which benefit the most from travel and tourism are North America, the European Union and North East Asia. Travel and tourism contributed upwards of 1.5 trillion U.S. dollars to the economies of each of these regions in 2016. Comparatively, the contribution to the GDP of Latin America, the region which was ranked forth, was only 328.2 million U.S. dollars. The high travel and tourism spend in Europe and the U.S. could be generated by the high visitor spend in the regional major cities. In 2015, the two leading cities for international visitor spending worldwide were Dubai and London, with a visitor spend of 31.3 billion U.S. dollars and 19.76 billion U.S. dollars respectively.[2, c.532]

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FILM TOURISM AND HIS INFLUENCE ON ECONOMIC OF NEW ZEALAND

Mass media has been proved to have a very powerful influence on people's lives and decisions. Lately, it has turned out to be very relevant in connection to tourism and the decisions individuals make on where they will travel and spend their leisure activities. There were a lot of researches carried out on this subject, discovering that mass media can be a powerful tool to influence the societies. Mass media plays an important role not only in the human behaviour, but also in motivating tourism behaviour. Nowadays, movies and TV series have ended up essential to what numerous individuals construct their travel choices on. [2]

New Zealand - the perfect Middle-earth

New Zealand's varied landscapes and unspoiled beauty offer the perfect backdrop to Middle-earth. Middle-earth might have been a figment of author JRR Tolkien's imagination but New Zealand bears an uncanny resemblance. Tolkien used the term Middle-earth to describe the "lands of men" or "mortal lands" in his books - The Hobbit and The Lord of the Rings - and even created maps outlining the place surrounded by ocean that he called "the old fashioned word for the world we live in". For Sir Peter Jackson, the man who turned Tolkien's famous books into even more famous movies, the land he lives in - his home country of New Zealand - provides the perfect setting to produce moving picture adaptations of The Lord of the Rings Trilogy and more recently The Hobbit Trilogy. After entirely filming The Lord of the Rings Trilogy in New Zealand, Jackson was adament that there was no reason to look outside the country for film locations for The Hobbit Trilogy as he considered New Zealand "the perfect Middle-earth".

Since the first movie The Lord of the Rings: The Fellowship of the Ring, New Zealand has been dubbed Middle-earth. More than a decade later, 'Rings' and now 'Hobbit' fans continue to travel to the country to experience the mountains, lakes, rivers and plains that were the backdrop to the movies' famous scenes. More than 150 different locations throughout New Zealand were used to film The Lord of the Rings Trilogy, after Jackson and his team scoured the country for the most beautiful and diverse areas.

Film Tourism The Lord of the Rings Trilogy based on Tolkien's fantasy epic generated US$2.9 billion in worldwide box-office receipts, and another US$3 billion from DVDs, merchandise and other sources. The multi-award-winning films also inspired New Zealand businesses to provide tours to the sites of many memorable movie scenes. Tours still operate in more than 30 locations today. Scores of tourists continue to visit New Zealand specifically to travel down Hobbit paths, hand-make their own personal 'One Ring', and handle replica swords, flags and helmets. International Visitor Arrivals continue to increase into New Zealand with The Lord of

the Rings and The Hobbit Trilogies a factor in stimulating interest in New Zealand as a destination. The Waikato region - where Hobbiton and the Shire are located in lush farmland near Matamata - is probably the most memorably linked with The Lord of the Rings and The Hobbit Trilogies. The working sheep farm with its rolling green hills and spectacular views to the Kaimai mountain range was been reconstructed in permanent materials for The Hobbit Trilogy, and continues to operate as a tourist attraction. Tongariro National Park in the North Island's central plateau became the Emyn Muil for The Lord of the Rings. Thousands now tread the same path as Frodo and Sam by walking the Tongariro Alpine Crossing, often described as one of the best one-day walks in the world. The 17km trek passes volcanoes, steaming fumaroles, jagged lava flows and crater lakes. From Wellington, The Lord of the Rings tours include helicopter rides over the limestone formations that formed Dimholt Road where Aragorn, Legolas and Gimli rode to meet the 'Army of the Dead'.

Spectacular natural scenery - such as The Remarkables mountain range, nearby lakes, vast valleys, forests and fiords - which has enthralled millions of movie-goers as Isengard, the Misty Mountains and the Ford of Bruinen - is an integral feature of the New Zealand tourism experience. This southern region is home to rare wildlife, ice-age glaciers, rugged mountains, deep lakes, meandering rivers and native forests - much of it unchanged since ancient times, yet all within a short distance of civilisation. Other Middle-earth tours cover the Nelson region which provided locations for Chetwood Forest, Rivendell and Dimrill Dale. In virtually every region of New Zealand, tourists will be reminded of Middle-earth and The Lord of the Rings Trilogy and The Hobbit Trilogy - The Lord of the Rings Trilogy was famously filmed in one hit, making it one of the longest and most massive productions in movie history.[1]

Researching

Research and data collected show us that movies can influence travel choices. One of the best examples, lately, has been New Zealand, which has been voted the world's top film tourism destination. It placed number one in a study commissioned by HBO Entertainment in 2015 about destinations made famous by movies and television. This study analysed the responses of 2000 adults and according to the results, one in four people choose their holiday destination based on the movie set they would like to visit and find out more about. New Zealand also recently placed third in USA Today's 'Best Cinematic Location' poll. According to the study carried by HBO Entertainment, the 10th places in Top 30 TV or Movie Destinations, look like this: 1. New Zealand – Lord of the Rings 2. New York, USA – Sex and the City 3. The Causeway Coast and Glens, Antrim, Northern Ireland – Game of Thrones 4. Las Vegas, USA – The Hangover 5. West Bay, Dorset, UK – Broadchurch 6. Alnwick Castle, Northumberland – Harry Potter 7. Paris, France – Inception 8. Benidorm, Spain – Benidorm 9. Iceland – Game of Thrones 10. Malta – Game of Thrones.

Film industry has been rapidly growing in New Zealand. It has shown an increase in revenues from movie production of $7 million in 2014, reaching the value of $3.155 billion. Working alongside with New Zealand Film Commission and Film

New Zealand, the Tourism New Zealand succeeded to access opportunities of marketing and media impact to promote the country as an exceptional tourism destination. The movies that transformed New Zealand from a country known for diary exports into a world leader in film tourism have been the six Lord of the Rings and the Hobbits. These movie are one of the most successful franchises of all times, with earnings of billions of dollars. The studio that produced them is Warner Brothers – American entertainment company – one of the major film studios with the headquarters in Burbank, California. Hence, tourism is currently the second largest industry in New Zealand, after dairy.

Conclusion

Looking at all the data gathered, movies made upon best-seller novels had brought an increase in the number of tourists for the set locations. But what helped the locations achieve the goal of becoming a top film tourist destination is a proactive participation of governments and specialist in marketing activities. Even though researches have shown film tourism as a considerable market, in order to have a successful film tourism, there is a need for a wide cooperation between a lot of parties involved like producers, screen agencies, film commissioners, tourism agencies, PR specialists and government.[2]

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COMPETITION AND COMPETITIVENESS OF THE ENTERPRISE

In the current conditions of management, the economic category of competitiveness becomes of great importance among the business structures. The market condition of the enterprise depends on the level of its competitiveness.

For a detailed study of the essence of the "competitiveness of the enterprise" first and foremost we have to clarify the concept of "competition", as these two notions are interconnected – since the competitiveness can be regarded only in the condition of a competition between the producers of a particular type of product.

It should be noted that a thorough study of the categories "competition" and "competitiveness", as well as their interrelations, was in the focus of the research of such economists as I. V. Smolin, S. M. Klimenko, L. L. Antonyuk, G. Asoyev, I. Ansoff, G. Ya. Kiperman, M. Porter, J. Schumpeter, and others.

Thus, Kiperman G. Ya. And others will determine competition as "the process of interaction, interconnection and struggle of producers and suppliers in the sale of products, economic competition between isolated commodity producers or suppliers of goods (services) for the most favorable conditions of sale."[3, p.7].

Classic scholars of the political economy A. Smith and D. Ricardo noted that competition is a competition for profit.

Analyzing the category of "competition" proposed by different scholars, one can conclude that these concepts combine such qualities as perseverance, endurance, unity of competitive principles, dynamism and innovativeness.

Today, there are a number of definitions of the category "competition", which allows us to study its essence in details, analyze it independently, and lay out our own definition.

Consequently, competition can be defined as a rivalry between individual economic entities that use any means to achieve a better position on the market in order to regain the most favorable terms of sales and gain consumer affinities on the basis of the advantages of the properties and characteristics of their products.

It should be noted that today there is no single approach to the definition of the category of "competition", but many of the proposed meanings of this word create the basis for the study of the essence of "competitiveness".

Given the large number of methodological approaches to defining the concept of "competition", all those numerous definitions are similar and share the idea of rivalry. Though, taking into account various scientific approaches to the definition of "competitiveness" there is a discrepancy between them. It is due to the fact that scholars identify the concept of enterprise competitiveness and the competitiveness of products (services), as well as consideration of competitiveness at different levels: the levels of the enterprise, industry, and country.

For example, I. Z. Dolzhansky defines competitiveness as "the ability to rapidly produce high-quality products and in the appropriate quantity in comparison with the similar objects in this market", I.V. Smolin regards competitiveness as "a promising target characteristic of the future ability of the market participant to get it in their own interest." And G. L. Azoyev focuses on the financial side of the enterprise, that is, the ability to effectively manage its own and borrowed resources in a competitive market [1, p.12; 2, p.28].

However, most scientists are trying to combine the concept of "enterprise competitiveness" and "product competitiveness" into one category; in our opinion, this is not entirely correct, since, for a detailed study of these categories, it would be expedient to consider these two concepts in specific environments and take into account the various factors affecting them.

The concept of "enterprise competitiveness" is rather complex and does not have a general definition. Some scholars believe that the ability to efficiently manage

their own and borrowed resources for effective economic activity in a competitive market is decisive. Other scientists define the "competitiveness of the enterprise" as a level of competence compared with other enterprises-competitors for such parameters as technology, practical skills and professional knowledge of the personnel, level of strategic and current planning, sales policy, management level, communication, quality of production management systems, etc.

Studying different definitions for "competitiveness of the enterprise" one can conclude that it is the implementation and maintenance of effective economic activity which is the key aspect for the superiority of a single entity over another entity-competitor.

As for the concept of "product competitiveness", it should be considered as one of the elements of the "competitiveness of the enterprise". The high level of competitiveness of the goods proves the efficiency and expediency of its production, as well as promotion on the market.

The next factor – the ability of a product to meet consumer inquiries more accurately then the other products on the market – reflects the competitiveness of products. It includes such competitive advantages as product quality, the price set by sellers of goods, advertising and the image of the product, the technical level, as well as its consumer properties.

At the same time, competition forces commodity producers to innovate and improve technological processes, in order to reduce production costs. As a result, products are replenished with qualitative characteristics and properties, attract new customers' attention and compete with other products with analogues, and, most importantly, increase their own profits.

Competitiveness also means competition for achieving the best results, which is impossible without the effective use of all available resources, which in turn depends on the personnel of the enterprise, its intelligence, abilities, experience and qualifications, as well as the production and implementation of competitive products for its promotion on the market, compliance with the requirements of consumers and conducting effective economic activity, which allow to bring more profits.

In general, it can be concluded that competitiveness is the main measure of successful enterprise activity, which is determined by such parameters as the ability of an enterprise to function effectively and maintain the best positions in the market, as well as the ability of one company's products to compete and hold their positions in the market in a manner consistent with the products of other enterprises – competitors.

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FINANCE STUDENTS' PERSPECTIVE OF WORK-RELEVANT COMMUNICATION SKILLS

Today English is one of the most important and demanded language not only in the world but in Ukraine. Knowledge of English is useful for self-development and self-improvement. On the other hand English is necessary in such areas of activity like Business, Economics and Finance.

Skills audit in the field of Finance continues to be a potent research agenda as it presents rich opportunity to compare prioritization of skills, competence evaluation, training approaches, and practical applications. One key stakeholder whose perspectives on these subjects commonly explored is employers. The subsequent discussion synthesizes findings of recent studies on employer viewpoints in relation to work-relevant skills in finance practice and suggested ways to address the gap.

A number of studies report employer complaints about the lack of communication aptitude among new graduates entering the workplace.

Many companies need employees who can communicate with partners and clients all over the world. Very often, that means finding employees who speak English. English gives a wider choice of employment, because more and more companies start cooperation with foreign partners and firms. Very often employers encourage employees to know English skills as a result their salary is higher than usual. According to research conducted on the results of the analysis of job search portals rabota.ua, ua.jooble.org and headhunter.ua, the salary of finance specialists who speak English is a few times higher the salary of those who do not have the same knowledge, in particular, the knowledge of English makes it possible to earn in Ukraine 3-6 times more.

Having analyzed vacancy positions in Ukraine of finance specialist without work experience with knowledge of English the range of requirements were identified. They are as follows: upper-intermediate or advanced English skills, both oral and written; fluent written and spoken English; good business English writing skills; fluent English (for analyzing documents in English); good English communication skills; excellent written and spoken English; very good command of English; English proficiency at intermediate / upper intermediate level; well-developed writing skills in English, etc.

General English language courses may cover varied topics in speaking and writing, but neglect targeting specific work-relevant skills. In our research we tried to

identify the skills that are critical to the functions of financiers in different career levels-staff, manager, and partner. In particular, we found that entry-level financiers mainly function as receivers, gatherers, and processors of information; thus, fundamental communication skills, such as demonstrating respect, active listening, building trust, building relationships, and using information technology are critical to their work. Managers, on the other hand, focus on leadership and organizational functions, such as teaching important skills providing performance feedback, providing motivation, creating group synergy, and expressing encouragement. Finally, partners focus on advanced leadership and organization skills, including making convincing presentations, negotiating, building rapport, and being persuasive. These insights, informed by employer knowledge, provide a comprehensive guide in designing a more specific communication course customized for future finance professionals.

Knowledge of English for future finance professionals is needed in order to perform such duties as: preparation of the financial models, presentations, business plans; financial and industry analysis; evaluation of new investment opportunities; communications with corporate clients to ensure effective project execution, etc.

Therefore, universities that train specialists in finance should take into account the needs of employers who require not just experts in finance, but graduates who will be able to establish business contacts with foreign partners in a foreign language environment.

Practical implication of these findings call for the implementation of a specialized communication course for finance majors. The mentioned course shall aim to develop competence in interview, writing, listening, reading, and communication technology as applied in the professional context.

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THE IMPACT OF GLOBAL PROCESSES ON THE WORLD FINANCIAL SYSTEM

This study provides theoretical basis for the research of globalization processes. The main features of financial globalization are considered as well as the impact of globalization processes on the banking sector. The research also highlights the current state and trends of the development of banking services market in Ukraine and analyses the share of foreign capital in the development of Ukrainian banking system. Based on the study results, guidelines for ensuring the efficient development of banking activities in the context of globalization are defined.

Globalization is the main trend of modern world system. It is the one of the key features in the development of the whole world. It has significant impact on the

development of national economies through strengthening their interaction and interdependence, integration of national political and social systems, national cultures, and deepening the processes of international integration of financial markets.

Globalization is an irreversible process that any state cannot resist. Considering the formation of a single global market, the study of the impact of globalization on the global financial system is crucial due to necessity to counter the problems that expand the field of potential conflicts and financial instability. The above mentioned problems become especially critical in the context of the deepened instability in the world economy. They form the ground for manipulating with huge investment and financial resources, which poses a real threat to the countries with low and average profits.

In terms of the level of globalization, the financial sphere today outstrips all spheres of real economy. The core of financial globalization displays itself through the processes of global financial and economic integration and formation of a global financial market. The main driving force there is migration of financial capital across the planet, while the unification of legislation, economic processes and the application of advanced technologies allows to mobilize more financial capital with lower costs. The total amount of world financial assets in 2008 exceeded $120 trillion. For comparison, in 1980 this indicator stood at $12 trillion and in 1993 – at $53 trillion [1, p.27]. Global volumes of financial transactions now exceed $1.5 trillion per day. Volumes of foreign investment have trippled, while portfolio investment volumes have grown by 5.5 times in the last 10 years. Over the past 20 years, the ratio of the global stock market capitalization to world GDP has increased almost 10 times and now exceeds 100% [2, p.26]. The sales of bonds reache $4 trillion per annum, for financial derivatives these fifures stand at $20-30 trillion annually [3, p.466].

The situation in the modern world is changing dynamically and significantly. This leads to radical modernization of the market system, which is accompanied by reinforcement of financial and economic integration between countries. The changes affect almost all spheres of public life, including economy, politics, social sphere, ecology, security, etc., in all countries of the world. These changes also influence the development of Ukraine and its financial system which is relatively weak compared to similar financial institutions of the developed countries.

Rapid changes in the global economic system, in particular in the financial sector, cause not only positive, but also negative consequences. The formation of the global financial market is based on erosion of the boundaries of national currency systems, the deregulation and informatization of financial activities, the moves of financial flows into fictitious speculative capital and appearance of secondary securities market, loss of representative function of money and transformation into separate goods [4, p. 102]. Globalization of the financial market leads to a breach of stability and predictability. The abolition of the fixed exchange rates results in the

"erosion" of state borders and closed national spaces. It also stimulates the expansion of foreign capital in the national financial markets.

One of these negative consequences is violation of financial stability, which causes global threats such as powerful financial crises, whose scale of potential magnitude increases with deepening of globalization processes.

The study of origins and causes of the global financial and economic crisis of 2007-2008 shows that world economy is a multilevel, hierarchical system which is characterized by a certain organic integrity, interconnectedness of its components and structural unity. Therefore, the crisis in one big country or group causes "the effect of falling dominoes". At the same time, financial globalization makes mechanism for preventing global financial crises more effective. The current global financial crisis has clearly demonstrated the existing methods for regulating the financial sector and the newly developed ones [5, p.315].

Inefficiencies and inconsistencies in the actions of national regulatory and supervisory institutions in the countries, differences in the financial and economic practices of individual countries did not allow countries to act concertedly and take urgent measures of anti-crisis policy in order to curb crisis processes at an early stage. The ineffectiveness of international mechanisms for controlling and overseeing operations in the world financial markets, helplessness of international financial institutions, severe conditionality of loans granted by the IMF to member states, and the inhibition of time in solving complex problems caused an increase in devastating imbalances in financial sector. Under the influence of changes in macroeconomic conditions, banks face the need to restructure their business models, expand the range of services, strengthen the market principles of activity, as well as adjust policies in the area of risk management and create a network structure.

Nowadays, the main trend is the formation of economic models of national economies based on general civilizational determinants. The following factors are also taken into account: the combination of internal and external conditions, economic conditions in the main partner countries, application of new financial instruments to solve complex problems of world economic development and financial sector in particular.

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FACTORS AFFECTING THE PRIME COST OF PRODUCTION

The growth of production efficiency consists of many interrelated elements and factors that characterize the level, dynamics of the work of an enterprise and its result. One of the indicators of production efficiency is to reduce the prime cost of production. The prime cost is the main source of profit growth and increase of the production profitability.

The prime cost of production is a complex concept and it depends on the influence of many different factors. All factors can be classified into two categories: of external origin, that is, those outside the enterprise and of internal origin. External factors include:

- a change in prices for semi-finished goods, fuel, energy, materials and other tangible assets received by the organization for production needs;
- change in the minimum sustainable wage, as well as various mandatory contributions, accruals and deductions.

The main factors of internal origin are:

- reduction of the cost of salaries, related to the manufacturing of products;
-increase and improvement of the productivity of personnel;
-reduction of materials cost for the manufacture of products;
- elimination of defective goods and related losses, etc.

One of the main factors in reducing the prime cost is an increase of the technical level of production. This is achieved through the introduction of up-to-date technology, automation and mechanization of production processes; the use of new types of materials and raw materials; changes in technical characteristics of products, as well as other factors that increase the overall technical level of production. The degree of influence on the structure and the level of the prime cost of production differ for each separate group of factors. For example, if the output is increased to a certain boundaries, lowering the cost of production is carried out by reducing the

share of fixed costs that fall on a unit. The prime cost can also be reduced by increasing productivity, and improving skills in the work.

So, we can reach the conclusion that the prime cost of an enterprise production depends on a large number of different factors, namely: efficiency, productivity, production and its quality, as well as the volume of production. Reducing cost is an important factor in the profit growth and it is an indicator of enterprise efficiency as a whole.

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THE CURRENT STATE OF CUSTOMS-TARIFF REGULATION IN UKRAINE AND ITS ROLE IN STATE BUDGET INCOMES

Customs-tariff regulation is among the main tools for the state regulation of the foreign economic activity. Its application contributes to maintaining the international trading system stability and provides protection of the domestic economy. An effective and continuous operation of the customs-tariff regulation mechanism is an essential condition for the state customs policy implementation, as well as for strengthening the economic and financial security of Ukraine.

Customs regulation as activity is based on a wide range of legislative basis in this sphere including the Law of Ukraine “On Customs Tariff of Ukraine”, the Customs Code of Ukraine and some others. In the Law of Ukraine “On Foreign Economic Activity” customs regulation is defined as “regulation of questions related to determining duties and customs fees through mechanisms of customs control, organization of activity of customs control bodies of Ukraine” [3, p. 6]. Besides, the

Law of Ukraine "On Foreign Economic Activity" mentions the following: "customs regulation of foreign economic activity shall be effected in compliance with this Law, laws of Ukraine on customs regulation, the Single customs tariff of Ukraine and treaties of Ukraine" [3, p. 12]. But national customs legislation requires changes under the influence of the European integration processes. That's why during the recent years customs regulation basis is being actively transformed and brought in balance with the European legislation, international obligations and standards.

Ukraine trades with more than 180 countries of the world, and over the years of its independence has already concluded multinational trade agreements with more than 20 countries. Within the framework of active development of international trade relations, protection of state economic interests as well as of sensitive branches of economy and domestic producers is gaining more and more importance. Customs-tariff regulation as a part of state customs regulation can effectively cope with this task, customs duty is the most important tool in the sphere of customs-tariff regulation of international trade. Customs duty is understood as a tax levied by the customs authorities of a country on goods that cross the state border. This tax is used to raise the state revenue, and/or to protect domestic industries from more efficient or predatory competitors from abroad [2].

Nowadays customs payments play an important role in filling the State budget of Ukraine. And analysis of customs charges, levied in 2015-2017, confirms this fact. The charges we investigated are: an excise tax on excisable goods imported into the customs territory of Ukraine, a value added tax (VAT) on goods imported into the territory of Ukraine, import and export duties. These customs charges provided 38.04 %, 38.43 % and 39.96 % of State budget incomes in 2015, 2016 and 2017 respectively [6]. The increase of this indicator was stimulated by the following five factors:

1. over these three years the volume of exports and imports have increased by 13.47 % and 32.23 % respectively;
2. the excise tax rates on petroleum products were raised and the excisable products list was expanded in 2015;
3. the rates for most groups of excisable goods were increased in 2016;
4. the excise tax on cigarettes and alcohol went up in 2017;
5. European integration processes and concluding of the Canada-Ukraine free trade agreement boosted the export volumes, while an export duty plan was over fulfilled in all of the three investigated years, especially in 2015, when the factual sum of levied export duty exceeded the planned one by 71.33 %.

This research has also revealed that during 2015-2017 the VAT on goods imported into the territory of Ukraine has had the most important role in the budget filling. On average, its share stood at 36.62 %. The excise tax on excisable goods imported into the customs territory of Ukraine was ranked second, except 2015, when the import duty exceeded it almost twice. One of the main reasons for such exception was introduction of additional import duty on 100 commodity groups in order to increase budget incomes by 17.6 billion UAH and thus stabilize the balance of

payments [8]. The import and export duties took third and fourth places in the budget filling respectively.

According to the research of I. Novosad [5], the level of the customs load on the economy is also a useful indicator of fiscal efficiency of customs payments. This indicator is calculated through dividing customs payments, received by State budget of the country, by the GDP figure. The calculations show fluctuations of the customs load level closely to 10 %, which is relatively insignificant. The increase in the level of customs load evidences that the domestic market of Ukraine is being flooded with imported products mostly from Russian Federation, China, Germany, Poland, Belarus, USA, Switzerland, Italy, France, Turkey, and Hungary (Ukraine imported 63,10 % of goods from these countries in 2017 [7]). This indicator equaled to 7.5 % in 2007 [5]. So the level of customs load has increased by 3.15 % within 10 years. It testifies to fiscal efficiency of payments that are accumulated by the customs authorities.

Proper functioning of the customs system provides sustainable economic development of the state, influences the investment climate of the country and protects its customs interests. However, despite the governmental initiatives on reforming the customs sphere, there exist a number of problematic aspects which worsen the Ukrainian customs system's efficiency.

Modern Ukrainian customs regulation system lacks coordination in the regulatory legal framework, proper interaction between different bodies, an effective system to control the compliance with the requirements of the legislation of Ukraine. There are organizational and managerial problems and a lack of legal clarity regarding the central executive in the sphere of state tax and customs policy [10].

The prerogatives and reforms in the field of the state customs business improvement have mostly formal and declarative nature. Another not less important problem is the fiscal role of customs duties, i.e. its main purpose is determined by the state's needs of cash, while in the developed countries the regulatory function of duty is a priority.

The prosperity of the contraband business is also a very severe issue: only illegal cigarettes trade results in up to 2.5 billion UAH of annual losses for the state budget of Ukraine [9]. The smuggling business connected with logs of wood, amber, smartphones, IT products, etc. is also developing in Ukraine, which poorly affects the image of Ukraine in the world. Besides that, the foreign economic activity commodity nomenclature is too branched, which gives the possibility of misuse when determining the product code.

A Ukrainian "single window" system, which is originally aimed to simplify the customs formalities, in fact increases the time for control passing. The requirement of physical representation of the paper documents' originals is also a source of problems. As a result, the subjects of foreign economic activity are not interested in the "single window" system because of extended product inspection [1]. The realization of the customs expertise in Ukraine is also problematic because sometimes

it can be almost impossible to find the owners of inspected goods and bring them to responsibility.

In order to solve the outlined problems in the sphere of customs business of Ukraine the following measures should be of top priority:

1) harmonization of norms of Customs and Tax Codes of Ukraine and other regulatory legal acts in the customs regulation sphere;

2) enhancement of an action program to support domestic exporters;

3) better provision of customs with material and technical equipment and further digitalization of state regulation and administration of customs activities [10];

4) curtailment of smuggling business attractiveness through applying special codes on the packs of cigarettes and cigarette blocks, development and improvement of cynology service and other internationally recognized methods of drug detection, more thorough customs staff recruitment, etc.;

5) fulfillment of the terms of the EU-Ukraine Association Agreement clearly and on time [4];

6) curtailment of the foreign economic activity commodity nomenclature.

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STUPID LAWS OF THE USA

You know that the United States is one of the most strongest country in the world. The USA is famous by a lot of things like Statue of Liberty, Times Square, Donald Trump, different traditions and many other ridiculous, sad, majestic, and terrible things. Facts that telling about the laws in the US, can tell about the mentality of the country no less than a historical excursion. By its nature, the story at the level of facts is rather entertaining than useful. So let's look at some of them.

So, the most interesting laws:

- You can not sleep in a cheese factory in South Dakota.
- You can not ride around the city square of Oxford, Mississippi, more than one hundred times immediately.
- You can not say "Oh no!" In Jonesboro, Georgia.
- You can not play golf on the streets of Albany, NY.
- You can not hunt whales in Salt Lake City, Utah, which has no access to the sea.
- A lawsuit in California states that a $ 500 fine is required to be paid for the explosion within a city of nuclear devices.
- There are forbidden: wearing cowboy shoes by people who do not own at least two cows; crying while testifying in court; licking of frogs and frogs; as well as the washing of cars underwear, which were in use.
- In the city of Bexley, Ohio, it is not allowed to install gaming machines in toilet.
- In the Clinton County, in the same state, it is forbidden to lean against the walls of the buildings of public institutions under the threat of a fine.

- In Oklahoma, dogs are prohibited from going to groups of three or more if they do not have a special permit signed by the city mayor.
- In Oklahoma City, you can not walk the streets behind, eating a hamburger on the go.
- Honolulu in Hawaii is considered a crime to "stick to birds" in urban parks.
- In the city of Columbus in Giorgio it is forbidden to chop the heads on Sundays.
- Montana is not allowed to carry sheep trucks in the cabin. The only exception is if the sheep are accompanied by a shepherd.
- Drivers in Little Rock, Arkansas, can not be buzzed at the place where cool ice cream and sandwiches are sold.
- New Hampshire is forbidden to collect greenery thrown by the sea on the beach.
- Hollywood has a special decree that forbids driving over two thousand sheep through the streets.
- In Pennsacle, Florida, residents are ordered to always have at least $ 10 for themselves.
- The city of Lafayette in California is considered a crime to spit within a meter of other people.
- San Francisco is forbidden to let the elephants out into the street, unless they are led by the leash.
- In Manville, New Jersey, a special decree is not allowed to offer cigarettes and alcohol to animals at the zoo.
- In the city of Puebla, dandelions are considered a forbidden plant.
- Idaho is forbidden to fish while sitting on a camel.
- Baltimore is not allowed to come to the theater with lions.
- In Providence, Rhode Island, in stores it is forbidden on a Sunday to sell a toothbrush and paste to one and the same buyer.
- In Arizona, it is forbidden to put a donkey in a bath in the face of a fine.
- In Chicago, California, a fine of up to $ 500, threatens anyone who blows up a nuclear device within the city.
- New Orleans can not tie crocodiles to hydrants.
- If you're in Texas, do not even think of firing on the bison from the second floor of the hotel.
- In Kansas, all pedestrians crossing the road at night must wear light reflectors.
- Alabama is forbidden to drive a car with blindfolded eyes.
- In Minnesota you are threatened to get into jail for being naked.
- Alaska is forbidden to wake the bears to photograph them, as well as to throw live elk out of the plane.
- In Oklahoma, under the threat of imprisonment, it is prohibited to annoy dogs, and to bite pieces of someone else's hamburger.

- In Eureka, Illinois, men wearing a mustache are forbidden to kiss women.
- In India, bathing is prohibited between October and March.
- In Alabama, under the threat of a death penalty, it is forbidden to sprinkle rail rails with salt.
- In Nebraska, you are at risk of being arrested if your child begins to hide during a church service.
- In Los Angeles, there is a statute that prohibits bathe two infants at the same time in the same font.
- In the city of Zion in Illinois it is prohibited to give smoked cigars to cats, dogs and other domestic animals.
- In Carmel, New York, a man faces a fine if he gets out into the pants in his pants that are not suitable for a jacket.
- St. Louis is forbidden to sit on the cobblestones and brew beer from the bucket.
- In Hartford, Connecticut is forbidden to cross the road.
- Baltimore is forbidden to throw a haystack from the second floor.
- Pennsylvania is not allowed to have more than 16 women living in the house (according to legislators, 17 women are already a brothel). The law, however, will allow 120 people to live together.
- In Pennsylvania, all drivers who are on a rural road at night are ordered to stop every mile and shoot at a rocket launcher, wait 10 minutes until the cattle that could hit her from the road and then go further.
- n Hawaii it is forbidden to insert coins into the ears.
- In Crescill in New Jersey, all cats and cats must wear three bells so that "the birds always knew about their location."
- In the city of Cookcheft in the same state it is officially forbidden to swear words that are spoiled.
- In Denver, the wandering stray dogs in front of another round must “warn dogs by hanging a three-day announcement on a tree in a city park”.
- In the same city it is forbidden to ride on Sundays on cars of black color.
- In Coloring City, Sterling is forbidden to let cats go for a walk if they “do not have rear light reflectors”.
- In Hartford, Connecticut, spouses are prohibited from kissing on Sundays.
- In New Brighton, in the same state, fire trucks can not ride faster than at a speed of 25 miles per hour, even if they rush for a fire.
- In the city of Forest City in the same state issued a special regulation for motorists. Having come to the city limits, they must necessarily stop and report on themselves by telephone in the municipality. This is done in order to "give time to the townspeople to remove horses from the road."
- In Florida, the law prohibits washing in the shower naked.
- In Atlanta, a special decree does not allow tied giraffes to telephone

pillars or street lamps.

- In Georgia, it's allowed to beat anyone who offend you with nimble expressions.
- In the city of Gainesville in the same state issued a special order that offers "eat chicken hands".
- In New Hampshire, all cattle cross the street, should have "a means for collecting manure".
- In California, one vehicle can not exceed 100 kilometers per hour if it goes without a driver.
- In Crawford, New Jersey, it is prohibited to park boats and boats on lawns.
- Denver is officially forbidden to let its neighbors use their vacuum cleaner in Colorado.
- Delaware is also prohibited from flying over any water reservoirs and resources, unless "there is enough water and drink in the aircraft".
- In Florida, a woman faces a fine if she falls asleep during drying her hair.
- In North Dakota, it is considered a crime to go to bed without taking off shoes.
- In Montana, seven Indians gathered together are considered a gang threatening civilians. They can shoot without warning.
- In the same Nebraska, where there are no seas in the meadow, it is forbidden to catch whales.
- The Whitehall in Arizona is forbidden to ride a car that has icicles on its wheels.
- In Nevada, you have the right to personally hang any who will shoot a dog on your plot of land.
- In California, animals are forbidden to walk within 500 meters of public facilities.
- In Alabama it is forbidden to drive a car untreated. The law, however, allows you to ride in the oncoming lane if you turn on headlights.
- In Connecticut, you must not dispose of used razors. In this same state, nobody, except the blind, can not walk with a white cane.
- In New York, those who jump from the roofs of buildings face the death penalty.
- In North Carolina, there is a law that says, "If a single husband and wife as a spouse fit together in a single room at the hotel, they are declared to be a husband and wife".
- In Florida, to skateboard, you need to get special rights.
- In the city of Key West in this state, hens are considered to be a rare species of bird that is under the protection of the law.
- In Fargo, North Dakota, you are threatened with jail if you dance in a hat
- In Florida, if you leave an elephant on the street in a place designated for parking, you will have to pay for it as a parked car.

- In the city of Cape Coral in the same state a special decree is not allowed to dry clothes on ropes.
- It is forbidden to drink almonds in Alaska. (And again about moose in Alaska)

And after finishing American stupid laws, I want to note that life in the United States, according to all the data, is more measured and calm than in less developed countries. So some of stupid laws have place to be here.

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THE ROLE OF MARKET COMMUNICATIONS IN MANAGING BOOK BUSINESS IN UKRAINE

Nowadays the general interest in reading has considerably decreased in Ukraine. According to the survey conducted during October-November 2017 by the Research & BrandingGroup, a company of marketing and sociological research, on the reader's activity of Ukrainians (1802 respondents aged 18 and older were interviewed), 51% of Ukrainians did not take up any publication, 43% of respondents read at least one book last year, however, 6% of the respondents were unable to answer the question whether they had read books during the previous 12 months; in 2017 more women (48%) than men (38%) were reading. Among the readers, there were more people with higher education, the fewer number of those with secondary education (57% and 31% respectively). The largest amount of readers in the eastern and central regions (49% and 46%) are mostly fond of reading. The least percentage in the southern regions of Ukraine (34%). At the same time, city residents read more than those in the rural areas (53% and 37% respectively). The number of books, pointed out by Ukrainians who regularly read, varies from one to several dozens: 75% - read less than 10 books, 50% - less than 4, 25% - less than 2. The average reading for a year of books is 7 editions (6.9 for men, 7.5 for women)

Nowadays in the book market the exchange of information is carried out both through direct methods of communication (direct communication, telephone, correspondence, events), and through mediated (media, radio and TV, direct marketing, visual aids). The number of information sources is constantly increasing; the amount of information received from individual experience and personal communication is reducing. There is some information chaos and as a result the use of manipulative technologies.

One of the conditions for the development of the book market is increasing the openness of communications, the creation of independent information centers, the integration of information resources. We need a system that will encourage a union of participants (buyers, libraries, sellers, distributors, publishers and printers) into a single information space. The ability to organize marketing communications is an opportunity to do art, to create conditions for the implementation of non-circulation, but ideas.

Marketing communications is a way of interconnecting and knowingly guided interaction between buyers, intermediaries and other market players. The most active in today's business is the implementation of 4 main areas of marketing communications: public relations, advertising, sales promotion, direct marketing. In general, marketing communications are the ability to manage not statistics and numbers, but relationships and events.

In conditions of modern competition, the need to use the potential of active and analytical marketing, updating of personal marketing communications and targeting the buyer is growing. World book business is actively using remote communication capabilities, implements direct marketing strategies, an "interactive system that uses one or more advertising environments in order to obtain measurable feedback and / or transaction from the client."

Creating effective marketing services in publishing houses and booksellers is constrained, in our opinion, by the low profitability of the book business and the lack of experienced staff with industry specifics. Interest and understanding of the need for marketing services is already there, and the funds for this until the Ukrainian entrepreneurs unfortunately lack.

Business practices agree that optimizing and increasing the profitability of a book business requires the implementation of a comprehensive marketing communications system, i.e.

1. presence of competent personnel;
2. organization of effective activity in separate business processes;
3. analytical management;
4. information system (CRM, telephone, Internet, website, etc.);
5. system of motivation and control (including communication audit).

In modern business, competitive advantages are largely solved by effective communication policies, closely linked to strategic directions of activities and marketing system, management system. However, today it is necessary to understand marketing communications not only as a tool that affects the behavior of consumers,

but as a communication channel that allows for joint projects in order to obtain mutual satisfaction.

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CONCEPT AND ESSENCE OF MARKETING

The concept of marketing is still unclear and raises a number of controversies regarding its interpretation. Marketing is a relatively new functional area at Ukrainian enterprises. Evolution of marketing in Ukraine has passed 3 stages. The first stage (in the mid 70's) – the first publications of the founders of Soviet marketing appeared: G. Abramishvili, V. War, N. Gerchikov, A. Goryachev, V. Demidov, P. Zavialov, B. Solovyov , Yu Trusova and others. At the second stage (from the mid 80's and the beginning of the 90's), a new group of marketers joined the marketing elite: A. Braverman, I. Gerchikov, E. Golubkov, N. Kapustin, I. Kretov, S. Medvedkov, M. Moses, R. Nozdreva, A. Porshnev, B. Solovyov, O. Tretyak, A. Khrutsky, and others. The works of the new group of marketers are mostly devoted to the general problems of the external and internal emerging market. In these works the approaches and possibilities of using marketing in foreign economic activity were analyzed. The third stage (from the mid 90's to the present) is characterized by the growth of scientific publications, which develop the methodological, methodological and theoretical basis of marketing in relation to the conditions for the establishment of market relations in Ukraine. An active process of creating marketing departments is underway, and there is a specialization in marketing in universities that provides training for economists and managers, merchants, engineers and engineers-economists. At the same time, a Ukrainian Marketing Association was created in Ukraine (February 20, 1997). The following specialists made a significant contribution to the development of domestic contemporary marketing as a science and art: professors A.O. Starostina, N.P. Goncharova, V.Ya. Zaruba, O.L. Kanishchenko, Ye.V. Kricavsky, O.E. Kuzmin, V.E. Momot, PG Break, VA Poltorak, IL Reshetnikova, O.I. Chernyak, N.P. Goncharova, V. Rudelius[1]. Effective implementation and use of marketing at Ukrainian enterprises requires, first of all, a correct understanding of its essence, and this is a rather complicated thing, because even the approximate estimates of marketing definitions themselves, modern Western and domestic literature offers

several thousand. Various scientists, marketers interpret the concept of marketing in different ways. So, F. Kotler in a book *Fundamentals of Marketing* believes that "marketing is a kind of human activity, aimed at meeting needs through exchange". In turn, D. Traut, E. Rice, in his joint work *Marketing Warfare*, first reflected a different position on the concept suggested by F. Kotler, and proved that "marketing is a war where competitors are enemies and your goal is to defeat them". And William Rudelius, O.M. Azaryan, O.A. Vinogradov in a joint work *Marketing: A textbook*: *The Consortium for the Improvement of Management Education in Ukraine*, noted that 'marketing is the process of creating a concept of ideas, goods and services, pricing them, promoting and distributing them through mutually beneficial exchanges for individual and corporate purposes". Today, the American Marketing Association has adopted the following definition of marketing: "Marketing is a prediction, management of the economy and the satisfaction of demand for goods, services, organizations, people, territories and ideas in the form of exchange".

Consequently, we can conclude that the interpretation of the concept of "marketing" can be divided into four approaches looking at the various methodological approaches of marketers of science to the characteristics of marketing. Each walk examines the essence of marketing in different ways. Let's find out more in detail. There are plenty of approaches in total. We will consider the most popular, namely the conceptual approach, the functional approach, the system-behavioral approach, the institutional approach and the managerial approach. The conceptual approach considers marketing as exact knowledge, foresight and taking into account market requirements and wishes of consumers, a complex of scientifically grounded representations about management of production and sales activity of the enterprise in the conditions of market relations. A functional approach explains marketing as a trade activity that promotes the acquisition of goods or services, their promotion from producers to consumers, as well as meeting the needs and desires of people. The system-behavioral approach represents marketing through problems associated with changes in the respective systems (which are four: the system of input and output, the system of power, the communication system and the system of adaptation to internal and external conditions) and the guesswork characteristics and consequences of such changes. An institutional approach is to understand marketing as a system with many elements that interact with each other and with elements of external systems. The managerial approach to understanding marketing involves its close relationship with the management process of the enterprise, which operates under specific market conditions [2]. Consequently, among experts and scholars does not have a common definition of the concept of "marketing", so in the direction of this topic, you can still do a lot of research. In turn, we offer the following definition of marketing: Marketing is a system of measures for the study of consumers and the market for further definition of the tasks of the enterprise for its successful functioning.

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PROBLEMS OF EMPLOYMENT IN THE CITY OF KHMELNYTSKY

The purpose of this study is to analyze the demographic structure of labor resources in the city of Khmelnitsky in modern conditions. Efficiency of the use of labor resources forms a success of management largely. A negative tendency is today kept in the features of forming the labor potential.

The important economic and social terms, which caused the decline of efficiency and the use of labor resources, is a disbalance of demand and supply of labour force at the market of labor, a low level of remuneration of labor and a decline of social infrastructure in rural locality. Arising and intensifying of the marked problems in market conditions are largely caused by absence motivational factors and organizationally-economic mechanism of adjusting the labor relations in industries, by lag of developing the objects of social infrastructure and decline of social service sphere [2, p. 91].

As researches show, at present the problem of improving the quality indexes of labour remain due to the increase of professionally-qualifying and general preparation of agroindustrial production. One of the reasons is the using a morally and physically out-of-date equipment by agricultural enterprises and absence of money for its replacement. These circumstances provide for an orientation towards the use of low-skilled manual labor, worsening the quality of of products, declining the level of the personal interest of businessmen-employers in the increase of level qualification of the workers, compensation of technical and personnel backwardness [4, p. 105].

In the city of Khmelnitsky average monthly number of economically active population aged 15-70 (based on the results of a sample population survey (households) on issues of economic activity) on average 2017 amounted to 566.2 thousand people, 516.0 thousand of which were engaged in economic activity, while the rest (50.2 thousand) were unemployed, that is, those who did not have work, but actively sought for it both independently and with the help of the state employment service. The employment rate of the population aged 15-70 was 54.7%, while the working age was 63.2%. The unemployment rate (according to the ILO methodology) among the economically active population aged 15-70 was 8.9%, and the working age was 9.2%.

According to the State Employment Service, the number of registered unemployed people during February 2018 increased by 4.3% and at the end of the month amounted to 14.3 thousand people. Of the total number of unemployed, 46.3% were women.

The level of registered unemployment in the region compared to January 2018 has not changed and at the end of February 2018 amounted to 1.8% of the working-age population (in urban settlements and rural areas - 1.3% and 2.6% respectively).

The average number of unemployed who received unemployment benefits during February 2018 amounted to 12.6 thousand people. The average unemployment benefit was UAH 2342, which is 31.7% less than the statutory minimum wage (UAH 3723).

The number of vacancies announced by employers to the state employment service in February 2018 compared to January 2018 increased in 1.7 times and at the end of the month amounted to 2.4 thsd. (at the end of February 2017 - 2.0 thsd.).

According to the professional groups, the greatest demand was for the end of February 2018. It was observed on the servicing, operation and control of the work of the process equipment and machinery - 32.5% of the total number of vacancies, 24.9% - for qualified workers with the tools, 15.4% for the workers in the sphere of trade and services, and the smallest - for skilled workers of agriculture and forestry, fish-breeding and fishing (1.1%) [3].

So, in recent years in Khmelnytsky the processes in the field of employment of human capital are characterized by changes in the structure of the employed, structure of labor needs that contradicts the process of human resources formation of the region. To improve the situation there is a necessary struggle against unemployment and support for enterprises that create new jobs by reducing the tax burden on the entrepreneur, since with the increase of the minimum wage, entrepreneurs are forced dismiss workers, or transfer to part – time jobs.[1, p. 43].

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THE DEVELOPMENT OF ECONOMY IN THE FIELD OF EDUCATION

The purpose of this research is to consider the development of the system of higher education in Ukraine and to determine the economic and financial conditions of the functioning of the higher education system.

Each person's education is an investment in his human capital which allows him to contribute to his society in a productive way. Consequently, the education of the people forms a crucial determinant of an economy's capability to achieve high growth with high wages, low unemployment and strong social cohesion. It is therefore vital for Ukraine to ensure a high-level high-quality education for all its population, requiring appropriate educational investments and an efficient use of given educational resources, as well as an equitable distribution of educational opportunities. In the competitive and dynamic environment of modern knowledge-based economies, education policies take centre stage and, if rightly conceived, can take on roles formerly mainly confined to physical-investment or social-protection policies.

The analysis of the economic and social determinants and consequences of education is the realm of the economics of education. Education economists analyse the effects of education on wages, employment, economic growth and social equity, while also covering non-monetary outcomes and external effects of human-capital accumulation. They scrutinize the role of education in a society's capability to advance knowledge through research, entrepreneurship and innovation. They estimate how family backgrounds, schools' resource endowments and institutional features of the education systems determine the quality of education, using observational and experimental data to estimate the effectiveness of education policy interventions. They deal with the public and private financing of different levels of education from pre-school learning to on-the-job training and compare the benefits of each type of education to its costs [1, p. 8]. And they explore the opportunities and limitations that the employment of markets and incentive-creating institutions in general can bring to an efficient use of scarce resources in the different forms of learning throughout life. The knowledge created by the economics of education can thus assist governments in optimising their policies through better-informed choices, thereby helping to reach the goal of sustainable and equitable growth with an encompassing participation of all citizens.

Higher education is one of those areas that facilitate longterm national competitiveness. Higher education should provide national economy with highly skilled and creative professionals who will be able to face challenges of technological development. Consequently, government should take measures to optimize organizational, economic and financial conditions of higher education system functioning. This explains the relevance of this study. Ukraine can pride itself on its high (according to the world standards) levels of educational expenditures, which result in higher percentage of people with higher education, yet bring no increase in labour productivity or employer's level of satisfaction with the quality of workforce.

The reason for the above imbalances is that for years the budgeting process has completely disregarded the excising demographic trends, such as falling birth rates, urbanization, etc. and failed to adequately meet the actual market needs for professionals with specific knowledge and skill sets [2.p11]. For example, the number of children aged 15-19 years decreased by 41% during 2000-2015, while the number of students – only by 8%. Gradual reduction in the number of students began late and has been very slow. Thus, according to the latest available data, as of 2013, 80% of the Ukrainian youth held higher education degrees. In 2016, the situation did not change because, according to the admission statistics of Universities, 80% of school graduates were admitted to Universities, in comparison with 50% in 2000. The upshot of this is a significant gap between the employer requirements and the level of education in Ukraine: 30% of Ukrainians feel overqualified for the job they are currently performing. Another imbalance – during 2010-2015 the total number of students diminished by 33% while the number of students funded from the state budget – only by 19%. In 2016, more than a half of students – 51% of total – were educated at the expense of the state, compared with 38% in 2010. The number of students per one teacher (including full-time (day), evening and correspondence study) amounted to approximately 11 in 2015, while the same indicator in European countries averaged 15.4 in 2013.




The number of Universities	288	160	48	427
per 1 mln of the population	6.35	2.48	4.95	5.28
in TOP 800 Times Higher Education	0	88	11	41
in QS TOP 400	1	48	8	28
in ARWU TOP 500 («Shanghainese» rating)	0	37	11	38

The largest number of foreign students in higher educational institutions of Ukraine are from the following countries: China (4.7 ths), Turkmenistan (4.5 ths),Russia (3.5 ths), India (2.4 ths), Jordan (2.2 ths), Iran (1.2 mln people) (Government Service of Statistics of Ukraine, 2012) [3,p 128]. Analytical data indicate a territorial uneven distribution of higher educational institutions. Most institutions are concentrated in the areas with high population (Kyiv, Donetsk, Dnipropetrovsk, Kharkiv regions), which is justified in terms of the orientation of educational institutions to accommodate potential consumers. At the same time the number of universities in leading positions, except for the above, occupy Lviv and Odesa regions, which is a consequence of the acquired human and scientific potential previously. Industrialized regions – Kyiv, Donetsk, Dnipropetrovsk, Luhansk, Kharkiv, Odesa keep leadership in the number of higher educational institutions of the I–II accreditation levels (technical colleges), which concentrate a large number of industries that use skilled labor. During 1990–2012, the number of universities grew rapidly, exceeding the pace of preparing scientific and pedagogical staff for higher education training, including highly qualified specialists. This has led to the fact that some schools do not meet the demand in terms of the provision with qualified

teaching staff. This fact affects adversely the quality of teaching and reduces the overall research and innovation potential of higher education.

One of the negative factors HR development of higher education is insignificant level of wages of teaching staff, low level of social security and low prestige of teaching work (Geyets et al., 2006). One of the basic drawbacks of higher education in Ukraine is the orientation of higher education to meet the needs of consumers who want to receive the so-called "fashionable" or "rating" specialty (economist, lawyer, manager, psychologist etc.). Great part of higher educational institutions prepare non-core professionals, not having proper personnel, scientific and methodological support.

In future, the research should be delivered on developing econometric models that enable the prediction of economic characteristics of higher education.

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MARKETING COMMUNICATIONS IN FILM DISTRIBUTION AND EXHIBITION

An effective marketing communications system widely applying various communication tools and new means of information influence has become the main factor in ensuring competitiveness for modern enterprises in the market. The ability to organize the interaction of many tools of marketing communications strategically correctly and to identify the most effective means of communication in each individual case of the enterprise’s economic activity is nowadays a key to the company’s success.

In terms of the economic approach, there are many interpretations of “communication” as a concept, but its general sense is a process of transferring information about an enterprise and its product in order to influence the target and non-target audiences and obtain counter-information on the respond from these audiences to the enterprise's influence [1, с 294].

Various authors interpret “marketing communications” differently. This concept is understood as a complex of all kinds of signals and messages developed by the firm for different audiences: consumers, dealers, suppliers, shareholders, and authorities, as well as for its own staff.

Summarizing the conducted research, we suggest understanding marketing communications as the process of forming bilateral relations between actors in the market through a certain marketing message to the audience, through information, persuasion, and reminder, in order to achieve the marketing objectives of the firm and the implementation of the chosen strategy on the market

The communication strategy of the cinema consists of a marketing strategy (analysis of consumers and competitors in the market), a creative strategy (development and formation of the image and image of the popular cinema of the city) and a media strategy (the choice of media advertisement carriers). The purpose of the communication strategy for film distributing companies is the choice of an appropriate communication media for the effective development and formation of the image of a cinema, popular in the city, through the analysis of the film distribution market and communication tools for an effective attraction of the consumers (audience) of the film.

The communication strategy includes general principles of the cinema advertising activity: taking into account the main motives of consumers in choosing a film and a cinema, targeted communications, advanced communication tools (Internet-technologies), choosing effective media by determining the ratio of communication costs to the number of consumers that had got information and became consumers of cinema services.

When developing the strategies and tools of marketing communications of the movie industry companies, it is necessary to pay attention to certain features:

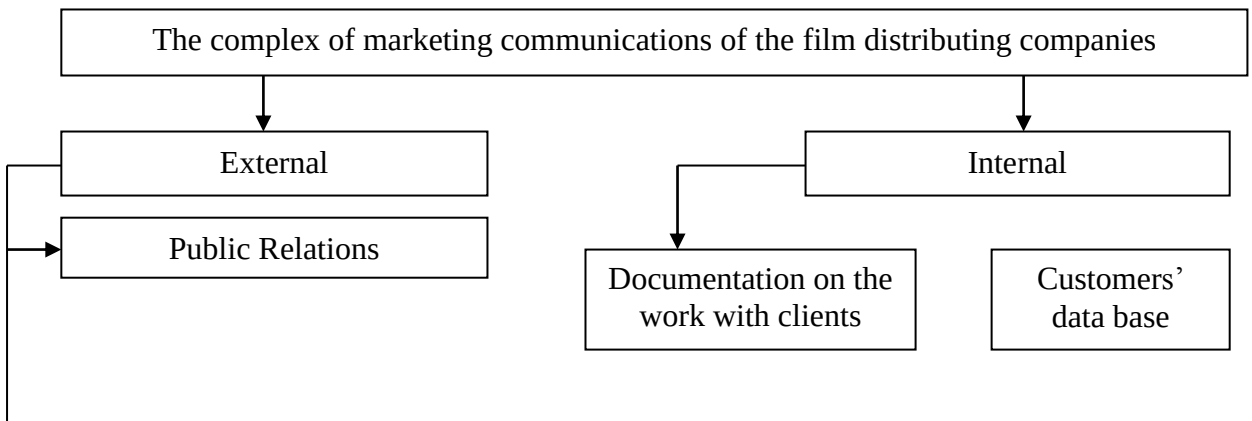
— The shape and style of the logo. The logo should fully reflect the direction of the cinema and be clear to the consumer of cinema services. Usually, this name is written in an interesting font;

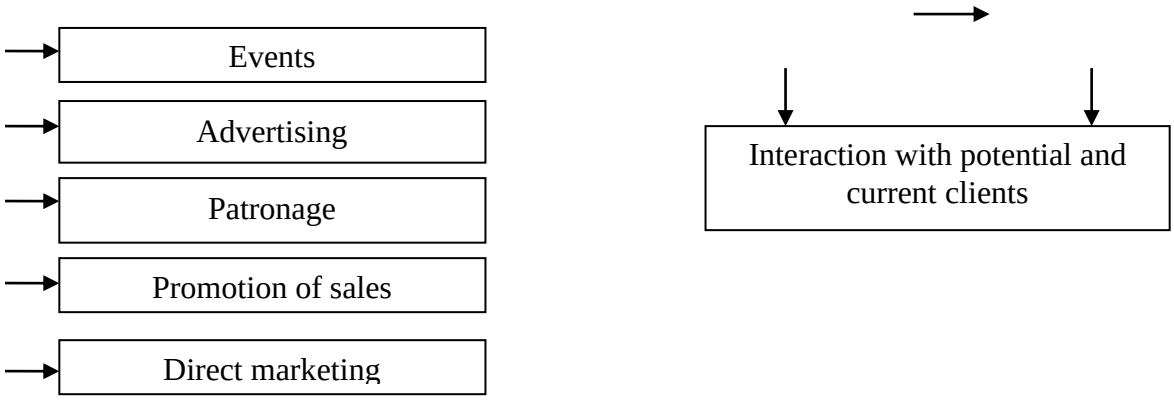
— When formulating the advertising slogans, the use of interesting metaphors in them will attract the attention of the consumer to this institution;

— An element that helps in promoting cinema rental services is also the provision of information about the novelty, honors and long-awaited feature of the selected movie, which the client is going to view in this cinema;

The advertising provided by the entertainment services can focus the consumers' attention on a certain style of behavior, appropriate to the well-known and really popular people. In this case, the image of a famous person shapes the image of the service he/she enjoys. But the exclusivity of the person demonstrating the service can prevent the perception of it as a daily used thing, since the ideal often seems inaccessible.

The complex of marketing communications of film distributing companies is presented in the Scheme 1.





Scheme 1. Complex of marketing communications for the film distributing enterprises.

Source: developed by the author according to N. M. Vlashchenko [3]

The process of marketing communications management involves complex development of decisions on the content of communications, justification and choice of strategy, public relations and corporate social responsibility [2]. Differentiation of promotion tools depending on the type of films is presented in the table # 1:

Table 1

Differentiation of promotion tools depending on the type of films

Type of films	Elements of marketing communications	Distribution channels
Long-awaited films-novelties	Advertising, sales promotion	Availability of a constantly updated website; activity in social networks; development of bonus accumulation programs; publications in mass media; questionnaires on the quality of services; organization of events for various holidays.
Films after the premiere show	Advertising, sales promotion	Activity in social networks, implementation of the system of discounts; street advertising (billboards, light boxes)
Elite folmss	Advertising, sales promotion	Availability of a constantly updated website; activity in social networks; development of bonus accumulative programs with an emphasis on the off-season periods; printed advertising in periodicals, including free ones.

Source: developed by the author according to N. M. Vlashchenko [3]

To sum up the conducted research it can be argued that the complex of management of marketing communications services enterprises has significant differences from the management of marketing of enterprises producing material goods. At the enterprises of this type, a special role is given to the staff who directly works with the clients, and whose skills, behavior, competence, courtesy of impact the clients' visits to this particular cinema and their satisfaction with the film. Also, the complexity of the combination of all elements of the service that affects the level of customer satisfaction remains an essential barrier when organizing the process of providing a film distribution service or for improving its quality. Further studies are related to the development of tools for improving the management of marketing communication activities of service companies aimed for promotion, improving their image and establishing long-term interaction with the consumers.

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STARTUP BUSINESS AND ITS ACCOUNTING ISSUES

In recent years, such business phenomenon as a startup has become quite popular. The urgency of the problem is based on the fact that the startup developer, while developing a small business, is not able to make sound managerial decisions without control over financial resources.

CB Insights has published an analysis of the main reasons for the failure of startups, among which the most significant are market insecurity in the created product (42%) and lack of funds (29%). The smallest share was taken by the lack of flexibility of the company (7%). Among other indicators, there were other financial factors, such as: problems with pricing (18%), problems with the business model (17%), weak marketing (14%), incorrect strategy (10%), lack of interest from investors (8%), etc. Thus, all of these issues are related to uncontrolled financial resources [1].

Sooner or later, any project is facing the question of using an accounting to make important management decisions that will affect its financial future. After all, when starting a business, an entrepreneur should focus on finding financial resources, creating his product, developing partnerships and generating sales. That is why, accounting for the startup is an integral part of its development.

Before understanding the peculiarities of the accounting for startup, one need to understand what a startup is in general. Startup is a new business project that seeks to realize an entirely new unique idea, to suggest a new product at the market in order to get profit from this project and its further development. It is important to understand that not all newly created projects can be called startups. All startups have one particular feature: their idea is brand new, the product is original, not copied from other existing projects.

There are five main stages of startup development [2]:

Startup shaping. The search of idea and developing of its technical methods of realization are at the stage of shaping. The initiative group conducts market analysis, writes a business plan, formulates a technical task. Next steps are: creating a prototype product, testing its versions, studying the demand and finding sources of funding. At this stage, during the activities planning, it is necessary to predict the costs of activities, to make an approximate cost of the product, etc.

Startup formation. At this stage an investor is found, and the product is marketed. The product must prove its superiority to its competitors in market environment. When compiling accounting reports, it is necessary to allocate separate graphs of income, expenses and profit, for example, for each group of goods. This way, we can see if growth in sales really increases our revenue, and if there is no income, an initiative group should intervene and improve the situation.

Early project development. The company goes into development if the product is competitive. The product captures the market niche, which its developers have been focusing on. Small business goes to break-even point and brings profit to investors.

Startup expansion. At this stage, the product occupies new market shares, is in high demand and, consequently, the revenue is gradually increasing. Accounting will help to calculate and plan the right direction to the next stage by examining, with the help of accounts, the needs of buyers, which, accordingly, will increase demand.

Maturity of the project. The investors, who funded the project are selling their share in the business, when the company reaches the peak of its development, which brings them good profit. Although, individual investors retain their share and use it as a source of constant income.

Entrepreneurs do not often use the accounting for cash flow at the start of their business. However, reasonable accounting for finances from the very start can help correctly assess its financial situation and guide the cash flow in the right direction. After analyzing a large number of factors related to the creation, development and planning of the startup, we believe that it is necessary to keep accounting records at all stages of the startup development, in order to make sound managerial decisions, increase the economic benefits and reduce the cost of small business. Accounting will help to understand the current situation in general, consider development opportunities and find ways to reduce the risks of decisions.

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ADVERTISING APPEAL AS AN EFFICIENT SALES ELEMENT

Every day in our life, each of us striving for the of attention the other people is constantly engaged in some kinds of advertising activities, particularly, self-promotion. Our positive comments about our friends and relatives also create a sort of advertising or promotion for them in the community. As a result, a complex system of social links and relations between a huge number of people appears in society. And the peculiarities of the psychological base of that system have not been

sufficiently studied yet. Therefore, psychology regards commercial advertising as only a special case of a global system of interpersonal and intergroup communications.

From the point of view of the psychology of advertising, people's demonstrative behavior or their self-presentation do not essentially differ from the activities of big organizations or companies spending a lot of money on the advertisement of their goods or services [1, p. 5].

Occupying an intermediate position between media advertising and sales promotion, on-the-spot advertising is an effective way to bring commercial information to the consumer. It promotes the activity of not only a trading company but also a producer.

Of course, today's advertising requires special principles of creation, since there is plenty of advertising product and the level of competition is high. The market is saturated with advertising appeals, so marketers constantly have to invent new ways to attract potential customers. The multi-level models of the advertising impact can be highly effective in that case [3].

The first and the basic model is AIDA. It distinguishes four levels of influence of advertising: attention, interest, desire and action. This popular nowadays model of advertising influence was initially regarded as a description of the impact of advertising. This advertising initiates attention, then arouses interest, eventually appeals to the motives ("desires") and prompts to action (before the purchase of goods or services). So, this model expresses the course of the process of the advertising impact: attention becomes the precondition for interest, interest is a prerequisite of desire, and if the consumer has a desire then the customers will definitely buy a product or service, that is, they will perform an action. Also, there are recommendations on how advertising should be organized: in order to be effective, advertising should touch all four levels. Of course, it provides the basis for the application of certain methods of transferring the influence of advertising. For example, attention can be understood through the motion of gaze, and available motives – through verbal thought aloud and the projective method of testing [2, p. 99].

As an example of the development of the AIDA model, the influence of advertising is represented by a six-step model of Levinda and Steiner. The model is based on the fact that the impact of advertising is a general result of six steps: attention, knowledge, sympathy, benefits, beliefs and purchases.

The authors concern each previous step as necessary, even if it is insufficient to achieve the next level or step.

If people look through the advertising and face the information not consistent with their relationships and beliefs, they tend to search (and find) counter-arguments, and thus avoid setting changes. Although violations, for example, due to the use of humor, background music or noises of any kind, prevent the search and consideration of such arguments and therefore may lead to superficial changes in settings. However, it should be kept in mind that using this strategy demands to avoid both the ineffectiveness of violations and the obstacles at least the necessary embryonic

understanding of the treatment. Therefore, the disadvantages are best suited for very simple arguments, which are easy to refute or less reliable. Already these considerations explain that the use of violations is due to certain specific conditions. Petty and Brock suggest five conditions for maintaining communication persuasion through violations:

- communication of belief contradicts the original attitude;
- the recipient was involved in the topic;
- communication of the persuasion provokes counter arguments;
- the message (and not the violation) sends the initial attention;
- the source has a high probability of purchase.

In the process of advertising, various kinds of obstacles arise as a result of the influence of factors of the environment. They can be one of the reasons for lowering the effectiveness of advertising. You can select the following groups of obstacles:

1. physical (for example, poor-quality printing, poor TV-signal);

2. psychological (one and the same information can cause different emotions in different people);

3. semantic (the same word may have different meanings for different groups of people).

Taking into account all these features of advertising appeals will help to avoid possible mistakes in the implementation of an advertising campaign [4].

It is clear that consumers can live without many things if new needs and desires are not imposed on them by means of advertising. A woman can live without lipstick, perfumes, elegant underwear or fur coat. You can live with only one dress, one hat, one coat and one pair of shoes. Of course, in the household, you can do without a vacuum cleaner, a refrigerator or a washing machine. And men generally can live without expensive lighters, electric shavers, shorts or bright ties. However, people will be much happier if they fulfill not only mandatory necessities but also something that creates comfort and provides a high standard of living (of course, if material resources are available) [3].

But to grant job to people, and to provide the initiators with a possibility of creating financial flows and getting profit, we have to make consumers believe that most things they do not have are of great need for them, and it is an urgent matter to buy exactly what we are advertising, because the advertisement knows what people really need. This logic should be clear for any potential consumer when they meet our advertising.

Before the creating of an advert, a group of people of marketers is organized, and they investigate the problems existing in society, while each product or service is presented as a genuine and reliable solution to any problem. The effect of the product or service is judged by the consumers themselves after they have take advantage of the service or purchased the goods.

Consequently, there are many ways of effective selling such as discounts, promotions, gifts, certificates, contests, work on unique service standards as specific instructive documentation. Also, the level of service and the quality of employees' work have a great influence on sales efficiency and high performance. Even modern

Cross-Sell and Up-Sell practices are still not so common and easy to create and use as advertising. As a conclusion, advertising, namely advertising appeal, remains the most effective and comprehensive method of effective sales.

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PERSPECTIVES FOR DEVELOPMENT OF INTERNET-TRADE IN UKRAINE

Internet commerce is an industry that is developing at a rapid pace, which is why business on the Internet pays special attention to the emergence of the informational society and its direct contribution to the economy. The global network enables goods and services to enter the global trading market. The development of the informational and communicational technology sector is also a factor contributing to the successful conduct of business and an impetus to increase the rates of economic growth of countries. E-commerce has been developing steadily over the past two decades, which is a short period of time compared with many sectors of the economy.

E-Commerce is a form of business deal, in which, instead of physical contact and exchange, the interaction of the parties is carried out electronically, resulting in the ownership or right to use the product, or the service is transferred from one person to another.

In Ukraine, the rapid development and adaptation of Internet commerce are underway, and the development of the ICT sector, which is the direct engine of Internet commerce, is in the world. It is worth noting that this kind of sales of goods has a huge success among the target audience, because, as a rule, in the absence of time, many people simply do not visit retail outlets. And so they come to the aid of a fast and accessible online store at any time of the day or night.

There are different levels of e-commerce organization: national and international. For a number of reasons, international commerce is becoming more

complicated. It depends, first of all, on customs duties, differences in tax systems and in the conduct of banking operations. E-commerce is implemented within the framework of the Internet economy, that is, the environment where the company or person can establish interrelationships of bilateral cooperation in the field of trade.

E-commerce is growing rapidly in modern conditions and is constantly being modernized by a business model. Accordingly, it has its own peculiarities. First of all, business on the Internet should cover the following aspects: establishing contacts with the target audience of buyers by attracting attention (advertising, bright site design, etc.); sale of goods and services; providing full control over the payment, delivery and after-sales operations.

An online store can be both a basis for business creation and an auxiliary tool aimed at developing and expanding already existing business, thereby helping to attract more customers and capital. The main drivers of the development of Internet commerce can be considered an increase in the competition of online stores and the dynamics of electronic payments.

There are over 10 varieties of business models for online commerce, but the main and most popular are models:

B2C – a consumer to a company;

B2B – a company to a company;

C2B – a consumer to a company;

C2C – a consumer to a consumer.

B2C category has historically been the first model in which a commercial enterprise acts as a seller of goods and services, and a customer (consumer) is an individual. In B2B commercial organizations play a role both as a seller and a buyer. This business model opens up new horizons for companies, such as the placement of commercial offers, large deals, and contracts, the expansion of business ties at the international level and increased activity on the global market. At present, a large percentage of all transactions carried out in the e-commerce markets are in the sector. In the C2B model, the role of the seller is assigned to a private individual, and the buyer is a company. A similar system of sales organization allows consumers to set the value limits of goods offered by commercial organizations, thereby independently shaping the demand for these products. But it should be noted that this business model is the least used of all existing ones. In the C2C model, individuals are both buyers and sellers. Under these conditions, sites are only intermediaries between consumers.

During the first half of 2018, Ukrainians refuse to pay almost 4 billion USD for purchases on Prom.ua[3], which revises the result of the same period in 2017. This is evidenced by data from the study of small e-commerce. This did not happen at the expense of healthy goods, but due to the number of orders. Yet e-commerce in Ukraine is restored by a young industry that will not yet be used by the economic potential to gain a more prominent share of the world market. The Internet retailing market is attracting active attention to business development, as well as for investors who are actively entering the market, financing new ideas and projects. Under

Internet retailing, we understand sites that have a certain amount of goods, as well as the possibility of ordering through the mechanism of the basket.

E-commerce in Ukraine is now in the stage of rapid development. This segment of the economy attracts attention. Experts estimate that market development will last until 2019. But in order to prevent this process, it is necessary to solve a number of problems. First of all, government support is needed. It is worth paying attention to the development of e-commerce infrastructure, as well as the security of personal data of clients and intellectual property rights. In addition, there is the problem of the lack of awareness of Internet users about electronic payment card, which greatly facilitates the process of payment for goods and services. These tasks require immediate resolution and participation in this particular state.

The online market in Ukraine is developing at a slower pace due to poor logistics and an unstable payment system. The local market of Ukraine is dominated by local companies such as Rozetka[2], Allo[1], Prom.ua[3] and many others.

Most buyers are young people with higher education, living in cities. More than half of Internet buyers in Ukraine are people aged 14 to 34 years. A little over 36% of them are residents of cities with a population of more than 500 000 people, and 20,5% live in rural areas. Positive impact on the growth of the online consumer audience has made access to 4G. According to the results of last year, Ukraine has outstripped all other European countries by such an indicator as the growth rate of sales on the Internet – for our country this figure was 35%. Extreme distribution of Internet commerce occurred in the countryside. By the end of 2018, 60% of people have access to online purchases.

Purchasing activity has a greater impact on the development of Internet commerce, but its availability depends on the development of Internet infrastructure. In order for business in the field of Internet retailing to bring a positive result, you need to use a way to promote stores (companies) in social media. Distribution and sharing of information in the global network between users form a special kind of purchasing behavior. Target audience before purchasing a product thoroughly examines it and compares it with analogs. But the final decision is often taken only after reading the opinion of other users. According to the research, for the Ukrainian consumers, in addition to personal recommendations of acquaintances, the Internet becomes the main information resource and place of the decision on the purchase.

Internet retailing has its own specifics. It opens new opportunities both for consumers (buyers), for suppliers, and for commercial organizations. At the present stage of development, such a sector of the economy is in the phase of formation and is gaining momentum.

The rates of Internet penetration in the capital and in large cities are much higher than in other regions of our country. But recently there is a positive dynamics of this process. In the coming years, the indicators on the market of e-commerce in Ukraine will increase significantly; there is a positive trend of growth in market volumes. But there are a number of problems that slow down this process; therefore, for the even development with the least losses and risks, support of the state is

necessary. The main task of the state is to create a stable situation in the e-commerce market and make it a competitive player on the worldwide online platform.

Thus, Internet commerce, being a fairly young segment of the Ukrainian economy, is actively gaining momentum in its development. Our country is ready to take high positions in the e-commerce market. A good organization of business, taking into account all the trouble moments, such as competitive prices, a wide range, choice of delivery method, will promote Ukraine's advancement in the Internet space. The Ukrainian Internet commerce market, according to our deep conviction, is rather attractive not only for domestic players but also for foreign investors. Indicators of the volume of the Ukrainian e-commerce market have positive dynamics, despite the economic crisis and the political situation that has developed in the country.

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BUDGET HOLIDAY IN UKRAINE

People all over the world love to save, even citizens of well-off countries. After all, it's so nice – both to travel, and to spend not too much with it. In Ukraine, it is more important because today Ukraine and most Ukrainians are experiencing an economic crisis. But people want to travel, so they are looking for a budget holiday. Because of this, I chose this particular theme. I made a list of the most accessible Ukrainian cities for tourists, where it is interesting to go on a weekend.

So, a budget holiday in Ukraine. In fact, we can travel budgetary everywhere. For example:

Ternopil

Ternopil is a city from the must-see list for any Ukrainian traveler. In addition to the number of monuments and medieval historical places there is another advantage in this city: the budget of your trip to Ternopil cannot exceed 1000 UAH.

Once being there, be sure to visit the Dominican Church, the Ternopil Castle, the Zbarazsky Palace, the Pototsky and Vyshnevetsky Palace - in the vicinity of the city. In the city itself it is worth taking a walk in the park "Topilche" and visiting the local "Champs-Elysees".

People with a strong psyche can look into the gloomy chambers of the Museum of Political Prisoners of the Soviet Period. And the Regional History Museum will be pleased with the historical, ethnographic, archaeological exhibits, sculptural compositions of the famous Johann Pinzel.

The mood of Venice is a romantic place with a distinctive architectural ensemble, an arcade, columns and a restaurant-gallery. The humorous monuments of the 12th chair from the famous book "Golden Calf", the Invisibles from the novel by Herbert Wels and the sanitary technician will make smile. [1,p.1]

Renting an apartment with all conveniences in Ternopil can be up to 320 UAH per day.[3,p.2]

Lviv

Over the past few years, Lviv has become a kind of mink for Ukrainian tourists. The image of a coffee capital with centuries-old history is backed by a large number of special places in the city, where you can always meet tourists from other countries and cities. When in Lviv, visit the Rynok Square, Apteka Museum, climb the High Castle, visit the Latin Cathedral, the Dominican Cathedral and the Lviv City Hall.

And when you want coffee, go to “Lviv Coffee Maker”, “Galka” or “Masoch-Café”, and enjoy delicious Lviv chocolate in the Lviv Chocolate Workshop.[2,p.1]

But staying in Lviv can be in the apartment for only 332 UAH per day.[3,p.1]

Uzhhorod

In the second half of April Uzhgorod's streets turn into an enchanting garden thanks to the blossoming of sakura. Here even "Sakura Fest 2017" is held, which is intended to emphasize the beauty of the Transcarpathian capital at this time of the year.

Once in Uzhgorod, be sure to go along the streets of Dovzhenko and Rakotsi, as well as visit the Uzhhorod castle, the Boddo Park, the Lypova Alley and the church of St. Yury.

The Uzhgorod castle, built between the 9th and 13th centuries, is hugging over the city and visible from everywhere. The stone pedestrian bridge over the river Uzh connects Old and New Town.

The Goryansk Rotunda of St. Anne is a monument of architecture of the 12th century, which has no architectural analogues in Ukraine. On the walls there are murals of the 14th century of Italian artists. The Laudon Arboretum contains exotic plants from different parts of the world. Corzo is an extravagant street of shops, banks, cafes, low-rise old houses with stucco decorations.

You can stay in Uzhgorod in an apartment for 390 UAH per day. Alternatively, you can book a room in a local hostel for just 150 UAH per day[3,p.3]

Odesa

Odesa is beautiful at any time of the year. Of course, visit the main attractions of this maritime city in Odesa: Derybasovska, Odesa Opera House, Potemkin Stairs, Privoz, and also look at the Seaside Boulevard and descend into the Odesa Catacombs.

And to book an apartment for a day in Odesa can be only 390 UAH per day.[3,p.1]

Chernivtsi

Chernivtsi is not accidentally called "little Vienna" or "little Paris". Here is the special atmosphere of the city-holiday, the interweaving of cultures of different peoples, beautiful squares, ancient streets, domes of temples, colorfulness of architectural ensembles and styles. One of the main attractions of Chernivtsi is the floating fountain, which is part of the TOP-10 best fountains in the world. Its feature is that directly on the fountain project video in 3D, using a laser projector. The length of the floating platform is almost 100 meters, and about 170 tons of water and 560 submarine lights are used for the show. The evening light show program is accompanied by the music of well-known composers of modernity and classics.

It is hard to miss the Musical-Drama Theater - a copy of the Vienna Theater, the town hall of the mid-19th century, the impressive building of the Museum of Fine Arts, the House-ship, the majestic Cathedral of the Holy Spirit, the exquisite building of the Jewish People's House, the original composition of the Armenian Church.

Fantastically beautiful former residence of Metropolitan Bukovina is included in the UNESCO Heritage List.

And to book a home in Chernivtsi can be in advance at a fully affordable price: 2-bedroom apartment here will cost you only 350 UAH per day.[3,p.1]

Zaporizhzhia

Khortytsia is a very picturesque island with lakes, rocks, gardens, forests, steppe, beach. There are statues from the stone of the Scythian times on the island and the reconstruction of the legendary "Zaporizhzhia Sich".

The first hydroelectric power station of the Soviet Union DniproGES and two two-level bridges across the Dnipro River attract the attention most of all. The Museum of Local History is the history of the city, numismatics, ethnographic collections, antique books, weapons and household items of the Zaporizhzhia Sich, an exhibition devoted to Nestor Makhno.

And to book a home in Zaporozhzhia can be in advance at a fully affordable price: a night for two in 3 * hotels costs 460 UAH.[3,p.1]

Kamianets-Podilskyi (Khmelnytsky region)

It is one of the oldest cities in Ukraine, the Historical and Architectural Reserve. There are about 200 architectural monuments of the 11th-19th centuries. Visiting the Old Fortress, you can visit the 16th century. Ancient Town Hall, Beautiful Cathedral, Museums, Alley of Sakur in the central park, picturesque landscapes of the Canyon of the Smotrych River. The city is mentioned in the novels of Henrik Senkevich and Vladimir Beliaev, in many films.

You can stay in Kamianets-Podilsky hotel - from 370 UAH (for two)[2,p.1]

The results show that you can rest budgetary or visit different cities of Ukraine at a reasonable price. So travel because travel is life.

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INVESTMENT PROPERTY EVALUATION ISSUES UNDER NATIONAL AND INTERNATIONAL FINANCIAL REPORTING STANDARDS

In connection with the gradual integration of Ukraine into the European Union, as well as its entry into the international market, the transition from national financial reporting and accounting standards to international financial reporting standards is significantly accelerated. These processes have not passed the accounting for investment property.

Despite of legislative regulation in the form of the National Accounting Standard 32, «Investment Property» (hereinafter – NAS 32) and International Accounting Standard 40 «Investment Property» (hereinafter – IAS 40), it can't be asserted, that we have complete clarity regarding the key issues of accounting for this object, which is one of the most problematic types of non-current assets.

One of the main questions – is the evaluation of investment property objects and its influence on the indicators of financial reporting. The urgency of considering this problem arises from the fact that there is a significant difference in the provision of recommendations for the evaluation of investment property in accordance with national and international standards. Given the insufficient development of the investment property market in Ukraine and the number of tax accounting issues that arise when choosing one or another model of evaluation, the question arises: what value should be reflected: fair or cost?

First of all, it should be noted that both standards regulate the following methods of evaluation of investment property:

1. a fair value model – item 16 of NAS 32 and item 33 of IAS 40;
2. a cost model – item 16 of NAS 32 and item 56 of IAS 40.

In particular, item 31 of IAS 40 emphasizes the following: «It is unlikely that the replacement of the fair value model to the cost model will lead to a more reliable presentation» [1]. So, despite of the same recommendations, there is a difference: the international standard prefers an approach to valuation at fair value.

If company has chosen a fair value model, then at each balance sheet date, the amount of the change in the fair value of investment property will be recognized in other operating income or other operating expenses in accordance with item 22 of NAS 32 [2] or, in accordance with item 62 of IAS 40, is recognized as net profit or loss [1].

Item 32 of IAS 40 addresses in detail the issue of valuation of investment property: it is recommended (but not required) to determine the fair value of this asset with the help of a qualified independent appraiser [1]. Attention to this issue isn't paid in NAS 32.

Item 55 of IAS 40 encourage the application of an appraisal at fair value until the moment of the asset's abolition, «even if comparable market transactions become

less frequent or market prices become less available» [1]. In other words, even if situations that complicate the process of determining fair value arise, the international standard foresees the continuation of the using of this model. At the same time, item 17 of NAS 32 recommends using the fair value model until the fair value can be measured reliably [2].

In addition, accounting by fair value (prioritized for IFRS) assumes that investment property is recorded in the financial statements at fair value and depreciation is not commenced in this case. Hence, in the opinion of Kireytsev G.N., there are several possible issues in reflecting such investment property in the tax accounting:

1. the procedure of accounting for expenses for the purchase of investment property is not specified;

2. controversial participation in the book value of investment property in the calculation of the 10% limit for repairs [3].

According to Suprunova I.V., in the conditions of weak development of the property market in Ukraine, «of limited information about market transactions with such objects» there is a need to substantiate the feasibility of carrying out an investment property valuation at fair value [4, p.280]. Nevertheless, the scientific community has not yet formed the final opinion about the valuation of investment property at fair value in our country.

If the entity has selected cost model, then, at the balance sheet date, the cost of investment property is measured at cost less accumulated depreciation, less impairment losses and recoverable benefits recognized at NAS 28 [5, p. 868].

In accordance with item 10 of NAS 32, the cost of investment property includes:

1. amounts, paid to suppliers and contractors for the construction and installation work (excluding indirect taxes);

2. registration fees, government fees and similar payments made in connection with the acquisition of rights to investment property;

3. the amount of indirect taxes in connection with the acquisition (creation) of investment property (if they are not reimbursed);

4. legal services, commission fees associated with the acquisition of investment property;

5. other expenses directly related to the acquisition and bringing of investment property objects into a state in which they are suitable for use [2].

In a situation when an entity chooses a cost model because of the inability to determine fair value, investment property is not subject to revaluation.

Based on the general situation and on a set of all facts, we can formulate the following conclusions:

1. the valuation of investment property at fair value is relevant for economic entities that compile financial statements according to international standards (securities issuers admitted to trading, stock market participants, joint investment institutions, etc.), since this model prevails in international practice;

2. The choice of the method of assessing investment property at cost is more appropriate for the formation of ordinary legal entities operating in the territory of Ukraine, since, as noted earlier, the determination of fair value causes difficulties due to insufficient development of the market of property, moreover, the cost model has documentary evidence and does not require a large number of assumptions.

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LEGALIZATION OF MARIJUANA IN CANADA

From October 17, Canada can freely sell and buy marijuana. The government in Ottawa believes that the new law will eliminate the shadow market of cannabis and reduce the consumption of soft drugs among adolescents.

From Wednesday, the seventeenth of October, Canadians get the right to buy, own, and consume marijuana (official name - cannabis) not only for medical purposes, but for the so-called recreational purpose - that is, for entertainment. And in Canada in the near future expect the emergence of a multi-billion dollar legal market of marijuana. According to the government, in 2017, the country's residents spent nearly four billion euros on the purchase of illegal marijuana.

With the legalization of "grass", Canada became the first member of the G-7, in which cannabis is legalized at the national level. The sale of this drug has already been legalized in the US, but not in the whole country, but only in a number of states.

Canadians broadly support marijuana legalization, but amid the euphoria, there was also caution. “Legalization of cannabis is the largest public policy shift this country has experienced in the past five decades,” said Mike Farnworth, British Columbia’s minister of public safety.

In a stinging editorial published on Monday, for example, the Canadian Medical Association Journal called the government’s legalization plan an “uncontrolled experiment in which the profits of cannabis producers and tax revenues are squarely pitched against the health of Canadians. It’s an octopus with many tentacles, and there are many unknowns,” he added. “I don’t think that when the federal government decided to legalize marijuana it thought through all of the implications.” [4]

However, in Canada, marijuana will be sold not immediately, but after a transitional period of 8-12 weeks. Every adult resident in Canada (depending on the province from 18 or 19 years old) will be able to purchase it, at an approximate price of 6.5 euros (about $5.40 in United States dollars per gram).

A special marijuana excise tax, to be divvied up between the federal government and the provinces, will be included in the price; sales tax will be added at the cash register . Illegal drug dealers across the country have already responded by lowering their prices. Some in Montreal, for example, are offering two joints for the price of one. The federal government has left the country’s 13 provinces and territories to carry out the new legislation and set their own rules, creating a patchwork of regulations. Among many open questions are how the police will test drivers who may be high and how employers deal with employees who smoke before coming to work. After some time personal possession is limited to 30 grams. In addition, the new law allowed to grow in his own home no more than four hemp shrubs for personal use.

Who will control “hemp freedome”? The Canadian Government will be able to regulate the price of marijuana through taxes. From October 2018, suppliers of cannabis will have to deduct to the budget one dollar for each sold gram. This is excluding VAT, which is 13 percent in Canada.

The new law has become a peculiar example of Canada's decentralization in action. So, three quarters of the tax revenue from the sale of marijuana will remain on the ground. The government will control the issuance of licenses to large producers at the national level, and small businesses will be taken care of by local authorities.

Also, the provinces are left with a decision on where and in what form it will be possible to sell marijuana. In some regions, sales can only be allowed in state-owned stores, while others will need to hold local referenda for such restrictions.

Deficit or overproduction of marijuana? Representatives of the online platform New Cannabis Ventures, which combines marijuana manufacturers, expect that liberalization of the market in Canada will lead to its deficit.

At present, licensed manufacturers barely satisfy the high demand for medical cannabis. Experts estimate that the rest of the products are exported and will not be available on the local market.

However, there is no unity in the estimates. Other analysts, on the other hand, believe that in the long term, Canada is more likely to face the overproduction of marijuana. Local growers of hemp from time to time announce the increase in capacity.

And in early 2018, the Canadian market of cannabis took a large-scale takeover: marijuana maker Aurora for 2.2 billion dollars bought shares of competitor MedReleaf.

How will the marijuana market developed? Similar deals open up great perspectives, but they also have a lot of risks. Nevertheless, large manufacturers of cannabis decided to expand. Leaders of industry - Aurora Cannabis and Canopy Growth - are regularly accused of purposefully crowding out small players.

According to the analyst company New Frontier, consumption of cannabis per capita in Canada is higher than in the United States. By 2025, the total turnover of the Canadian marijuana market could reach almost six billion dollars.

In addition, in the United States, the legalization of marijuana has led to a revival in the labor market - in some US states, almost 300 thousand new jobs were created. This also applies to Canada, especially if you take into account the fact that, unlike American companies, Canadian marijuana manufacturers do not forbid the export of products.

In addition to tax revenues and new jobs, the Canadian government pays a boost to the growing importance of marijuana in the world. More and more countries are beginning to produce medical cannabis.

So, in Germany, the cultivation of medical hemp is pushed through rigid state regulation, but local pharmacies have not been left without commodities - they get marijuana from Canada and the Netherlands. [1]

The main things is the price! Legalization of cannabis was the pre-election promise of the young Prime Minister of Canada, Justin Trudeau, who had previously admitted that he used marijuana 4-5 times, in particular, already in adulthood. "We will receive a system that will remove our teenagers from cannabis and save organized crime from profit," he said victorious after a successful vote in the parliament.

And it's really possible, says Professor of Economics at Düsseldorf University Justus Gaukap, who had previously headed the Federal Reserve Commission for Monopoly Affairs. Gaukap refers to the experience of the state of Colorado, where in 2014 legalized the use of marijuana for recreational purposes.

"It's impossible to destroy the black market in one day, it will take some time," Gaukap acceptes, who deals with how much tax revenue to the Federal Reserve will increase in the event of full legalization of marijuana in the country (from 2017 in Germany you can buy cannabis in Prescription Drug Store - Ed.).

Gaukap itself supports such a step. However, at one time with the legalization of marijuana, it is necessary to carry out information campaigns to explain the negative consequences of its use, the expert observes.

However, how lucid marijuana lovers will refuse from the services of the black market will depend on the price of marijuana. According to Gaukap, it should not be very high.

Thus, in Colorado, the price of cannabis after legalization increased by 10-20 percent compared with the value of an illegal product. Meanwhile, the official permission for the sale of marijuana will make it possible to provide quality control, because the bought from the dealer cannabis is often diluted, contains pesticides and other harmful impurities.

Too cheap legal cannabis should also not be, because the Canadian authorities do not seek to encourage citizens to mass consumption of "grass", the expert points out.

Where can you buy it? The legalization of cannabis has led to a so-called “green rush,” with licensed cannabis growers pressing to get a foothold in what is expected to be a $5 billion industry (6.5 billion Canadian dollars) by 2020, buttressed by the expected arrival of thousands of pot tourists from the United States. For example, in the province of Alberta, hemp can be purchased from 17 private traders.

At the same time, the Toronto-based capital of Ontario is working on its sales rules, so while its residents can still order marijuana only on websites. Others across Canada were ordering pot online from government stores. As online demand soared, stocks quickly ran out, creating fears of marijuana shortages.

How do you know what you are buying? The package must contain all the information that is necessary for the consumer to make a reasoned decision. It should include the name of the manufacturer, the strains of marijuana, the content of tetrahydrocannabinol, the substance containing the plant, and the cannabidol, the therapeutic substance.

How many cannabis can be stored? Adults are allowed to carry up to 30g of dried hemp in public places, including their own vehicle.

This means that 30g is the maximum amount of hemp that you can buy at a time.

A person who carrying more than this amount of marijuana risks to get rid of the

will for up to 5 years.

What’s the legal smoking age? The legal age for marijuana use will be 19 in most provinces, and 18 in Quebec, although its newly elected government has vowed to raise the minimum age to 21. It will be a federal crime to supply marijuana to minors — with a penalty of up to 14 years in prison. [2]

Can a villager buy marijuana from her neighbor in order not to go to the city? Absolutely not. If a neighbor is not a licensed retailer, he is forbidden to sell hemp to another, otherwise he may receive a fine of $ 5,000 or 14 years imprisonment. The same punishment awaits those who sell hemp to minors.

Can you rise marijuana in recruitment goals? Yes, but not in all provinces, because some of them hold the position that hemp needs to be grown only in safe places. Only 4 plants up to one meter can be grown where it is allowed to grow.

Can you make a grass at work? The policy of drug in the workplace is determined by the employer. Legalization is not anarchy. This does not apply to medicinal cannabis.

Can you smoke at home? In many provinces, the home is the only place where you can smoke. But if a person leases an apartment or a home, the owner can enter into an agreement with a tenant in which to ban smoking in the house. The same applies to ordinary cigarettes. [3]

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MODERN RESEARCHING OF OVERPOPULATION OF THE EARTH

The problem of the overpopulation is sharply rises in the modern world. “The Limits to Growth” is the article was posted by the Club of Rome in the 1972 about future predictions. After the cycles of the computers simulations of the economic dynamic and population grows scientists made the conclusion that increasing and changings of this factors would violate the balance and it would be enough amount of resources for everybody since 2030. It is explained by big variety of the factors which have become the contemporary style of life of modern people: urbanization, environmental pollution, resource overrun, the temps of the population birth.

If we become deeper in factors of the problem of overpopulation we will observe great depending among demographic situation changings and historical formed reasons: culture, social order, tendency of developing of the farms.

First reason of the increasing population are cultures and religious specifics of every country, for instance, there are several countries where access to contraceptives is limited or aborts are forbidden. For example: Andorra, Malta, Egypt, Laos, Iraq and others.

The second factor is the lack of access to health care and, as a result, low average life expectancy and high mortality rates in economically underdeveloped countries. It contributes to the extensive way of the continuing the race, that is, increasing the population, in opposite to intensive - raising the level of medicine and, thus, prolonging life expectancy. A striking example is the Niger Republic, where women give birth to 7 children on average, and therefore 68% of the country is under 25 years of age. And at the same time, in developed countries, women no longer want to give birth to children under 30 years of age. This is due to a high standard of living, access to abortion and contraception, the rupture of old patterns about a woman as a housewife. There is no need to give birth to many children, if the lives of people in the country are stable, developed medicine and living conditions. 81% of the woman in the developed countries have a right to interrupt pregnancy if desired, in opposite to developing countries where this indicator is equal to 29%. In other words, the industrial society itself leads to the improvement of all spheres of life, which is why the population of developed countries does not worry about diseases, climate, crop failure and high mortality from them.

According to the reasons and the temps of increasing of the population UN made the conclusion: "The current world population of 7.6 billion is expected to reach 8.6 billion in 2030, 9.8 billion in 2050 and 11.2 billion in 2100". Each year the population of the planet is growing by 83 million. (1) Overpopulation will lead to a sharp shortage of water and food resources. According to the International Organization of Food, these resources will be enough for 20-25 billion people. In addition to the shortage of food, the lack of fuel and energy resources will be tangible. As a result, economic crises and rising prices for the plant food (due to lack of cropping areas). Population growth goes along with industrialization (infrastructure development, the work of factories, factories, power plants, enterprises), which is necessary to meet the needs of the population and more important - is a powerful environmental pollutant.

Consider, for example, the impact of the overpopulation on India, which is the leader in the rate of population growth. According to the UN forecast, by 2100, the population of this country will reach an estimated 2.6 billion people. For India, this will mean a shortage of water resources, rapid deforestation, environmental pollution. Given the social factor, inevitably rivalries and war for possession of the resources will inevitably start in the country.

The problem of overpopulation can not be avoided, since it is already exacerbating in the countries of Africa and Asia. However, you can reduce the pace and "delay" the crisis situation. In the 1970s, the population of China increased annually by about 2% [2], while in 1979, the government applied a special demographic policy "one family – one child". Over the next few years, the growth rate dropped to a steady 0.54% annually. And although in 2015, such policy were lifted, the UN predicts that China will slow down the growth rate in 2100 to -2.4%. The same policy is carried out by India, Bangladesh, Pakistan, Sri Lanka, Indonesia and others. But here the demographic policy is less successful.

Although, UN Department of Economic and Social Affairs did a big revision in the 2017 and made a huge review of the demographic trends and perspective for the future. China and India are the most overpopulated countries, it accommodates 19 and 18% of the global Earth population and, if believe in predictions, since 2024 population of the India will overgrow Chinese result.

Particular attention should be paid to changing the situation of the women in the developing countries. Give women the right to education and care, legalization of abortions and the popularization of contraception. A woman must realize herself not only as a mother, but also as a person that is impossible in traditional societies in Africa and Asia.

The weekly news release of Newsweek unveiled an article "Even a Pandemic Wouldn’t Create a 'Sustainable' Population, Study Says": «Even a rapid transition to a worldwide onechild policy leads to a population similar to today’s by 2100. Even a catastrophic mass mortality event of 2 billion deaths over a hypothetical 5-y window in the mid-21st century would still yield around 8.5 billion people by 2100. In the absence of catastrophe or large fertility reductions (to fewer than two children per female worldwide), the greatest threats to ecosystems — as measured by regional projections within the 35 global Biodiversity Hotspots — indicate that Africa and South Asia» [4].

Overpopulation is a very big problem in modern world and has huge variety of consequence in the future which will relate to essential world things. The climate will be changed because factories will work in a accelerated mode for producing bigger amount of resources for human existence: water and air pollution irresible change all living condition on the planet. Atmosphere of a human being will become horrible because it will become strife for means of existence, moral values will go to the background. With a raising problem of the overpopulation we are waiting for ruin. Many scientists try to find a planet where the future generations will possible live, but, is it essential if we even don`t try to save what we have?

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STATE AND TRENDS OF DEVELOPMENT OF MEAT PROCESSING INDUSTRY

The meat processing industry occupies an important place in the food industry of Ukraine. The meat processing enterprises provide the population with fresh meat, sausage products, various meat semis, which are the source of essential amino acids and valuable proteins. However, the current state of the meat processing industry is in the conditions of underproduction, technological imbalance between the raw material base and the processing of raw materials, falling demand for meat products. At the same time, the meat processing industry of Ukraine has significant potential and great prospects for development. Ensuring the development of the market for meat and meat products is of strategic importance, since consumption of these types of food is one of the most important indicators of the standard of living of the population, and thus, increase not only the economic level of industry, but also the social level of people's lives.

Works of such domestic scientists and practitioners as I. Vlasenko, V. Vlasenko, N. Shelest, V. Eagle and others are devoted to the study of the state and trends of the meat processing industry development. In their writings, scientists analyze various aspects of the state and trends of the meat processing industry. They also offer theoretical and practical recommendations aimed at improving the efficiency of meat processing enterprises. However, the development of the meat processing industry

requires continuous monitoring of existing problems, taking into account changes in the political, financial, innovation and other areas. Therefore, there is a need for an additional analysis of the state and trends of the meat processing industry.

The functioning of the meat and meat products market is ensured by the developed infrastructure. It consists of such units as primary processing and industrial processing, wholesale and retail links, and directly consumer final products. The concept of "meat and meat products market" includes the functioning of its various counterparties (agricultural, harvesting, processing and trade organizations), between which successfully establish production links and economic relations [6, c.60].

The meat products market regulates the organizational and economic forms of relations between economic entities of various sectors of the livestock sector, ensuring the movement of products at all stages of the reproduction process – from growing and fattening animals (obtaining meat raw material) to the manufacture of finished products and the realization of their final the consumer [6, c.60]. The scheme of functioning of the meat and meat products market in Ukraine is presented in Fig. 1.

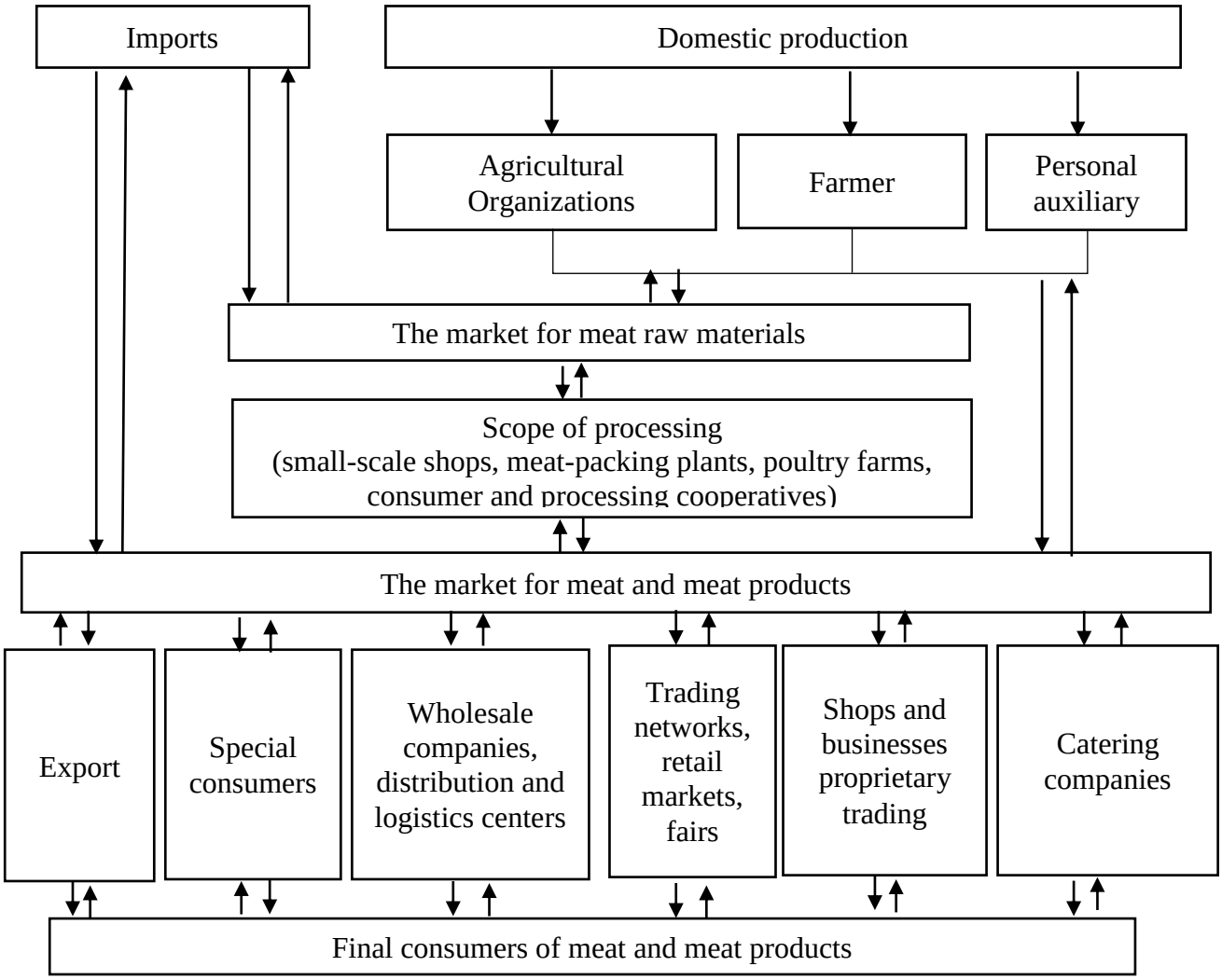

Fig. 1. The scheme of functioning of the meat and meat products market in Ukraine [7, c.72].

Table 1 shows the balance of consumption and production of meat and meat products in Ukraine for 2010-2017 formed on data from the State Statistics Service of Ukraine [8].

Table 1

Balance of consumption and production of meat and meat products in Ukraine for 2010-2017 years, ths. tons

Indexes	Years							
	2010	2011	2012	2013	2014	2015	2016	2017
Production	2059	2144	2210	2389	2360	2323	2324	2318
Change in stock at the end of the year	-3	-37	23	-20	-18	-1	-2	-5
Imports	378	244	423	332	201	158	182	233
Total resources	2440	2425	2610	2741	2579	2482	2508	2556
Export	48	79	125	182	218	245	303	351
Spent on non-food purposes (for feed, losses, etc.).	8	7	7	9	8	8	10	10
Consumption Fund	2384	2339	2478	2550	2325	2179	2195	2195

Source: State Statistics Service of Ukraine [8].

As it is clear from Table 1, the total quantity of resources for the analyzed years has not changed significantly (in 2017 there is an increase of 4.8%, or by 116 thousand tons compared to 2010), since 2012 it was tend to their contraction. The positive dynamics is characterized by domestic production, which grows every year and significantly exceeds imports, which in the last years will be significantly reduced. Thus, in 2017, the share of production in the general structure was 90.7% and imports – 9.1%. This indicates the high potential of domestic producers in meeting the demand generated by the population.

Reducing the purchasing power of the population led to a decrease in the consumption fund, compared with 2013 by almost 14%, which amounted to 2195 thousand tons in 2017. The volume of exports is increasing each year (more than 6 times over the past 7 years). The volumes of meat and meat products for non-food purposes also grow, from 8 thousand tons in 2010 to 10 thousand tons in 2017.

In the general structure of domestic production of meat and meat products in 2017 dominated poultry (51.12%.), pork (31.75%), beef and veal (15.7%) and the least frequent occupy other types of meat (only 1.42%).

The largest producers of meat and meat products in the segments according to the type of raw materials are:

- ❖ for the production of poultry – Mironivska and Vinnytsia poultry factories and "Agromars";
- ❖ for the production of beef – Kozyatinsky meat-packing plant, Konotopmyso, Meat-processing plant Yatran and Zhytomyr meat-packing plant;
- ❖ from the production of pork – "NPP Globynsky pig complex" (Poltava region), "Danyush" (Ivano-Frankivsk region) and "Agroprodservis" (Ternopil region), "AK Slobozhansky" (Kharkiv region) and Ukrainian-British company "Niva Pereyaslavschiny" (TM "Pyatachok") [5, c. 181-182].

The structure of consumption of meat and meat products by types of raw materials is almost the same as the structure of production. We see a similar structure in which the share of poultry meat dominates over pork, beef and veal, and the smallest share in the structure of consumption falls on other types of meat. The annual consumption of meat in Ukraine is shown in Table. 2.

Table 2

Meat consumption in Ukraine (per capita per year, in kg) for 2010-2017 years

Product type	**Years**							
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Meat and meat products	52	*51,2*	*54,4*	56,1	54,1	50,9	51,4	51,7
In% to the rational consumption rate of the Ministry of Health of Ukraine (80 kg / person)	*65,0*	*64,0*	*68,0*	*70,1*	*67,6*	*63,6*	*64,3*	*64,6*

Source: calculated on the basis of data from the State Statistics Service [1-4].

According to actual data, for the last 8 years, the consumption of meat in Ukraine per person is approximately at the same level of about 52 kg /person, which is significantly lower than the scientifically substantiated rate of consumption (80 kg / person). The actual indicator exceeds 30%. This fact shows negative consequences both for enterprises and for the population, which manifests itself in reducing the annual supply of energy-valued food products.

Consequently, the results of a detailed analysis of the current state of the meat processing industry in Ukraine showed that the main problems remain the high dependence on the purchasing power of the population, changes in the economic situation in the country and changes in demand trends for meat and meat products.

The conducted research has shown that at the present stage of development, the meat processing industry of Ukraine is in difficult conditions of management. A significant decline in demand for industry in recent years does not allow meat-processing companies to expand their activities. Therefore, it is expedient to direct meat processing enterprises to expand the range of poultry products, to improve the production process in accordance with international standards and to find new markets both within Ukraine and abroad. The focusing on the modern realities of the meat and meat products market will enable the meat processing industry to be a profitable and competitive business.

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THE IMPACT OF LABOR MIGRATION ON THE UKRAINIAN ECONOMY

The purpose of this research is to study labor migration and its impact on the economy of Ukraine. Also, the definition of positive and negative factors that have an impact on the economy of the country.

In the modern world, the able-bodied population in many countries is less or more involved in migration processes. The socio-economic essence of migration is to establish a quantitative and qualitative correspondence between the need for labor and its availability in different countries.

Labor migration is the departure of able-bodied workers abroad for the purpose of finding employment for a certain period of time. According to statistical data, the stay of Ukrainians abroad is decreasing, with only 10% of migrants staying abroad for more than a year. Usually, migration has a short-term – from a month to six months.

The political and economic instability that is characteristic of Ukraine today has a significant impact on the motivation of Ukrainians on labor migration. In addition, after the introduction of democratic freedoms, in particular freedom of

movement, the transboundary mobility of the Ukrainian population has grown rapidly. The integral assessment of labor migrants in 2015-2018 is about 4 million emigrants, which is about 16% of the able-bodied population of Ukraine.[3, c.7]

Particularly attractive countries for the migration of Ukrainians are Poland, Russia, Italy, the Czech Republic, Portugal and Spain – about 80% of the total flows of short-term and long-term migrant workers from Ukraine. In 2013, the annexation of the Crimea and the beginning of the conflict in the East of Ukraine, for the first time the number of trips of Ukrainians to Poland exceeded the number of visits to Russia, which has traditionally been most visited by Ukrainian citizens.[2, c.10; c.13]The impact of labor migration on the Ukrainian economy is significant. Labor emigration is connected with the outflow of the able-bodied population outside the country, through to changes in the quantitative and qualitative characteristics of the labor potential of society, in particular the influence on the professional structure of the able-bodied population, it affects the economic potential of the country as a whole. This effect can be positive and negative.

One of the positive factors in labor migration is money transfers from migrants from abroad. According to the estimates of the International Organization for Migration in 2014-2015 has received approximately $ 2.8 billion. [2, c.19]We think that remittances have a positive impact on macroeconomic stability in Ukraine. They help finance the trade deficit of the country and support the value of the national currency. However, the contribution of migration to GDP in Ukraine is relatively small, and remittances make up from 2 to 5% of GDP. [1, c.54]Also, important positive factors are increase of the population's solvent demand, stimulation of production, development of the financial and banking sector of the economy and improvement of the skills of workers.

However, despite positive factors, migration also has a negative impact on the country's socio-economic development. First, it is unemployment, which is the result of a decrease in the number of economically active population in the country and slows economic growth. Secondly, the departure of a large number of educated and professionally skilled migrants leads to a decrease in the number of skilled personnel in the country. Also, this process is accompanied by a loss of qualification, which leads to a decrease in the capacity of the development of scientific and technological progress in the country of origin of migrants.

Therefore, we can conclude that the impact of labor migration on the economy of Ukraine is both negative and positive. In our opinion, the losses of the Ukrainian economy from labor migration outweigh the benefits of it. Indeed, at this stage of development of Ukraine, human capital is especially important, which is the main component of the economic potential of the entire country. So, we believe that one of the areas of migration policy should be increase of the efficiency of public administration in the processes of labor migration, and most importantly, creation of comfortable conditions for the employment and development of Ukrainians at homeland, which will reduce the number of labor migrants in Ukraine and increase the public welfare of the population.

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DIRECTIONS TO IMPROVE THE EFFICIENCY OF MANAGEMENT BY THE MAIN PROCESSES OF MILLS FERTILIZER ENTERPRISES

In today's economic conditions characterized by a high level of competition and dynamic external environment, the efficiency of any industrial enterprise depends on many factors. One of these factors for dairy processing enterprises is the effective management of non-current assets. In this case, considerable attention should be paid to the policy of management of the main means of the business entity, because they are the most important component of an enterprise's potential and provide its production process. In addition, effective management of fixed assets contributes to an increase in production and level of profitability and profitability of economic activity.

Recently, the dairy industry's products are in increasing demand, requiring manufacturers to increase their capacity and increase their business volumes. At the same time, the small support of enterprises by the state, the reduction of own resources for equipment production, the lack of desire to invest their own funds in the restoration of enterprises led to the fact that a significant part of domestic business entities had almost completely physically and morally worn basic production means Thus, according to the State Statistics Service of Ukraine, the degree of depreciation of fixed assets of the enterprises of the processing industry in 2017 amounted to 64.6%, and in the food industry – 48.0% [3]. Under these conditions, issues of relevance to finding ways to increase the efficiency of the use and reproduction of the main means of dairy processing enterprises become of paramount importance.

The success of the enterprise's capital assets management can be considered from the standpoint of the effectiveness of their use in economic turnover. Due to the fact that fixed assets are used for a long time, they gradually lose their value due to physical deterioration, and the transfer of the cost of fixed assets to manufactured products (work performed, services rendered) occurs due to depreciation. To assess the state of the main facilities of dairy processing enterprises of Ukraine we will calculate the indicators of their wear and fitness for the last three years

(Table 1)

Assessment of the state of fixed assets of dairy enterprises [4]

Indicator	Years			Deviation 2017 р. до 2015 р.	
	2015	2016	2017	+/–	%
«Organik Milk»Ltd.					
Initial cost of fixed assets, ths. UAH	7678	7923	9135	1457	18,98
Depreciation of fixed assets, ths. UAH	4965	5508	6271	1306	26,30

Depreciation of fixed assets,%	64,67	69,52	68,65	3,98	-
Level of suitability of fixed assets,%	35,33	30,48	31,35	-3,98	-
PJSC "Kalanchatsky Dairy Plant"					
Initial cost of fixed assets, ths. UAH	10096	10490	11126	1030	10,20
Depreciation of fixed assets, ths. UAH	7144	7669	8137	993	13,90
Depreciation of fixed assets,%	70,76	73,11	73,13	2,37	-
Level of suitability of fixed assets,%	29,24	26,89	26,87	-2,37	-
PJSC "Zhytomyr Butter Plant"					
Initial cost of fixed assets, ths. UAH	633794	746589	1076440	442646	69,84
Depreciation of fixed assets, ths. UAH	262739	320272	404751	142012	54,05
Depreciation of fixed assets,%	41,45	42,90	37,60	-3,85	-
Level of suitability of fixed assets,%	58,55	57,10	62,40	3,85	-

Consequently, based on the calculated data, the following conclusions can be drawn. The level of depreciation of fixed assets at LLC Organik Milk and PJSC "Kalanchatskiy Dairy Plant" is growing year by year, and in general, it is quite high, indicating deterioration in the state and level of suitability of existing fixed assets and the need for their renewal. As for PJSC "Zhytomyr Butter Plant", the level of depreciation of fixed assets in 2017 compared with 2015 decreased by 3.85% and amounted to 37.6%, which positively characterizes the policy of management of production funds in this enterprise. It should be noted that all investigated economic entities in the year 2017 are profitable.

Thus, to date, the problem of improving the state and increasing the efficiency of the use of fixed assets is quite relevant and requires a real solution.

The study of scientific literature has shown that scientists offer different ways to increase the efficiency of the use of basic productive assets. So, O. Drobyshev and S. Vinichenko believe that in order to increase the efficiency of the use of fixed assets, it is necessary to take the following measures: 1) to direct investments mainly to finance the active part of fixed assets; 2) maximize the use of existing production capacity; 3) maximize the use of the time schedule of the calendar according to the technical characteristics of the equipment; 4) to observe conditions of exploitation of fixed assets; 5) repair and update fixed assets in a timely manner; 6) apply a combined method of organization of production business processes at the enterprise; 7) evenly distribute the load on fixed assets; 8) to raise the professional qualification level of the personnel who work with the equipment [1, p. 80].

In the dissertation, A.V. Yelkin proposes to take the following measures in order to increase the efficiency of the use of fixed assets at the enterprise: to monitor the technical state of equipment and involve specialists for complex repairs; to involve specialists of the marketing department in order to determine the fair price of the equipment and to update it before it reaches full physical wear; to increase the level of specialization of production; apply advanced technology; remove simple ones; improve the composition, structure and status of fixed assets of the enterprise; increase productivity and productivity at the enterprise; improve the quality of repairs of fixed assets; constantly analyze the market situation in order to ensure the production of advanced technologies for the release of the necessary products to consumers; in case of impossibility of acquisition to use leased (leasing) equipment in order to increase the efficiency of production [2, p. 49].

Summing up above, we believe that the priority among measures aimed at improving the state and efficiency of the use of the main production facilities of dairy processing enterprises should be given to the timely replacement and mobilization of obsolete equipment, the improvement of the structure of the main production facilities; organization of accelerated commissioning of new equipment purchased; improvement of organization of material and technical support of enterprises and maintenance of modern systems of machines; the introduction of progressive forms of organization of production and labor; application of modern effective systems of material incentives for workers and engineering workers; attraction of investment resources of domestic and foreign investors for modernization of material and technical base of enterprises.

At the same time, the improvement of the intensive use of the main production facilities of the enterprise is an important prerequisite for an increase in production volumes that is in demand on the market without additional capital investments, which is especially important in the context of the limited investment resources.

Among the areas of increasing the efficiency of the use of basic productive assets in milk processing enterprises, the focus should be on measures aimed at improving their extensive use. In particular, the importance should be given, above all, to those aimed at increasing the variability of the equipment, which is an important factor in the growth of output and increase of the efficiency of the use of basic productive assets.

Consequently, the introduction into the practical activities of milk processing enterprises of the specified measures will ensure the solution of the problem of increasing the efficiency of management of fixed assets, which is one of the main prerequisites for increasing the efficiency of the functioning of economic entities in general.

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QUALITY PRODUCTS AS OBJECT OF MANAGEMENT

The modern market economy puts forward new demands for a quality management system. This is due to the fact that the stability of any firm and its position on the market are determined by the level of competitiveness. In turn, the competitiveness of products is associated with the action of numerous factors, among which the quality of products takes the first place.

The purpose of the work is to study the concepts of product quality and quality management. Also, the research is aimed to study the system of quality management of products at the enterprise and its improvement in order to improve the efficiency of the operation of the enterprise in general.

Issues of quality and quality control system of products were presented in the works by the following scholars: A. A. Golikov, W. E. Deming, D. Coton, G. G. Azgoldov, S. D. Ilyenkov, S. T. Lapidus, M. Kh. Mexson, M. Thorsten, D. H. H. Harington. They were of the opinion that the quality of products is a set of properties, influence of which allows them to distinguish one product from another, the origin of quality occurs during its release, and the quality management process must be comprehensive, systematic and continuous.

At present, quality is a key factor in the efficient operation of the enterprise, so the concepts of price and quality always remain relevant and interrelated, especially if consider them in terms of new economic reality.

The quality of products and services has always been one of the main factors of competition in the national and global markets, a symbol of prosperity of individual enterprises, regions and entire countries. As an economic category, quality is a public assessment that characterizes the degree of satisfaction of needs in specific conditions of consumption of the set of properties that are clearly expressed or potentially incorporated in the product [9, p. 74].

Quality is a combination of product properties that determine its suitability to meet certain needs in accordance with its purpose [3, p. 156].

To manage the quality of manufactured products, you need to be able to evaluate it. The standards contain general criteria for assessing quality. They establish and regulate the most effective quality indicators of any kind of products, such as economic or technical indicators.

The process of forming product quality is complex. It is laid down at the stages of creating the product itself: during scientific research, during design and development, during the direct production of the product. Also, the quality depends on raw materials, technological process, storage, transportation, means and methods of control and testing, operation and repair [6, p. 244].

The Quality Management System (QMS) is created to implement the policy of the enterprise in the field of quality, to achieve and maintain the quality of products (works, services) issued at the regulatory level, and to ensure the fulfillment of the requirements of the consumer, to continuously improve product's quality in order to increase the satisfaction level of consumers and other interested parties [8, p. 6].

The system of quality management is an integral part of the overall management system of production and economic activity of the enterprise and is created on the basis of general quality management at the enterprise.

Effective control affects the quality of the product, as well as makes it possible to avoid all possible crashes at work, detect and eliminate them with the least losses for the enterprise.

To carry out the quality control system, it is important to implement the following steps [7, p. 101]:

1. Define the concept of control: it may be a comprehensive control system (controlling) or private verification.

2. Set a task of control, which may consist in decisions about the necessity, accuracy, regularity and efficiency of the quality management process.

3. Study the objects and subjects of quality control, determine the methods, means and volume of the quality control system, and establish the terms of inspection.

4. Determine the planned and actual indicators of the product quality level.

5. Find deviations of factual data from the plans and identify the reasons of those deviations.

6. Analyze deviations and reasons, allocate powers and determine actions aimed to eliminate shortcomings.

Ensuring high quality involves the effective management of all phases of activity from the birth of the idea to the production of products.

Improving technical control services is important for the effectiveness of the quality control system. It creates conditions for the development of real quality control plans, which are based on the obtained researches, an experience of the enterprise, prevention of deficiency, unbalance of the production process, and deviations of actual indicators from the plans.

We can distinguish the following signs that make it possible to facilitate the procedure of technical control [10, p. 98]: entrance control, which is carried out when receiving raw materials for production of products; current control, which is necessary for monitoring the conformity of product quality with the requirements of normative documents; operational control of products, which is carried out in the process of execution or after the completion of one technological operation; receiving control, which leads to the conclusion that the product is usable; inspection control, which is carried out by specially authorized persons.

In the '80s under the influence of Japanese experience in world practice, a new approach, called «Total Quality Management» (TQM), was formed.

These systems, which exist on the principles of Total Quality Management, are created in accordance with the standards of the ISO 9000 series. The ISO 9000 series

is a set of standards adopted by the international standardization organization and includes 3 basic standards: ISO 9000 – Quality Management Principles; ISO 9001 – Quality management systems – Requirements; ISO 9004 – Quality management – Quality of an organization [4].

The experience of leading competitive enterprises has established that qualitative products that meet the requirements and needs of consumers can only be made taking into account the detailed study and market analysis.

The ISO 9000 series standards are implemented by the technical committee based on the analysis of the experience of the leading enterprises in the field of creation, implementation and operation of product quality systems. They represent recommendations for quality management and general requirements for ensuring high quality, as well as the development of elements of quality systems [5, p.78].

The quality system should satisfy such important principles [2, p. 63]: direct involvement and responsibility of the management bodies of the enterprise in work on improving the quality of products; timely, accurate planning in the field of quality; the division of duties and powers for each stage of the process, which is related to the implementation of the plan of the enterprise in the field of quality; distribution of costs for product quality; ensuring product safety for the buyer and the environment; organization of work on improvement of quality; improving the methods and means of ensuring quality control.

One of the main reasons for the ineffectiveness of QMS is the remoteness from financial and economic processes, with the fact that quality management is impossible without proper investment in improving processes.

The main task of the organization of quality management is to increase the economic efficiency and sustainability of the enterprise, productivity and transition to innovation and new technologies [6, p. 24].

To ensure efficiency and effectiveness of the quality management system in the organization or enterprise, management of an organization must know the methods of its integration into the organization and the correct sequence of stages of its improvement: creating quality service; planning improvements; carrying out measures to create basic conditions for the successful functioning of the QMS; implementing system of internal audits; eliminating causes of inconsistencies; verifying ISO 9001 certification.

Keeping the standards of product quality, knowing the stages of implementation and improvement of the quality management system, given the minor disadvantages of QMS, it is possible to improve the enterprise or organization, to offer quality goods to the market, to ensure consumer satisfaction and compete with many large companies. The enterprise will receive discipline, responsible personnel, and reduce unproductive costs through more rational use of resources. Thus, the most optimal solution is the quality management system at the enterprise developed on the basis of the international ISO standards of the 9000 series, which are rightfully considered, generalized for use in almost any field of activity. However, since they are unified in some way, this will require the presence of trained, qualified personnel or the help of third-party quality professionals in terms of developing the required

package of documents. The ultimate goal – improving the system of product quality management at the enterprise − is to maximize profit by increasing the competitiveness of products and services, entering new markets, and, quite naturally, strengthening the company's position.

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Session work №4

CURRENT RESEARCH IN THE FIELD OF LAW AND SECURITY

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INTERACTION SECTORS IN THE eGOUVERMENT

The development of information technology is now the most important factor in the life of the world community. The technology diffusion transforms modern reality and leads to serious changes in the political, economic, social and cultural spheres. There are many global trends that determine the relevance of the topic of information technology in general and, in particular, e-government.

First, information and communication technologies have become the basis for globalization and are increasingly affecting social development. Secondly, in modern conditions, overly centralized structures are not able to react quickly to the rapid changes in the external environment, hence the need for greater flexibility and mobility of public services.

The concept of e-governance is a concept of interaction and a new form of cooperation between the state and citizens in the information society. On this basis, even a few classifications of interactions taking place in e-government are singled out. There are several main types of interactions: G2C «Government – Citizens»; G2G «Government – Government»; G2B «Government – Business»; G2E «Government - for employees». E-government encompasses many types of activities and participants, but there are three distinct sectors of interaction: between government agencies (G2G), between the state and business (G2B), and between the state and citizens (G2C).

E-government involves automating interaction in the G2B, G2G and G2C sectors. Consider the prospects of implementing e-government in these sectors in more detail.

The G2B sector, «Government-Business» is the inter-governmental sector and business representatives in the e-government [1, c.428]. It is an online interaction

between authorities and business entities to support and develop business through ICT.

The G2G sector, «Government – Government», is the inter-governmental sector in the e-government. In many respects, the G2G sector is the backbone of e-government [2, c.429].

The G2G includes organization of the work of electronic document management between the subjects of authority exercising power and the exchange of data between the power electronic registries according to the principles of unification, interchangeability and compatibility (so-called principles of interoperability).

This implies both interdepartmental interaction within and between state authorities, as well as interaction between state authorities of all levels, as well as local self-government bodies.

The G2C sector, «Government – Citizens», is a sector of interaction between authorities and citizens in the e-government [3 c.428]. Under initiatives in the G2C sector are those designed to facilitate the interaction of citizens with the authorities. The initiators can be both sides. The purpose of these initiatives is to reduce the time required for the administration of management services and to simplify these processes through the Internet.

The G2E sector, «Government – Civil servants», is a sector of interaction between government bodies and civil servants themselves or local government officials in the e-government. It is an online interaction through instant communication between the authorities and their employees [4, c.429]. In addition, G2E interoperability is an effective means of providing e-learning for employees, their effective communication and knowledge sharing between them.

In conclusion, we can say that the introduction of e-government is the most important and necessary step towards creating an "e-state", and this step must be taken not only at the state level but, equally important, at the level of the state entities. Under the e-government is understood the way of organizing the activities of the authorities, as well as organizations involved in the performance of state authority, in which in all cases there is no need for administrative discretion, as well as paper document circulation, formal procedures for collecting information, preparation and decision-making based on remote electronic interaction, which ensures achievement of a qualitative new level of efficiency, openness and transparency of government activity.

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REGARDING THE PROBLEM OF SUBMITTING ELECTRONIC EVIDENCE

Right – this is primarily a regulator of social relations. Therefore, we can say that any changes in the society development, the spread of certain new trends can cause, respectively, certain changes in the law and in the legal regulation of social relations. Accordingly, an important role in the legislation of any country playes the dissemination of electronic technologies. As for Ukraine, the introduction of e-governance can be as such as example. In addition, the transition from paper management in state authorities and local government to electronic methods, with the use of technical means, has already begun. Undoubtedly, it is also affected on the Judiciary system of Ukraine, in particular, on a system of electronic court documents that anticipated phase-out of paper forms (but of course, this is impossible). Moreover, it is very important that it is concerned the system of the automated determination of judges which protects against the determination of a biased or interested judges. Also, a Unified Judicial Information and Telecommunication System should be introduced, which will provide a simpler and more efficient communication among the courts, more qualified electronic office work and other important functions of the system.

One of the steps of implementing of technologies in the Judicial System of Ukraine is the introduction of such a category as electronic evidence. The legislator does it simultaneously in relation to three types of process: civil, administrative and economic at the time of adoption of new editions of codes in 2017. Such changes, in my opinion, have become not just one of the steps of reforming the legislation, but they have already been a need that arose in the practical application of the provisions of the law. Already for more than a year, the question arose: To which group of evidence to attribute electronic documents? Video and audio recordings? In addition, is there information from the Internet? What should be the procedure for filing such evidence? There has already been some judicial practice, which included, for example, electronic documents to the written evidence, video to the material evidence. Therefore, to regulate such relations, the legislator and made appropriate changes to the procedural codes.

In particular, in the Civil Procedure Code (hereinafter referred to as the CPC) two articles were devoted to this issue – 100 and 101 (Section 5, Clause 5 of the

CPC). Firstly, it should be noted that in accordance with Article 100, paragraph 1 of the CPC, electronic evidence is information in an electronic (digital) form containing information about circumstances relevant to the case, in particular, electronic documents (including text documents, graphic images, plans, photos, video and audio, etc.), websites (pages), text, multimedia and voice messages, metadata, databases and other data in electronic form. [1]

Based on this definition, it is appropriate to highlight certain types of electronic evidence; they are electronic documents (including text documents, graphic images, plans, photographs, video and audio recordings, etc.); websites (pages); text, multimedia and voice messages; metadata; the database and other data in electronic form. Thus, one can immediately assume that there should also be a separate submission procedure for the proofs of each of the groups. However, the legislator did not regulate such a clear order. Paragraphs 2 and 3 of Article 100 of the CPC only set out the following general provisions for the submission of electronic evidence: "Electronic evidence is filed in the original or in electronic copy, certified by an electronic digital signature. The participants in the case have the right to file electronic evidence in paper copies certified in accordance with the procedure provided for by law. Paper copies of electronic evidence is considered written evidence."[1]

Thus, we can say that such a narrow regulation of civil procedural legal relations in the part of electronic evidence leads to significant problems in submitting electronic evidence in practice. Therefore, let us list some of these problems and analyze them.

One of the problems is using the new institute of evidence in the civil process associated with the definition of the original and a copy of the electronic evidence. The law only points to the existence of these two concepts, but does not give meaning to them. The consequence of such uncertainty is further difficulty in assessing the electronic evidence by the court of admissibility. It would be logical to turn to the profile of such issues of the Law of Ukraine "On Electronic Documents and Documentation". According to Art. 7 of this Law, the original of an electronic document is an electronic copy of a document with mandatory requisites, including an electronic signature of the author or a signature equivalent to his own signature in accordance with the Law of Ukraine "On Electronic Digital Signature". Therefore, based on the provisions of this Law and the CPC, one can immediately point out that it is difficult to distinguish the original of the electronic proof from its copy. In practice, this is associated with the identification of the concept of "original electronic device" and "original electronic evidence", which leads to the need to attach electronic devices to the case. [2]

For a more simple understanding, let us give an example: if you have taken a picture on a mobile phone, the photo on this phone is the original electronic confirmation, and the phone is the physical (technical) data medium on which it is stored. Therefore, providing the original electronic evidence to the court, we must file the above-mentioned phone. If we copy this photo to another device (flash drive, CD,

etc.), this will be an electronic copy of the electronic proof. If you print this image, it will be a paper copy of the electronic proof.

Proceeding from this, problems with the certification of copies will also arise. For example, it is not clear how to submit a copy of the video to the court, if in order to make a copy of the video. An electronic digital signature must certify the video, which is technically impossible. Therefore, if the civil process is not able to obtain the original video (for example, a video taken on a live stream on a web site, videos from video surveillance cameras stored in a cloud service over the Internet), then they will not be able to submit such materials as a copy of the electronic proof. In any case, the court must directly accept the evidence and be sure of its integrity. The problem with sound recordings is similar. Therefore, a procedure such as a review of evidence of their location (paragraph 7 of Article 85 of the CPC) may come to the aid. The court can itself initiate such a procedure, or carry it out on the request of the party. But, in my opinion, such a provision is also ineffective since with the spread of the Institute of Electronic Evidence, such situations can often arise and the court will not be able to physically examine dozens of cases per day and also should go to places for watching videos, listening to audio and viewing the web, pages.

These difficulties arise from the more complex types of electronic evidence (video, sound recordings). Nevertheless, in practice the court challenges the integrity of copies of ordinary text documents, even if an electronic digital signature certifies them. There are cases when the court requires the registration of such records on the media itself. Otherwise, such evidence would be inappropriate because of the problem in the structure of the data placement on the data medium, attachment of the attribute file in connection with the access to the media. That is, the court requires "confirmation of evidence". You need to capture the process of downloading files (taking pictures or monitoring video) to the media. You must submit to the court and this data medium. In addition, you need information about the media itself. In some cases, in order to record properly, you need special knowledge in technology and programming.

Consequently, before settling on the legislative level, the issue of the certification of copies of electronic evidence from the parties to the proceedings will be possible to submit electronic evidence only in original. In addition, the legislator does not adequately regulate the order of submission. Therefore, it remains open to question what exactly to consider the original of electronic evidence. Consequently, the court may have questions regarding the assessment of this evidence. [3, p. 13]

Therefore, we believe that the introduction of such changes to the Code (even several codes) was hasty and unexplored. The changes do not eliminate the existing problems, but instead create new ones. At the time of their introduction, a certain practice has already been associated with the submission of electronic evidence, which is even clearer than the current provisions of the Law.

Consequently, we believe that today the Institute of Electronic Evidence is difficult to apply in practice or ineffective at all. Therefore, we propose to amend the relevant provisions of the Civil Procedural Code. In the first place, it is necessary to determine what it is necessary to consider as the original of the electronic proof, and

what a copy. In my opinion, the original must be an electronic proof of attachment to the medium where it created for the first time. However, such provisions should not apply to the originals of electronic text documents certified by an electronic digital signature, since such a document is an original regardless of its original source. In addition, a more detailed definition of the procedure for filing electronic evidence is particularly necessary, since the violation of such a procedure creates the grounds for the admission of evidence to be inadmissible. It is necessary to regulate the direct procedure for submitting electronic evidence, which grounds on the recognition of a copy of electronic evidence as inadmissible evidence. Therefore, we could be noted that such a new institute of civil procedural law as electronic evidence is imperfect today and clearly needs legislative changes to create an effective and realistic opportunity to use this type of evidence in civil justice.

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LIFE IN AMERICAN GHETTO

Despite that the United States of America has become a model of the political nation, both in theory and practice, it doesn't change the fact that the development of citizens' ethnic culture is in process. To a large extent, this is the case for African-Americans, Black citizens of America, who had come to the New World from different parts of Africa in the past. The main feature of the development of the African-Americans' national processes is closely linked to racism, racial segregation from the Whites and State institutions of the USA. Famous American researcher M. Makridis noted that African-Americans, ethnic separatism is natural, and this fact should be seen as a kind of ethnic/cultural nationalism.

One of the most important manifestations of real social situation African Americans in the USA is economic inequality. On average, African American is still poorer than representatives of other ethnic and racial groups of the American population. This is due to conserved poverty in the African American community. Poverty is an inheritance, it is like the biggest obstacle to social mobility. A lot of

African Americans succeed in the USA they are politicians, businessmen, sportsmen and cultural. But most of them are still poorer than Whites and their poverty is growing.

African American teenagers have another model of success, it is a sport, music at best or crime. A lot of gifted children don't try to be good at studying for the sake of being the same to others and to avoid conflicts.

In the past, African Americans were taken as labour without any rights for usual things available for White's.

Their children did not have the right to study in the same schools or kindergartens with "white", for them, they created special establishments exclusively for "black" ones.

They did not have a right to vote on the presidential election. They were denied benefits and admissions in hospitals.

They did not hold a management position and not perceived as people. Because of such an attitude, there was a high level of crime involving African Americans.

Among the police, there was a popular activity to shift the responsibility to African Americans, who were forced to suffer in prison under inhumane conditions.

Usually Black people, in order to prevent the mass-impact of Whites gathered in the community, the so-called ghetto.

A ghetto (Italian pronunciation: [' g etto]) is a part of a city in which members of a minority group live, typically as a result of social, legal, or economic pressure.

Originally, the term was used only in areas inhabited by people discriminated against on national, racial or religious grounds.

What is the difference between ghetto and usual urban district?

The first is always noticeable visually, and in some cases, it is not too late to turn around and run away from this unfriendly place. The second is a large amount of graffiti. They paint on all the walls, police usually rarely see that.

The third is strange cars. On big wheels, tinted, or just rusty, dirty and very old.

And the fourth, the most important. Fences around the houses and grates on the windows. It's often robbed here, it's dangerous to sit on the terrace, you can shoot it from a passing car, just like that.

The locals are almost always outdoors. Morning, afternoon, evening, weekends and weekdays. They stand or go, alone or in groups. They do not work anywhere.

Also, the ghetto is very widespread drug trafficking, and going down the street with almost 100% probability you can see either the transfer of drugs or people who have already taken them.

These areas are quite dangerous for the "white", so it is not recommended to go there independently.

The style of local clothing is also special, and very famous. The cap and handy is sure. Sometimes the pants "I got stuck", sometimes - the classic Abyss with three stripes. Yes, "Nigers" love them too.

Ghetto residents love to do nothing. For someone, this is a protest: we have been slaves for so many years, and now we will work. The word "work" is one-footed with the word "slave" so hateful to us.

Many abandoned houses. These are the former homes of those who escaped from this terrible place, or simply died. The influx of inhabitants into such places is not, as you suspect, the houses are empty.

Men, according to statistics, live on average up to 28 years. Forty - it's almost old. The average life expectancy of a ghetto woman is seventy years old.

At the same time it is in the ghetto usually the largest church of different confessions. Ghetto residents are very devout.

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THE INFLUENCE OF ETHICS ON PERFORMANCE OF PUBLIC ADMINISTRATION

Ethic like an original term is inherent in all areas of social activity. It is the basis for the normal existence of society, the establishment of certain moral frameworks, the creation of formal rules of human behavior, regulation of all processes taking place in the world.

Certainly, the issue of ethics is urgent as it has penetrated into all spheres of human activity. The first attempts to introduce professional ethics were made in the XX century, but this phenomenon has become widespread now. Particular attention should be paid to the ethics of public service, since it should become one of the main mechanisms of influence on state bodies, which, in turn, provide the activation of the functioning of the state as a unit in general.

It should be noted that the ethics of public servants is regulated by the Constitution of Ukraine in accordance with the Law on Civil Service, but in some cases there is unprofessionalism and non-compliance with the established rules, which impedes the effective functioning of both a certain state body and the state as a whole, but there are some aspects, which approximate the model of Ukrainian management to the generally accepted European standards.

In their work, public servants are guided by some principles that ensure the effective fulfillment of their primary tasks, among which:

– humanism is one of the most important component of activity of public servants, because it ensures the special importance of a person's identity and his life. This phenomenon is a fundamental, because it teaches respectful attitude towards citizens, ensures that their rights are taken into account, which, in turn, contributes to the proper performance of state functions.

– optimism is a principle, this principle directs as much diligence as possible in carrying out its professional activities, as it serves as a mechanism for influencing the development of the state as a whole, but nothing motivates such as belief in own strength and significance.

Certainly, there are certain requirements for public servants. These norms are definite and mandatory. They include:

– disciplined manner, that is compliance with national laws and regulations, since the activities of state authorities are primarily aimed at ensuring the needs of citizens. This also includes the notion of self-control, since a professional civil servant is obliged to put public interests above private ones.

– law enforcement, because particularly work of public authorities aimed to meet the needs of society, and concept of self-control, which implies preference for public interest over private.

– the ability to efficiently and rationally use the resources available to a public servant to perform the tasks that were set before him, that is, the ability to properly think and dispose of them.

– the ability to avoid any conflicts, because public servant represents the state. Here the principle of humanism and proper treatment of citizens is applied, since the official of a state body must be able to avoid conflicts and solve them.

In view of the above, one can distinguish the features inherent in a civil servant in order to effectively fulfill his duties. They are:

- tactfulness, that is careful attitude towards everyone, who uses the public services;
- empathy, that will enable everyone to understand each and every one, regardless of the situation and solve any problem;
- determination, that is timely and correct decision-making;
- adaptation, which will allow to adapt to each situation, to find an individual way of solving any problem;
- lack of discrimination in views, which makes all citizens equal and ensures their rights.

So, summing up the above, we will generalize that ethics has a significant impact on the efficiency of public administration, because it is the basis of the whole system of relations between the state and its citizens.

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CORRUPTION AS A WEAK LANK OF THE SHIP'S SYSTEM: CAUSES OF ACCUSATION AND RESISTANCE METHODS

All of us, Ukrainians, had to be witnesses or direct participants in the struggle for a "new" Ukraine. It is difficult to find a person who is not acquainted with the political situation today. This struggle is remained in the memory of each of us. We are witnessing lustration of the authorities, changes in the ruling elite of our state. However, we clearly understand that the changes made in Ukraine are just the beginning of a difficult, thorny path and they are our responsibility.

In this turning point in the history of Ukraine, every Ukrainian must make its contribution into a truly democratic state building. We, as lawyers, need to change the legal system, which has lost the citizens' trust. Firstly, the courts of Ukraine, which "became famous" by such notion as "corruption", are in need of changes. Determining a court as an independent authority often causes only sarcastic smiles so there is an urgency of the consideration of the issue of corruption.

According to Article 129 of the Constitution of Ukraine, judges in the administration of justice are independent and obey only the law. Obviously, Ukrainian judges misunderstand the word "independent". Thus, according to the results of the Transparency International rating conducted in 2012, Ukraine ranked 144th in the index of corruption perception, while its neighbours Russia and Belarus were on the better positions [1, p. 40].

What is corruption? As noted by the Transparency International organization, corruption is the behaviour of officials of the public sector, which or as a result of which they or their family are illegally enriched because of the abuse of state authority they have transferred [2, p. 7].

Furthermore, we need to understand the origins of the term corruption. After analyzing the attitude of ordinary Ukrainians towards "bribes", it can be noted that the main reason for the existence of corruption is the perception of it by Ukrainians as a proper and necessary phenomenon. Yes, we can rely responsibility of a corrupt system existence for the President, parliament, Cabinet of ministers and at the same time, at the first necessity, we take out another "bribe" from our pocket. Yes, citizens categorically relate to corruption, but they use it almost daily. Here's a paradox. It follows that bribery has been used both in our national culture and in each of us. As we go to court, we know in advance that we cannot do anything without a monetary reward for a judge even we cannot count on the legal decision. What about judges, they start from an educational institution, and then during their employment they are immersed in a corruptive system. What do we expect from such a judge and what

kind of independence could be said? The causes of corruption are laid in our sense of justice.

As to the legislation in the field of combating corruption in courts, it consists of: the Law of Ukraine "On the Principles of Prevention and Counteraction of Corruption", Article 375 of the Criminal Code of Ukraine, the decision by a judge of a knowingly false decision), Article (interference with the activity of judicial bodies), Article 185-6 (failure to take measures for a separate court order or a separate resolution of a judge or a prosecutor's statement), etc. The legislation of Ukraine in the field of corruption meets international requirements, but it is not implemented sufficiently. The main reason for this is the fact that the subjects involved in the prevention and counteraction of corruption.

Struggling with the manifestations of corruption, we must remember that we will not be able to eradicate it, because it is inherent even to the most advanced states, but we can reduce its level. Firstly, we must change our attitude towards corruption as means of resolving our problems and refusing to give bribes. Secondly, judges should be provided with proper working conditions. The next step should be to engage civic organizations in counteracting corruption. Citizens must trust the public organization and report on known corruption cases. In addition, responding to reports of corruption acts, including anonymous ones, should be instantaneous.

We could combat with corruption without the media. Yes, it is through information that court proceedings and decisions will become more transparent. However, journalists should cover the events objectively and be responsible for the false information provided. Media will help judges to look at cases only with "open eyes" and make legal decisions.

In Ukraine, plans to create the Lustration Committee and the Anti-Corruption Bureau. Of course, the feasibility of creating these bodies will show practice, but today the initiative is evaluated only positively. After all, the Lustration Committee will help get rid of “obvious corruptive person” and the Anti-Corruption Bureau will provide prevention and counteraction to such actions. Perhaps they are bodies that will force judges to abandon the usual practice of "bribery" and increase the number of decent judges.

Thus, there are no independent courts in Ukraine and there is no proper mechanism for the protection of rights and freedoms. The main factor that makes judges work is money. So our judges must finally understand what their purpose is and what the independence of the court corps means. The task of lawyers in such a case is to ensure the inevitability of the judge's responsibility. That is how we can protect our rights and freedoms in a truly independent court. So, let's hope that together with the current changes in the state, we will be able to change both ourselves and our legal system and will leave the manifestations of corruption in the past.

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HYBRID WAR

The aim of this study was to investigate Hybrid war, how it is conducted, its purposes and how to counter it on different levels.

Hybrid warfare is a military strategy that employs political warfare and blends conventional warfare, irregular warfare and cyberwarfare with other influencing methods, such as fake news, diplomacy, lawfare and foreign electoral intervention. By combining kinetic operations with subversive efforts, the aggressor intends to avoid attribution or retribution. Hybrid warfare can be used to describe the flexible and complex dynamics of the battlespace requiring a highly adaptable and resilient response. There are a variety of terms used to refer to the hybrid war concept: hybrid war, hybrid threats, hybrid influencing or hybrid adversary (as well as non-linear war, non-traditional war or special war). US military bodies tend to speak in terms of a hybrid threat, while academic literature speaks of a hybrid warfare. For the purposes of this article, these terms will be used interchangeably.

Traditional militaries find it hard to respond to hybrid warfare. Collective defense organizations such as NATO might find it hard to agree on the source of the conflict making response difficult. An article published in *Global Security Review* entitled "What is Hybrid Warfare?," compares the notion of hybrid warfare to the Russian concept of "non-linear" warfare. It defines non-linear warfare as the deployment of "conventional and irregular military forces in conjunction with psychological, economic, political, and cyber assaults." The article partially attributes this difficulty to the "rigid" or static military taxonomy used by NATO to define the very concept of warfare. Also, to counter a hybrid threat, hard power is often insufficient. Often the conflict evolves under the radar and even a "rapid" response turns out to be too late. Overwhelming force is an insufficient deterrent. Many traditional militaries lack the flexibility to shift tactics, priorities, and objectives on a constant basis.

HW is a strategy that includes conventional and non-conventional methods such as: [1,p 45] [3,p 112]

- Propaganda(Russia24 about “Crucified kid”);
- deception ;
- sabotage;(like it was in 2014);
- supporting insurgents and criminals;
- cyber warfare (virus “Petya”);

- usage of both conventional and non-conventional methods(NC-chemical weapon in Syria, torturing of POWs);
- acting on behalf of another party (so-called DPR and LPR are actually Russian proxies);
- usage of private military companies

The main concepts are:[4,p 45][2, p 231]

-strategic controlled degradation of the socio-economic situation;[5,p 33]

-instigation of socio-political crisis;

-incitements of mass panic with the loss of confidence in key governmental institutions;

-defamation of leaders not loyal Russia;

-annihilation of possibilities to form coalition with foreign allies.

On the basis of this research the data from different material were received

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NABU AND SAP ANTI-CORRUPTION BODIES

Corruption is one of the most threatening phenomenon for the process of the law-governed state creation. It projects direct danger to legal norms, democracy, human rights, objectivity and social justice, as well as impedes economic development and stability of democratic institutions. Under the conditions either ethical norms or internal stability are greatly undermined, that threatens the international security of the countries. This social phenomenon takes place in any society widespread all over the world: no country in the world today can declare itself free of corruption.

This research is aimed at the study of the preconditions for creation of anti-corruption bodies in Ukraine. Special attention is paid to the duties, obligations and the main tasks of these bodies.

Corruption destroys the basic principles on which every democratic state relies on: the principles of equality of citizens before law, justice, impartiality of justice, protection of rights by law enforcement agencies from various unlawful actions. In addition, it contributes to the deterioration of the progressive development of society, exacerbating the criminal situation, and directly affects the financial security of the state, as it leads to the expansion of the "shadow" economy.

Having an international character, corruption has been repeatedly subjected to considertion in such fundamental international legal acts as: the United Nations Convention against Corruption, adopted on October 31, 2003 at the 58th session of the UN General Assembly; Criminal Law Convention on Corruption, adopted by the Council of Europe on January 27, 1999; recommendations GRECO; Istanbul Action Plan to Combat Corruption, etc. They define international standards and recommendations for the creation and operation of an anti-corruption body.

Corruption has always been one of the most serious problems in Ukraine. In order to improve the mechanism of fighting corruption and bring it to international standards the Verkhovna Rada of Ukraine adopted the Law of Ukraine "About National Anti-Corruption Bureau of Ukraine", on October 14, 2014. The main task of the National Bureau is to counteract the criminal corruption offenses committed by senior officials authorized to perform state or local government functions that endangers national security.

The creation of a special anti-corruption body is a novelty for the Ukrainian legislation. Since the time Ukraine has gained its independence, the functions of detecting, stopping and preventing corruption offenses, including those among the highest state officials, were assigned to specially authorized units of the bodies of internal affairs, the tax police, the Security Service of Ukraine and the Prosecutor's offices. Due to the imperfection of the current legislation, responsibility for the results of the work performed to fight against corruption was divided between departments that had their own management vertical and ultimately de facto depended on political state leadership. Under these circumstances, the means of detecting corruption among state officials were inefficient, and the statistic figures of the law enforcement agencies' activity in the area of corruption prevention and counteraction did not always correspond to actual state of the matter in the defined area.

Obligations of the National Anti-Corruption Bureau of Ukraine are as follows:

1. To carry out operative and detecting activities aimed at preventing, detecting, terminating and revealing criminal offenses committed in the branches of law under its jurisdiction, as well as operating cases, supplied by other law-enforcement bodies;
2. To carry out pre-trial investigation of criminal offenses committed in the branches of law under its jurisdiction, as well as to conduct pre-trial investigation of other criminal offenses in cases specified by law;

3. To take measures for the investigation and seizure of funds or other property that may be subject to confiscation or special confiscation in criminal offenses assigned to the National Bureau of Investigation, to carry out activities for the storage of funds and other property that is being seized;

4. To interact with other state bodies, regional state administrations and other bodies and institutions for proper performance of its duties;

5. To carry out data processing and analytical work in order to identify and eliminate the causes and conditions that facilitate the commitment of criminal offenses;

6. To provide for individual safety of the National Bureau employees and other individuals specified by the law, to protect from unlawful encroachments on individuals involved in criminal proceedings, criminal cases and those under investigation;

7. Under the terms of confidentiality and voluntarism, to ensure cooperation with individuals who report corruption offenses;

8. To report on its activities in accordance with the procedure established by the Law and inform the public about the results of its work;

9. To carry out international cooperation within the limits of its competence in accordance with the legislation of Ukraine and international treaties of Ukraine.

The control over the activities of the National Bureau is carried out by the Verkhovna Rada Committee on Fighting Organized Crime and Corruption.

The Director of the National Bureau obligations are:

• informs the President of Ukraine, the Verkhovna Rada and the Cabinet of Ministers of Ukraine on the main issues of the activities of the National Bureau and its subdivisions, reports on the fulfillment of the Bureau's assigned tasks and results of the observation of the legislation, rights and freedoms of individuals;

• every year, not later than February 10 and August 10, The Director of the National Bureau submits a written report to the President of Ukraine, to the Verkhovna Rada and the Cabinet of Ministers of Ukraine on the activities of the National Bureau during the previous six months.

By order of the Prosecutor General of Ukraine Victor Shokin on September 22, 2015, the Specialized Anti-Corruption Prosecutor's (SAP) was formed in the structure of the General Prosecutor's Office of Ukraine. SAP is an independent structural unit of the General Prosecutor's Office of Ukraine.

The Specialized Anti-Corruption Prosecutor's office is an independent body of the Prosecutor's Office of Ukraine. Foundation of the Specialized Anti-Corruption Prosecutor's Office and determination of its structure are carried out by the Prosecutor General of Ukraine with the consent of the Director of the National Anti-Corruption Bureau of Ukraine. The appointments to the administrative positions in the Specialized Anti-Corruption Prosecutor's Office are carried out by the Attorney General on the basis of the open competition. The appointments of the SAP junior prosecutors are under powers of the body's leader and take place on the basis of the open competition. The Specialized Anti-Corruption Prosecutor's office is located in the offices of the NABU or in the Prosecutor's office.

The SAP fulfils the following duties:

1. Supervision over observance of the laws by the National Anti-Corruption Bureau of Ukraine during conducting of operational and investigative activity on the level of pre-trial investigation;

2. Maintenance of the public prosecution in the relevant proceedings;

3.Representation of the interests of the citizens or state in court during the corruption related trials.

From the above said it can be concluded that the national model of special anti-corruption bodies in Ukraine is based on the world experience and typical models of the relevant anti-corruption institutions. The result of the legislative research for the optimal option was the creation of new autonomous body outside the system of existing anti-corruption bodies – the National Anti-Corruption Bureau of Ukraine. In addition, the Specialized Anti-Corruption Prosecutor's Office was formed in the structure of the Prosecutor's Office. The two were established in Ukraine to prevent, detect, terminate and disclose corruption crimes in Ukraine.

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LEGAL WAYS FOR THE SUSPENSION OF WATER POLLUTION IN UKRAINE

One of the most important challenges of the twenty-first century is the global pollution of the environment. Natural resources are reduced every year and the most significant one is water. In Ukraine, water supplies are in critical condition not only because their minimal stocks, but also due to the fact that factories produce a lot of chemicals and pour it into rivers, so they poison water.

The Dnipro - the country's largest waterway - is annually poured out about 370 million cubic meters of chemicals or 14% of the total amount in the country. As well as the Dnipro River is used by industrial enterprises very intensively that is why the quality of water and fish productivity is reduced and it can lead to the loss of the Dnipro as a supplier of drinking water. In this case, 36 million people in Ukraine in the near future may remain without drinking water. It could be noticed that the most polluted rivers are the Western Bug, the Azov, the Seversky Donets. The average annual content of the pollution in the waters of the Western Bug, Poltva, Kalchik, Kalmius, Krynka, Bulavin, Udi, Mius, Lopan, Kryviy Torets, Bakhmut, Lugan rivers exceeds the maximum legal concentration. [1, p.58]

In addition, water management is well-developed in Ukraine, which allows us to use water for people needs in such spheres as industry, agriculture, transport and other sectors of the economic. The Water Code is stated that water users can be enterprises, organizations and citizens of Ukraine, as well as foreign legal entities, individuals and stateless persons. Industry is on the first place of water users in Ukraine, it counts 45% of the total amount of water consumption. Consequently, water objects are mostly polluted by factory chemicals. In recent years, the tendency to large-scale contamination of water with manganese, copper, chromium and nitrogen is increasing, while immediately after the waste dumping by enterprises they exceed in 20-30 times the maximum legal norms.

Furthermore, the contravention of water code can lead to the administrative, criminal, disciplinary or civil liability. As for me, today there is a very low liability for the damage that causes to water resources every year. Most water users are brought to administrative liability under Articles 59-62 of the Code of Administrative Offenses. They are fined from five to eight tax-free minimum incomes. The Criminal Code has only 2 articles (242, 243), which could lead to liability for breach of the rules of water protection and sea pollution. Imprisonment up to 5 years is the most severe punishment provided in the Ukrainian law.

To sum up, it is necessary to implement a European model of state environmental control to eliminate the existing problem in Ukraine. It should be enshrined in the Law of Ukraine "On Environmental Protection" and it could be established severe fines for violating or the enterprise can be banned their work until elimination of the problem. It is also necessary to increase the penalty for violating the legislation requirements in the field of environmental protection increasing the amount of fines in the area of water usage, and also to make amends to the Criminal Code to fix the maximum liability for water pollution, namely to determine such as imprisonment up to 10 years. As a result, these measures will be able to stabilize the critical situation with water resources in Ukraine.

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THE FAMINE AS A SPECIFIC INSTRUMENT OF THE TOTALITARIAN REGIME AND OF HUMAN RIGHTS VIOLATION

The Famine is deliberately organized by the Soviet Union authority in 1932-1933 years as an artificial famine, which led to death of millions of the Ukrainians and to the genocide of the Ukrainian people. In the history of the stormy XX-th century, the Famine of 1932-1933 years was the second mass deliberate famine in Ukraine.

The **aim** of the following theses is to study and to analyze the scale of the tragedy caused to the Soviet Ukrainian Republic by the Famine of the 1932-1933 years. The research also proves the contribution of the Soviet Union's totalitarian system to the genocide of the Ukrainian people.

Stalin's "big leap" cost to Ukrainian people too much. Taking into account that since January to November of 1930 the peasant sector of Ukraine gave to the state 400 million poods of grain, and for the same period of 1931 year the number was 380 million of poods. For the period of 1929-1932 years the quantity of cattle in the Ukrainian Republic decreased by 41.8%, horses by 33.3%, pigs by 62.3 %, sheep by 74% [6, p. 129].

The non-fulfillment of the Moscow's procurement plan on the grain supplies was considered as a counteraction to Soviet authority, and as aimed at breaking the plans of the Soviet Union construction. The non-fulfillment of the grain supplies by Ukraine was assessed as a subversion of class enemies. As a result Stalin ordered to apply hard measures to the Ukrainian Republic.

In the autumn of 1932, an extraordinary commission headed by V. Molotov arrived in Ukraine, which transferred the republic to emergency state. Into the process of "knocking out" the Ukrainian grain from the peasants, the NKVD departments, the communist army, the organization of Soviet Komsomol and the trade union activists were involved. The Ukrainian villages destroyed by Stalin's experiments could supply the state only with 89.5 million pounds of grain (during November 1932 - January 1933 years), instead of planned 131 million pounds. The commission headed by V. Molotov, subjected to the influence of the Party and the state's leader, took on an extraordinary initiative – to remove bread at any price. The main repressive measure was the requisition of grain, food and feed stock of the collective farms. Common practice was to impose fines on villages: meat, potatoes and other agricultural products were withdrawn [3, c. 97].

As in the period of continuous collectivization, competition between various Soviet Republics and Party officials was launched to increase grain supplies. In search of grain, Party executors searched every house, ripped the floor, climbed into basements and even wells. The army and the NKVD deprived the peasants of the entire foodstuff; they took not only grain, but also other food: potatoes, fat, beets,

pickles and even crackers. The grain campaign in fact became a deliberate and brutal physical and moral extermination of the peasant population.

The Ukrainian villages faced the cruel reality of Stalin's revolution (the Famine affected the main agricultural areas of the Soviet Union). People were dying with all their families and even villages. There are records of terrible cases of inhumanity and torture. Parents, trying to save children from starvation, took them to the cities and abandoned them near institutions, hospitals or just at the streets.

On December 14, 1932, "the commander-in-chief", "the inspirer and organizer of all the victories", J. Stalin, joined the play. Under his command, an operational meeting was held in Moscow. The members of the Central Committee of the Communistic Party, of the Regional Committee of the North Caucasus and of the Regional Committee of the Western region were summited there. In fact, the Western area appeared clearly to hide the anti-Ukrainian direction of the campaign. According to the Decree of the Central Committee of the CPSU (Bolshevik) on the matter of grain procurement in Ukraine, in the North Caucasus and in the Western region, the participation of the West region was limited to a simple indication of completing the grain harvest plan until January 1, 1933 and the plan for harvesting flax until February 1, 1933 [1, c. 12].

The grain campaign in Ukraine lasted even till February 1933. Till that time some villages had almost extinguished from starvation, and the peasants were trying to seek salvation in other villages, but that was practically impossible to do. The Soviet repressive machine was activated to eliminate the most desperate peasants' movements as the army units and parts of the NKVD blocked areas affected by starvation, preventing the population from escaping.

In the midst of the Famine, the Law "On the protection of property of state enterprises, collective farms and on cooperation and strengthening of social (socialist) property" was adopted. The Law, adopted on August 7, 1932, stated that "the highest measure of social protection" was imposed on an individual for stealing collective farm's property. Under the Law anyone, even a child, caught taking even a bit of produce from a collective field (e.g., "the Law of five ears of corn"), could be shot or imprisoned for stealing "socialist property."

In December 1932 a system of internal passports was introduced in the USSR, but only for the population of cities and new settlements. The peasants were forcibly bound to the land, as it was before the reform of 1861 in the Russian Empire [2, c.482-487].

In January 1933, mass starvation became unprecedented. However, from the rostrum of the joint plenum of the Central Committee and the Central Committee of the CPSU, J. Stalin, stated: "We undoubtedly have achieved that the material situation of workers and peasants is improving year by year. And only sworn enemies of Soviet Union can doubt it". The Kremlin dictator treated the "Holodomor" as an unreal phenomenon. When Secretary of the Central Committee of the Communist Party of Ukraine R. Terekhov appealed to J. Stalin for help, he said hastily: "We are informed about your, Comrade Terekhov, skills of a good speaker. But it turned out

that you are a good storyteller. They made a story about hunger, they thought we would be intimidating – it would not work! You would better leave the post of the Secretary of the Central Committee of the Communist Party of Ukraine and the Kharkiv Regional Committee and change your occupation for storyteller. You will write stupid stories and the stupid ones will read them". Because of the non-recognition of the Famine by the Soviet Union Authorities Ukraine was not provided with the international assistance.

Trying to avoid tragedy, the Kremlin was forced to decrease the accelerated pace of industrialization and the increased pressure on the peasants. During the spring field campaign, the collective farms were supplied with some foodstuff to feed those who worked there. As S. Kosior wrote in a letter to J. Stalin, "the collective farms gradually began to come out of the crisis" [5, c. 56].

At the end of the 1930s, Ukrainian agriculture came to the level that had been before the collectivization started. The collective farm system became one of the mechanisms of the bureaucratic economy and the authoritarian regime. Forcible collectivization, dispossession, and the Famine had unpredictable consequences for Ukraine. All the following years, the Soviet Union and Soviet Ukraine experienced a terrible burden of the past, they were not able to eliminate food shortages and provide people with decent food [4, c. 345].

Conclusion: The most horrible crime of the Soviet totalitarian system was the Famine of the 1932-1933 years, which physically and morally destroyed the generation of Ukraine. The devastation of its consequences is still felt.

The Famine of the 1932-1933 years was not a casual phenomenon of natural or social origin, but as a result of the deliberately caused hunger by the totalitarian power of terror, that is genocide. The massive physical extermination of farmers by the artificial famine was a deliberate terroristic act of the Stalinist political system against civilians, against the Ukrainians as a nation and against peasants as a class. As a result, not only numerous layers of wealthy and independent peasant entrepreneurs, but also whole generations of the agricultural population disappeared. The social foundations of the nation, its traditions, spiritual culture and identity were undermined. The main purpose of the organization of the artificial famine was to undermine the social base of resistance of the Ukrainians to communist rule and to ensure total control of all segments of the population by the state authority.

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EGYPTIAN DIALECT IN EGYPTIANS` SPEECH

The article deals with the functioning of Egyptian dialect in Egyptians` speech, it aims to study the functioning of dialect and its main Phonetic, Grammatical and Lexical peculiarities. This article defines similar and different features of Standard Arabic and Egyptian Arabic and studies the reasons of its functioning and establishment. The article contains the most common examples of Egyptian dialect describing it from the point of view of Phonetics, Grammar and Lexicology. Results of the study show a general linguistic situation in Egypt and the role of Egyptian colloquial in the Arab World.

العامية المصرية في كلام المصريين

تتسم اللغة العربية بوجود الازدواجية الثنائية يعني اللغة الفصحى و العامية. ومن بين ثلاثة آلاف لغة حية يرى الباحثان عباس المصري وعماد أبو الحسن أن اللغة العربية تخضع لهذه الازدواجية بشكل يفوق غيرها من اللغات في الواقع المعاصر. في الوقت الحاضر تكون العامية التي تميز كل بلد عربي عنصراً مهماً لحياة الشعب وتجسد روحه.

حاليا لا تغلب اللغة العربية الفصحى في كلام المصريين على العامية لأن يوجد في مصر تعايش اللغتين و يستخدمون السكان اللغة العامية في كلامهم اليومي بشكل أكبر. بهذا السبب نتحدث عن اهتمام كبير لاستخدام العامية المصرية و اهم صفاتها.

هدف البحث هو اكتشاف في وجود العامية الصرية و أهم خصائصها.

وظائف البحث فيما يلي:

- تدقيق دور العامية المصرية في جمهورية مصر العربية و في العالم العربي؛
- كشف في اسباب تكوين العامية المصرية؛
- تعيين الشبه والاختلافات بين اللهجات العامية والفصحى؛
- بحث عن صفات العامية المصرية.

إن ظاهرة وجود العامية بجانب العربية الفصحى هي ظاهرة لغوية في جميع دول العالم العربي. العامية هي مجموعة من الخصائص اللغوية يتحدث بها عدد من الأفراد في بيئة جغرافية معينة. تتميز اللجنة العامية المصرية باستخدام واسع في كافة مجالات حياة السكان و بانتشار كبير وكذلك بصفات لغوية خاصة لها. وتعرف اللهجة العامية بأنها طريقة الحديث التي يستخدمها السواد الأعظم من الناس، وتجري بها كافة تعاملاتهم.

نستطيع أن ننظر اتصال اللغة بلهجاتها على مر العصور والأزمان، و هو ما يؤدي إلى انتقال آثير من صفات اللهجات إلى اللغة الفصحى، و بموجب ذلك نعتبران للعامية قوة كبيرة للغاية.

اللجنة العامية المصرية هي إحدى أكثر اللهجات العربية والعالمية تأثرًا باللغات الأخرى، وهو ما يجسد الفجوة الواسعة بينها وبين اللغة العربية الفصحى، حيث تضمنت مئات بل آلاف الكلمات والألفاظ التي تعود جذورها إلى أصول أجنبية متعددة، وهو ما أثراها وجعلها إحدى أكثر اللهجات العربية انتشارًا.لطالما سيطرت اللهجة المصرية المميزة على المنطقة، عبر أفلام السينما، وعبر أقلام كُتابها الكبار كالعقاد وطه حسين، وغيره من كُتاب شكلوا تاريخياً الوجدان العربي.

لكن استخدام العامية دائما في مصر هو من الحذرالذي يمكن أن يضعن هذا من الأواصر العربية، ويهدد أمل تحقيق الوحدة العربية.

من المعروف أن العرب كانوا أمة متفرقة إلي قبائل وأن تلك القبائل قد انتشرت بشكل خاص، في أنحاء الجزيرة العربية، وكان لكل قبيلة استقلالها وآيانها فأدى القديم، ذلك إلي انعزالها، و اما عوامل التي ساهمت في نشأة العامية فهي التالية:

- العامل الجغرافي (فقد تتسع الرقعة الجغرافية للمتكلمين باللغة، وتفصل بينهم الجبال والأنهار، ويقل التواصل بينهم، فتأخذ اللغة بالتغير شيئاً فشيئاً، ويسلك المتكلمون باللغة مسلكاً مختلفاً عن غيرهم، مما يؤدي إلى حدوث لهجة جديدة)؛
- العامل الاجتماعي (تؤدي الظروف الاجتماعية في البيئات متعددة الطبقات، إلى تعدد الطبقات، فكل طبقة تحاول أن تكون لها لغتها، وأسلوبها المميز)؛
- العامل السياسي (قد يساعد انفصال قبيلة أو دولة، واعتناق المذاهب السياسية أو الدخول في الديانات الجديدة على دخول ألفاظ واصطلاحات جديدة في اللغة، تساهم كلها في تخلّق لغة جديدة بظروف جديدة نابعة من سياقات سياسية في الأصل)؛
- الصراع اللغوي (ربما يكون هذا أهم العوامل التي تؤدي إلى تعدد اللهجات، وانتصار واحدة على أخرى، طبقا لقوانين لغوية؛ فالأقوى حضارة ومادة يكتب له الانتصار) [5].

تختلف العامية عن الفصحي بشكل كبير، لكن يكون التقارب بين العامية والفصحى: بما أن العامية والفصحى من أصول عربية فلا بد من تشابه بينهما لأنها من صنع مجتمع عربي اللسان غير أن ما نأباه من تلك اللهجات أنها تناتيش لغات تهشمت وهي ترد العربية إلى الوراء.

أما الاختلاف بين اللهجات العامية والفصحى فهو التالي:

- العامية هي لغة السواد الأعظم من الناس بينما الفصحى تقتصر على الخاصة؛
- تحرر العامية من التعقيدات والأحكام اللغوية لتنطلق على سجيتها الكلامية؛
- من يتحدث العامية ولا يقوى على القراءة والكتابة يعاني صعوبة في فهم واستيعاب ما تعنيه؛
- افتقار العامية إلى ما لا يحصى من المصطلحات العلمية والفنية ولا سيما مستلزمات التطور الحضاري والتقدم التكنولوجي.

نستطيع أن نفصل صفات التي تتميز اللغة العامية بها على 3 مجموعات: صفات الأصوات و صفات القواعد و صفات الكلمات. و من أبر أمثلة المظاهر اللغوية للعامية وفقا 3 صفات هذه فيما يلي:

على مستوى الكلمات تتسم العامية المصرية أكثر انتشاراً لتركيب "فيه" (يعني وجود أي شيء) و لتركبي "مافيش" (يعني عدم وجود): "لحمة مافيش النهار دا، فيه فرخة" أو "مش فيه عندكو؟" [1، ص 212].

استخدام الضمائر ذو اهتمام خاص لأن تطورت أشكالها المختلفة عن الاشكال التقليدية، فمثلاً: " إحْنَا" ("نحن" في الفصحى) – «إحنا كلنا في مركب واحد..."[6]، و كذلك ضميران "دا" ("هذا") – "دا كتاب" و"دى" ("هذه") – "دى صورة"[3، ص 27]، اما ضمير "-كو" ("-كم" في الفصحى) فيستخدم المصريون شكليه [1، ص 174].

على مستوى القواعد فهناك اشكال الأفعال الخاصة، مثلاً في صيغة المستقبل يستخدم الناس الحرف "ح-" أمام الفعل – "حنطالب"، "حنكون"، "حنتحدث"، و في صيغة المضارع يوجد الحرف "ب-" أمام الفعل – "بنحبكو"، "بأقول" [2، ص 147].

على مستوى الأصوات نتحدث عن تغييرات في شكل صوتي للكلمات و من أبرز مميزاتها هي طريق نطق الاصوات المختلفة. يلفظ المصريون حرف "ج" بصوت "g" (في العربية الفصحى "ğ") في كلمات مثل "موجود"، "جوهلر"، "رجل". حرف "ث" في العامية المصرية ممثلة بصوت "t" – "ثلاثين" بنسبة الى حرف "ق" فهو احيانا ممثل ب"ء" كما هو في حال لفظ كلمة "قبل" [2، ص 79].

نتائج البحث هي التالية:

في الوقت الحاضر تكون العامية المصرية عنصراً مهماً لحياة الشعب المصري، تم تطويرها منذ قرون و الأن هي منتشرة في مجالات الحياة المختلفة: في الكلام اليومي، في الكلام الرسمي و في كلام وسائل الاعلام. تختلف العامية عن اللغة العربية الفصحى بشكل كبير، لكن توجد خصائص مشتركة لديها ايضاً. يمكن فصل صفات اللغة العامية الى 3 مستويات: صفات القواعد، صفات الأصوات و الكلمات الخاصة و بفضل انتشار الأفلام والمسلسلات والمسرحيات المصرية ووسائل الاعلام المصرية تعتبر العامية المصرية اكثر انتشار و سهولة لها.

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DECRIMINALIZATION OF THE ILLEGAL CROSSING OF THE BORDER AS A POTENTIAL THREAT TO THE INTEGRITY OF THE STATE BORDER

Recent political events in Ukraine would be characterized with existing problems in terms of ensuring territorial integrity and, mostly, inviolability of state borders. Moreover, the inviolability of state borders is a guarantee of national security, law and order. Therefore, in Ukraine, the solution of important issues of ensuring the security of the state border is becoming more and more relevant.

Illegal crossing of the state border is a phrase that really provokes fear, and awareness which threat is created or could be created by such as action for a person, society and even for the whole state. Nobody could believe that it will remain criminally impunity. In fact, the harm would not be underestimated because the inviolability of state borders determines the security of citizens and the state as a whole. The existence and independence of the state depends on the state of security itself. On the contrary, in connection with the latest political events in our country, it would be necessary to enforce legal liability, namely the part of bringing to criminal liability.

It could be added that until 2004, the legislation of Ukraine for the illegal crossing of the state border is provided for criminal liability. However, according to the Law of Ukraine "On amendments to some legislative acts of Ukraine on crossing the border of Ukraine" dated May 18, 2004 №1723-IV, illegal crossing the state border of Ukraine was decriminalized. Since humanization of a crime had taken place so in our opinion, it is not normal because crimes against national security are the most social dangerous and their dynamics is constantly increasing, but the liability is not equal to a crime.

At present, these actions provide for administrative liability in the form of a fine or administrative imprisonment for a period up to fifteen days. Is it possible to understand if such a remedy against encroachments on the state border of Ukraine is effective? In our opinion such measures to prevent the illegal crossing of the border, which exist and namely administrative responsibility, are not capable to counteract such dangerous crimes at an appropriate level.

Therefore, there is the other issue: Is it correct that the state refused of criminal responsibility for the actions, which have real threat to national security?

We could mentioned that the lack of equal responsibility for illegal border crossing is one of the grounds in order to neglect established rules. As a result, it is created the base for committing other crimes in future, e.g. acts of terrorism, sabotage, smuggling weapons, espionage, etc.

We would notice, each state tries to provide the most effective protection of its border from violations and external attacks. Therefore, we believe that it is necessary to pay attention to the practice of the European Legislation regarding responsibility for illegal crossing of the border.

Firstly, in the Criminal Code of Lithuania stated that illegal crossing of the border is a crime which is set criminal liability as a fine, arrest or imprisonment for up to two years. Secondly, legislation of Poland follows the same position and provides a criminal responsibility for citizens from other countries who illegally are in Poland or illegally have crossed the border of Poland. Moreover, illegal entry and illegal stay in Germany by citizens from other countries entails punishment in the form of imprisonment for up to a year or monetary penalties. [2]

Therefore, we could see the above stated countries use criminal measures to prevent negative consequences that could threat territorial integrity of the state because of illegal crossing of the border.

Based on the analysis of modern situation in our country, which is caused by hidden military aggression neighbouring state, terrorists', separatists' and extremists' activities against our country, it would be essential to admit that the changing of criminal law is obvious because it could enhance security of our state and its borders of potential threats.

Finally, the Criminal Code of Ukraine was supplemented by Article 332-2, which established liability in the form of imprisonment for up to three years for the Ukraine state border crossing in order to cause damage to the interests of the state or by a person who is prohibited from entering the territory of Ukraine or by representatives of divisions of armed forces or other law enforcement agencies of the aggressor state. [1]

On the one hand, it may seem that this is the first step to ensure the integrity of the state border. On the other hand, if you look at the extraordinary events which occur in our country and what kind of people causes these events, so it is clear the position of the legislator regarding a very limited number of possible violators of the state border. As a result of such acts, damage to the territorial integrity of Ukraine is not only possible by the representatives of the armed forces or other law enforcement agencies of an aggressor state, but also it seems that the legislator should carefully review the content of this norm in order to eliminate the discrimination signs and establishment of criminal liability for illegal crossing of the state border of Ukraine for all persons, regardless of the state of origin.

At the same time, it would be advisable to make adjustments to the article 332-1 Criminal Code of Ukraine. It is unclear why only temporarily occupied territory Ukraine is put under the criminal legal protection. We consider that it is not the only district, the crossing of which is threat to territorial integrity and integrity of our state. The whole territory of Ukraine needs to be protected, not only its separated parts.

To sum up, understanding the relevance of the problem of protection territorial integrity and integrity of state borders, we believe that the right way of the protection

sphere of the national security is in the following: the amendment the Code of Ukraine about administrative offense, Article 204, and simultaneously reversion of criminal responsibility for illegal crossing of the border with the aim of damaging the state. Moreover, it should be provided for each person who commits actions that will contain signs of this crime.

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THE USE OF THE LEXICO-SEMANTIC GROUP “CYBERSPACE” IN ORDER TO ESTABLISH THE PECULIARITIES OF LEGAL TERMS

The end of the twentieth century became for the whole world a period of intensification of dynamic processes of development, scientific research and discoveries, as well as intensification of integration processes in all spheres of life. This process has called “globalization”, which is already familiar today. Information, information flows, information networks, information banks, information technologies and information analytics are entering a new level. One of the greatest achievements of the last century is the emergence of a global information network on the Internet and cyberspace.

Cyberspace is, a technical term, used for electronic media of computer networks, thanks to which online communication takes place when two or more computers are connected. In the modern information world, this term has a very broad meaning, since it is associated with crimes committed using a computer as a tool. Despite this, the term "cyberspace" appeared only in 1982, apparently coined by William Gibson in his science fiction story "Burning Chrome". According to the Oxford English Dictionary (OED), cyberspace is treated as a virtual reality space; conditional environment, in which electronic communication takes place (through the Internet). The word "cyberspace" was formed as a result of the abbreviation of the

word cybernetics, thereby connected with information and computer equipment. This word is considered to be extremely productive by linguists, since over a decade more than one hundred computer terms were formed, for example: cyberspace, cyberspeech, cybertrading, cyberworld, cyberculture, cyberbanking, cybercommerse, etc. [1, c. 55].

According to the international standard, cyberspace is a medium of existence, resulting from the interaction of people, software and services on the Internet, using technological devices and networks which they are connected, and which do not exist in the same physical form. Some states still define their concept. For example, the cyberspace of the United States is an area characterized by the ability to use electronic and electromagnetic means for storing, modifying, and exchanging data in network systems and related physical infrastructure. In the UK, cyberspace is all forms of digital network activity, including content and actions performed through digital networks. In addition, in Germany, cyberspace is explained as an information infrastructure that is accessible through the Internet beyond all territorial boundaries. According to official documents of the European Union, cyberspace is a virtual space in which electronic data of global personal computers circulate. [2, c. 62].

In general, in Ukraine there is no single concept of cyberspace. S. Gnatyuk, analyzing this concept and proposed the following general definition: cyberspace is a virtual space, which is the result of user interaction, software and hardware, network technologies (including the Internet) to support and manage transformation processes, information (electronic information resources) for ensuring the information needs of society [3, c. 119].

Among the problems of the translation English terms into Ukrainian, the translation of legal terminology requires an early solution. Difficulties in the translation of terms denoting the legal concepts of the national terminological system of law and jurisprudence in a foreign language are mainly associated with interlingual terminological intervention. The general context and features of the use of terms, primarily computer, determine the features of their functioning as a legal term. Teaching English for law students is associated with the processing of legal terminology, among which a special place is occupied by terms related to computer activity and cybernetics. Since the terms of this lexico-semantic group have fallen into the Ukrainian language in English, the study of the peculiarities of their functioning in primary sources is one of the main tasks in mastering the English language in jurisprudence by students. First of all, it concerns the problem of cybercrime, the study of terminology, in which we offer an integrated approach related to contextual analysis, in particular, work on complete texts of thematically integrated issues of cybercrime.

To identify computer vocabulary the usage terminological connections and instructions. For example. While rapid technological development has provided large areas of new opportunities and potential sources of efficiency for organizations of all sizes, these new technologies also brought with them unprecedented threats. Cyber security, defined as the protection of systems, networks and data in cyberspace, is a

critical issue for all enterprises. Students, when making a translation of a fragment, should take into account the general style of the text. [4, c. 158].

Another stage in the work on legal texts is the synthesis and general description of the terminology they have. This stage includes the definition of criteria for distinguishing legal terms, the definition of the functional and stylistic type of language, taking into account the compatibility of the term and its structure. For example, in this text fragment: Unauthorized access or hacking occurs when someone accesses your computer or device without permission. Hackers can access your cyberspace through weak protection, phishing, or malware. After hacking email, banking or social media accounts, they can change passwords that prevent access to accounts. Scammers often send messages, send you to send people to fake websites, or ask them to send money. To define terminological phrases, it is necessary to clarify their meaning, based on context and extra-linguistic knowledge. [4, c. 159]. In addition, this stage should allow us to expand the basic trends in the functioning of legal terminology in the field of cybercrime, in particular the use of the term "cyberspace". In our opinion, the mechanism of justifying and clarifying the term requires the use of supporting materials. For interpretation it is necessary to use explanatory dictionaries.

Thus, the study of legal terminology related to the lexical-semantic group "cyberspace" should be comprehensive, and the main teaching methods should be search and language. Specific methods that we propose to use, based on the work with the text and provide for reading, listening and analysis. The main objectives of the search symbol is the choice of dates, their grouping and definition. The last step is to translate and compare English terms with Ukrainian ones and predict legally defined terminology to combat cybercrime.

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ANTI-CORRUPTION CONSTITUENT OF ETHICS OF PUBLIC OFFICIALS

Corruption is a dangerous social phenomenon, which appears through the use of the authority of public servants for the purpose of their self-enrichment. Therefore, counteraction against corruption is an urgent problem that needs to be solved, because corruption forms distrust of the population to the government of the country. For the purpose of this, high officials must follow ethical code and the rules of conduct for public officials.

The constituents of ethical code of public officials can be examined through the prism of morality and legislation. Unfortunately, in Ukraine there is no special code of ethics for public officials to be passed by the Parliament of Ukraine or the Cabinet of Ministers of Ukraine, that is why ethical rules of conduct are fixed in the Ukrainian Constitution, the Law of Ukraine «On Public Service», «The common rules of ethical behavior of the public employee», the Law of Ukraine «On service in local self-government bodies» and «On prevention of Corruption». Together all these documents determine moral standards for citizens and ethical requirements for public official.

The adoption of the code of ethics for public officials will provide more diligent conducting of one's obligations, strengthen the authority of the public services and services in local self-government bodies, and raise the reputation of public officials and officials of local self-management.

Considering anti-corruption constituent of ethics of public officials through the prism of legislation, the major factor here is compliance with the law and its implementation. The vivid example of this is The Law of Ukraine «On Public Service», which regulates the obedience of such principles as: the rule of law, legality, effectiveness, professionalism, clarity, equal access to the public services, stability, political impartiality, patriotism and righteousness. Regarding the current realities, public officials sometimes neglect the respect for certain principles. In our opinion, the most important principle is the principle of righteousness, that means the protection of public interests and refusal of private interest's prevailing, because social questions are more important to decide.

Professor O. Lukhterhandt once said: «The crucial thing for success of all state institutions is the professional and ethical level of public officials. Everything depends on their willingness and capacity to represent oneself in service «not by the owners», but servants and stewards of the common social and state interests and requirements» [3, c.5].

Another anti-corruption constituent of ethics of public officials is punishment for violation of rules of conduct and discipline. In The Law of Ukraine «On Public Service» it is indicated: «For failing to comply with or improper fulfillment of official duties… by duty regulations and also violation rules of conduct or other violation service discipline civil servant is involved in disciplinary responsibility…» [2] Also state official may be indicted for violating The Law «On prevention of Corruption». Also some correctional measures can be added to the disciplinary ones, to become convinced that the guilty person has entirely realized his guilt and do everything for not happening it again.

Considering the anticorruption components of the ethics of civil servants through the moral aspect of this issue, first and foremost, public executives should be

highly merciless, since they are the face of the state, and they are the intermediate link between the government and the people. In one's oath each public employee says: «…to serve the people of Ukraine faithfully, to protect rights, freedom and legitimate interests of citizens» and if each follows it, the country will prosper.

Also civil servant should be cultural and well informed in all time novelties, as such person is modern and open for new ideas, because one cannot create something new, not knowing old. YU. V. Shabanov wrote that: «the culture of managerial activity is a level of improvement of the state apparatus, full and informed knowledge of its employees of its competence (authority), the level of qualifications of employees, clarity in the performance of duties, the degree of mastering the achievements of science of management» [1, c.33].

Cconsequently, the ethics of public servants is important regulation in work of public officials. However there are cases, when public officials disregard the rules of behavior in work, what's undermining their authority among citizens and colleagues.

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ACTUAL PROBLEMS OF MIGRANTS IN UKRAINE

Introduction. The occupation of Crimea and events in the East of Ukraine led to a significant movement of citizens in our country. According to official sources, as of October 2018, more than 1.5 million internally displaced persons were registered [1, p.38]. It is hard not to agree that this figure is impressive.

Objectives. To consider the main problems associated with migrants in Ukraine.

There is no tendency to reduce the number of migrants. Even yesterday's supporters of the "republics" destabilizes the prospects of life in these territories and leave the problem areas in search of a better life.

Although this situation has existed since the beginning of armed confrontation despite all efforts of the Ukrainian authorities to overcome it and assistance from other countries and charity organizations, the integration of internally displaced persons in Ukraine faces a range of problems that are not fully resolved today.

The contribution of domestic and foreign volunteers, funds, organizations, including international ones, who supply settlers, allows us to solve local issues.

One of the main problems hindering the adaptation of migrants is the lack of a single national program for internally displaced persons and the lack of a single state rehabilitation center which directly solves the issue of settlers and also Joint Forces Operation`s participants. Mostly, such centers are created by volunteers.

Today, even migrants who have jobs spend a significant part of their income on renting housing. Moreover, this is the main reason why many migrants are forced to return to the occupied territory where they have their own housing for which they do not have to pay.

Along with employment, another painful problem for migrants, of course, is the housing problem. According to the words of the Minister of Social Policy of Ukraine, the state budget allocated UAH 40 million for the implementation of the housing program in 2019. The program is intended for Joint Forces Operation`s participants and settlers residing in the countryside or resettling there for permanent residence [2].

At the same time, according to a survey conducted on the initiative of the NGO "Crimean Diaspora", in the Kyiv region there are 87.6% of the polled migrants from the Crimea and the ATO zone who are ready to buy housing on credit. Moreover, among the settlers who now live in the Kyiv region, 95% rent housing. Therefore, it remains to develop a mechanism for this lending. However, it should be noted that people hope for a long-term loan with a minimum initial payment. In addition, the development of mechanisms and the organization of such lending will remain

relevant in the future, as surveys show that 78% of citizens does not plan to return to uncontrolled regions of Ukraine within next five years [3, p.9].

Conclusion. As a conclusion, settling the problems of migrants will come only after the victory of the Ukrainian army. Then there will be a new problem of returning displaced people home.

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Session work №5

CURRENT RESEARCH IN THE FIELD OF HUMANITIES

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EURISTIKA POSTFACTUUM

Heuristics (Greek (heuristiko) - find, discover) is the field of knowledge, the area of scientific research, studying creative activity, as well as the methods used in the opening of the new and in the learning process. Heuristics is also called a set of techniques and methods that simplify and facilitate the decision of familiar and constructive tasks. As science heuristics develops at the intersection of philosophy, psychology, economics, finance, the theory of artificial intelligence, structural linguistics, information theory, mathematics and physics [1].

Nowadays, the study of this industry is extremely important because heuristics is a branch of knowledge that explores the creative activity of the individual. Heuristics is also capable of explaining the irrationality of the entity's behavior. Due to the growing tendency of using the heuristics, the relevance of research into the theoretical aspect of this area of science is also increasing.

Over the past two millennia, the concept of "heuristics" has been described only comprehensively. Over the past decades, a variety of studies have been carried out in this area, but in the process of studying the essence of heuristics, their values have become so numerous and caused problems with them. The main problem is that the same in essence heuristics received different names and are treated as separate units. In order to exclude the possibility of duplication, it is necessary to carry out a comprehensive classification of heuristics in accordance with well-known mechanisms and approaches [7].

As for post-factorial heuristics, it is also controversial. Today, there is no single name for this phenomenon, and among the options most often distinguish: post-factorial heuristics, post-factum effect, heuristics "all back are all solid", hindsight bias, retrospective error, the effect "it was so obvious." The most commonly used option is post factum heuristics. Its essence lies in the fact that post-factorial heuristics is intended to explain the events that take place in the present experience from the past.

The idea that the person inherited post-factorial heuristics came to Baruch Fischof, as he claims when he was reading the article by Paul Mila - one of the founders of the famous MMPI test and a well-known critique of clinical predictions - "Why do not I go to the conference for case insurances from practice?" [6]. Baruch Fischoff was shocked by one of Paul Mil's observations, according to which at each of these conferences each speaker describes the case (case) as if he knew in advance how this particular case of practice would evolve.

The theoretical basis of post-factorial heuristics is the heuristic of overconfidence, the essence of which excessive self-confidence is a very common feature of the person's character, manifested even in the assumptions about the final result of the task. Excessive self-confidence exposes the subject of economic activity and leads to actions that the individual would not even dare under normal circumstances. Confidence is largely due to the illusion of control and exaggerated self-esteem. Mistakes caused by excessive self-confidence arise when the investor narrows the subjective circle of trust. Such a phenomenon is quite common in modern conditions. Also, in the context of excessive self-confidence, there are optimistic mistakes, as optimists most often depend on the illusion of control. That is, optimists are convinced that they fully control the situation and underestimate the role of chance.

According to the classification developed by D.Kaneman and A.Tversky, post-factorial heuristics are one-system and belong to a group with an incorrect estimate of probability. According to the classification, authored by G. Gigerenter, the post-factorial heuristics can be attributed to a whole class of heuristics, which is called "the method of decision-making or one of the most important reasons" [5].

Post factum heuristics - is one of the key cognitive distortions that work in the field of memory, and, to put it more precisely, in the field of remembering and interpreting past events. The cognitive sphere of the human psyche includes perception, thinking and memory, and it is clear that distortions, systematic mistakes, illusions can manifest themselves and manifest themselves in each of these mental processes [3].

In the case of memory, the possibility of error increases because we have no direct contact with what we recall. Moreover, today it is clear that our memory is reconstructive, and it does not store the records unchanged, and extracting these records from memory does not look like opening a book on the right page and the exact reading of the text written there. Our memories change when they are stored, and when we try to remember something, we bring in new images in memory, distorting them under the influence of new information [2].

This distortion does not cover all memory errors, all distortions inherent in the process of remembering, remembering, and relates to a clearly defined range of situations. These situations are well described by phrases like "I knew it from the beginning" (I knew it all along) and "I knew it would happen" (I knew it would happen). The last phrase is even the name of the scientific article by Baruch Fischof and Ruth Beit [4].

The characterization of post-factorial heuristics is carried out as follows: when a subject is left alone with an event that has already taken place, it quickly formulates

the hypothesis and, on its basis, claims that it could foresee the events, or has already done it in the past or will do it in the future [7].

Today, there are few examples of the practical application of post-factorial heuristics, since its research is under development. However, many are convinced that they can predict the results of a particular event much better than most other people. We also use information about events that have already taken place to confirm our requests for the possession of extrasensory abilities.

So, heuristics are a new and popular trend in scientific research. Today, the problem of heuristics is particularly relevant, since there are no established approaches to determining the nature of heuristics and classifications to all known heuristics. The post-factorial heuristics at this stage is under development and requires even more cases of its manifestation for more detailed analysis.

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FEMINISM IN MODERN YOUTH CULTURE

"Feminism is a range of political movements, ideologies, and social movements that share a common goal: to define, establish, and achieve political, economic, personal, and social gender equality." – This is what popular website – Wikipedia says. [1] But in our opinion, feminism is not just a definition, it is a strong worldwide orientation on equality, that helps every women no matter what their race, body shape, political views etc. are. Mostly this movement consists of young people, since they already have felt benefits of early women rights activists.

The birth of feminism dates back to from 18th century. There is a point of view that rising of feminist ideas is connected to the start of new English and Italian female authors' literature: Isotta Nogarollah, Laura Cereta, Christina of Pisa. Also related to this are the works of Afra Benn, Mary Estel. They are called women rights activists.

Currently, feminism evolved into a new form. The forth wave is famous for youth involvement. For example, average young girl Meltem Avci, who survived a very difficult childhood, now is quite famous for leading a campaign, with Women for Refugee Women, which motivated her and her to fulfill her dream being a mechanical engineering student at Kingston University. And it is all because of feminism, this is what she says: "My mum is my hero. We've been through everything together, and she's a strong woman, who is still able to smile and enjoy life." [2]

And, as we said before, feminism is a movement for youth, that is why this ideology is use in many subcultures and it`s components. For example, comic books. An American researcher Maryjane Dunne wrote a work about characters – women. There is a part of her sayings: "Roles are important because the typical comic book superhero almost always has an alter ego, meaning they usually carry-on normal lives outside of their superhero persona. For male characters in the 1940s-60s, these roles are diverse and typically prestigious. In contrast, female characters were usually given very few roles with limited upward mobility. Because of the civil rights movement, second wave feminism and the sexual revolution, the late 1960's changed this landscape for women and their comic book counterparts." [3]

One of the most famous and empowering female superheroes is of course Wonder Woman. She is an Amazon warrior who has superhuman, strength speed, stamina, immortally and also is a master hand-to-hand combat. She has a very strong personality and she is powerful and beautiful at the same time, that is what makes her a perfect role model for girls. "Wonder Woman is a unique example of a female character that was specifically modeled as a feminist." [4]

So, in conclusion, we would like to say that looking back through all the things that we have written about, feminism is what every woman is needed in. And right now youth need to provide equality in our community. This is main goal of our work.

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TEACHERS' VIEWS ON THE ADVANTAGES AND DISADVANTAGES OF IWB TECHNOLOGY IN THE ENGLISH LANGUAGE CLASSROOM

The aim of this paper is to discuss the advantages and disadvantages of interactive whiteboard technology in English language teaching and learning. Also, my paper will illustrate how schools have started to implement IWB technology into their English language classrooms and how familiarized are English teachers with the integration of this technology in their English classroom.

A qualitative approach was used to collect data needed to answer the research questions. To collect the qualitative data, structured interviews were conducted with 4 English teachers who indicated that they had integrated IWBs in their English language in the last 2 years. The interviews were the primary data source of this research.

The questions of the interview were developed based on the literature review and the research questions. The teachers were asked the same set of questions in the interview guide. The questions focused on the participants' views on the shortcomings and benefits of using technology. The first part of the teachers interview included five questions about the advantages of IWB. The second part of the teacher interview included five questions about the disadvantages of IWB.

The data were analyzed across teachers rather than with each teacher as an individual case. To begin the analysis, the responses of each interview question were separated into a series of distinct statements by teacher. Statements were edited to remove irrelevant comments. The statements were then analyzed to identify common and different elements within statements.

The findings reveal that the majority of teachers who use this technology in teaching are aware of the benefits and these benefits in fact become their main reasons for integrating IWBs into teaching. The IWB supports the teaching and the learning process with various features that offer multiple opportunities to teach and learn in new and exciting ways that surpass the possibilities of traditional chalkboards. The advantages mentioned by teachers are: accommodation of different learning styles, interactive teaching and learning, active learner participation, increased motivation and engagement, and change in the pace of teaching and learning.

Furthermore, the teachers are aware of the fact that this technology presents some disadvantages that should be well taken into consideration. Four major drawbacks of the use of the IWB were reported by the teachers: lack of training, lack of time, repair costs and frequency of problems, and increased noise level. Teachers must recognize both advantages and disadvantages of using IWBs so they can get the maximum effectiveness of technology to enhance English language learning. The

results suggest that teachers must consider both advantages and disadvantages of using IWBs so learners can acquire a language with the help of not only the old methods but also the new ones.

Through the integration of technology such as IWBs in the English language classroom the learner will be at the centre of the learning process and not the teacher. IWBs are an instructional tool that if the teacher knows how to use it, it can transform his teaching style and support English language learners to learn more effectively.

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POEMS AT THE LESSONS IN THE KINDERGARTEN

In the period of development of education, when the search for effective methods of study continues, the use of poetic materials in foreign language lessons in a kindergarten plays an important role. Poems are one of the main means of achieving such basic goals of teaching a foreign language as an educational, developing and upbringing ones.

The aim of the article is to analyze poetry at the lesson in the kindergarten, to show that poems contribute to the development of preschoolers' creative abilities and is the key to the successful study of English. The development of poems as a means of teaching English has led to the base of our researching. The article focuses on poems that are widely used at lessons in the kindergarten.

The problem of the use of poetic material in the teaching of a foreign language constantly attracts the attention of domestic and foreign scholars and educators - E. K. Kondraska, S. N. Savina, M. V. Lyakhovitsky, A. Mirolyubova, V. Lobanova, L. Chervinska and etc. This is evidenced by the large number of articles devoted to this topic "The role of poems and songs in the study of grammar of English" (Lobanov V.), "Songs and poems in the English language lessons" (Izmaylov V.), "Games, poems and songs in the initial the stage of teaching a foreign language" (Dimentov A.) and others. However, the problem of the use of rhymed texts in teaching children of preschool age English vocabulary remains insufficiently studied [1].

Undoubtedly, one can say that the acquaintance of children with reading begins in early childhood. This is the age when a child begins to understand actively and react emotionally to the content of works of fiction.

Alla Goncharenko, the candidate of pedagogical sciences, calls the artistic word as the driving force for the development of speech competence and the formation of a value relation to the world, and children literature as an education factor and means and ways of pedagogical influence on children.

In the modern world poetry is one of the main means of teaching foreign language children. Rhymed texts are of interest to children in work activity, developing memory, thinking, creating an elevated mood, enrich the vocabulary. Reading poetry, studying it and translating make the lessons of a foreign language more informative, meaningful and interesting for preschoolers.

Work on poems begins with the choice of artistic work, which should correspond to the age-specific features of the child. A teacher reads the whole poem to the children expressly in no hurry. The understanding of the content helps to

develop a more effective memory, so a teacher should explain incomprehensible words and sayings.

To begin with, a teacher must follow the principle “from simple to complex”. To do this a teacher should use simple verses from a topic already familiar to children. This is explained by the fact that the experience gained by children contributes to a better understanding of the work, and therefore the poems are easily and quickly memorized by the children. Today there is a great number of poems on various topics. These poems are emotional and plausible. For example:

Family

A little Amily
Has got a big family:
A mother, who likes to cook,
A father, who's writing a book,
A brother, who goes to school
And a fish, which swims in the pool.

With the help of the poem, the tutor introduces children new lexical units (*family, mother, father, brother, fish*), develops the ability to perceive the text by hearing, improves the skills of correct pronunciation of English sounds and fosters respect and love for his family.

Work on poetry can be done in different ways. It can fully reveal the creative abilities of children, and especially the educator. When working with a poem, the tutor can also use a picture - as a means of clarity. The picture should be painted and presented as an illustration. It is nicer if the tutor draws the characters of the poems with the children in the lesson. No less effective way of memorizing the poems is a role play and only then the tutor can study the poem with all the children together.

To conclude, the paper examines the main ways of using and applying poetry in the kindergarten. The advantage of using rhyming material is that poetry helps to learn and extend lexical supplies without difficulty, as texts include new words and sayings. Already learned vocabulary can be met in a new contextual environment. In the process of familiarizing children of preschool age with poetry poetic-emotional competence is formed. Learning poems enriches the vocabulary of children, forms the skills of correct pronunciation, and improves the culture of speech.

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THE IMPACTS OF TRANSLATION IN ALBANIAN LANGUAGE NOWADAYS

Translation has played an important role in the dissemination of scientific information between different cultures. After a great isolation from the world that surrounds us in this decade we have increased contacts with different countries. Satellite communications have enabled faster spread of information. Exchanging ideas and printed materials between different language communities emphasize the necessity of translation in the development of this process. However, the process of translation is faced by many linguistic problems. The translation literary works was seen as a tool for the enrichment and advancement of the Albanian language. Intercultural communication as a form of translation which takes elements of culture passing from one language to another is inevitable. How we communicate when we translate and how we translate when we communicate? How translation can enrich Albanian language and what are its effects nowadays? The object of this study is the translation, named otherwise as an intercultural communication and the impact that has on today's Albanian language syntax.

The current study attempts to investigate the problems of structure that Albanian translators face when translating from English, as a source language, into Albanian, as a target language and vice versa.

It is well known that this languages are from different family languages. The main purpose of any translator during his work is to convey in the language of translation the general meaning of the target language, whether words, phrases, or sentences. This means that the interpreter will give a direct understanding of the original speech, as well as additional, implicit meaning that are needed to be translated as they provide information about the lecturer, his personality, and his psychological state at the moment of speaking. The interpreter must remain faithful to the linguistic level of every author's and character's speech.

It's easy to understand how it would be mixing different speeches to the interpreter.It is enough to imagine an uneducated mountaineer who speaks with a vernacular language, full of expressions and dialects that the interpreter has to speak in the standard language without deviation of literary expressions that foretell a high degree of culture.

The interpreter should convey as much as possible from the semantic-stylistic complementary values, along with all the context given also by using language means, because these values express the speaker's feelings that the translator is

required to take in consideration. Special interest is also the translation of the phonetic, morphological and syntactic style that will be the object of this study.

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THE GROWING IMPORTANCE OF ENGLISH FOR ACCOUNTANTS

Every year we are increasingly convinced of the growing importance of English in the modern world. It is the major means of communication between business people in different countries. Undoubtedly, English is a skill that embellishes a resume of a representative of any profession and accounting is no exception.

Nowadays, many employers include English in the number of mandatory requirements for the position of an accountant. It does not matter whether we are talking about an international company or a small firm in the domestic market - now the demand for accountants with knowledge of English is constantly increasing. At the Ukrainian labor market, every third company now requires knowledge of a foreign language from its employees. In spite of this, some people still do not realize the significance of this skill.

Today, the business world has a lot of opportunities connected with cooperation with foreign partners. Most companies have links with foreign investors, suppliers and customers. The accounting department, which is responsible for all business transactions of a company, must clearly understand all the content of contracts, financial statements and terms of cooperation.

Many people think that they do not need to improve English communication skills because the major part of their job involves dealing with numbers. However, a certified accountant should not only organize the numbers in a certain order, but also to communicate about the changes, results and the information pertaining to the financial statements or provide accurate information in the form of various notes and interpretations. Good language skills are very necessary for everyday communication with employees, leadership, partners, getting acquainted with new people, telephone conversations, meetings, presentations and participation in negotiations.

A few years ago, knowledge of English was not so important, but now the situation has completely changed. This is due not only to the growing number of foreign companies in the Ukrainian market, but also to the high level of competition in the industry. According to statistics, the salary of a specialist who knows English is higher by 10-20% than the one who does not want to learn a language. Due to the reorientation to the world markets and the expansion of partnerships between Ukrainian companies with foreign ones, primary documents, reports, contracts are formed in English. The ability to study and analyze documents is an obligatory requirement for the profession of an accountant.

English is necessary to prepare company reports according to International Financial Reporting Standards (IFRS). Recently the Law of Ukraine "On Changes to the Law of Ukraine "On Accounting and Financial Reporting in Ukraine" was passed by the Supreme Council. The Law came into force on 1 January 2018 and harmonized the legislation on accounting and financial reporting in Ukraine with the European legislation, in particular the EU Directive No. 2013/34/EU. Every year, the list of companies that start to prepare IFRS reporting is significantly expanding, and in the near future it will become a mandatory requirement for all of them.

In the financial world, it is very important to have quick access to relevant information. However, most of such information is often available only in English. Current information about the most significant changes in the economy can be found in the English-language periodicals. With the help of regular reading of these periodicals, you can effectively expand your vocabulary, enrich it with finance terminology, phrasal verbs, idioms, and abbreviations. Besides this, you will have access to many English-language sources of professional information, for example, you can become a listener of online finance and accounting conferences.

If you are going to work in a foreign company, an international certificate of Business English language can positively impact on your employment. International Certificate in Financial English (ICFE) is one of the specialized Cambridge exams. It is intended to confirm the level of language competence in the field of financial English. If you are planning to obtain an international certificate in finance, management, investments (for example, ACCA, CPA, CFA), the first step is the ICFE Certificate. Furthermore, it gives you the chance to attend international conferences and events and get an unlimited amount of modern knowledge. Good pronunciation, great vocabulary and knowledge of grammar, awareness in business communication style are factors that will help you to be confident, and to form a good impression on your partners.

Moreover, due to the great responsibility of a modern accountant in any company, another advantage of the knowledge of English is the availability of overseas business trips. This is one of the opportunities for developing your business, establishing relationships with new partners, and developing professional skills.

It is undeniable fact that learning English has never been more accessible. There are a lot of books, videos, language schools, online courses and other ways to improve your skills. Knowledge of English opens a lot of opportunities for professional and personal growth. In most cases, there is a small chance to take a good position in a big company and get a good salary without knowledge of English. Learning English is a difficult and lengthy process that requires patience and strong concentration. However, awareness of how the study material can be used today can be one of the greatest motivators for learning the language. Obviously, it is impossible to be knowledgeable in all areas, but we should be aware of the basic business or commercial terms that most people use in the course of their work. In conclusion, it should be noted that success only comes with self-discipline, persistence and genuine delight for what you are doing.

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LISTENING AS A METHOD OF LEARNING A FOREIGN LANGUAGE

Learning a foreign language is becoming an increasingly important with Ukraine's integration into the world community. In this regard, increased requirements for the educational process and the development of new innovative teaching methods meet the requirements of the time. One of the important aspects of learning a foreign language is listening as a kind of verbal activity.

Today, we observe that the amount of information is increasing every day, which results in the need for quick and accurate perception of speech, understanding the information listened. Listening as the basis of communication includes the process of simultaneous perception and understanding of oral speech.

Studies show that listening is the most frequently used language skill by students. According to these studies, listening is basically how you obtain and learn new information. Whether you're in the classroom or not, listening takes up more daily communication time than other forms of verbal communication. Working on your listening abilities must be at the core of students' learning practice. Listening can be very difficult, especially with speakers who have a strong accent or who talk really fast.

When we speak of listening mechanisms it is necessary to bear in mind the difficulties of this process, among which there are auditive difficulties caused by linguistic characteristics of oral speech; the difficulty of perception of expressive and stylistically colored speech generated by, for example, idioms; the the difficulty of understanding the semantic aspect of information due to the understanding of the objective content of the information; communication difficulties associated with communication conditions due to the presentation of one-shot information, etc. In connection with this, the teacher should bear in mind all the above mentioned problems which complicate the work of psycho-physiological mechanisms of listening.

As the result of our research we defined some tips to help effectively learn English by listening. They are as follows: using diverse english listening materials; focusing actively on listening, not on reply, translation or particular grammar structures; predicting content, creating mind maps; focusing on the main idea; focusing on details later, paying attention to specific information; repeating and practicing constantly. Living in the digital age has many advantages, but it's especially great when it comes to language learning. Today, students can improve English quickly and easily with the help of phone, tablet or computer. Here is the list of the suggestions that can help to learn English by listening. They are as follows:

watching TV Shows, YouTube channels; listening to the radio, audiobooks, podcasts, university lectures, songs.

To sum up, we believe that listening is a special way of learning foreign languages, through which learners perceive and better understand speech. This is one of the most important methods of learning languages taking into consideration the fact that listening skills are at the core of developing such skills as speaking, writing and reading.

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THE INFLUENCE OF MUSIC ON THE PHYSICAL AND MENTAL HEALTH HUMAN

Since ancient times, music has been important in everyday life of people. Of course, in ancient times, hasn`t exist songs, poems, etc., because people just did not know how to make them. The environment is filled with enormous and varied sounds. Great influence on the formation of the spiritual world of the individual created the noise of leaves, singing birds, murmur of streams In other words, all that surrounded a person and informed her about the outside world, namely about certain objects and phenomena of nature.

When we don`t hear any sounds when the whole world is silent, often it's all, we are associated with fear and death. But when we all hear, we experience a sense of life and movement. As for me, sounds are the movement through which we live and feeling life. Sounds perceived by a person cause her certain emotions, feelings, associations with other objects, phenomena and others.

All the sounds we hear have a certain effect on our psychological processes, and each other has certain properties, in particular:

1. Sound pitch
2. Volume
3. Time of sounding
4. Timbre
5. Amplitude of oscillation and others

All these properties have their own reflection in human consciousness and mind. Each of them can affect both the complex, and separately.

Individuality is independent and unique, has its own preferences, admiration and tastes. The same thing happens in music. In general, each sound is unique. Everyone tries to find something special in music that only he can explain. As mentioned earlier, we perceive music despite the emotions, feelings and associations it causes of us. Someone may feel joy, happiness, sadness, pain, disappointment and even a large range of emotions during listening.[1, p. 115]

In the childhood we are accustomed to music. Mothers who tried to put the baby in bed often sang to us lullabies. They act as a sedative for the baby. Lullabies, even without words, act as a wonderful sedative in case of sleep disorders. In Salzburg, studies have been conducted in which it was said that the lullaby, like music, acts not only to relax and normalize human biological rhythms, but it will also

contribute to the relief of the soul, that is, it relieves a certain emotional tension that exists within a person. This can be seen in some maternity hospitals. For example, in a maternity hospital in London, one journalist noticed that newborn babies enjoy listening to instrumental music by Vivaldi. After such therapy, they do not wake up even when a tool box has fallen. Especially exciting for them were flute sounds. Instead, the Japanese hospital in Shibuya (Tokyo) conducted an experiment by its director, W. Oki, who, with the help of him, was able to prove that "slow avtomatous" (repeated repetition of the melodic phrase) music greatly facilitates the birth of a woman.[2, p. 66]

I would also like to stay on such a famous, as well as no less ingenious composer like Wolfgang Amadeus Mozart. The scientists conducted a series of experiments, which showed how his music affects the mind and human body. They found that while listening to his compositions, little children develop more intellectually. It is also useful to listen to his works before the exam, as it helps to concentrate more, to increase his creative thinking, and to facilitate the search for non-standard solutions. Improvement of attention, memory, headache alleviation, sleep improvement, increased mathematical abilities, and this is not the end of what Mozart's music can influence.[4]

It is known that humans body is made on 70% with water. Japanese scientist Emoto Masaru, that has written a book in 1999 year called “Hidden Messages in Water”, has made some experiments that show how does water change its structure, to be exact the type of molecule. The scientist put the glass of regular water between two loudspeakers from which was playing different genres of music pieces, were said different words. After what this liquid was frozen, and then under the microscope people studied the structure of molecule. As a result, the frozen water has a form of snowflakes, that has clear or fuzzy contour. For example, when the scientist turned on “The Swan Lake” of Tchaikovsky, the form of the snowflake has had the most beautiful framework, that has an appearance of a bird feather. The Symphony №40 of Mozart shows the same greatness as the composer. Reaction of water on the hard rock music is as much incredible. The structure of a snowflake in this case in absent and only the blurred background can be seen.[3]

So, music is one of the most important part in humans life. It contains one of the most, modern informational channels. We have researched that music influences not only on our mind but on our body. It helps not only with mental illness and emotional tension, but with physical too. With its sounds, it makes relevant and unusual waves, that have an impact on our consciousness. Often music therapy is used in hospitals, sanatorium for children and adults and other places for treatment. A big responsibility and impact have music teachers, because they guide and push us to find not only our music way, but the music taste too. Of course a lot of scientists research this theme a lot by making a lot of experiments, but besides all of that this problem is still not explored and has to be studied even more.

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MEDIA DISCOURSE AS A BASIC NOTION OF MEDIALINGUISTICS

The second half of the XX – the beginning of the XXI century is characterized by the rapid growth of media and new information technologies. The dynamic development of traditional media and spread of the Internet has contributed to the formation of a single information space, conglomeration of many media-streams. The Internet and related technologies are categorized as a leading mass communication and essential information resource processing and distributing large data arrays. As a result media greatly affects communicant language behaviour.

Media discourse structure, its typology and methods of research have been extensively studied by Lysakova (1981), S. Tryeskova (1989), R. Fowler (1991), M. Montgomery (1996), V.G. Kostomarov (1999), T.G. Dobrosklons'ka (2004), G.Y. Solhanyk (2005), A. Bell (2005), and others. However, distinctive characteristics of media discourse need further clarification.

Prof. Dobrosklons'ka views media discourse as a set of processes and products of language activities in mass communication sphere in all diversity and complexity of their interactions [1: 21]. As a special type of mass communication media discourse is a social phenomenon, whose main function is to influence mass audience through content-based information and evaluative data transmitted by media channels [4]. Consequently media discourse is a mechanism of updating information through different communication tools of Media Institute [4].

I.A. Kozhemyakin distinguishes two approaches to the definition of media discourse. The first approach postulates that media discourse is a specific verbal-mental activity, peculiar only for information mass media space [3]. This approach differentiates media discourse from other discourse types such as political, religious, scientific, etc. on the basis of such discourse parameters as the use of language and communicative sphere of its realization. The second approach states that media discourse is any kind of discourse realized in media space and produced by mass media [3]. Thus it is possible to distinguish political, religious, scientific media discourse characterized by the specificity of mass information formation, interpretation and broadcasting.

Alongside with knowledge production and object evaluation, media discourse explaines the various ways of information broadcasting. It leads to the assumption that the central notion of media discourse is not social-political processes but methods of their description [3]. In this case, media discourse provides mediation attempts. Thus, media discourse analysis is aimed, on the one hand, at emphasizing essential elements of meaning creating and broadcasting process, and on the other hand, at defining the role of media context in meaning-making.

M.R. Zheltuhina defines distinctive features of media discourse that include [2: 27-40]:

- group correlation (the author shares the views of his group);
- publicity (focusing on mass addressee);
- disorientation (creating conflict with its following discussion);

- staging and mass orientation (impact on several groups simultaneously).

It should be added that media discourse mirrors the state of society, reflects both positive and negative changes in a certain period of its development. Choosing a linguistic unit, grammatical form or structure addressers show not only their individual language preferences and habits, but also signify about language skills of individual classes and social groups, i.e. the society of a certain historical period [5: 220].

From the stated above we may come to the conclusion that media discourse is integrated into social, personal and professional relationships and can be used to achieve appropriate illocutionary effect. Media discourse is a leading type of discourse that penetrates into all types of institutional and everyday communication. Mediatexts become significant means of forming society outlook and world perception of individuals.

This article focuses on the study of verbal and non-verbal features of the media social network discourse, Instagram discourse in particular. To conduct a preliminary scientific analysis we have analysed top three blogs:

(1) a challenge blog by kristenhanby (Los Angeles, California). A challenge blog by kristenhanby is dedicated to various tests undergone by friends. The friends freely become involved in making a tattoo, eating the hottest dish in public catering, making a pink defiant manicure, wearing women's clothes in a public place etc.

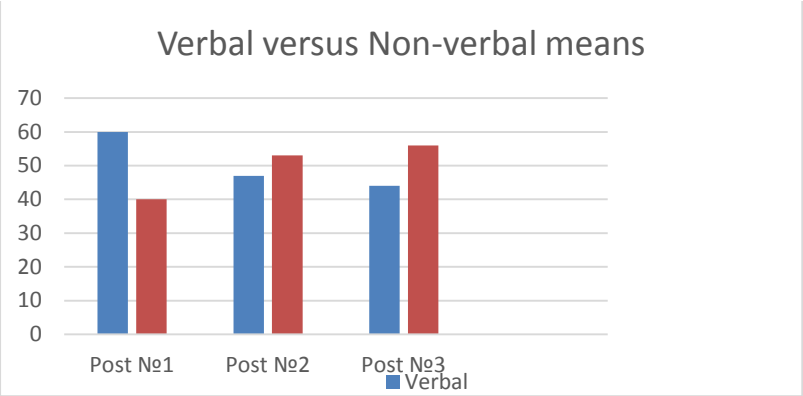
(2) a travel blog by Vitaliy Raskalov (Russia). The blogger is an avid adventurer who willingly posts many sets of detailed photos from his trips all over the world. Eye-catching pictures draw the followers' attention and leave an everlasting impression.

(3) a travel blog about an adventure cat by Suki Cat (Canada). Suki Cat blog is managed by a cat owner, whose pet likes to travel a lot. Magnificent pictures of a cute animal tend to move the followers and encourage them to reach all destinations the cat does.

The followers try to appreciate the bloggers' work by means of short elliptical sentences *"awesome nails", "the best"*, incorrect spelling *"inforgetable"* and incorrect grammar *"she do not want intrude", "awesomeness man",* extensive use of exclamatory and question marks *"Whaaaaaat?????!!!!!"* and letter duplication *"so cuuute"* etc. The followers greatly imply non-verbal means (emoticons) to highlight their attitude to the bloggers' posts (See Table 1). Such smiles (kisses, hugs, applauding hands) give some extra colouring and vividness to the feedback and consequently please the bloggers.

Verbal versus Non-verbal Means in Instagram Discourse

Table 1



As for the prospects for further research, it is appropriate to analyze the structure of media discourse and to consider linguistic component of mediatexts in terms of the perlocutionary effect, which creates manipulative influence on the addressee.

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THE GENRE OF DIALOGUE IN THE LITERATURE OF BULGARIAN NATIONAL REVIVAL – MEANING AND FUNCTIONS

Whether it is a transitional form to the drama (P. Penev, St. Karakostov, M. Bradistilova-Dobreva), a particular literary form, which undergoes a division between private literary and stage manifestations (Ts. Minkov) or a separate variety of publicism (Il. Todorov) the dialogue occupies an important place in the consecutive differentiation of the genres and genre reproductions of the literary thinking in Bulgarian National Revival. It is a preferable opportunity for ideological and aesthetic expression, mainly because of its well-established, non-exhaustive changes, especially in its starting position; because of the language - accessible,

understandable, through which an idea or a tendency is imposed; because of its simplified characters system (*modèle actantiel* – Pavis 2002: 6), which brings out specific social types bearing the very defined world views, which in the course of the development of the conditional plot scheme in most cases either are confirmed or undergo a sharp transition.

The syncretism of the dialogical genre certainly facilitates something else that is particularly important - the immediate outlining of a clear, categorical assessment of a current event or phenomenon affecting the whole community. The intertwining of civic-publicistic and ideological and aesthetic suggestions into a unified conceptual structure determines a more direct synchronic view on one psychological type or social and political move. For example, through the dynamic exchange of replicas of characters protecting different, often opposite, ideas about the commented individual presence or public tendencies, a more complete picture of the life and behavior of the Bulgarian notables beyond the Danube is revealed, about the attitude of the "old" people to the founding and the activity of a cultural institution such as the Literary Society or the controversy over the church issue.

So far, there is no more complete and systematic study of the dialogue as a genre in the Revival literature. The need to fine-tune the broad conceptual fields he sets, to analyze and conceptualize his concepts and his poetological potential, also largely determines the actuality of scientific activities in this direction. This would help in the more detailed characterization of close but not identical inter-genre relations (dialogues - drama, dialogues - publicism).

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TRENDS OF TOURISM BUSINESS DEVELOPMENT UP TO 2020

Actuality of theme. Nowadays tourism is an industry that has a significant impact on the development of the economy. Tourism is an industry that provides services for high-speed recoupment of a tourist product.

The research aim is to analyze how the development of the tourism services market will change over the next two years.

The results and discussion. The modern tourist industry is rapidly progressing. Its development promotes the active economic growth of many countries in the world.

Nowadays, tourism has become an independent branch of the economy, almost 6% of the world's gross national product, 5% of all taxes and 7% of world investments.

An analysis of recent research and publications in the field of tourism has shown the considerable interest of scientists from different fields to this issue. In particular, among the Ukrainian researchers, M. Afanasyev, O. Lyubitseva, V. Kifiak, I. Malskaya, I. Smirnov, L. Ustimenko, and V. Khudo were engaged in these issues.

In their research, the history of tourism is widely described, the concept of "tourism" and "tourism industry" are deeply disclosed, the current state of tourism development in Ukraine, the characteristics of tourist financial flows and management models in the international tourism business are also analyzed [1].

According to forecasts of the World Tourism Organization (WTO), tourism will continue to grow in the future. The number of travelers to 2020 will reach 1.6 billion people per year, which means an increase in tourist arrivals 2.4 times compared to 2000. At the same time, revenues from tourism, according to the forecasts of the WTO, in 2016 will amount to 1550 billion US dollars, that is 3.3 times the level of 2000, and by 2020, the increase in revenues is expected to reach 2000 billion US dollars.

With an annual increase of 8%, the number of tourist arrivals in China will reach $ 137.1 million by 2020. The second most popular tourist destination will be the United States (102.4 million), then – France (93.3 million), Spain (71.0 million), Hong Kong (59.3 million).

The daily expenses of tourists, with the exception of funds for air travel, will increase to 5 billion dollars a day. According to the forecasts of the WTO, the rapid development of outbound tourism is expected. Germany, Japan, the United States, China and the Great Britain will become the largest suppliers of tourist streams.

The economic backwardness of the countries of Eastern Europe is a real barrier to attract the population of these countries to international tourism. The volume of tourism between the countries of Western and Eastern Europe will grow mainly in the direction from East to West.

Specialists of the World Tourism Organization identified *the five most promising types of tourism* in the twenty-first century [2]:

1. *Cruises* – one of the most promising and rapidly growing types of tourism. In the beginning of 1980 the number of "cruise" tourists amounted to 1.5 million, nowadays – 10 million people, and their number is constantly increasing.
2. *Adventure tourism* – for fans of acute sensations. The demand for climbing to the highest peaks of the world and excursions along the sea depths is constantly growing.

3. *Cultural and cognitive tourism* – will actively develop in Europe, Asia, the Middle East, respectively, increase the importance of protecting cultural monuments.

4. *Business tourism* has become active now and will develop in the future, which is associated with the rapid development of the world economy, the deepening of political and economic ties between different countries of the world.

5. *Space tourism* according to American experts, will provide an annual income of $ 10 billion.

Conclusion. The analyzed data testify that the tourism industry is actively developing: the number of tourist arrivals in the world is increasing and in all tourist macro-regions in general. Therefore, further scientific research in this direction will be devoted to finding ways to solve problems of tourism industry development.

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THE USING OF THE CARTOON "PEPPA PIG" AT THE ENGLISH LESSONS IN THE KINDERGARTEN

The study demonstrates the using of the cartoon "Peppa Pig" at the English lessons in the kindergarten. There has been an increase of interest in developing the cartoon capability recently. This paper investigates the impact of the cartoon on different language competences in the English language of children of preschool age. Furthermore, this article includes expressions from "Peppa Pig" sorted out for different competencies to prove the study of the article.

It is not surprising that the interests and leisure of children have changed with the development of technology. Before the XXI century preschoolers did not have the possibilities to watch so many cartoons, but nowadays this kind of art has captivated the minds of children and even some adults.

In previous years some scholars investigated using cartoons at the lessons in kindergartens, in particular, Eugene Hohlova. However, little research has been undertaken to study the problem of using "Peppa Pig" in kindergartens.

There are many popular cartoons, but not all of them have educational implications. One of the best is "Peppa Pig". Firstly, this cartoon aesthetically appeals to children. Secondly, it is funny which improves health. Thirdly, it is interesting to children, because it is expressed in a clear, distinct and simple language, as the result, it promotes comprehensive development.

One of the main tasks of our study is to prove the educational orientation of "Peppa Pig" to the English Language. Watching cartoons can be one of the means of study.

In general, each episode lasts 5 minutes [1]. It consists of a dubbed name at the beginning, followed by the development of events. The title is a verbal name. The plot is an action or a system of events in which the characters revealing some contradictions are revealed.

The using of "Peppa Pig" is possible in several areas of the language studying. The following section will be described below. So every episode of the cartoon begins with the phrase "*I'm Peppa Pig. This is my younger brother George. This is Mummy Pig. This is Daddy Pig*". The monologue competence can be formed as children have the ability to represent themselves.

There is also an expedient for the young age to rate the timbre and voice, simple words and sentences, so children can understand their meanings. Preschoolers learn to understand the pronunciation of the English sentences and words and memorize them.

The lexical competence is also developing. Very often each episode has its own theme and children remember the words on this topic, later it is possible to use the didactic game to repeat these words. For example, in the episode "Snow": *cold, snowing, hats, scarves, gloves, making footprints in the snow, playing snowballs, building a snowman.*

The grammatical competence develops thanks to a well-built and easy to remember utterance in each series. These are affirmative and negative sentences, questions, orders, conditionals and sentences in passive voice.

- If you jump in muddy puddles, you must wear your boots.
- George likes to jump in muddy puddles, too.
- When George goes to bed, Mr. Dinosaur is tucked up with him.
- It's a job for a detective.
- Do not worry George. We'll find Mr. Dinosaur [2].

In order to develop the dialogue competence, children learn to communicate with each other in different situations in English.

- Peppa Pig: Hello. This is my young brother George.
- Madame Gazelle: Hello, George.
- Suzy Sheep: I wish I had a little brother like George.
- Peppa Pig: Really? [2]

To conclude, this paper has proved that the world of "Peppa Pig" is really capable to improve the English language of preschoolers and this cartoon can be used in English lessons in kindergartens. Moreover, the comprehensive development and upbringing of children by this means are carried out. The results show that this cartoon is indeed a means of teaching English. That is why, we should use cartoons, because when it is interesting, children will have a desire to learn.

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THE ETYMOLOGY OF MILITARY TERMS UNDER CONDITIONS OF THE INTERNATIONAL COOPERATION

In our time, an integral element of each sovereign state is the presence of armed forces. It is quite evident that each of these armed forces has its own distinctive features, which are appeared not only at the structural and organizational levels, but also in military customs and traditions. All these peculiarities are expressed at the language level of the militaries from different countries. At the stage of Ukraine's integration into European military, political, economic and cultural structures, the issues of training specialists who are capable of successfully implementing the process of cooperation between Ukraine and Europe and the entire world are of the first priority. One of the most important conditions for accomplishing this task is the requirement to develop the officers' professional communication skills in a foreign language. Taking into account the achievements in various fields of science and the intensive development of international relations, as well as the latest developments in the field of arms, the active need for officers is mutual understanding in conducting common military tasks in local conflicts.

The generation of the considerable amount of the military terms in the international armed forces causes difficulties in their understanding and translation, as well as the constant change in the vocabulary of military personnel in connection with the technical process and the reformation of troops.

The purpose of the study was the process (ways and means) of the English military terminology formation and the specific nature of its translation.

The purpose defined the following main tasks:

1. to study the word-formation structure of military terms, to identify the most productive word-formation models;
2. to analyze the formation of military terms;
3. to consider the peculiarities of the military terms' translation.

In the study it was considered the concept of "military etymology", its composition and structure were determined, lexical-semantic groups of English-language military vocabulary were singled out.

The composition of modern military terminology is not sustainable. It is constantly changing due to the aging of certain words, new addition of the terms during the reorganization of the armed forces, the production of the new weapons patterns, military vehicles and new methods of warfare. Therefore, the main ways and

means of the language vocabulary replenishment in the military sphere are determined.

The structural-semantic analysis of the English-language military terms shows that military vocabulary processes occur after affixation, combination of words, abbreviation and semantic derivation. The number of simple terms has been reduced, the formation of terms based on the abbreviation has been introduced. Military terminology is constantly developing and changing under the influence of external, social factors such as the active actions of the United States and Great Britain in the international arena. All these activates the innovative language processes and affects the modern composition of military terminology.

The difficulties in translation are usually caused with terms that consist of a group of words. They take a significant place in the English military vocabulary. The most common ways of translating multicomponent terms into Ukrainian are: to use a similar prepositive attributive group, components inversion, to use participial or adverbial participial clauses, descriptive translation.

To sum up, for the successful implementation of the cooperation process and mutual understanding, servicemen must not only have a good command of the appropriate foreign language and military terminology, but also know all the structural and organizational features of the foreign armed forces, as well as their customs and traditions.

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PROBLEMS OF HIGHER EDUKATION AND ITS IMPORTANCE IN THE FUTURE

People are not a programmed machine, and only because we decided to do it. Golden, more and more young people are put under the conscience and the need for a social institution such as higher education. In our time, the availability of a graduation certificate is an important criterion for getting a job. Without a diploma it is important to find a good place to work with high wages. Therefore, every person seeks to obtain this document, which confirms the "deduction" of knowledge necessary for this specialty. At the same time, unfortunately, it simply can not be allowed to receive higher education for a material (or other) reason, and also another that simply does not need education and participation in training — a waste of time and effort that could be spent on something more important. Therefore, consider some of the positive and negative aspects of higher education. Advantages include: — trainings and highly developed mental abilities by students (of a wide spectral discipline) — to introduce autonomy and regularity (especially this applies to young people living in a hostel, namely: planning of finances, order of day) — expands the horizons and allows you to establish new opportunities, provides relevant specialist

knowledge that allows you to deal with complex and specific, highly sought after and interesting professions (without pre-training, allowing you to work with insignificant) to help you decide in which direction people will find development and work throughout of your life. — help to organize their own business (during the practice) and receive advancement in career repositories (the availability of higher education for a profile accounting process that has a decisive influence). Also, student years are a lot of active events, activities where you can spend time interesting, as well as educational institutions - places where you can not only get the necessary knowledge, as well as indicate useful values, learn about previously unknown opportunities, find the best friends or half. Let's also consider the main disadvantages: 1. Unfortunately, in the field of education there is now a very high level of corruption, which negatively affects the level of knowledge. Even if you do not study well at school, you can easily enter a higher education institution and get a diploma. Because of this, there are a lot of students in high schools, and there are not enough good specialists. 2. The need to modernize the education system. Includes: lack of funds for the implementation of necessary software and equipment, limiting access to high-quality electronic resources, low readiness of managers and teachers to use the latest learning technologies. This leads to a discrepancy between the necessary labor and received marks on the market. Discover how you see higher education in Ukraine, due to a number of financial and other issues, to a greater extent expand the horizons and prepare young people, ready to teach people, not ready-made specialists. That is why the question arises whether higher education is needed. You only need to remember how many people have become rich or happy without learning. For example: Steve Jobs, Mark Zuckerberg, Bill Gates. These are remarkable examples of human labor and perseverance. However, if we want to be sensitive, we must admit that not all capable (which motivate) to develop, to which will be discussed and clearly indicated direction, and similar people. These people are able to think broadly and see new opportunities faster than their peers. All this has little effect on the extraordinary thinking of their thinking, but much of their success will be self-development and self-education. Of course everyone can learn himself. Today, there are many opportunities for use with courses and trainings, books, the Internet, video and audio products, etc. But all this requires from you: material resources, a lot of free time, self-control skills, verification of knowledge in practice. In other words, all that gives us institutions that have education for years of study, thus, you can disconnect yourself and reduce time. How does youth evaluate the importance of domestic education in life, how to show the results of contemporary sociological research: when cooperating with higher education, there is a tendency for underestimation of opportunities and ways of implementation to be given. The problem of professional orientation and self-determination of those who lead the labor market and will be the main productive society is extremely relevant. In the vast majority of young people there are no installations for preoperative activities. This suggests that young people need to be encouraged to professional development in order to provide coverage of the field in order to attain knowledge that meets the needs of the world labor market.

Education satisfies the needs of the human spirit, develops and educates the sense of values that are of a general nature. Education is not only for accumulation of knowledge, but also the development of abilities to analyze the problems of the whole society, a constant and troublesome search for solutions to them. New education is a science of human unity with a society in which a future specialist will play an important social role. Consequently, each of us must take a serious approach to choosing our future and the way we will go about it, certainly taking into account their needs and analyzing financial and psychological opportunities.

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MYTH ABOUT HYPERION IN AMERICAN LITERATURE OF THE XIX – XX CENTURIES

The aim of this study is to investigate the specificity of interpretation of the traditional myth by such American writers as romantic author Henry Longfellow in his novel "Hyperion", 1839 and postmodernist Dan Simmons in his eponymous novel, 1989. In American literature the myth about Hyperion is represented by only two novels, unlike European literature, where it gave a large number of interpretations.

The topicality of the work is caused by the increasing interest of scholars to mythologism, embodied in literature work, together with the lack of scholars' attention to Longfellow's prose as well as to Simmons's novels. There are very few fundamental works devoted to them, but mostly reviews. Thus, we are the first in Ukraine to trace the dynamics of American interpretations of the myth, the sources of myth creation by Longfellow and Simmons, and distinctive features compared to the European tradition of myth interpretation.

The theoretical and methodological basis of the work are both fundamental and cutting-edge investigations, concerning mythologism, romanticism and postmodernism, especially Longfellow's and Simmons's novels. We use the ideas and concepts of such scholars as B. Adams, A. Auramo, J. Clute, G. Couzens, H. Sachs, J. Stein, and many others.

Henry Longfellow was the first American writer who interpreted the myth of Hyperion. His novel represents a romantic interpretation of the myth. It shares such features of a romantic story as personalising the text, trend to include extracts from poetic works in order to highlight the author's point of view, paying much attention to depicting nature, emphasising the leading role of poets in society and romanticising the idea of struggle. Longfellow's novel is partly autobiographical [6, p. 135]. So, we can say that the image of the main hero Paul Fleming is partly the Longfellow's image, moreover, the protagonist transmits the author's ideas concerning creativity, life and death, divine forces.

Longfellow's novel is not only a philosophical and romantic novel, but also the novel of travels[3, p. 217]. Historical monuments in Germany, depicted in the novel, become the symbol of the lost past for the author. Longfellow states that the most glorious pages of human history are over, human culture is coming into decline, Americans abandoned their past, history and culture. This is one reason why he appeals to the culture and sights of Europe, not native America. Longfellow's opinion is that writers do not have enough support in young American cultural tradition [1, p. 64]. But European tradition is just the model for the author to create American culture and literature.

The author offers his own solution to the problem of loss of spirituality by humanity. Longfellow leads us to the conclusion that the nature is divine, but the main task of man is to find God in himself, because God is hidden inside each of us. This means that the writer shares pantheistic prospect of the world, and is a carrier of the mythological worldview, which gives him the opportunity to create his own literary myth.

The parallels with the ancient myth about Hyperion are present in Longfellow's novel on three levels. The first is a history of spiritual evolution of the protagonist, which correlates with the story of titans' fall and defeat. The second layer is associated with a landscape. The author points out the titanic grandeur of nature, when compares clouds with Hyperion [5]. The third level appeals to literature. Longfellow compares the change of Titans for the new generation of gods with changing old geniuses by new talented writers. Thus he claims the divine essence of the artist. But all these parallels are applied to the author's epoch, and are meant to bind the art of Longfellow's time with the deepest roots of literature, and prove the necessity of continuity of cultural tradition.

Longfellow appeals to many European literary works; but for him the world of human emotions is much bigger and brighter than it can be expressed on paper. Thus, the greatest value for Longfellow is the human soul that hides all the wealth of the world in itself. Thus, he created a typically romantic myth glorifying a man, strong and creative.

"Hyperion" by D. Simmons, like Longfellow's novel, is a new myth. But this is a typically postmodernistic piece of literature. This is a novel, containing such features characteristic to postmodernistic prose as intertextuality, double coding, genre syncretism, pastiche, authors playing literature, irony, fragmentality and epistemological uncertainty, because of the crises of faith in science and technical progress.

The novel is connected to mythology on the level of text and problematics [2, p. 15]. But compared to Longfellow, the author's outlook shifts to scientific-mythological, as his mythological prospect of the world is completed with scientific details taken from physics, biology and astronomy. This is a trait, typical to postmodernistic texts, as these days not intuition, as it was in romantic era, but facts help us understand the world.

The most important problems of the novel are realised in the revival of romantic poet John Keats, who is the brightest example of a poet for Simmons, and becomes a character in the novel. With the help of Keats's images and ideas the core of the problematics of the novel is created [8] as it was with Longfellow's quoting European poets, transmitting his ideas. But the difference lies in applying the artistic legacy to the text. Longfellow used to provide quotations whereas Simmons uses allusions and reminiscences, giving the author a chance to add the new senses. The antique and Keats's motive of the fall of titans is realised by Simmons in the form of SF and concerning the topical problems characteristic to post-industrial informational society: the threat of changing humanity by AIs [4, p.6]. Simmons shares Keats's

view of evolution as the only right way of development for the humankind and it reminds Longfellow's thought about necessity of constant motion and development.

Like in Longfellow's novel, the problematics of the novel includes the problem of relationships between the creator and the society, the problem of losing historical memory, the problem of irreversibility of time and the problem of immortality. With the help of allusions on classic literature texts, Simmons also touches upon the problem of cultural level of mankind and the decay of reading culture, as well as the status of classical literature nowadays. The ironic modus of Simmons's pastiche appeals to the mass literature and the false values of the consumer society.

In his novel, Simmons comes to the conclusion that poets are the most important members of human society because they create the existing reality with the help of their word [7, p. 357]. Thus they are the only ones who can obtain immortality. And this is Similar to Longfellow's idea about immortality of a man, leaving something behind, but specified.

Thus, the two "Hyperions" are related not only by name. The main problems worrying American writers have not changed for a century, but the new aspects were added. Both novels, each through the prism of its time, deal with the problems of culture decline, life and death, human striving to achieve immortality, relations between creator and creation. Besides, both novels proclaim the sole and unique role of literature and the writer in society, both authors refer to the search for God and found him in nature and in man, as the highest creation of nature. Both works are a matrix in which the fragments of literary works are inserted for better implementation of authors' aims. The novels give the reader optimistic prospects for the future and hope that people will find the right way. To conclude, the two novels both leave the main core of the myth but give the variations characteristic to the period.

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METHODOLOGY OF TEACHING PRESENT PERFECT

Synthesis

- "Present perfect involves the use of auxiliary *have* or *has* (third person singular) + -e*d* participle of a lexical verb" (Carter & McCarthy, 2006, p.415). *–ed* participle can also be called *past participle* (Morenberg, 1997).
- Negative form: *haven't/hasn't* + *-ed* participle; interrogative form: *have/has* + *Subject*+ *-ed* participle (p.416).
- "Perfect aspect indicates that the action of a verb is completed" (Morenberg, 1997, p.55).
- "Present perfect verbs often refer to past actions with effects that continue up to the present time" (Biber, et al., 2002).
- "The time frame may be indicated explicitly by an adjunct indicating "time-up-to-now". Such expressions include: *before, during, in the last x minutes/hours/days, etc., lately, recently, so far, this week/month/year, etc., to date, today, up to/until now/till, for, since, already, still, yet, ever*" (Carter & McCarthy, 2006, pp.614-615).
- Another use of present perfect is when a speaker considers an event to be still important or relevant to the moment of speaking (Carter & McCarthy, 2006).
- "In spoken and written journalistic styles, the present perfect is sometimes used to stress the current relevance of events, even though definite past time adjuncts may be present: A man *has been arrested* last night and will appear in the court tomorrow.
- "Perfect aspect is used in all registers, but it is somewhat more common in fiction and news. ...The present perfect is much more common than past perfect in conversation, news, and academic prose" (Biber, et al., 2002, pp.158-159).
- The most common verbs used in present perfect are *be, get,* and physical and communication verbs, verbs that "state that earlier findings or practices continue to be valid" (Biber, et al., 2002, p.160). Verbs that rarely occur with present perfect are verbs that "describe mental or logical state" (p.161).
- Both the present perfect and the simple past refer to an event or state in the past, or a state that existed over a period of time. The main difference is that in present perfect the situation continues up to present, when the simple past "describes an even that happened at a specific time in the past with usage of time adverbials": *yesterday, at that moment, then, etc.* (pp.161-162).

Pedagogical application

This lesson is designed for 10 ESL intermediate students. Hours of instruction per week are 20. They already know past simple and that it is used for finished time in the past.

Warm-up

Review past simple.

The students are divided in 2 groups of 5 students in each. The teacher writes a sentence on the top of the paper for each group "Once upon a time, there lived a very lazy student Mark". Students have to continue making sentences in the group using past simple. Each student after making a sentence folds a sentence and writes only a past simple verb for the next student on the next line of the paper, so the next student get a slight idea of what happened in the previous sentence and then writes its own. After finishing passing the sentences to each other, the students unfold the whole paper and read their story to the class.

Presentation

Teaching present perfect in affirmative sentences with actions that continue up to the present time only.

The teacher is going to write the sentences below on the board.

I have sent many emails today.

We have taken 3 tests this semester.

I have visited my family only once this year.

Carlos (for example a student from the group) has lived in the US for 2 years.

Then, the teacher will ask a question for each sentence:

1) Is today finished?
2) Is this semester finished?
3) Is this year finished?
4) Is Carlos still living in the USA?

The students are supposed to say that those periods of time are not finished and Carlos is still here. And the teacher would say that all these actions can still continue as the time is not finished. The teacher will explicitly explain that if the action started in the past and is not finished and continues now, it is called Present Perfect and the students have to use the structure (and the teacher will use one color to underline have/has and another to underline the verb) to show the unfinished action. The teacher will also point out the difference of using irregular past forms and tell the students to use the third column in their table of irregular verbs for the present perfect.

Focused practice

1) The students practice forming affirmative sentences in present perfect

Put the verbs in present perfect form:

1. The doctor _____(see) many patients today.
2. This year _____(be) very difficult for the country.
3. Many people _____(die) of malaria this summer.
4. We _____(stay) in this hotel for a week.
5. They _____(go) to many places in the past 2 months.

The students will have more sentences like that to practice the form.

Communicative Practice

As Biber et al. (2002) report that perfect aspect is more common in fiction and news, I chose news register for the communicative practice.

The students will become reporters and have to write a piece of news about what has happened in the world this year.

You are a reporter at the major news station. Give the name of your news station and the time of the day you give the news. Think about all the major events that have happened this year (2017)/or this month/or today (choose the time) in the world. Write at least 8 news. Use appropriate structure (have/have + ed/III column). You may use the internet resources to help you.

You are going to hand in your writing to the teacher and also pair up with another student and share your news with him/her and compare if you have the same or different news with your partner.

The constructive feedback will be given only if the mistakes interfere with the meaning at this stage. The students will not be corrected on misusing have/has. The future lessons will be dedicated to gradual introduction of negative and interrogative sentences and the other usages of present perfect.

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APPLICATION OF MASSIVE OPEN ONLINE COURSES FOR STUDENTS LEARNING ENGLISH: ADVANTAGES AND DISADVANTAGES

English language has been the language of international communication for a long time. In Ukraine, it doesn't only save it's status, language is socially necessary. Today, it's really very difficult to find promising work not only abroad and even in Ukraine. That's why, the constantly growing public demand for a high level of English knowledges requires the improvement of the technology for it's study.

But, despite this level of motivation to study English language among students not always consistent with an urgent public inquiry. It can be caused by using relatively old technology to study English language.

In the conditions of globalization, when the labor market requires highly skilled, competitive specialists, who are able to learn quickly, new technologies are especially needed.

However, today the greatest attention of teachers is falsified at school and preschool level. There is certain regularity in it – an important step of learning any

foreign language is initial level, which is taught in schools and preschools establishments. But, learning English language, are not limited to knowledge, given only in school. Institutions of higher education provide not only basic knowledge, but also an "add-on" to them. That's why, no less attention deserves the issue of the implementation of innovative technologies in the study English specifically for students. So, this question needs to be resolved and is very actual today.

The term innovation translates from Latin "novation" means update or change and prefix "in" means in the direction. If translated literally, "innovatio" means "in the direction of change".

According to it, foreign teacher's technologies is an innovation in the educational industry, in which the complex implementation of the latest didactics achievements and restriction of the educational process in terms of implementation of the principles of humanization and personal orientation of students are embodied.

According to the level of innovation potential, technologies are divided into three types:

- modifying;
- combinatorial;
- radical.

Modificatory innovations are associated with the improvement and modernization of what has an analog and prototype. Combinatorial assume new constructive connection of previously known techniques, radical innovations abolish existing forms and methods of work and contain ideas of radical transformation.

In our opinion, the most successful kind of innovation is combinatorial. It's due to the fact that they are less «painful» perceived by all representatives of the educational sphere and are softer, because at the same time, they bring something new, but don't abolish the usual norms and standards

One of the most common examples of combinatorial innovations is the Massive open online courses. There are Internet platform that allow you to remotely improve or retrieve knowledge from a chosen industry. Today, such courses are available at some American and European universities, or simply exist as separate educational Internet portals. MOOC is not an equivalent of usual education but used as an element of distance or co-education.

Using of MOOC in studying English language has several advantages. First of all, there is no need to attend these courses directly, which saves time. Secondly there a lot of free courses, which is why it provides rights for all students. Thirdly, MOOC are interactive; they involve all available online interactive medias to facilitate the exchange of information and knowledges.

But MOOC also have some disadvantages. Firstly, it should be noted that not all students at such courses have sufficient level of self-discipline. According to the results of the research, 85-90% of all registered participants don't complete the course to the end.

Another significant limitation is that online classes without a teacher reduces the emotional color of knowledges and hence the depth of their memorization.

So, the best variant for modern students is the combination of self-education in mass-based open online courses with classroom English classes. In our opinion, the

Ukrainian higher education institutions need to take the practice of foreign universities in combination of these two methods of studying English to improve the level knowledges of students.

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THE INFLUENCE OF READING ON HUMAN BRAIN

In the modern world the problem of reading is one of the most widespreaded. Every day almost everyone reads without thinking about how does it influence on our brain. That's why this problem is very relevant for modern science.

Since the childhood, we are learnt that reading books is very important. And it`s true, because literature helps us to develop and improve ourselves. We all remember the touch of the first book in childhood, our first favorite story, heroes and villains, love and friendship. And then our first encyclopedia, the power of knowledge, even a little. It all will be forever in our memories but is the importance of reading artistic or science literature real?

In school, teachers tell pupils that reading books will help them in future and it helps to develop their brains. But why? What does reading do to our intellect?

Reading books, not only are we advancing our memory and empathy, but science has proved that it makes us feel better and more delighted too. Researches has shown that reading has some incredible health benefits, including the help with depression, reducing stress, and decreasing the chances of developing Alzheimer's later in adulthood. [1]

No doubt, that reading has direct connection with our brain. According to the research of the Emory University, reading boosts activity of the brain in the region answerable for primary sensory motor activity. When we are learning something new,

neurons in this area of the brain stimulate to create an emotion of not just reading about the action of the book, but involving the sensations it is express.

Imagine that you are reading your favorite book, and the main character is running away from the villain. Your nervous system activates the part of the brain that is responsible for the running.

During many decades, different organizations studied this problem. Here are some examples of them.

Scientists from the Liverpool University researched the activity of human brain during the reading Shakespeare's poems. It is proved that reading keeps our brain ablazed, even when we stop reading. Zones that are connected to the autobiographical memory were especially activated. In addition, scientists retold the plot of poems, but it hasn`t made the same influence on the neurons.

Experts from the Emory University in Atlanta have made a Magnetic resonance imaging (MRI) to 12 students. They had to read 30 pages of the historical thriller of Robert Harris "Pompeii". Scan has shown that reading caused the high activity of left temporal cortex that is connected to the speech. But the excitement was kept after reading too.

In the 2008 year the scientists from the Duke University found out that reading can be used during the treatment of obesity. They studied 30 girls at the age of 9 to 13 years old that have adiposity. Some of them were proposed to read the book "Saving lake" – about a girl with a low self-esteem who tries lose weight. Another group have read a book, in which was no character like that. And the third one hasn`t read anything at all. As the result reducing the body mass index in the first group was higher than in another two groups. It is connected to the motivation of girls, which they got from the book. [3]

Researches from the Stanford University asked the group of candidates of sciences in literature to read the novel of Jane Austin inside the MRI machine. With different methods. At first they were reading without thinking, but then they were asked to concentrate on the analyzing of the text. It was found that for the analytical reading required the implementation of the special function, that usually isn`t activated. During the change of reading for pleasure to the analytical , is happening the sharp switch of neural activity of the brain. [2]

So we can see that reading has a big influence on our brain. But unfortunately nowadays we can see tendency of decreasing the interest of young people towards reading. It can become even bigger problem in future, because it reduces the level of intelligence of younger generation. This age is perfect for self-development, and people who ignore this fact, in future will not be able to become educated human beings. Beside all of the earlier written things, we can add the fact that reading enhances the world view. Also develops the imagination and mindset.

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EMBRACING TECHNOLOGY IN TEACHING FOREIGN LANGUAGES AND MOTIVATION BEHIND IT

In today's world, technology has a massive effect on everything around us — and this includes English teaching and language learning. Technology has gained a more leading place in classrooms. For example Classroom Educational Technology Services in USA significantly increased total classroom setups during a couple of years. If in 2003 they made around 60,000 setups per year, in 2014 this number goes up to 160,000 [5]. This shows how much grows the need in bringing technologies in education. And there is absolutely no doubt that this is now an essential for us.

It all starts with techniques that teachers use in their practices and by choosing how to teach their students. In terms of language pedagogy, it has changes a lot. Today task-based approaches (British schools) making accents on the practical uses of language and communication. This method can help being flexible during lessons, includes computers, audio-visual and kinesthetic learning. The task-based learning has a gap of information and in order to complete it, students have to do research on their own, before applying them. Huw Jarvis, a senior lecturer in the School of Humanities, Languages and Social Science at the University of Salford, says: "We know that people learn better when they struggle to communicate — so that needs to be at the core of the kind of delivery and the methodology" [1]. This type of studying gives teachers a big verity of methodology opportunities.

Innovative classroom practices allow teachers stay up to date and be more effective in educating. One of the basics of language learning is real-life communication and innovations help with it the most. This essential aspect can be embodied in videoconferencing, chatting, blogging, etc. and audio recording can be also helpful in improving pronunciation; before recorded audio or video files of a lecture provide distance learning outside of the classroom. There is also a possibility to communicate with native speakers via social media, which was impossible for many just-in-classroom-students. Adopting technology in classrooms increase what teachers can achieve and helps engage and motivate for learning as many people as possible. Also technology can help with more independent and personalized learning, sometimes even make more and quicker progress in studying.

Susan (an ESOL teacher (English to Speakers of Other Languages) in a UK further education context) says: "Because we have to use the technology, it's changing the way that we teach. So we have to have a mixed approach; they want to see us using it outside the class time as well as for homework, so I suppose it's changing the way we think in that respect. I set things via the VLE for people to do their homework" [1, p. 75]. This teacher experience in which way technology is shifting her techniques and only in desirable better direction. Now a language is used outside the classroom, which extends the knowledge of a subject.

There are also a couple the newest technologies widely used now or will be in the nearest future. The software market grows really quickly and gives us access to variety of applications (apps) and platforms. These apps will combine verbal and visual learning, organize processes and motivate people to work together. One of the platforms offers diversity of online courses that help transmit learning to a broader audience. Teachers also can provide their students with one of the largest dictionary apps and help with words and phrases learning [4].

With such amount of opportunities, educators are becoming more creative. A teacher from Arizona uses technology in a not typical way. Her goal was to find a way to motivate her students, so she came up with idea of teaching through creating different robots. This way they can explore and learn about math, science, engineering, and also a foreign language. This way they communicate and improve a language [6].

In our current world full of technology, we are quite lucky to embrace them and use to its fullest potential. They are not denying traditional methods, but rather supports and extends the process of teaching and learning by suggesting a variety of new devices, techniques and possibilities in general. With the help of multimedia, the classrooms became more active, dynamic and exciting place for studying. And the whole experience of language learning is so full of different experiences people haven't had before.

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BEHAVIORAL ECONOMICS

Economics had been a science that operated with pure statics, mathematical formulas. An important discovery was made by marginal theory, that declared the irrational nature of humanity. In the 21st century scientific theories are made up on the multi-disciplinal joint. "Demand creates supply" was the dogma of the economy, yet John Maynard Keynes disputed it in his theory[1], and now, the combination of

psychology, sociology, mathematics and economy invented a new doctrine – behavioral economics.

The idea of irrationality was found in other discipline, linguistics – Noam Chomsky, the professor of linguistics and author of several revolutionary theories, made up a point, that all languages of humanity are created due to irrational nature of people, as example – if our languages were rational, they would look like formal logic or mathematics, yet that's false. Human languages are bad at rational, scientific description of nature, but perfect for creativity and art.

The old theories of market have failed, either planed-economy soviet system and classical market economy, causing the extermination of Soviet Union and 2008 crisis. The main trouble was understanding of human nature as rational and forgetting about the most important – human will and feelings. Important role was played by existencial philosophy, that claims that things being is dependent on perception, linguistic irrationality of language, as pointed earlier, and cognitive psychology.Daniel Kahneman introduced the new way of understanding market's principles.

The point of irrationality is the basis of behavioral economics, due to it CEO managers create advertisements, as example – free gifts from shops, it quite unprofitable to simply give out goods, but the reason of such actions is that person will go to the shop to get free stuff will contact with bright billboards, attractive products and decide to buy it – and that will bring the owner money.[2].While behavioral economics claims irrationality of human nature, still authors and researchers says, that human is predictably irrational[3]. And a plenty of companies already uses new methods taking into account new psychological realities and knowledge[4].

The most popular argumentof the surd intellection is a problem of cognitivedistortions.It is an effect of irrational thought patternthat can lead to different false conclusions in the context of human thinkingand perception [5]. For example, the effect of mental filtering, that is a cognitive deformation,can influence on making decisions in the system of economic relations and social traffics. Logical thinking is an abstract and ideal notion, because this type of thought can be just an orienteer, rather than idea of logic like a method.

The second argument is that basis of human perception makes by mapping of attitudes and behavior. It can be descripted by conception of self-justification[6]. Some irrational behavioral events, that are influenced by social area and conformism, can be contrasted with attitudes of individual as a member of economic relations. Then, cognitive dissonance can be arisen, so individual want to be saved of this effect by adapting behavioral events as a caused by own attitudes. That is why behave of individuals and characters of personality are irrational, even in the context of economic relations.

On the other hand, the new way of selling products might cause social problems, the sociological paradigm "Society of consumption" predicted the growth of obstruction of the consume-oriented way of life, which cause nihilism, destruction of nature, disappearance of the common sense[7]. Modern researches share the

opinion of Baudrillard, the growth of advertisement, target-oriented politics of companies oriented to provoke nostalgia, commodity fetishism[8].

The society of consumption is a huge problem for the post-industrial societies, yet behavioral economics helps us understand the new rules of the market and finding the solution.

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THE BASIC PROBLEMS OF THE ECOLOGICAL TOURISM DEVELOPMENT IN UKRAINE

One of the promising types of tourism today is ecological. The number of its supporters has increased recently throughout the world, and the environmental activities develop dynamically. Further development of this kind of tourism is associated with the quite attractive prospects for restructuring the economy that

stimulates growth in other sectors: transport, communications, trade, construction, agriculture, manufacturing goods of mass consumption, etc.

At present ecotourism is gaining the greatest popularity among young people and those, who lead an active lifestyle, including students wishing to visit interesting places. , provided savings. Elderly people are also fans of ecotourism. They consider it in terms of getting the recreational services.

The essence of ecotourism is to organize a holiday in ecologically clean places, including wild nature. This kind of tourism is initiated with the aim of exploring and preserving the environment and natural resources. Another purpose of ecotourism is to attract the attention of mankind to the problems of nature protection. Ecotourism as a new type of economic activity has become a separate independent branch of business.

The development of ecological tourism in Ukraine faces ecological, social and economic problems. Successful solution of these problems can determine the status of ecotourism as a separate industry or just a type of tourist services.

Special direction of ecological tourism is the creation of ecological hotels. The main differences of eco-hotels from other types lie in the fact that ecological hotels are placed mostly in ecologically clean areas, operate on the principle of harmonious neighbourhood with nature, not polluting the environment with tourists life products. These hotels are situated mostly in the Western and central regions of Ukraine

The popularity of ecological hotels is associated with the fact that the population feels a negative impact on the environment and seeks to avoid or at least minimize it. Every year the importance and significance of ecological tourism in the life of every person grows, which certainly generates hope for the prospects of its development.

The main problems of tourism and the environment coexistence are:

- identification of priority areas of development;
- calculation of anthropogenic load on natural areas;
- planning tourism activities on nature territories;
- resettlement of coastal tourism, camping, etc.;
- regulation of tourism activities within the natural reserve fund;
- environmental education and education of travelers;
- recycling and removal of the tourism waste from nature areas.

To solve the above mentioned problems a series of organizational measures in the field of nature management should be taken, namely:

- to develop the normative-technical and legal documents, regulating environmental costs needed to prevent negative impact on the environmental status in the areas of recreational nature;

- to establish tighter standards for emissions of vehicles, industrial and municipal facilities that are located in recreational areas and nearby and introduce a system of measures for economic control of their impact on the environment;

- to study all the expenses for environmental measures, to identify sources of funding;

- to start the practice of the construction and commissioning of plants with complex environmental recycling.

For tourism to keep the status of sustainability, the organizers, local communities, tourists themselves should:

- promote the idea of all cultures equality among tourists and the local population;
- tourist companies should inform the travelers about the culture, traditions, recommended ways of behaviour in destination places (these measures are urgent not only for tourists, traveling in the Asian or African countries, but also for those travelling in different regions of Ukraine);
- promote the idea of local crafts and traditions revival, pride of the culture of his native land;
- attract locals to the tourist industry, contributing to the creation of small businesses;
- register and protect monuments of historical, cultural, cognitive value;
- tourism profit should be a part of local budgets;
- give local people the right to decide what services to offer to tourists and how to represent their culture.

Thus, the outlined problems of ecological tourism development in Ukraine can be solved by attracting small and medium business, and domestic and foreign investors to this area. In this regard, we need to hold a series of promotional activities, such as: a range of preferential taxes, change in ownership of companies involved in tourism sector and privileged information support.

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„ПО ЗЕМЯТА“: ГРАДОВЕ И РЕФЛЕКСИИ

В предисловието към книгата „По земята“ (1930) българският писател Константин Константинов пише: „*Това е станцията. Отправната точка. Часът, който звъни. Благословения час: часът на заминаването. Часът, който изкупва всички връщания.*“ [1, p. 5]. Поставеният акцент върху мига на отпътуването задава началната рефлексия, през която могат да бъдат разглеждани разказите-пътеписи, поместени в книгата на Константинов – посредством благословията на пътя, която предопределя пътешестването като съдбовно случване, но и още, като възможност за натрупване на опит в чуждото/другото пространство. И ако пътуването из родните български земи и градчета в първата част на книгата вписва възприятията в общата предзададена

представа за регионалност и всекидневност на видяното[1], то втората част на „По земята“, съдържаща разкази, посветени на чуждестранни градове, задава нови перспективи на пътуването; интригува както с избора на посетените места, така и с впечатленията, които натрупва пътешественикът.

Европейското пространство от разказите-пътеписи на Константин Константинов се разкрива двупланово – от една страна, бива предаден неподправеният интерес на персонажа към изучаване и опознаване на чуждото, за среща с другия/непознатия, а от друга страна, погледът на пътешественика остава предимно дистанциран, констатиращ и анализиращ видяното. В книгата бива проблематизиран както образът на многомилионния град в лицето на френската столица Париж, така и образи на други хилядни градове, част от Френската и Италианската Ривиера – Венеция и Марсилия, Ница и Кан, Монте Карло и др. Окото на пътешественика улавя емблематични дестинации по своите историческа и/или обществена значимост. Във водещите възприятия обаче се задават усещанията за привлекателна преситеност и постепенен упадък на човешкото в европейския модерен град, където Другият е поел по рисковия път на деиндивидуализацията.

Знаков момент в книгата „По земята“, сигнализиращ прехода на вниманието от родното градче към чуждестранния град се явява контрастът, изведен в разказа „Градчето“. Малкото градче, което „почти няма име“, е опустяло, забравено, „засрамено от собствената си незначителност“ [1, p. 52]. На него биват противопоставени наситените със събитийност милионни градове, които „в тоя същи час [...] бучат от движение, електричество и тълпи“ [1, p. 57]. Възходът на техническия прогрес в лицето на превозните средства – бързите влакове по „шумните перони“ на „грамадните гари“; „гигантските“ параходи из „огромните портове“ [1, p. 57]; сигнализира настъпилата промяна в рефлексията на Аза относно собственото позициониране и възможности за движение в света. Срещата с другото пространство ще се разбира тъкмо през копнежа за включване/приобщаване на пътешественика към световното случване и събитийност.

В разказа „Лазурния бряг“ градовете Ница, Монте Карло и Марсилия очертават облика на Ривиерата през екзотичните природни картини „на палмите, на пиниите, на портокалите, на цветята, обезумели от багри и мирис“ [1, p. 61]. Лазурният бряг е „брегът на щастливите в тоя свят“ [1, p. 61] – гости от различни раси, които се отдават на живота в блясък, безгрижие и снобизъм. Пищната природа в Монте Карло хармонира със светлините от Казиното, които посрещат космополитната тълпа, „блазирана и равнодушна към всичко, дошла само за Рулетката“ [1, p. 66]. По бреговете на Ривиерата щастието на човека добива формата на безтегловна радост, свежа и безплътна лекота, наситена с великолепие и лукс. В разказа „Две раси“ посещението на Кан – „зимния курорт на принцове и милиардери“ [1, p. 69], извиква чувство на възмущение и

[1] Темата за пътуването в делника от и към малкия провинциален град в сборниците с разкази на К. Константинов „По земята“ (1930), „Трета класа“ (1936), „Ден по ден“ (1938) и „Седем часът заранта“ (1940) е разгледана детайлно в студията на Н. Стоянова „Събитие и всекидневие“, поместена в книгата „Възходът на слънчогледите“ (2015).

усещане за абсурдност пред „идиличната“ картина на живота, изтъкана от разкош и изящество, на фона на която малкият човек може да бъде единствено страничен наблюдател. Двете раси – на синята и червената кръв, маркират два различни свята, които се дефинират в потенциала на оттласкването един от друг.

В Ница, „сърцето на Лазурния бряг“ [1, p. 62], обликът на безкраен празник бива развенчан в постепенното преобразяване на градското пространство с фабрики, работници и провинциален покой. В Марсилия екзотичното остава на заден план, погълнато от динамиката и шума на булевардите, на прииждащите и заминаващи параходи в пристанищния порт. Кан, Монте Карло, Ница и Марсилия демонстрират поетапното снемане на високите стандарти на удоволствия и класови разделения.

Париж от цикъла с разкази на Константинов е „мечтаният“ град, интернационален център и средоточие на света, където се стичат хора от различни раси от всички географски посоки. В Париж сливането на героя с тълпата създава не само усещане за свобода и анонимност, но и още „някакво чувство за близко обещание, на радостна увереност в нещо, което ни чака – голямо и значително“ [1, p. 85]. Да бъдеш част от тълпата на Париж, означава да свериш своя личен часовник с всеобщия ритъм на света. Пътешественикът на Константин Константинов възприема остранения поглед на фланьора, който търси своето убежище в тълпата на прага на големия град – „погледът на flaneur, чийто начин на живот обкръжава приближаващата безнадеждност на човека от големия град с примиряващ ореол“ [2, p. 170].

Образът на Париж се разкроява през множеството перспективи, ъгли и гледни точки, от които се улавят *моментните фотографии* на френската столица. Париж „На върха“ оглежда от птичи поглед глобалната картина: „Там долу беше светът, човечеството, милионите, непознати и близки“ [1, p. 86]. Тълпата от обитатели по улиците на Париж се насича последователно на отделни фрагменти, илюстриращи различните житейски съдби в пространството на големия град. Фокусът на внимание се спира поетапно върху разгръщащата се палитра от пороци, които избуяват в парижката нощ – стихийният нагон на плътта и безпаметното веселие („Черните“), търговията с наркотици и опиати („Жълтите“), бездомничеството и продажната любов („Белите“). Куклените театър на парижките деца от „Оазис“ се явява прелюдия на невинността пред жестокостите на безмилостния ход на Парижкия живот: „Той поглъща и влече всичко по пътя си, той расте като апокалиптична река, която бърза към някакъв страшен вртоп“ [1, p. 106]. В разказа „Светото сърце“ грохотът утихва в трепетната молитва на събраното множество богомолци в църквата – хора, изгубили своя човешки облик, репрезентиращи „неповторими маски на човешката нищета“ [1, p. 108]. Лицата на Париж, които се откриват пред посетителя на града, задават гамата от тоналности на кризисното съпреживяване на случващото се в напреженията, обусловени от тяхната жива динамична едновременност. В подобна посока на разпознаване и назоваване на различните образи на Париж Н. Стоянова определя „Париж“ на Константинов

като „театрален спектакъл“, в който персонажите наблюдават или разиграват сцени от градския делник и празник [3].

Антитеза на многомилионната френска столица се явяват образите на провинциалния европейски град от разказите „Нормандия“ и „Брюге“. Историческият град-паметник Руан, свързан в миналото с имената на Жана д‘Арк, Пиер Корней, Флобер и др., в настоящето тъне в ленив сън [1, p. 81]. Белгийският град Брюге от едноименния разказ на свой ред почива в сънна неподвижност [1, p. 112]. В „старинната столица на Нормандия“ (Руан) и в някога „гордата столица на Фландрия“ (Брюге) постепенното обезлюдяване донася разложение и упадък, които провокират в съзнанието на Аза появата на безименна, непреодолима мъка, която „отравя сърцето“, спира туптежа му [1, p. 118]. Славният живот от миналото изгасва в настоящето и изсмуква живителните сили на минувача: „Усещаш, че съзнанието ти повече не ще изтрае, че тясната назъбена уличка ще те сдъвче със своите каменни челюсти, че пролинялата вода те притегля като омагьосан“ [1, p. 118].

Не на последно място, ще спрем вниманието върху разказа „Пътьом“, където се оглежда образът на Венеция през рефлексията на личното преживяване и спомен на пътника. Разходката с гондола по водите на Канале Гранде отключват спомена за отминала, неслучила се любов, за вечерния час на съдбовната среща и трагичното разминаване. Миналото в спомените на героя възкръсва като априлска пролет в контраст на дъждовната есен от настоящето, петнадесет години по-късно. Героят на Константинов се превръща в печален скитник по следите на отминалата младост: „Аз съм отново пътник в тоя град на любовта и спомените, но моите стъпки не будят тук ехото на никаква радост. Аз дойдох само на една малка панихида за единствената и несбъдната любов“ [1, p. 77].

Следва да се обобщи, че разказите, посветени на далечните европейски градове от книгата „По земята“ (1930), отключват богат потенциал от възможности за отместване на Аза в чуждото пространство, за неговото опознаване и резултатната саморефлексия на персонажа. Предадените образи на чуждестранни градове добиват пълнокръвност, като разказите запечатват не само спомена за видяното и чутото в тях, но и опазват автентиката в излъчването на градовете – индивидуални форми, цветове и характерен мирис. Предвид тази специфика в поетиката на творчеството на Константин Константинов, неслучайно българската литературна критика определя писателя като „българин с европейско съзнание и европеец с българско съзнание – и в мисленето, и в писането си“ [4, p. 7].

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ŹRÓDŁA POLSKO-UKRAIŃSKICH HOMONIMÓW I PARONIMÓW

We współczesnym językoznawstwie szczególne zainteresowanie (zob. np. BEDNARZ, 2002; BUTTLER, 1971, 1972, 2001; KALETA 2010, 2013, 2014; MAJEWSKA, 2002) budzą słowa homonimiczne i paronimiczne w językach spokrewnionych. To zjawisko ciągle nie zostało w lingwistyce wystarczająco opisane.

Ponieważ moja praca mieści się w obrębie badań historycznojęzykowych, odwołuję się w niej głównie do danych etymologicznych, odnoszących się do relacji pomiędzy językami ukraińskim i polskim. W niniejszym tekście przedstawiam wyniki badania homonimów i paronimów języków ukraińskiego i polskiego w aspekcie etymologicznym.

Wszystkie homonimy i paronimy, a także wszystkie ich wyróżniane typy określają się szerszym ujęciem jako *fałszywi przyjaciele* tłumacza. *Fałszywi przyjaciele* tłumacza powstają w zależności różnych czynników, to np. niezależny rozwój języków, zmiana znaczeń za pomocą zapożyczenia dla określenia nowego pojęcia lub przedmiotu, paralelne zapożyczenie obu języków z trzeciego, używania jednakowych słów w różnych językach dla określenia nowych terminów za pomocą przeniesienia definicji itd.. Historycznie są one zwykle wynikiem wzajemnego wpływu języków, który w niektórych przypadkach może skutkować, szczególnie w językach bliskich sobie genetycznie, zbieżnością fonetyczną albo graficzną słów. Ich ogólna liczba jest różna dla każdej rozpatrywanej pary języków.

Termin *fałszywi przyjaciele tłumacza* wprowadzony w 1928 roku przez Maxima Koesslera i Jules'a Derocquigny oznacza wyrazy (lub wyrażenia) z dwóch lub większej liczby języków, mające identyczną lub podobną formę (dźwiękową lub graficzną), lecz inne znaczenie (Koessler, Deroquiny 1928: 112). Wiadomo, że, jak dowodzą badacze tej leksykalnej kategorii, większość takich wyrazów jest niebezpieczna pod względem translatorskim i glottodydaktycznym, ponieważ sprawia dużo problemów nie tylko podczas komunikacji obcokrajowców i tłumaczenia, ale również podczas nauki języków obcych. Na pierwszy rzut oka wydaje się, że trudności z właściwym rozpoznaniem takich wyrazów mają tylko ludzie zaczynający naukę języka obcego, z niedoskonałą znajomością języka. Jednak, jak pokazuje praktyka, mogą one wprowadzać w błąd także doświadczonych tłumaczy, ludzi, którzy płynnie władają językiem i znają go w stopniu

zadowalającym, ale nie osiągnęli jeszcze odpowiedniego poziomu dwujęzyczności i dlatego dopuszczają się fałszywego utożsamienia oddzielnych elementów systemów języków obcych i ojczystych. Tak powstają nieuprawnione semantyczne kalki i przypadki naruszeń połączeń leksykalnych lub zasad stylistycznych nie tylko w trakcie korzystania z języka obcego, ale także przy tłumaczeniach na język ojczysty.

Powstanie par międzyjęzykowych homonimów i paronimów języków polskiego i ukraińskiego przede wszystkim jest spowodowane tym, że jednostki leksykalne obu języków mogą mieć wspólne praindoeuropejskie lub prasłowiańskie źródło pochodzenia, jednak w procesie rozwoju te wyrazy zachowały swoje podobne brzmienie, ale rozeszły się w znaczeniu leksykalnym: *krzesło – крісло, dzierżawa – держава*. Niektóre pary homonimów i paronimów międzyjęzykowych powstały w wyniku rozbieżności w słowach zapożyczonych z innych języków pod wpływem procesów wewnętrznojęzykowych: *fistaszek – фісташка, portfel – портфель*. Homonimy i paronimy międzyjęzykowe również mogą powstawać w wskutek procesu przejścia słów z języka polskiego do ukraińskiego i odwrotnie: *węzeł – вензель*. Niekiedy homonimy i paronimy międzyjęzykowe mogą powstawać w wyniku przypadkowej zbieżności w brzmieniu słów dwóch języków: *mecz – меч, kit – кіт*.

Podczas badania homonimów i paronimów międzyjęzykowych wzięłam pod uwagę źródło pochodzenia, czyli etymon tych jednostek leksykalnych, ich pierwotne i współczesne znaczenie, proces i czynniki zmian ich znaczeń. W wyniku podziału według podanych kryteriów zostało ustalono 5 semantycznych typów takich par:

1. pary, w których zmiany semantyczne przebiegały równolegle w obu językach, np.:

pol. *dzierżawa* – ukr. *держава* ‘państwo’, pol. *drużyna* – ukr. *дружина* ‘żona’;

2. pary, w których zmiany semantyczne przebiegały tylko w języku polskim, w języku

ukraińskim zachowano natomiast znaczenie pierwotne, np.: pol. *czaszka* – ukr. *чашка* ‘filiżanka, kubek’;

3. pary, w których zmiany semantyczne przebiegały tylko w języku ukraińskim, w

języku polskim zachowano natomiast znaczenie pierwotne, np.: pol. *magazyn* – ukr.

магазин ‘sklep’, pol. *broń* – ukr. *броня* ‘kolczuga, pancerz’;

4. pary, które mają różną genezę, np.: pol. *mecz* – ukr. *меч* ‘miecz’, pol. *kit* – ukr. *кіт*

‘kot’;

5. pary, w których różnice znaczeniowe wiążą się z odmiennym procesem asymilacji

semantycznej zapożyczonej przez oba języki jednostki, np.: pol. *dywan* – ukr. *диван*

‘sofa, kanapa’.

W artykule zajmę się grupą 4, czyli homonimami heterogennymi. Według Marii Bednarz za heterogenne homonimy międzyjęzykowe należy uznać homonimy, które nie mają między sobą żadnego związku genetycznego (homonimia okazjonalna, która powstała w wyniku przypadkowego zbieżności form wyrazów) albo taki związek straciły w wyniku procesu rozpadu polisemii w jednym z języków porównywanych (БЕДНАЖ, 2004: 34–35).

W wyniku badań homonimów i paronimów międzyjęzykowych do czwartej grupy możemy zaliczyć następujące pary jednostek leksykalnych: pol. *kit* – ukr. *кіт* [kit], pol. *mecz* – ukr. *меч* [mecz], pol. *flaga* – ukr. *фляга* [flag(h)a], pol. *piłka* – ukr. *пилка* [pyl(ł)ka], pol. *żwir* – ukr. *звір* [zwir].

Rozpatrzmy zatem wybrane pary jednostek leksykalnych z etymologicznego punktu widzenia.

1. Para pol. **mecz** i ukr. **меч**:

Słowo polskie *mecz* według ESBn[2] zostało zapożyczone do języka polskiego w pierwszej połowie XX w. Pochodzi ono (podobnie zresztą jak znaczna część polskiej leksyki sportowej) od angielskiego wyrazu *match* ‘spotkanie dwóch drużyn lub dwóch zawodników, podczas którego drużyny lub zawodnicy grają w grę sportową i starają się pokonać przeciwnika’ (WSJP)[3].

Słowo ukraińskie *меч* według słownika ЕСУМ prawdopodobnie pochodzi od prasłowiańskiego wyrazu **mečь*, lub jego młodszej postaci **mьčь*, mających niewiadome pochodzenie. Często jest zestawiane z gockim **mēkeis* ‘miecz’, staronordyckim *mækir* czy staro-dolno-niemieckim *māki*, przy czym zarówno forma słowiańska, jak i przytoczone formy germańskie są raczej zapożyczone z jakiegoś trzeciego (wspólnego, lecz nieustalonego) źródła. Istnieje również związek z greckimi wyrazami *μάχη* ‘walka’ i *μάχαιρα* ‘nóż, szabla’, a także ze średnioperskim *magēn* ‘miecz’, lecz jest słabo uzasadnione..

Ilarion Ogienko w swoim słowniku ECCM podaje kilka możliwych źródeł pochodzenia tego słowa: gockie *mēkeis* ‘miecz’, łacińskie *maco* ‘zabijam’, a także jakieś nieustalone słowo turkijskie (do porównania średnioturecki wyraz *mač* ‘biała ostra broń’).

Podstawa (etymon)	Współczesne znaczenie polskie	Współczesne znaczenie ukraińskie
MECZ ang. *match* **МЕЧ** 1.psł. **mečь* 2.goc. *mēkeis* 3.łac. *maco*	**MECZ** spotkanie dwóch drużyn lub dwóch zawodników, podczas którego drużyny lub zawodnicy grają w grę sportową i starają się pokonać przeciwnika WSJP	**МЕЧ** 1. dawna broń biała w postaci obusiecznego prostego długiego brzeszczotu z rękojeścią; 2. *przest*. w dawnym obrządku weselnym ozdobiona kwiatami, tasiemkami i itp. szabla, którą trzymała w rękach *swityłka* СУМ

[2] Wszystkie źródła i ich skróty podane są na końcu artykułu

[3] Z kolei słowo ang. *match* pochodzi ze stang. *mæcca*, ‘kolega, kumpel, jeden z pary, żona, mąż, jeden dopasowany do drugiego, równy’, od *gemæcca*, od pniem. **gamakon*, ‘dobrze dopasowane razem’ od pie. rdzenia **mak-/*mag-* ‘dopasować’. Śrangiel. znaczenie ‘pasujący przeciwnik, osoba zdolna do walki z innym’ doprowadza do sportowego znaczenia ‘współzawodnictwo, zawody’ po raz pierwszy potwierdzego w 1540 (OED).

Wyraz polski *mecz* współcześnie według WSJP występuje w jednym znaczeniu, które odnosi się wyłącznie do sportu: nazwa zawodów, rozrywek sportowych.

Wyraz ukraiński *меч* według słownika СУМ ma dwa znaczenia: pierwsze jest najbardziej rozpowszechnione: nazwa obosiecznej broni z długim, prostym metalowym ostrzem; drugie znaczenie jest przestarzałe i używane tylko w wąskim obszarze, który dotyczy obrządku i etnicznej kultury matrymonialnej na Ukrainie ‘w dawnym weselnym obrządku – ozdobiona kwiatami, tasiemkami drewniana szabla, którą trzymała w rękach *swityłka*’ (z kolei według słownika СУМ *swityłka* to jest dziewczyna, która była odpowiedzialna za trzymanie miecza drewnianego i świecy podczas wesela).

Jak widać z zaprezentowanego materiału oba wyrazy: polski *mecz* i ukraiński *меч* nazywają różne, odległe od siebie, rzeczywistości pozajęzykowe.

2. Para pol. **piłka** i ukr. **пилка**:

Polskie słowo *piłka* według SEBo zostało zapożyczone do języka polskiego w XIV w. w znaczeniu ‘kula służąca do gry’, dawne znaczenie wyrazu ‘piłka do gry’ *piła* pojawia się od 1500 r. (w XVI w. też *pieła),* w XVI w. także używane w znaczeniu ‘mała kulka, kulista bryłka’. Prawdopodobnie pochodzi od łacińskiego wyrazu *pila* ‘piłka, kulka’.

Słowo ukraińskie *пилка* według słownika ЕСУМ prawdopodobnie pochodzi od prasłowiańskiego wyrazu *pila,* które pochodzi od germańskiego ***fīla*** ‘pilnik’.

Podstawa (etymon)	Współczesne znaczenie polskie	Współczesne znaczenie ukraińskie
PIŁKA łac. *pila* **ПИЛКА** germ. ***fīla***	**PIŁKA** 1. kulisty przedmiot wypełniony powietrzem, wykorzystywany w grach i zabawach sportowych; 2. konkretne zagranie piłką w trakcie meczu; 3. *pot.* piłka nożna – dyscyplina; 4. mała piła – przyrząd do cięcia WSJP	**ПИЛКА** 1. narzędzie metalowe z zębami do cięcia różnych materiałów; 2. mały pilniczek СУМ

Wyraz polski *piłka* we współczesnej polszczyźnie według słownika WSJP ma trzy znaczenia: pierwsze, najbardziej rozpowszechnione, określa gumowy lub wykonany z innych materiałów przedmiot o kształcie kulistym o różnym rozmiarze, wypełniony powietrzem, służący do zabaw bądź gier sportowych. Drugie i trzecie znaczenie używane wyłącznie w obszarze sportowym – zabawa lub gra sportowa z użyciem piłki: piłka nożna i podkręcona piłka – piłka, lecąca w powietrzu podczas gry. Czwarte znaczenie określa piłę ręczną o małych rozmiarach.

Wyraz ukraiński *пилка* według słownika СУМ ma dwa znaczenia, bardzo bliskie do siebie, określające podobne przedmioty gospodarstwa domowego o różnych rozmiarach.

Oba wyrazy polski *piłka* i ukraiński *пилка* nazywają różne przedmioty niepodobne do siebie ani ze względu na kształt, ani ze względu na przeznaczenie. Można jednak zauważyć, że czwarte polskie znaczenie jest najbardziej zbliżone do pierwszego znaczenia ukraińskiego, które określa podobne narzędzie o małych rozmiarach.

3. Para pol. **żwir** i ukr. **звір**[4]:

Polskie słowo *żwir* według SEBo w znaczeniu ‘okruchy skał, kruszywo’ zostało zapożyczone do języka polskiego w XVIII w., które pochodzi od litewskiego wrazu *žvỹras* ‘żwir’.

Słowo ukraińskie *звір* według słownika ECУM w znaczeniu ‘bestia, zwierzę’ które prawdopodobnie wywodzi się od prasłowiańskiego **zvěrь* ‘bestia, dzikie zwierzę’; w znaczeniu ‘wąwóz, zagłębienie, rów tektoniczny’ słowo prawdopodobnie pochodzi od prasłowiańskiego wyrazu *iz-vorъ*, które połączone z *vьrěti* ‘wrzeć, kotłować się; bić źródłem’.

Podstawa (etymon)	Współczesne znaczenie polskie	Współczesne znaczenie ukraińskie
ŻWIR lit. *žvỹras* **ЗВІР** psł. *zvěrь* psł. *iz-vorъ*	**ŻWIR** drobne kamienie i okruchy skalne, używane w budownictwie WSJP	**ЗВІР 1** 1. dzikie, drapieżne zwierzę; 2. *przen.* bardzo luty okrutny człowiek. **ЗВІР 2** 1. *dial.* jar, wąwóz СУМ

Wyraz ukraiński *звір* według słownika СУМ, oprócz tego, że jest wieloznacznym słowem, tworzy parę homonimiczną z *звір2*. Pierwotne znaczenie tego wyrazu określa zwierzę, drugie znaczenie powstaje na podstawie pierwszego i używane w znaczeniu przenośnym, które nazywa okrutnego człowieka. Wyraz, który tworzy homonimiczną parę, pochodzi z dialektu i określa ‘jar, wąwóz’.

Oba wyrazy polski *żwir* i ukraiński *звір* nazywają zupełnie różne obiekty, bardzo odległe od siebie znaczenia. Polski wyraz nazywa rodzaj drobnych kamieni, a ukraiński wyraz nazywa nie tylko żywą istotę, ale i wąwóz o wąskim dnie i stromych zboczach.

Omówione jednostki leksykalne stworzyły pary homonimiczne i paronimiczne niejako przypadkowo. Całkowita odmienność znaczeniowa tych tautonimów wynika stąd, że są to słowa o różnej genezie. Przeanalizowane pary zaliczam do postulowanej przez Marię Bednarz homonimii heterogenicznej pełnej. Warto zaznaczyć, ze mylne utożsamienie obu jednostek przez Ukraińców i Polaków wynika z działania czynników fonetycznych. Pary homonimiczne lub paronimiczne, które mają bardzo odległe od siebie znaczenia, określają absolutnie różne przedmioty, nie mają między sobą żadnego związku semantycznego, najczęściej powodują błędy przy tłumaczeniu z języka polskiego lub ukraińskiego, a podczas komunikacji mogą nawet prowadzić do nieporozumień. W takim przypadku problem homonimów i paronimów międzyjęzykowych, należy rozpatrywać w teoretycznych i praktycznych aspektach: językoznawstwa, dydaktyki, glottodydaktyki, poprawnego tłumaczenia dla

[4] Tu konieczna jest uwaga na temat niepełnej tożsamości fonetycznej.

zapewnienia dobrej komunikacji, co z kolei wymaga analizy wyników procesu tłumaczenia.

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MODERN METHODS OF LEARNING ENGLISH

"One language sets you in a corridor for life.
Two languages open every door along the way"
Frank Smith

Actuality of theme. The significance of English in the modern world is great. This language of international communication can help you to achieve your goals with new opportunities. People have always aspire to develop an optimal methodology for mastering a foreign language. However, it's not so easy to determine which of the methods of learning English is the best.

The research aim is to give tips on how to increase the vocabulary of English and to consider the most interesting methods of learning a foreign language.

The results and discussion. Learning English is important and people all over the world decide to study it as a second language. It is definitely worth emphasizing the fact that people studying English face a lot of difficulties. There are many methods *of learning English* that work, but we want to analyze only some of them.

1. Audio-linguistic method

The purpose of the technique is to repeat heard words (phrases) from the teacher (with the help of a phonogram). Upon reaching a second-level student is allowed to speak one or two phrases himself, everything else he repeats as a teacher. The third level involves free communication.

2. The principle of the spiral

Studying English with the help of a self-teacher or a program of video courses involves the gradual development of language skills and the study of topics. It is not necessary to immediately study all times or to scratch the dictionary without mentioning the grammar. We should study English gradually: the simplest grammatical categories, common words, basic rules of pronunciation. Having mastered the basics, you can return to the spiral: to study more complicated topics, knowledge of which will be based on previously passed material, forms of words, exceptions to pronunciation rules, etc.

3. Attend classes

Some people can learn on their own with a book or a computer, but it takes a great deal of dedication, motivation and a systematic approach. Most people learn faster, remember more, and have more fun in a class. It isn't important where the class is, but your learning will improve if you do it with other people [1].

Work in groups of 3-4 people, students are given one task, while discussing the role of each. The following forms of dual and group work are most effective: inside / outside circles; brain storm; jigsaw reading; think-pair-share; pair-interviews.

4. Visit an English-speaking country

You will only start learning the natural language people speak if you visit a country where English is spoken. Look for language schools in the country you want to visit. Most English-speaking countries have many schools to choose from. If this isn't possible, then a holiday in an English-speaking country is great, but make sure you speak English while you are there [1].

5. Get with the language

One of the most effective and easy ways to learn English is to fully immerse yourself in the language. Find an English-speaking radio station to listen to, watch an English-speaking movie or TV show or surround yourself with people having conversations in English. This method will help you to practice your listening skills, but you can also try to pronounce the words yourself in context to improve your speaking skills. With modern technology and apps, this can be done practically anywhere [2].

6. Join online English forums

The key here is to join forums for subjects that you are interested in – that way, your motivation will rub off on your English learning and you'll be more inclined to participate. So, whether it's photography, movies, travelling or cooking, discuss your passion with other like-minded people in English. If you feel nervous about people identifying you, make an anonymous profile. Then read through the forum to see what people are discussing. Once you feel confident, start to take part in the forum by answering questions posed by other people – or post your own questions and have a conversation with the other members [2].

7. Add some music

Not only your favourite song can wake up your mind and put you in a positive mood to learn English, but the lyrics can help you expand your skills. Research demonstrates how music can help second language learners acquire grammar and vocabulary and improve spelling. Songs almost always contain a lot of useful vocabulary, phrases and expressions. And since the intended audience is native speakers, the latest tunes include up-to-date language and colloquialisms. The language used in songs is casual and usable, if you pick the right music. Music also has an uncanny ability to stick in our heads, so this can help you to remember your new English words [2].

Conclusion. So, when you're learning English, it's important to keep your motivation up. As with any task, there may be times when it feels a bit more difficult, so switch up your methods and don't be afraid to make mistakes – you'll reach the level you want to be at.

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ELEMENTS OF ARTIFICIAL INTELLIGENCE IN FOREIGN LANGUAGE TEACHING

Advanced information technologies are vital not only for practical needs in the modern world, but also in the educational sphere. This fact is confirmed by the mass of publications of modern domestic and foreign scientists in the field of pedagogy. From this it follows that the issue of information technologies and web technologies implementation is very important and deserves our attention.

Particularly interesting is the issue of using systems with elements of artificial intelligence in the process of teaching students in higher educational institutions. Such an approach can vary the stages of the educational process and, at the same time, simplify the work of a teacher.

Nowadays, artificial intelligence or its elements can be found in our everyday life, and we, as typical users, don't even think about it. Good examples of the artificial intelligence usage are: cameras of modern smart phones, virtual reality

helmets, augmented reality glasses, devices and programs for geographic location, security systems of public and private facilities, and courses for military personnel.

This list is very large, but, unfortunately, within it we can not find the use of artificial intelligence in higher educational institutions. Although, the usage of artificial intelligence' elements is already present in some applications, for example, EasyLing. This software provides an opportunity to test students for the English language proficiency, using a variety of training modules. Also, the program is divided into thematic blocks where the student can choose the vocabulary according to the desired field of knowledge. Students can choose the number of lexical units to memorize individually. After that, the program independently reproduces these words in a visual and audible form. The usage of artificial intelligence' elements begins after passing the test and the first module, thus, the program learns how to interact with the user and offers to repeat those words that were difficult for the student to memorize.

Summing up, it should be mentioned that the use of artificial intelligence for the purpose of teaching students in higher educational institutions is a powerful tool for improving the foreign language skills. But we should not forget about the classical methods, since the result of combining these two approaches can be much higher.

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ADVANTAGES OF ONLINE LEARNING: EDUCATION WITHOUT LEAVING HOME

Problems that arise in educational institutions – budget cuts, the immutability of the level of education or absence of some specialties – leads to a loss of interest on the part of students to traditional education. Therefore, there is a need to find new, alternative learning methods that would allow them to acquire an appropriate level of knowledge and to master any profession without significant obstacles. That is why online training is gaining momentum today, its ratings are constantly growing, and popularization expands the range of users.

Online Learning is referred to by many names—E-Learning, Blended Learning, Mobile Learning, MOOC, Online Education or Virtual Learning Environment (VLE) and distance learning – a way of studying, especially for a degree, where you study mostly at home, receiving and sending off work by post or over the Internet [1, c. 246].

Online Learning has its own complexity and peculiarities, but it has the advantages that can make a revolution in modern education and in our understanding of it.

Newer education offers a variety of courses and programs on the Internet according to age, preferences, and future profession. However, you can take courses for personal development or gain any educational level online.

A wide range of courses – from programming to drawing – makes online learning more popular. There is an opportunity to take an online course for any purpose, even not related to the future profession. Thus, the student can learn everything he wants by simply clicking a few letters on his gadget.

Online learning is very convenient. You can safely listen to lectures on online platforms, even in bed, and uncomfortable chairs in classrooms will no longer influence your mood and health. Your schedule will no longer include physical activities, but you can even study in pajamas.

Education will not be a problem that demands your time taken from your family or friends, makes you stop working or quit your favorite activities. You no longer have to spend time commuting to the University, you can plan your time to study in any way: anything that took your time before will no longer be a problem.

The ease and flexibility of online learning help balance your time so that you can master the course quickly and at a high level. All these benefits give you the opportunity to study in your spare time, and not vice versa.

It is possible to get the necessary materials for study at any time, even at night. There is no need to go to the library because all the books are in electronic format, moreover, there are audio books that can be listened at any time, even during some kind of housework.

An independent learning system helps you to determine the right priorities of the day and fight your procrastination – because without the effort the course will fail. We need a desire to study and then a student becomes a master of his business.

Regardless of where you live, whether at home or on the go, wherever you have access to the Internet, you can safely master the program or review the performances of prominent scientific lecturers from all over the world.

Uncertainty disappears and concentration increases. Internet platforms give courageous and confident students the opportunity to discuss issues on a variety of topics without fear, as fears of public speaking disappear, unlike, for example, in large classrooms with many students. Due to the lack of noise generated by the excessive activity of students in traditional classroom education, students have better concentration and are ready to absorb the necessary material quickly.

The student gets more knowledge, becomes more skillful in the technical environment: even the simplest online program requires some necessary computer skills since modern Internet platforms use a large number of new training programs. The skills that a student obtains while studying can be used in most modern professions, including accounting, marketing, management, and many more. Some schools offer free laptops or iPad for the period of study, which helps to overcome the lack of relevant technology.

The on-going online courses promote career development and are an excellent addition to the resume. The flexibility of online learning allows the student to combine studying and work quite easy. For any employer, it is important that the employee is able to acquire new skills and knowledge. The educational level in any field which you can get online will be valued as a traditional one because it is your competence, which is eventually the indicator of your educational level. Thus, you can quickly be promoted due to having online courses at a prestigious university, since for your employer, you will be the first candidate for a new position.

Learning online reduces your expenses. It is known that online courses are at times cheaper than traditional, which makes the student consider them. Some universities offer financial assistance to students for tuition fees, which also have to be taken into account. There are also absolutely free platforms, and some of them are no worse than their paid prototypes.

The Ukrainian educational platform *Prometheus* offers free online courses in all areas, including programming, psychology, exams, and even courses for future mothers; The training takes place in a few weeks, combining lectures, practical tasks, exam and further recommendations; at the end of the course, a free certificate is provided [2].

FutureLearn is a digital education platform founded in December 2012. It is a Massive Open Online Course (MOOC) learning platform. The launch was described as a move to 'fight back' and provide a space for UK institutions to engage in the MOOC space. According to Financial Times, *FutureLearn* was the first platform to enable students to earn credits towards a degree from a top UK university from their tablets and smartphones, 2016 [3]. *FutureLearn*'s courses span a broad range of topics, which are now available to people anywhere in the world for free, you may only pay for the certificate of the course completion.

There are many other online platforms that provide skilled student training. Some online courses do not have certificates, but they are also useful for personal development and the development of new skills in any field.

Online training is a challenging but extremely useful way to achieve a variety of skills. Being initially criticized, today online education is becoming a viable tool in getting the appropriate qualification. Online courses are available in almost all directions and their number increases every year. There is an increase in the number

of students who change traditional training in online teaching for a number of reasons. Online education allows you to study at universities abroad without leaving your home.

Online learning is part of modern progress, which is far ahead of time and enables the student to develop themselves in the areas previously unavailable.

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Session work №6

CURRENT RESEARCH IN THE FIELD OF MEDICINE

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LATIN BORROWINGS IN THE ENGLISH WORD-STOCK OF J.K.ROWLING'S MYTHOPOETIC UNIVERSE

A series of books on Harry Potter – an orphaned young wizard, who became an irreconcilable fighter of the dark magic – has been keeping on top of all readership ratings for several decades. Such popularity is secured by many factors, among them there is extremely fascinating plot, young attractive characters, with whom teenagers can associate themselves, and enigmatic atmosphere, to mention just a few. The author of the series, a British bestselling writer J.K. Rowling, has designed a secondary universe, which generally corresponds to modern Europe and the USA, but, nevertheless, has a number of remarkable differences. The first and foremost is, certainly, the idea that magic, wizardry, fantastic beasts and other supernatural ideas and objects are real. Moreover, the difference is marked with the language of the British magic community, which is quite different from the English spoken in the real UK.

The tradition of introducing new languages or at least words and phrases into a secondary world is deeply rooted in the sci-fi and fantasy fiction tradition. Basically, all authors describing different worlds need (and coin) new nominations for those worlds' culture-specific elements. The laurels of the most productive language inventor belong to J.R.R. Tolkien who created several new languages (including several Elvish (Quenya, Telerin, Sindarin), several human (Adûnaic, Westron, Rohirric) languages, as well as Khuzdul (the language of the Dwarves), Entish (the language of the Ents) and Valarin (the language of the Ainur)) for his Middle Earth.

Nevertheless, *Harry Potter* series of books has also enriched the English language with some neologisms coined by J.K. Rowling. For instance, the word *muggle* ('a person of non-wizarding origin who does not possess magic powers') entered *Oxford Dictionary of English* in 2002 with the meaning 'a person who lacks a particular skill or skills, or who is regarded as inferior in some way' [3]. Later this word was joined by *quidditch* ('magicians' team sport played on broomsticks with four different balls') with the meaning 'a team sport played while straddling broomsticks, in which goals are scored by throwing a ball through any of three hoops

fixed at either end of the pitch'. Moreover,the editing team of the *Oxford Dictionary of English* is quite optimistic about the prospective for other Harry Potter words to be registered by this dictionary: 'we explore some of the language of *Harry Potter*, and the related neologisms that we are currently tracking; if they gather enough evidence of widespread usage, these words could be joining *muggle* and *quidditch* in our dictionaries' [1].

Being a well-educated English philologist, J.K. Rowling designated new words using a rich palette of word-formation elements not only of English, but of other European languages. For example, she referred to French while creating the nickname for the villain of the story – *Voldemort*, which is literally 'flight of death' in French [2]. However, the most widely used source language for *Harry Potter* word creation is beyond doubt Latin. The authorized wizarding world website Pottermore.com gives detailed reasons for J.K. Rowling's use of Latin: 'Latin's more than just a historical eccentricity – it's the basis of what we call Romance languages… It resonates through English too, with so many of our words coming directly from Latin… With wizards being old-fashioned in nature, it's not surprising that so many of their spells are rooted in a more archaic language' [4].

Indeed, the author widely employs Latin-derived stems for creating new words which belong mainly to names (e.g. Albus (from Latin *albus* – 'white'), Severus (from Latin *severus* – 'severe'), Lupin (from Latin *lupus* – 'wolf')), etc., and incantations (Fidelius – a spell of keeping secret (from Latin *fidelius* – 'faithful, reliable'), Patronus– a spell summoning a defender from Dementors (from Latin *patronus* – 'defender'), Cruciatus – a spell of tortures and pain (from Latin *crucire* – 'to torture')).

Structural and lexical-semantic analysis of Latin borrowings in the Wizarding English word-stock enabled to discover that Latin was employed by the author for creating those personal names that bear strong stylistic effect of antonomasia (a meaningful name). For instance, Professor Snape's first name Severus (severe) hints at his gloomy character and specific temper; the last name of Remus Lupin (wolf) tells the reader about his second personality of a werewolf; and the first name of Ludo (from Latin *ludo* – 'I play') Bagman reveals his strong inclination to gambling. For creating personal names, J.K. Rowling uses adjectives (albus, severus), nouns (lupus) and 1st person singular verbs (ludo). Besides, she employs Latin-originated names: e.g. Minerva, the Latin goddess of wisdom, has given name to Minerva McGonagall, and Horace Slughorn, a professor of Potions, has been named after the famous Roman poet.

As for incantation names, they are represented in two guises – as actual names (Cruciatus, Imperius, Fidelius) and as actual magic formulae, pronounced while casting a spell (diffindo, engorgio, expulso). The first group of words is represented mainly by Latin nouns (*cruciatus* – 'torture', *patronus* – 'defender'); however, the so-called 'invented' Latin nouns (namely, adjectives or infinitives transformed into nous by means of adding noun suffix –us) also occur (Fidelius (from Latin *fidelis* – 'faithful, reliable'), Imperius (from Latin *imperare* – 'to reign'), etc. The second group – actual spells formulae – comprises mainly 1st person singular forms of the Latin verbs: *expecto patronum* (literally 'I expect a defender'), *cave inimicum*

(literally ‘I beware of an enemy’), *levicorpus* (literally ‘I make a body fly’), *evanesco* (literally ‘I vanish’), *finite incantatem* (literally ‘I finish a spell’), etc.

Apart from names and incantations, Latin is implemented in *Harry Potter* books via names of potions. For example, the famous Polyjuice Potion brewed by Hermione on her second year has Latin-borrowed prefix *poly-* (meaning ‘many’) in its name. The name of the potion of luck – Felix Felicis – is made of two forms of one and the same word: the first component (*felix*) is nominative case and the second one (*felicis*) is genitive case. Thus, this word combination means ‘lucky of lucky’.

Latin borrowings play a very important role in Harry Potter books. First, they create a specific atmosphere of magic and sorcery, as Latin was the language of medieval alchemists who were considered half-scientists and half-magicians of their time. Second, words of Latin origin secure certain postmodern playing with the reader, who is encouraged to decipher them. And, finally, Latin borrowings enrich the lexicon of the novels, making them interesting objects for both literary criticism and linguistic analysis.

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UMBILICIAL CORD BLOOD STEM CELLS FOR POTENTIAL FUTURE TREATMENT

The article is devoted to students’ knowledge and awareness of stem cells treatment. Stem cell research has been widely studied worldwide to increase human health in medical setting. Nevertheless, there is currently no full understanding of the stem cell knowledge and attitude levels among student nurses in Ukraine. This study is aimed to assess the level of stem cell knowledge, attitude toward stem cell application in medicine, and its association with years of education among master degree nursing students in Zhytomyr Medical Institute.

To determine awareness of stem cells treatment 50 students of Zhytomyr Medical Institute were studied. It was used a questionnaire consisting of 10 questions. The survey was conducted during 2017-2019.

Current studies in stem cell biology have shown a meaningful differentiation plasticity of many stem cell types in human tissues. Medical specialists are curious about the knowledge that could come from studying human stem cells. The research shows these types of cells offer an opportunity to learn more about how diseases develop and how they could be prevented or treated on the cellular level.

Stem cells have huge promise to help people understand and treat a range of diseases, injuries and other health-related conditions. Their potential is evident in the use of blood stem cells to treat diseases of the blood, a therapy that has saved the lives of thousands of children with leukemia; and can be seen in the use of stem cells for tissue grafts to treat diseases or injury to the bone, skin and surface of the eye. Researchers continue to explore new avenues using stem cells in medicine.

According to the research findings, stem cells are undifferentiated, immature cells, capable of self-renewal and differentiation into different types of cells, tissues and organs. Moreover, they can turn into specific *cells*, as the body needs them. Stem cells are cells that are extremely different from other cells in the human body. Regardless of origin, all stem cells have three important properties. First of all, stem cells do not have specific functions. Secondly, stem cells are rapidly divided and self-healing. In addition to this, stem cells can provoke growth of cells that have specific functions.

Many scientists are exploring the different roles tissue-specific stem cells might play in healing, with the understanding that these stem cells have specific and limited capabilities.

The human body is constantly renewing its tissues. In some parts of the body stem cells regularly divide to produce new body tissues for maintenance and repair. Stem cells are present inside different types of tissue. Scientists have found stem cells in tissues, including: the brain, bone marrow, blood and blood vessels, skeletal muscles, skin, the liver, fat tissues, umbilical cord.

Until recently, blood that remained in the umbilical cord and placenta after delivery was routinely discarded. There has been a substantial increase in the clinical use and research investigation of umbilical cord blood in hematopoietic transplantation and regenerative medicine. The umbilical cord blood contains special stem cells which can be used to generate red blood cells and cells of the immune system. Cord blood stem cells are currently used to treat a range of blood disorders and immune system conditions such as leukaemia, anaemia and autoimmune diseases. These stem cells are used largely in the treatment of children but have also started being used in adults following chemotherapy treatment.

The collection of umbilical cord blood is uncomplicated and entirely without risk for mother and child. The umbilical cord is cut and then punctured to collect the remaining blood containing many stem cells from the placenta and umbilical cord.

The umbilical cord bloods were applied in the treatment of juvenile diabetes, infantile brain damage, and hematopoietic disorders as well as in the correction and regeneration of the immune system in case of immunodeficiency.

There are a variety of methods used to collect umbilical cord blood. Before large syringes or small bags were used. Many specialists have expressed the opinion that bag collections are simpler to perform. Now special kits are used too. They meet all regulatory requirements for shipping blood, including double containment and a crush-resistant container. Moreover, these collection kits are insulated and padded for safety during transport, and studies have shown that these kits protect the sample from temperature extremes during shipment.

The collection, processing, and banking of umbilical cord blood for immediate or future clinical use can be reproducibly performed with the proper methodology. For parents interested in cord blood banking on the territory of Ukraine, the following banks can provide collection of cord blood as Ukrainian Stem Cells Bank, Institute of Cell Therapy in Kiev, Life Cord Blood Bank, Family *cord blood bank* HEMAFUND.

To sum up, all these studies indicate that children whose umbilical cord blood stem cells are available for their own potential use could be among the first one to benefit without having the risk of rejection by the immune system.

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BLOOD DONATION. ITS PROBLEMS AND WAYS OF THEIR SOLUTION

Actuality of theme

Blood donation is a voluntary provision of donor`s blood or its components for further transfusion to patients in need of it. [1, art. 2]. In Ukraine today, there is a critical shortage of donors. A large number of patients requiring transfusion do not have timely access to blood products and components.

The aim of the study: to determine the level of knowledge among the population concerning donation.

Research methods:

In order to study the level of knowledge of the population on donations, we conducted a questionnaire of 20 employees of educational institutions and 10 students. The survey showed that only three of them were donors.

Results obtained.

The most common reason for the refusal to be a donor is a state of health. At the same time, 66.7 % of respondents refused for other reasons. 33.3 % of respondents believe that there is a high probability of contracting infectious diseases during the process of giving blood, but this opinion is false: on the contrary, a potential donor has the opportunity to have his health checked. All manipulations are carried out in compliance with all the rules of asepsis and antiseptics (in particular, the use of disposable blood collection systems).

43.3% of the respondents have a sufficient level of knowledge on donation and only 20% of them have a high level. The lack of awareness of the need for blood donation is a problem today. The most common reason for it is indifference or belief that there is no lack of the blood of common groups. However, it is a deception, because a large number of people with a certain group of blood testifies to the high demand of it. The population is unaware of the need for blood donation, so it is worth talking about it, distributing information through the media, social networks, the Internet, and conducting sanitary and education work among young people.

It is also wrong to think that the donation is harmful to health. In general, regular blood donation is even useful. It helps to improve hematopoiesis, remove excess iron from the body, which can cause cancer and heart diseases. Being a donor is also accompanied by general activation and restoration of an organism and normalization of blood circulation; it helps to prevent cardiovascular diseases, stimulates the immune system and reduces the load on liver and spleen. Another big advantage is the development of the body`s ability to withstand excessive bleeding and recover after it much faster.

Conclusions:

The indifference of the population to blood donation is critical. It is necessary to promote blood donation, encourage the population to donate their blood, hold lectures and activities for students about the importance of blood donation and to inform people where and how they can donate blood.

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CURRENT MEASELS OUTBREAKS IN UKRAINE AND HOW TO PROTECT YOURSELF

According to the basic law of Ukraine, human life and health are the highest social values. At the same time, there are many adverse effects on the human:

ecological, social, economic and political influences and refusal of vaccination. These factors negatively affect the health of Ukrainians, their living conditions and lives.

Thanks to the benefits of the measles vaccine, Ukrainians are able to protect children from the measles. However, in recent years some parents have refused or delayed vaccinating their children out of fear or misinformation about the safety of the measles vaccine. This means there are more unvaccinated children, adolescents, and adults in our communities.

Vaccination, which was conducted over 200 years, at various stages of its development was aimed at a significant reduction in the incidence of diseases that cause various pathogens. The vaccination strategy was in constant development. Prevention of infectious diseases and the ability to control the epidemic process by a specific method is to vaccinate.

The current reforms in Ukraine's health care system are aimed at providing Ukrainians with highly professional medical and emergency care, medical services that will positively affect the health of the population, increase and improve life.

In 2017-2018 Ukraine had an outbreak of measles - one of the most infectious diseases known in the world. According to the Public Health Center of the Ministry of Health of Ukraine, from the beginning of 2018, 36,455 people, 14,110 adults and 22,344 children suffered from measles.

Measles outbreaks are cyclical in nature and occur every 5-6 years.

Measles is a dangerous highly contagious viral disease that spreads rapidly. Out of 10 people contacted by an infected person, 9 of them will fall ill if they have not been vaccinated.

Despite the development of the medical sector, measles is still one of the main causes of child mortality in the world. According to the World Health Organization, every year in the world 30-40 million children suffer from measles, more than 800 thousand die from the infection itself and its complications. In 2018, nearly 54.5 thousand people (20 thousand adults and 34 thousand children) became ill with measles in Ukraine. Because of the complications died 16 people: 12 children and 4 adults. On January 1, 2019, a two-year-old child died from complications due to measles in Ukraine. It happened in Zhytomyr Regional Children's Hospital.

The measles virus spreads during coughing and sneezing, contacting infected person. The virus remains active and lives in the air or on infected surfaces for 2 hours. An infected person can transmit the virus four days before and four days after the rash appears over the body.

The first sign of measles is usually a significant increase in temperature (about 10-12 days after infection and lasts 4-7 days.) At this initial stage, you may experience runny nose, coughing, sore eyes eyes and small white spots on the inner part of the cheeks. Within a few days there appears a rash. It is usually on the face and upper part of the neck. After about three days, the rash spreads all over the body, including hands and feet. It keeps 5-6 days and then disappears. On average, the rash appears after 14 days (7 to 18 days) after exposure to the virus. During the first symptoms you should immediately contact a doctor because this disease can have serious consequences, especially among children under five. Among the

complications of measles are inflammation of the middle ear, bronchitis, pneumonia, diarrhea, encephalitis. This disease can even lead to death.

There's no specific treatment for an established measles infection. However, some measures can be taken to protect vulnerable individuals who have been exposed to the virus.

You or your child may also take medications such as acetaminophen, ibuprofen or naproxen to help relieve the fever that accompanies measles. Don't give aspirin to children or teenagers who have measles symptoms.If a bacterial infection, such as pneumonia or an ear infection, develops while you or your child has measles, your doctor may prescribe an antibiotic. Children with low levels of vitamin A are more likely to have a more severe case of measles. Giving vitamin A may lessen the severity of the measles.

If a non-vaccinated person becomes infected and becomes ill with measles, it will, of course, form a natural immunity against this disease. However, measles has a severe course and often needs hospitalization. Patients with measles are contagious for a long time, they need to be isolated for a long time.

The measles vaccine is very effective in protecting against measles. However, no vaccine is 100% protective so very rarely, people who are vaccinated may develop measles. Some people may also be at risk for getting the measles if they only received 1 dose of the measles vaccine.

MMR vaccine, like any medication can have side effects, but the risk of complications from measles is much higher than the risk after vaccination.

The biggest number of infected patients was recorded in 2018:

• Lviv region (5.6 thousand people - 1,773 adults and 3,861 children);

• Zankarpathia region (2.9 thousand people - 551 adults and 2 405 children);

• Ivano-Frankivsk region (2.7 thousand people - 774 adults and 1 928 children);

• Odessa region (2.28 thousand people - 1,150 adults and 1,134 children);

• in Kyiv (1.98 thousand people - 1 230 adults and 756 children);

• in Ternopil region (1,500 people - 598 adults and 938 children).

Recent outbreaks are the result of parents who refuse to vaccinate their children for a variety of reasons. And vaccination is our duty to protect our children, families, society and all people living in our country. Together we will protect Ukraine from measles.

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OBESITY

The aim of study was to investigate the causes of obesity, its impact on human health and to determine the ways of obesity prevention.

Obesity is abnormal or excessive fat accumulation that may impair health. Over 1.4 billion adults ages 20 and older are overweight in the world: 200 million are men and 300 million are women, 65% of the world's population live in countries where obesity kills more people than underweight. Low and Middle class people are more likely to be obese than rich people. There are more women than men who are obese. While there are more than 40 million under the age of 5 obese as well. [5,c.6].

When you're obese, your overall quality of life may be lower, too. You may not be able to do things you'd normally enjoy as easily as you'd like. You may have trouble participating in family activities. You may avoid public places. You may even have discrimination. [2,c.19].

Other weight-related issues that may affect your quality of life include:

depression, disability, physical discomfort, sexual problems, shame, social isolation.

In 1997, the World Health Organization proposed a classification of degrees of obesity, based on the definition of the index - body mass index (BMI) for people aged 18 to 65 years. [6].

BMI is calculated using the formula: weight in kg / height in meters squared. For BMI, the following options for body weight and the risk of associated complications are distinguished: BMI <18.5 (low) - indicates a shortage of body weight and an increased risk of developing other pathologies; BMI from 18.5 to 24.9 (normal) - corresponds to body weight in normal conditions. With such a BMI, the lowest morbidity and mortality rates are observed; BMI from 25.0 to 29.9 (increased) - indicates overweight or pre-fattening. BMI from 30.0 to 34.9 (high) - corresponds to the I degree of obesity; BMI from 35.0 to 39.9 (very high) - corresponds to grade II obesity;

BMI of 40 or more (excessively high) - indicates obesity III and IV degree.

The following types of obesity are distinguished by the preferential localization of fat deposits on the body: abdominal (upper or android) - excessive deposition of adipose tissue in the upper half of the body and abdomen (the shape resembles an apple in shape). It develops more often in men and is most dangerous for health, because it is associated with the risk of arterial hypertension, diabetes mellitus, stroke and heart attack.

femoral-buttock (lower) - the predominant deposition of adipose tissue in the thighs and buttocks (the shape resembles a pear). It is more common in women and is accompanied by disfunction of the joints, spine, venous insufficiency. intermediate (mixed) - a uniform distribution of body fat over the body.

Patients with I and II degrees of obesity may not show special complaints, with more pronounced obesity, drowsiness, weakness, sweating, irritability, nervousness, shortness of breath, nausea, constipation, peripheral edema, pain in the spine and joints are noted.

Patients with obesity III-IV degree develop disorders of the cardiovascular, respiratory, and digestive systems. Objectively detected hypertension, tachycardia, deaf heart tone. High standing of the dome of the diaphragm leads to the development of respiratory failure and chronic pulmonary heart. There is fatty infiltration of the liver parenchyma, chronic cholecystitis and pancreatitis. There are pains in the spine, symptoms of arthrosis of the ankle and knee joints. Often, obesity is accompanied by violations of the menstrual cycle, up to the development of amenorrhea. Increased sweating causes the development of skin diseases (eczema, pyoderma, furunculosis), the appearance of acne, stretch marks on the abdomen, thighs, shoulders, hyper pigmentation of the elbows, neck, places of increased friction. [4,c.27].

Obesity is diagnosed when an individual's body mass index (BMI) is 30 or higher. Although there are genetic and hormonal influences on body weight, obesity occurs when you take in more calories than you burn through exercise and normal daily activities. Obesity usually results from a combination of causes and contributing factors, including:

Inactivity. If you're not very active, you don't burn as many calories. With a sedentary lifestyle, you can easily take in more calories every day than you use through exercise and normal daily activities.

Unhealthy diet and eating habits. If you have a diet that's high in calories, eat fast food, skip breakfast, eat most of your calories at night, drink high-calorie beverages and eat oversized portions all may have problems with your weight. [3,c.45].

Pregnancy. During pregnancy, a woman's weight necessarily increases. Some women find this weight difficult to lose after the baby is born. This weight gain may contribute to the development of obesity in women.

Lack of sleep. Getting less than seven hours of sleep a night can cause changes in hormones that increase your appetite. You may also want foods high in calories and carbohydrates, which can contribute to weight gain.

Certain medications. Some medications can lead to weight gain. These medications include some antidepressants, anti-seizure medications, diabetes medications, antipsychotic medications, steroids and beta blockers.

Medical problems. Obesity can sometimes be traced to a medical cause, such as Prader-Willi syndrome, Cushing's syndrome, polycystic ovary syndrome, and other diseases and conditions. Some medical problems, such as arthritis, can lead to decreased activity, which may result in weight gain. A low metabolism is unlikely to cause obesity, as is having low thyroid function.

Obesity is more than just a cosmetic concern. If you're obese, you're more likely to develop a number of potentially serious health problems, including: high cholesterol and triglycerides, type 2 diabetes, high blood pressure, metabolic syndrome — a combination of high blood sugar, high blood pressure, high triglycerides and high cholesterol; heart disease, stroke, cancer, including cancer of

the uterus, cervix, ovaries, breast, colon, rectum and prostate; sleep apnea, a potentially serious sleep disorder in which breathing repeatedly stops and starts; depression, gallbladder disease, gynecologic problems, such as infertility and irregular periods, osteoarthritis, skin problems, such as poor wound healing. [1,c.21].

If you think you may be obese, and especially if you're concerned about weight-related health problems, see your doctor. You and your doctor can evaluate your health risks and discuss your weight-loss options.

For the prevention of obesity, a person with a normal weight is enough to spend calories and energy as much as he gets them during the day. With a hereditary predisposition to obesity, at the age after 40 years, people should reduce the consumption of carbohydrates, fats, and increase in their diet food rich in proteins and plant foods. In some cases, prescription medications or weight-loss surgery may be options.

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THE INFLUENCE OF COLOROLOGY ON PATIENTS' PSYCHOLOGICAL AND MENTAL HEALTH

The aim of this study was to discover and investigate the psychological effects of colors on healthcare environments. The questionnaires were drawn up and distributed to Bachelor's degree students of Zhytomyr Medical Institute, the survey was done on SurveyMonkey.com platform, taking into considerations the international students' answers too. The scientific literature and other sources relevant to a particular *problem were examined and compared.* On the basis of this research

the data from different material were received and analyzed.

This research would contribute to understand more about colors; to highlight and demonstrate links between particular colors and shades, their psychological and physiological effects on individuals including patients and doctors (healthcare environment) in order to make proper outcomes in choosing colors for different spaces to suit the aim for which they are designed; to consider the psychology of color when designing healthcare facilities and wards.

Color has always been known to have both psychological and physiological effects on people. [1] Despite the general lack of research in this area, the concept of color psychology has become a popular topic in marketing, branding, advertising; art, literature, design and other areas, including health care.

Particular colors have been associated with increased blood pressure (BP), metabolism, eyestrain, weakening the immune system and in this sense, affect patients' mental, emotional health too.

It is important to underline, international scientists have made a few meaningful discoveries and observations about the psychology of color and the effect it has on patients' moods, feelings, behaviors, it can also affect their temperaments and reactions. [2]

If lower stress levels and positive mood improve health [3], and if certain colors can encourage calmness and happiness, then those colors would have an indirect effect on overall health, patients' conditions.

A few ancient cultures, including the Egyptians and Chinese, carried on chromotherapy, − the use of colors to heal. Chromotherapy is explained as light therapy or colorology and is used nowadays as a holistic or alternative treatment. According to colorology: red color was used to stimulate the body and mind, to increase blood circulation; yellow was considered to stimulate the nervous system and purify the body; orange was used to heal the lungs and to boost energy levels; blue was believed to soothe illnesses and treat pain, ache; purple shades were stated to alleviate skin problems. [1]

The given results of many color studies prove that colors are needed to be used in hospitals. The survey proved, a simple way to strengthen calmness is to paint the walls soothing colors. The survey proves cool colors tend to be more calming, so objects that are in blue and blue-green colors really put people at ease because they add a sense of tranquility.

Avoiding bright colors (red, orange, yellow), particularly in adult rooms, is also important, as those colors tend to raise anxiety levels, encourage nervous system to be tensed and worried.

In a children's hospital, however, utilizing more vibrant colors such as yellows and oranges may help the children to feel a little more relaxed and happy, reducing their stress and anxiety. [4]

Our survey and research have proved that light blue walls in a patient room (a ward) encourage the recovery process. However, a red wall slows recovery. Color in healthcare facilities can affect mood, which has an impact on health.

It is needed to mention, when a patient enters the hospital, the first thing he notices is either a wall or the ceiling. According to Forbes, walls painted with lighter shades have proven to make people feel accepted, while that of medium shades helps create trust. It was also found that brown is the color that not only provides

sophistication but also a comforting option for potential patients. [5] According to Color Connections, different colors come with a set of psychological properties that aid in healing. Red color raises blood temperature and stimulates circulation. Red is used to care for people with anemia, fatigue, paralysis, and exhaustion. Blue is soothing, symbolizes the sky and sea. It lowers the heart rate, allowing the body quiet time to heal itself. In addition, blue helps alleviate tension, stress, and problems with the immune system. It is believed to decrease insomnia, anxiety, high blood pressure, migraines and skin irritations. Yellow is used to heal digestion as well as the liver and intestine process. Yellow is thought to have decongestant and antibacterial properties to act as a cleanser for the body. It has been known to help relieve rheumatism and arthritis. Green sets up balance and harmony within the body. The analyzed survey explains green colors are especially good for heart and blood problems. It is known to influence the human cell structure and muscles. Moreover, green is the complementary color to red. If a surgeon looks at a lot of blood, the afterimage from the surgical site could be neutralized with light green colors. Orange helps with the kidneys, urinary tract, and reproductive organs. Purple is associated with the eyes, ears, nose, and mouth. It helps with head congestion and sinuses and is known to calm the nervous system. Pink is a healing color that helps to calm down. [5]

It is important to underline, colors influence a person's perception towards the surroundings. Selection of colors for patients' room and appropriate use of colors in a healthcare facility also depends on the purpose of the room or the area. Colors can accelerate healing, lift spirits and calm nerves, they are capable of influencing human behavior.

To sum up, interest in the subject of color psychology is growing, but there remain a number of questions. More scientific research is needed to gain a better understanding of color psychology. Specifying particular colors for healthcare environments in order to influence emotional states, mental or behavioral activities, is needed to be studied and used in design of hospitals and health care centers.

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ANALYSES OF PROCRASTINATION

We all are humans and have our weaknesses; one of them is procrastination.

Procrastination is a challenge we have all faced at one point or another. For as long as humans have been around, we have been struggling with delaying, avoiding, and procrastinating on issues that matter to us. This fashionable phenomenon can cause big problems, because everybody knows that everything is good in its season.

Human beings have been procrastinating for centuries. The problem is so timeless, in fact, that ancient Greek philosophers like Socrates and Aristotle developed a word to describe this type of behavior: Akrasia.

Akrasia is the state of acting against your better judgment. It is when you do one thing even though you know you should do something else. You could say that akrasia is procrastination or a lack of self-control.

Let's find out what exactly "procrastination" is. Procrastination (*Latin: procrastinare, pro-, 'forward', with -crastinus, 'till next day' from "cras", 'tomorrow'*) is defined as the avoidance of doing a task that needs to be accomplished [1]. It could be stated as a habitual/intentional delay of starting or finishing a task despite its negative consequences [2]. It is a common human experience involving delay in everyday chores or even putting off salient tasks such as attending an appointment, submitting a job report or academic assignment, or broaching a stressful issue with a partner. So, procrastination is the act of delaying or postponing a task or set of tasks.

Sounds horrible, doesn't it? But why do we procrastinate?

Behavioral psychology research has revealed a phenomenon called "time inconsistency," which helps explain why procrastination seems to pull us in despite our good intentions. Time inconsistency refers to the tendency of the human brain to value immediate rewards more highly than future rewards.

The best way to understand this is by imagining that you have two selves: your Present Self and your Future Self. When you set goals for yourself — like losing weight or writing a book or learning a language — you are actually making plans for your Future Self. Researchers have found that when you think about your Future Self, it is quite easy for your brain to see the value in taking actions with long-term benefits. The Future Self values long-term rewards.

However, while the Future Self can set goals, only the Present Self can take action. When the time comes to make a decision, you are no longer making a choice for your Future Self. Now you are in the present moment, and your brain is thinking about the Present Self. Researchers have discovered that the Present Self really likes instant gratification, not long-term payoff.

So, the Present Self and the Future Self are often at "war" with one another. The Future Self wants to be trim and fit, but the Present Self wants a donut. Sure, everyone knows you should eat healthy today to avoid being overweight in 10 years. But consequences like an increased risk for diabetes or heart failure are years away.

This is one reason why you might go to bed feeling motivated to make a change in your life, but when you wake up you find yourself falling back into old patterns. Your brain values long-term benefits when they are in the future (tomorrow), but it values immediate gratification when it comes to the present moment (today).

You cannot rely on long-term consequences and rewards to motivate the Present Self. Instead, you have to find a way to move future rewards and punishments into the present moment. You have to make the future consequences become present consequences.

This is exactly what happens during the moment when we finally move beyond procrastination and take action. For example, I had this report to write. I'd known about it for weeks and continued to put it off day after day. I experienced a little bit of anxiety thinking about this paper, but not enough to do anything about it. Then, suddenly, the day before the deadline, the future consequences turned into present consequences, and I started writing the report hours before it is due. The pain of procrastinating finally escalated and I crossed the "Action Line."

There is something important to note here. As soon as you cross the Action Line, the pain begins to reduse. In fact, being in the middle of procrastination is often more painful than being in the middle of doing the work. The guilt, shame, and anxiety that you feel while procrastinating are usually worse than the effort and energy you have to put in while you're working. *The problem is not doing the work, it's starting the work.*

If we want to stop procrastinating, then we need to make it as easy as possible for the Present Self to get started and trust that motivation and momentum will come after we begin. *Motivation often comes after starting, not before.*

Here are the ways to stop procrastinating.

1. Take The Smallest Step Possible

When you don't feel motivated, take the smallest step possible toward your goal. After taking that step, you're more likely to continue taking more steps toward that goal. Instead of telling yourself to workout for an hour, say you'll go for 10 minutes. - Rosie Guagliardo, InnerBrilliance Coaching

2. Identify A Positive Outcome From Your Action

To overcome your tendency to procrastinate, focus on what the reward is when you take action. This assumes the outcome is something you want. Be very selective about what you let into your experience and surround yourself with to keep your energy as clean as possible to achieve the goals you want. - Christine Hueber, ChristineHueber.com

3. Give Yourself A Hard Deadline, Then Schedule It

The best way to overcome a natural tendency to procrastinate is to create a hard deadline for yourself and then put it on the calendar. Having a scheduled deadline

that you commit to will make it easier to get tasks completed. Treat the deadline the same as if your boss created it, and then honor it the same way you would if your boss were waiting for you to complete the task. - Kitty Boitnott, Boitnott Coaching, LLC/Teachers in Transition

4. Be Kind To Yourself

Forgive yourself. If you have the tendency to label yourself a procrastinator, make your first effort one to drop the name calling. For whatever your past experience has been, refocus on doing 5% more toward your goal and give yourself permission to be human at the same time. - Cindy Stack, Whole-Life Leadership

5. Switch Off Your Phone And Set A Timer

Take away all that can interrupt. Making it happen is literally as easy as setting an intention and then shutting off tempting interruptions. - Laura DeCarlo, Career Directors International

6. Give Yourself A Reward For Each Task You Complete

Make a list of things you need to do and do the one you don't want to do first. Then give yourself a little reward for doing it (piece of candy, a few minutes on social media, etc). Then do something on your list that you want to do and continue alternating from there. - Krista Rizzo, Why Am I Yelling? Life Coaching

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PHYSIOLOGICAL CARDIAC REHABILITATION OF PATIENTS WITH MYOCARDIAL INFARCTION

The paper discusses some problems relating to physiological cardiac rehabilitation after myocardial infarction and its clinical application.

Evidence shows cardiovascular diseases are the leading cause of premature death in the world. The studied material proves the number of deaths from

cardiovascular diseases is on the rise. Also, the projections for cardiovascular disease in developing countries are alarming. In Ukraine, cardiovascular diseases have become an emerging health issue leading to disability and death. These diseases lead to the emergence of severe disability, and therefore significantly affect the length and quality of life of patients. Approximately half of the fatal cases among diseases in the cardiovascular system are caused by myocardial infarction (MI) [1, C. 22-29].

The survey and its results show there is an essential problem regarding the importance of patients' rehabilitation after the transfer of MI. The growing evidence on MI rehabilitation effectiveness in different health care settings and outcome measures used widely are reviewed in this research paper.

Physical rehab is able to minimize the occurrence of various complications after the transfer of MI. Improving the standard of living of patients with this disease requires the search for affordable and safe rehab programs, as well as the establishment of certain methods for evaluating these programs [2, C.62-65; 3, C.143].

The purpose of the study is to summarize theoretical data of physiological rehabilitation after the transfer of myocardial infarction.

Methods of research are a theoretical analysis of scientific sources.

At the present stage, rehabilitation of patients with MI according to A.V. Maglirovany can solve the following tasks: creating comfortable conditions for reducing heart load; corrections in the psycho-emotional state of patients; patients' training with the correct type of respiration; prophylaxis of muscular hypotrophy, as well as thrombosis of small vessels; normalization of the autonomic nervous system, etc. [4, C. 148].

For a more effective improvement of the patient's condition, physiological rehabilitation should be gradually performed during the first days of the patient's stay in the hospital. When a patient is in a hospital, four types of motor regime are distinguished: severe bed (I degree of motor activity); bed-ease (II degree --mobility activity); semi-staircase, or ward (III degree of motor activity); general (IV degree of motor activity) [5, C. 62].

The healthcare specialist performing the assessment should be specialized in MI rehabilitation or has experience in neurorehabilitation; as the patient's type and condition severity and classification are vital determinants of disabilities and functional abilities, along with the capacity to learn and physical action continuance.

MI rehabilitation is provided by a team of specialists in various settings; these healthcare specialists work together to improve patient's functional mobility, decrease risk factors related to his cardiac injury, and help him and his family manage the psychosocial effects that may influence recovery after a heart attack.

There are four stages of rehabilitation of patients with MI: hospital stay; polyclinic sanatorium; supporting rehabilitation [6, C. 173].

Hospital stay phase is intended to restore the patient's ability to self-service, helping to avoid complications from MI, skeletal muscle, other organs, and systems.

The main task of this stage is to restore the physical and psychological state of the patient and to prepare the patient for the next stage of rehabilitation.

Then the clinical stage is provided to the patient. The patient remains under control of his physician-cardiologist. At this stage, blood biochemistry is monitored. A physician who systematically assesses the patient's condition corrects medication according to the patient's condition.

The sanatorium stage is conducted on the basis of specialized cardiological sanatorium and spa establishments. On this stage patients are assigned certain programs of physiological rehabilitation, patients carry out these programs steadily.

Supportive rehab is carried out by a therapist, as well as by a cardiologist through periodic consultations with the patient.

Some types of massage, for example, the massage of the collar area and the area of the heart, are also shown as one of the types of physiological rehabilitation of patients with MI. D. Korotko [8, C. 240], M. Makarova [7, C. 304] recommend massage of the lower extremities to be performed before the medical exercises. It contributes to the restoration of the patient's condition.

To sum up,myocardial infarction is a rather serious illness that can lead to both disability and death. In order to prevent these conditions, more attention must be drawn to the physiological rehabilitation of patients with MI. After all, rehabilitation contributes to the restoration of the body and aims at preventing various types of complications in the early period after the MI, allowing patients to restore their ability to work, lengthen the duration and improve the quality of life. It is necessary to remember that certain types of rehabilitation exercises are selected for each patient individually, in the absence of a pain syndrome or its rapid repression.

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PHYSIOLOGICAL AND PSYCHOLOGICAL CHARACTERISTICS OF STUDENTS WITH DIFFERENT EYES COLORS

The aim of this study was experimentally to prove the possibility of using iridodiagnostics in the forecast of individual development of human abilities among students of Zhytomyr medical institute. Our research was carried out by means of anonymous questionnaire and diagnostic examination of visual acuity and refraction during ophthalmology, changes in the frequency of heart rate and blood pressure during physical education classes. These studies were received and analyzed. It would be interesting to trace whether there is a relationship between the individual features, in particular the color of the eyes, with the physiological and psychological characteristics of a person. If such a relationship exists, which is quite possible from the point of view of the action of genes, it would allow to evaluate the functional capabilities of a person without resorting to a complex, time-consuming diagnosis. Therefore, we decided in our work to investigate the relationship between the color of the iris and the physiological and psychological characteristics of students [1].

The research objective is to determine the relationship between the features of the structure of the iris and the abilities that are genetically predetermined in development. Identify informative iridologic markers.

Among the surveyed students, roughly the same number of people with brown, gray-green and gray-blue eyes were detected. Students with black and yellow iris were not identified.

Visual acuity was higher among students with gray-green eyes[4].

The weight of the body of students with brown eyes corresponds to their growth, and students with gray-green eyes found excessive body weight [5].

The respondents with brown, gray-green and gray-blue iris revealed a normotonic type of reaction to standard exercise [3].

In people with brown eyes, slower recovery of heart rate occurs after standard exercise. The analysis of scientific literature has allowed us to assert that with the help of genetic markers it is possible to predict morpho-functional parameters and motor abilities of a person. Study of special literature on iridodiagnostics allowed us to assume the possibility of an individual forecast of the development of motor abilities of a person on the features of the structure of the iris of the eye, because the iris is an indicator of genetically predisposed signs of man.

We have identified the relationship between the structure of the iris and the level of development of motor abilities of students. The most informative in the individual forecast of the development of motor abilities of a person are the following iridological features: type, density, color of the iris of the eye [2].

Iridological genetic markers should be used in the process of controlling the individual development of abilities and properties of a person that are necessary for it in the field of motor activity. Together with other technologies, they can be used in

the individual projection of motor skills of students.

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INCREASING PRODUCTIVITY OF STRESS AND DISCOMFORT RESPONSE

Psychological human health is a guarantee of high productivity. In today's world, we face stress and stress every day. According to European experts, about 70% of people's illnesses are related to emotional stress. Due to constant voltage in the environment there is a violation of the cardiovascular system. As a result, about 1 million people were registered in Europe.

One can approach the scientific understanding of stress in different ways. First of all, stress is the reaction of an organism to an external stimulus that exceeds the norm and has an effect on the nervous system. Everyone experiences stress differently: someone speaks about him, complaining about incidents of different situations, and for someone a stress is a cause of serious illnesses, in particular stomach ulcers or a heart attack, caused by repeated repetition of stressful moments.

For the first time, the term "stress" was introduced into the scientific revolution by Voltaire Bradford Cannon in 1932 in one of his works, calling it "a reaction of struggle" or "escape". However, the wider use of the term was due to the Canadian endocrinologist Hans Sielie, who explained the main mechanisms of adaptation of the organism. According to Hans Selie: "A nonspecific, stereotypical response to any problem that arises." All factors that cause stress are called stressors or stressors. They can be of any nature: physical, chemical, geological (natural elements), biological, social [2, c.123-132].

It is usually believed that stress has only a negative impact on the body. Even doctors have long noticed the effect of stress not only on the nervous system, but also on the development of cancer. In the second century AD the Roman physician Galen drew attention to the fact that cheerful women rarely suffer from breast cancer than women, often in depressed condition.

Stress has three forms:

- acute (can be described as something that almost screwed up to us);
- medium term (shown in short terms, for example, session at university);
- chronic (it's a war, a life in dangerous conditions, or a job with a lot of responsibility and low support).

Scientists have identified the following phases of stress:

1. Stage of anxiety.
2. Stage of resistance.
3. Stage of exhaustion.

The most dangerous is the last phase, the stage of exhaustion. It is characterized by such signs: tendency of fatigue, depression, disorganization, non-autonomy and subsequently leads to physical problems, in particular to diseases and even to the death of the body.

We can conclude that stress adversely affects the human body and its productivity. However, modern research can confidently emphasize that it has positive factors in human productivity.

A person is in a constantly changing environment. So, stress is a natural reaction of the organism to the stimulus. It is given to us in order to cope with the variability of the environment - to turn our lives to stability. In a stressful situation, changes occur at the physiological level, so psycho emotional energy generates a lot to overcome the stimulus. Stress is not bad, it gives people the power to protect themselves from the threat, overcome obstacles or experience a great joyful event, because for this, too, energy is needed.

Followers of the "positive stress" movement in Silicon Valley are practicing exhausting workouts, harsh diets and ice showers in order to improve brain performance and productivity [3, c.346]. The idea is that the daily stay in extreme conditions tempers the body and prepares for any tests. The concept of beneficial stress was first formulated by endocrinologist Hans Sielle in 1974. It was he who discovered that not every stress is harmful, some of his manifestations mobilize and heal the body.

Everything is individual and depends on perception. Stress, which is caused by failures, images, and diseases, destroys, but the stress of exciting creative work has a beneficial effect.

Also, according to studies conducted by the international leadership education organization (CenterforCreativeLeadership, CCL), when the resources of one person reach or even exceed the requirements of another person - then stress can show itself on the best side. The so-called "positive stress" acts as a stimulating factor and contributes to increased productivity.

Positive stress is the energy felt by people who face new, challenging challenges and, at the same time, confident in their ability to achieve a positive result. When requirements exceed human capabilities, its resources and its experience, then it encounters a negative kind of stress. "The basic trick is to figure out what type of stress you just came across," says CCL representative Vidula Bal [1, c.368].

And here it is not about that we just have to throw out the experience as not needed, namely to allow him to live. To arrange a meeting with the factors contributing to the formation of stress, recognize their presence and choose a way how to get out of these situations.

Of course, the ideal option is not to accumulate the voltage, but to realize the energy for the intended purpose: scary - run, zhysshy - beat, sadly - crying. However, not always the direct ways of realization are comfortable and socially acceptable. Therefore, the task of each person is to find a balance between his emotional needs and rational guidelines, so that no party is left deprived. It is important to hear your stress and work with him together, then the request "how to overcome it" will not appear.

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PSYCHOLOGICAL PROBLEMS OF "NURSE-PATIENT" COMMUNICATION

Communication is a process of exchanging information between two or more people. Its purpose is to ensure the transmission and understanding of the information exchanged. If mutual understanding is not achieved, the communication has not taken place. It means that both sides have to play an active role in it[1, p. 356].

The communicative side is closely connected with the information exchange, but it cannot be fully described in terms of the information theory. Communication is not only the reception and transmission of information, but it also comprises the relationship of at least two people, and they play a crucial role during the interaction[2, p. 235].

The recipient can create the psychological barriers of various origins against unwanted, tedious or dangerous information. They are called communication barriers.

Such barriers may arise due to the lack of understanding between the participants of communication, which arises on the basis of social, political, religious, professional differences which lead to the appearance of different attitudes, world understandings, worldviews, and outlooks in general. Communication barriers may arise due to the individual or psychological characteristics of those who communicate (distrust, resentment, suspicion, etc.).

Barriers can be caused by different reasons. Therefore, we can distinguish such types: barriers to understanding, barriers of socio-cultural differences and barriers of relations.

1. The barrier of understanding. Its occurrence can be caused by various reasons, not only psychological. Such kind of barrier can appear due to distractions during the transmission of information. It's a phonetic misunderstanding. The phenomenon of phonetic misunderstanding appears as a result of the communicator's usage of slurred fast speech or speech with a large number of similar sounds.

2. The semantic barrier of understanding. It is connected with the fact that participants use different meanings of words.

3. The stylistic barrier of understanding. It usually occurs when there is a discrepancy between the speaker's style of speech and the communicative situation and listener's style of speech or social position.

4. The logical barrier of understanding. It appears when the logic of the speaker's reasoning is either too complex for the listener understands, or it seems to him/her to be wrong or differs from the accepted argumentation manner.

5. The socio-cultural barrier of understanding. Sometimes the reason for the barrier appearance may be hidden in socio-cultural differences between the participants of communication. These may be social, political, religious and professional differences which lead to different explanations of certain concepts.

6. The barrier of authority. Sometimes the vision of a participant as a person of a certain profession, nationality, gender, and age can also become an obstacle[3].

Thus, it can be concluded that the work of a nurse needs high-quality professional and ethical-deontological training. It is essential to remember that the approach to the patient should be sought from the position of a holistic understanding of the human body and health in general. This approach fits the principle of Ukrainian medicine - not to treat the disease, but the patient.

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ALLERGY. THE 21-ST CENTURY ILLNESS

Presentation provides information of the causes, treatment, symptoms and preventive methods of the allergy. "The Age of Allergy". So doctors call our century. According to the World Health Organization, allergy infects every fourth inhabitant of the Earth today, but the number of patients is increasing. Where is this disappointing trend?

1. What is allergy? Allergy is an increased sensitivity ("hypersensitivity") altered reaction of the human body to the influence of certain factors (allergens). Hypersensitivity (allergy) means that the immune system of the body, which protects against infections, diseases and foreign bodies, reacts to the allergen with a violent reaction and excessive protection on completely harmless substances. Immunoglobulins, blood cells that circulate immune complexes, biologically active substances are involved in the development of allergy. The term "allergy" was introduced by the Austrian pediatrician K. Pirke in 1906. Allergy is a global medical problem, because about 25% of the population of some industrial areas suffers from some kind of allergic disease. The number of allergy cases is steadily increasing worldwide, the number of not only allergic reactions has increased, there has been a large number of severe conditions with respiratory failure, skin and mucous membranes, joints, lymphatic system, etc.

Official statistics say that 1.5% of Ukrainians are allergic to allergies, but not less than 25% are real patients, doctors are convinced. And in large, "environmentally compromised", cities this indicator reaches 30%. According to physicians, the main cause of allergy is the pathology of the immune system, and most children and the elderly suffer from an illness. If the mother has an allergy, then the probability of developing a child's illness is 50%, says Professor Boris Pukhlik, the president of the Association of Allergists of Ukraine. And when both parents are allergic, in 85% of cases the child is at risk of "inheriting" the diagnosis. However, not only the genetic factor leads to allergies, but also the influence of external allergens that affect the health of everyone. And the modern person lives in an environment that is literally full of allergens. So we are all at risk, Boris Pukhlik warns.

2. Causes of allergy. All that surrounds us can cause allergies: household chemistry, animal wool, food products, pollen plants, mold, insects, latex, medicines, household dust, feathers, cosmetics, alcohol, seafood, even cold and sun rays. The development of allergy begins with the release of histamine in the blood. This causes irritation of the mucous membrane of the nasopharynx, begins running nose and sneezing, swelling appears. The nature of allergy is largely a mystery. Allergies can suddenly occur and just as suddenly pass. But basically, the nature of the allergy is immunological, and hides in violation of the regulation of the immune response. In

addition, the predisposition to one or another type of allergy is transmitted inherited, so if one of the parents suffers from allergies, there is a 25% chance that his child will develop an allergy. At present, there is a tendency for self-administration of a large number of medications simultaneously from various pharmacological and therapeutic groups, which leads to the development of allergies. This has led to the development of many new diseases and complications. Food allergens. They can be food or substances that are formed during digestion, culinary processing, long-term storage. The most commonly used food allergens include coffee, cocoa, chocolate, citrus fruits, strawberries, eggs, meat from animals and birds, honey, fish, which are believed to have the most pronounced allergenic activity (animal and vegetable proteins), caviar, crabs, crayfish, milk, carrots, beets, tomatoes, buckwheat, cereals (rye, wheat, millet, rice, corn), legumes, nuts. Household allergens. These include mainly domestic dust allergens, feathers of pillows, and library dust.

3. Symptoms of allergy. Allergies have the following symptoms: runny or tearing , recurring dry night cough, wheezing in the lungs and breathlessness, itching, throat irritation, rash and other skin reactions. Allergy is characterized by pronounced clinical polymorphism. In the process of allergy can be drawn any tissue and organs. In the development of allergy, skin cover, gastrointestinal tract, respiratory system are more often affected. Allergic reactions of immediate and delayed type are distinguished, however, such distribution of allergy is largely conditional.

4. Treatment of allergy. The best method of treating an allergy is to find out its cause and, if possible, avoid contact with this allergen. If you want to determine the cause of an allergy, then you need to contact a dermatologist or an allergist. If you do not identify the cause of the allergy, you can choose symptomatic treatment. Symptoms of allergy caused by the release of a chemical called histamine (one of the inflammatory mediators) and antihistamines are an effective method of treating allergies. .Further, there is no method of treatment that completely cures for allergies, so the fight against allergic diseases consists either in suppressing the very reaction of immunity, or in neutralizing substances that are formed when allergies cause inflammation. However, with proper treatment of allergy, its manifestations can be minimized.

5. How to prevent an illness? First of all – to strengthen immunity. According to physicians, there are no special secrets: it is necessary to rest, to do sports, to organize a healthy diet and to limit as much as possible contact with substances that provoke an allergy. At least at the household level. Nowadays there are two fundamentally different ways to treat allergies. The first, which is used antihistamines, hormones, relieves the symptoms of the disease. Such drugs work only for a short time – say, within 24 hours, when you breathe nicely or remove bronchospasm. However, they do not eliminate the very causes of the disease. The second method is more powerful, because it allows you to eliminate the problem. It is about the therapy of “causal agents”, that is, allergens. Treatment with allergens, according to the president of the Association of Allergists of Ukraine, lasts for an average of three years. But already in the first year it costs almost twice or three times

cheaper than pharmaceutical therapy, which only eliminates symptoms. The following courses (second, third year of therapy) are cheaper by almost five times. While treating with anti-allergic drugs, you need a lifetime, gradually increasing the therapeutic dose, since it is addictive.

Everyone can choose: drink a pill and get tangible, but temporary relief, or a few years to be treated with allergens: one or two pills a week. By the way, the second way of treatment of allergy is now advocated by the European Academy of Allergology and Clinical Immunology. At the same time, allergen therapy is effective only if you have come to the doctor in time – after the first symptoms.

According to social surveys, 68% of Ukrainians aged 20 to 65 do not reflect on the question: "Are the safe laundry powders used by your family?" At the same time, it is just the anionic active substances, phosphates that are part of synthetic detergents, one of the most dangerous to health. By interacting with our body, substances contained in household chemicals help reduce immunity, lead to the development of skin and respiratory allergic diseases. So, it's important to pay attention to the ingredients contained in the synthetic detergents that we use at home.

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GLOBAL WARMING AND OTHER ENVIRONMENTAL PROBLEMS AS A RESULT OF HUMAN ACTIVITY

Global warming has become an undisputed fact about our current livelihoods; our planet is warming up and we are definitely part of the problem. Scientists often use the term "climate change" instead of global warming. However, this isn't the only environmental problem that we should be concerned about.

Our environment is constantly changing. Human civilization and globalization are the dominant culprits of constant change in the environment. With a massive influx of natural disasters, warming and cooling periods, different types of weather patterns and much more.

Major Current Environmental Problems

1. Pollution: Pollution of air, water and soil require millions of years to recoup.

2. Global Warming: Climate changes like global warming is the result of human activity.

3. Overpopulation: The population of the planet is reaching unsustainable levels as it faces shortage of resources like water, fuel and food.

4. Natural Resource Depletion: Globally, people are taking efforts to shift to renewable sources of energy like solar, wind, biogas and geothermal energy

5. Waste Disposal: The over consumption of resources and creation of plastics are creating a global crisis of waste disposal.

6. Climate Change: Climate change is yet another environmental problem that has surfaced in last couple of decades.

7. Loss of Biodiversity: Human activity is leading to the extinction of species and habitats and loss of biodiversity.

8. Deforestation: Our forests are natural sinks of carbon dioxide and produce fresh oxygen as well as helps in regulating temperature and rainfall. At present forests cover 30% of the land but every year tree cover is lost amounting.

9. Ozone Layer Depletion:

10. Acid Rain: Acid rain occurs due to the presence of certain pollutants in the atmosphere.

11. Water Pollution: Clean drinking water is becoming a rare commodity. Water is becoming an economic and political issue.

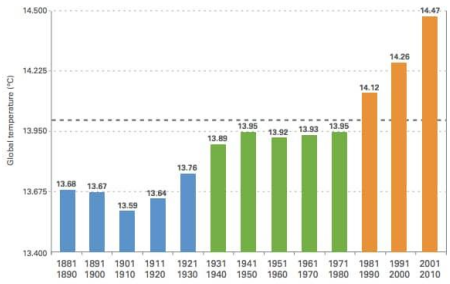
12. Urban Sprawl

13: Public Health Issues: The current environmental problems pose a lot of risk to health of humans, and animals. Dirty water is the biggest health risk of the world and poses threat to the quality of life and public health

14. Genetic Engineering: Genetic modification of food using biotechnology is called genetic engineering. Genetic modification of food results in increased toxins and diseases.

What is Global Warming?

Global warming is the increase of earth's average surface temperature and its oceans due to greenhouse gases released as people burn fossil fuels. Global warming has emerged has one of the most biggest environmental issue in the last two decades. The Earth's climate has changed throughout history. Just in the last 650,000 years there have been seven cycles of glacial advance.



Nobel laureates:

William Nordhaus and Paul Romer. US economists win Nobel prize for work on climate and growth. They one of the first who concern about climate change and global warming.

Dr Rajendra Kumar Pachauri, Nobel Peace Prize Winner 2007. Pachauri was awarded on behalf of the Intergovernmental Panel of scientists on Climate Change won the prize for giving scientific evidence that climate change – both natural and anthropogenic – would be a major threat to peace in the course of this century.

Facts About Global Warming

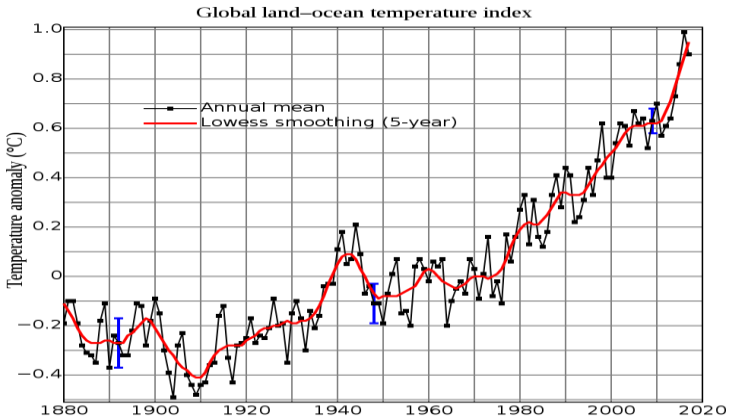
The consumption of fossil fuels in last few decades has contributed much to the degradation of our environment. Global warming, climate change, extinction of wildlife species, depletion of ozone layer, and increase in air pollution are few of the effects of global warming.

Intergovernmental Panel on Climate Change:Ice cores drawn from Greenland, Antarctica show that the Earth's climate responds to changes in greenhouse gas levels. This ancient evidence reveals that current warming is occurring roughly ten times faster than earlier.

Surprising Facts on Global Warming

As per NASA, "the global average surface temperature rose 0.6 to 0.9 degrees Celsius between 1906 and 2005, and the *rate* of temperature increase has nearly doubled in the last 50 years. Temperatures are certain to go up further. It seems that the temperature is rising at a rate faster than ever before

Fact 1: The last two decades of the 20th century have been hottest in the last 140 years, according to climate studies.



Fact 2: According to the multinational Arctic Climate Impact Assessment report compiled between 2000 and 2004, the average temperature in Alaska, Western Canada and Russia have risen at twice the global average.

Fact 3: Decreased snow cover

Fact 4: The Arctic ice is melting rapidly. By 2040 the region is expected to have a completely ice free summer, or even earlier.

Fact 5: The Montana Glacier National Park has only 25 glaciers instead of 150 that were there in the year 1910.

Fact 6: Sea levels have risen about 7 inches in the last 100 years, which is more than the previous 2000 years combined.

Fact 7: More than 1 million species have become extinct due to disappearing habitats, ecosystems acidic oceans.

Fact 8: Since the industrial revolution in 1700, the level of carbon dioxide on earth has increased by 34%.

Fact 9: Each year of the 21st century ranks amongst 14 hottest years since 1880.

Fact 10: Between 2000-2100, the heat related deaths will rise by 150,000.

Fact 11: Heat waves caused by global warming is responsible for many heat related illness and deaths.

Fact 12: Global warming can lead to massive food and water shortages and has a life threatening impact on the wildlife.

Global Warming in *Ukraine*

The increase in the average annual temperature in Ukraine is ahead of the indicator observed in the world. If starting in 1961, the temperature on the planet increased by 0.8 degrees, in Ukraine this figure is about 1.1 degrees.

There is also a threat of the transition of the forest-steppe zone into the steppe zone.

Do you know how to reduce your carbon footprint?

Scientists believe that this causes global warming and is destroying our environment. But do you know the best way ways to save energy and reduce pollution?

You can save fuel by using the bus or train, cycling or walking instead of travelling car.

How about switching some electronic devices (such as TV and computer) at night.

Try using energy-saving light bulbs.

It's a good idea to recycle your cardboard, paper, tin cans, glass and plastic instead of throwing them away.

You should also focus on reducing the amount of plastic in your life.

If these figures do not change and humans continue moving forward in such a harmful way towards the future, then there will be no future to consider. Current environmental problems require urgent attention.

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PROBLEMS OF ONCOLOGY IN UKRAINE AND WAYS TO SOLVE THEM. DISEASE STATISTICS

Introduction. Oncology, in general, is identified as the study about tumors, their growth, possible ways of prevention of their appearance and effective ways of treatment. Yet, there is still no universal precise definition of "tumor" existing in the scientific literature, which results in discrepancy and continuous debates between supporters of different theories of its origin.

The most precise and successful definition of the "tumor" was given by M.M. Blokhin: «Tumor disease is a special type of pathology, widespread in nature, characterized by unbridled and relatively autonomous growth and reproduction of cells within the affected area. At the same time, the growth of the tumor occurs from the primary rudiment without involving surrounding unchanged cells in the process. However, the malignant cell transmits its properties and the ability to grow to all subsequent generations of cells» [3]. Malignant tumor is a specific pathological form of cell proliferation, caused by induced or spontaneous changes in the genome of a cell, characterized by a tendency to uncontrolled growth, incomplete differentiation, as well as invasion and destruction of adjacent tissues and the formation of distant metastases [5].

Topicality of our research is determined by a number of factors, including rapid spread of oncological diseases, the high cost of their treatment, the severe course of illness, lack of funding for cancer hospitals etc. The ecological crisis that swept the world in recent decades has posed to humanity almost the most difficult medical, social and economic problem, such as the irregular growth of cancer morbidity and mortality. Representatives of the European Commission have recently published stunning data, indicating the following fact: every fourth EU citizen dies of cancer. Every year in the world more than 10 million new cases of cancer are registered, as well as about 6 million deaths from them. Experts predict, that in 2020 these figures will be 20 and 10 million respectively [1].

More than 160 thousand new cases of malignant tumors are registered annually in Ukraine, thus, giving us the second place among European countries in terms of the rate of cancer spread. Every year about 100 thousand Ukrainians die from oncological diseases, 30% of them are people of working age. Today, more than a million of our compatriots are on the cancer record. Every third Ukrainian, diagnosed with cancer, dies within a year after the diagnostic procedure. According to the National Cancer Registry, from 37% to 60% of all cancer patients in Ukraine receive no special treatment, leading to such a high mortality rate. Only 47% of children with different types of cancer survive, while in Israel this figure reaches 84%. Up to 12% of Ukrainian women with breast cancer die without living a year, while in the US this figure does not exceed 2%. The five-year survival rate for breast cancer in Ukraine is 58%, in France - 83% and in the USA - almost 90%. The financiation of medical aid

for children with cancer is not included in a separate line in the State Budget for 2012-2013(y) as the State Program "Children's Oncology" has expired in 2010, and the new program of the Ministry of Health of Ukraine has not been prepared and has not been approved by the Cabinet of Ministers [2].

Currently, the level and quality of aid to cancer patients in our country is unacceptable. The main issue is the lack of funds within the healthcare sector, including healthcare facilities and institutions. Kyiv City Cancer Hospital (KCCH) exemplifies the situation. The financial needs of KCCH are about 40 million 400 thousand UAH per year (which includes medical drugs, equipment, salaries, international cooperation etc), but in 2006 only 1 million 148 thousand UAH was received in accordance with "Health of Kyiv Citizens" program, as well as additional 3.5 million from the state budgets. The first transaction of about 428 thousand UAH came only in August. Hospitals lack modern equipment for ultrasound diagnostics of expert class, endoscopic devices, mammographs, immunoassay and hematologic analyzers. It is known that up-to-date endoscopic equipment increases the identification of stomach cancer by 10% [1].

Object of research are individuals (Ukrainians) with registered cases of cancer of working age.

Subject of the research is the condition of malignant tumors of the prostate on the outpatient-policlinic level.

Aim of our research is determine the scale of oncological diseases in the Zhytomyr region.

Methods of research:

We have used the following research methods: the sociological method (surveys), the statistical method (data generalization), the method of analysis (comparison of the results) and the interpretation of the analysis (explanation of the results), the method of the organizational experiment (mathematical processing of data), the epidemiological method (detection problems of prophylaxis, causes, conditions and mechanisms of the formation of morbidity).

Research Results:

In the process of our research, we have identified, that in the Zhytomyr region there was a significant increase in the prevalence of malignant neoplasms among residents of urban (+5.9%) and rural (+3.7%) areas (2013-2014 years); high (25.1%) is the proportion of patients with newly diagnosed prostate cancer in III-IV stages. As a general population, patients who applied for medical assistance at the outpatient clinic level to the urologist (873 persons) were eligible to take part in the research as respondents.

In fact, 890 surveys were analyzed (17 surveys were rejected, which was 1.94% of 873). Among the remaining survey material, 471 patients were enrolled in the main group (patients diagnosed with malignant neoplasm (cancer) of the prostate), 402 patients were moved to the control group (patients without signs of neoplasms in the prostate who applied to the urologist for a counseling and / or prophylactic purpose).

For the male population of Zhytomyr region during the period of research from 2014, the gradual was characterized by the decrease in the prevalence of prostate gland diseases (from 1226.5 in 2010 to 1075.9 per 100 thousand men (18 years old and older) in 2014, at 12,3%), which occurred in most (in 17 of 23) of city districts. At the same time, its growth was observed in 4 districts: Volodar-Volynskyi (from 575.0 to 982.0, by 70.8%), Cherniakhivky (from 1521.3 to 3418.2, by +24.7%), Radomyshlsky (from 421.7 to 551.1, +22.0%), and the Chervonoarmiysky (from 259.2 to 288.3, +11.2%), including the city of Berdichev (from 926.2 to 1518,0, at +63.9%).

As a result, the highest levels of prevalence of prostate gland diseases in 2014 were registered in Cherniakhivsky (3418.2) and Lyubarsky (2767.1) districts. The lowest indicators were picked in Malinsky (260.8), Brusilovsky (270.8), Chervonoarmiysky (288.3) districts of the region.

The difference between the values (top and bottom) of the indicator in 13.1 times testifies to the presence of essential features of its formation at a regional level. Similar changes were observed among men of all ages. Thus, among the men of working age, the rate of decrease was about 2.74%, with specific changes in the indicator from 416.8 in 2010 to 405.4 in 2014 (2.74%). For men of retirement age, the process was slower: from 4312.0 to 3597.7 respectively (16.57%) [4].

Conclusion. On the basis of the statistical data analysis we can conclude that, similar to the all-Ukrainian tendencies of reducing the incidence of the tumors-class diseases, in Zhytomyr region the indicators have decreased from 2013 to 2014 among urban (by 18.5%) and rural population (by 2.46%); the same tendencies characterized the spread of tumors, but only among urban residents (12.3%) with a slight increase among the rural population (by 1.16%). The decrease in the incidence of neoplasms (tumors) occurred within the age groups of adult (urban population ~18.9%), adult groups of rural population (-3.0%) and among the working-age population (-8.5%) [4].

The prospects of our further research is to establish and confirm a connection between the onset and development of cancer in patients due to high electromagnetic radiation, a Chernobyl accident, virus infections etc, as well as to determine the sequence of symptoms and the stages of cancer development within different categories of patients.

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ESSENTIAL STEPS TO STAYING FIT AND MOTIVATED WHILE STUDYING IN MEDICAL SCHOOL

Nowadays in medical institutes and schools, the issue of staying motivated and fit is extremely important. As future doctors, medical assistants and nurses are going to work with people's health it is obvious that they need to know everything about physical fitness, psychology and health in general. Therefore, there is a question how to find time among all the subjects and crucial amount of information that we gain in the medical school.

Below we have prepared a few offers how to stay motivated and fit in medical school:

1. Find your people.

A support system is absolutely what will get you through medical school, so it is important to have a good one. Everyone's network looks different, but it is very important.

It may be a mix of family, friends from home, college and grad school, friends/study group at school, the members of some Students Medical Association, and mentors from various stages of education. These may be the people you talk to when you are having the best and worst days, and they're the ones who have gotten you through the year.

2. **Motivation is everything.**

Fortunate enough to begin med school with a good picture of what motivates you based on background and many of the activities you participate in during undergrad and graduate school.

The fact that some of the populations that you are going to work with never given a fighting chance due to disparities in health care and education is what keeps you awake at night. It is what will push you out of bed in the morning and what determines the activities you are involved.

Motivation can come from many different sources and is very person-specific. Find what motivates you and hang on to it because some days will be difficult, and you will definitely need the reminder of why you came to medical school in the first place.

3. **There is no shame in asking for help.**

It is not only OK — it is crucial. However, so many med students went through school always understanding everything and never really having to ask for help, but

there are times in medical school when you just do not know what to do. At these times, it is so important to ask for help, whether from classmates, faculty or others.

This will be especially important later on the wards because patients can really suffer if you do not know what you are doing and you don't ask for help. It may take some humility at first, but you may be surprised that people are often more than happy to teach you and are often glad that you asked … not to mention that others often have the same issue but are afraid to ask.

4. **It's OK to try new things.**

"Humans are creatures of habit?" It's kind of true, but it turns out that we miss a lot if we stay inside our comfort zones all of the time.

New things — like running a half-marathon, dancing in front of an audience and trying new hobbies, among many other things. Shaking things up keeps life interesting, and it has definitely led to some fun experiences.

5. You are a person.

This may mean that sometimes you need a day off, so take a day off or push through until you can. There are also times that you will have an emotional encounter with a patient or something bad will happen in your life outside of medical school. At these times, it is so important to take care of yourself.

6. **The sacrifice will be worth it.**

In a few short years, people will trust us with their lives; that's an incredible responsibility. Thus, there are sacrifices that we must make. The hardest one has been not being able to see family and friends as much as you would like. However, they, as well as you, know that this is temporary but necessary, and it will definitely be worth it on the other side.

7. **Sometimes it's hard work**

Studying medicine comes with a certain expectation to work harder on average than most other students. There are generally more contact hours than other subjects with practical lessons and lectures taking up a great deal of time. Of course it is not just the contact hours when you are working: lecture notes need to be read over, essays have to be written, practicals should be prepared for and keeping on top of it all can be a challenge. This is especially the case as your work load will vary from week to week, sometimes being set a great deal of work and sometimes having a whole week with very little to do. There's also a reasonable amount of pressure on to pass exams. In most subjects other than medicine what you are really studying and aiming for is the best grade possible. Obviously this is true to an extent in medicine, but there is an additional challenge, which is the very high pass marks for the "Step" exams, the ones you have to pass in order to become a doctor. By being passed in these you are essentially being certified as competent enough in a subject area to continue towards a professional medical career. Passing these exams can often require cramming a great deal of knowledge in a small space of time and this can be stressful, but the reward after exams is a long summer to enjoy. Medicine can be challenging.

8. It's not all hard work!

Don't panic, medicine can be challenging but you'll still have plenty of time to enjoy being an undergraduate, an experience that many people say is the best time of their life. All that you need to do in order to manage these other activities is be efficient with the time you spend working; don't spend a whole afternoon watching YouTube videos if you know you have a gym that evening. University is about a lot more than simply gaining a degree, you will learn a lot about yourself and other people and hopefully build yourself into someone who is capable of being a good doctor.

Sports and societies also provide an opportunity to take a leadership and organisational role, which once again will become very important in a clinical context, whether it is organising ward staff or running a practice as a GP. Medicine is a career in which it is vital to emerge from university as a functional person who is capable of interacting well with others.

9. Studying medicine brings you up to date with the latest medical research

For those of you who are really interested in the biological sciences, studying medicine is a great opportunity to be brought very close to the frontier of current scientific knowledge, beyond what you will find in textbooks. Your lecturers are all actively involved in their field of interest and as such it is part of their job to stay up to date with all the latest advances and studies that are going on in that area.

10. Medicine is a long course

Studying medicine is very much a marathon, not a sprint. It is a 5 or 6 year course, where in your final few years holidays become a lot shorter and you are studying almost all year round (instead of having three months off a year). The reason the course is so long is because of the volume of material that needs to be learned; both the basic scientific principles and the clinical skills needed to apply them must be taught. While this may seem like a fairly monumental task the truth is that while at university time seems to pass incredibly rapidly, probably because the average student is so busy they don't have time to notice each term flying past. While this is nice as it feels as if you're making rapid progress through your studies it also means it's very easy to get behind on work and not catch up until the holidays come around.

Among all these offers we have prepared a few how to stay fit and healthy during the long process of studying:

- **Meal prep for the week.** Devote a few hours on Sunday to plan and prepare food that can be frozen and reheated. It's just like creating a study plan for school and makes choosing the right foods a lot more manageable.
- **Do a food swap.** No one likes eating the same meal every day for a week. Find other people who also will do a meal prep for the week and swap lunches. That way you get variety without having to eat out or cook too often.
- **Reward yourself.** Don't allow yourself to quit all your vices cold turkey. Just smaller portions.

- **Separate eating from studying.** Seriously. Take 20 minutes to just eat. You'll eat less. If you're studying while eating, you'll eat more and likely eat more sweet or starchy foods.
- **Have an accountability partner.** Someone who is also doing this with you. Whether you go to the gym together or cook together, daily check-ins help keep you on track.
- **Make your workouts fun.** Call it a "fun out," not a workout. Is it a spin class, or a new trail you want to run?
- **Make working out a time to escape studying.** No one I know does well when studying is always on their mind. Getting away from the material for an hour is refreshing for when you return.
- **Celebrate your workouts.** Little successes are key. Most people who work only towards big goals will fail them.

Conclusion

Studying at university is a real contrast to being a student at school and one of the real challenges is organising your work and activities. You can no longer rely on your parents to keep a calendar of everything that's going on and instead you must sort things for yourself. Add to this the fact that a significant proportion of time at university will be spent feeling tired, due to excessive studying or partying, and there is a recipe for potential disaster. Tutorials may clash with rehearsals, practicals may coincide with sports matches. The most important thing is to have some kind of system, whether it is a paper diary you keep with you or a calendar on your phone. Make sure you're not the one who is always nearly missing things or running round at the last minute trying to work out where you're supposed to be.

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SCIENTIFIC SUBSTANTIATION OF «MEDICAL ADMINISTRATOR» POSITION IMPLEMENTATION INTO HEALTHCARE SYSTEM

Topicality of our research. It is indisputable, that nowadays Ukraine is undergoing a series of reforms, including fundamental changes in the healthcare system. New approaches to the training of medical personnel in higher medical education institutions are being developed. Topicality of this issue is determined by core irreversible changes within the healthcare system itself, as well as the introduction of new specialties, which will increase the efficiency and ensure a high level of provision of medical services.

Aim of research is to substantiate expediency of introducing a post of a medical administrator as a highly-qualified specialist in administrative and business work.

Results and their discussion: It is known, that the senior nurse of the department spends about 70% of working hours carrying out administrative and economical duties, which include: medical drugs management (listing, prescription, disposal); medical documentation and archive keeping; household accounting and financial calculations execution; records making and keeping; inventory listing, accounting and other assets. Thus, taking this fact into consideration, the senior nurse has no time to be directly engaged in the provision of quality medical services and medical diagnostic process. Consequently, she is unable to fully supervise the activity of junior medical personnel, keep the sanitary and hygienic condition of the department according to the requirements, as well as organize and support the sanitary-anti-epidemic and treatment-protective regime. Therefore, in accordance with the changes in the Directory of Qualification Characteristics of Professionals, Issue 78, «Okhorona zdorov'ya» ("Health Care"), the section "SPECIALISTS" is supplemented with a new content, which introduces a new post in the health care system - "Medical Administrator" [1]. This specialist will accumulate and assume administrative, household and economic functional responsibilities. The work of the senior medical specialist will be greatly facilitated, as the medical administrator will take over all the extra duties. Such a division of functional responsibilities will ensure a high level of performance by a senior nurse and a medical administrator.

Training of a competitive, highly skilled, competent specialist, capable of using modern knowledge of health care organization(s) (WHO etc) in market conditions, engaged in nursing administration, making managerial decisions, and ensuring their implementation is based on the application of nursing leadership models. Bachelor of Nursing of "Medical Administrator" specialization can use modern knowledge of health care organization(s) in market conditions to deal with nursing administration, as well as to make managerial decisions and ensure their implementation, is based on the application of models of nursing leadership [2, p. 35].

Medical Administrator must be aware of:

- current legislation on health care and regulatory documents regulating the activities of health care institutions;

- rights, duties and responsibilities of the medical administrator, including policy documents defining the tasks and functions of medical institutions;
- the procedure for keeping records and accounting documentation (including reports), the ways of processing medical statistical information and the medical drugs management (listing, requirements, logistics, disposal);
- procedure of composing rational schedules and proper placement of junior specialists with medical education;
- safety rules for medical instruments and equipment [1].

An administrative and business work specialist manages and organizes information provision, communications and internal administrative coordination of the activities of the health care institution. He/she forms the info-communicative infrastructure of its departments, distributes responsibilities among employees, directs, coordinates and supervises their work, as well as takes steps to improve the forms and methods of personnel interaction. Administrator also keeps under control the undergoing events (promotions, information campaigns, patient-related activities etc), schedules the upcoming ones, plans and organizes meetings, counsels and summits. Also, the development of analytical, reference and other materials on issues related to the activities of the healthcare facility, provision of the head physician with the necessary information of an administrative or organizational nature form the responsibilities of medical administrator as a skillful manager.

Post of medical administrator includes the following duties and responsibilities:

1. drafting budgets, controlling costs, preparing draft contracts and procurement orders, as well as developing perspective and current plans in accordance with the development strategy of the institution;
2. providing office work in the department
3. participation in documentation circulation and making estimates of economic costs;
4. carries out control over the timely preparation of the wards for the reception of patients, preservation of property and equipment;
5. monitors compliance with the established procedure for accounting of material and technical means of maintaining health and providing statistical reports;
6. conducting medical documentation; provision of actual information at the request of management, coordination of the department's interaction with other structural subdivisions of the health care institution;
7. monitors the corresponding fees and services, checks the correctness of the outpatient card placement and filling. Conducts organizational and technical measures;
8. provides accounting for income and sales of inventories and assets;
9. monitors the availability of the necessary assortment of goods and medical products in compliance with the standards [3].

Medical administrator is responsible for the expense of medical drugs within the department, their account, storage and use. It ensures the preservation of medical equipment, tools and their proper use. He/she supervises compliance with the rules of

internal regulations, safety and fire regulations and he/she constantly improves his/her professional level [4].

Conclusions. As a conclusion, we can state that after the substantiation of new functional directions of the activity of a medical administrator as a component of reforming the healthcare system (organization of department functionality in particular), there would be a necessity of medical administrator position introduction in every medical institution. The activities of the senior nurse will mostly be aimed at the quality medical diagnostic process and junior specialists with medical education supervision within the departments.

Prospects for further research.

1. to conduct the analysis of the financial and economic activities of the department and the legal job description of the senior nurse;
2. to carry out the timing of the work of the senior nurses;
3. to conduct a survey for senior nurses regarding functional responsibilities;
4. to conduct a division of functional responsibilities between a senior nurse and a medical administrator;
5. to determine the main priorities of the educational program when training a medical administrator.

After generalization of the peculiarities of the specifications of the duties and responsibilities of the medical administrator in the structural units of the hospital(s) (departments, centers), offered additions to the job description of a senior nurse would be tested and implemented in the experimental facilities. Thus, the necessary changes to the education program regarding medical administrator training shall be introduced. Data obtained could be used in professional activity of the specialists mentioned above.

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ALZHEIMER'S DISEASE

Alzheimer's disease (AD) is a chronic neurodegenerative disease that usually starts slowly and gradually worsens over time [1, 2]. It is the cause of 60–70% of cases of dementia [1, 2]. The most common early symptom is difficulty in remembering recent events [1]. As the disease advances, symptoms can include problems with language, disorientation (including easily getting lost), mood swings, loss of motivation, not managing self-care, and behavioral issues [1,2]. As a person's condition declines, they often withdraw from family and society [1].Gradually, bodily functions are lost, ultimately leading to death [3]. Although the speed of progression can vary, the typical life expectancy following diagnosis is three to nine years [4, 5].

In recent years, a growing number of scientific studies have backed an alarming hypothesis: Alzheimer's disease isn't just a disease, it's an infection. While the exact mechanisms of this infection are something researchers are still trying to isolate, a litany of papers argue the deadly spread of Alzheimer's goes way beyond what we used to think. Now, scientists are saying they've got one of the most definitive leads yet for a bacterial culprit behind Alzheimer's, and it comes from a somewhat unexpected quarter: gum disease. In a new paper led by senior author Jan Potempa, a microbiologist from the University of Louisville, researchers report the discovery of Porphyromonas gingivalis – the pathogen behind chronic periodontitis (aka gum disease) – in the brains of deceased Alzheimer's patients. 530 Alzheimer’s gum disease bacteria 1 P. gingivalis' gingipains (red) among neurons in the brain of a patient with Alzheimer's (Cortexyme) It's not the first time the two factors have been linked, but the researchers went further. In separate experiments with mice, oral infection with the pathogen led to brain colonisation by the bacteria, together with increased production of amyloid beta (Aβ), the sticky proteins commonly associated with Alzheimer's. The research team, which is coordinated by pharma startup Cortexyme that was co-founded by first author Stephen Dominy, isn't claiming to have discovered definitive evidence of Alzheimer's causation. But it's clear they think we've got a strong line of investigation here. "Infectious agents have been implicated in the development and progression of Alzheimer's disease before, but the evidence of causation hasn't been convincing," Dominy says. "Now, for the first time, we have solid evidence connecting the intracellular, Gram-negative pathogen, P. gingivalis, and Alzheimer's pathogenesis." In addition, the team identified toxic enzymes called gingipains secreted by the bacteria in the brains of Alzheimer's patients, which correlated with two separate markers of the disease: the tau protein and a protein tag called ubiquitin. But even more compellingly, the team identified these toxic gingipains in the brains of deceased people who were never diagnosed with Alzheimer's. That's important, because while P. gingivalis and the disease have been linked before, it's never been known – to put it simply – whether gum disease causes Alzheimer’s, or whether dementia leads to poor oral care. The fact that low levels of gingipains were evident even in people who were never diagnosed with Alzheimer's could be a smoking gun – suggesting they might have developed the condition if they had lived longer. "Our identification of gingipain antigens in the brains of individuals

with AD and also with AD pathology but no diagnosis of dementia argues that brain infection with P. gingivalis is not a result of poor dental care following the onset of dementia or a consequence of late-stage disease, but is an early event that can explain the pathology found in middle-aged individuals before cognitive decline," the authors write in their paper.

Further, a compound formulated by the company called COR388, which is already going through clinical trials with Alzheimer's patients, showed in experiments with mice that it could reduce bacterial load of an established P. gingivalis brain infection, while also reducing amyloid-beta production and neuroinflammation. We'll have to wait and see what future research will uncover about this link – and the potential benefits of COR388 – but the research community is cautiously optimistic. "Drugs targeting the bacteria's toxic proteins have so far only shown benefit in mice, yet with no new dementia treatments in over 15 years it's important that we test as many approaches as possible to tackle diseases like Alzheimer's," chief scientific officer David Reynolds from Alzheimer's Research commented in a statement. "We will have to see the outcome of this ongoing trial before we know more about its potential as a treatment for Alzheimer's"[6, 7].

In conclusion, I would like to say, that we’re one step closer to solving the problem of Alzheimer's disease

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WHAT IS PAIN AND HOW TO DEAL WITH IT

What is pain? It might seem like an easy question. The answer, however, depends on who you ask. Pain scientists are reasonably agreed that pain is an

unpleasant feeling in our body that makes us want to stop and change our behaviour. Pain warns us what things are dangerous, and so helps us avoid damage to our body. If the body is already damaged, pain helps with healing because it makes us protect our injuries. [1]

When you stub your toe or touch something hot, your body releases chemicals that send pain signals up through the spinal cord to receptors in the brain. The brain then sends the pain message back down to the part of the body that hurts. But although it's the interpreter of pain, the brain itself does not have pain-sensitive nerves. Only the structures that surround the brain feel pain. As a matter of fact, once inside the brain, surgeons can operate on the brain without anesthesia. In one technique known as brain mapping, surgeons probe brain tissue while monitoring reactions like muscle movement and speech — all while the patient is awake.[2]

Some babies are born with a rare condition that makes them unable to feel pain. They do not learn the lessons that pain teaches, and as a result suffer many fractures and infections.

Women actually do experience more pain than men over their lifetimes because of conditions and experiences such as menstruation, childbirth, and migraine headaches. Studies also show that women may experience pain differently — often more intensely — than men do. For example, some animal studies show that females require twice as much pain medication to get the same relief as males. However, there's conflicting research on whether women actually have a higher tolerance for pain than men (although millions of women who have gone through childbirth might disagree).[3]

Pain sometimes works in strange ways. It is possible, for example, to suffer a serious injury but not feel any pain - soldiers battle may not feel pain from wounds until after the battle. The opposite can happen too - patients who lose a limb can continue to feel pain in the limb long afterwards, even though it is missing. This “phantom limb” pain is an example of neuropathic pain, caused by damage to the remaining nerves.

Different types of pain will be treated in different ways. A treatment that is effective against one type of pain may not relieve another.

Drugs relieve pain in two ways. Some block the nerves’ messages and prevent them getting to the brain. Others change the way the brain receives the messages, reducing their effect. Many methods of controlling chronic pain without drugs have been developed. These include:

Acupuncture: The use of needles at certain pressure points can provide an analgesic effect.

Nerve blocks: These injections can numb a group of nerves acting as a source of pain for a specific limb or body part.

Psychotherapy: This can help with the emotional side of ongoing pain. Chronic pain can often affect the enjoyment of everyday activities and can lead to not being able to work. A psychotherapist can help to enhance understanding and put in place lifestyle changes to enable these parts of life.

Transcutaneous electrical nerves stimulation (TENS): TENS aims to stimulate

the brain's opioid and pain gate systems to provide relief.

Surgery: Various surgeries of the nerves, brain, and spine are possible to relieve chronic pain. These include rhizotomy, decompression, and electrical deep brain and spinal cord stimulation procedures.

Relaxation therapies: This covers a wide range of controlled relaxation techniques and exercises, mostly in the realm of alternative and complementary medicine. This can include hypnosis, yoga, meditation, massage therapy, distraction techniques, and tai chi.

Physical manipulation: a physiotherapist or chiropractor can sometimes help relieve pain by manipulating the tension from a person's back.

Heat and cold: Using hot and cold packs can help. These can be alternated or selected according to the type of injury or pain. Some medications have a warming effect when applied topically to the affected part.

Rest: If the pain is due to an injury or a repetitive action, rest may be the best option. [4]

Pain is vital part of our body's defenses, and without it we could not survive but at the same time it is the most common reason for seeking medical care.

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THE IMPACT OF BIORYTHMS ON STUDENT'S HEALTH AND SUCCESSFULNESS

Topicality of our research: Biorythm (greek „bios" and „rytmos" – life and concordance) is identified as number of periodic changes in the intensity of the course of physiological and mental processes depending on time. Biorhythms are inherent in all lifeforms on Earth and are a prerequisite for their normal existence in

accordance with the basic rhythms of nature, caused by the rotation of the Earth around the Sun and the Stars, together with the associated changes, such as: the change of seasons of the year; alternation of day and night; the moon phases influence; sea tides etc.

Among many factors affecting the working capacity and health of modern youth, biorhythms continue to be underestimated. The study of biorhythms and their effects on the human body will allow us to rationally calculate the necessary amount of energy and effort needed to achieve a particular goal without overworking or causing a considerable damage to the organism.

Aim Of Research is to study the impact of biorhythms on student's health and successfulness (academic and non-academic), as well as its role of a «biological clock». To achieve this goal, a medical-sociological study (survey) is used.

Results and their discussion: It is known, that there is a certain link between physical activity, state of health, work ability (successfulness) and geophysical factors. We have determined, that a number of characteristics of well-being, performance indicators, including success rate (successfulness), depend on the biological rhythms of the human body, caused by the phases of the moon (new moon, first quarter, full, third quarter) and solar activity, which are superimposed on the individual rhythms of the "biological clock" of an individual.

The best performance indicators (concentration of attention and productivity) among students are observed at the peak (coincidence) of the intellectual, physical and emotional components of the individual biorhythm and vice versa. Changes in biorhythm parameters are possible during/because of pathological processes in the body (disease(s), disorders, trauma(s) etc). The research indicates a direct connection between the influence of biorhythms on the ability to work (success rate), the state of health and the activity of students..

Conclusions. The data obtained determines the necessity to identify and analyze each person's "biological clock" for proper planning of any kind of activity, including rest (sleep), emotional unloading (entertainment, communication with friends), physical (sports, fitness) and intellectual activity. It is necessary to have a rational approach to creating an individual graphic for each day and to calculate the optimal time for the pursuit of intellectual (training) and physical (sports, fitness) work.

Prospects For Further Research. The aim of our future research would be to experimentally confirm the impact of student's biorhythms on their successful work and new knowledge assimilation, as well as the effectiveness of individually calculated and adopted schedules and biorhythmic calendars.

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ŚWIATOWA ORGANIZACJA ZDROWIA

Światowa Organizacja Zdrowia wyspecjalizowana agencja Organizacji Narodów Zjednoczonych, jest główną organizacją międzynarodową, zajmuąca się

problemami zdrowia. Jej siedzibą jest Genewa. W 1946 r. ONZ zwołała Międzynarodową Konferencję Zdrowia w Nowym Jorku, gdzie 61 krajów ratyfikowało konwencję WHO. W roku 1948 w liczbie już 88 członków ratyfikowano powstanie WHO. Do WHO należą obecnie 194 kraje.

Głównym obchodem, organizowanym przez WHO co roku w dniu 7 kwietnia, jest Światowy Dzień Zdrowia.

Zadaniem WHO jest: działanie na rzecz zwiększenia współpracy między państwami w dziedzinie ochrony zdrowia, zwalczania epidemii chorób zakaźnych, ustalanie norm dotyczących składu lekarstw i jakości żywności, dąży również do zapewnienia opieki medycznej ludności świata oraz zmniejszenia śmiertelności niemowląt. [6, c.3]

Do największych sukcesów tej organizacji należy zwalczanie epidemii groźnych chorób, takich jak: gruźlica, malaria, cholera czy dżuma poprzez masowe szczepienie. WHO walczy także z AIDS.

Główne organy Światowej Organizacji Zdrowia to: Sekretariat na czele z dyrektorem generalnym, Światowe Zgromadzenie Zdrowia, Rada Wykonawcza, Komitety Regionalne.

Działalność WHO jest wspomagana przez 6 biur regionalnych oraz 147 biur krajowych i łącznikowych. Oprócz biura stałego mieszczącego się w Genewie,

WHO posiada regionalne biura: Afryka – Brazzaville**,** dla obu Ameryk – Waszyngton,

dla płd.-wsch. Azji – New Delhi, dla Europy Kopenhaga, dla regionu śródziemnomorskiego – Kair dla regionu zach. Pacyfiku – Manila.

Władzą naczelną WHO jest Światowe Zgromadzenie Zdrowia, które stanowią przedstawiciele wszystkich krajów członkowskich, które zbiera się raz do roku w Genewie. Zgromadzenie wybiera na okres 3 lat Komitet Wykonawczy, w którego skład wchodzi 34 ekspertów w dziedzinie zdrowia proponowanych przez kraje członkowskie.

Zadaniem Komitetu jest realizacja decyzji i wytycznych Zgromadzenia. Zazwyczaj posiedzenia Zgromadzenia odbywają się corocznie w maju. Zgromadzenie zatwierdza strategię finansową Organizacji, weryfikuje i zatwierdza przedłożony projekt budżetu oraz mianuje Dyrektora Generalnego. Sekretariat obejmuje około 8000 fachowców w dziedzinie zdrowia i dziedzinach pokrewnych, którzy pracują w centrali w Genewie, w biurach regionalnych i krajach członkowskich. Na czele Sekretariatu WHO stoi Dyrektor Generalny, wybierany co pięć lat przez Światowe Zgromadzenie Zdrowia.

W historii Światowej Organizacji Zdrowia było osiem sekretarzy generalnych, mianowicie: Brock Chisholm (Kanada), Marcolino Gomes Candau (Brazylia), Halfdan Mahler (Dania), Hiroshi Nakajima (Japonia), Gro Harlem Brundtland (Norwegia), Lee Jong-wook (Korea Połud.), Anders Nordström (Szwecja), Margaret Chan (Chiny). Aktualny sekretarz generalny est Tedros Adhanom Ghebreyesus .Pochodzący z Etiopii Tedros Adhanom Ghebreyesus est pierwszym Afrykaninem, który został na czele WHO.

Kraje członkowskie WHO wyznaczają delegacje do Światowego Zgromadzenia Zdrowia – najwyższy organ decyzyjny WHO. Wszystkie kraje członkowskie ONZ mogą stać się członkami WHO i zgodnie z informacjami na stronie internetowej WHO "Pozostałe kraje także mogą być przyjęte do Organizacji, jeśli ich wniosek zostanie poparty przez zwykłą większość głosów Światowego Zgromadzenia Zdrowia." [5, стаття 115]. Kraje nie należące do ONZ mogą stać się członkami zrzeszonymi uzyskując pełne spektrum informacji, jednakże ograniczone prawo głosu. Muszą one uprzednio zyskać aprobatę Zgromadzenia. Można także uzyskać status obserwatora.

Finansowanie WHO jest finansowane poprzez składki krajów członkowskich oraz dotacje. Obecnie praca WHO skutkuje szerszym spektrum współpracy: ok. 80 organizacji pozarządowych oraz z zakresu przemysłu farmaceutycznego, jak także z fundacjami np.. Fundacja Billa i Melindy Gates i Fundacja Rockefellera. Dobrowolne datki na rzecz WHO lokalnych i państwowych rządów, fundacji i organizacji pozarządowych, innych organizacji ONZ i sektora prywatnego przekroczyły szacowaną sumę składek z 194 krajów członkowskich.[4, стаття VI]

WHO działa w następujących zakresach: świadczy krajom członkowskim pomoc techniczną, w obszarach które w danym kraju należą do priorytetów systemu

ochrony zdrowia; wypracowuje i na bieżąco monitoruje stosowanie tzw. Międzynarodowych Przepisów Zdrowotnych; wspiera badania naukowe w zakresie medycyny; ustala podstawowe standardy dla leków i szczepionek; udziela państwom członkowskim pomocy we wprowadzaniu standardów dla leków i bezpiecznej żywności; monitoruje stopień zanieczyszczeń chemicznych powietrza i wody, doradza państwom członkowskim w określaniu standardów w edukacji szkolenia personelu medycznego; posiada system wczesnego ostrzegania w razie pojawiania się znamion epidemii [3]

Ukraina jest członkiem WHO od 1948 r. (3 kwietnia 1948 r. dołączyła do statutu WHO). Od 1950 do 1991 roku - okres nieaktywnego członkostwa Ukrainy w tej organizacji z powodu bycia w ZSRR. Odnowiła członkostwo w 1992r. w tym samym czasie co przywrócenie niepodległości.

Współpraca Ukrainy z WHO jest jednym z ważnych elementów jej międzynarodowej współpracy w celu zapewnienia konstytucyjnego prawa każdego obywatela Ukrainy do opieki zdrowotnej, opieki medycznej i ubezpieczenia medycznego.[2, стаття 3]. Współpraca Ukrainy z WHO odbywa się głównie za pośrednictwem Europejskiego Biura Regionalnego zgodnie z umowami ramowymi (2 lata) zawartymi między Ukrainą a Parlamentem Europejskim. W umowach określone są priorytetowe obszary współpracy, na które kierowane są fundusze, jakie lokowane są z głównego budżetu WHO na wsparcie działań napoziomie krajowym.

Ukraina jest zainteresowana wykorzystaniem potencjału i zgromadzonego Międzynarodowego doświadczenia przez WHO, także nadaniem przez swoje międzynarodowe kanały pomocy w rozwiązywaniu problemów, przede wszystkim

w następujących obszarach: gruźlica i HIV / AIDS; ptasia grypa, rak, choroba sercowo-naczyniowa i cukrzyca; palenie tytoniu; zdrowie matki i dziecka; bezpieczeństwo żywności; zdrowie psychiczne; krew i jej bezpieczeństwa. [1]

Działania, które realizowane są w ramach współpracy Ukrainy z WHO są zgodne z krajowymi priorytetami i strategiami w zakresie opieki zdrowotnej, biorą pod uwagę specyfikę sytuacji w tym zakresie w kraju i specyfikę krajowego systemu opieki zdrowotnej.

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