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English in a digital era

A Textbook for Students of Higher Educational Establishments

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Навчальний посібник призначений для студентів нефілологічних спеціальностей, які вивчають англійську мову за професійним спрямуванням. Основна мета посібника – розширення знань і поглиблення вмінь використання професійної англійської мови й інформаційно-комунікаційних технологій в освітньому процесі університету.

Посібник складається з дванадцяти тематичних юнітів, кожен з яких містить англомовні автентичні тексти, лексичні вправи, теми для обговорення, дискусійні питання, матеріали для написання творчих робіт, посилання на відповідні вебсайти для пошуку додаткової інформації. До складу посібника входить комплекс граматичних вправ, англо-український словник, спеціальні символи для кодів програмування та список найбільш вживаних в інтернет дискурсі англомовних скорочень і абревіатур.

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INTRODUCTION

WHY WE LEARN ENGLISH

What hope is for a common language and how can this goal be best reached? There are, of course, supporters of new international languages. Esperanto has made some progress although it is improbable that it will ever provide the answer. Of the existing languages, English has by far the best start. The total number of languages in the world is large: between 4,000 and 4,500. There are only five languages that can claim a very large number of speakers, namely, Chinese, English, Spanish, Hindi-Urdu and Russian (in that order). Of these languages, only English can claim to be a more or less universal language.

Chinese is followed by English. Gone are the days when United Kingdom was a great Empire. Now there is the Commonwealth. The Commonwealth was created by the Statute of Westminster, passed by the British Parliament on the 31-st of December 1931, as a successor to the British Empire. All states in the Commonwealth are given equal status, and all recognize the British monarch as the official head of the organization. The Commonwealth is a voluntary organization whose primary function is to encourage cooperation between member states. Membership has changed considerably since its inception. Original members of the Commonwealth included Australia, Canada, the Irish Free State, Newfoundland, New Zealand, the Union of South Africa, and the United Kingdom. Ireland and South Africa withdrew from the organization in 1949 and 1961 respectively, with South Africa later rejoining in 1995. Pakistan withdrew in 1972 but rejoined in 1989. That is why English covers such a great territory and we are to call it worldwide spread.

More than 600 million people speak it as their first or second language and can therefore be «reached» through English. What is more important this number includes most of the world leaders. English is by far the most useful language from the stand-point of business, politics and science. In every field of knowledge more is written in English than in any other language. More television programs use it. There are English-language newspapers in many important non-English-speaking cities. If we are going to have a world language it will almost certainly be English.

It is obvious that those who learn English develop closer ties with English-speaking countries. They read books from these countries and learn about their history and their customs. The young study at schools and universities in English-speaking countries, the middle-aged travel and do business there. So, I guess, future of the world language is defined. Some people try to refute it offering Esperanto for this purpose. But as for Esperanto, it is not able to become a world language, because it is a synthetic language and lots of people just refuse to waste time learning it.

There are some people who say that we don't need international language at all. Machine translation has made a lot of progress in the last few years. Perhaps the day when computers will take over the whole business of translation isn't too far away. But from my point of view computers will be able to help us in reading or writing, but as speaking and communication in English are concerned, computers will never be as intelligent and interesting speakers as people usually are.

Questions for discussion

1. Why do lots of people refuse to learn Esperanto?

2. Do you share the author's viewpoint concerning the role of computers in intercultural communication?

3. How can you prove that only English really claims to be a more or less universal language?

4. Is your native language widely spread beyond the boundaries of your country? Does it claim to become a universal language?

5. Can machine translation replace oral communication?

6. What are your reasons for learning English? Are you planning to use it in your future professional activity?

Мотиви, що спонукають студентів до вивчення англійської мови

Вибіркова сукупність у розрізі структурних підрозділів Чорноморського національного університету імені Петра Могили (вересень 2020 р.):

– факультет політичних наук 147 студенти (15,8 %);
– факультет комп'ютерних наук – 274 (29,5);
– факультет фізичного виховання та спорту – 38 (4,1 %);
– факультет економічних наук – 141 (15,2 %);
– юридичний факультет – 39 (4,2 %);
– факультет філології – 208 (22,4 %);
– медичний інститут – 80 (8,6 %);
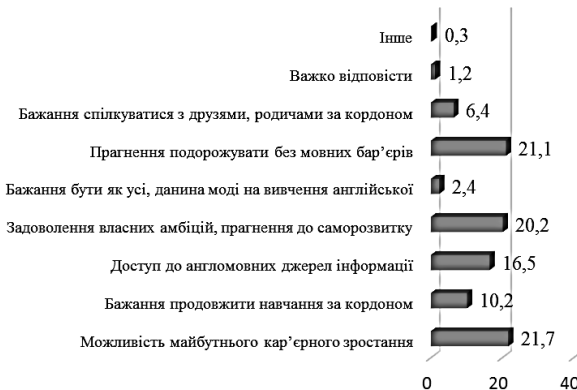– інститут державного управління – 3 (0,3 %).

Рис. 1. Мотиви, що спонукають студентів до вивчення англійської мови (% від загальної обраних варіантів відповідей)

Before the computer

An *application* was for employment
A *program* was a TV show
A *cursor* used profanity
A *keyboard* was a piano!

Memory was something that you lost with age
A *CD* was a bank account!
And if you had a broken *disk*,
It would hurt when you found out!

Compress was something you did to garbage
Not something you did to a *file*
And if you *unzipped* anything in public
You'd be in jail for a while!

Log on was adding wood to a fire
Hard drive was a long trip on the road
A *mouse pad* was where a mouse lived
And a *backup* happened to your commode!

Cut – you did with a pocket knife
Paste you did with glue
A *web* was a spider's home
And a *virus* was the flu!

I guess I'll stick to my pad and paper
And the *memory* in my head
I hear nobody's been killed in a *computer crash*
But when it happens they wish they were dead!

UNIT 1

Electronic Ukraine.
What is digitalization?

We are running into the 21st century where technology knows no bounds. This is the phase of radical development where technology is taking over every niche and corner. Smart phones, laptops, and tablets are no more unknown words.

Digitalization is the process of changing from analog to digital form. It refers to taking analog information and encoding it into zeroes and ones so that computers can store, process, and transmit such information. Converting handwritten or typewritten text into a digital form is an example of digitalization.

In 2019 the Digital Ukraine Forum was held which became the platform for joint work on digital transformations in the country between government, business and public associations. Digital technologies are the basis of Ukraine's welfare. This is the world where new opportunities are created, the sphere that determines the essence of transformations in the country – for better life, work, creativity, education, recreation of adults and children in Ukraine and around the world.

Digitalization in education refers to the use of desktop computers, mobile devices, the Internet, software applications, and other types of digital technology to teach students of all ages. During this phase the education system is evolving for the sake of betterment, as this generation's students are not born to be confined by the limits of simple learning; their curiosity is vast and cannot be catered with educational systems that were designed earlier. If we kept on teaching our children the way we taught them yesterday we would deprive them of their tomorrow. Our obsolete educational system

lacks the capability to stand a chance in the 21st century. So we are compelled to use digitalization in our education.

Test-taking using a computer, online universities, e-books and entertainment are just a few examples of digitalization in education today. Some educators and technology advocates believe that eventually education will be an entirely digital process supported by artificial intellect and virtual reality. Online courses, digital textbooks, virtual reality tools and videos can be used to help students use e-learning platforms on multiple mobile devices to interact with study material.

The word *digitalization* was considered the most frequently used word in 2019. The digital era started at the beginning of the 21-st century, and now there exists a digitalized driving license, student's identification card and even passport. Most documents are now in free access in the Internet thanks to digitalization and people can solve their problems staying at home. Students have access to digitalized works of art, literature, and computer software. In Estonia all utility bills and public services (but marriage and divorce) are digitalized and can be paid online. It is especially important when the whole world is under lockdown. It is certain that the process of digitalization is going to be continued in the future as it is one of the most effective ways to get rid of piles of paper documents and save trees in forests. This process will help people to implement their ideas about nature preservation in practice.

Task 1.

1. Speak about the perspectives of digitalization in the future. In what spheres of life will it be most popular?

2. How is digitalization connected with all-round computerization?

3. What are the advantages of digitalization in comparison with analog format?

4. Tell the group about digitalization in education.

5. Discuss the usage of digitalization in banking, commerce and enterprising.

6. Write down a story «Digitalization on the Guard of Security» showing the importance of video cameras in the streets and on the roads which prevent car accidents and traffic jams.

7. How has digitalization influenced your life?

8. The word *digitalization* was the most frequently used word in 2019. Which word became the most popular in 2020? Why?

Life in 2050

Check infographics on **Life in 2050.**
https://www.good.is/infographics/infographic-life-in-theyear-2050#open.

Task 2. Discuss the questions to find the best solutions of the problems below:

1. What new trends of today help us understand that great changes are coming very soon?

2. Will distance learning and work from home influence people's behavior? How? In what way?

3. It was published in famous journals that in the future it will be possible to correct the DNA in order to program the qualities of a to-be-born child. Do you believe it will be normal to interfere into the DNA without any harm for a baby?

4. How will changes of the weather and climate influence people lives?

5. What is to be done to help people survive in constantly changing circumstances?

6. Will the life of people become more interesting or more complicated in 2050?

The New York Times bestselling author of Physics of the impossible gives us a stunning and provocative vision of the future. Based on interviews with over three hundred of the world's top

scientists, who are already inventing the future in their labs, Kaku-in a lucid and engaging fashion presents the revolutionary developments in medicine, computers, quantum physics, and space travel that will forever change our way of life and alter the course of civilization itself. His astonishing revelations include: the Internet will be in your contact lens. It will recognize people's faces, display their biographies, and even translate their words into subtitles. You will control computers and appliances via tiny sensors that pick up your brain scans. You will be able to rearrange the shape of objects. Sensors in your clothes, bathroom, and appliances will monitor your vitals, and nanobots will scan your DNA and sells for signs of danger, allowing life expectancy to increase dramatically. Radically new spaceships, using laser propulsion, may replace the expensive chemical rockets of today. You may be able to take an elevator hundreds of miles into space by simply pushing the up button. Like Physics of the Impossible and Visions before it, Physics of the Future is an exhilarating, wondrous ride through the next fifty years of breathtaking scientific revolution.

Task 3. Answer the questions:

1. What is a nanotechnology? Will its development help people in their everyday life?

2. Will vaccination against various diseases be obligatory in order to prevent humans from pandemics?

3. Will «green» or solar energy replace electricity of today?

4. Will formation of eco-thinking become one of the urgent problems in the nearest future?

5. It is clear that oil and gas deposits will sooner or later be exhausted. What resources can be used to replace them?

6. How will progress in science and technologies change people's life? How will people's relationships change under the influence of scientific and technological progress?

UNIT 2

Digital Era.
Living in a digital age

Exercise 1. Complete the text with the words from the box. Decide if it is necessary to translate these words.

Financial, Internet, electronic, print, design, microchips
Digital Era

Computers have changed the way we do everyday things, such as working, shopping, and looking for information. We _____ houses with the personal computers (PCs); we buy books or make flight reservations on the _____ we use gadgets that spring to life the instant they are switched on, for example the mobile phone, the music player, or the car ignition, all of which use _____ Many people now work at home and they communicate with their office by computer and telephone. This is called «teleworking».

With the appropriate hardware and software a PC can do almost anything you ask. It's a magical typewrite that allows you to type and _____ any sort of document. It's a calculating machine that makes _____ calculations. It's a filling cabinet that manages large collections of data. It's a personal communicator that lets you interact with friends. It's a small lab that helps you edit photos and movies. And if you like _____ entertainment, you can also use it to relax with games.

Exercise 2. Match the words from exercise 1 with the following definitions.

a) tiny pieces of silicon containing complex electronic circuits _____;

b) to make or draw plans for something _____;

c) relating to money or how money is managed _____;

d) involving the use of electric current in devices such as TV sets or computers _____;

e) the large system of connected computers around the world ____ _____;

f) to produce texts and pictures using a printer _____ _____.

Living in a Digital Age

Task 1. Read the text and discuss advantages and disadvantages of living in a digital age.

We are now living in what some people call the digital age, meaning that computers have become an essential part of our lives. Young people who have grown up with PCs and mobile phones are often called the digital generation. Computers help students to perform mathematical operations and improve their maths skills. They are used to access the Internet, to do basic research and to communicate with other students around the world. Teachers use projectors and interactive whiteboards to give presentations and teach sciences, history or language courses. PCs are also used for administrative purposes – schools use word processors to write letters, and databases to keep records of students and teachers. A school website allows teachers to publish exercises for students to complete online. Students can also enroll for courses via the website and parents can download official reports.

Mobiles let you make voice calls, send texts, email people and download logos, ringtones or games. With a built-in camera you can send pictures and make video calls in face-to-face mode. New smart phones combine a telephone with web access, video, a games console, an MP3 player, a personal digital assistant (PDA) and a GPS navigation system, all in one.

In banks computers store information about the money held by each customer and enable staff to access large databases and to carry out financial transactions at high speed. They also control the cash points, or ATMs (automatic teller machines), which dispense money to customers by the use of a PIN-protected card. People use a Chip and PIN card to pay for goods and services. Instead of using a signature to verify payments, customers are asked to enter a four-digit personal identification number (PIN), the same number used at cash points; this system makes transactions more secure. With online banking clients can easily pay bills and transfer money from the comfort of their homes.

Airline pilots use computers to help them control the plane. For example, monitors display data about fuel consumption and weather conditions. In airport control towers computers are used to manage radar systems and regulate air traffic. On the ground airlines are connected to travel agencies by computer. Travel agents use computers to find out about the availability of flights, prices, times, stopovers and many other details.

Task 2. Answer the questions:

1. Do you belong to the «digital generation»? Why?

2. Is digitalization a complicated process? What skills are necessary to change the analog information into a digital format?

3. Identify the advantages of mobile phones in comparison with stationary ones. How can mobile phones make our life more comfortable?

4. Speak about computers in banking. Is it important for common people or only for bank employees?

5. Imagine you are a travel agent. How can computer help you in your every day work?

6. Speak about digitalization in medicine and weather forecast.

Task 3. Before reading the text, try to explain how you understand its title.

Computer Literacy

Informed citizens of our information-dependent society should be computer-literate, which means that they should be able to use computers as everyday solving devices. They should be also aware of the potential of computers to influence the quality of life.

Computer literacy is defined as the knowledge and ability to use computers and related technology efficiently, with a range of skills from elementary use to programming and advanced problem solving. Computer literacy can also refer to the comfort level someone has with using computer programs and other applications that are associated with computers. Another valuable component of computer literacy is understanding how computers work and operate. Having basic computer skills is a significant asset in the developed countries.

There was a time when only privileged people had an opportunity to learn the basics, called the three R's: reading, writing and arithmetic's. Now, as we are quickly becoming an information society, it is time to restate three R's basics as reading, writing and computing (unfortunately without R). Computing is a certain concept which embraces not only the third R, a**r**ithmetic's, but also a new idea – computer literacy.

The precise definition of «computer literacy» can vary from group to group. Generally, literate (adjective) is associated with one who can read any book in their native language, looking up new words as they are exposed to them. Likewise, an experienced computer professional may consider the ability to self-teach (i.e. to learn arbitrary new programs or tasks as they are encountered) to be central to computer literacy. In common discourse, however, «computer literate» is often associated with little more than the ability to use several very specific applications (usually Microsoft Word, Microsoft Internet Explorer,

and Microsoft Outlook) for certain very well-defined simple tasks, largely by rote. Being «literate» and «functional» are generally taken to mean the same thing.

Computer skills refer to the ability to use the software and hardware of a computer. Being «computer functional» is usually what is meant by one with computer skills; computer literacy is only really evident in advanced computer skills.

Basic computer skills include: knowing how to power on the computer, being able to use a mouse to interact with elements on the screen, being able to use the computer keyboard, being able to shut down the computer properly after use.

Intermediate computer skills are: functional knowledge of word processing, knowing how to use e-mail and the Internet; installing software skills and navigating a computer's file system. Advanced skills include programming, understanding the problems of data security, use of a computer for scientific research, fixing software conflicts, repairing computer hardware.

Task 4. Comprehension Check
1. What does it mean to be a «computer literate person»?
2. What is meant by basic/intermediate/advanced computer skills?
3. What did people mean by the three R's before? Has anything changed now?
4. In your opinion, what qualities and skills does a computer professional need?
5. Tell the group how old you were when you started to use computer, who helped you. Was the English language necessary for you to learn operating a computer?
6. Identify your level of computer literacy. Prove it with the examples from your experience.

UNIT 3
English in the 21st Century

Do you know that:

− there are at least 500 000 words in English;

− Winston Churchill was famous for his particularly large vocabulary: in his writings he used 60 000 words;

− the average native English speaker uses in his/her everyday speech 5 000 words;

− 50 words make up 45% of everything written in English.

The world is constantly changing under the influence of different factors: natural, economic, political, social, and many others. To keep in step with the progress in various spheres of life and adequately react to these factors people should comprehend their consequences and adapt to the new challenges in life.

The total number of languages in the world is large: between 4,000 and 4,500. There are only five languages that can claim a very large number of speakers, namely, Chinese, English, Spanish, Hindi-Urdu and Russian (in that order). Of these languages, only English can claim to be a more or less universal language.

Chinese is followed by English. Gone are the days when United Kingdom was a great Empire. Now there is the Commonwealth. The Commonwealth was created by the Statute of Westminster, passed by the British Parliament on the 31-st of December 1931, as a successor to the British Empire. All states in the Commonwealth are given equal status, and all recognize the British monarch as the official head of the organization. The Commonwealth is a voluntary organization whose primary function is to encourage cooperation between member states. Membership has changed considerably since its inception. Original members of the Commonwealth included Australia, Canada, the Irish Free State, Newfoundland, New Zealand,

the Union of South Africa, and the United Kingdom. Ireland and South Africa withdrew from the organization in 1949 and 1961 respectively, with South Africa later rejoining in 1995. Pakistan withdrew in 1972 but rejoined in 1989. That is why English covers such a great territory and we are to call it worldwide spread.

More than 600 million people speak it as their first or second language and can therefore be «reached» through English. What is more important this number includes most of the world leaders. English is by far the most useful language from the stand-point of business, politics and science. In every field of knowledge more is written in English than in any other language. More television programs use it. There are English-language newspapers in many important non-English-speaking cities. If we are going to have a world language it will almost certainly be English.

English is used for more purposes than ever before. Vocabularies, grammatical forms, and ways of speaking and writing have emerged influenced by technological and scientific developments, economics and management, literature and entertainment genres. When Mexican pilots laid their airplanes in France, they and the ground controllers use English. When German physicists want to alert the international scientific community to new discoveries they first publish their findings in English. When Japanese executives conduct business with Scandinavian entrepreneurs, they negotiate in English. When pop singers write their songs, they often use lyrics or phrases in English. When demonstrators want to alert the world to their problems, they display signs in English.

Three factors continue to contribute to this spread of English: English usage in science, technology and commerce; the ability to incorporate vocabulary from other languages; and the acceptability of various English dialects.

In science English replaced German after World War II with this technical and scientific dominance, first in Europe and then globally.

The information age

Today, the information age has replaced the industrial age and has compressed time and distance. This is transforming world economics from industrial production to information-based goods and services. Ignoring geography and borders, the information revolution is redefining our world. In less than 20 years, information processing, once limited to the printed word, has given ways to computers and the Internet. Computer-mediated communication is closing the gap between spoken and written English. It encourages more informal conversation conversational language, and has resulted in Internet English replacing the authority of language institutes and practices.

Every historical period causes definite changes in people's lives and marks certain trends in societies' development. But the fact is that if a hundred years ago it took one or two generations to make important changes, now the world community faces a lot of significant changes every decade and scientists cannot explain to people what is really going on.

A new generation of young people has grown up, and its mentality greatly differs from the way of thinking of all previous generations. Modern students no longer have a non-significance complex which bothered people of the same age fifteen years ago, and believe in their abilities to get proper education and reach their professional goals in the future life. Consequently changed the role of higher educational establishments in teaching and bringing up young people who want not only to gain knowledge but to learn how to get used to constantly growing volume of information and become competitive on the labor market.

Reforms on all stages of Ukrainian educational system regulated by the Laws of Ukraine «On Higher Education» (2014), «On Education» (2017) and other state documents are aimed at improving the quality of our educational system and integrating it into European and world educational community. But no integrating is possible

without keeping to some key principles of the development of higher school: university autonomy, high quality, more attention to students' self education, synergy of academic process and students' scientific research activity, knowledge of English etc.

Task 1

1. Define the main factors of the industrial age.

2. Speak about the achievements of the industrial age.

3. Is conquering of space more industrial, scientific, intellectual, or information success?

4. Why is information so important in the modern world?

5. Has the role of paper media changed under the influence of computer technologies?

English as the language of international communication

English continues to be the language of international communication; moreover it encompasses new countries and spheres of people's activity. Advanced knowledge of English is one of the most important trends of our time. Ukrainian university graduates can hardly be competitive if they do not have profound skills of English communication in their professional subjects. Mastering professional English is the only way to find a well-paid job in joint companies, communicating in the Internet and using various social media. That is why great attention should be paid to learning English as the language of international communication.

Traditionally students of all non-philological specialties learned English but among the four kinds of competences in a foreign language (reading, speaking, listening and writing) more attention was paid to developing skills of reading, translation, and in the last years speaking. Now it becomes clear that for effective cooperation and mutual understanding listening and writing are not less important than other kinds of competences. Moreover, in the world of business filling

in all sorts of documents as well as writing references, summaries, resolutions are becoming an inseparable part of communication. It means university graduates are to be professionally competent in writing and listening to the same degree as in reading or speaking English.

There are some people who say that we don't need international language at all. Machine translation has made a lot of progress in the last few years. Perhaps the day when computers will take over the whole business of translation isn't too far away. But from my point of view computers will be able to help us in reading or writing, but as speaking and communication in English are concerned, computers will never be as intelligent and interesting speakers as people usually are.

Problems for discussion

1. What makes it possible to call English «a global language'?

2. Why do you think it has become so widely spread?

3. How does development of technique and science influence spread of English?

4. Give your own examples of use of English as an international language.

5. Does spread of the English language threaten the existance of other languages? Is it dangerous?

6. What can declining language standards result in?

7. Express your own attitude towards learning English in Ukraine. Are you satisfied with the level of teaching English at your university?

8. Do you plan to improve your English after graduating from the university?

Questions for Self – Control

1. Do we need to be concerned about the future of the English language? Why?

2. Why is English used for more purposes now than ever before?

3. What are the three factors which continue to contribute to spread of English?

4. How can you explain the words «the information age has replaced the industrial age»?

5. What will changes in the language reflect?

Writing Topics

1. The 21st century is in full swing. What changes do you think this new century will bring? Use examples and details in your answer.

2. Do you agree or disagree that progress is always good? Use specific reasons and examples to support your answer.

3. If you could study a subject that you have never had the opportunity to study, what would you choose? Explain your choice, using specific reasons and details.

4. Do you agree or disagree with the following statement? Children should begin learning a foreign language as soon as they start school. Use specific reasons and examples to support your position.

5. Do you agree or disagree with the following statement? Your competitiveness will depend on your knowledge of foreign languages, especially English.

UNIT 4

Computer viruses.
Anti-virus programs

After COVID-19 pandemic everybody knows what a virus is and how dangerous it can be.

1. Is there anything in common between medical and computer viruses?
2. What should be done to avoid infection with viruses?
3. How can you protect yourself and your PC from viruses?
4. Are computer viruses as dangerous for your health as medical ones?
5. Do you know any medicine for computer viruses?
6. Are computer viruses constant? Can they mutate?

The Internet communication system permits millions of computer users around the world link together for business and enjoyment. Private citizens, businesses and governments use the Internet. Anyone using the Internet can find information about many different subjects in many different languages in only a few minutes.

The Internet is the fastest, most modern and best communication tool ever invented. However, the Internet also makes it possible for one person to damage or slow thousands of computers that are linked to it. They can do this by writing computer instructions that cause damage. Or they make the computer fill itself with so much useless information that it stops working.

On January 2015 a kind of computer virus called a «worm» was released to infect the Internet. A worm is a computer instruction that makes copies of itself and sends copies to other computers.

For example, one large American banking company had to close about thirteen thousand of its money machines. People could no longer get their money from the bank's machines using their plastic cards.

A major international airline could not sell tickets using the Internet because the worm made its computers fail. Emergency service workers in the western American city of Seattle, state Washington, could not answer emergency calls because the worm caused their computers to fail.

Computer experts said the worm caused a problem for the Internet that was similar to when there are too many cars on the road in a large city. This kind of a vehicle problem is called a traffic jam. The worm caused an information jam. The experts believe the worm was first released in Asia. An American computer expert said evidence seemed to show the virus first appeared in Hong Kong. A government computer team in Hong Kong was working to find who released the new virus.

South Korea may have been the worst affected nation in the world. A spokesman for South Korea Information and Communication Ministry said computer communications on the Internet were almost back to normal. The ministry also said experts were working to find where the computer virus came from.

Computer experts in China and Taiwan also reported problems with worm. Computers in Japan suffered some problems. But they were mostly limited to some schools and companies. By the next morning computer experts around the world had stopped the worm or made their computer systems safe against the worm. Experts believe the worm cost computer networks many millions dollars in delays, lost businesses, and the loss of work usually done on a computer.

The person who wrote the instruction that created the worm attacked computers that use the Microsoft Windows. Microsoft quickly provided the necessary computer instructions to make its system safe and prevent the worm from attacking other computers.

The kind of program that made the Microsoft system safe is called a «patch» or «update». Microsoft says it wants to improve the

speed of future updates or patches for computer users linked to the Internet. Sophos P-L-C is a computer company in Britain that makes programs which protect computers against viruses and worms. It is the fourth largest anti-virus company. The Sophos Company experts say about eighty thousand computer viruses are now known to exist. They say about six hundred new computer viruses are released into the Internet each month.

A company called F-Secure also makes computer security programs. Its experts say new kinds of computer attacks will be aimed at damaging millions of computers very quickly. This kind of attack is called a «flash worm». It would be able to infect millions of computers in less than fifteen minutes.

Using a computer anti-virus program is the first step in protecting a business or private computer. An anti-virus program searches the computer for, and guards against viruses. It also inspects incoming e-mail and new programs for viruses. To protect valuable information do not open any file attached to electronic mail if it comes from an unknown person or place. Delete electronic mail from unknown people. Make copies of all important documents and keep them in a safe place.

Computer experts agree that everyone should refuse computer information from strangers. They also agree that users must be extremely careful when copying any kind of information from the Internet to their computer's memory. All experts agree that doing these things is better than suffering a virus or worm attack.

The Internet is fun, educational and a great business tool. But because of computer virus attacks, safety is extremely important.

Anti-viruses programs

1. Make a presentation of the anti-virus program you have on your PC. Explain to the group why you have chosen that very program describing its advantages.

2. Characterize the widely spread programs AVAST, Kaspersky and some others.

3. Are anti-virus programs constantly changing? What does this process reflect?

4. Does the anti-virus program you have chosen depend on the model of your computer?

5. Is it necessary to upgrade the anti-virus program from time to time?

Writing Topics

1. People attend college or university for many different reasons (for example, new experiences, career preparation, increased knowledge). Why do you think people attend college or university? Use specific reasons and examples to support your answer.

2. It has been said «Not everything that is learned is contained in books». Compare and contrast knowledge gained from experience with knowledge gained from books. In your opinion, which source is more important? Why?

3. Do you agree or disagree with the following statement? Parents are the best teachers. Use specific reasons and examples to support your answer.

4. Some people think they can learn better by themselves than with a teacher. Others think that it is always better to have a teacher. Which do you prefer? Use specific reasons to develop your essay.

UNIT 5

Outstanding personalities in the IT world.
Steve Jobs

Task 1 Read the text about Steve Jobs and explain what personal qualities helped him to overcome the negative changes in his professional career.

Steve Jobs biography

Steven Paul Jobs was born on 24 February 1955 in San Francisco, California, to students Abdulfattah Jandali and Joanne Schieble who were unmarried at the time and gave him up for adoption. He was taken in by a working class couple, Paul and Clara Jobs, and grew up with them in Mountain View, California.

He attended Homestead High School in Cupertino and went to Reed College in Portland, Oregon, in 1972 but dropped out after only one semester, staying on to «drop in» on courses that interested him.

He took a job with video game manufacturer Atari to raise enough money for a trip to India and returned from there a Buddhist. Back in Cubertino he returned to Atari where his old friend Steve Wozniak was still working. Wozniak was building his own computer and in 1976 Jobs pre-sold 50 of the as-yet unmade computers to a local store and managed to buy the components on credit solely on the strength of the order, enabling them to build the Apple 1 without any funding at all.

The Apple II followed in 1977 and the company Apple Computer was formed short afterwards. The Apple II was credited with starting the personal computer boom, its popularity prompting IBM to hurriedly develop their own PC. By the time production of the Apple II ended in 1993 it had sold over 6 million units.

Inspired by a trip to Xerox's Palo Alto Research Center, engineers from Apple began working on a commercial application for the graphical interface ideas they had seen there. The resulting machine, Lisa, was expensive and never achieved any level of commercial success, but in1984 another Apple computer, using the same WIMP (Windows, Icon, Menus, Pointer) interface concept, was launched. An advert during the 1984 Super Bowl, directed by Ridley Scott introduced the Macintosh computer to the world.

In 1985 Jobs was fired from Apple and immediately founded another computer company, NeXT. Its machines were not a commercial success, but some of the technology was later used by Apple when Jobs eventually returned there.

In the meantime, in1986, Jobs bought The Computer Graphics Group from Lucasfilm. The group was responsible for making high-end computer graphics hardware but under its new name, Pixar, it began to produce innovative computer animations. Their first title under the Pixar name, Luxo Jn.won critical and popular acclaim and in 1991 Pixar signed an agreement with Disney, with whom it already had a relationship, to produce a series of feature films, beginning with Toy Story.

In 1996 Apple bought NeXT and Jobs returned to Apple, becoming its CEO. With the help of British-born industrial designer Jonatan Ive, Jobs brought his own aesthetic philosophy back to the ailing company and began to turn its fortunes around with the release of iMac I 1998.The company's MP3 player, the iPod, followed in 2001, with the iPhone launching in 2007 and the iPad in 2010. The company's software music player, iTunes, evolved into online music store, helping to popularize the idea of «legally» downloading entertainment content.

In respect to his personal life, Steve Jobs remained a private man who rarely disclosed information about his family. In the early

100990s Jobs met Laurene Powell at Stanford business school, where Powell was an MBA student. They married in 1991 and lived together in Palo Alto, California, with their three children.

In 2003 Jobs was diagnosed with pancreatic cancer and underwent surgery in 2004. Despite the success of this operation he became increasingly ill and received a liver transplant in 2009. He returned to work after a six month break but eventually resigned his position in August 2011 after another period of medical leave which began in January 2011. He died on 5 October 2011.

Task 1. Say if the following statements are true or false. Expand on the true statements and correct the false ones.

1. Steve Jobs was born in California.
2. Steve was dropped out from the college.
3. Steve sold his friends' computers.
4. Lisa was an unsuccessful project.
5. The Macintosh computer was introduced in 1983.
6. S. Jobs used NeXT 's ideas in Apple.
7. He bought the company which produced animations.
8. Steve Jobs is still alive.

UNIT 6

Elon Musk and his projects

Elon Reeve Musk born June 28, 1971 is a business magnate, industrial designer and engineer. He is the founder, CEO, CTO and chief designer of SpaceX; early investor, CEO and product architect of Tesla, Inc.; founder of The Boring Company; co-founder of Neuralink; and co-founder and initial co-chairman of OpenAI. He was elected a Fellow of the Royal Society (FRS) in 2018. Also that year, he was ranked 25th on the *Forbes* list of The World's Most Powerful People, and was ranked joint-first on the *Forbes* list of the Most Innovative Leaders of 2019. A centi-billionaire, Musk became the richest person in the world in January 2021.

Musk was born to a Canadian mother and South African father and raised in Pretoria, South Africa. He briefly attended the University of Pretoria before moving to Canada when he was 17 to attend Queen's University. He transferred to the University of Pennsylvania two years later, where he received dual bachelor's degrees in economics and physics. He moved to California in 1995 to begin a Ph.D. in applied physics and material sciences at Stanford University, but dropped out after two days to pursue a business career. He co-founded Zip2, a web software company, which was acquired by Compaq for $307 million in 1999. Musk then founded X.com, an online bank. It merged with Confinity in 2000, which had launched PayPal the previous year and was subsequently bought by eBay for $1.5 billion in October 2002.

In May 2002, Musk founded SpaceX, an aerospace manufacturer and space transport services company, of which he is CEO and lead designer. He joined Tesla Motors, Inc. (now Tesla, Inc.), an electric vehicle manufacturer, in 2004, the year after it was founded, becoming its product architect that year and its CEO in 2008. In

2006, he helped create SolarCity, a solar energy services company (now a subsidiary of Tesla). In 2015, he co-founded OpenAI, a nonprofit research company that aims to promote friendly artificial intelligence. In July 2016, he co-founded Neuralink, a neurotechnology company focused on developing brain–computer interfaces. In December 2016, Musk founded The Boring Company, an infrastructure and tunnel construction company focused on tunnels optimized for electric vehicles. In addition to his primary business pursuits, he envisioned an open-source high-speed transportation system known as the Hyperloop based on the concept of a vactrain.

What sort of personality is Elon Musk?

Musk has also been the subject of criticism due to unorthodox or unscientific stances and highly publicized controversies. Following the rejection of a prototype submarine from Tesla that Musk had offered to be used in the 2018 Tham Luang cave rescue, he called a diver who advised in the rescue and disparaged the prototype a «pedo guy» and in response the diver sued for defamation; a California jury ruled in favor of Musk. Also in 2018, he falsely tweeted that he had secured funding for a private takeover of Tesla at $420 a share. The U.S. Securities and Exchange Commission (SEC) sued him for the comment. He settled with the SEC, temporarily stepping down from his chairmanship and accepting limitations on his Twitter usage. Musk has received substantial criticism for his views on artificial intelligence, public transportation, and the COVID-19 pandemic.

Education

While awaiting Canadian documentation, Musk attended the University of Pretoria for five months. This allowed Musk to avoid mandatory service in the South African military. Arriving in Canada in June 1989, Musk failed to locate his great-uncle in Montreal and instead stayed at a youth hostel. He then traveled west to live with a

second-cousin in Saskatchewan. He stayed there for a year, working odd jobs at a farm and lumber-mill. In 1990, Musk entered Queen's University in Kingston, Ontario. Two years later, he transferred to the University of Pennsylvania; he graduated in 1997 with a Bachelor of Science (BS) degree in economics from the Wharton School and a Bachelor of Arts (BA) degree in physics.

In 1994, Musk held two internships in Silicon Valley during the summer: at an energy storage start-up called Pinnacle Research Institute, which researched electrolytic ultracapacitors for energy storage, and at the Palo Alto-based start-up Rocket Science Games. Bruce Leak, the former lead engineer behind Apple's QuickTime who had hired Musk, noted: «He had boundless energy. Kids these days have no idea about hardware or how stuff works, but he had a PC hacker background and was not afraid to just go figure things out». In 1995, Musk was accepted to a Ph.D. program in energy physics/materials science at Stanford University in California. Musk attempted to get a job at Netscape, but he says that he never received a response to his job inquiries. He dropped out of Stanford after two days, deciding instead to join the Internet boom and launch an internet startup.

Business career

In 1995, Musk, his brother Kimbal, and Greg Kouri founded web software company Zip2 with money raised from a small group of angel investors. They housed the venture at a small rented office in Palo Alto. The company developed and marketed an internet city guide for the newspaper publishing industry, with maps, directions, and yellow pages. Before the company became successful, Musk says he could not afford an apartment, instead sleeping on the office couch and showering at the YMCA. Furthermore, he says they could only afford one computer, and consequently, according to Musk, «The website was up during the day and I was coding it at night, seven days a week, all the time».

Their efforts materialized when the Musk brothers obtained contracts with *The New York Times* and the *Chicago Tribune,* and persuaded the board of directors to abandon plans for a merger with CitySearch. Musk's attempts to become CEO were thwarted by the board. Compaq acquired Zip2 for $307 million in cash in February 1999. Musk received $22 million for his 7 percent share from the sale.

X.com and PayPal

In March 1999, Musk co-founded X.com, an online financial services and e-mail payment company, with $10 million from the sale of Zip2. One year later, the company merged with Confinity, which had a money-transfer service called PayPal. The merged company focused on the PayPal service and was renamed PayPal in 2001. Musk was ousted in October 2000 from his role as CEO (although he remained on the board) due to disagreements with other company executives over his desire to move PayPal's Unix-based infrastructure to a Microsoft one. In October 2002, PayPal was acquired by eBay for $1.5 billion in stock, of which Musk received $165 million. Before its sale, Musk, who was the company's largest shareholder, owned 11.7% of PayPal's shares.

In 2017, Musk purchased the domain X.com from PayPal for an undisclosed amount, explaining that it had sentimental value to him.

SpaceX

In 2001, Musk conceived Mars Oasis, in which a miniature greenhouse on Mars would grow food crops and reawaken public interest in space exploration. In October 2001, Musk traveled with a group to Moscow to buy refurbished Dnepr Intercontinental ballistic missiles (ICBMs) that could send the greenhouse payloads into space. He met with companies such as NPO Lavochkin and Kosmotras; however, Musk was seen as a novice and was even spat on by one of the Russian chief designers. The group returned to the United States empty-handed. In February 2002, the group returned to Russia to look for three

ICBMs. They had another meeting with Kosmotras and were offered one rocket for $8 million, which Musk rejected. Musk instead decided to start a company that could build affordable rockets.

With $100 million of his early fortune, Musk founded Space Exploration Technologies Corp., traded as SpaceX, in May 2002.

In 2006, NASA announced that the company was one of two selected to provide crew and cargo resupply demonstration contracts to the International Space Station (ISS), followed by a $1.6 billion Commercial Resupply Services program contract on December 23, 2008, for 12 flights of its Falcon 9 rocket and Dragon spacecraft to the Space Station, replacing the US Space Shuttle after it retired in 2011. On May 25, 2012, the SpaceX Dragon vehicle berthed with the ISS, making history as the first commercial company to launch and berth a vehicle to the International Space Station.

Starting in 2011, SpaceX received funding under NASA's Commercial Crew Development program to develop the Dragon 2 crew capsule. A contract to provide crew flights to the ISS was awarded in 2014.

Working towards its goal of reusable rockets, in December 2015, SpaceX successfully landed the first stage of its Falcon 9 rocket back near the launch pad, the first time this had been achieved by an orbital rocket. Landings were later achieved on an autonomous spaceport drone ship, an ocean-based recovery platform. Starting in 2017 boosters were reflown on further missions, with booster reuse becoming more common than new boosters from 2018 on.

On February 6, 2018, SpaceX launched the Falcon Heavy, the most powerful rocket in operation and the rocket with the fifth-highest thrust ever built (after N1, Saturn V, Energia and the Space Shuttle). The inaugural mission carried a Tesla Roadster belonging to Musk as a dummy payload.

Starlink and further progress

SpaceX began development of the Starlink constellation of low Earth orbit satellites in 2015 to provide satellite Internet access, with the first two prototype satellites launched in February 2018. A second set of test satellites and the first large deployment of a piece of the constellation occurred in May 2019, when the first 60 operational satellites were launched. The total cost of the decade-long project to design, build, and deploy the constellation is estimated by SpaceX to be about $10 billion, including nearly $900 million in Federal Communications Commission subsidies.

In late 2017, SpaceX unveiled the design for its next-generation launch vehicle and spacecraft system, Big Falcon Rocket (BFR), that would support all SpaceX capabilities with a single set of very large vehicles: Earth-orbit, Lunar-orbit, launch service provider interplanetary missions, and even intercontinental passenger transport on Earth, and totally replace the Falcon 9, Falcon Heavy and Dragon vehicles in the 2020s. Starship will have a 9-meter (30 ft) core diameter. Significant development on the vehicles began in 2017, with an initial prototype unveiled in September 2019, while the new rocket engine (Raptor) development began in 2012, with a first test flight performed in August 2019.

In a September 2018 announcement of a planned 2023 lunar circumnavigation mission, a private flight called *#dearMoon project*, Musk showed a redesigned concept for the BFR second stage and spaceship with three rear fins and two front canard fins added for atmospheric entry, replacing the previous delta wing and split flaps shown a year earlier. The revised BFR design was to use seven identically-sized Raptor engines in the second stage; the same engine model as would be used on the first stage. The second stage design had two small actuating canard fins near the nose of the ship, and three large fins at the base, two of which would actuate, with all three

serving as landing legs. The two major parts of the re-designed BFR were given descriptive names in November: «Starship» for the upper stage[c] and «Super Heavy» for the booster stage. As of October 2020, Musk was spending most of his time at the company's Boca Chica launch site leading the engineering work on Starship development.

In May 2020, SpaceX launched its first manned flight, the Demo-2, becoming the first private company to both place a person into orbit and dock a crewed space-craft with the ISS. Furthermore, it marked the first time an American astronaut was launched from American soil on an American rocket since the end of the Space Shuttle program.

Tesla

Tesla, Inc. (originally Tesla Motors) was incorporated in July 2003 by Martin Eberhard and Marc Tarpenning, who financed the company until the Series A round of funding. Both men played active roles in the company's early development prior to Musk's involvement. Musk led the Series A round of investment in February 2004, joining Tesla's board of directors as its chairman. According to Musk, all three, along with J. B. Straubel, were inspired by the earlier AC Propulsion zero electric roadster prototype. Musk took an active role within the company and oversaw Roadster product design at a detailed level, but was not deeply involved in day-to-day business operations. Following the financial crisis in 2008 and after a series of escalating conflicts in 2007, Eberhard was ousted from the firm. Musk assumed leadership of the company as CEO and product architect in 2008, positions he still holds today. As of 2019, Elon Musk is the longest tenured CEO of any automotive manufacturer globally.

Tesla Motors first built an electric sports car, the Tesla Roadster, in 2008, with sales of about 2,500 vehicles to 31 countries, which was the first serial production all-electric car to use lithium-ion battery cells.[Tesla began delivery of its four-door Model S sedan in June 2012. Although it unveiled its third product, the Model X, in February 2012,

the launch was delayed until September 2015. In addition to its own cars, Tesla sold electric powertrain systems to Daimler (for the Smart EV, Mercedes B-Class Electric Drive and Mercedes A Class), and to Toyota (for the RAV4 EV). Musk was able to bring in both Daimler and Toyota as long-term investors in Tesla.

Long-term goals

SpaceX's goal is to reduce the cost of human spaceflight by a factor of 10. In a 2011 interview, Musk said he hopes to send humans to Mars' surface within 10–20 years. In Ashlee Vance's biography, Musk stated that he wants to establish a Mars colony by 2040, with a population of 80,000 humans. Musk stated that, since Mars' atmosphere lacks oxygen, all transportation would have to be electric (electric cars, electric trains, Hyperloop, electric aircraft). Musk stated in June 2016 that the first unmanned flight of the larger Interplanetary Spaceship was aimed for departure to the red planet in 2022, to be followed by the first manned ITS Mars flight departing in 2024. In September 2016, Musk revealed details of his architecture to explore and colonize Mars.

Task 1. Answer the questions:

– What features of character, personal and professional qualities help Elon Musk gain success in his life?

– How has his education help him build his professional career?

– Was his business career always successful? Did he face any difficulties? Is Elon Musk ready to overcome difficulties?

– Are there any contradictions in Musk's character? Do you consider him to be a controversial person?

– Is he ambitious? How far have his ambitions reach?

– Is he an easy-going person? Is he ready to share his ideas with other people?

– Is he an excellent team-worker? Has he any managerial qualities? Is he an in-born leader?

They say Elon Musk likes popularity very much that is why he constantly popularizes his projects and sometimes expresses controversial opinions about urgent questions. Why, do you think, he does so: only because he wants to attract people's attention or there are some other reasons?

Task 2. Range these personal characteristics from the most important for Elon Musk to the less important (in writing). Give your reasons for the choice.

Boundless energy, adequate self assessment, positive thinking, ability to work in a team, creativity, responsibility, persistency, success orientation, readiness for constant learning, ability to implement his ideas in life, native wit (смекалка), boldness, resistance to difficulties, hardworking, purposefulness, ability to research activity, adventure spirit, leadership qualities, reliability, seriousness, fascinating with new ideas, bravery, excellent communicative skills, tolerance, trustfulness, attentiveness, readiness for sharing, self expression, motivation, curiosity, inquisitiveness, desire to learn new, readiness for risk, initiative, confidence in the abilities, successfulness, emotional activity, problem seeking, ability to analyze, integrate and synthesize information, developed imagination, quick thinking, good memory, readiness for compromise.

Elon Musk's projects

SolarCity

Musk provided the initial concept and financial capital for SolarCity, which his cousins Lyndon and Peter Rive co-founded in 2006. By 2013, SolarCity was the second largest provider of solar power systems in the United States. In 2012, Musk announced that SolarCity and Tesla would collaborate to use electric vehicle batteries to smooth the impact of rooftop solar on the power grid, with the program going live in 2013.

In June 2014, Musk committed to building a SolarCity advanced production facility in Buffalo, New York, that would triple the size of the largest solar plant in the United States. Musk stated the plant will be «one of the single largest solar panel production plants in the world», and it will be followed by one or more even bigger facilities in subsequent years. The Tesla Gigafactory 2 is a photovoltaic (PV) cell factory, leased by Tesla subsidiary SolarCity in Buffalo, New York. Construction on the factory started in 2014 and was completed in 2017. Tesla accepted $750 million in public funds from New York Governor Andrew Cuomo as part of the Buffalo Billion project–a plan to invest money to help the economy of the Buffalo, New York area–to build the factory and infrastructure. The factory was operated as a joint venture with Panasonic until early 2020.

Tesla acquired SolarCity for over $2 billion in 2016 and converted it into its solar division; the announcement of the deal resulted in a more than 10% drop in Tesla's stock price. At the time, SolarCity was facing liquidity issues; however, Tesla shareholders were not informed. Consequently, multiple shareholder groups have filed a lawsuit against Musk and Tesla's directors, claiming that the purchase of SolarCity was done solely to benefit Musk and came at the expense of Tesla and its shareholders. During a June 2019 court deposition, Musk acknowledged that the company reallocated every possible employee from the solar division to work on the Model 3, and, according to Musk, «as a result, solar suffered». This had not previously been disclosed to shareholders. Court documents unsealed in 2019 have confirmed that Musk was also aware of the company's liquidity issues. Tesla directors settled the lawsuit in January 2020, leaving Musk the sole remaining defendant.

Hyperloop

On August 12, 2013, Musk unveiled a concept for a high-speed transportation system incorporating reduced-pressure tubes in which

pressurized capsules ride on an air cushion driven by linear induction motors and air compressors. The alpha design for the system was published in a whitepaper posted to the Tesla and SpaceX blogs. The document scoped out the technology and outlined a notional route where such a transport system might be built: between the Greater Los Angeles Area and the San Francisco Bay Area, at an estimated total cost of $6 billion.

Musk's proposal, if technologically feasible at the costs he has cited, would make Hyperloop travel cheaper than any other mode of transport for such long distances.

Musk had envisioned the system in approximately 2011, and assigned a dozen engineers from Tesla and SpaceX who worked part-time for nine months, establishing the conceptual foundations and creating the designs which resulted in the 2013 whitepaper.

In June 2015, Musk announced a design competition for students and others to build Hyperloop pods to operate on a SpaceX-sponsored mile-long track in a 2015–2017 Hyperloop pod competition. The track was used in January 2017, and Musk also started building a tunnel.

In July 2017, Musk claimed that he had received «verbal government approval» to build a hyperloop from New York City to Washington, D.C., stopping in both Philadelphia and Baltimore.

Potential dangers of Artificial intelligence

Musk has frequently spoken about the potential dangers of artificial intelligence, calling it «the most serious threat to the survival of the human race». During a 2014 interview at the MIT AeroAstro Centennial Symposium, Musk described AI as humanity's largest existential threat, further stating, «I'm increasingly inclined to think that there should be some regulatory oversight, maybe at the national and international level, just to make sure that we don't do something very foolish». Musk described the creation of artificial intelligence as «summoning the demon».

Despite this, Musk invested in DeepMind, an AI firm, and Vicarious, a company working to improve machine intelligence. In January 2015, he donated $10 million to the nonprofit Future of Life Institute, an organization focused on challenges posed by advanced technologies. He was previously the co-chairman of OpenAI, a nonprofit artificial intelligence research company.

Musk has said that his investments are «not from the standpoint of actually trying to make any investment return... I like to just keep an eye on what's going on with artificial intelligence. I think there is potentially a dangerous outcome there. There have been movies about this, you know, like *Terminator*. There are some scary outcomes. And we should try to make sure the outcomes are good, not bad».

Musk's opinions about artificial intelligence have brought him some controversy. He and Facebook founder Mark Zuckerberg have clashed, with the latter calling his warnings «pretty irresponsible». Musk responded to Zuckerberg's censure by saying that following a discussion he had about AI with Zuckerberg he was of the opinion that Mark had only a «limited understanding» of the subject. In 2014, Slate's Adam Elkus argued that current AIs were as intelligent as a toddler, and only in certain fields, going on to say that Musk's «summoning the demon» analogy may be harmful because it could result in significant cuts to AI research budgets. In June 2016, when asked whether he thinks humans live in a computer simulation, perhaps controlled by a vast AI, he stated that «the odds that we're in 'base reality' is one in billions». Harvard physicist Lisa Randall disputes this and has argued the probability of us living in a simulation is «effectively zero».

The Information Technology and Innovation Foundation (ITIF), a Washington D.C. think-tank, awarded its Annual Luddite Award to «alarmists touting an artificial intelligence apocalypse»; its president, Robert D. Atkinson, complained that Musk and others say AI is the

largest existential threat to humanity. Atkinson stated «That's not a very winning message if you want to get AI funding out of Congress to the National Science Foundation». *Nature*, referring to the award said that «concerns over AI are not simply fear-mongering» and concluded: «It is crucial that progress in technology is matched by solid, well-funded research to anticipate the scenarios it could bring about ... If that is a Luddite perspective, then so be it». Facebook's AI head, Jerome Persati, said that Musk has «no idea what he is talking about when he talks about AI», with CNBC reporting that Musk is «not always looked upon favorably» by the AI research community.

COVID-19 pandemic

Musk has received criticism over his views on and actions related to the COVID-19 pandemic. He has been accused of spreading misinformation about the virus by Angela Rasmussen, a virologist and associate research scientist at the Center of Infection and Immunity at the Columbia University School of Public Health. In early 2020, Musk likened some aspects of COVID-19 to the common cold and stated that «the corona virus panic is dumb», and «danger of panic still far exceeds danger of corona imo. If we over-allocate medical resources to corona, it will come at expense of treating other illnesses». Musk has additionally been criticized for tweeting contentious claims on the disease, including that «Kids are essentially immune, but elderly with existing conditions are vulnerable», which he accompanied with a graphic showing that no children had died in Italy by March 15 and for saying «Based on current trends, probably close to zero new cases in US too by end of April». In addition, he promoted articles which suggested that healthcare companies were inflating COVID-19 case numbers for financial reasons, promoted a paper on the benefits of chloroquine that was subsequently widely discredited and pulled down by Google, and retweeted a video calling for an immediate end to social distancing measures, adding «[d]ocs make good points».

When the Alameda County Sheriff ordered all non-essential businesses to shut down, Musk and Tesla initially refused to comply, arguing that vehicle manufacturing and energy infrastructure are critical sectors, citing the U.S. Department of Homeland Security. Musk called the lockdown 'fascist' on a Tesla earnings call stating:

So, the extension of the shelter-in-place, and frankly I would call it forcibly imprisoning people in their homes against all their constitutional rights – my opinion – and erasing people's freedoms in ways that are horrible and wrong, and not why people came to America or built this country.

Musk later sent out numerous tweets opposing mandatory lockdowns such as «FREE AMERICA NOW». On May 11, Musk reopened Tesla's Fremont production line in defiance and violation of Alameda County's orders and tweeted that «Tesla is restarting production today against Alameda County rules. I will be on the line with everyone else. If anyone is arrested, I ask that it only be me». Musk also announced that Tesla would be moving headquarters to Texas or Nevada and that Tesla had filed a lawsuit against Alameda County challenging its «shutdown» of the Fremont factory; the suit was subsequently withdrawn. The Alameda County Public Health Department explained it was waiting on a plan that Tesla had promised to provide on May 11 that would walk through how it would protect workers' health during the coronavirus pandemic. An opening date of Monday, May 18 had been penciled in for Tesla pending approval – the same date that Fiat Chrysler, Ford Motor Company, and General Motors were also due to restart production.

In March and April 2020, Musk offered to donate ventilators built by Tesla to third-world countries: «We will give away all our ventilators, whether we buy them or build them». He received widespread requests from dignitaries around the world, including the Ukrainian Health minister, Bolivia's Ambassador for Science and Technology to Silicon Valley, and Nigeria's Ministry of Finance.

When asked about what they received from Musk, California hospital representatives noted that they received CPAP machines made by ResMed instead and not «full ventilators», though they expressed gratitude nonetheless.

On November 16, 2020, the phrase «Space Karen» began to trend on Twitter after a scientist referred to Musk as such over comments he made questioning the effectiveness of COVID-19 testing and suggested he «didn't read up on the test» before complaining. Several days earlier, Musk said he had «most likely» contracted COVID-19. In December 2020, *Politico* named Musk's prediction that there would be «close to zero new cases» of COVID-19 by April one of «the most audacious, confident and spectacularly incorrect prognostications about the year».

Task 2. Organize a round-table discussion:

– Does anybody else in the world share Musk's ideas concerning corona virus?

– What gives him reasons to consider that «the corona virus panic is dumb», and «danger of panic still far exceeds danger of corona itself. If we over-allocate medical resources to corona, it will come at expense of treating other illnesses».

– Does he support the idea of vaccination? Is he ready to be vaccinated?

– Do people have any problems with vaccination in Ukraine?

– Is vaccination really the only way to avoid infection?

– Do we know exactly which of the existing vaccines are the most effective?

– Are all Ukrainians ready to be vaccinated?

My Story about Elon Musk

Elon Musk is a very successful person who surpassed our time. He has the ability to implement his ideas in life. Hardworking,

inspiring, strong leader – it's all about the Mask. Interest, curiosity, and imagination drove him to what SpaceX became. We are very often afraid to make mistakes, to leave the comfort zone, but in vain, which is shown by Elon's success. He believes in what he says, that his words and actions affect our world. Instead of thinking that you don't know anything, each of us can achieve our goals, but for this you need to develop certain personality traits.

What are these qualities that led to success? The answer is: purposefulness, hard work, ability to dream and go towards your dream. Elon Musk lived a difficult childhood, but did not stay at home, went to Canada, founded Zip 2, but did not stop at becoming a millionaire. He continues to invest, open new projects and believe in the importance of these projects. Thanks to him, we have PayPal, Hyperloop, Tesla, and people are already slowly opening their minds to the ideas of colonizing Mars.

Many people do not like changes, but our whole world needs them, and there are always people who drive technological progress. Everyone thinks they are insane until they achieve worldwide recognition. Who can be more inspiring than a person literally shaping our future? Elon Musk makes science fiction a reality. Most people have pretty mundane goals in life. Elon Musk stands out for the fact that he has strategic thinking and is concerned about the future of all mankind. I am very interested in his projects. Hopefully, over time, his plans will be realized.

UNIT 7

Computers:
history and development

The history of computer development is often referred to in reference to the different generations of computing devices. Each of the five generations of computers is characterized by a major technological development that fundamentally changed the way computers operate, resulting in increasingly smaller, cheaper, more powerful and more efficient and reliable computing devices.

In this text you'll learn about each of the five generations of computers and the technology developments that have led to the current devices that we use today. Our journey starts in 1940 with vacuum tube circuitry and goes to the present day – and beyond – with artificial intelligence.

First Generation (1940–1956) Vacuum Tubes. The first computers used vacuum tubes for circuitry and magnetic drums for memory, and were often huge, taking up entire rooms. Hey were very expensive to operate and in addition to using a great deal of electricity, generated a lot of heat, which was often the cause of malfunctions.

First generation computers relied on machine language, the lowest-level programming language understood by computers, to perform operations, and they could only solve one problem at a time. Input was based on punched cards and paper tape, and output was displayed on printouts.

In 1930 the first analog computer was built in America. This device was used in World War II to help aim guns. Many technical developments of electronic digital computers took place in the 1040s and 1950s. The first digital computer was completed in 1944, it could figure out long list of mathematical problems at a very fast rates.

The UNIVAC and ENIAC (the Electronic Numeral Integrator and Calculator) computers are examples of first generation computing devices. The UNIVAC was the first commercial computer delivered to a business client, the US Census Bureau in 1951.

Another important achievement in developing computers came in 1947 when the idea of keeping instructions inside the computer's memory was presented. As contrasted with analytical engine which was designed to store only data, this machine was able to store both data and instructions. The idea if storing data and instructions in a binary code that uses only ones and zeros was realized.

Second Generation (1956–1963) Transistors. Transistors replaced vacuum tubes and ushered in the second generation of computers. The transistor was invented in 1947 but did not see widespread use in computers until late 1950s. The transistor was far superior to the vacuum tube, allowing computers to become smaller, faster, cheaper, more energy-efficient and more reliable than their first generation predecessors. Though the transistor still generated a great deal of heat that subjected the computer to damage, it was a vast improvement over the vacuum tube. Second generation computers still relied on punched cards for input and printouts for output.

Second generation computers moved from cryptic binary machine language to symbolic, or assembly, languages, which allowed programmers to specify instructions in words. High-level programming languages were also being developed at this time, such as early versions of COBOL and FORTRAN. These were also the first computers that stored their instructions in their memory, which moved from a magnetic drum to magnetic core technology.

The first computers of this generation were developed for the atomic energy industry.

Third Generation (1964–1971) Integrated Circuits. The development of the integrated circuit was the hallmark of the third

generation of computers. Transistors were miniaturized and placed on silicon chips, called semiconductors, which drastically increased the speed and efficiency of computers.

Instead of punched cards and printouts, users interacted with third generation computers through keyboards and monitors and interfaced with an operating system, which allowed the device to run many different applications at one time with a central program that monitored the memory. Computers for the first time became accessible to a mass audience because they were smaller and cheaper than their predecessors.

Fourth Generation (1971–Present) Microprocessors. The microprocessor brought the fourth generation of computers, as thousands of integrated circuits were built onto a single silicon chip. What in the first generation filled an entire room could now fit in the palm. The Intel 4004 chip, developed in 1971, located all the components of the computer – from the central processing unit and memory to input/output controls – on a single chip.

In 1981 IBM introduced its first computer for the home user, and in 1984 Apple introduced Macintosh. Microprocessors also moved out of the realm of desktop computers and into many areas of life as more and more everyday products began to use microprocessors.

As these small computers became more powerful, they could be linked together to form networks, which eventually led to the development of GUIs (Graphical User Interface), the mouse and handheld devices.

Fifth Generation (Present and Beyond) Artificial Intelligence. Fifth generation computing devices, based on artificial intelligence, are still in development, though there are some applications, such as voice recognition, that are being used today. The use of parallel processing and superconductors is helping to make artificial intelligence a reality. Quantum computation and molecular and

nanotechnology will radically change the face of computers in years to come. The goal of fifth-generation computing is to develop devices that respond to natural language input and are capable of learning and self-organization.

Task 1. Answer the questions.
– What is the main idea of computer development?
– What was the basis of the first generation computers?
– How were input and output organized in the first generation computers?
– When was the first commercial computer produced?
– What was the main element of the second generation computers?
– What were the advantages of the second generation computers compared to the first ones?
– What were the main characteristics of the third generation computers?
– What was the main element of the fourth generation computers?
– Do you believe in the creation of the sixth, seventh and other generations of computers?
– Will all the next computer generations be connected with the artificial intelligence?

Task 2. Study the Infographic Poster on Computer History: http://www.onlinecomputersciencedegree.com/end-ofcomputers/ and tell your partner about the main milestones in the development of computers.

Task 3. In your group organize visiting Computer History Museum: http://www.computerhistory.org/internet_history/ and create a Timeline «The History of Computers»: http://www.timeline.com/en/.

UNIT 8

My future profession

Professions of the future

– Will all professions that are popular today be demanded in the future?

– What are the reasons for new professions appearing?

– Are all people ready to change their profession?

– Should people be inclined to change their profession several times during their working career?

With the advance of science development and educational technologies, new trends are inevitable to arise while teaching approaches of the past will become obsolete. In the time when the mankind is struggling with the pandemic of corona virus, the new trends of the next decade – the 2030th are discussed in mass media. Futurologists foresee the fast development of the artificial intelligence, biotechnologies, gene therapy and editing of a person's genome.

Appearance of new specialties will require new professions. The necessity of training a new generation of specialists caused by appearing of new professions in the labor market will force universities to open new departments and look for new teachers. Such specialists as a biotechnologist, an engineer of augmented reality, a DNA consultant, a biophysicist, a gene engineer will be approved by the society's demand. These professions combine different branches of science and they will develop within medicine, biology, engineering, computer technology, etc. Professional training of such specialists will require not only high computer literacy rate on the part of university educators but also working out new approaches to training university students, educational technologies and methods of teaching. Online education will soon become a normal thing for many school leavers,

and more and more young people will learn from home. But absence of face to face communication may result in psychological problems: people will become reserved and not friendly, they may lose the ability to sympathize others or to help people who really need a helping hand.

Eco thinking is one more trend of our time. It is regarded as one of the components of the new way of comprehending the environment. Traditionally it was considered as the subject obligatory for learning by students of biological faculties, future ecologists, generally people who were engaged in nature protection movement. Nowadays the humanity has become aware that this issue concerns virtually everyone. More and more people are voluntarily adopting eco thinking as a lifestyle.

Global warming, snowless winter and rainless spring and future problems with possible harvest should make people be thrifty and care about nature. It is difficult to overestimate the role of education in teaching young generation to be attentive to natural processes and think about preserving the environment.

My future profession

Task 1. Read the text and be ready to say whether your reasons for choosing a profession co-inside with the statements below. Give your own reasons for choosing this profession.

Why I decided to become a computer engineer? My answer is «because I enjoy it» and there are a few reasons for that.

First, I enjoy problem solving. Computer engineering involves plenty of problems on different scales. Nowadays computerization encompasses all spheres of our life. But you know there is no 'eternal engine»; existing machines and mechanisms sometimes get out of order and there should be somebody who can repair them. I want to be one of these highly qualified specialists who are able to help people in occurring computer problems.

Second, my dad is an engineer, and he can do a lot of useful things with his own hands. He can mend all sorts of home devices and repair mechanisms in his garage. I want to follow my father's inclination to solving technical problems and learn to use my knowledge and practical skills in everyday life and my professional activity.

The next reason is my special love for creating. Computer engineering is a means that allows me to create something out of nothing: if I can imagine something new, I can create it. Since my childhood when my parents presented me with my first computer (very simple and slow, with limited functions) I have made my mind to devote all free time to obtaining computer knowledge and mastering my skills in computer operating. I have many ideas concerning creating things which are able to save time, to develop person's imagination, to make people be interested in new technologies. I can find and use any necessary information in retrieval systems of different applications. I can fill in any gap in my knowledge with the help of special internet programs.

I also pay much attention to my future career. My profession is in great demand these days, it is quickly developing and I hope will continue to be required in future. It is one of the most well paid modern professions, and I believe it would not be difficult to find an interesting and profitable job.

Task 2. Choose the statements which correspond to your attitude towards your future profession.

1. I don't like problem solving but I enjoy computer games.

2. When at school I didn't like math but now I understand it is impossible to become a skilful engineer without knowledge of math.

3. I adore surfing the internet looking for rumors and gossips about celebrities.

4. I want to develop my imagination because it can help me create something new.

5. I don't think much about my future working place, I just get pleasure with my studying.

6. My parents greatly influenced me in choosing a profession as they both graduated from the shipbuilding institute and now can't find job which corresponds to their specialties.

7. I like computer graphics and want to learn drawing computer generated cartoons.

8. I know some students create their start-ups I'd like to try too.

9. It is better for me to work part time and spend more time with my friends.

10. I'd like to find a well paid job and devote all my efforts to working out something new.

Task 3. Work in pairs. Find sentences which correspond to your understanding of a computer engineer's work responsibilities. Share your opinion with your partner.

– It is necessary to get up early in the morning and run to work.

– I am always in a hurry.

– You should take with you a lot of instruments: software CDs related to the diagnosis of computer problems, testers, cables and connectors, anti-virus programs, thumb drives, LAN wire connectors.

– It is not easy to carry all these instruments all day long.

– You must keep yourself abreast with new technologies.

– It is necessary to have good communication skills and be ready to cooperate with different people.

– You must be able to take quick and right decisions and bear responsibilities for them.

– You can work from home and come in touch with your colleagues via the internet.

– Your working day is not limited: if people have got any computer trouble they can call any time.

– Very often you are to perform the duties of an ordinary technician and it's boring.

Task 4. Discussion. How do you imagine a typical working day of a computer engineer?

In many cases a typical working day of a computer engineer is the same as a working day of the most people who are employed in a computer field: coming to the office they firstly have a cup of coffee and then proceed to their regular duties. They check up e-mails, write answers to some letters, communicate with their boss and colleagues, read and discuss news. Then the most pleasant part of their day comes: they can completely devote themselves to their favorite tasks connected with creation of something new and interesting. They concentrate on their responsibilities and are thinking about the best variants of solving professional tasks.

But a computer engineer starts his day and finishes it with troubleshooting and repairing computers in his office and satisfying customers' calls if necessary. Fortunately there are some days when it is possible to stay the whole day in office and spend the time examining the system block, motherboard or other computer parts. It goes without saying that a computer engineer should read much about new trends in computer science and be ready to share his knowledge with other people. Much time is devoted to communication with engineers from other firms in order to share ideas concerning computer functioning, dismantling and assembling its part, updating existing programs, installing new applications etc. But the trouble is that when you come home after work you continue sit in front of your computer surfing the internet, chatting with friends, watching movies. Sometimes you spend too much time with a computer and lose the sense of reality. It may have negative impact on your health and life style.

Do you know how to force yourself not to devote all time to the computer? Share your ideas with the group mates.

What should a computer engineer know and be able to do? Speak about advantages and disadvantages of your future profession.

Task 5. Read the text and be ready to characterize the main requirements for the qualification of a computer engineer. Choose the most appropriate word from those given in brackets.

One of the most important (*responsibilities, duties*) of a computer engineer is to troubleshoot and rectify the problems that are encountered in the functioning of computers at home or offices. When we face with operational (*difficulties, shortcomings*) in the functioning of computers, we need (*aged, skilled)* technicians to fix our problems. The work of a computer engineer (*incorporates, involves*) planning, designing and implementation of a computer network. Testing, installing and connecting various computers in the networks, troubleshooting and diagnosing hardware (*disorders, problems*), computer repairs and desktops at home and offices are all part of the job. Engineers who work in the research and development departments of some computer industries or in consumer electronic shops diagnose problems, replace parts of personal computers and *(solve, deciding*) hardware problems.

Computer engineer's responsibilities besides troubleshooting and diagnosing hardware problems include:

− testing, designing, maintaining programs to allow computers to function properly;

− updating, repairing and modifying computer programs to make them operate as efficiently as possible;

− converting hardware designs into conventional programming languages such as COBOL, Prolog, Java, C++, ACTOR etc.

− developing skills of installation of new applications and serving them.

Task 6. Compare advantages and disadvantages in your future profession. Are you ready to withstand such challenges?

As any other profession my future preoccupation has a lot of pluses and some minuses. It is a very interesting job for me, and I am ready to spend much time working with my computer. But to work effectively and not to stand on the same place it is necessary to learn hard. I like learning but only when it concerns computer sciences. I do not want to waste time learning the disciplines I have already learnt at school: Ukrainian history, native language, mathematics etc. I like learning English because it helps me in mastering computer sciences and surfing the internet when I am looking for necessary information. Flexible schedules can be considered as one of the important advantages especially for women with children.

My future profession has some minuses. First, spending too much time in front of the computer brings harm to your health. You may have problems with your eyesight, your figure changes not for the better, too much sitting and no physical activity may cause getting spare weight. You may lose your real friends if you communicate only in social networks.

Task 7. Read this example of how a university graduate is trying to get a well paid job in a famous firm and writes an application letter.

I believe I would be the ideal candidate bases on the skills that I have on my profile. And I want you to know some important things about me.

One of my favorite slogans is «Do great or don't do it at all». I always prefer to be the best in everything I do. I`m not afraid of any work and I`ll willingly do everything possible for the benefit of your firm. I am a great team player. My experience in playing volleyball and participating in various tournaments may testify this.

I am a person with a very persistent character and an infinitely sincere and kind heart. I possess the qualities that you are looking for in your future employees – responsibility, practicality, initiative, and conflict-free.

Therefore, I am absolutely sure that I deserve to be chosen for this post.

I hope that my experience, knowledge, skills and my great desire to be useful make me convenient for any valuable position in your firm.

Task 8. Translate one of the paragraphs of the text in writing.

Motherboard and System Devices. The motherboard is the base of the modern computer system. If the processor is the 'brain' of the computer, then the motherboard is the central nervous system and circulatory system, plus much more, all rolled into one. The motherboard is the main circuit board in the computer where everything comes together. This is where you plug in your processor, memory, cache, video card and other cards. It is also where you connect your peripherals.

System Chipset and Controllers. The chipset and other motherboard circuitry are the 'smarts' of the motherboard. Their job is to direct traffic and control the flow of information inside the computer. These circuits control the processor's access to memory, the flow of data to and from peripheral devices and communication lines. The chipset is a critical part of any computer because it plays a big role in determining what sort of features the computer can support.

System buses. The system buses are the electrical channels through which various parts of the computer communicate. The physical part of these buses, the part you can see, is the set of slots in the back of the machine into which you put your video card, sound and other cards. It is over the system buses that your video card gets information from the processor, the processor saves data to your hard disk, etc. The architecture chosen for each of the system buses has a

great impact on the performance of your PC, as well as dictating your choices for video cards and other devices.

Answer the questions:

– What personal and professional qualities should a computer engineer possess?

– Is knowledge of professional English necessary for a computer engineer?

– Are good communication skills necessary for your future professional development?

Task 9. Range these personal characteristics from the most important for a computer engineer to the less important (in writing). Give the reasons for your choice.

Adequate self assessment, positive thinking, ability to work in a team, creativity, responsibility, persistency, success orientation, readiness for constant learning, resistance to difficulties, hardworking, purposefulness, ability to research activity, leadership qualities, reliability, seriousness, excellent communicative skills, tolerance, trustfulness, attentiveness, readiness for sharing, self expression, motivation, curiosity, inquisitiveness, desire to learn new, readiness for risk, initiative, confidence in the abilities, successfulness, emotional activity, problem seeking, ability to analyze, integrate and synthesize information, developed imagination, quick thinking, good memory.

Task 10. Describe a portrait of an ideal computer engineer or programmer. Discuss in groups of 3-4 students.

– Do you know any student who may serve as an example for you?

– Which of the above mentioned qualities are you lack of?

– Is it possible to bring up necessary personal characteristics if they were not inborn?

– What should be done to bring up desirable qualities?

– How are your personal traits connected with your professional qualities?

– What is more important for a good professional career – to be kind and warmhearted or to be strict and demanding?

– Can education help acquiring necessary personal traits?

– What does learning of foreign languages help you to train?

Task 11. How does knowledge of professional English help you in your studying? Comment on the sentences in italics.

I know that English is an international language, and no matter where you are you can always find a person who speaks English. The total number of languages in the world is large: between 4,000 and 4,500. There are only five languages that can claim a very large number of speakers, namely, Chinese, English, Spanish, Hindi-Urdu and Russian (in that order). *Of these languages, only English can claim to be a more or less universal language.* More than 600 million people speak it as their first or second language and can therefore be «reached» through English.

What is more important this number includes most of the world leaders. *English is by far the most useful language from the standpoint of business, politics and science.* In every field of knowledge more is written in English than in any other language. More television programs use it. There are English-language newspapers in many important non-English-speaking cities. If we are going to have a world language it will almost certainly be English.

There are some people who say that we don't need international language at all. Machine translation has made a lot of progress in the last few years. Perhaps the day when computers will take over the whole business of translation isn't too far away. But from my point of view *computers will be able to help us in reading or writing, but as speaking and communication in English are concerned, computers will never be as intelligent and interesting speakers as people usually are.*

Answer the questions:

− Do you believe machine translation can replace a person with excellent command in English?

− Can computers take over the whole business of translation in the nearest future?

− Will computers ever be as intelligent and interesting speakers as people usually are? Give your reasons.

− Tell the group if English helps you to master computer sciences.

− Are you satisfied with your level of English?

− Are you planning to improve your English communication skills? How? Do you need any help?

− Do you often use English vocabulary in your smart phone?

− Is English really necessary for your career growth?

− What are career perspectives for a computer engineer or a programmer?

Task 12. In each sentence there is a mistake in one of the underlined words. Find mistakes in the text and correct them.

The job of a computer engineer <u>offers</u> plenty of career <u>opportunity</u> to students and builds a strong platform for their future <u>growth</u> in the IT field. The young people who like <u>analyzing</u> and solving computer problems <u>has</u> great prospects in this field. Training and education are very <u>importent</u> but an inner urge and interest to understand and solve computer problems are the <u>fundamental</u> prerequisites to become a really <u>skilfull</u> computer engineer.

I plan to find an interesting and well paid job in a big computer <u>companies</u>. I know there are some in our city and they <u>fire</u> computer engineers who <u>possess</u> excellent working skills, are very <u>good at</u> English and can work in a team. They <u>willingly</u> employ our university graduates because everybody <u>know</u> that at Mohylianka students are practically trained to be <u>skilful</u> working with modern hardware and using different applications. Unlike other Mykolaiv

universities at our «alma mater» we <u>taught</u> professional English on a high <u>level</u> and that is why we can find job in <u>joint</u> companies. Besides I have <u>a good</u> communication skills and I am ready to cooperate with people of different <u>background</u>. I am rather <u>tolerantly</u> to other person's shortcomings and can <u>forgive</u> any negative things is they do not <u>cause</u> serious troubles.

Task 13. Round-table discussion. The group is divided into two parts: those who believe in professional growth after graduation from the university and pessimists, who are not sure in brilliant perspectives for the future. Try to persuade your group mates in the advantages of computer engineers on the labor market.

Give your own reasons to support your position. In your reasoning you may use the following information no matter whether it is true or false:

– There are too many engineers in our city.
– The competitiveness is very strong.
– Almost all universities in our city train computer specialists.
– There are not enough working places in computer firms to give job for every university graduate.
– Not all jobs are well paid.
– Serious computer companies hire only people with very good command in English and excellent communicative skills.
– To prove your efficiency you must try.
– Don't be afraid to praise yourself and speak about your advantages over other candidates.
– Learn to write a perfect resume and send it to many companies.
– Get ready for an interview.
– Mind your appearance and manners.

Summary. Tell the group about your career perspectives and explain how you are preparing for them.

Task 14. Look through the text and write out professional terms and abbreviations. Explain their meanings in English.

The system BIOS (which stands for Basic Input/Output System) is a computer program that is built into PC's hardware. It is the lowest-level program that runs on your computer. Its job is to acts an intermediary between your system hardware (the chipset, motherboard, processor and peripherals) and your system software (the operating system). By doing this, the operating system does not have to be made different for every machine, which is why DOS will load on any PC. The BIOS is what runs when you turn on your computer and what loads your operating system. The BIOS also allows you to set or change many different parameters that control how your computer will function. For example, you tell the BIOS what sort of hard drives you have, so it knows how to access them.

UNIT 9

Virtual and augmented reality

Task 1. Answer the questions.

1. What do you think of when you hear the words *virtual reality* (VR)?
2. Do you imagine someone wearing a clunky helmet attached to a computer with a thick cable?
3. Do visions of crudely rendered pterodactyls haunt you?
4. Do you think of Neo and Morpheus adoring the Matrix?
5. Or do you wince at the term, wishing it would just go away?

If the last applies to you, you'd likely a computer scientist or engineer, many of whom now avoid the words *virtual reality* even while they work on technologies most of us associate with VR. Today, you're more likely to hear someone use the words virtual environment (VE) to refer to what the public knows as *virtual reality*. The terms can be used interchangeably.

The concept is – using computer technology to create a simulated, three-dimensional world that a user can manipulate and explore while feeling as if he were in that world. Scientists, theorists and engineers have designed dozens of devices and applications to achieve this goal. Opinions differ on what exactly constitutes a true VR experience, but in general it should include:

– three-dimensional images that appear to be life-sized from the perspective of the user;

– the ability to track a user's motions, particularly his head and eye movements and correspondingly adjust the images on the user's display to reflect the change in perspective.

In a virtual reality environment, a user experiences immersion, or feeling of being inside and a part of that world. He is also able to interact with his environment in a meaningful way. The combination

of a sense of immersion and interactivity is called telepresence. Computer scientist Jonathan Steuer defined it as «the extent to which one feels present in the mediated environment, rather than in the immediate physical environment». In other words, the effective VR experience causes you to become unaware of your real surroundings and focus on your existence inside the virtual environment.

Jonathan Steuer proposed two main components of immersion: depth of information and breadth of information. Depth of information refers to the amount and quality of data in the signals a user receives when interacting in a virtual environment. For the user, this could refer to a display's resolution, the complexity of the environment's graphics, the sophistication of the system's audio output, ect. J. Steuer defines breadth of information as the «number of sensory dimensions simultaneously presented». A virtual environment experience has a wide breadth of information if it stimulates all your senses. Most virtual environment experiences prioritize visual and audio components over other sensory-stimulating factors, but a growing number of scientists and engineers are looking into ways to incorporate a user's sense of touch. Systems that give a user force feedback and touch interaction are called haptic systems.

Immersion within a virtual environment is one thing, but for a user to feel truly involved there must also be an element of interaction. Interactivity depends on many factors: speed, range and mapping. Speed is the rate that a user's actions are incorporated into the computer model and reflected in a way the user can perceive. Rang refers to how many possible outcomes could result from any particular user action. Mapping is the system's ability to produce natural results in response to a user's actions.

What does the term «virtual reality» mean?

Virtual reality means creating immersive, computer-generated environments that are so convincing users will react the same way they

would in real life. The idea is to block out the sensory input from the outside and use the visual and auditory cues to make the virtual world seem more real. While the concept is simple, actually building virtual reality systems has proven difficult to do, until recently.

«The big difference here is the sensory deprivation», says game developer Eric «Giz» Gewirts, chief creative officer at Seismic Games in Los Angeles». You're more susceptible to real life-like experience – on a very primitive level you're tuning everything out.

The term «virtual reality» dates back as far as the 1930s, though in that case it was referring to theatre. In the 1960s, Morton Hellig, a cinematographer, invented a machine called the «Sensorama». The machine used wraparound screens viewed with a binocular-like device to get a 3-D effect, a seat that moved and vents to blow air at the viewer, and the then-new stereo sounds to simulate activities like riding a motorcycle. The Sensorama remained a novelty, though.

Once modern computers appeared, along with television and early 3-D movies, science fiction writers picked up on the possibilities for creating environments that would look and feel real; Ray Bradbury's short story «The Veldt» («Степ») from 1950 describes a nursery run by an artificial intelligence run amok. That concept of virtual reality – a computer-generated world that mimics reality – is one of the earliest instances of the concept we'd recognize today. Yet that meaning of virtual reality did not enter the popular lexicon until the 1970s and 1980s. Science fiction author William Gibson was one of the early popularisers of the term, famously in the novel «Neuromancer». Even so, there's a clear through-line of the concept of simulating a world, from Bradbury to Gibson through to Star Trek's holodecks.

Better computers and sophisticated graphics processors got video game designers interested in making their games more «real». A famous example is Atari's Battlezone, some versions of which involved looking through a periscope-like viewer.

Virtual reality headsets would have to wait until the 1990s. Sega tried introducing one and managed to get it into arcades. The headset could track the user's motion to keep the field of view aligned with where the head would be in the virtual landscape. The headset called Sega VR failed to break into the home market, however.

Even the US military got into the act, as the Department of Defense attempted to use virtual reality simulations for pilot training. It turned out the traditional flight simulators were superior, because the people using the VR headsets would get nauseous.

Virtual reality headsets seemed to go the way of earlier gimmicks like Smell-O-Vision, until the Oculus VR built the Oculus Rift and HTC created the Vive.

Both of new headsets are considerable advances over earlier efforts. The visuals are more realistic, and the design of the headsets is better at blocking out outside stimuli. Gewirts adds that dealing with the nausea (тошнота, нудота) goes a long way as well. Changing the frame rate of the animation helped, as well as designing the in-game movement so that it is more gradual. «It's the lateral movement», he says. Your eyes are telling you one thing and your brain (via your balance sensors in the inner ear) is telling you something else.

Virtual reality is the thing that …

a) will change our life forever;

b) will help us better adjust to constantly changing reality;

c) enables people to travel in time and space;

d) diverts young people from the everyday life problems;

e) attracts attention because of the perspectives of its future development.

Virtual reality is the thing that becomes popular every day and there is a chance that soon any of us will use it for our demands. It is really awesome that you can dive into a virtual world and do things that you can't do in a real one, but nowadays it costs a lot, and it's not about price only.

That said, the new headsets got better in part because they focused on hearing and sight, the two senses people are most engaged with. Early ideas about virtual reality included full-body suits, and there are still some people working on adding more tactile sensations. In general though, technology has gotten smaller and more portable. «We've really gone in the opposite direction (from full suits)», Gewirts says, though it's possible that could change in the future. This makes current VR different from even the earlier video games that allowed you to sit in a pilot seat, since there's no «distraction» from the outside world. «Those games you were always quietly aware you were in a booth», Gewirts says.

Virtual reality offers options to game developers that even the best ordinary console games do not. Since the VR headset can track where one's eyes are focused, it allows in-game characters to make eye contact. That provokes a more visceral response from players. Non-player characters can also feel closer. «They can do an invasion of personal space», Gewirts says. «That makes people uncomfortable».

Another thing virtual reality can do is simulate being somewhere else, also known as telepresence. One could imagine making an environment that simulates being on a mountaintop, for example – offering a kind of vicarious travel to the peak of Everest or the Grand Canyon.

Already Oculus VR is showcasing the Oculus Rift in conjunction with HBO, with the «Ascend the Wall» traveling exhibit, which uses the Rift's simulation capabilities to give fans the experience of riding up an elevator to the top of a 700 foot wall of-ice.

The possibilities are endless, Gewirts says. «There's no real language for making interactive content in VR. No one knows how it's like traditional cinema or games».

Task 2. Answer the questions:
− What is used to make the virtual world seem more real?
− Who is Eric «Giz» Gewirts and what are his ideas concerning virtual reality?
− Why did the term «virtual reality» firstly refer to theatre?
− Why did science fiction writers pick up the possibilities for creating environments that would look and feel real?
− What is one of the earliest instances of the concept we'd recognize today?
− What got video game designers interested in making their games more «real»?
− When did the first virtual reality headsets appear?
− How was American Department of Defense interested in virtual reality headsets?
− Why did not early ideas about virtual reality including full-body suits come true?
− What options does virtual reality offer to game developers that even the best ordinary console games do not?
− What is telepresence?
− Do you believe in the future development of virtual reality?

AUGMENTED REALITY:
the PRESENT or FUTURE that has come

Modern technologies make us free. Everything that was not available to previous generation is now lying at our feet. Humans never stop moving ahead since the moment they took in their hands digging stick, and maybe even earlier. Since the moment they made their first step as human beings.

What is interesting to mention is that now we are able not only to push the boundaries of our own consciousness but to expand the boundaries of the reality surrounding us by modern information technologies.

What is augmented reality?

So what is this augmented reality? And how can we use it with benefits? Augmented reality is the synthesis of technologies and the world around us, the interpenetration of real and virtual worlds. Maybe first «augmentation» started at the moment when a primitive man made his first rock painting. And now we have what we have.

For example, there are technologies «GoodleGlass» or «Microsoft Hololens» with the help of which we can experiment with our present. In such a way, GoodleGlass can record our walk in the way we see it. Or with Microsoft Hololens we can work with hologram in a different way. Augmented reality is born with imposing digital image, audio or other digital data on the environment. Well, without paying much attention normal people went beyond their physical boundaries.

Augmented reality gives us undeniable advantages. The most obvious are:

– Instant access to information. If only we wish, we can switch on the application with one flick of a finger or even maybe with one nod. As soon as we did it we are able to get extensive information. For example, how many places left in the café in front of us (all of this is possible because of application «Nokia City Lens»).

– The visibility. Now it is possible to improve your regular jogging in the early frosty morning or in the warm and sunny one with the help of digital technologies. For example, you will be able to see in front of your eyes a full picture of your specified route. Or one more example. During your museum visit it will be possible to see the image of lost artifact recreated with the help of augmented reality. For example, you travel to ancient Egypt and see how the pyramids are being built.

But we should remember that the coin has always two sides. We are the people of the twenty-first century. We like science and technologies. We are happy that there is no necessity to hack our

way through the thickets of the forest sitting on a horseback. Our reality now has absolutely been changed. And no matter what, we are not ready to live without modern technologies because they are making our life easier.

But we have to think about minuses as well:

– The dependence. The easier we live with a new gadget in our hands the less we want to live without it. Let's imagine apocalypse… We don't know how to handle with blackout and what to do if during this period the battery of our phone is dead.

– Digital surveillance. The more we use modern technologies the more we are in the limelight. Numerous applications are constantly asking our permission to get access to information.

Of course we should keep in mind minuses but let's concentrate on the positive point. Erasing the borders between the real and the virtual world gives us absolutely new experience. Technology is changing the world around, expands the scope of our usual perception of the things. It gives us the opportunity to paint the world in bright colors. Our dialogue with ordinary things becomes deeper because of the new way to learn information.

Appearance of augmented reality shows us that nowadays there is no place for fear that virtual world will absorb the real one. There is parity now between virtual and real space. Future that has come is the «agreement» in-between new technology and reality. These two worlds complement each other and invite humans to make an amazing journey through augmented reality.

Good to believe that this technology of augmented reality will be evolving. And that soon new astonishing projects will be created. For example, it could be amazing if during the visit of an antique place visitors were able to turn up inside an antique city recreated with the help of technology. And to walk among fountains, arches markets, baths and squares.

We augment space but with space people become augmented as well. The new vision of the world gives rise to new ideas. And new ideas again generate a new vision of the world. What an interesting spiral of development!

Task 3. Give definitions to:

Augmented reality, virtual reality, modern information technologies, commercial robot, domestic robot, people's physical boundaries, the visibility, spiral of development, parity between virtual and real space.

Task 4. Answer the questions.

– What are the advantages and disadvantages of augmented reality?

– How is augmented reality connected with our future?

– How can parity between virtual and real space be achieved?

– Are people's physical boundaries completely researched?

– How can you explain the words «people become augmented»?

Task 5. Define whether the following statements are true or false:

– We are able not only to push the boundaries of our own consciousness but to expand the boundaries of the reality surrounding us without modern information technologies.

– With paying little attention normal people went beyond their physical boundaries.

– Numerous applications are constantly asking our permission to get access to information.

– There is parity now between virtual and real space.

– In the course of time it will be difficult to differentiate a man from a robot.

– Robots will perform most of a man's functions in a decade.

– We augment space but with space people become augmented as well.

UNIT 10

Artificial Intelligence

What is Artificial Intelligence?

Artificial Intelligence is the modeling of human intelligence processes by machines, especially computer systems. These processes include training (obtaining information and rules for using information), reasoning (using rules to reach rough or definite conclusions), and self-correction. Today, artificial intelligence is rightly called a narrow AI (or weak AI), because it is designed to perform a narrow task, for example, only face recognition or only searching the Internet or only driving a car.

Artificial Intelligence allows machines to learn from experience, adapt to new data and perform tasks similar to human ones. Most of the examples of artificial intelligence that you have heard about today – from chess computers to cars with automatic control – largely depend on deep learning and processing of natural language. Using these technologies, computers can be trained to perform specific tasks by processing large amounts of data and recognizing patterns in the data.

The term Artificial Intelligence was firstly mentioned in 1956, but AI has become more popular now due to increased data volumes, improvements in computing power and advanced algorithms. Early AI research in the 1950s addressed topics such as problem solving and symbolic methods. While science fiction novels and Hollywood films represent AI as human-like robots who take control of the world the actual evolution of AI technologies is not that scary or quite that brainy. On the contrary, AI has evolved to provide many specific benefits in every industry.

Of course, as just everything in the world AI has its advantages and disadvantages. Benefits are more or less clear but lets talk about disadvantages. Artificial Intelligence can be programmed to do something destructive, for example, autonomous weapons are artificial

intelligence systems that are programmed to kill. In the hands of the wrong person these weapons could easily cause mass casualties.

In conclusion, it can only be said about the importance of artificial intelligence. AI automates repetitive learning and discovery through data, adds intelligence to existing products, analyzes more and deeper data using neural networks that have many hidden layers, adapts through progressive learning algorithms to let the data do the programming, achieves incredible accuracy through deep neural networks – which was previously impossible. AI has huge perspectives for its further development in the near future and it will be used in more and more areas besides health care, banking, manufacturing and retail.

Task 1. Answer the questions:

– What spheres of life, science and industry besides health care, banking, manufacturing and retail can artificial intelligence be used?

– How do you understand the phrase «AI adds intelligence to existing products?»

– Are people ready to use all advantages of AI?

– Can the progress in the research of AI be stopped taking into consideration its disadvantages?

– Will AI be able to make people's life easier?

Task 2. Find the information in the Internet and be ready to make a presentation about using of artificial intelligence in various spheres of our life.

Artificial Intelligence

Artificial Intelligence (AI) is invading the world. In the 90s and early 21st century AI achieved its greatest success. There are more and more jobs humans leave to robots such as exploring another planet, defusing bombs, exploring inside a volcano or just doing boring household chores like cleaning. Computers can perform a lot of functions: they can control cars and planes, give us the news, play

chess or football or compose music. Many factory jobs are performed by industrial robots nowadays. It has led to cheaper production of various goods, including automobiles and electronics. Industrial robots have little resemblance to a human being.

Artificial Intelligence has successfully been used in a wide range of fields including medical diagnosis, stock trading, robot control, law, scientific discovery and toys. Industrial robots are also used for packaging of manufactured goods, transporting goods around warehouses or hospitals or removing tiny electronic components with great accuracy, speed and reliability. Robots can move around, sense and manipulate their environment, predict the actions of others and exhibit intelligent behavior. Scientists are interested in designing robots that resemble a human.

Are robots our best friends or are they dangerous? It is still very difficult to answer this question. Some futurists believe that artificial intelligence will fundamentally transform society. Ray Kurzweil has calculated that desktop computers will have had the same processing power as human brains by the year 2029, and that by 2045 artificial intelligence will have reached a point where it is able to improve itself. Other futurists and science fiction writers have predicted that human beings and machines will merge into powerful cyborgs – humans with significant mechanical enhancement. Many people fear that highly intelligent robots may take over and destroy the human race. There are a lot of books and films about people losing control over clever machines which begin to kill their creators. But maybe it is early to worry as robots are still clumsy and not very intelligent.

But of course there are some reasons to worry about robots. The use of robots in industry leads to unemployment as many jobs are performed by machines. Besides industrial robots can be dangerous and cause harm to human workers. So much attention must be paid to security.

There are a number of competitions and prizes to promote research in artificial intelligence. Many large companies have created robots which can perform specific functions in the manner of man. Here are some of them:

Hitachi created its second humanoid robot EMIEW2 in 2008. It weighs 13 kg and can move on wheels as well as two legs. The robot is 80 cm tall, a height for looking over desk tops. It has 14 microphones which enable it to recognize human voices and sounds. It can distinguish voices even when three people are speaking at the same time and it can recognize voices spoken as far as 2m away.

Find in the Internet the information about Hitachi third humanoid robot EMIEW3. Compare its functions with their second humanoid robot EMIEW2 created in 2008.

ASIMO (Advanced Step in Innovative Mobility) is a humanoid robot created by Honda Motor Company. The robot is 130 cm tall and weighs 54 kilograms. It can walk or run on two feet at speeds up to 6 km/h. It can perform various functions. ASIMO can follow the movements of people with its camera, follow a person, or greet a person when he or she approaches. ASIMO can also recognize when a person offers him a handshake and other people's movements. The robot can sense the environment and avoids hitting people and other objects. It can respond to its name, face people when being spoken to, and recognize sudden, unusual sounds. ASIMO is also able to respond to questions, either by a brief nod, a shake of the head or a verbal answer. The robot has the ability to recognize 10 different faces. By accessing information via the Internet, ASIMO can provide news and useful information.

WAKAMARU is a Japanese domestic robot made by Mitsubishi Heavy Industries. The robot has been created to provide companionship to elderly and disabled people and to make their life easier. The robot is yellow 1m tall, and weighs 30 kilograms. Wakamaru can connect to the Internet, and has limited speech and

speech recognition abilities. It can say «Welcome back!», «Let me search the Internet» and other simple phrases. The functions it can perform include reminding the user to take medicine on time, and calling for help if it suspects something is wrong. When its batteries run out, Wakamaru recharges itself.

Electronic and Telecommunications Research Institute of Korea has developed a robot with four human senses such as seeing, hearing, touching, and smelling. **POMI** (Penguin rObot for Multimodal Interaction) can move the eyebrow, eyelid. eye ball and lips. It also uses various colors to show face expressions. POMI has two kinds of built-in scent sprays to express happiness, sadness, and joy. It also has a heartbeat device which makes people feel like the robot's heart really beats up when they put the hands on the left chest of the robot. It also can talk to people through a built-in speaker.

Task 1. Answer the questions:
− Should all robots look like human beings?
− What is the difference between industrial and domestic robots?
− Do you know any other kinds of robots besides industrial and domestic ones?
− Where can modern robots be used?
− Should artificial intellect be embodied in the form of a robot?
− How is conquering of space connected with the development of artificial intellect?
− Should people be afraid of robots?
− Can artificial intellect replace people in all spheres of life?
− Are there any robots in Ukraine? Where were they created? Where are they used?
− Are robots created only in technically highly developed countries (the USA, Japan, Korea, Germany etc.)? Is it necessary for each country to invent their own robots?

UNIT 11

Cyber crime

Answer the questions:
1. What is more dangerous – cyber crime or real crime?
2. Can cyber crime cause damage of health or death?
3. How can people protect themselves against cyber crimes?

Cybercrime, or **computer-oriented crime,** is a crime that involves a computer and a network. The computer may have been used in the commission of a crime, or it may be the target. Cybercrime may threaten a person, company or a nation's security and financial health. There are many privacy concerns surrounding cybercrime when confidential information is intercepted or disclosed, lawfully or otherwise. Internationally, both governmental and non-state actors engaged in cybercrimes, including espionage, financial theft, and other cross-border crimes. Cybercrimes crossing international borders and involving the actions of at least one nation-state is sometimes referred to as cyber warfare.

A report, published in 2014, estimated that annual damage to the global economy was $445 billion. In 2018 a study by Center for Strategic and International Studies concludes that close to $600 billion, nearly one percent of global GDP is lost to cybercrime each year.

Financial fraud crimes

Computer fraud is any dishonest misrepresentation of fact intended to let another to do or refrain from doing something which causes loss. In this context, the fraud will result in obtaining a benefit by:

– Altering in an unauthorized way. This requires little technical expertise and is a common form of theft by employees altering the data before entry or entering false data, or by entering unauthorized instructions or using unauthorized processes.

– Altering, destroying, suppressing, or stealing output, usually to conceal unauthorized transactions. This is difficult to detect.

– Altering or deleting stored data.

Other forms of fraud may be facilitated using computer systems, including bank fraud, carding, identity theft, extortion, and theft of classified information. These types of crime often result in the loss of private information or monetary information.

Cyber terrorism

Government officials and information technology security specialists have documented a significant increase in Internet problems and server scans since early 2001. There is a growing concern among government agencies such as the Federal Bureau of Investigations (FBI) and the Central Intelligence Agency (CIA) that such intrusions are part of an organized effort by cyber terrorist foreign intelligence services, or other groups to map potential security holes in critical systems. A cyber terrorist is someone who intimidates or coerces a government or an organization to advance his or her political or social objectives by launching a computer-based attack against computers, networks, or the information stored on them.

Cyber terrorism, in general, can be defined as an act of terrorism committed through the use of cyberspace or computer resources. As such, a simple propaganda piece on the Internet that there will be bomb attacks during the holidays can be considered cyber terrorism. There are also hacking activities directed towards individuals, families, organized by groups within networks, tending to cause fear among people, demonstrate power, collecting information relevant for ruining peoples' lives, robberies, blackmailing, etc.

Cyber extortion

Cyber extortion occurs when a website, e-mail server, or computer system is subjected to or threatened with repeated denial of service or other attacks by malicious hackers. These hackers demand money

in return for promising to stop the attacks and to offer «protection». According to the Federal Bureau of Investigation, cybercrime extortionists are increasingly attacking corporate websites and networks, crippling their ability to operate and demanding payments to restore their service. More than 20 cases are reported each month to the FBI and many go unreported in order to keep the victim's name out of the public domain. Perpetrators typically use a distributed denial-of-service attack.

Cyber warfare

The U.S. Department of Defense notes that the cyberspace has emerged as a national-level concern through several recent events of geostrategic significance. Among those are included, the attack on Estonia's infrastructure in 2007, allegedly by Russian hackers. In August 2008, Russia again allegedly conducted cyber attacks, this time in a coordinated and synchronized kinetic and non-kinetic campaign against the country of Georgia. The December 2015 Ukraine power grid cyber attack has also been attributed to Russia and is considered the first successful cyber attack on a power grid. Such attacks may become the norm in future warfare among nation-states, the concept of cyber space operations impacts and will be adapted by war fighting military commanders in the future.

Computer as a target

These crimes are committed by a selected group of criminals. Unlike crimes using the computer as a tool, these crimes require the technical knowledge of the perpetrators. As such, as technology evolves, so too does the nature of the crime. These crimes are relatively new, having been in existence for only as long as computers have-which explains how unprepared society and the world, in general, is towards combating these crimes. There are numerous crimes of this nature committed daily on the internet. It is

seldom committed by loners instead it involves large syndicate groups. Crimes that primarily target computer networks include:

– Computer viruses
– Denial-of-service attacks
– Malware (malicious code)

Computer as a tool

When the individual is the main target of cybercrime, the computer can be considered as the tool rather than the target. These crimes generally involve less technical expertise. Human weaknesses are generally exploited. The damage dealt is largely psychological and intangible, making legal action against the variants more difficult. These are the crimes which have existed for centuries in the offline world. Scams, theft, and the likes have existed even before the development in high-tech equipment. The same criminal has simply been given a tool which increases their potential pool of victims and makes them all the harder to trace and apprehend.

Crimes that use computer networks or devices to advance other ends include:

– Fraud and identity theft (although this increasingly uses malware, hacking or phishing, making it an example of both «computer as target» and «computer as tool» crime)
– Information warfare
– Phishing scams
– Spam
– Propagation of illegal obscene or offensive content, including harassment and threats

The unsolicited sending of bulk email for commercial purposes (spam) is unlawful in some jurisdictions. Phishing is mostly propagated via email. Phishing emails may contain links to other websites that are affected by malware. Or, they may contain links to fake online banking or other websites used to steal private account information.

Online harassment

Whereas content may be offensive in a non-specific way, harassment directs obscenities and derogatory comments at specific individuals focusing for example on gender, race, religion, nationality, sexual orientation.

There are instances where committing a crime using a computer can lead to an enhanced sentence. For example, in the case of *United States v. Neil Scott Kramer*, the defendant was given an enhanced sentence according to the U.S. Sentencing Guidelines Manual §2G1.3(b)(3) for his use of a cell phone to «persuade, induce, entice, coerce, or facilitate the travel of, the minor to engage in prohibited sexual conduct». Kramer appealed the sentence on the grounds that there was insufficient evidence to convict him under this statute because his charge included persuading through a computer device and his cellular phone technically is not a computer. Although Kramer tried to argue this point, the U.S. Sentencing Guidelines Manual states that the term 'computer' «means an electronic, magnetic, optical, electro chemical, or other high-speed data processing device performing logical, arithmetic, or storage functions, and includes any data storage facility or communications facility directly related to or operating in conjunction with such device».

In the United States alone, Missouri and over 40 other states have passed laws and regulations that regard extreme online harassment as a criminal act. These acts can be punished on a federal scale, such as US Code 18 Section 2261A, which states that using computers to threaten or harass can lead to a sentence of up to 20 years, depending on the action taken.

Several countries outside of the United States have also created laws to combat online harassment. In China, a country that supports over 20 percent of the world's internet users, the Legislative Affairs Office of the State Council passed a strict law against the bullying of

young people through a bill in response to the Human Flesh Search Engine. The United Kingdom passed the Malicious Communications Act, among other acts from 1997 to 2013, which stated that sending messages or letters electronically that the government deemed «indecent or grossly offensive» and/or language intended to cause «distress and anxiety» can lead to a prison sentence of six months and a potentially large fine. Australia, while not directly addressing the issue of harassment, has grouped the majority of online harassment under the Criminal Code Act of 1995. Using telecommunication to send threats or harass and cause offense was a direct violation of this act.

Although freedom of speech is protected by law in most democratic societies (in the US this is done by the First Amendment), it does not include all types of speech. In fact, spoken or written «true threat» speech/text is criminalized because of «intent to harm or intimidate». That also applies for online or any type of network-related threats in written text or speech.

Drug trafficking

Darknet markets are used to buy and sell recreational drugs online. Some drug traffickers use encrypted messaging tools to communicate with drug mules. The dark web site Silk Road was a major online marketplace for drugs before it was shut down by law enforcement (then reopened under new management, and then shut down by law enforcement again). After Silk Road 2.0 went down, Silk Road 3 Reloaded emerged. However, it was just an older marketplace named Diabolus Market that used the name for more exposure from the brand's previous success. Darknet markets have had an up-rise in traffic in recent years for many reasons, one of the biggest contributors being the anonymity and safety that goes along when using the markets.

There are numerous ways you can lose all your money invested and be caught when using darknet markets. Vendors and customers alike go to great lengths to keep their identities a secret while online. Commonly used tools are virtual private networks, Tails, and Tor to help hide their trail left behind for investigators. Darknet markets make the user feel safe as they can get what they want from the comfort of their home. People can easily gain access to a Tor browser with DuckDuckGo browser that allows a user to explore much deeper than other browsers such as Google Chrome. However actually gaining access to an illicit market isn't as simple as typing it in on the search engine like you would with google. Darknet markets have special links that are changing everyday ending in .onion opposed to the typical .com, .net. and .org domain extensions. To add to privacy the biggest currency on these markets is Bitcoin. Bitcoin allows transactions to be committed between people by exchanging wallet addresses and never having to know anything about the person you're sending money to.

One of the biggest issues the users face who use marketplaces are the vendors or market itself exit scamming. This is when usually a vendor with a high rating will act as if they're still selling on the market and have users send them money. The vendor will then close off his account after receiving money from multiple buyers and never send what they purchased. The vendors all being involved in illegal activities have a low chance at not exit scamming when they no longer want to be a vendor. In 2019, an entire market called Wall Street Market had allegedly exit scammed, stealing 30 million dollars from the vendors and buyers wallets in bitcoin.

Federal agents have had a huge crackdown on these markets. In July 2017, federal agents seized one of the biggest markets commonly called Alphabay. Commonly investigators will pose as a buyer and order packages from darknet vendors in the hopes they left a trail they

can follow. One investigation had an investigator pose as a firearms seller and for six months people purchased from them and provided home addresses. They were able to make over a dozen arrests during this six-month investigation. Another one of law enforcement's biggest crackdowns are on vendors selling fentanyl and opiates. With thousands of dying each year due to drug over dose it was long overdue for law enforcement to crack down on these markets. Many vendors don't realize the extra charges that go along with selling drugs online. Commonly they get charged with money laundering and charges for when the drugs are shipped in the mail on top of being a drug distributor. Each state has its laws and regulations on drugs therefore vendors have the face multiple charges from different states. In 2019, a vendor was sentenced to 10 years in prison after selling cocaine and methamphetamine under the name JetSetLife.

Although many investigators spend a lot of time tracking down people in the course of a year only 65 suspects were identified who bought and sold illegal goods on some of the biggest markets. This is compared to the thousands of transactions taking place daily on these markets.

Task 2. Read the examples of cyber crimes which really took place in different countries and comment on them.

– One of the highest profiled banking computer crime occurred during a course of three years beginning in 1970. The chief teller at the Park Avenue branch of New York's Union Dime Savings Bank embezzled over $1.5 million from hundreds of accounts.

– A hacking group called MOD (Masters of Deception), allegedly stole passwords and technical data from Pacific Bell, Nynex, and other telephone companies as well as several big credit agencies and two major universities. The damage caused was extensive, one company, Southwestern Bell suffered losses of $370,000 alone.

– In 1983, a 19-year-old student used his PC to break into a Defense Department International Communications system.

– Between 1995 and 1998 the Newscorp satellite pay to view encrypted SKY-TV service was hacked several times during an ongoing technological arms race between a pan-European hacking group and Newscorp. The original motivation of the hackers was to watch Star Trek reruns in Germany; which was something which Newscorp did not have the copyright to allow.

– On 26 March 1999, the Melissa worm infected a document on a victim's computer, then automatically sent that document and a copy of the virus spread via e-mail to other people.

– In February 2000, an individual going by the alias of MafiaBoy began a series denial-of-service attacks against high-profile websites, including Yahoo!, Dell, Inc., E*TRADE, eBay, and CNN. About 50 computers at Stanford University, and also computers at the University of California at Santa Barbara, were amongst the zombie computers sending pings in DDoS attacks. On 3 August 2000, Canadian federal prosecutors charged MafiaBoy with 54 counts of illegal access to computers, plus a total of ten counts of mischief to data for his attacks.

– The Stuxnet worm corrupted SCADA microprocessors, particularly of the types used in Siemens centrifuge controllers.

– The Flame (malware) that mainly targeted Iranian officials in an attempt to obtain sensitive information.

– The Russian Business Network (RBN) was registered as an internet site in 2006. Initially, much of its activity was legitimate. But apparently, the founders soon discovered that it was more profitable to host illegitimate activities and started hiring its services to criminals. The RBN has been described by VeriSign as «the baddest of the bad». It offers web hosting services and internet access to all kinds of criminal and objectionable activities, with

individual activities earning up to $150 million in one year. It specialized in and in some cases monopolized personal identity theft for resale. It is the originator of MPack and an alleged operator of the now-defunct Storm botnet.

– On 2 March 2010, Spanish investigators arrested 3 in infection of over 13 million computers around the world. The «botnet» of infected computers included PCs inside more than half of the Fortune 1000 companies and more than 40 major banks, according to investigators.

– In January 2012 Zappos.com experienced a security breach after as many as 24 million customers' credit card numbers, personal information, billing and shipping addresses had been compromised.

– In June 2012 LinkedIn and eHarmony were attacked, compromising 65 million password hashes. 30,000 passwords were cracked and 1.5 million EHarmony passwords were posted online.

– December 2012 Wells Fargo website experienced a denial of service attack. Potentially compromising 70 million customers and 8.5 million active viewers. Other banks thought to be compromised: Bank of America, J. P. Morgan U.S. Bank, and PNC Financial Services.

– 23 April 2013 saw the Associated Press' Twitter account's hacked – the hacker posted a hoax tweet about fictitious attacks in the White House that they claimed left President Obama injured. This hoax tweet resulted in a brief plunge of 130 points from the Dow Jones Industrial Average, removal of $136 billion from S&P 500 index, and the temporary suspension of AP's Twitter account. The Dow Jones later restored its session gains.

– In May 2017, 74 countries logged a ransomware cybercrime, called «WannaCry»

– Illicit access to camera sensors, microphone sensors, phonebook contacts, all internet-enabled apps, and metadata of mobile telephones

running Android and IOS were reportedly made accessible by Israeli spyware, found to be being in operation in at least 46 nation-states around the world. Journalists, Royalty and government officials were amongst the targets. Previous accusations of cases of Israeli-weapons companies meddling in international telephony and smart phones have been eclipsed in the 2018 reported case.

– In December 2019, the United States intelligence and an investigation by The New York Times revealed that messaging application of the United Arab Emirates, ToTok is a spying tool. The research revealed that the Emirati government attempted to track every conversation, movement, relationship, appointment, sound and image of those who install the app on their phones.

Hi-tech fraud

Both the US and the UK are experiencing a rise in «phishing». Fraudsters send an e-mail message that seems to come from a bank (Citibank, Lloyds) or a company like E-bay or Amazon. The message looks genuine, and may direct you to a website, which includes a corporate logo. You are asked to send or confirm personal information, such as your bank account number or password. This information is then used for fraudulent activity, such as online gambling, or to siphon off money from your account. 20% of recipients are fooled by this scam.

Spamming is another example of cyber crime. The nature of spam is changing from being just nuisance to more serious financial scams. Many mails sell fake pharmaceuticals on the black market. This kind of cyber crime has got an unprecedented spread during the corona virus pandemic. As the only way to avoid infection is vaccination the most popular vaccines created in developed countries (Pfiser BionTech, Moderna, AstraZenica) are proposed in the Internet though here in Ukraine we have no access to them. Financial and pharmaceutical spam now makes up an incredible 70% of all spam.

IT managers estimate that over 90% of computers in organizations have been infected by some kind of spyware. Many employees unknowingly download spyware onto their machines. This software, which hides somewhere in your computer, collects information about you and what you do on the Internet – it may even record your credit card details if you shop on the Internet. On average every PC has 28 so-called spyware programs installed on it, according to one recent audit by a software firm.

Adware is a form of spyware, which installs secret advertising software on your computer, such as annoying pop-up ads. There are government moves in various countries to make spam illegal. As the Internet is becoming more and more an integral part of our lives so we have to give more time to protecting ourselves against cyber crime.

Internet is full of dangers. What can be done about them? Let's look through four e-mails that come to the editor of an online business magazine, each of them mentions one type of cyber crimes.

Scam e-mails

The Internet has brought us innumerable benefits, but it has also brought us Internet crime. I have recently received a false mail asking for money, in the famous Nigerian scams. I was also asked for money after hurricane Katrina. Credit card and identity fraud are growing because many people really send money to an unknown person when they are asked to help. (*Lynette Dalgleish, Auckland).*

Hacking

Users of your site should watch out for the latest virus targeting business users. It is designed to destroy all Microsoft Word, Excel, Access and PowerPoint documents and is activated when you click on the e-mail attachment. What can be done to stop those who create these viruses? *(John, NYC).*

Click fraud

What is Click fraud' An advertiser pays money every time a customer clicks on their 'pay-per-click' link on, say, Google. So 'click fraud' forces the advertiser to run up a bill. For example, online robots can be programmed to click repeatedly on a link. Low-cost workers can be hired in China, India and other countries to do the same. Employees can click on rival companies' ads to deplete their marketing budgets. It is not unknown for an unhappy worker to click repeatedly on an advert! Hope this helps. *(Pete, Oxford, UK).*

Counterfeit goods

I recently have bought some jewellery on e-Bay, but discovered that it was fake. I complained to the seller and I received a refund. However, I asked eBay to remove listings for identical pieces – but they refused! eBay maintains it is just a marketplace which links sellers and buyers. I do understand eBay has around 180 million members with maybe 60 million items on sale at any time … but in my view the Internet has now become a marketplace for selling counterfeit goods, with no policing! (*Kerry O'Connor, Dublin).*

Combating computer crime

It is necessary to combat computer crime in time otherwise it can make harm to a country's security. It can ruin financial, social and even political life in different countries and explode people's trust in the ability of a state to defend their interests.

It is difficult to find and combat cyber crime's perpetrators due to their use of the internet in support of cross-border attacks. Not only does the internet allow people to be targeted from various locations, but the scale of the harm done can be magnified. Cyber criminals can target more than one person at a time. The availability of virtual space to public and private sectors has allowed cybercrime to become an every-day occurrence. In 2018, The Internet Crime Complaint Center received 351,937 complaints of cybercrime, which lead to $2.7 billion lost.

Investigation

A computer can be a source of evidence. Even where a computer is not directly used for criminal purposes, it may contain records of value to criminal investigators in the form of a log file. In most countries Internet Service Providers are required, by law, to keep their log files for a predetermined amount of time. For example, a European wide Data Retention Directive (applicable to all EU member states) states that all e-mail traffic should be retained for a minimum of 12 months.

There are many ways for cybercrime to take place, and investigations tend to start with an IP Address trace, however, that is not necessarily a factual basis upon which detectives can solve a case. Different types of high-tech crime may also include elements of low-tech crime, and vice versa, making cybercrime investigators an indispensable part of modern law enforcement. Methods of cybercrime detective work are dynamic and constantly improving, whether in closed police units or in international cooperation framework.

In the United States, the Federal Bureau of Investigation (FBI) and the Department of Homeland Security (DHS) are government agencies that combat cybercrime. The FBI has trained agents and analysts in cybercrime placed in their field offices and headquarters. Under the DHS, the Secret Service has a Cyber Intelligence Section that works to target financial cyber crimes. They use their intelligence to protect against international cybercrime. Their efforts work to protect institutions, such as banks, from intrusions and information breaches. Based in Alabama, the Secret Service and the Alabama Office of Prosecution Services work together to train professionals in law enforcement through the creation of The National Computer Forensic Institute. This institute works to provide «state and local members of the law enforcement community with training in cyber incident response, investigation, and forensic

examination in cyber incident response, investigation, and forensic examination». Due to the common use of encryption and other techniques to hide their identity and location by cybercriminals, it can be difficult to trace a perpetrator after the crime is committed, so prevention measures are crucial.

Prevention

The Department of Homeland Security also instituted the Continuous Diagnostics and Mitigation (CDM) Program. The CDM Program monitors and secures government networks by tracking and prioritizing network risks, and informing system personnel so that they can take action. In an attempt to catch intrusions before the damage is done, the DHS created the Enhanced Cyber security Services (ECS) to protect public and private sectors in the United States. The Cyber Security and Infrastructure Security Agency approves private partners that provide intrusion detection and prevention services through the ECS**.** An example of one of these services offered is DNS sink holing.

Answer the questions.

1. What is spyware?
2. What are the different types of spam?
3. Why does spam cost companies a lot of money?
4. How much spam do you receive?
5. How do you manage with it?
6. Have you ever made an illegal copy of software or music?
7. In what circumstances do you, or would you use illegal software or buy a pirated album?
8. What is the solution to the problem of piracy?
9. Rank mentioned in the text cyber crimes in order of their seriousness.
10. Decide on suitable penalties on various cyber crimes.

UNIT 12
Machine learning

Task 1. Answer the questions.

− In machine learning really a sign of the modern technologies development?

− What is the role of machine learning and AI in natural language processing?

− What is the difference between «machine learning» and «machine teaching»?

− What is tokenization?

− Is sentiment analysis the process of determining whether a piece of writing is positive, negative or neutral?

Machine learning for natural language processing and text analytics involves using machine learning algorithms and «narrow» artificial intelligence (AI) to understand the meaning of text documents. These documents can be just about anything that contains text: social media comments, online reviews, survey responses, even financial, medical, legal and regulatory documents.

The role of machine learning and AI in natural language processing (NLP) and text analytics is to improve, accelerate and automate the underlying text analytics functions and NLP features that turn unstructured text into useable data and insights.

Lexalytics is, at its core, a machine learning company. We maintain hundreds of supervised and unsupervised machine learning models that augment and improve our systems. We've spent more than a decade gathering data sets and experimenting with new algorithms.

In this article, we'll start by exploring some machine learning approaches for natural language processing. Then we'll discuss how to apply machine learning to solve problems in natural language

processing and text analytics. And we'll finish with some further reading.

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Background:
Machine Learning in the Context
of Natural Language Processing

Before we dive deep into how to apply machine learning and AI for NLP and text analytics, let's clarify some basic ideas.

Most importantly, «machine learning» really means «machine teaching». We know what the machine needs to learn, so our task is to create a learning framework and provide properly-formatted, relevant, clean data for the machine to learn from.

When we talk about a «model», we're talking about a mathematical representation. Input is key. A machine learning model is the sum of the learning that has been acquired from its training data. The model changes as more learning is acquired.

Unlike algorithmic programming, a machine learning model is able to generalize and deal with novel cases. If a case resembles something the model has seen before, the model can use this prior «learning» to evaluate the case. The goal is to create a system where the model continuously improves at the task you've set it.

Machine learning for NLP and text analytics involves a set of statistical techniques for identifying parts of speech, entities, sentiment, and other aspects of text. The techniques can be expressed as a model that is then applied to other text, also known as supervised machine learning. It also could be a set of algorithms that work across large sets of data to extract meaning, which is known as unsupervised machine learning. It's important to understand the difference between supervised and unsupervised learning, and how you can get the best of both in one system.

Text data requires a special approach to machine learning. This is because text data can have hundreds of thousands of dimensions (words and phrases) but tends to be very sparse. For example, the English language has around 100,000 words in common use. But any given tweet only contains a few dozen of them. This differs from something like video content where you have very high dimensionality, but you have oodles and oodles of data to work with, so, it's not quite as sparse.

Supervised Machine Learning
for Natural Language Processing and Text Analytics

In supervised machine learning, a batch of text documents are tagged or annotated with examples of what the machine should look for and how it should interpret that aspect. These documents are used to «train» a statistical model, which is then given un-tagged text to analyze.

Later, you can use larger or better datasets to retrain the model as it learns more about the documents it analyzes. For example, you can use supervised learning to train a model to analyze movie reviews, and then later train it to factor in the reviewer's star rating.

The most popular supervised NLP machine learning algorithms are:
– Support Vector Machines
– Bayesian Networks

- Maximum Entropy
- Conditional Random Field
- Neural Networks/Deep Learning

All you really need to know if come across these terms is that they represent a set of machine learning algorithms that are guided along in some way by a human data scientist.

Lexalytics uses supervised machine learning to build and improve our core text analytics functions and NLP features.

Tokenization

Tokenization involves breaking a text document into pieces that a machine can understand, such as words. Now, you're probably pretty good at figuring out what's a word and what's jibbersih. English is especially easy. See all this white space between the letters and paragraphs? That makes it really easy to tokenize. So, NLP rules are sufficient for English tokenization.

But how do you teach a machine learning algorithm what a word looks like? And what if you're not working with English-language documents? Logographic languages like Mandarin Chinese have no whitespace.

This is where we use machine learning for tokenization. Chinese follows rules and patterns just like English, and we can train a machine learning model to identify and understand them.

Part of Speech Tagging

Part of Speech Tagging (PoS tagging) means identifying each token's part of speech (noun, adverb, adjective, etc.) and then tagging it as such. PoS tagging forms the basis of a number of important Natural Language Processing tasks. We need to correctly identify Parts of Speech in order to recognize entities, extract themes, and to process sentiment. Lexalytics has a highly-robust model that can PoS tag with >90% accuracy, even for short, gnarly social media posts.

Named Entity Recognition

At their simplest, named entities are people, places, and things (products) mentioned in a text document. Unfortunately, entities can also be hashtags, emails, mailing addresses, phone numbers, and Twitter handles. In fact, just about anything can be an entity if you look at it the right way. And don't get us stated on tangential references.

At Lexalytics, we've trained supervised machine learning models on large amounts pre-tagged entities. This approach helps us to optimize for accuracy and flexibility. We've also trained NLP algorithms to recognize non-standard entities (like species of tree, or types of cancer).

It's also important to note that Named Entity Recognition models rely on accurate PoS tagging from those models.

Sentiment Analysis

Sentiment analysis is the process of determining whether a piece of writing is positive, negative or neutral, and then assigning a weighted sentiment score to each entity, theme, topic, and category within the document. This is an incredibly complex task that varies wildly with context. For example, take the phrase, «sick burn» In the context of video games, this might actually be a positive statement.

Creating a set of NLP rules to account for every possible sentiment score for every possible word in every possible context would be impossible. But if you train a machine learning model on pre-scored data, it can learn to understand what «sick burn» means in the context of video gaming, versus in the context of healthcare. Unsurprisingly, each language requires its own sentiment classification model.

Categorization and Classification

Categorization means sorting content into buckets to get a quick, high-level overview of what's in the data. To train a text

classification model, data scientists use pre-sorted content and gently shepherd their model until it's reached the desired level of accuracy. The result is accurate, reliable categorization of text documents that takes far less time and energy than human analysis.

Unsupervised Machine Learning for
Natural Language Processing and Text Analytics

Unsupervised machine learning involves training a model without pre-tagging or annotating. Some of these techniques are surprisingly easy to understand.

Clustering means grouping similar documents together into groups or sets. These clusters are then sorted based on importance and relevancy (hierarchical clustering).

Another type of unsupervised learning is Latent Semantic Indexing (LSI). This technique identifies on words and phrases that frequently occur with each other. Data scientists use LSI for faceted searches, or for returning search results that aren't the exact search term.

For example, the terms «manifold» and «exhaust» are closely related documents that discuss internal combustion engines. So, when you Google «manifold» you get results that also contain «exhaust».

Matrix Factorization is another technique for unsupervised NLP machine learning. This uses «latent factors» to break a large matrix down into the combination of two smaller matrices. Latent factors are similarities between the items.

Think about the sentence, «I threw the ball over the mountain». The word «threw» is more likely to be associated with «ball» than with «mountain».

In fact, humans have a natural ability to understand the factors that make something throwable. But a machine learning NLP algorithm must be taught this difference.

Unsupervised learning is tricky, but far less labor- and data-intensive than its supervised counterpart. Lexalytics uses unsupervised

learning algorithms to produce some «basic understanding» of how language works. We extract certain important patterns within large sets of text documents to help our models understand the most likely interpretation.

Background: What is Natural Language Processing?

Natural Language Processing broadly refers to the study and development of computer systems that can interpret speech and text as humans naturally speak and type it. Human communication is frustratingly vague at times; we all use colloquialisms, abbreviations, and don't often bother to correct misspellings. These inconsistencies make computer analysis of natural language difficult at best. But in the last decade, both NLP techniques and machine learning algorithms have progressed immeasurably.

There are three aspects to any given chunk of text:
Semantic Information

Semantic information is the specific meaning of an individual word. A phrase like «the bat flew through the air» can have multiple meanings depending on the definition of bat: winged mammal, wooden stick, or something else entirely? Knowing the relevant definition is vital for understanding the meaning of a sentence.

Another example: «Billy hit the ball over the house». As the reader, you may assume that the ball in question is a baseball, but how do you know? The ball could be a volleyball, a tennis ball, or even a bocce ball. We assume baseball because they are the balls most often «hit» in such a way, but without machine learning of natural language a computer wouldn't.

Syntax Information

The second key component of text is sentence or phrase structure, known as syntax information. Take the sentence, «Sarah joined the group already with some search experience». Who exactly has the

search experience here? Sarah, or the group? Depending on how you read it, the sentence has very different meaning with respect to Sarah's abilities.

Context Information

Finally, you must understand the context that a word, phrase, or sentence appears in. What is the concept being discussed? If a person says that something is «sick», are they talking about healthcare or video games? The implication of «sick» is often positive when mentioned in a context of gaming, but almost always negative when discussing healthcare.

ML vs NLP and Using Machine Learning
on Natural Language Sentences

Let's return to the sentence, «Billy hit the ball over the house». Taken separately, the three types of information would return:

– Semantic information: *person – act of striking an object with another object – spherical play item – place people live.*

– Syntax information: *subject – action – direct object – indirect object.*

– Context information: *this sentence is about a child playing with a ball.*

These aren't very helpful by themselves. They indicate a vague idea of what the sentence is about, but full understanding requires the successful combination of all three components.

This analysis can be accomplished in a number of ways, through machine learning models or by inputting rules for a computer to follow when analyzing text. Alone, however, these methods don't work so well.

Machine learning models are great at recognizing entities and overall sentiment for a document, but they struggle to extract themes and topics; what's more, they're less-than-adept at referring sentiment back to individual entities or themes.

Alternatively, you can teach your system to identify the basic rules and patterns of language. In many languages, a proper noun followed by the word «street» probably denotes a street name. Similarly, a number followed by a proper noun followed by the word «street» is probably a street address. And people's names usually follow generalized two- or three-word formulas of proper nouns and nouns.

Unfortunately, recording and implementing language rules takes a lot of time. What's more, NLP rules can't keep up with the evolution of language. The Internet has butchered traditional conventions of the English language. And no static NLP codebase can possibly encompass every inconsistency and meme-ified misspelling on social media.

Very early text mining systems were entirely based on rules and patterns. Over time, as natural language processing and machine learning techniques have evolved, an increasing number of companies offer products that rely exclusively on machine learning. But as we just explained, both approaches have major drawbacks.

That's why at Lexalytics, we utilize a hybrid approach**.** We've trained a range of supervised and unsupervised models that work in tandem with rules and patterns that we've been refining for over a decade.

Hybrid Machine Learning Systems for NLP

Our text analysis functions are based on patterns and rules. Each time we add a new language, we begin by coding in the patterns and rules that the language follows. Then our supervised and unsupervised machine learning models keep those rules in mind when developing their classifiers. We apply variations on this system for low-, mid-, and high-level text functions.

Low-level text functions are the initial processes through which you run any text input. These functions are the first step in turning unstructured text into structured data; thus, these low-level functions form the base layer of information from which our mid-level

functions draw on. Mid-level text analytics functions involve extracting the real content of a document of text. This means who is speaking, what they are saying, and what they are talking about.

The high-level function of sentiment analysis is the last step, determining and applying sentiment on the entity, theme, and document levels.

Task 2. Discuss in groups of two or three.
– What are our text analysis functions based on?
– What are three aspects to any given chunk of text?
– What does this definition refer to: «Natural Language Processing refers to the study and development of computer systems that can interpret speech and text as humans naturally speak and type it»?

CONCLUSIONS

We are living in a digital era when most processes in technology and social life are computerized. Computers have become an inseparable part of our life being used in business, commerce, learning, and everyday activity. They brought us a lot of advantages but at the same time they created many problems because not always they are used for the benefit of people; sometimes people use computers in harmful purposes.

Digitalization is invading the world. Very soon most countries will get rid of paper documents and start using computer applications for solving many problems. Let's hope in the future mankind will find effective measures to combat computer crimes, and these clever machines will really make our life better and happier.

English as the language of international communication quickly spreads all over the world. Every year more and more people learn English as a second or foreign language, and greater part of information is stored in the Internet in English.

SPECIAL SYMBOLS
FOR PROGRAMMING CODES

!	(exclamation mark) –знак оклику	
?	(question mark) –знак питання	
,	(comma) –кома	
.	(dot, period) –крапка	
:	(colon) – двокрапка	
;	(semi colon) – крапка з комою	
««	(quote) –лапки	
~	(tilde) – тильда	
@	(at) – собачка	
#	(number sign или hash) – решітка, дієз	
$	(dollar sign) – доллар	
%	(percent) – процент	
^	(caret) – знак вставки	
&	(ampersand) – і	
*	(asterisk) – зірочка	
⎵	(space) – пробіл	
\	(reverse solidus или backslash) – зворотній слеш	
/	(solidus или forward slash) – слеш / слэш	
'	(apostrophe или single quote) – апостроф	
<	(less than) – знак меньше	
>	(greater than) – знак більше	
_	(underscore или horizontal bar) – нижнє підкреслення	
+	(plus) – плюс	
`	(acute) – гравіс	
-	(dash или hyphen) – тире або дефіс	
=	(equals) – знак рівності	
|	(pipe или vertical bar) – вертикальная лінія	
§	(section) – параграф	
(	(open или left parenthesis) –ліва кругла дужка	
)	(close или right parenthesis) –права кругла дужка	
{	(open или left curly brace) –ліва фігурна дужка	
}	(close или right curly brace) –права фігурна дужка	
[	(open или left square bracket) –ліва квадратна дужка	
]	(close или right square bracket) –права квадратна дужка	

GRAMMAR FOCUS

1. Put each verb in brackets into the most suitable present tense.

I work in a large office with about thirty other people, most of whom I (1) _____ (know) quite well. We (2) _____ (spend) most of the day together, so we have all become friends. In fact, most of my colleagues are so interesting, that I (3) _____ (think) of writing a book about them! (4) _____ (take) Helen Watson, for example. Helen (5) _____ (run) the accounts department. At the moment she (6) _____ (go out) with Keith Ballantine, one of the sales representatives, and they (7) _____ (seem) very happy together. But everyone (except Helen apparently) (8) _____ (know) that Keith (9) _____ always make) eyes at Susan Porter. But I (10) _____ (happen) to know that Susan (11) _____ (dislike) Keith. 'I can't stand people who (12) _____ (apologise) all the time!' she told me. 'And besides, I know he (13) _____ (deceive) poor Helen. He (14) _____ (see) Betty Wills from the overseas department.' And plenty of other interesting things (15) _____ (go on) For instance, every week money (16) _____ (disappear) from the petty cash box. When you (17) _____ (realise) that someone in your office is a thief, it (18) _____ (upset) you at first. But I (19) _____ (also try) to catch whoever it is before the police are called in. I'm not going to tell you who I (20) _____ (suspect). Well, not yet anyway!

2. Identify any possible errors in these sentences, and correct them *if necessary*.

a) I'm depending on you, so don't make any mistakes!

b) Is this total including the new students? *Does this total include the new students?*

c) Excuse me, but do you wait for someone?

d) These potatoes are tasting a bit funny.

e) How are you feeling today?

f) I look forward to hearing from you.

g) I have a feeling that something goes wrong.

h) What's that you're eating?

i) Are you hearing anything from Wendy these days?

j) I think you're being rather mean about this.

3. Choose the most suitable words underlined.

a) When you passed the town hall clock, did you notice/were you noticing what time it was?

b) Last night my neighbours were shouting/would shout for hours and I couldn't get to sleep.

c) When you lived in London, did you use to travel/were you travelling by bus ?

d) Everyone was having a good time, although not many people danced/were dancing.

e) – Excuse me, but this seat is mine.

– I'm sorry, I didn't realise/hadn't realised that you were sitting here.

f) Jill didn't eat/hadn't eaten all day, so she was really hungry at this point.

g) – Paul has forgotten to book the tickets I'm afraid.

– He was always doing/would do something like that!

h) It took a while for me to notice, but then I did. Everyone stared/was staring at me. What had I done wrong?

i) Nobody bothered to tell me that the school decided/had decided to have a special holiday that Friday.

j) I was trying/tried to get in touch with you all day yesterday. Where were you?

4. Put each verb in brackets into a suitable tense. All sentences refer to past time. Suggest alternative tenses if necessary where the past perfect or another tense might be possible.

a) I realized that someone *was stealing* (steal) my wallet when *I felt* (feel) their hand in my jacket pocket.

b) When I _____ (phone) Helen last night she _____ (wash) her hair and she _____ (not finish) when I finally _____ (get to) her house.

c) Peter _____ (offer) me another drink but I decided I _____ (drink)enough.

d) Nobody _____ (watch), so the little boy _____ (take) the packet

of sweets from the shelf and _____ (put) it in his pocket.

e) I _____ (not realise) that I _____ (leave) my umbrella on the bus until it _____ (start) to rain.

f) At school I _____ (dislike) the maths teacher because he _____ (always pick) on me.

g) Wherever Marion _____ (find) a job, there was someone who _____ (know) that she _____ (go) to prison.

h) It was only much later I _____ (find out) that during all the time I _____ (write) to my penfriend, my mother _____ (open) and reading the replies!

i) I _____ (not understand) what _____ (go on). Several people _____ (shout) at me, and one _____ (wave) a newspaper in front of my face.

j) I _____ (know) I _____ (do) well in my exams even before I _____ (receive) the official results.

5. Put each verb in brackets into a suitable past tense. Only use the past perfect where this is absolutely necessary.

This time last year I (1) *was cycling* (cycle) in the rain along a country road in France with a friend of mine. We (2) _____ (decide) to go on a cycling holiday in Normandy. Neither of us (3) _____ (go) to France before, but we (4) _____ (know) some French from our time at school and we (5) _____ (manage) to brush up on the basics. Now we (6) _____ (wonder) if we (7) _____ (make) the right decision. We (8) _____ (plan) our route carefully in advance, but we (9) _____ (forget) one important thing, the weather. It (10) _____ (rain) solidly since our arrival and that night we (11) _____ (end up) sleeping in the waiting room at a railway station. Then the next morning as we (12) _____ (ride) down a steep hill my bike (13) _____ (skid) on the wet road and I (14) _____ (fall off). I (15) _____ (realise) immediately that I (16) _____ (break) my arm, and after a visit to the local hospital I (17) _____ (catch) the next train to Calais for the ferry home. Unfortunately my parents (18) _____ (not expect) me home for a fortnight, and (19) _____ (go) away on holiday. So I (20) _____ (spend) a miserable couple of weeks alone, reading *Teach Yourself French.*

6. Choose the most appropriate word or phrase underlined.

a) It's a long timesince/when I last saw you.

b) I've seen Bill quite often lately/from time to time.

c) Have you spoken to the director beforehand/already ?

d) I've lived in the same house for years/for ever.

e) I've read the paper now/still.

f) Diana has bought a computer two years ago/since then.

g) Nothing much has been happening by now/so far.

h) I've finished reading her new book <u>at last/this evening.</u>

i) Sue bought a CD player last week and she's been listening to music <u>ever since/for a while.</u>

j) Sorry, but I haven't got that work finished <u>already/yet.</u>

8. Put each verb in brackets into either the past simple, present perfect simple or present perfect continuous.

Ever since the day I (1) *decided* (decide) to move to London, I (2) _____ (worry) whether the decision I (3) _____ (take) was the right one. As I (4) _____ (already sell) my house and (5) _____ (arrange) a new job, it is too late to change my mind. However, since then I (6) _____ (hear) a lot of negative things about living in the capital, and lately some of them (7) _____ (begin) to bother me, I (8) _____ (grow up) in a fairly small town and I (9) _____ (spend) all of my life there. (10) _____ (always want) to live in a big city and so when my company (11) _____ (offer) me a job in their London office, I (12) _____ (grab) at the chance.But according to a programme I (13) _____ (just hear) on the radio, more and more people (14) _____ (stop) working in London recently, and a lot of large companies (15) _____ (choose) to move away from the centre. Of course I (16) _____ (tell) my parents that I'm moving and they (17) _____ (accept) my decision, but when I (18) _____ (tell) my friends they (19) _____ (seem) rather shocked. Since then I (20) _____ (hope) secretly that the company would tell me that the move was off!

9. Put each verb in brackets into an appropriate tense

Farmers, as we all (1) _____ (know), (2) _____ (have) a hard time of it in Britain lately, and (3) _____ (turn) to new ways of earning income from their land. This (4) _____

(involve) not only planting new kinds of crops, but some strange ways of making money, the most unusual of which has got to be sheep racing. Yes, you (5) _____ (hear) me correctly! A farmer in the West of England now (6) _____ (hold) sheep races on a regular basis, and during the past year over 100 000 people (7) _____ (turn up) to watch the proceedings. 'I (8) _____ (pass) the farm on my way to the sea for a holiday,' one punter told me, 'and I (9) _____ (think) I'd have a look. I (10) _____ (not believe) it was serious, to tell you the truth.' According to a regular visitor, betting on sheep is more interesting than betting on horses. 'At proper horse races everyone (11) _____ (already study) the form of the horses in advance, and there are clear favourites. But nobody (12) _____ (hear) anything about these sheep! Most people (13) _____ (find) it difficult to tell one from another in any case.' I (14) _____ (stay) to watch the races, and I must admit that 1(15) _____ (find) it quite exciting. In a typical race, half a dozen sheep (16) _____ (race) downhill over a course of about half a mile. Food (17) _____ (wait) for them at the other end of the track, I ought to add! The sheep (18) _____ (run) surprisingly fast, although presumably they (19) _____ (not eat) for a while just to give them some motivation. At any rate, the crowd around me (20) _____ (obviously enjoy) their day out at the races, judging by their happy faces and the sense of excitement.

10. Choose the most appropriate word or phrase.
a) _____ we get to the theatre, the play will have started.
   A) As soon as   B) Until   C) By the time   D) Whenever

b) What's the matter? Haven't you started _____?
   A) already   B) yet   C) by now   D) soon

c) The trouble with you is that you're) _____ complaining.
   A) forever   B) often   C) still   D) each time

d) Can you remember what you were doing _____?
   A) the time   B) usually   C) every day   D) at the time

e) The new school opens) _____.
   A) now   B) at once   C) next week   D) day by day

f) I haven't been feeling very well) _____.
   A) of late   B) not long ago c) currently   D) by now

g) _____ we get to the top of this hill, we'll be all right.
   A) Eventually   B) Once   C) Now   D) At the time

h) It's ages _____ I last saw a decent comedy film on television.
   A) that   B) ago   C) since   D) when

i) I don't go swimming very much _____.
   A) nowadays B) in those days   C) recently   D) now and again

j) _____ we haven't managed to find what we are looking for.
   A) To now   B) On and off C) Formerly   D) So far

11. Put each verb in brackets into an appropriate tense.

Ask hundreds of people what they (1) _____ (do) on a certain day in August next year, or the year after, and there (2) _____ (be) only one reply Provided of course that the people you (3) _____ (ask) (4) _____ (belong) to the Elvis Presley Fan Club. Although the King of Rock and Roll (5) _____ (die) nearly two decades ago, his fans (6) _____ (meet) every year since then outside his home in Memphis, Tennessee, to show respect for the singer they (7) _____ (love) so much. Fans like Jean Thomas, from Catford in South London. Jean (8) _____ (visit) Gracelands, the house where Elvis (9) _____ (suffer) his fatal heart attack, twice in the past five years. 'The first time I (10) _____ (borrow) the money from my Mum, as 1(11) _____ (not work)

then. But two years ago I (12) _____ (get) married and since then I (13) _____ (work) in my husband Chris's garage. Chris and I (14) _____ (go) together last year, and we (15) _____ (think) of spending two or three months in the USA next year. 1(16) _____ (always want) to visit some of the places where Elvis (17) _____ (perform), Like Las Vegas for example. 'Jean says that Elvis (18) _____ (be) her obsession ever since she (19) _____ (be) ten years old, and she (20) _____ (own) every single one of his records, good and bad.

12. Put each verb in brackets into an appropriate tense

a) I _____ (not understand) what you _____ (wait) for.

b) _____ (anyone see) my pencil? I _____ (leave) it here somewhere.

c) When he _____ (not arrive) by 6.00,1 _____ (know) he _____ (miss) the bus.

d) _____ (you go away) this weekend? Or _____ (you run out) of money?

e) What _____ (you think) you _____ (do) in ten years' time?

f)' I _____ (really enjoy) myself at the moment.

g) _____ (you let) me know the minute you _____ (hear) any news?

h) Something _____ (tell) me that you _____ (not listen) to a single word I _____ (say) in the past ten minutes!

i) What's the matter? _____ (you hurt) your ankle? How _____ (you do) it? j) That's definitely the last time that I _____ (lend) you any money!

12. Complete each sentence with one appropriate word

a) It's _____ since I last had a good Chinese meal.

b) Funnily enough I saw Bob quite _____ at the sports club.

c) I've loved you ever _____ the first day I set eyes on you!

d) How long _____ was it that you lived in Inverness?

e) I've _____ to see anyone who can dance as well as Diana.

f) Could you phone me the _____ you arrive at the hotel so I don't worry?

g) I promise to get everything ready _____ eight o'clock at the latest.

h) Have you finished _____ Wow, you are a fast worker, aren't you!

i) I'm sorry you've been waking so long, but it will be some time _____ Brian gets back.

j) Just sit here, would you? The doctor will be with you _____.

13. Put *one* word in each space.

a) How much do you make _____ week?

b) Could you do the washing up for me? I can't _____ it just now.

c) There was nothing more _____ I could do.

d) It is recommended that all luggage _____ bear a personal label.

e) Is this the street _____ you live in?

f) Half way through Ted's speech, everyone _____ out laughing.

g) It is _____ that more than a million people could benefit from the operation.

h) Charles is not the kind of person _____ would help you.

i) If we don't lower the price, we _____ losing the order.

j) We didn't _____ tell the doctor she was wrong!

14. Complete each sentence a) to j) with an appropriate ending from 1) to 10). Do not use an ending more than once.

a) I haven't been feeling very well...   1) … time and time again.
b) I went to the dentist's …   2) … all my life.
c) I've lived here …   3) … so far.
d) Don't worry. I haven't been waiting …   4) … for the time being.
e) I've written two pages …   5) … for the past hour or two.
f) I waited outside your house …   6) … yet.
g) I've warned you about this …   7) … till half past eight.
h) I haven't made a decision …   8) … for a while.
i) The repair worked …   9) … the other day.
j) I've decided to believe you …   10) … long.

15. Put *one* suitable word in each space.
   a) My cousin George is obsessed _____ keeping fit.
   b) Many frozen foods are deficient _____ vitamins.
   c) They say that there is an exception _____ every rule.
   d) It was very good _____ Sue to drive us to the airport.
   e) Breaking his leg a second time put Peter's football career _____ jeopardy.
   f) Don't worry, the whole situation is _____ control.
   g) The same rule applies, irrespective _____ how much you have paid.
   h) With complete disregard _____ her own safety, Ann jumped into the sea
   to rescue the dog.
   i) I'm afraid you are not eligible _____ a pension until you are 65.
   j) There were no ripe apples _____ reach, so I moved the ladder.

16. Put *one* word in each space.

Very few popular spectator sports today remain amateur in (1) _____ sense. In the past, even in cases (2) _____ payments to players or athletes was forbidden, many sports tolerated (3) _____ became known as 'shamateurism'. This (4) _____ that payments were made in the (5) _____ of expenses, or in some extreme cases, simply made illegally. More (6) _____ sport has become, in effect, a branch of the entertainment and advertising industry, and the top performers in sports (7) _____ as golf, tennis, football and track athletics can expect to become very rich. (8) _____ in itself worries some people. Where is the old Olympic ideal, they say, and hasn't the urge to win been transformed into mere greed for money? But (9) _____ fact is that sport has become more and more professional in the wider sense, (10) _____ only requiring total dedication from aspiring champions, (11) _____ also requiring expensive facilities, training and medical advice. (12) _____ is just no longer possible (13) _____ combine a career in sport with a career elsewhere. And besides, many would argue that top champions deserve large prizes. After all, (14) _____ shouldn't they be adequately rewarded for reaching the top of their profession? Perhaps most criticism is levelled (15) _____ two abuses: (16) _____ taking of performance-enhancing drugs, and the sheer lack of entertainment in many team games, (17) _____ the need to win has effectively stifled all sense of flair. Both, (18) _____ a sense, are forms of cheating, and both are difficult to define.

(19) _____ every banned substance, there is another legal one which can also be said to be a 'drug'; and where is the dividing line (20) _____ negative tactics and clever strategy?

17. Choose the most suitable word or phrase for each space.

The relationship between the British royal family and the popular press is curious, to say the least. (1) _____ the press has yet to realize that the royals are indeed the goose that lays the golden egg. Royal scandals and royal divorces (2) _____ tasteless photographs and supported by the worst kind of journalistic excess have proved to be (3) _____ the thing for raising newspaper circulations. The same papers that oozed sentimentality over royal weddings, and drooled over idealized princesses, later went out of their way to hound various royals into separation or divorce. Every photograph became a contribution to (4) _____ new rumour; (5) _____ private telephone conversations were printed on the front page. (6) _____ the press has yet to realise is that (7) _____ intrusions into the privacy of members of the royal family have also helped to create an atmosphere (8) _____ the very existence of the monarchy has been called into question. The prestige of the royal family has (9) _____ suffered. And how could this not be (10) _____ when their lives have been turned into some absurd soap opera? (11) _____ the press feeds the illusion that the characters on television, those awful creeps in 'East Enders' and 'Neighbours', are somehow 'real people', so it has reduced the royal family to the status of a series of cardboard characters. And if you are secretly thinking, 'Well, that's what they are, (12) _____ ,' perhaps you are just another victim of the illusion. (13) _____ real issues still to be debated about the role, and indeed the survival, of the royal family, issues to which the popular press has (14) _____ contributed. If the monarchy should lose its constitutional role, the press will be largely to blame. And (15) _____ it will then have lost one of its main circulation boosters, and it will have killed off its golden goose for good.

1.	A) First of all	B) In many respects	C) Nevertheless	D) A reader of
2.	A) illustrated with	B) showing	C) having taken	D) provide
3.	A) made	B) merely	C) more than	D) just
4.	A) this	B)some	C) create	D) feed
5.	A) even	B) in	C) their	D) despite the fact that
6.	A) So	B) In fact	C)What	D)Thus
7.	A) what	B) no	C)such	D) all
8.	A) and so	B) in which	C) whenever	D) if rarely
9.	A) undoubtedly	B) been	C) utterly	D) not
10.	A) the point	B) the one	C) the last	D) the case
11.	A) For example	B) Just as	C) Like	D)What
12.	A) all in all	B) at the end	C) moreover	D) any way
13.	A) If they are	B) What are the	C) There are	D) They create the
14.	A) merely	B) hardly	C) utterly	D) extremely
15.	A) thus	B) literally	C) ironically	D) if

The Passive Voice

18. Rewrite each sentence so that it does not contain the words underlined and so that it contains a passive form.

a) <u>Someone</u> left the phone off the hook all night.

b) <u>The government</u> has announced that petrol prices will rise tomorrow.

c) A burglar broke into our house last week.

d) <u>People</u> asked me the way three times.

e) <u>The fruit-pickers</u> pick the apples early in the morning.

f) It's time <u>the authorities</u> did something about this problem.

g) Lots of <u>people</u> had parked their cars on the pavement.

h) The government agreed with the report and so <u>they</u> changed the law.

i) <u>You</u> have to fill in an application form.

j) <u>They</u> don't know what happened to the ship.

19. Put each verb in brackets into the passive in an appropriate tense.

a) The boxes *have not been packed* (not pack) yet.

b) Your food _____ (still prepare).

c) The new ship _____ (launch) next week.

d) Luckily by the time we got there the painting _____ (not sell).

e) We had to go on holiday because our house _____ (decorate).

f) I'm afraid that next week's meeting _____ (cancel).

g) If we don't hurry, all the tickets _____ (sell) by the time we get there.

h) All main courses _____ (serve) with vegetables or salad.

i) The second goal _____ (score) by Hughes in the 41st minute.

j) The cathedral _____ (build) in the fourteenth century.

20. Put each verb in brackets into the passive in an appropriate tense.

a) Nothing *has been seen* (see) of Pauline since her car _____ (find) abandoned near Newbury last week.

b) As our new furniture _____ (deliver) on Monday morning I'll have to stay at home to check that it _____ (not damage) during transit.

c) The new Alhambra hatchback, which in this country _____ (sell) under the name 'Challenger', _____ (fit) with electric windows as standard.

d) For the past few days I _____ (work) in Jack's office, as my own office _____ (redecorate).

e) The last time I went sailing with friends the boat _____ (sink) in a gale. Luckily I _____ (not invite) again since then!

f) It _____ (announce) that the proposed new office block _____ (now not build) because of the current economic situation.

g) A major new deposit of oil _____ (discover) in the North Sea. It _____ (think) to be nearly twice the size of the largest existing field.

h) Pictures of the surface of the planet Venus _____ (receive) yesterday from the space probe 'Explorer' which _____ (launch) last year.

i) A large sum _____ (raise) for the Fund by a recent charity concert but the target of £250 000 _____ (still not reach).

j) No decision _____ (make) about any future appointment until all suitable candidates _____ (interview).

21. Choose <u>the most</u> appropriate word underlined.

a) The busy shopping street was thronged by/with people.

b) The emergency exit was concealed <u>by/from</u> a red curtain.

c) The price of excursions is included in/with the cost of the holiday.

d) All through January, the fields were covered <u>by/from</u> snow.

e) The room was crammed <u>by/with</u> furniture of all descriptions.

f) Two of the climbers were injured <u>by/with</u> falling rocks.

g) The island is inhabited <u>by/from</u> people of mainly Chinese origin.

h) The bank was quickly surrounded <u>from/with</u> armed police.

i) The window had been smashed <u>from/with</u> a hammer taken from the tool-shed.

j) The stadium was packed <u>from/with</u> cheering fans.

22. Put suitable preposition in each space.

a) The tree had been decorated *with* coloured balls.

b) The answers have been included _____ the book.

c) After the rugby match, Jim's shorts were covered _____ mud.

d) The victim was struck from behind _____ a heavy object.

e) The house was built _____ money that David borrowed from the bank.

f) The cat narrowly escaped being run over _____ a car.

g) When the accident happened. Sue was struck _____ flying glass.

h) The turkey was stuffed _____ chestnuts, and was very tasty.

i) No one knew that Peter had been involved _____ the investigation.

j) When I left the casino, my pockets were crammed _____ money.

23. Rewrite each sentence so that it begins It.......

a) They have decided to cancel the match. It *has been decided to cancel the match.*

b) We thought it was necessary to send a telegram.

It _____.

c) We have agreed to meet again in a fortnight.

It _____.

d) There is a rumour that the couple are to seek a divorce.

It _____.

e) There is confirmation of Mr Jackson's resignation.

It _____.

f) We believe that the ship has sunk.

It _____.

g) There was a proposal that a new offer should be made.

It _____.

h) We didn't think it was a good idea.

It _____.

i) We decided to try again later.

It _____.

j) There has been a suggestion that I should take a holiday.

It _____.

24. Rewrite the text using the passive where possible and so that the words underlined do not appear.

Nobody knows exactly when someone invented gunpowder. People know for a fact that the Chinese made rockets and fireworks long before people used gunpowder in Europe, which occurred at about the beginning of the thirteenth century. We generally believe that gunpowder brought to an end the 'Age of Chivalry', since anyone with a firearm could bring down a mounted knight. In fact, people did not develop efficient firearms until the sixteenth century. They used gunpowder mainly in siege cannon when people first introduced it. Later they used it in engineering work and in mining, but they found that it was extremely dangerous. Modern explosives have now replaced gunpowder, but we still use it for making fireworks, just as the Chinese did.

GENERAL and ALTERNATIVE QUESTIONS
in REPORTED SPEECH

Task 1. Change the sentences making the phrase in brackets the principle clause and the question – a subordinate clause. Don't forget about the rules of Sequence of Tenses.

1. Do you know Nina's address? (I was asked)
2. Does Peter have a driving license? (My friend asked)
3. Do your students study online during the quarantine? (We were asked)
4. Does Peter shout for Dynamo team? (I asked Joe)
5. Do you like tea or coffee? (I was asked)
6. Do you have classes in the morning or in the afternoon? (We were asked)
7. Did you get up early yesterday? (I was asked)
8. Did Nina visit her Granny on Sunday or on Saturday? (Peter was asked)

9. Did all students in our group learn English at school? (We were asked)

10. Did your teacher help you with writing a report? (My friend was asked)

11. Is Peter good at English? (I was asked)

12. Are Peter and Nina good friends? (I asked Joe)

13. Is it difficult to translate the text without a dictionary? (We were asked)

14. Are you interested in computer sciences? (We were asked)

15. Is Mark Nina's friend? (We were asked)

16. Are you afraid of injections? (I was asked)

17. Was the weather fine yesterday? (I was asked)

18. Were you listening attentively to the computer lecture? (We were asked)

19. Was Nina cooking dinner yesterday evening? (Peter was asked)

20. Have you got new friends at the university? (I was asked)

21. Has Peter received a letter from the company? (I was asked)

22. Have you ever been to London? (Peter was asked)

23. Has your brother recovered from corona virus? (I was asked)

24. Has the doctor prescribed you tabs or an injection? (I was asked)

25. Will you take part in the competitions? (Nina was interested)

26. Will Peter work in a big computer company? (The teacher asked)

27. Will Nina and Peter go to the Crimea in summer? (We were interested)

28. Will the weather change for better? (People wanted to know)

29. Will Nina's brother enter our university or any other one? (I was interested)

30. Will you drink tea or cola? (I was asked).

SPECIAL QUESTIONS in REPORTED SPEECH

Task 2. Change the sentences making the phrase in brackets the principle clause and the question – a subordinate clause. Don't forget about the rules of Sequence of Tenses.

1. When do your classes begin? (We were asked)
2. Where does your Granny live? (Peter asked me)
3. Why were you absent yesterday? (The teacher was interested)
4. How can I get to the nearest bank? (I asked a passer-by)
5. Why was a #4 computer class closed last Tuesday? (I was interested)
6. When was our city first mentioned in the history? (Tourists wanted to know)
7. Why is this movie so much spoken about? (I wanted to know)
8. How many students learn German at our university? (We were asked)
9. How much does your new mobile phone cost? (My friend asked me)
10. How can you travel without a navigator? (My driving instructor asked)
11. How many times did you participate in startup contests? (My group mate asked me)
12. How much time did you spend at the seaside? (The travel agent asked)
13. When did you plan to come back after your vacation? (I was asked)
14. When did you go to the library last time? (The teacher asked the student)
15. Why did you refuse to help Nina? (I was asked)
16. Why weren't you invited to the party? (Mum asked me)

17. Why wasn't the report written in English? (The teacher asked the student)

18. Why weren't the letters sent in time? (Our boss asked)

19. When will you join us in our trip? (We were asked).

20. Why have you rejected the idea of discussing the plan online? (I asked)

21. Where are you planning to spend your holidays? We were asked)

22. How many students are engaged in this project? (The teacher asked)

23. Why is the air in your city so polluted? (The inspector asked)

24. Why are so many traffic jams in the streets in the rush hours? (I wanted to know)

25. When will you graduate from the university? (My relatives wanted to know)

26. Why have you chosen this profession? (My dad asked me)

27. Why don't you want to be vaccinated against corona virus? (I was asked)

28. How often do you use your computer for studying? (The teacher wanted to know)

29. Why is cyber crime difficult to detect? (I wanted to know)

30. Why is artificial intelligence becoming more popular? (We were asked).

QUESTIONS to the SUBJECT in REPORTED SPEECH

Task 3. Change the sentences making the phrase in brackets the principle clause and the question – a subordinate clause. Don't forget about the rules of Sequence of Tenses.

1. Who taught you English at school? (I was asked)

2. Who helped you write this composition? (The teacher asked)

3. Who plays computer games every day? (Nina wanted to know)

4. Who won the skating competition yesterday? (My friend was interested)

5. Who lost the football match Barselona/MU? (I wanted to know)

6. What helped Peter master his computer skills? (The teacher asked)

7. What is necessary to know to be successful? (The manager asked)

8. What was your favorite school subject? (My friends were interested)

9. What do you prefer: tea or coffee? (The waiter asked)

10. What made you get up so early on Sunday? (Mum wanted to know)

IMPERATIVE in REPORTED SPEECH

Task 4. Change the sentences making the phrase in brackets the principle clause and the question – a subordinate clause. Don't forget about the rules of Sequence of Tenses.

1. Don't go home alone! (I was told)

2. Don't translate the text with a computer! (We were recommended)

3. Take these medicines three times a day. (The doc prescribed me)

4. Go to bed earlier! (Mum told me)

5. Don't eat junk food every day ((We were recommended)

6. Don't use the same words in each sentence. (We were asked)

7. Don't cross the road in this place. (We were warned)

8. Don't be late for classes. (We were told)

9. Hand in your papers in time (We were recommended)

10. Speak English at your foreign language classes (We were asked).

11. Don't forget to take your umbrella: it looks like rain (We were warned)

12. Don't forget to call Nina: she asks for help (I was told)

13. Water these flowers once in three days (We were warned)

14. Translate this text without a dictionary (We were told)

15. Fill in your application form in time (I was warned)

Task 5. Change the sentences making the phrase in brackets the principle clause and the question – a subordinate clause. Don't forget about the rules of Sequence of Tenses.

1. They are working in the garden. (We were sure).

2. I have never been to Kyiv. (I told).

3. They have been waiting for him for ten minutes. (He didn't know).

4. Tim hasn't written to them for ages. (She knew).

5. Mary will not see us. (My mother wrote).

6. He is going to the park. (He told me).

7. They are skating. (I supposed).

8. Somebody has stolen his purse. (He didn't notice).

9. Sophie is a very clever girl. (Everybody knew).

10. He doesn't agree. (He told).

11. She hasn't done her homework. (She said).

12. I don't like going to parties. (I told them).

13. She doesn't know how much the dress cost. (Mary told me).

14. We will come again next year. (We wrote them).

15. I am washing the car. (I told him).

16. He has already seen this movie. (He didn't tell us).

17. She is not feeling very well. (She told the doctor).

18. He is translating the article. (I saw).

19. She will talk to Susan. (She promised).

20. He cannot swim. (I did not suppose).

Verbs followed by prepositions

absorbed in something (especially *absorbed in her work/a book)*

confide in someone

be engrossed in something

implicate someone in something

involve someone in something

result in something

specialise in something

succeed in something

account for something

allow for something (to take into consideration)

apologize for something/someone (on their behalf: *Let me apologize for Jack.)*

blame someone/or something

care for something/someone

cater for something/someone

charge someone/or something (make them pay for it)

count for something (especially*: I count for nothing in this company.)*

earmark something/or a particular use

pay for someone/something

accuse someone of something *convict* someone of something *remind* someone of something *suspect* someone of something

acquaint someone *with* something

associate something *with* someone

charge someone *with* something

clutter with something (especially passive: *The room was cluttered with boxes.)*

coincide with something

collide with something

comply with something

concern with something (usually passive: *be concerned with)*

confront someone *with* something

confuse someone/something *with* someone/something

cram with something (especially passive: *be crammed with)*

deal with someone/something

discuss something *with* someone

face with something (especially passive: *be faced with)*

ingratiate oneself *with* someone

meet with something (especially: *meet with an accident)*

pack with something (especially passive: *be packed with)*

plead with someone

provide someone *with* something

tamper with something

trust someone *with* something

bar someone from a place

benefit from something

derive something *from* something

deter someone from something

differ from something

distinguish one thing *f*rom another thing (also *distinguish between two things)*

distract someone from something

exempt someone from something

expel someone from a place

refrain from something

resign from something

result from something

stem from something

suffer from something

translate one language *from/into* another language

base something *on* something

blame something *on* someone

centre something *on* something (usually passive: *be centred on)*

concentrate something *on* something

congratulate someone *on* something

decide on something

depend on someone/something

elaborate on something

impose on someone

insist on something/someone doing something

pride oneself *on* something

insure something *against* something *protest against* something

GRAMMAR and LEXICAL TEST
ERROR CORRECTION

In sentences 1–60 find the one underlined word or phrase (1, 2, 3, 4, or 5) that should be corrected. Then, on your answer sheet, find the number of the question and fill in the space that corresponds to the number of the answer you have chosen.

1.   My friends are so[1] hard-working businessmen that[2] I'm sure they'll make[3] a success[4] of[5] their new business.

2.   The[1] northern part of the[2] United States generally receives[3] much more snow because[4] the[5] southern part.

3. She is not ready <u>to answer</u>[1] that question <u>in the moment</u>[2] – <u>let</u>[3] her <u>do</u>[4] <u>it</u>[5] later.

4. He <u>explained</u>[1] <u>me</u>[2] what I <u>had</u>[3] <u>to do</u>[4] with <u>the</u>[5] used car.

5. <u>Studying</u>[1] a foreign language <u>leads</u>[2] students to learn about the culture of the <u>countries</u>[3] where <u>it</u>[4] <u>speaks</u>[5].

6. I am afraid this photocopier <u>has</u>[1] <u>went</u>[2] out of <u>paper</u>[3], but you can use <u>the</u>[4] <u>other one</u>[5] in my office.

7. The patient was <u>warned</u>[1] <u>don't</u>[2] eat a lot of <u>meat</u>[3] because of <u>the</u>[4] potential danger <u>to</u>[5] his health.

8. I <u>did not think</u>[1] the film <u>are</u>[2] very <u>frightening</u>[3], but my younger brother was <u>terribly</u>[4] <u>upset</u>[5].

9. The concert <u>was delayed</u>[1] because two <u>of</u>[2] <u>the</u> musicians <u>had</u>[3] <u>left</u>[4] their instruments <u>after</u>[5] the bus.

10. It <u>was</u>[1] <u>a</u>[2] very long <u>journey</u>[3] <u>after</u>[4] at the end we <u>got</u>[5] there.

11. 11 They had a bad <u>relationships</u>[1] <u>at</u>[2] first, but she <u>gets</u>[3] <u>on</u>[4] very well <u>with</u>[5] him now.

12. All <u>of</u>[1] us <u>were getting</u>[2] hungry, so I <u>suggested</u>[3] <u>to go</u>[4] to the nearest <u>snack-bar</u>.

13. There <u>are</u>[1] <u>lots</u>[2] of streets <u>with</u>[3] the same <u>name</u>[4] and it's very <u>useful</u>[5].

14. One of the <u>most</u>[1] popular American <u>holiday</u>[2] is Thanksgiving <u>which</u>[3] is <u>celebrated</u>[4], <u>in</u>[5] November.

15. Smokers are <u>warned</u>[1] <u>don't</u>[2] smoke <u>in</u>[3] <u>bed</u>[4] because of <u>the</u>[5] potential danger.

16. Some <u>from</u>[1] <u>the</u>[2] people we want to invite <u>for</u>[3] our anniversary dinner <u>will be</u>[4] <u>on</u>[5] vacation.

17. $\underline{Listening}^1$ to very loud music $\underline{at}^2$ rock concerts $\underline{have}^3$ $\underline{caused}^4$ hearing loss $\underline{in}^5$ some teenagers.

18. Small animals in $\underline{the}^1$ forest move about $\underline{so}^2$ $\underline{quick}^3$ $\underline{that}^4$ one can $\underline{hardly}^5$ catch a glimpse of them.

19. $\underline{The}^1$ car had $\underline{nobody}^2$ in $\underline{it}^3$ $\underline{because}^4$ the $\underline{engine}^5$ ran.

20. $\underline{Have}^1$ $\underline{you}^2$ $\underline{ever}^3$ $\underline{been}^4$ $\underline{in}^5$ Kiev?

21. $\underline{Would}^1$ you $\underline{like}^2$ some coffee? I $\underline{have}^3$ just $\underline{made}^4$ $\underline{any}^5$.

22. $\underline{It}^1$ has been $\underline{raining}^2$ for two $\underline{day}^3$ now. There'll be a $\underline{flood}^4$ $\underline{soon}^5$.

23. $\underline{When}^1$ I got to $\underline{the}^2$ car park I $\underline{realized}^3$ $\underline{what}^4$ I $\underline{had\ lost}^5$ my keys.

24. My grandfather was $\underline{a}^1$ $\underline{very}^2$ clever $\underline{man}^3$. He $\underline{could}^4$ speak five $\underline{language}^5$.

25. Why $\underline{didn't}^1$ Ann apply $\underline{for}^2$ $\underline{the}^3$ job? She $\underline{able}^4$ have $\underline{got}^5$ it.

26. Notice in $\underline{a}^1$ picture gallery: «Cameras, sticks $\underline{and}^2$ umbrellas $\underline{has}^3$ be left $\underline{at}^4$ the $\underline{desk}^5$».

27. $\underline{Yesterday}^1$ John $\underline{was}^2$ playing $\underline{with}^3$ football. Now he $\underline{can't}^4$ walk. He $\underline{has\ broken}^5$ his leg.

28. $\underline{I'm}^1$ going $\underline{away}^2$ $\underline{for}^3$ a $\underline{little}^4$ days. I'll phone you $\underline{when}^5$ I get back.

29. Tom $\underline{can}^1$ to drive $\underline{very}^2$ $\underline{well}^3$ but $\underline{he}^4$ hasn't $\underline{got}^5$ a car.

31. $\underline{Till}^1$ you took $\underline{more}^2$ $\underline{exercises}^3$, you $\underline{would}^4$ feel $\underline{better}^5$.

32. $\underline{If}^1$ I $\underline{had\ knew}^2$ you $\underline{were}^3$ ill, I $\underline{would}^4$ have gone to visit $\underline{you}^5$.

33. The[1] patient said[2] that the nurse[3] had given him[4] a powders[5].

34. He's going to take[1] a[2] map in case[3] he losts[4] his way[5].

35. A[1] friend of mine[2] used to work[3] as a[4] reporter in a[5] Middle East.

36. Jazz became[1] popular[2] in[3] the United States[4] in 1920s[5] years.

37. When[1] we were[2] in[3] Italy we[4] spent a[5] some days in Venice.

38. He's got[1] so much[2] moneys[3], he doesn't know[4] what to do[5] with it.

39. Noise[1] pollution generally receives[2] any[3] attention than does[4] air[5] pollution.

40. Because[1] Jane was at[2] school, she[3] was always losing[4] her books and[5] exercise-books.

41. Why[1] makes that terrible[2] noise[3]? - It is[4] the pneumatic drill; they are[5] repairing the road.

42. That's the[1] girl[2] who[3] friend lent me[4] the money[5].

43. I have to look[1] in[2] the phone[3] book because I'm not[4] knowing[5] his phone number.

44. How[1] much[2] moneys[3] did[4] you pay[5] for the trousers?

45. Some[1] these[2] books are not yours[3]. You must[4] take them[5] back to the library.

46. Must[1] you to[2] leave[3] so early? I didn't have much[4] time to[5] talk to you.

47. Most[1] babies will grow up[2] to be[3] as cleverer[4] as their parents[5].

48. They're[1] the[2] couple who[3] children were injured[4] in the[5] accident.

49. Some[1] people[2] studies[3] English for[4] a[5] special reason.

50. I really ought to[1] study tonight, as[2] there's[3] few[4] time left[5].

51. I needed some[1] informations[2] from[3] the[4] tourist guide about[5] hotels in London.

52. There[1] is usually a lot of[2] traffics[3] in the city at[4] this time of[5] the day.

53. If you want[1] to have a[2] pet you must[3] be ready to look[4] over[5] it for several years.

54. What[1] language is[2] speaking[3] in[4] your native[5] country?

55. Who[1] is[2] responsible in[3] this[4] unplanned[5] party?

56. When we returned[1] home, the[2] dinner has[3] been[4] already cooked[5].

57. A[1] weather is rather[2] changeable in[3] autumn: sometimes it rains[4], sometimes it[5] snows.

58. Nobody likes[1] to[2] be[3] interrupted while[4] he or she is speak[5].

59. They say[1] this[2] film is[3] worth seeing[4] neither[5].

60. Why was[1] this[2] book so[3] popular between[4] our students last[5] winter?

61. What made[1] you to[2] get up[3] so[4] early on[5] Saturday?

READING COMPREHENSION TEST

In sentences 1–70 choose the correct words to complete each sentence correctly and mark 1, 2, 3, 4, or 5 on your answer sheet. Only one answer is correct.

1. If Benjamin Franklin hadn't worked so hard, he wouldn't have become the_____ of America.

1	2	3	4	5
symbol	badge	marking	hallmark	device

1. If mother had not taken him to the skating rink in his childhood, he would never have become two times Olympic_____.

1	2	3	4	5
title holder	champion	winner	advocate	upholder

2. English is an international language. It is also a working language of the United Nations Organisation and _____ in many countries in the world.

1	2	3	4	5
is told	is said	is spoken	is retold	is conversed

4. People must be careful while _____ the street because many accidents are caused by dangerous driving.

1	2	3	4	5
came	crossing	went	arriving	leave

5. Ruth is learning English now because she likes learning _____ and she wants to impress everybody.

1	2	3	4	5
speeches	information	reports	protocols	languages

6. Mr. Alex Fraser worked in a local factory for forty years but even the people who had worked with him for years _____ very little about him.

1	2	3	4	5
know	investigated	knew	reported	hear

7. Vegetarians don't eat _____ meat, fish or poultry, and they avoid foods with animal products in them.

1	2	3	4	5
either	those	no	any	neither

8. No matter what kind of hobby a person_____, he always has the opportunity of learning from it and that becomes the most exciting aspect of a hobby.

1	2	3	4	5
have	possess	has	want	like

9. Our teacher informed us that the Indians had settled in the North America _____ Columbus came there.

1	2	3	4	5
if	in case	although	before	because

10. By 1906 the chocolate industry had _____ an important part of the Swiss economy.

1	2	3	4	5
turned	grown	found	become	did

11. British society is considered to be _____ into three main groups of classes – the upper class, the middle class, and the lower or working class.

1	2	3	4	5
divided	dissected	shared	separated	detached

12. Had _____ amazing experience last night. I saw a dinosaur eating meat pie in London park.

1	2	3	4	5
a	an	no	little	few

13. When the Titanic was _____ the Atlantic she struck an iceberg which tore a huge hole in her bow. The captain ordered the crew to help the passengers into the boats.

1	2	3	4	5
going	riding	coming	crossing	driving

14. Married couples with children often rent cottages by the seaside for the summer_____ .

1	2	3	4	5
festivals	celebration	holidays	hols	recess

15. Many people think that lead is _____ heaviest metal, but gold is heavier.

1	2	3	4	5
the	a	some	any	no

16. There'll always be a conflict between the old and the young but young people want _____ while the old people want things to stay the same.

1	2	3	4	5
alteration	changes	modification	substitution	replacement

17. The postman's little boy says that he _____ be a dentist than a doctor, because dentists don't get called out at night.

1	2	3	4	5
would rather	will rather	has better	had been	would be

18. Professor Jones the man who discovered the new drug that everyone is talking about, refused to give a press_____ .

1	2	3	4	5
meeting	deliberation	consultation	congress	conference

19. My aunt lived on the ground floor of an old house on the River Thames. She was very much afraid of burglars and always locked up the house very carefully _____ she went to bed.

1	2	3	4	5
in	at	on	before	upon

20. It was a windy morning but they hired a boat and went for a sail along the coast. In the afternoon the wind increased and they soon found themselves in _____ .

1	2	3	4	5
obstruction	hindrance	difficulties	hurdle	obstacle

21. Newsparers and magazines _____ in the morning.

1	2	3	4	5
is brought	bring	have bought	are brought	brought

22. The aeroplane in _____ the football team was travelling crashed soon after taking off.

1	2	3	4	5
whose	which	when	why	this

23. He usually _____ sandals but when I last saw him he was wearing boots.

1	2	3	4	5
puts	uses	wears	has	makes

24. I was alone in the house at that time _____ Mr Jones was working in the garage and Mrs Jones was shopping.

1	2	3	4	5
because	but	as	before	in

25. I went into the garden _____ what the boys were doing. James was weeding and Alexander was cutting the grass.

1	2	3	4	5
to advise	to supervise	to monitor	to counsel	to see

26. When I arrived at the meeting the first speaker had just finished _____ and the audience was clapping.

1	2	3	4	5
speaking	reading	writing	retelling	reciting

27. When I heard his knock I went to the door and opened it, but I did not _____ him at first because I was not wearing my glasses.

1	2	3	4	5
realized	became aware	recognize	understood	stared

28. As soon as Mary saw me she waved and shouted _____, but I couldn't hear what she was saying because everybody was making such a noise.

1	2	3	4	5
nothing	everything	what	something	anything

29. The teacher _____ into the classroom unusually early and one of the boys, who was smoking a cigarette, had no time to put it out.

1	2	3	4	5
went	arrived	came	reached	left

30. We are late because the boss made _____ for a meeting after work.

1	2	3	4	5
us to stay	us stay	us staying	us to staying	us to be staying

31. Mark avoids _____ on Friday nights because there's too much traffic.

1	2	3	4	5
driving	drove	have driven	was driven	will drive

32. The King's daughter was very pretty, polite, good-natured and everybody _____ her.

1	2	3	4	5
hated	liked	envied	despised	fond

33. When I arrived she _____ lunch. She apologized for starting without me but said that she always had it at 12.30.

1	2	3	4	5
had	has had	was having	to have	eat

34. He was playing the guitar outside her house _____ someone opened the window and threw out a bucket of water.

1	2	3	4	5
if	before	till	until	when

35. The thief _____ the safe when he heard the police.

1	2	3	4	5
opens	had opened	will open	was opening	to open

36. We were answering the teacher's questions when the headmistress _____ the classroom.

1	2	3	4	5
enter	enters	entered	had entered	to enter

37. When the children were walking through the wood, they _____ a fox and ran after it.

1	2	3	4	5
to see	sees	were seen	saw	see

38. I thought that I would finish my _____ in two days but unfortunately my computer shut down.

1	2	3	4	5
report	adaptation	version	conference	interpretation

39. My grandparents have been married for 50 years and are celebrating their _____ wedding next week.

1	2	3	4	5
diamond	golden	ruby	silver	wooden

40. I like country life and I'll buy that house when I _____ enough money.

1	2	3	4	5
was having	would have	have	has	o have

41. Tom won't _____ to our party, because he will be away on that date.

1	2	3	4	5
to come	came	will come	been come	come

42. Mr Pitt won't speak at the meeting tonight, _____ he has suddenly fallen ill and has been taken to hospital.

1	2	3	4	5
because	that is why	so	before	even

43. At the rate he is doing he will have spent all his _____ by the time he is twenty-one.

1	2	3	4	5
moneys	banknotes	coins	money	change

44. By the time he gets back from his holiday the milkman will have _____ twenty-one bottles of milk outside his door.

1	2	3	4	5
leaved	to leave	left	spent	spend

45. Their method was always _____ same; they would wait till their victim had left the bank and then go up to him and ask for a light.

1	2	3	4	5
a	an	any	some	the

46. He was a very _____ cat; he would sit for hours beside a mousehole.

1	2	3	4	5
persistent	constant	diligent	unwearied	patient

47. There is no point in remaining in a dangerous place if you can't do _____ to help the people who have to stay there.

1	2	3	4	5
anything	something	nothing	everything	same thing

48. If you had not missed classes last month, you _____ your exam. But you failed it.

1	2	3	4	5
would have passed	would pass	will pass	passed	to pass

49. If I had not entered the university I _____ as a tractor driver in my native village.

1	2	3	4	5
would work	work	had work	would have worked will work	would work

50. The telephone was invented by Alexander Bell _____ the end of the 19th century.

1	2	3	4	5
because	after	at	on	under

51. Spanish ____ in Spain and in some countries of Latin America.

1	2	3	4	5
is spoken	speak	speaks	speaking	to speak

52. I knew they _____ for me at the metro station and I decided to hurry.

1	2	3	4	5
will be waiting	were waiting	waited	wait	are waiting

53. He could not understand why people _____ to take water from that well.

1	2	3	4	5
wanting	did not want	don't want	does not want	will not want

54. I asked my neighbour if he _____ by air before.

1	2	3	4	5
ever to travelled	had ever travelled	travels	will travel	to travelled

55. The delegates were told that the guide _____ out and would be back in ten minutes.

1	2	3	4	5
was just gone	just went	had just gone	been going	to just go

56. My friend asked me who _____ the piano in the sitting room.

1	2	3	4	5
playing	play	to play	was playing	be played

57. He said he _____ at the factory but he had to quit the job because he didn't like it.

1	2	3	4	5
works	had worked	to work	working	work

58. Tourists are met at the station and _____ to the hotel by bus.

1	2	3	4	5
been taken	will be took	took	taken	was taken

59. Hobbies are _____ into four large classes: doing things, making things, collecting things and learning things.

1	2	3	4	5
shared	separated	isolated	insulated	divided

60. She _____ me because her son was crying loudly.

1	2	3	4	5
didn't hear	not heard	haven't hear	doesn't hear	not to hear

61. If I _____ you last year, I would have never married him.

1	2	3	4	5
met	had met	meet	to meet	meeting

62. What is _____ best place for you in the world?

1	2	3	4	5
a	–	the	some	any

63. Robert entered the room _____ 8 o'clock.

1	2	3	4	5
on	till	at	in	over

64. New school-year begins _____ September.

1	2	3	4	5
on	at	in	by	after

65. I don't think your brother _____ the party.

1	2	3	4	5
enjoy	is enjoying	has being enjoyed	is enjoyed	to enjoy

66. I can't believe that you _____ three pizzas already.

1	2	3	4	5
eat	have eaten	have been eating	has eaten	to eat

67. I feel really tired. I _____ the garden for the last three hours.

1	2	3	4	5
weeded	has weeded	had weed	have been weeding	to weed

68. By the time I got to the station, the train _____ .

1	2	3	4	5
left	has been left	had left	had being left	to left

69. By the end of the week we _____ what. to do.

1	2	3	4	5
decides	decided	will have decided	will to deciding	to decide

70. If you feel too hot _____ the night, turn down the central heating.

1	2	3	4	5
during	before	after	because	because of

ACRONYMS AND ABBREVIATIONS

ACRONYMS ARE PRONOUNCED AS INDIVIDUAL LETTERS

ADSL Asymmetric Digital Subscriber Line;

AI Artificial Intelligence;

ALU Arithmetic Logic Unit;

AMD Advanced Micro Device;

AMLCD Active Matrix Liquid Crystal Display;

API Application Programming Interface;

ARPANet Advanced Research Projects Agency Network;

ASCLII American Standard Code for Information Interchange;

ASIMO Advanced Step in Innovative Mobility;

AT&T American Telephone & Telegraph company;

ATA Analogue Telephone Adaptor;

ATM Automated Teller Machine;

AVI Audio Video Interface.

B2B Business to Business;

B2C Business to Customer;

BASIC Beginner's All-purpose Symbolic Instruction Code;

BIOS Basic Input/Output System;

bit binary digit;

BPM Business Process Management;

bps bits per second.

C2C Customer to Customer;

CAD Computer Aided Design;

CAVE Cave Automatic Virtual Environment;

CCD Charge-Coupled Devices;

CD Compact Disk;

CD-R Compact Disk-Recordable

CD-ROM Compact Disk-Read Only Memory

CD-RW Compact Disk-Rewritable

CEO Chief Executive Officer

COBOL Common Business-Oriented Language

CPU Central Processing Unit;

CRM Customer Relationship Management;

CU Control Unit.

DAB Digital Audio Broadcasting;

DAW Digital Audio Workstation;

DBA Data Base Administrator;

DBMS Database Management System;

DDR Double Data Rate (RAM);

DIY do-it-yourself;

DMB Digital Multimedia Broadcasting;

DNS Domain Name System;

dpi dots per inch;

DSL Digital Subscriber Line;

DTP Desktop Publishing;

DVD Digital Versatile Disc or Digital Video Disc;

DVD-R Digital Versatile Disc-Recordable;

DVD-ROM Digital Versatile Disc-Read Only Memory;

DVI Digital Video Interface.

ECM Enterprise Manadement;

EDI Electronic Data Interchange;

EDVAC Electronic Discrete Variable Computer;

EFT Electronic Funds Transfer;

ENIAC Electronic Numerical Integrator and Calculator;

ERP Enterprise Resource Planning.

FAQ Frequently Asked Questions;

FED Field Emission Display;
FORTRAN FORmula TRANslation;
FTP File Transfer Protokol.

GB Gigabyte (1.024 megabytes);
GIF Graphic Interchange Format;
GIS Geographic Information System;
GPL General Public License;
GPS Global Positioning System;
GSM Global System for Mobile communication;
GUI Graphical User Interface.

HDD Hard Disk Drive;
HP Hewlett Packard;
HR Human Resources;
HTML Hypertext Markup Language;
HTTP Hypertext Transfer Protocol;
Hz herts.

IaaS Infrastructure as a Service;
IAD iProducts (iPad, iPod, iPhone) Adverticement;
I/O Input/Output;
IBM International Business Machine;
IC Integrated Circuit;
ICT Information and Communications Technologies;
ID Identification (Disambiguation);
IM Instant Messaging;
IP Internet Protocol;
IR Instruction Register;
IrDa Infrared Data Association;
IS Information System;
ISP Internet Service Provider;
IT Information Technology.

JPG (JPEG) Joint Photographic Experts Group.

k 1) kilo, used to denote a thousand; 2) 1.024 bytes;
KB kilobyte (1.024 bytes).

LAN Local Area Network;
LCD Liquid-Cristal Display.

.mov QuickTime movie;
Mac Macintosh computer;
MAN Metropolitan Area Network;
MB Megabyte (1.024 kilobytes);
MHz Megaherts;
MIDI Musical Instrument Digital Interface;
MIPS Million Instructions Per Second;
MIS Management Information System;
MMS Multimedia messages;
Modem Modulator/DEModulator;
MP3 MPEG-1 Layer-3 Audio;
MPEG Moving Pictures Experts Group;
ms millisecond.

NIS Network Interface Card;
NSF National Science Foudation;
NUI Network User Identifier.

OCR Optical Character Recognition;
OLE Microsoft's Object Linking and Embedding standard;
OLED Organic Light-Emitting Diodes (display);
OOP Object Oriented Programming;
OS Operating System.

.pdf portable document format;
PAN Personal Area Network;

PaaS Platform as a Service;
PC 1) Personal Computer 2) Program Counter;
PCL Printer Control Language;
PDA Personal Digital Assistant;
PDL Page Descroption Language;
PIN Personal Identificatiom Number;
pixel picture element;
png portable network graphic;
ppm pages per minute;
PPP Point to Point Protocol.

.ra RealAudio file;
RAM Random Access Memory;
RGB Red, Green. Blue;
RFID Radio-Frequency identification;
RIM Research in Motion;
RIP Raster Image Processor;
RISC Reduced Instruction Set Computer;
ROM Read Only Memory;
RPM Rotations Per Minute;
RSI Repetitive Strain Injury;
RSS Really Simple Syndicator.

SaaS Software as a Service;
SD RAM Synchronous Dynamic Random Access Memory;
SME Small and Medium-sized Enterprise;
SIM (card) Subscriber Identity Module;
SMS Short Message Service;
SMPT Simple Mail Transfer Protocol;
SOHO Small Office/Home Office;
SSL Secure Sockets Layer;
SSM Solid State Memory;

SXGA Super XGA (Extended Graphics Array).

TAN Transaction Authorization Number;
TB Terabyte (1.024 gigabytes);
TCP/IP Transmission Control Protocol;
TET Thin Film Transistor (display);
TIFF Tagget Image File Format.

UMTS Universal Mobile Telecommunications;
URL Uniform Resource Locator;
USB Universal Serial Bus.

VAT Value Added Tax;
VCR Videocassette Recorder;
VDU Visual Display Unit;
VE Virtual Environment;
VGA Video Graphics Adapter/Array;
VoiceXML Voice Extensible Markup Language;
VoIP Voice over Internet Protocol;
VPN Virtual Private Network;
VRML Virtual Reality Modeling (or Markup) Language.

.wav Windows wave audio file;
WAI Web Accessibility Initiative;
WAN Wide Area Network;
WiFi Wireless Fidelity;
WIMP Window, Icon, Menu (or mouse) and Printer;
WP Word Processing;
WWW World Wide Web.

XGA Extended Graphics Array;
XML Extensible Markup Language.

WXGA Wide XGA (Extended Graphics Array).

VOCABULARY

A

ability – здібність;
abstain – утримуватись;
abuse – зловживання;
accretion – приріст;
accuse – звинувачувати;
acquisition – надбання;
addendum – доповнення, додаток;
additional property expenses – додаткові витрати з нерухомості;
adjust – пристосовуватись;
advanced – просунутий;
alumni – вихованці, випускники;

amok – втратити розум;
ancestor – предок;
appeal – заклик, звернення;
approach to – підхід;
approximately – приблизно;
aptitude – здатність;
arable land – орна земля;
augment – збільшення, додавання, приріст;
augmented – додана, розширена реальність;
availability – доступність.

B

ban – забороняти;
behavioristic – зумовлений поведінкою;
blackmailing – шантаж, наклеп;
blame – звинувачувати;

blend – суміш;
blunder – груба помилка;
borrowing powers – кредито-спроможність.

C

calumny – наклеп;
cancellation – скасування;
capable of – здібний до;
capital goods – засоби виробництва;
cash benefit – грошова допомога;
casual labour – тимчасова робоча сила;
charges – плата;
clarity – ясність;
cognitive – пізнавальний;
cohesive ties – зв'язки;
collective bargaining – колективний договір;
completeness – завершеність;
commitment – зобов'язання;
comprehend – розуміти;
confidence – впевненість;
confirmation – підтвердження;
confined – обмежений, прикріплений;
constraint – примушування;

consistency concept – принцип послідовності;
counterfeit goods – підробки, фальшивки; контрафактні товари;
convergence – збіг, конвергенція;
corporal punishment – тілесне покарання;
crackdown – удар;
creditworthiness – кредитоспромож-ність;
creed – переконання, віросповідання;
crime – злочин;
custodian – зберігач, сторож;
custody – опіка, збереження;
to take into custody – заарештувати;
cue – натяк, підказка;
Customs – митниця;
customs duty – митний збір, мито.

decline – спад, зниження;
diversity – різноманіття;
deduction – відрахування;
delay – затримка;
depleted – спустошений;
discarded – непотрібний;
disruption – руйнування;

D

divergence – розбіжність, відхилення;
donate – жертвувати;
drought – засуха;
dual – подвійний;
durability – міцність, тривалість.

educated – освічений;
elicit – викликати;
elimination – знищення;
eloquence – красномовство;
endure – терпіти, зносити;
ensue – слідувати, наступити;

E

errand – доручення;
evaluation – оцінка;
exhibit – експонат;
explicit (conscious) – свідомий;
extortion – вимагання.

fairness – чесність, справедливість;
fallibility – помилковість;
fake – підробка;
fault – провина;
fidelity – вірність;
fire – звільнити з роботи;
forceful – переконливий;

F

forger – фальшивомонетник;
forgery – підробка;
fraud – обман, шахрайство;
frontiersman – прикордонний житель;
fulfilment – виконання.

garbage – сміття;
gene therapy – генна терапія;
genesis – походження;
gifted – обдарований;
gimmick – хитромудрий пристрій, хитрощі, дивовижа;

G

goal – мета;
go-between – посередник;
guidance – вказівка;
guilty – винний;
gold rush – золота лихоманка.

harassment – образа, приниження, домагання;
heaven – небеса;
hemisphere – півкуля;
herd – стадо;

H

heredity – спадок;
heritable – успадкований;
holocaust – знищення у вогні;
homage – повага;
hypocrisy – лицемірство.

illicit – незаконний;
immersive – занурений, втягнутий;
immerse in debt – заплутатись у боргах;
intrusion – вторгнення**;**
impact of changes – вплив змін;
implementation – впровадження;

jealousy – ревнощі;
jealous – ревнивий;
justice – правосуддя, справедливість;

keystone – головний принцип;
kidnapping – викрадення;

latent – прихований;
lateral – побічний, сторонній, другорядний;
law-obedient – законослухняний;

mediocrity – посередність;
merit – заслуга;
merge – зливатися ;
modifiability – здібність до модифікації;

neglect – нехтувати;
neural – нейронний;
nobility – знать, дворянство;

observance – дотримання;
observant – спостережливий;
obsession – нав'язливість;
occurrence – виникнення, поява;

I

implicit (unconscious) – несвідомий;
innocent – невинний;
in-service training – курсова перепідготовка;
islet – острівець;
insolvent – неплатіжеспроможний;
interrelated – взаємозалежний.

J

judge – суддя;
justification – підтвердження.

K

kinetic – рухомий;
knowingly – свідомо.

L

liability – відповідальність;
limelight – центр уваги;
lineage – походження;
lumber – лісоматеріал.

M

monitor – постійно перевіряти;
mould – форма для чеканки монет;
multiple-choice – множинний вибір;
murder – вбивство.

N

nominate – висувати;
non-violent – ненасильницький.

O

onlooker – спостерігач;
omit – опускати;
overlap – перекривати.

peninsular – півострів;
perceiving – сприйняття;
perish – гинути ;
perpetrator – виконавець;
personality – особистість;
persecution – переслідування;
perseverance – наполегливість, стійкість;
persuade – переконувати;

queer – незвичайний;
questionnaire – опитування;
quest – пошуки;

refinery – нафтоочисний завод;
responsibility – відповідальність;
reciprocal effect – зворотній ефект;
redundancy – надлишок;
reference – посилання;
relevance – відношення;

scores – здобутки, надбання;
search – обшук;
self-assessment – самооцінка;
sensory deprivation – втрата сенсорних відчуттів;
sexual harassment – сексуальні домагання;
simplification – спрощення;
sin – гріх;
skills – навички;

talented – обдарований, талановитий;
tenacity – упертість;
tentative – пробний, попередній;
tenure – перебування на посаді;

P

persuasion – переконання;
pragmatic considerations – прагматичні міркування;
privacy – особисте життя;
prosecute – звинувачувати;
proficiency – уміння;
prolific – плідний;
punishment – покарання.

Q

quilt – стьобана ковдра;
quotation – цитування.

R

resignation – відставка;
revolt – повстання;
rigid – жорсткий;
royalty – королівські особи;
rural – сільський.

S

sophistication – спотворення;
sufficient – достатній;
support – підтримка;
surveillance – нагляд, спостереження;
susceptible – чуттєвий;
suspect – підозрювати;
squash – кабачок;
syllabus – програма.

T

terrestrial – земний, наземний;
thirst – спрага;
threaten – загрожувати;
torrent – потік.

ultimate – останній;
uncertainty – невизначеність;
undergraduate – студент останнього курсу;

valid – дійсний, діючий;
vendor – продавець;
vernacular language – розмовна мова;

wilderness – дика місцевість;
wipe out – стирати, знищувати;
withstand – протистояти, витримувати;

U

uniformity – єдність, однаковість;
unrewarding – невдячний.

V

vital – життєвий;
vitality – життєздатність;
vocational education – професійна освіта.

W

withdraw – відходити, видаляти;
well-grounded – обґрунтований;
witness – свідок.

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