С. О. Медведєва, О. Д. Мельник

Practical English
for
Information and Communication
Technologies

Частина I

Міністерство освіти і науки України

Вінницький національний технічний університет

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Електронний навчальний посібник

комбінованого (локального та мережного) використання

Рекомендовано до видання Вченою радою Вінницького національного технічного університету Міністерства освіти і науки України (протокол № 9 від 28.04.2022 р.)

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Навчальний посібник призначено для студентів закладів вищої освіти, які вивчають інформаційно-комунікаційні технології, містить автентичні фахові тексти, лесичні та граматичні вправи комунікативного спрямування. Посібник також укомплектований аудіо- та відеокурсом, що дає змогу використовувати оригінальні професійно орієнтовані записи зі спеціальності з метою формування навичок аудіювання.

Contents

UNIT 1

APPLICATION OF COMPUTERS

TASK 1. Discuss the following questions.
1. What is ICT?
2. What does ICT study?
3. What does English for Specific Purposes study?
4. Does General English differ from English for Specific Purposes?

TASK 2. A) Read the text. The words in bold are familiar to you in general English. But can you think of a different meaning for each word used in an ICT context?

Anna phoned the **language** school where she was working to say she had caught a **virus** and was too ill to work. Then she **plugged in** her player, found a little **bit** of dark chocolate in the fridge, and sat down to **browse** through her magazine and play with her pet **mouse**. Half an hour later she called the local Chinese restaurant and ask what there was on the **menu.** Anna had just chosen her lunch when the postman arrived with a **package addressed** to her. She stepped out to get it and the door closed behind her. Anna realized her **keys** were inside her apartment and she got locked out.

B) Fill in the gaps with one of the words in bold from Task 2 (A). Change the form if necessary.

1. Select an option from the drop-down _____ .
2. The smallest unit of data in a computer is called a _____, short for binary digit.
3. The aim of anti- _____ software is to protect computers from infection.

4. High-level programming _____, such as C and C++, are composed of letters, numbers and symbols.
5. To view information on the Internet you need a web _____.
6. Click on the _____ twice to open the program.
7. This software _____ includes a number of programs that businesses will find useful.
8. One way to protect data is to encrypt it so that only someone with the correct _____, or password, can open it.
9. Most Internet _____ begin www.
10. You may need to install a _____ to play music or watch films on your computer.

TASK 3. Read and translate the groups of sentences. Pay attention to the different meanings of the words in bold. Write out the words in bold, translate and learn them.

1. A **keyboard** consists of a number of keys used to create letters, numbers, and symbols, and perform additional functions. – He briefly played **keyboards** with a rock-and-roller John Mellencamp.
2. That **cookie's** junk, you shouldn't have bought it! – **Cookies** can be used to administer logins and enhance the security of the system, to analyze users and their behaviour.
3. After the collapse of the Eastern Bloc, a new wave of migration of **Rom** started. – Despite some changes in **ROM**, it was mostly compatible with the motherboard.
4. His **backbone** is longer than it's supposed to be. – Education is the **backbone** of the economic recovery of the country. – The firm has built a new broadband Internet **backbone** across the country.
5. These medicines are also available in capsule dosage form and a **tablet**. – She took the **tablet** so I'm stuck using the laptop. – The poem was engraved on a **tablet** of stone.
6. This little **attachment** allows you to take photographs using your mobile phone. – Opening the file displays the **attachment** in a new window. – That was before I understood your **attachment** to me was hindering your progress. – These statements can be found in the **attachment** to the present paper.
7. Close all applications including the **browser**. – We can show you strategies that will help you turn **browsers** into buyers.
8. Regular **application** of the medicine should reduce the symptoms within 24 hours. – The Bulgarian Government recently submitted an official **application** for full membership in the European Union. – OpenOffice 1.1 became a very good office **application** getting faster and more stable.
9. He was an experienced player who was always trying to improve his **performance**. – High-**performance** cars are the most expensive. – This

was a very impressive **performance** by the young player, who managed to score 10 points within the first ten minutes.

10. Will this spray get rid of those little black **bugs** that are attacking my shrubs? – He said they had eliminated all the **bugs** in the software.

_____*LISTENING*

TASK 4. Listen to four people talking about how they use computers at work.

A. Write down each speaker's job;

B. Match the words and word combinations to the speakers:
    a) to catalogue and classify books and newspapers,
    b) to design electrical installations and lighting systems,
    c) to write memos and letters,
    d) to write music,
    e) to do office things,
    f) to record, store and control the sound,
    g) to be in charge of other services like printing,
    h) to make drawings,
    i) to communicate with the offices around the world,
    j) to help people with their enquiries,
    k) to produce the sound,
    l) to be linked up to the international offices by email,
    m) to test installations,
    n) to store information,
    o) to assist customers in the use of software and hardware.

C. Be ready to talk about each speaker's job and the application of computers in his / her job.

TASK 5. Look at the list of these professions and say how they use computers.
- an accountant,
- an architect,
- a doctor,
- a teacher,
- an engineer,
- a pilot,
- a shop assistant,
- a designer,
- a mechanic,
- a student.

TASK 6. Match the words and word combinations with their Ukrainian equivalents. Learn the words.

1. accuracy	a) шифрувати
2. ATM (automated teller machine)	b) зберігати
3. by means of	c) записувати
4. CAD (Computer-Aided Design)	d) програмне забезпечення
5. communication	e) банкомат
6. customer	f) забезпечувати
7. enquiry	g) оглядати, досліджувати
8. equipment	h) проектувати
9. hardware	i) за допомогою
10. insurance	j) запит
11. software	k) оцінювати
12. to be in charge of	l) клієнт, покупець
13. to design	m) апаратне забезпечення
14. to emerge	n) зв'язок
15. to encrypt	o) постачати
16. to enhance	p) страхування
17. to evaluate	q) обладнання
18. to examine	r) комп'ютеризоване проектування
19. to permit	s) точність
20. to provide	t) універсальність, різнобічність
21. to record	u) виникати, з'являтися
22. to store	v) збільшувати, покращувати
23. to supply	w) дозволяти
24. versatility	x) бути відповідальним за

TASK 7. Match the synonyms. Translate and learn them.

1. to enhance	a) cashpoint
2. ATM	b) to allow
3. accuracy	c) to improve
4. to emerge	d) quick
5. fast	e) to be responsible for
6. to permit	f) to study
7. hardware	g) to assist
8. to help	h) to encode
9. to be in charge of	i) programs and instructions
10. software	j) equipment
11. to examine	k) to appear
12. to encrypt	l) precision

TASK 8. Replace the words in bold with their synonyms. Use the correct grammar form.

1. These standards require high **precision** and improved international monitoring.
2. Homo sapiens **appeared** about 400 000 years ago.
3. She bought some new **hardware** for her system.
4. You are to learn how to **encrypt** personal information on your local computer to prevent other people from reading it.
5. We have seen **cashpoints** become entirely normal and worldwide accepted.
6. He is **in charge of** personnel recruitment.
7. Children are not **permitted** in without their parents.
8. Their living expenses are constantly **enhancing**.
9. We must **examine** carefully the details of his proposals.
10. She **assisted** the boy with his homework.

_____*READING*

TASK 9. Read and translate the text.

APPLICATION OF COMPUTERS

The modern age is the age of Information Technologies. Nowadays computers have become an integral part of our lives, having penetrated all the spheres of our society, particularly the fields where computations are required to be done at a very fast speed and accuracy, and where data is so complicated that the human brain finds it difficult to cope with. Now, we will discuss the application of computers in various fields.

Business _____

People can start a business, run the business and manage the business by means of a computer. A computer has a high speed of calculation, reliability, accuracy, and versatility which has made it an integrated part of all business spheres. Today everything is controlled and managed by computers. Business organisations and companies use computers to do marketing and business planning, record customer data, manage and sell goods and services. Calculating machines are also essential for payroll calculations, budgeting, sales analysis, financial forecasting, managing employee databases, maintenance of stocks, etc. Besides, anyone today can start his or her business from home as a freelancer and work remotely from home with the use of a computer and the Internet.

Banking

It's hard to imagine modern banks without computers. In banks, computers are used to store information about the money held by each customer and enable staff to access large databases and carry out financial transactions at high speed. They also control the cashpoints, or ATMs (automatic teller machines), which dispense money to customers by the use of a PIN-protected card. Another way in which computers make it easier for customers to manage their money is through online and mobile banking, which allows clients to pay bills easily and transfer money from the comfort of their homes.

Education

Modern IT technologies enable computer-based and distance learning. With computers and the internet, students today have a wealth of information at their fingertips that can help them develop their research and communication skills while preparing them for a future career in the workforce. Educational systems all over the world are implementing new teaching approaches and syllabuses. Information and communication technologies (ICT) have facilitated the spread of learning tools such as learning platforms, cloud services of storage, digital online labs, webinar events, virtual classrooms, etc. They have improved classical education and provided new flexible learning solutions.

Healthcare

Computers play an important role in hospitals and labs. The major fields of health care in which they are used include:

- Diagnostic Systems − Computers are used to collect data and identify the cause of illness.
- Lab-diagnostic System − All tests can be done and the reports are prepared by computers.
- Patient Monitoring System − The procedures like ECG, X-ray scanning or ultrasonic scanning is used to examine patients.
- Pharma Information System − A computer is used to check medication labels, expiry dates, harmful side effects, etc.
- Surgery − Nowadays, computers are also used in performing surgery.

Engineering Design

Computers are widely used for engineering purposes. In Architectural engineering computers help in designing buildings, planning towns, determining a range of buildings on a building site using both 2D and 3D drawings. In Industrial Engineering computers deal with the development of materials and equipment, their improvement and implementation. CAD (Computer-Aided Design) is widely used here. It provides the creation and modification of images.

Military

Computers are playing an increasingly important role in the military and defence. They can do a broad range of tasks, such as geospatial analysis, and smart weapons control. Computers are used in tanks, planes and ships to target enemy forces, help diagnose any problems. They provide communications systems, hold documents, process data, etc. Modern military vehicles, missiles, weapons, etc. employ highly computerized control systems.

Communication

Computers are critical for communication and are the centrepiece of information technology. The early 1990s saw the emergence of household Internet use, which eventually spurred the common use of email, websites, blogs, social networking, video chats and Voice-Over-Internet Protocol. The World Wide Web, the Internet and email revolutionized the way people communicate with each other. Rather than waiting days or weeks to see information, we can now view all information at the speed of light. An email has fundamentally transformed how people share information and conduct business based on the speed and flexibility it offers.

TASK 10. Reread the text and find English equivalents of the Ukrainian words and word combinations in the text.

Проникати в усі сфери суспільства, застосування комп'ютерів, керувати бізнесом за допомогою комп'ютера, записувати інформацію про клієнтів, продавати товари та послуги, фінансові прогнози, отримати доступ до великих баз даних, проводити фінансові транзакції, мати велику кількість інформації під руками, встановити причину хвороби, оглядати пацієнтів, перевіряти термін придатності, проектувати будівлі, визначати розташування будинків на будівельному майданчику, виконувати геопросторовий аналіз, забезпечувати системи зв'язку.

TASK 11. Use collocations in the box to complete these sentences.

access the Internet	perform operations	do research	make calls
send messages	display data	write letters	store information
	complete exercises	carry out transactions	

1. With the latest mobile phones, you can _____ with multimedia attachments like pictures, audio, and even video.
2. Thanks to Wi-Fi, it's now easy to _____ from cafes, hotels, parks and many other public places.
3. Online banking lets you _____ between your accounts easily and securely.
4. Skype is a technology that enables users to _____ over the Internet for free.
5. Students are encouraged to _____ using PowerPoint to make their talks more visually attractive.
6. The Web has revolutionized the way people _____ with sites such as Google and Wikipedia, you can find the information you need in seconds.
7. Cookies allow a website to _____ on a user's machine and later retrieve it; when you visit the website again, it remembers your preferences.

TASK 12. Read and translate the text about MOOCs. Fill in the gaps with suitable words and word combinations. There are 2 extra words and word combinations you should not use.

learning goals	range	supplies	integrate	facilitators
includes	universities	available	self-organise	flexible
high levels	participation	to make sure	forums	

The MOOC model for digital practice

Massive open online course (MOOC) is a successful and popular mode of distance learning first introduced in 2008. A MOOC is aimed at large-scale interactive (1) _____ and open access via the web. In addition to traditional course materials such as videos, readings, and problem sets, MOOCs provide interactive user (2) _____ that help build a community for the students, professors, and teaching assistants. MOOCs provide an affordable and (3) _____ way to learn new skills, advance your career, do college preparations, supplemental learning, corporate eLearning & training, and more.

MOOCs (4) _____ social networking, accessible online resources, and are facilitated by leading practitioners. Most significantly, they build on the engagement of learners who (5) _____ their participation according to (6) _____, prior knowledge and skills, and common interests.

Typically, each MOOC (7) _____ a course provider and a course platform. A course provider is often a university, which (8) _____ the course materials

and instructors. The platforms – such as EdX, Canvas, Coursera or Udacity – provide the technological infrastructure for course modules, user access and other learning resources.

Providers of MOOCs are mostly (9) _____ but may also be corporate entities. Top educational institutions and universities, such as Harvard, the Massachusetts Institute of Technology (MIT) and Stanford, are leading providers of online courses. Corporations such as Microsoft and Accenture also provide publicly (10) _____ online courses. When searching for a MOOC to take, it is important (11) _____ that the course aligns with the student's education and career goals.

The cost of MOOCs can (12) _____ significantly both in price and structure. Many MOOCs are completely free, whereas online degree programs that contain a bundle of courses can cost tens of thousands of dollars.

TASK 13. Translate into English using active vocabulary and word collocations from previous exercises.

1. Завдяки використанню новітнього медичного обладнання, лікарі можуть швидко оглянути пацієнтів та встановити причину хвороби.
2. Комп'ютери використовуються в усіх сферах життя сучасного суспільства.
3. Банкіри та фінансисти маєть доступ до великих баз даних і можуть проводити як фінансові транзакції так і робити фінансові прогнози з великою точністю.
4. У бізнесі дуже легко співпрацювати з постачальниками та замовниками використовуючи сучасні високопотужні комп'ютери та мережу Інтернет.
5. Жодне сучасне підприємство не в змозі продуктивно виконувати роботу без допомоги комп'ютерних систем контролю.
6. Вам слід знати, як працює комп'ютер.
7. Де ще використовуються комп'ютери?
8. Він ще не вміє писати комп'ютерні програми, чи не так?
9. Хіба ви не можете зробити це за допомогою комп'ютера?
10. Він не зміг скористатися принтером, оскільки він зламався.

_____ *GRAMMAR*

TASK 14. Watch the video lecture about Greek and Latin affixes on https://www.videoclass.com/video/greek-and-latin-affixes and answer the questions.
1. How many common English words are derived from Latin or Greek?
2. How many technical and scientific words are derived from Latin and Greek?
3. How many new English words can a single Latin or Greek root generate?
4. Why is it important to know Latin or Greek roots?

TASK 15. Read and translate the words paying attention to the meaning of the Latin and Greek prefixes.

Prefix	Meaning	Example
macro-/mega-	large in size or duration	macroeconomics, megabyte
micro-	very small	microprocessor
multi-	many or much	multitasking
semi-	half	semiconductor, semiautomatic, semicircle, semifinal
dec-	ten	decimal
de-	remove, reduce	decode, deactivate, delete, defrost, decompress
re-	again	reboot, rearrange, rebuild, remake
ultra-	very, extremely	ultrathin, ultrasonic, ultramodern, ultra-short
ex-	out; former	exclude, extend, ex-champion
inter-	between	international, interface, intercommunication
bi-	two	binoculars, binary, bipolar
hyper-	excessive	hyperactive, hypersensitive, hypercritical
co-	together	collegue, coauthor, coedit, coexist
trans-	across	transatlantic, transpolar, transportation

TASK 16. Fill in the gaps with the correct prefix from the list. Some of them are to be used twice.

semi-(x2) co- trans- re-(x2) hyper- micro- mega- bi- de-(x2)

1. We have only one planet, and we must learn to ____exist on it.
2. Just as a triangle is half of a square, a _____circle is half of a circle.
3. Ruby is the fastest _____atlantic cable that there is.
4. _____directional satellite Internet communication is a perfect solution for those who prefer high quality and good service.
5. It is not difficult to find many of the features of '_____activity' in modern social life.
6. At the beginning of 2009, Nova Company passed a resolution to _____construct the telephone network.
7. Portable computers, by their nature, are _____computers.
8. A _____byte equals approximately one million bytes.
9. Once you finish your program, you will have to test it and _____bug it to remove all the mistakes.

10. The introduction of _____conductor technology has revolutionized the computer industry.
11. The _____imal system is a number system based on 10.
12. The _____chargeable battery of a laptop is charged from an AC adapter and typically stores enough energy to run the laptop for 2 to 3 hours in its initial state.

TASK 17. Study the information in the table about compound nouns.

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Compound Nouns

Compound nouns are a group of two or more nouns that act as a single noun. The first part of the word or the word combination tells us what kind of object or person it is, or what its purpose is. The second part identifies the object or person. The last word in the chain says what the thing is, while the preceding word or group of words describes the thing. So when we translate compound nouns, we usually have to start with the last word and work backwards.

Compound nouns as a single word.

This type of compound noun is formed by combining two words into a single word:

- **Noun + noun:** motherboard
- **Verb + noun:** runtime
- **Adjective + noun:** smartphone, hardware, software
- **Preposition + noun:** download, overtime
- **Verb + preposition:** breakdown

Compound nouns as separate words.

This type of compound noun is formed by using two separate words together, they are acting as a single unit.

- **Noun + noun:** printer cartridge, computer memory, video card
- **Verb + noun:** driving licence
- **Adjective + noun:** copper wire

Compound nouns with hyphens.

Some compounds can use hyphens.

- Hard-disk drive, post-graduate

Compound nouns may have more than two nouns:

- Random Access Memory (RAM)
- Graphical User Interface (GUI)

</td></tr>
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TASK 18. Read and translate compound nouns.

Research centre, data input, solar power, car battery, battery car, air supply, water source, circuit diagram, computer language, software technology park, file transfer protocol, chairman, copyright, database, deadline, calculation speed,

communication satellite, data processing module, backspace, general-purpose, graphics processor, handwriting recognition, voice recognition, solid-state storage device, power efficiency, stand-alone, object-oriented, time-sharing.

TASK 19. Rewrite the sentences below to form compound nouns.
e.g. development of the software for microprocessors – microprocessors software development

- a program written in Python;
- characteristics of the system;
- introduction to the components of the memory;
- codes for the communication of data;
- system for the management of codes;
- characteristics of digital computers;
- a language for programming at a high level;
- instructions used for the control of the program;
- the main languages for programming.

TASK 20. Study the information in the table about word order in English questions.

	Question word	Auxiliary verb (depends on the tense form)	Subject	Predicate	Object	Adverbial modifier
General question	___	**Am (is, are) Was (were)**	I he (she, it) we you they	___	___	at the University?
		Do / does (Did Will Can Have, has Had)	I he (she, it) we you they	attend / attended	classes	every day / yesterday / tomorrow / yet?
Alternative question	___	**Do / does (Did Will Can Have, has Had)**	I he (she, it) we you they	study / studied	___	at school **or** at University?

Special question	What Where When How Why	**do / does (did will can have, has had)**	I he (she, it) we you they	study?	___	___
Subject question	Who What Whose (friend)	___	___	studi**es**	___	at the University?
Tag question	___	___	I **he (she, it)** we you they	studi**es** / doesn't study	at the University,	doesn't he? does he?
				studied / didn't study	at the University,	didn't he? / did he?
				have / has studied	at the University,	hasn't he? / has he?
				can / can't study	at the University,	can't he? / can he?

TASK 21. Build questions of different types to each sentence.

1. We study at Vinnytsia National Technical University.
2. We don't study at Vinnytsia National Medical University.
3. Our classes start at 8.15.
4. The students are listening to the lecture in the lecture hall.
5. They follow the instructions of their teacher.
6. He prepares the equipment for the experiments two times a week.
7. He prepared a report for the conference yesterday.
8. The students will know the results of the test tomorrow morning.
9. Daniel is repairing his laptop now.
10. Mathematics was my favourite subject at school.
11. They will be good specialists in 4 years.
12. There are many foreign students at our University.
13. Yesterday we were late for the English lesson.
14. My father graduated from VNTU 20 years ago.
15. He has already done this task.
16. They will have a lot of work to do next month.

TASK 22. Group work. There are two groups (A and B). Group A reads its statements and Group B should contradict them. Each group is to provide not less than 3 arguments for or against the statement. While answering, use the following phrases:

I wouldn't say so.
But on the other hand, ….
It seems to me…
I'd like to point out…
I don't support this idea.
I agree with this statement but still…

A	B
1. Computers are very useful in education. 2. It's great to chat with friends on social media websites. 3. You can store all your personal information on your computer. 4. Computers can make the mind lazy, especially in terms of education. 5. If students need to research information, they merely access a relevant site and download the information.	1. Computers and the Internet make communication easier. 2. You can play computer games for hours. 3. When computers are down, our way of life breaks down. 4. Computers offer enormous recourses for entertainment. 5. Our society has developed technological dependence.

TASK 23. Choose one of the areas in the diagram below and discuss what tasks are performed with the help of computers in each area. Use the Active Vocabulary from Unit 1 to help you.

Education field
Business
Hospitals
Banking

Government Offices
Home
Marketing
Students

Uses of Computer
www.klientsolutech.com

TASK 24. Write a passage (150 words) on one of the topics. Be sure to use topical vocabulary.

1. How ICT has led to changing work patterns.
2. Computers make learning more fun and more exciting.
3. It is possible to gain in-depth knowledge about any subject on the Net.
4. Information technology and business are becoming inextricably interwoven

_____*PROFESSIONAL READING*

TASK 25. Read and translate the text.

Information and Communication Technology (ICT) at Work

ICT plays a key role in business today. In fact, its use is now so widespread that it is difficult to succeed without it. Rapid developments in the ICT sector in the last two decades have produced a huge range of new products and services. These include products such as personal computers (PCs), notebooks and fax machines, and services such as e-mail, intranet and the Internet, Businesses of all sizes and types use computer-based systems like these because they offer a better way to work - one which can save time and money.

Firstly, ICT is a faster and more efficient way for people to communicate, Businesses no longer have to rely on slow postal services. They can send and receive information and documents by text, e-mail or fax. Video-conferencing means people do not need to travel long distances to attend meetings. ICT provides a way for people within an organization to contact each other quickly and share work. It also means that they can work with people around the world.

ICT is also used to input, store and manage information. One common use of office computers is to record, find and work with information. For example, businesses use word-processing (WP) or desktop publishing (DIP) packages to produce company documents, and databases to store customer details and produce mailing lists. In the past, these tasks took hours, days or even weeks and produced a lot of paperwork. With ICT they take less time and cost less. Such electronic systems also save storage space.

Another area where ICT is important is the retail industry. Most items on sale in shops have a small black and white label called a bar code. Many shops combine bar-coding with electronic point-of-sale (EPOS) systems. The customer takes an item to the cashier, who uses a scanning device to read the bar code and find out the price of the item. The EPOS system logs each sale and helps the shop manager to decide which products to reorder from the supplier. Some EPOS systems are even programmed to do the ordering.

Manufacturers use new technology to design and build products. At the design stage, they use computer-aided design (CAD) software to produce new ideas and designs. In the production stage, many companies use robots. These are machines that do the work of people and are controlled by computer-assisted manufacturing (CAM) programs. Robots can carry out routine, complex and dangerous procedures. They can work 24 hours a day and the standard of their work remains constant because they do not get tired or bored. As a result, companies can improve their production rates without losing quality.

New technology, then, offers a range of benefits. Firstly, it saves time. Tasks that once took a long time to do by hand now take a fraction of that time. Secondly, ICT improves communication between people, speeding up business transactions and decision-making, and opening up new markets around the world. Thirdly, inexpensive ICT solutions can often replace expensive people. Consequently, companies can reduce the size of their workforce and their wage bills. Finally, ICT can increase the quantity and improve the quality of goods produced, which may also increase profits.

However, it is important to understand that there are costs as well as benefits. ICT systems can be very expensive. Companies have to choose systems that suit their needs and are cost-effective before investing in ICT. They have to consider several factors. Firstly, technology is constantly developing, which means that systems need to be regularly upgraded. Another issue is staff training. There is no point in installing an ICT system if workers cannot use it. Lastly, there is the cost of technical support, such as a helpdesk, to ensure that everything runs well daily.

Modern technology is here to stay. It would be almost impossible to ignore computer-based systems or to return to work without them, However, successful use of ICT requires investment in both equipment and skills. Businesses of all sizes need to make the right choices because there are risks, as well as benefits, involved.

TASK 26. Reread the text from the Professional Reading section. Find the words in the box in the text, and write out word combinations with these words from the text. Build sentences using these word combinations.

key	fax	publishing	store	space	combine
		logs	routine	reduce	

TASK 27. Answer the questions.
1. What types of businesses are discussed in the article?
2. How is ICT used in different types of businesses?
3. What are the advantages for businesses of using ICT?
4. What factors do businesses have to consider before they invest in ICT?

UNIT 2

COMPUTER EVOLUTION

TASK 1. Discuss the questions.
1. When was the first computer developed?
2. What was the first calculating device in the world?
3. What country was the first computer developed in?
4. What did the first computers look like?
5. Compare the first computers with the modern ones. How have they changed?
6. What will computers be like in the future?

TASK 2. Focus on the stages of the development of computing devices. Look at the pictures, guess the names of the devices and denote the time period when they appeared.

• analytical engine • abacus • slide rule • mechanical calculator (pascaline)	• punched card • analogue computer • electronic digital computer • ENIAC
1632 1642 1834 3000 BC 1943	1725 1930s 1942

1_____

2_____

3_____

4_____

5_____

6_____

7_____

8_____

_____*VOCABULARY*

TASK 3. Match the words and word combinations with their Ukrainian equivalents. Learn the words.

1. abacus	a) додавати
2. analogue	b) віднімати
3. artificial intelligence	c) множити
4. binary digit	d) ділити
5. bus	e) рахівниця, абак
6. calculating device	f) обробляти
7. capacitor	g) вводити дані

8.	digital	h)	виводити дані
9.	diode	i)	двійкове число
10.	meter	j)	перфокарта
11.	pressure	k)	обчислювальний прилад
12.	punched card	l)	винаходити
13.	relay	m)	зрозумілий, дружній для користувача
14.	resistor	n)	лічильник, вимірювальний прилад
15.	to add	o)	вакуумна лампа
16.	to call for	p)	штучний інтелект
17.	to collate	q)	діод
18.	to consume	r)	конденсатор
19.	to devise	s)	резистор
20.	to divide	t)	реле
21.	to input data	u)	споживати
22.	to invent	v)	шина
23.	to multiply	w)	аналоговий
24.	to output data	x)	блок, пристрій, одиниця
25.	to process	y)	цифровий
26.	to subtract	z)	тиск
27.	unit	aa)	напруга
28.	user-friendly	bb)	вимагати, потребувати
29.	vacuum tube	cc)	зіставляти
30.	voltage	dd)	розробляти

TASK 4. Fill in the gaps with the words or word combinations from the active vocabulary given in Task 3. Use the correct grammar form.

1. The two basic mathematical operations pupils learn at primary school are to _____ and _____ small numbers.
2. Alexander Bell _____ telephone in 1897.
3. The invention of a computer mouse and graphical user interface made computers more _____.
4. Computers have given banks the possibility to _____ millions of transactions at the speed of light.
5. Abacus is a simple _____ that people used since ancient times until computers became a part of our lives.
6. All information on the computer is represented in the form of _____, which are the combination of zeroes and ones.
7. A _____ is a piece of paper where digital information is represented by the presence or absence of holes in it.
8. _____ is a computer technology that deals with making machines work and think similar to the way the human mind works.
9. An _____ is a simple device for calculating, consisting of a frame with rods on which a specific number of beads are free to move.

10. A _____ is a device that measures and records the quantity, speed or degree of something.
11. The standard _____ in Ukraine is 220 volts AC.
12. The active catalogue system gathers and _____ information about parts so that engineers can access all the information in one place.

TASK 5. Match the words with their definitions.

1. perform	a) keep, save
2. digital	b) execute, do
3. word processor	c) monetary
4. store	d) screen
5. online	e) embedded, integrated
6. financial	f) connected to the Internet
7. download	g) collection of facts or figures
8. monitor	h) to match, to compare
9. built-in	i) describes the information that is recorded or broadcast using computers
10. data	j) a program used for text manipulation
11. to devise	k) copy files from a server to your PC or mobile
12. to collate	l) to create, to fabricate

TASK 6. Replace the words in bold with the equivalents from the box.

contemporary	built-in	devised	count	showed	compare
productivity	plain	different kinds	tiny	presented	instruct

1. Software is a set of programs that **give commands to** the hardware to perform certain tasks.
2. **Varieties of types** of integrated circuitry are used in **modern** supercomputers.
3. **Embedded** computers are **small**, **simple** devices, which are used to control other devices.
4. Herman Hollerith, an American inventor, **fabricated** the calculating machine able to **calculate**, and **collate** information stored on a punch card.
5. A device called 'tabulator' quickly **demonstrated** the **efficiency** of mechanical data manipulation.
6. IBM **introduced** its Personal Computer in 1981.

_____READING

TASK 7. Read the text. Choose from (a – j) the one that best fits each space (1 – 8). There are two choices you do not need to use.

a) *There are two different types of computers – analogue and digital.*
b) *People are the most important component of the computer system.*
c) *The most common form of computer in use today is the embedded computer.*

d) *In addition, hardware devices can include external components…*
e) *An incredibly important contribution to computer technology development…*
f) *IBM made punch-card office machinery…*
g) *hardware, software, people, procedures, and data;*
h) *This process is called digitization*
i) *a method that was already used to control automatic silk-weaving machines called Jacquard looms*
j) *His 'tabulator' quickly demonstrated the efficiency of mechanical data manipulation.*

The term computer is used to describe a device made up of a combination of electronic and electromechanical components. The computer has no intelligence by itself and is referred to as hardware which is the computer's physical electronic and mechanical parts. A computer system can be viewed as consisting of five most vital elements: (1) _____. When one computer system is set up to communicate with another computer system, connectivity becomes the sixth system element of the total computer system. (2) _____: they create the computer software instructions and respond to the procedures that those instructions present.

(3) _____. Analogue computers solve problems by using continuously changing data (temperature, pressure, voltage) rather than by manipulating discrete binary digits (1s and 0s) as digital computers do. In current usage, the term computer usually refers to digital computers. Hybrid computers combine elements of both types. Digital computers are generally more effective than analogue computers for three principal reasons: they are not as susceptible to signal interference; they can convey data with more precision, and their coded binary data are easier to store and transfer than analogue signals are. Such computers can represent any type of data, from numbers and letters to musical notes. (4) _____.

A vague image of the modern computer was first outlined in 1833 by British mathematician Charles Babbage. His design of an 'analytical engine' contained all the necessary elements of a modern computer: input devices, a store (memory), a mill (computing unit), a control unit, and output devices. The design called for more than 50,000 moving parts in a steam-driven machine as large as a locomotive. Most of its actions were executed through the use of perforated cards: (5) _____ by the name of the inventor. It was one of the first programmable devices.

In the 1880s Herman Hollerith developed a calculating machine able to count, collate, and sort information stored on punch cards. (6)_____. In 1896 Hollerith founded the Tabulating Machine Company to produce similar machines. In 1924 the company changed its name to IBM.

From 1939 to 1942, American physicists John V. Atanasoff and Clifford Berry built a computer based on the binary numbering system. Their ABC (Atanasoff-Berry Computer) is often credited as the first electronic digital computer.

(7) _____ is made by Steven Jobs and Stephen Wozniak, the founders of the Apple II computer. The first devices that resemble modern computers date to the mid-20th century (1940–1945).

Early electronic computers were the size of a large room. Modern computers are based on tiny integrated circuits. (8)_____. Embedded computers are small, simple devices that are used to control other devices – for example; they may be found in machines ranging from fighter aircraft to industrial robots, digital cameras, and children's toys.

TASK 8. Decide if the following statements are True or False.

1. The principle of work of analogue computers is the same as of digital computers.
2. Digital computers have greater performance.
3. The basis of computer organisation was laid by Charles Babbage.
4. An analytical engine couldn't be programmed.
5. The Tabulating Machine Company is the predecessor of IBM.
6. The ABC computer was the first to use binary notation.
7. The function of an embedded computer is to control other devices.

_____*VIDEO*

TASK 9. Watch the video about the history of computers. Then read the statements and decide if they are True or False. Correct the False ones.

1. Abacus and slide rules were the first mechanical calculating devices.
2. Steve Jobs is often referred to as 'the father of computers.'
3. A working model of the analytical engine was never built by its author.
4. The very first electronic computers were developed by Konrad Zuse in the USA in the period 1935 to 1941.
5. The Z3 was the first working, programmable and fully automatic digital computer.
6. The Colossus computer was built by the British to break encrypted German codes during WWII.
7. ENIAC (built in 1943 in the USA) stands for the Enormous Numerical Integrator Analyzer and Computer.
8. ENIAC weighed 30 tons, was 100 feet long and eight feet high.
9. Similar to a vacuum tube, a transistor controls the flow of electricity, but it is only a few millimetres in size and generates little heat.

10. Computer systems using vacuum tubes are considered the second generation of computers.
11. Computer systems using transistors are considered the first generation of computers.
12. Computer systems using integrated circuits are considered the third generation of computers.
13. Computer systems using microcontrollers are considered the fourth generation of computers.
14. The Altair 8800 made in 1975 had neither keyboard nor monitor.
15. Stephen Jobs and Steve Wozniak created a personal computer in 1976 that had a keyboard, display and disk storage. They called it Mark I.
16. Bill Gates and Paul Allen developed software for Altair 8800 and founded Microsoft.
17. A personal computer (a PC) was developed by IBM in 1981.
18. The first IBM personal computer didn't use any operating system.
19. The graphical user interface was introduced in the 1980s both by Apple and by Microsoft.
20. According to Moor's Law, the number of transistors on an integrated circuit doubles approximately every two years.

TASK 10. Watch the video again and answer the questions.

1. When and where did the first calculating device appear?
2. How was it called?
3. What calculating device was invented in 1621 and was widely used until the 1970s?
4. Who is often referred to as 'the father of computers'?
5. What did Charles Babbage develop in 1830?
6. What were its peculiarities?
7. Did Babbage build a working model of his analytical engine?
8. Who created the computer Z3?
9. The Z3 was the first working, programmable and fully automatic digital computer, wasn't it?
10. For what was the Colossus computer used?
11. Did ENIAC and Colossus computers work on vacuum tubes or transistors?
12. What computer systems are considered the first / the second / the third / the fourth generation of computers?
13. Which computer had neither keyboard nor monitor? When was it developed?
14. By whom was the Apple I developed?
15. What company did Bill Gates and Paul Allen set up?
16. What company developed a personal computer (a PC) in 1981?
17. What kind of an operating system did it use?
18. When was the graphical user interface introduced?

TASK 11. Match the words with the examples on the right.

1. cardinal numbers	a) ¼, 2/3, 28/36
2. ordinal numbers	b) first, second, third, …
3. decimals	c) 1, 2, 3, …
4. fractions	d) 12%, 89%...
5. percentages	e) 2.3, 4.698

N.B. Each digit after the decimal point is read separately: *two point three*, *four point six nine eight.*

TASK 12. Learn how to say numbers in English. Watch the video on https://www.youtube.com/watch?v=spxGl07DmtM.

TASK 13. Read the following numbers.

65%, 3 ½, 3.4, 8.5%, 1/3, 2.87, 5.625, 2/3, 2/5, 6^2, 5^3, 2^5, 5X6, 30^0, 1940, 2005, 2022, the 20th, 13, 30, 15^0, 5.421, 2 6/7, 100, 159, 1005, 3851, 35485, 154658

TASK 14. Read the text and fill in the gaps with the words from the box.

programming language	workstations	occurred	had come out
spreadsheet	graphical user interface	technology	mainframe
	market leader		

The IBM mainframe computer of the 60s
    The 1960s saw large (1)_____ computers become much more common in large industries as well as in the US military and space programmes. IBM became the (2) _____ in selling these large, expensive and very hard-to-use machines.

The PCs of the 70s
    A veritable explosion of personal computers (3) _____ in the early 70s, starting with Steve Jobs and Steve Wozniak exhibiting the first Apple II at the First West Coast Computer Fair in San Francisco. The Apple II boasted built-in (4) _____ called BASIC, colour graphics, and a 4100 character memory. Programs and data could be stored on a common audio cassette recorder.

The Apple Macintosh

By 1984, Apple and IBM (5) _____ with new models. Apple released the first generation Macintosh, which was the first computer to come with a (6) _____ and a mouse. The GUI made the machine much more attractive to home computer users because it was easy to use. IBM released the IBM PC/IT, which, with applications like Lotus 1-2-3, a (7) _____ and Microsoft Word, quickly became very popular all over the world.

Today's powerful home computers

Now people have their own personal graphics (8) _____ and powerful home computers. The average computer a person has at home is dramatically more powerful than a machine like ENIAC.

The computer revolution has been the fastest-growing (9) _____ in man's history.

TASK 15. Read the text about the first computer ENIAC and fill in the gaps with the words from the box.

electronic	consumed	cost	solve	designed	perform
digital	buses	save	subtract	vacuum tubes	punch card

ENIAC stands for 1) _____Numerical Integrator And Computer. It was the first electronic general-purpose computer. It was 2) _____, and it was capable of being reprogrammed, it could 3) _____many numerical problems. ENIAC was conceived and 4) _____by John Mauchly and John Presper Eckert of the University of Pennsylvania.

The completed machine was announced to the public February 14, 1946 at the University of Pennsylvania, having 5)_____almost $500,000 (approximately $6,000,000 today).

ENIAC was a modular computer, composed of individual panels to 6) _____different functions. Twenty of these modules were accumulators, which could not only add and 7) _____but hold a ten-digit decimal number in memory. Numbers were passed between these units across several 8) _____. In order to achieve its high speed, the panels had to send and receive numbers, compute, 9) _____the answer, and trigger the next operation – all without any moving parts.

ENIAC contained 17,468 10)_____, 7,200 diodes, 1,500 relays, 70,000 resistors, 10,000 capacitors and around 5 million hand-soldered joints. It weighed more than 30 tons, was roughly 2.4m x 0.9m x 30m, took up 167 square meters, and 11) _____150 kW of power. Input was possible from an IBM card reader, and an IBM 12)_____ was used for output.

TASK 16. Answer the questions.

1. What does the word ENIAC stand for?
2. What are the key features of ENIAC?
3. Who was ENIAC designed by?
4. When was the computer announced to the public?
5. What kind of a computer was it?
6. What electronic components did the computer contain?
7. How much room did it occupy?
8. How much did it weigh?
9. How could information be input into and output from the computer?

_____ *GRAMMAR*

TASK 17. Study the information in the table about Present Tenses (Active). Define when each tense is used.

Tense	Affirmative	Negative	Interrogative	Adverbial modifiers
Present simple	I (you, we, they) **load** the computer every day. She (he, it) **loads** the computer every day.	I **don't load** the computer every day. She **doesn't load** the computer every day.	**Do** you **load** the computer every day? **Does** she **load** the computer every day?	*always* *usually* *often* *sometimes* *regularly* *every day / week*
Present continuous	I **am loading** the computer. You (we, they) **are loading** the computer. He (he, it) **is loading** the computer.	I **am not loading** the computer. You **are not loading** the computer. He **is not loading** the computer.	**Am** I **loading** the computer? **Are** you **loading** the computer? **Is** she **loading** the computer?	*now* *at present* *at the moment*

Present perfect	I (you, we, they) **have loaded** the computer. She (he, it) **has loaded** the computer.	I **have not loaded** the computer. She **has not loaded** the computer.	**Have** you **loaded** the computer? **Has** he **loaded** the computer?	*already* *just* *yet* *recently* *lately* *ever* *never* *this week* *today*
Present perfect continuous	I (you, we, they) **have been loading** the computer. She (he, it) **has been loading** the computer.	I (you, we, they) **have not been loading** the computer. She (he, it) **has not been loading** the computer.	**Have** (you, we, they) **been loading** the computer? **Has** she (he, it) **been loading** the computer?	*since 2 o'clock;* *for 3 hours*

* State verbs describe states rather than actions. They are not usually used in the Continuous or Perfect Continuous forms:
Like, love, hate, believe, forget, know, be, remember, forget, belong, contain, hear, smell, see, taste, have (possess), think, understand, etc.

TASK 18. Put the verb in brackets into the correct form.

Carol: Hi Nigel! How are you?
Nigel: Fine. fine. It's been a long time, hasn't it? So tell me about yourself.
Carol: Well, for the time being, I _____ (work) in a language school in Cairo but I want to change my job as soon as I _____ (find) a better-paid one.
Nigel: I see. What _____ (do / you) here in London?
Carol: I _____ (have) a holiday.
Nigel: That's lovely. And what _____ (think/you)of Cairo?
Carol: Actually. I like it very much. It _____(be) a very exciting place.
Nigel: And what about your job? Is it difficult?
Carol: Not really. I _____ (teach / usually) from 11 a.m. to 2 pm. And then later again from 6.30 to 9.30. In the evenings my friends and I _____ (go) into town very often. We _____ (prefer) to come together at each other's houses and chat.
Nigel: You _____ (seem) to enjoy your days in Cairo. So when are you going back?
Carol: Next week on Friday. My plane _____ (leave) early, at about 7.00 a.m.
Nigel: By the way, how is your brother?
Carol: Chris... oh. He's OK. He is married with two children and as usual he _____ (not / stop) telling me that I should settle down and get married. These days he _____ (play) a lot of football. I _____ (guess) he wants to get fit!

TASK 19. Complete the conversation with the correct form of the words in brackets. Use the Present Perfect or Present Perfect Continuous.

A. How long _____ (you / study) Higher Mathematics.

B. I _____ (not/study) Higher Mathematics for long, only since I started University.

A. What _____ (you / do) in class recently?

B. We _____ (solve) different problems and _____ (study) theorems.

A. How many problems _____ (solve)?

B. So far, we _____ (solve) 30 problems.

A. _____ (you / ever / think) of studying Higher Mathematics at University?

B. No, it _____ (not / cross) my mind. I _____ (always / be) more interested in Algebra.

A. _____ (you / find) any similarities between Algebra and Higher Mathematics?

B. To some extend. But Higher Mathematics _____ (be) more difficult for me.

TASK 20. Build questions to the underlined words.

1. They have bought a new laptop.
2. You are reading the notes very carefully.
3. James is waiting for you near the lecture hall.
4. My cousin wants to study IT at university.
5. They have been discussing a new project for an hour.

_____*SPEAKING*

TASK 21. Group work. There are two groups (A and B). Each group is to name 3 inventions which they consider crucial for the development of computer technologies and IT. The other group should either agree or contradict. Use the following phrases.

USEFUL EXPRESSIONS TO EXPRESS YOUR OPINION

In my opinion, ...
To my mind, ...
As far as I am concerned, ...
Speaking personally, ...
From my point of view, ...
As for me, ...
My view / opinion / belief / impression / conviction is that ...
I would say that ...
It seems to me that ...
I believe that ...

I have no doubt that ...
I am sure / I am certain that ...
I think / consider / find / feel / believe / suppose / presume / assume that ..
It goes without saying that ...

USEFUL WORDS TO EXPRESS YOUR AGREEMENT

I agree with you/him...
I share your view.
I (really) think so.
You are (quite / absolutely) right about that.
I have come to the same conclusion
I hold the same opinion.
We are of one mind / of the same mind on that question.

USEFUL WORDS TO EXPRESS YOUR DISAGREEMENT

I don't agree.
I disagree.
I don't think so.
You are / he is wrong.
I think otherwise.
I don't think that's quite right.
I don't agree with you (with what you say).
I am afraid that is not quite true.
I take a different view.
I don't share his / her / your view.
Not at all!
Nonsense!

TASK 22. Prepare a report about one of the computers of the past. Be sure to mention:

- when and by whom it was developed;
- what technical characteristics it had;
- what technologies it used;
- what it was used for.

_____*WRITING*

TASK 23. Write a passage on the following topic in 150 words. Be sure to use topical vocabulary.

How do you imagine 2050 computers? Will they be very different from the current ones? What will be different?

TASK 24. Read and translate the text about future trends in computing.

The more recent and faster the evolution of computers is the more difficult it is to draw a line between the generations. We are currently living through the fifth, going on to the sixth, generation of computers, whose aim is to develop devices that respond to natural language rather than machine language, and are capable of learning and self-organization, while altogether being smaller and less expensive.

The present generation relies on ULSI technology, that is Ultra Large-Scale Integration, which consists in placing more than about one million circuit elements on a single chip, thus allowing for faster processes. Some other aspects this generation of computers has achieved are the development and simplification of storage devices and memories, the development of parallel processing, i.e. the division of tasks across multiple processing units operating simultaneously thus increasing the speed of processing, and the development of easier and wider networking capabilities.

All these features, combined with the development of Artificial Intelligence, are leading computers into their sixth generation. The idea is that of focusing on human-computer interaction (HCI), with the objective of reducing the gap between machines and the human brain. New intelligent systems are in fact trying to learn from past errors and mimic human communication, and they are starting to reason and learn, answering to natural language, optical and touch inputs.

Artificial Intelligence, therefore, together with quantum computers – which take advantage of some physical properties of atoms that allow them to work simultaneously as 'qubits' rather than consecutively as the binary systems do with hits, thus being able to perform millions of calculations in parallel – and nano-biological computers which combine microscopic dimensions with biologically derived molecules to explore new and unexplored scientific scenarios – are becoming the future of computers.

So, what more can we expect in the near future? We expect evolutions of the present virtual and augmented reality, i.e. the addition of a digital layer on top of the real physical world, developments of perceptual computing, i.e. interacting with computers using gestures, eye movements or voice, more wireless solutions, more progress in 3D technologies and new applications, shapes and uses of present devices such as bands, mobiles and tablets.

However, 'the question persists and indeed grows, as to whether the computer will make it easier or harder for human beings to know who they really are to identify their real problems, to respond more fully to beauty, to place adequate value on life, and to make their world safer than it now is.'

(Norman Cousins, 'The Poet and the Computer', in Perspectives on the computer revolution, 1989).

TASK 25. Decide if the following statements are True or False. Correct the False ones.

1. It's easy to distinguish between different generations of computers.
2. ULSI technology allows for faster processing thanks to the higher number of integrated circuits.
3. Parallel processing consists in multiple units sharing the same tasks.
4. HCI stands for Human-chip interaction.
5. Qubits work consecutively, taking advantage of ULSI technology.
6. Perceptual computing is adding a new layer to the real physical world.
7. The sixth generation of computers aims at developing computers able to reason and learn, using natural language processing.
8. Nano-biological computers are used in science to give life to microscopic devices.

TASK 26. Read and translate the text. For questions (1–6), choose the answer (A, B, C or D) which you think fits best according to the text.

Student life and technology

By Debra Mallin, a business student at Greyfort University

Last Saturday, as my grandfather drove me and my sister home from dinner to celebrate his birthday, he got frustrated at not being able to remember the name of the singer of a song he'd just heard on the radio. Without a second thought, I grabbed my smartphone, searched for the song and found the name, Bob Dylan. For me and my friends, this is a completely natural course of action, but it totally astonished my grandfather, who didn't understand how I had checked the information so quickly. My sister and I laughed and explained, but afterwards, it made me think about how much I depend on technology.

The list of the ways I use technology is endless: writing, planning, socialising, communicating and shopping, to name a few. When I reflected on its impact on my education, I saw that, for my fellow students and I, technology has been significant in many ways. Returning to the story of my grandfather and the smartphone, he had asked me more about how I used it and about university life. He said he thought we had an easy life compared to previous generations. My sister caught my eye and we exchanged a smile. But whereas she was thinking our grandfather was just being a typical 65-year-old, I could see his point.

Not only are we lucky enough to have the same educational benefits as those of previous generations, we have so many more as well. We still have walk-in libraries available to us, and I can see why some students choose to find and

use resources in these distraction-free locations. However, the only option for studying used to be sitting in these libraries with as many books from your reading list as you could find, yet now a single search for your chosen study topic online can immediately provide access to a huge range of resources. At universities, the interaction between students and university staff is another area that has changed considerably with developments in technology. We can have face-to-face time with our tutors when we need it, and also communicate using our electronic gadgets from the comfort of our homes, or on the bus. The most popular means of doing this is via instant messaging or social media – email is often considered too slow, and it has become unacceptable for messages to be unanswered for any length of time. While this puts an extra strain on the university's academic support team, who usually have to answer the queries as they come in, we students are greatly benefitted.

It's important that we remember to appreciate how much the advances in technology have given us. Electronic devices such as tablets, smartphones, and laptops are now standard equipment in most classrooms and lecture halls, and why shouldn't they be? The replacement of textbooks with tablets allows students the luxury of having up-to-date, interactive and even personalised learning materials, with the added benefit of them not costing the earth.

When we compare the student life of the past and that of the present day, it is tempting to focus on the obvious differences when it comes to technology. In actual fact, students are doing what they've always done: embracing the resources available and adapting them in ways which allow them to work more efficiently and to live more enjoyably. The pace of change in technology continuously gathers speed, so we have to value each innovation as it happens.

1. What does the writer illustrate by describing the incident in the car?

    A. the older generation's frustration at people's dependence on technology
    B. how unaware young people are of some effects of technology
    C. the difference in attitudes to technology between the two generations
    D. how technology helps different generations communicate

2. What did the writer think of her grandfather's comment, mentioned in the second paragraph?

    A. It showed how out-of-date he was.
    B. It had an element of truth in it.
    C. It was an annoying thing to say.
    D. It made her feel sorry for him.

3. What does the writer say about getting study resources from libraries?

    A. She considers libraries more preferable places for study than home.
    B. She cannot understand why anyone chooses to go to a library now.
    C. She appreciates the fact that people can still study in libraries if they want to.
    D. She thinks libraries are limited by the number of resources they can store.

4. What disadvantage of new technology does the writer mention in the third paragraph?

    A. Those who can afford the best gadgets gain an unfair advantage.
    B. Sometimes slow internet connections make communication difficult.
    C. A heavier workload is created for teaching staff at the university.
    D. Students cannot escape from dealing with university issues.

5. What is the purpose of the question 'Why shouldn't they be?' in the fourth paragraph?

    A. to express an opinion
    B. to introduce some problems
    C. to make a criticism
    D. to indicate uncertainty

6. What is the writer's conclusion about students today in the final paragraph?

    A. They have such different lives from previous generations that it's unwise to compare them.
    B. They deal better with change than previous generations did.
    C. They take advantage of new resources more quickly than previous generations did.
    D. They are behaving in a similar way to previous generations of students.

UNIT 3

TYPES OF COMPUTERS

_____*LEAD IN*

TASK 1. Discuss the questions.
1. What types of computers do you know?
2. What is the difference between a desktop PC and a laptop?
3. What is the difference between a laptop and a tablet?
4. What kind of computer do you have?
5. What computer would you buy and why?

_____*VOCABULARY*

TASK 2. Match the words and word combinations with their Ukrainian equivalents. Learn the words.

1. application	a) обчислювати
2. artificial intelligence	b) дані, інформація
3. bus	c) жорсткий диск
4. CAD (Computer Aided Design)	d) пристрій збереження інформації
5. CAM (Computer Aided Manufacturing)	e) ємність пам'яті
6. chassis, case	f) пристрій введення
7. data	g) пристрій виведення
8. digital	h) периферійні прилади
9. expansion board	i) операційна система
10. GUI (graphical user interface)	j) основна (оперативна) пам'ять
11. hard drive	k) взаємодіяти
12. input unit	l) графічний інтерфейс користувача
13. laptop	m) мережа
	n) передавати

37

14. main memory	o) цифровий
15. network	p) ноутбук
16. operating system	q) планшет
17. output unit	r) обробляти
18. peripherals	s) прикладна програма; застосування
19. resolution	t) штучний інтелект
20. storage capacity	u) роздільна здатність
21. storage unit	v) шина
22. tablet	w) зберігати
23. to communicate	x) використовувати
24. to compute	y) плата розширення
25. to employ	z) портативний
26. to process	aa) корпус
27. to store	bb) комп'ютеризоване проектування
28. to transmit	cc) комп'ютеризоване виробництво
29. wearable, portable	

TASK 4. Match the words with their definitions.

A	B
1. computer	a. information;
2. software	b. a metal case that sits upright on your computer desk and includes all the computer components;
3. operating system	c. to exchange information;
4. data	d. this system software allows all the hardware and software components to work together;
5. main memory	e. RAM (Random Access Memory);
6. tower	f. a visual way of interacting with a computer using items such as windows, icons and menus;
7. to communicate	g. an electronic device that performs certain tasks
8. graphical user interface (GUI)	h. possessing sufficient knowledge about computers
9. server	i. programs and data
10. computer literacy	j. a computer that manages access to centralized resources or services in a network.

TASK 5. Translate into English using active vocabulary and word collocations from previous exercises.

1. Операційна система – це основне програмне забезпечення, яке керує всіма апаратними та іншими програмами на комп'ютері.
2. Операційні системи зв'язуються з апаратним забезпеченням пристрою.
3. В основній пам'яті комп'ютера зберігаються програми, команди і дані, з якими найбільш інтенсивно взаємодіє процесор.
4. Графічний інтерфейс користувача – це частина операційної системи, яка забезпечує взаємодію користувача з комп'ютером.

5. Сервер – це потужний комп'ютер, призначений для збереження інформації і забезпечення доступу до неї з віддалених клієнтських пристроїв.
6. Системний блок комп'ютера – це корпус, в якому знаходяться основні функціональні компоненти персонального комп'ютера.
7. Роздільна здатність екрана комп'ютера – це кількість пік селів, яку він може відображати.
8. Основною характеристикою пам'яті є її ємність, яку вимірюють в одиницях вимірювання пам'яті; найменшою одиницею є біт.
9. Периферійні пристрої – додаткове обладнання, що підключається до комп'ютера.
10. Плата розширення – це електронна картка, яка вставляється в слот розширення на материнській платі комп'ютера та використовується для додавання додаткової функціональності комп'ютеру.

_____*LISTENING*

TASK 6. Listen to a lecture about types of computers.

b) As you listen, label the pictures with the words from the box.

laptop	desktop PC	PDA	mainframe	tablet PC

a _____   b _____   c _____

d _____   e _____

c) Listen again and decide whether these sentences are True or False. Correct the False ones.

1. A mainframe computer is less powerful than a PC.
2. A mainframe is used by large organizations that need to process enormous amounts of data.
3. The most suitable computers for home use are desktop PCs.
4. A laptop is not portable.

5. Laptops are not as powerful as desktop PCs.
6. Using a stylus, you can write directly onto the screen of a tablet PC.
7. A Personal Digital Assistant is small enough to fit into the palm of your hand.
8. A PDA does not allow you to surf the Web.

READING

TASK 7. Read and translate the text about different types of computers.

Types of Computer

A computer is a programmable electronic machine that processes data and performs calculations and other tasks. Computers can be divided into several main types depending on their size and power.

Supercomputers are very expensive computers with high computational performance. They are employed for specialized applications that require immense amounts of mathematical calculations and huge processing speed. They are often found at places like research centres, scientific institutes, military and defence organizations, or weather forecasting stations, where speed is of vital concern. For example, the United States' National Oceanic and Atmospheric Administration, which has some of the world's most advanced weather forecasting capabilities, uses some of the world's fastest computers – capable of more than 8 quadrillion calculations per second.

Mainframes are very large and expensive computers capable of supporting hundreds, or even thousands, of users simultaneously. They are connected to hundreds of terminals over a network. They are mainly used by big companies and organizations such as banks, airline companies, hotel chains, hospitals or governmental organisations because they are able to deal with big amounts of data. Their time processing is measured in nano or pico seconds and they are endowed with multi-tasking capacity and the ability to work on different operating systems simultaneously. The chief difference between a supercomputer and a mainframe is that a supercomputer channels all its power into executing a few programs as fast as possible, whereas a mainframe uses its power to execute many programs concurrently. In some ways, mainframes are more powerful than supercomputers because they support more simultaneous programs. But supercomputers can execute a single program faster than a mainframe.

Servers are computers designed to provide services to other computers over a network, their

main function is to process requests and deliver data to computers over the Internet or a local network. Servers usually have powerful processors, lots of memory and large hard drives. They control access to the hardware, software and other resources on a network and provide a centralized storage area for programs, data and information. Servers support from two to several thousand connected computers at the same time. Depending on their function, there are different server types, such as proxy server, mail server, server platforms, Web server, application server, FTP server, etc.

A **workstation** is simply a desktop computer that has a more powerful processor, additional memory, high-end graphics adapters and enhanced capabilities for performing a special group of tasks, such as 3D graphics or game development. It is used for engineering applications (CAD/CAM), software development, and other types of applications that require computing power and high-quality graphics capabilities. Workstations generally come with a large, high-resolution screen, a large amount of RAM, built-in network support, and a graphical user interface. Like desktop computers, they are intended for individual users. But in comparison with desktops, they are much speedier.

Personal computers (PCs) are computers designed for general use by a single person. PCs can be either desktops or laptops. **Desktop** PCs can be generally classified by size and chassis (case). The chassis is the metal frame that serves as structural support for electronic components. All main computer components like power supply, motherboard, and storage devices are held in a case. It also contains slots for expansion boards. There are two basic types of case designs – desktop models and tower models, but there are many variations of these two basic types.

A **laptop computer** is small enough that it can sit on your lap. Nowadays, laptop computers are more frequently called notebook computers. It can work as fast as a desktop PC, with similar processors, memory capacity, and disk drives, but it is portable and has a smaller screen. Modern notebooks have screens that produce very sharp images. Instead of a mouse, they have a touchpad built into the keyboard – a sensitive pad that you can touch to move the pointer on the screen. They offer many connectivity options: USB (Universal Serial Bus) ports for connecting peripherals, slots for memory cards, etc. They come with battery packs, which let you use the computer when there are no electrical outlets available.

Tablets are wireless, portable devices with a touchscreen interface. Tablets can do pretty much all the

functions that laptops do, but they usually have low-performing processors. They also have less storage capacity than traditional PCs. Tablets are more portable than PCs, have a longer battery life yet can also do smartphone-like activities such as taking photos, playing games and drawing with a stylus. For those who like the keyboard functionality of a laptop, some tablets come with a keyboard (attached or detachable).

Wearable computers can be worn by a user. They include smartphones, watches, glasses, clothing, shoes, sleep monitors, heart rate trackers, intelligent earbuds and similar items. Wearables allow users to track their location, altitude, calories burned, heart rate, pulse, blood pressure, steps, speed, etc. Nowadays devices that can be implemented under the skin are under development. They are supposed to be able to track various biological processes happening in your body.

Wearables are indeed a new horizon in personal computing. Their flexibility and mind-warping potential speak to the idea that the computer revolution isn't over. If anything, the PC era might just be getting underway.

(based on https://computer.howstuffworks.com/10-types-of-computers10.htm)

TASK 8. Reread the text and find English equivalents of the Ukrainian words and word combinations in the text.

Обробляти дані, виконувати обчислення, величезна швидкість обробки, виконувати багато програм одночасно, обробляти запити, доставляти дані, підтримувати декілька тисяч з'єднаних комп'ютерів одночасно, додаткова пам'ять, високоякісна графіка, екран з високою роздільною здатністю, вбудована підтримка мережі, графічний інтерфейс користувача, додаткові жорсткі диски, корпус, плата розширення, блок живлення, материнська плата, прилади збереження данних, ноутбук, планшетний комп'ютер, чітке зображення, периферійні прилади, мережа, навушник.

TASK 9. Read the definitions and say which type of computer they refer to.

1. It is a small multifunctional device that can be used as a telephone, a web explorer and a personal organizer.
2. It is a typical computer found in many businesses and popular for home use. It is not portable.
3. It is a large computer used for intensive data processing and often linked to many terminals.
4. It is a small computer that fits into items of clothing.
5. It is a portable computer that can be closed up like a briefcase, but it can be as powerful as a desktop PC.
6. It is a wireless, portable device with a touchscreen interface. It is typically smaller than a notebook computer but larger than a smartphone.

TASK 10. Answer the questions.

1. What types of computers do you know?
2. What type of computer is the most powerful one? Where is it used?
3. What is the difference between a supercomputer and a mainframe?
4. What is a server? What types of servers do you know?
5. Where are workstations used? What are their basic characteristics?
6. What is the difference between a desktop PC and a laptop PC?
7. What do you know about wearable computers? What types of wearable computers are there?
8. What type of computer do you prefer to work on?

_____*VIDEO*

TASK 11. Watch the video about the LUMI supercomputer on *https://www.youtube.com/watch?v=2JdL9EezKBY* and fill in the gaps with the words you hear.

LUMI is one of Euro HPC's flagship supercomputers. It is a GPU-accelerated supercomputer enabling the convergence of high-performance computing, (1)_____ and high-performance data analytics. LUMI's peak performance is astonishingly over (2)_____ petaflops per second and consists of several partitions. The largest partition of the system is the LUMI-G consisting of GPU accelerated (3)_____ using future-generation AMD Instinct GPUs.

In addition to this, a smaller CPU-only partition, LUMI-C, features third-generation AMD Epyc CPUs. Its storage system, totalling (4)_____ petabytes, consists of three layers.

LUMI takes up (5)_____ square meters of floor space which equals the size of a tennis court and weighs (6)_____ kilograms. The supercomputer will be placed in CSE's data centre in Kajaani, Finland, hosted by the LUMI consortium.

LUMI is powered using 100 % (7)_____, and its waste heat will cover (8)_____ % of Kajaani's annual district heating needs.

When the operations start in 2021, it will be one of the most competitive (9)_____ in the world, providing HPC and AI resources for European researchers in academia and industry. Up to 20% of LUMI's resources are reserved for (10)_____ use.

TASK 12. Watch the video about the world's smallest computer on *https://www.youtube.com/watch?v=SGwfum7DYXg* and do Tasks *A* and *B*.

A. Watch the video for the first time and tick the words you have heard.
- split
- full-fledged computer
- wired keyboard
- ultracheap PC

- USB power cable
- an HDMI extender
- power transformer
- built-in storage
- power adapter
- thick package
- compatibility
- windows updates
- heavy-weight OS
- text editing
- infrared keyboard

B. Watch the video again and answer the questions.

1. Where can this device be plugged into?
2. Is it an expensive device? How much does it cost?
3. What does it come with?
4. Why is the device equipped with a fan?
5. How many USB ports does it have?
6. What can you do with such a computer?
7. What are the disadvantages of such a computer?
8. What do you think about the Compute Stick?

_____*VOCABULARY IN USE*

TASK 13. Read the definitions and solve the puzzles.

1. It is a small, portable computer – small enough to sit on your lap.

	a				**p**

2. A computer system that is usually placed on a desk.

		s		**t**		

3. It is a computer input device in the form of a small panel containing different touch-sensitive areas.

	o			**h**			**d**

4. A metal case that sits upright on your computer desk and includes all the computer components.

			w			**r**

5. Able to be carried or moved easily, especially by hand.

p						**l**	

TASK 14. Read the text about smartphones and fill in the gaps with the suitable word.

A smartwatch is a small smartphone-like device worn on the (1)_____. Many smartwatches are connected to a smartphone that (2)_____ the user of incoming calls, e-mail messages, and notifications from applications. Some smartwatches can even (3)_____ telephone calls. Many smartwatches have colour displays, but some inexpensive models use a black-and-white 'e-paper' display. The user can (4)_____ the smartwatch through a touch screen, physical buttons, or a combination of the two. Some smartwatches come with pedometers and heart-rate monitors to help users (5)_____ their health.

As computers (6)_____ in size in the 20th century, electronic equipment became small enough to fit into a watch. One of the first calculator watches was the Calcron (1975), which had a nine-digit display. In the early 1980s, Seiko (7)_____ several watches with computing capabilities. The Data-2000 (1983), so-called because it could store two memos of up to 1,000 characters each, fit into a keyboard on which the user entered the information. The RC-1000 (1984) is (8)_____ to a personal computer. The Receptor MessageWatch (1990) received pager messages via FM radio signals.

The 1990s saw a further (9)_____ of watches and computers. Users of the Datalink (1994), a collaboration between Timex and Microsoft, entered information on their personal computers, such as phone numbers, which were then (10)_____ to the watch wirelessly, using light pulses. Seiko's Ruputer (1998) was a personal computer that fits into a watch. Data were entered through buttons or a joystick, and users could write their own software. Samsung's SPH-WP10 (1999) was the first watch phone; its battery lasted for 90 minutes of calling time.

One of the earliest true smartwatches was the Microsoft SPOT (Smart Personal Object Technology), introduced in 2004. The SPOT received information such as weather, news, and stock updates through FM radio. It also received e-mails and instant messages, but users could not reply. With the rise of the smartphone, smartwatches such as the Sony Ericsson LiveView (2010), the Pebble (2013), and the Apple Watch (2015) (11)_____ that received data from a phone. In 2014 Google developed Android Wear – a version of its mobile operating system, Android – specifically for (12)_____ devices like smartwatches.

(based on https://www.britannica.com/technology/smartwatch)

	A	**B**	**C**	**D**
1	hand	palm	wrist	arm
2	tells	notifies	talks	says
3	make	do	produce	create

4	do	work	operate	perform
5	see	notice	observe	track
6	shrink	shrank	less	little
7	introduced	comprised	collaborated	constructed
8	linked	conceived	connected	united
9	meld	mold	molding	melding
10	transformed	transmitted	translated	transfer
11	emerged	come	appear	looked
12	wear	worn	wearable	wearing

_____ *GRAMMAR*

TASK 15. Study the information in the table about Past Tenses (Active). Define when each tense is used.

Tense	Affirmative	Negative	Interrogative	Adverbial modifiers
Past simple	I (you, he, she, it, we, they) **repaired** the computer yesterday. I (you, he, she, it, we, they) **bought** the computer last week.	I **didn't repair** the computer yesterday. She **didn't buy** the computer last week.	**Did** you **repair** the computer yesterday? **Did** she **buy** the computer last week?	*yesterday* *last week* *a week ago* *in 2020* *when?*
Past continuous	I **was repairing** the computer when the phone rang.	I **was not repairing** the computer when the phone rang.	**Was** she **repairing** the computer when the phone rang?	*at 5 o'clock yesterday; when something happened*
Past perfect	I **had repaired** the computer before the lesson started.	I **had not repaired** the computer before the lesson started.	**Had** you **repaired** the computer before the lesson started?	*by 5 o'clock; by the time; as soon as; before something happened*
Past perfect continuous	I **had been repairing** the computer for 5 hours before the lesson.	I **had not been repairing** the computer for 5 hours before the lesson.	**Had** you **been repairing** the computer for 5 hours before the lesson?	*for 3 hours (are related to the past)*

TASK 16. Open the brackets and use the correct grammar form.

1. Why _____ (you / not let) me know about the meeting? – Sorry, I _____ (not have) my notebook with me and _____ (not remember) your phone number.
2. What time _____ (the engineers / leave) their office yesterday? Well, their working day _____ (finish) a bit later yesterday so they _____ (leave) the office at about 8 p.m.
3. What _____ (the weather / be) like during your last rip to Warsar? – Oh, it _____ (be) cold and rainy and we _____ (not leave) the hotel.
4. The secretaty _____ (prepare) the report for her boss at 10 o'clock yesterday morning.
5. Nick and Den _____ (work) in the science laboratory from 3 to 7 o'clock last Tuesday.
6. Sandy and I _____ (study) for our English test all day last Tuesday.
7. Den _____ (fly) to Madrid two days ago.
8. The car _____ (turn) round the corner and _____ (stop) in front of the supermarket.
9. When Andy _____ (turn on) the TV, the reporter _____ (tell) about the latest current affairs.
10. What _____ (Sheila / do) while you _____ (prepare) the report? – She _____ (make) some calculations for me.
11. When _____ (he / begin) to study Computer Architecture?
12. _____ (you / visit) any museums when you were in Berlin?
13. Mr Miller _____ (work) in a travel agency for years. Then he gave it up.
14. He _____ (learn) French before he started to learn English.
15. Where _____ (study) before you entered the University?
16. They _____ (discuss) the problem for half an hour when he came in.
17. He said he _____ (learn) German for 2 years.
18. Who _____ (Ben / speak) to when we _____ (see) him yesterday? – He _____ (speak) to his coach.

TASK 17. Write questions to the underlined words.

1. He prepared a report for the conference yesterday.
2. The tourists were in front of the museum some minutes ago.
3. We were preparing for the exhibition for two weeks.
4. Ted was repairing his laptop at 3 o'clock yesterday.
5. John had checked all the information about that project by 7 o'clock yesterday.
6. The journalists had prepared a list of questions before the interview.
7. You had been playing computer games for three hours yesterday.

TASK 18. Study the information in the table about Future Tenses (Active). Define when each tense is used.

Tense	Affirmative	Negative	Interrogative	Adverbial modifiers
Future simple	I (you, he, she, it, we, they) **will repair** the computer tomorrow.	I **won't repair** the computer tomorrow.	**Will** you **repair** the computer tomorrow?	*tomorrow* *next week* *in a week* *in 2030*
Future continuous	I **will be repairing** the computer when you come to my place tomorrow.	I **will not be repairing** the computer when you come to my place tomorrow.	**Will** she **be repairing** the computer when you come to her place tomorrow?	*at 5 o'clock tomorrow; when something happens*
Future perfect	I **will have repaired** the computer before the lesson **starts.**	I **will not have repaired** the computer before the lesson **starts**.	**Will** you **have repaired** the computer before the lesson **starts**?	*by 5 o'clock; by the time; as soon as; before something happens*
Future perfect continuous	I **will have been repairing** the computer for 5 hours before the lesson.	I **will not have been repairing** the computer for 5 hours before the lesson.	**Will** you **have been repairing** the computer for 5 hours before the lesson?	*for 3 hours (are related to the future)*

TASK 19. Complete the blog entry using the verbs in the Future Simple, Future Continuous or Future Perfect.

Will my future be perfect?

Hi, I don't know about you but I'm rather a hard-working and determined person and I have already made plans for my future. In 4 years I _____ (graduate) from university and hopefully, I _____ (find) a job in an international IT company. I'm sure, I _____ (work) on exciting and challenging projects and _____ (earn) a good salary. In ten years' time, I _____ (be promoted) to an executive position and I _____ (manage) important projects.

But, back to reality, which, I must admit, bothers me a lot. Well, I'm sitting a very important exam tomorrow so I must finally get down to work! If not, this time next year I _____ (queue) at the job center!

I wonder if you have similar worries. What are your plans for the future?

TASK 20. Write a reply to the blog from the previous exercise. Use Future tenses to make predictions about your future.

TASK 21. Translate into English using active vocabulary and word collocations from previous exercises.

1. Як тільки він придбав комп'ютер, він одразу приєднався до мережі Інтернет.
2. До ХХ століття всі обчислювальні прилади були механічними, перші електронні комп'ютери з'явилися в середині ХХ століття.
3. Перший комп'ютер фірми Apple в 1976 році був дерев'яним ящиком з електронними компонентами в середині.
4. Apple – американська транснаціональна корпорація, котра проектує та виробляє комп'ютери та іншу побутову електроніку, а також програмне забезпечення до них.
5. Безліч винаходів ХХ століття стали невід'ємною частиною сучасного життя.
6. Ця компанія відома по всьому світу, тому що вона запроваджує передові технології.
7. Чи не могли б ви детально викласти свою думку щодо цього питання?
8. Я гадаю, нам прийдеться повторити цей експеримент.
9. Даній проблемі зараз приділяють велике значення.
10. Останнім часом мій комп'ютер погано функціонував, тому я заніс його в сервісний центр.
11. Щоб детально вивчити цю проблему, було проведено декілька експериментів.
12. Отримана інформація була детально описана в статті.
13. Комп'ютерні технології продовжують ускладнюватися та вдосконалюватися.
14. З моїм комп'ютером щось сталося: здається, він зламався.

_____*SPEAKING*

TASK 22. Prepare a report on one of the topics.

- You want to buy a new PC. What would you buy – a laptop or a desktop? Explain your choice.
- Compare supercomputers, mainframes and servers. What are their key characteristics? Where are they applied?
- Wearable computers – their types, functions and main features.

TASK 23. Read the writing task and write your email in 150 words.

You recently bought a laptop from an online shop. The shop had assured you that you would receive the product within two days, but you had to wait longer. When you opened the package, it turned out there was a problem with the product as well. Write an email of complaint to the online shop. Include these points.

- Explain what you bought and when.
- Complain about the delay in receiving the parcel.
- Describe the problem with the product.
- Suggest a way to solve the problem.

_____*PROFESSIONAL READING*

TASK 24. Read the text and match headings (a – g) to the paragraphs. There are two choices you do not need to use.

Smart Healthcare: The Future of Wearable Technology

by Albert Mckeon

a) *Turning disability into accessibility with wearables.*
b) *Security and smart healthcare.*
c) *Heard about hearables?*
d) *Benefits for mankind.*
e) *Beyond steps: wearable gadgets for smart healthcare.*
f) *Perspectives for the future.*
g) *Shocking statistics.*
h) *Fitness tracking for all four paws.*

I. Well-known wearable gadgets include smartwatches that sync with your phone and fitness trackers. The future of wearable technology is predicted to go far beyond exercise trackers, however. Advances in material fabrication for flexible electronics coupled with the availability of smaller power sources that power up in an instant are already reducing the size of wearables. Combine these with an enhanced IoT (Internet of Things), connectedness for rapid data exchange could put wearables for personal safety, comfort and information right at your fingertips, wrist or even your dog's collar.

II. The convenience factor of immediate on-the-body access to a wearable and its data could help you stay healthy. PC Mag's report on wearables at this year's Consumer Electronics Show (CES19) highlights a smartwatch with electrocardiogram (ECG) functionality. As previously reported, the Internet of Bodies (IoB) is poised to accelerate with enhanced interconnectedness; this means wearables could even help track elusive cardiac arrhythmias. Other wearables highlighted at CES19 include a device to monitor fetal health during pregnancy

and a device to track bladder function for individuals prone to urine retention. Both wearables use skin sensors placed over the abdomen, which send data on baby kicks or bladder levels to a smartphone app.

III. Repurposing the senses, allowing one sense to be amplified in the absence of another, is another advancement in wearable technology. For example, IEE Spectrum mentions a wrist device that uses sensory substitution to relay speech as patterns of vibration for deaf people; users learn to recognize the patterns, associating each with sounds. Another project uses woven conductive textiles to drape a body in haptics. In the form of a shirt, this technology can translate the sounds of an orchestra into different vibrations played over the surface of the skin. Fortune describes how micro-actuators direct sound from each instrument to different areas on the torso, immersing users in the orchestral experience.

IV. The future of wearable technology is on the lookout for your safety. For instance, this year's CES19 promoted a personal alarm button worn on the wrist. Also available are RFID-blocking wearables that prevent identity theft. Esub describes two wearable gadgets that can help worker safety – one of which catches you before you nod off. Micro-sleeps are a risk in many industries where workers operate heavy machinery, but the smart cap wearable checks in on brainwaves and alertness to give drivers or construction workers a heads up that they are fatigued. Another device comes as a personal tag that tracks worker activity and location; linked to a central monitoring station, a supervisor can keep a virtual eye on construction sites, for example. Falls automatically trigger an emergency response and the tags will also send out a distress call when triggered by the wearer.

V. If you haven't, you will soon. A Nieman Reports article describes how sunglasses laden with positional sensors will be able to tell not only where you are but which direction you are facing. This could be good for the directionally challenged, but even better if you are interested in the location-specific audio relayed to your ears. Imagine being alerted to construction diversions or security incidents while on your usual walking route. Hearables are predicted to be more visible than wearables this year.

VI. It's not just humans that need to count steps, apparently; fitness trackers for your pet are a growing market, too, with wearable gadgets to track all four paws. The furry future of wearable technology also includes GPS or accelerometer capabilities to track your pet's location. Wearable lists a number of collars and tags that will upload data on walks, body temperature and calories burned. Apart from tracking a lost pet, data uploads could be useful for monitoring health. As the tech gets smaller and more convenient for 24/7 access, even your cat can benefit from the future of wearable technology.

(based on https://now.northropgrumman.com/the-future-of-wearable-technology)

TASK 25. Reread the text and say which of the wearable devices will become a reality? Which of them has already become a reality?

UNIT 4

COMPUTER HARDWARE

_____*LEAD-IN*

TASK 1. Look at the picture above and label the elements of the computer system.

TASK 2. In this task, you have two pairs of sentences *(e.g. 1 a, b)*. They describe some computer components. Read the descriptions and say which computer component each pair of sentences refers to.

TASK 3. Look again at the pairs of sentences from TASK 2. Find the words in them which have the following meanings:

1. to press the mouse button
2. clear and easy to see image
3. to make an extra copy of something
4. selection
5. influence

TASK 4. Match the words and word combinations with their Ukrainian equivalents. Learn the words.

1. central processing unit (CPU)	a) прилади вводу / виводу
2. circuit	b) оперативна пам'ять
3. clock generator	c) перифірійні прилади
4. core	d) тильний, зворотній
5. expansion card	e) обробка
6. external	f) пристрої збереження інформації
7. hard disk drive (HDD)	g) центральний процесор
8. heat sink	h) приймати
9. input/ output devices	i) прикріпити, приєднати
10. integrated circuit	j) виконувати
11. internal	k) обробляти
12. main memory	l) роз'єм, гніздо
13. motherboard	m) карта розширення
14. performance	n) жорсткий диск
15. peripherals	o) виводити
16. permanent	p) твердотільний накопичувач
17. printed circuit board	q) продуктивність
18. processing	r) тимчасовий
19. rear	s) витягати, видобувати, отримувати
20. silicon	t) вводити
21. socket	u) зовнішній
22. solid-state drive (SSD)	v) постійний
23. storage devices	w) розміщувати
24. temporary	x) схема
25. to absorb	y) внутрішній
26. to accept	z) підключати
27. to attach	aa) поглинати
28. to carry out, to execute	bb) відноситися, стосуватися, посилатися
29. to extract, to retrieve	cc) тактовий генератор (генератор тактової частоти)
30. to house	dd) тепловідвід
31. to input	ee) інтегральна схема
32. to output	ff) ядро
33. to plug into	gg) материнська плата
34. to process	hh) друкована плата
35. to refer	ii) кремній
36. volatile memory	jj) енергозалежна пам'ять

TASK 5. Match the synonyms. Translate and learn them.

1. to store	a) to connect
2. to carry out	b) to retrieve
3. to plug in	c) inner
4. to extract	d) to save
5. rear	e) to execute
6. internal	f) outer
7. external	g) back

TASK 6. Translate the sentences into Ukrainian. Pay attention to the correct translation of the words in bold.

1. All of us have certain duties and jobs **to carry out**.
2. He **extracted** a small notebook from his hip pocket.
3. **External** devices should be of robust construction.
4. You should **attach** a recent photograph to your application form.
5. A **central processing unit** (CPU) is the electronic circuitry that **executes** basic arithmetic, logic, controlling, and input/output (I/O) operations specified by the instructions in the program.
6. The new network will enable data to be more speedily.
7. A **solid-state drive** (SSD) is a type of **storage device** that has flash-based memory, which is much faster than a traditional mechanical **hard disk**.
8. Computer **peripherals** are **external** devices that enhance your machine's functionality through better performance, design, sound quality, etc.
9. A **heat sink** is a component that increases the heat flow away from a hot device.

_____*READING*

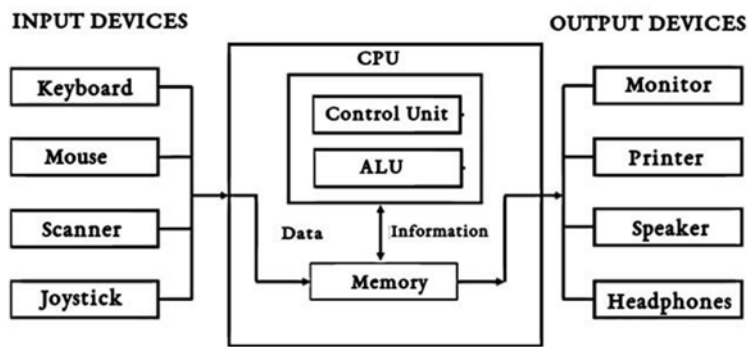**TASK 7. Read and translate the text.**

Computer Structure

Computer systems consist of software and hardware components and follow the concept of input, processing, output and storage.

Hardware is any electronic or mechanical part you can see or touch. Hardware consists of both external and internal components. The external devices, also called *peripherals*, can perform the basic functions of input, output and storage. Peripherals are usually plugged into the computer ports located on the rear or on the side panels of a computer.

Input units enable data to go into the computer's memory. The most common input devices are the mouse, the keyboard, the microphone and the scanner. *Output units* enable users to extract the finished product from the system. For

example, the computer shows the output on the monitor or prints the results onto paper by means of a printer. ***Storage units*** (external hard drives, SSDs, flash drives) provide permanent storage of both data and programs.

Internal hardware, also called ***components***, refers to the parts built into the computer case or tower. These parts are the central processing unit (CPU), memory chips, the motherboard, video and sound cards, the internal hard disk drive (HDD) and solid-state drive (SSD).

Hardware is therefore responsible for performing four basic functions: input, processing, output and storage. The relationship between the different hardware components in most modern general-purpose computers is based on ***the von Neumann architecture***, which was proposed by American mathematician and physicist John von Neumann and his team. According to the von Neumann architecture, all the instructions and data are held in the main memory, or RAM, and are then loaded from the memory to the CPU to execute the instructions.

TASK 8. Reread the text and choose the correct answer.

1. Hardware refers to _____.
   a) all the physical parts inside a computer
   b) all the internal and external physical parts
   c) all the physical parts except internal memory
   d) all the internal parts and external hard disks
2. The main functions of hardware are _____.
   a) input, output and processing
   b) input, output, processing and storage
   c) input, output and storage
   d) input, processing and storage
3. The brain of the computer that does the calculation, moving, and processing of information is called _____.
   a) CPU
   b) RAM
   c) motherboard
   d) hard drive
4. Part of a computer that allows a user to put information into the computer is called _____.
   a) output device
   b) operating system
   c) software
   d) input device

5. What is the name given to the computer's short-term memory that is lost when the computer is turned off?
   a) CPU
   b) RAM
   c) ROM
   d) flash
6. The physical parts of a computer are termed as _____.
   a) hardware
   b) software
   c) hard drive
   d) disk drive
7. Part of a computer that allows the user to see or hear information that comes out from the computer is called _____.
   a) software
   b) input device
   c) output device
   d) operating system
8. The computer part that stores programs and other information and is located inside the computer is called _____.
   a) motherboard
   b) hard drive
   c) CPU
   d) operating system

TASK 9. Answer the questions.

1. What is the difference between hardware and software?
2. What are the basic hardware components?
3. What are the peripherals?
4. What is the difference between input, output and storage devices?
5. Give examples of input, output and storage devices.
6. What is the role of the CPU?
7. How are called the external components attached to the computer?

TASK 10. Look at the list of components and decide which of them are *internal components (I), peripherals (P), input devices (In), output devices (O) or storage devices (S)*. For some items, there can be more than one possible answer.

- hard disk drive
- keyboard
- solid state drive
- headphones
- mouse
- monitor
- power supply unit

- printer
- screen
- external drive
- main memory

_____ *VOCABULARY IN USE*

TASK 11. Read and translate the text. Fill in the gaps with the suitable word.

Storing, processing and transmitting data through electronic devices is possible (1) _____ the binary system, but what exactly is it? As the word 'binary' says, only two digits, 0 (zero) and 1 (one), are (2) _____ to express a number in a binary system, while the common decimal system is built on the combinations of 10 (3) _____ digits (0, 1, 2, 3, 4, 5, 6, 7, 8, 9).

When working with any kind of processor, each digit (0 or 1) (4) _____ to a bit. Every string of 8 bits is called a byte. In ASCII code *(pronounced [ˈæski])* (American Standard Code for Information Interchange) any (5) _____ you type on your keyboard is interpreted by the computer as a byte. For example, the letter 'A' is (6) _____ as the ASCII code 65 but 65 is a decimal number, so if you convert it to a binary number, you get 01000001. These 8 digits, or bytes, are known to the computer as the letter A.

When writing, you can (7) _____ bits and bytes by their spelling: upper case 'B' is used for bytes and lower case 'b' for bits. So 1MB is a MegaByte, 1Mb is a Megabit and 1kb is a kilobit. For example, (8) _____ data transfer speed when you download a file from the Internet, you may notice that your browser indicates the transfer rate in KiloBytes per second (KBps).

		A	B	C	D
		A	**B**	**C**	**D**
	1	because	due to	as	so
	2	connected	confronted	combined	continued
	3	possible	possibly	possibility	probability
	4	carries	comprises	consists	corresponds
	5	characteristic	character	chronicle	cubicle
	6	translated	transmitted	expressed	transfigured
	7	miss	identify	observe	omit
	8	noticing	seeing	looking	monitoring

TASK 12. Read and translate the text. Fill in the gaps with the suitable word.

The von Neumann architecture is the fundamental architecture upon which nearly all digital computers (1)_____. It has (2)_____ characteristics that have had an immense (3)_____ on the most popular programming languages. These characteristics (4)_____ a single, centralized control, housed in the

central processing unit, and a separate storage area, primary memory, which can (5)_____ both instructions and data. The instructions (6) _____ by the CPU, and so they must be brought into the CPU from the primary memory. The CPU also (7)_____ the unit that performs operations on operands, the arithmetic and logic unit (ALU), and so data must be (8)_____ from the primary memory and brought into the CPU in order to be acted upon. The primary memory has a built-in addressing mechanism (9)_____ the CPU can refer to the addresses of instructions and operands. Finally, the CPU contains a register bank that constitutes a kind of 'scratch pad' where intermediate results can (10)_____ and consulted with greater speed than could primary memory.

(based on https://www.sciencedirect.com/topics/computer-science/von-neumann-architecture)

	A	**B**	**C**	**D**
1	have based	have been based	based	basing
2	number	numerate	a number of	numbered
3	role	progress	experience	impact
4	include	empose	enhance	enrich
5	consist	contain	capture	propose
6	execute	executing	executed	are executed
7	performs	houses	possesses	experiences
8	given	fetched	receive	take
9	so that	because	hence	as
10	store	storing	stored	be stored

_____*VIDEO*

TASK 13. Watch the video about PC components on https://www.youtube.com/watch?v=HB4I2CgkcCo&feature=emb_logo and write down the function of each component.

CPU –
Heatsink –
RAM –
Hard drive –
Solid-state drive –
Expansion slots –
Power supply unit

TASK 14. Match the terms with their definitions.

1. peripherals 2. main memory 3. hard drive 4. input	a) the component of a computer system that performs the basic operations (such as processing data) of the system, and manages the system's other components; b) a mechanical part used to move air;

|	
5. ports	c) the section that holds programs and data while they are executed or processed;
6. output	
7. central processing unit (CPU)	d) any auxiliary device attached to the computer;
	e) a socket on the motherboard of a computer into which an expansion card can be inserted;
8. chipset	f) the information produced by a computer;
9. expansion slot	g) a part that reduces heat;
	h) a hardware interface by which a computer is connected to another device;
10. fan	
11. heat sink	i) the central circuit board;
12. power supply	j) it is the PC case. It can also be called 'a tower'.
	k) a group of integrated circuits that perform a set of related functions (such as processing data);
13. motherboard	l) information fed into a computer;
14. system unit	
	m) the means of providing energy;
	n) a storage device containing one or more spinning magnetic hard disks.

_____*READING*

TASK 15. Read and translate the text.

Computer Components

There are lots of different computer components that make up functional PCs. The basic building block of a computer, whether it's a laptop or a desktop, is a green-coloured printed circuit board called a ***motherboard***. All the other components are connected to it and use various circuits and interfaces to communicate with each other. The motherboard holds the CPU, memory, connectors for the hard disk drive (HDD) or solid-state drive (SSD), expansion cards to control the video and audio, and connections to your computer's ports (such as USB ports). The motherboard connects directly or indirectly to every part of the computer. It houses various components like a chipset, a clock generator, memory slots, sockets, expansion slots, storage connectors, etc.

The ***central processing unit*** (CPU) is the most influential computer component. Its function is to execute program instructions and coordinate the activities of all the other units. In a way, it is the 'brain' of the computer. The power and performance of a computer are partly determined by the speed of its processor. The CPU is usually a two-inch ceramic square with a silicon chip located inside the computer case. It fits into the motherboard's CPU socket, which is covered by the heat sink, which absorbs extra heat. CPU is responsible for all the calculations and input/output operations to be done in order to process the data. Whenever you press a key, click the mouse, or start an application, you're sending instructions to the CPU.
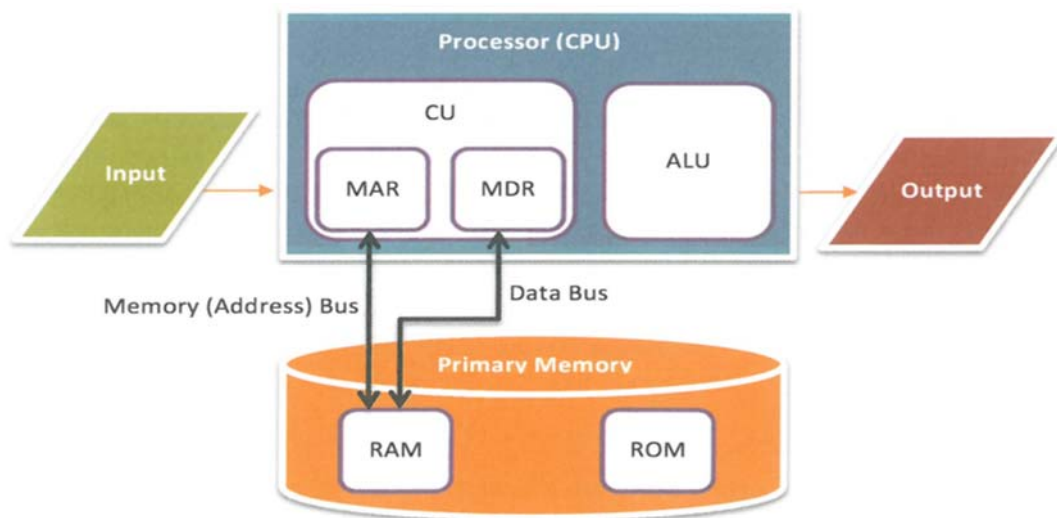
The CPU contains the ***control unit*** (CU), ***arithmetic logic unit*** (ALU), ***memory address register*** (MAR), and ***memory data register*** (MDR). The control unit (CU) is responsible for the operation of the CPU. It controls the retrieval of instructions from the primary memory as well as the sequence of their execution. The arithmetic logic unit (ALU) performs all the basic arithmetic, logical and input/output operations. The ***registers*** are high-speed units of memory used to store and control data.

Modern computers have small-sized CPU chips known as ***microprocessors***. Modern microprocessors usually come as ***multi-core***, with more than one processing units (cores) present on a single chip. The speed at which the CPU carries out instructions is called the clock speed. The clock speed is measured in cycles per second, and 1 cycle per second is known as 1 Herz. The higher the clock speed a CPU has, the faster it can process instructions. However, the actual speed of the computer depends on the speed of many different components – not just the processor.

Buses are electrical channels that allow devices inside the computer to communicate with each other. For example, the front side bus carries all data that passes from the CPU to other devices. Data between the processor and the memory is transferred along the system bus. Each part of memory has its own memory address and the processor determines where the processed data is stored by sending an address signal along an address bus and data along a data bus. This is synchronized by an electronic clock in the CPU that determines the operating speed of the processor. Transferring data between the processor and RAM can slow down the computer; therefore, extremely fast ***cache memory*** is applied to hold the most frequently used data.

There are two main types of memory – ***RAM*** and ***ROM***. RAM (Random Access Memory) holds the program's instructions and the data that is being used by the processor. RAM is volatile – that is, its information is lost when the computer is turned off. However, ROM (Read Only Memory) is non-volatile, it holds the program's instructions and settings required to start up the computer.

Within your computer, there is a large and permanent storage space that is used to keep all the data required by a computer like the operating system files, multimedia files, third-party software files (*e.g. cookies*), etc. This memory can be a magnetic rotating **hard disk drive (HDDs)** or a **solid-state drive (SSDs)**. When needed, the data is transferred from the hard drive to the random access memory (RAM) for being used by the CPU. When you run a program or open a file, the computer copies some of the data from the hard drive onto the RAM. When you save a file, the data is copied back to the hard drive. The faster the hard drive, the faster your computer can start up and load programs.

The **video card** is responsible for what you see on the monitor. Many computers have a GPU (graphics processing unit) built into the motherboard. But if you are a gamer, or really into working with photos or digital art, you may need a more powerful video card. The high-end cards typically have their own CPU for better and faster processing of images.

The **sound card** – also called an audio card – is responsible for what you hear in the speakers or headphones. Most motherboards have integrated sound, but there are models with a dedicated sound card for higher-quality sound.

The **power supply unit** in a computer converts the power from the wall outlet to the type of power needed by the computer. It sends power through cables to the motherboard and other components.

Expansion slots allow users to install **expansion cards**, adding features like sound, memory and network capabilities.

A part of the system unit most of us take for granted these days is the **wireless local area network (WLAN) card** or the **local area network (LAN) card**. This is the card you don't see signs of from the outside of your unit, but it is what lets us connect to our wireless internet. Another way to connect to a network is by cable or plugging a jack into the **network interface card (NIC)**.

(based on https://fossbytes.com/whats-inside-my-computer-different-components-of-a-computer, https://edu.gcfglobal.org/en/computerbasics/inside-a-computer)

TASK 16. Answer the questions.

1. How is the main printed circuit board called to which all the other components are connected?
2. How is CPU also called?
3. What does the CPU look like? Describe it.
4. What is the main function of a computer's processor?
5. What does the term multi-core mean?

6. What unit of frequency is used to measure processor speed?
7. What does the speed of a computer depend on?
8. Why can RAM be called a short-term memory?
9. What type of memory is used to start up the computer?
10. How can RAM be increased?
11. What can you do to improve the performance of your computer?
12. Where can data be stored permanently on your PC?
13. What is a bus?
14. What is the benefit of having expansion slots?
15. What is the difference between a video card and a sound card?
16. What device lets you have the internet connection on your computer?

TASK 17. Read the text. Substitute the Ukrainian words *in italics* with their English equivalents.

Have you ever wondered what's under your computer *корпус*? Don't take it apart – just read on *щоб дізнатися*.

The *жорсткий диск* is the main part that *зберігає данні*. A disk drive is used for *читання та копіювання данних*. One of the most important parts is the *материнська плата*. It contains *центральний процесор* and electrical connectors. These receive energy from the *блок живлення* and distribute it. The *плата* also includes other components like ports. Motherboard generates a lot of heat. *Щоб запобігти* heat damage, heat sinks and *вентилятори* are installed.

_____*LISTENING*

TASK 18. Listen to a technician describing the motherboard to a new trainee. Match the components (1-7) to A-G in the photo below.

1. SATA socket
2. Graphics card socket
3. USB port
4. Ethernet connection
5. Audio socket
6. CPU socket
7. DIMM slot

TASK 19. Listen to a conversation between two engineers. Tick the problems with the computer which the engineers identify.

- slow processor
- warm case
- malfunctioning motherboard
- loud fan
- defective heat sink

TASK 20. Now listen to an IT manager and his assistant talking about a problem with the delivery of new laptops and desktop computers. Find errors in the delivery slip and correct them.

Order for: Wood Publishing

Dingle Digital Hardware Supplies

5 × Expression 5710 laptop computers with the following specifications:
- Entel 2.73 GHz dual-core CPU
- 1 × 390 GB SDD
- 8 GB dual-channel DDR3 1666 MHz RAM
- Ladeon 3850 1 GB graphics card
- No optical drive
- 15.6-inch WLED 1920 × 1080 screen
- 4 × USB ports
- No operating system installed
- 1 year next business day on-site service

10 × Domination 8720 desktop computers
- Entel 3.4 GHz quad-core CPU
- 1 × Eastern Digital 2 TB 7200 rpm SATA HDD
- 16 GB 2000 MHz memory
- Ladeon 7950 2 GB graphics card
- 6 × Blu-ray combo optical drive (Blu-ray, DVD+/−RW & CD)
- 4 × USB ports
- 802.11n WLAN wi-fi mini card
- No operating system installed
- 1 year next business day on-site service

_____ *VOCABULARY IN USE*

TASK 21. Complete the conversation with the proper words from the box.

running	storage	lighter	feature	any	bigger
for	got	specs	more	cost	cheaper	both

Sales assistant: Hi there. Do you need _____ (1) help or are you just looking?

Nick: Actually, yes, you might be able to help. I'm looking _____ (2) a new laptop. Have you _____ (3) any that are really reliable? I've had loads of problems with the one I've got at the moment.

Sales assistant: OK. Well, it'll depend on your budget, but we've got two with 20% off at the moment – the Acer Aspire and the Lenovo.

Nick: Right. And what's the difference between these two? Do they have similar _____ (4)?

Sales assistant: Well, Lenovo's more of an entry-level model. It's got an Intel Core i3 processor _____ (5) at 1.4 GHz, which is fast enough for most applications, although you might struggle if you want to play advanced games on it. The Acer's processor runs at 2 GHz, which is really fast. The Acer also has twice as much RAM as the Lenovo – that's 8 GB as opposed to just 4.

Nick: OK and what's the _____ (6) capacity of each model?

Sales assistant: OK, that's HDD with I TB for the Lenovo and 250GB SSD + 1 TB HDD for the Lenovo.

Nick: Mmm. That's quite a difference, isn't it? Is there anything else I should know about?

Sales assistant: Well, they _____ (7) come fully wireless and Bluetooth-enabled, and Windows 10 is now standard on all the laptops we sell. They also both _____ (8) DVD writers, so backup onto DVD is quick and easy. The Acer has a slightly _____ (9) screen, and it's _____ (10), which would make it more practical if you plan to travel with it.

Nick: OK and how much do they _____ (11)?

Sales assistant: Let me just have a look. The Lenovo's quite a bit _____ (12) than the Acer – it's £439.97 compared to £769.97. But the Acer is much _____ (13) powerful – it's got twice the RAM and a faster processor.

Nick: Yeah, but I just can't afford that much. I think I'll take Lenovo.

_____*VIDEO*

TASK 22. Watch the video 'Things to know before buying a laptop' on https://www.youtube.com/watch?v=UboO40529IY&t=21s and do the tasks.

- **A. Write down the steps you should pay attention to while choosing a new laptop that were mentioned in the video.**
- **B. Answer the questions.**
  1. Which of the steps do you find useful when choosing a new laptop?
  2. Which other recommendations would you give?

TASK 23. Read the telephone conversation and put the correct auxiliary verb *(have/has, am/is/are, was/were, do/does, did)* **into each gap.**

D. Good afternoon, Apple Helpline here. I'm Damian. How can I help you?

V. Oh, at last! Hello, Damian. I (1) _____ got a terrible problem with my computer. It (2) _____ (not) working at all!

D. OK. Tell me your name and your company name and describe what (3) _____ happened.

V. My name's Valerie Marks. I (4) _____ (not) work for a company. I'm self-employed. I work at home and I (5) _____ trying to meet an important deadline at the moment. This morning I (6) _____ working away happily, when suddenly everything stopped and a message came on the screen. Then the screen went black.

D. OK, Val. (7) _____ (not) worry! What (8) _____ the message say?

V. I can't remember exactly because I (9) _____ (not) understand it. But I think it said something about 'not enough memory.'

D. It's OK, Val. I understand. Tell me (10) _____ you switched the computer off?

V. No, I (11) _____ (not). It's still on.

D. Fine, Val. Now, do exactly what I tell you. Go to your computer, OK? Can you see a 'W' in the top right-hand corner? What (12) _____ it say? Can you read it to me?

V. It says three things. Ther's a list of three things… First, it says….

TASK 24. Put the words in the correct order. Then answer the questions.

1. Val / the / is / why / Apple Helpline / ringing?
2. work / for / Val / does / company / which?
3. doing / when / computer / she / her / was / what / stopped?
4. Val / why / remember / message / the / can't?
5. switched / computer / she / has / her / off?

TASK 25. Work in pairs of two.

- **Student 1 suggests technical specifications for PCs for representatives of these professions:**
  —— a web designer;

—— a sales representative;
—— a secretary;
—— a teacher;
—— an engineer at a big industrial enterprise.
- **Student 2 agrees or disagrees with him/her explaining his/her point of view.**

e.g. I don't think secretaries need a powerful processor. They only need it for word processing and sending emails. A two-gigahertz processor will be enough for them.

TASK 26. Study a table with the specifications of a PC. Describe the specifications of your own computer in a similar way.

Component	Specification
Brand	Lenovo
Colour	Natural silver
Processor	11th Gen Intel Core i7 Processor
Memory (RAM):	16 GB
Storage	SSD (solid-state drive) 500 GB of storage
Graphics processing unit (GPU)	MSI GeForce RTX 3080 Ventus 3X OC
Monitor	15.6″ display
Mouse	2-button, optical mouse
Webcam	built-in webcam
Connectivity Technology	Bluetooth, Wi-Fi, USB, HDMI
Operating System	Windows 11 Home

TASK 27. Now think about the computer of your dream and describe its technical characteristics.

TASK 28. Student A is an engineer. Student B is a client. Use the information from the box. Suggest your solutions. Talk with each other about:
- *a possible problem with a computer;*
- *why you think the problem exists;*
- *suggest how to solve the problem.*

Problems	Possible solutions
1. The computer runs slowly. 2. There is no display on the monitor.	- Check that there is enough free space on the hard drive. - Check the connections. - Check the fan as it can be a heat-related issue.

3. The computer turns off without warning. 4. The computer freezes. 5. A program gives an error message. 6. A run time error appears on the screen. 7. There are problems with the Internet connection.	• Check the firewall. • Check the monitor and video card settings. • Check the power supply. • Check the router. • Consult the operating system's manufacturer's guide for a detailed list of errors and their specifications. • Delete temporary files. • Open Task Manager and end the task. • Reboot the computer. • Revert the operating system to an earlier version. • Run ScanDisk and Defrag. • Scan for malware and viruses. • Search for errors. • Update the operating system. • Update software and search for patches. • Update the drivers.

_____WRITING_

TASK 29. You have just bought a new computer. Write an email to a friend in which you:

- describe the type of a computer and its characteristics;
- describe the input and output devices you need for your work / studies;
- describe the storage device that you will use and why.

_____PROFESSIONAL READING_

TASK 30. Read and translate the text.

Will Von Neumann's Architecture be diminished in the future?

(by Mohammadhu Faalil for Mozilla Club of UCSC)

Computer architecture has undergone incredible changes in the past 20 years. One element that has remained constant throughout the years, is the von Neumann concept of computer design. It has been used in computers since it was published.

Von Neumann architecture was first published by John Von Neumann in 1945. His computer architecture design consists of a Control Unit, Arithmetic and Logical Unit (ALU), Memory unit, Registers and Inputs/Outputs. The basic structure of the Von Neumann Architecture is shown in the Figure below.
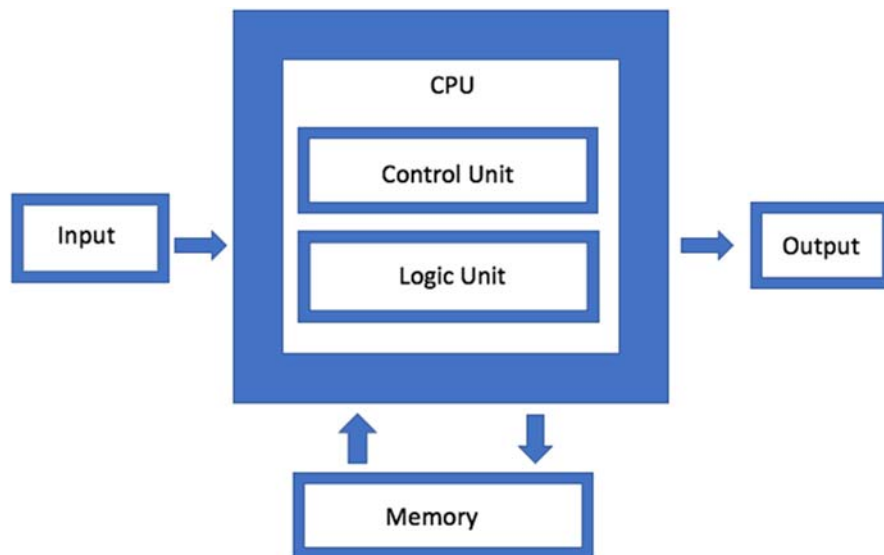
According to Von Neumann Architecture, the CPU consists of two units, Control Unit and Arithmetic Logic Unit. The underlying principle of Von Neumann Architecture is that data and instructions are treated in the same manner which means that both data and instructions are addressable. It operates using four simple steps: fetch, decode, execute, and store, called the Machine Cycle as shown in the diagram.
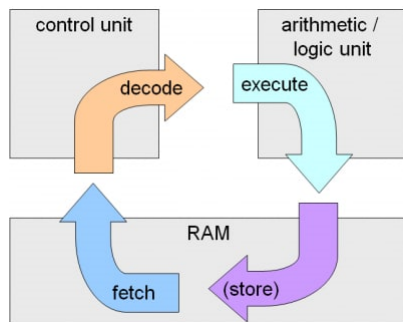
Instructions are fetched from the memory by the CPU. The CPU then decodes and executes the instructions and once it is completed it is stored back in the memory.

Under this architecture, memory for instructions and data are unified and shared with one data bus and one address bus between processor and memory. Instructions and data have to be fetched in sequential order, known as the Von Neumann Bottleneck which limits the bandwidth of memory access. The processor is idle for a certain amount of time while memory is accessed. Though numerous solutions have been proposed and implemented in modern days including cache memory and branch predictor algorithms, these solutions have not been able to solve the root of the problem rather they had made the architecture more complex.

In the modern world, Harvard Architecture has become a challenge for Von Neumann Architecture. Harvard architecture is a type of computer architecture that separates its memory into two parts so that data and instructions are stored separately. This architecture also has separate buses to transfer data and fetch data. This allows the CPU to fetch data and instructions simultaneously.

Further, IBM researchers introduced a new non-Von Neumann Architecture called the True North Architecture inspired by the functions of the human brain. Here, it uses a memory controller like a neuron, with no CPU, to work on synaptic-

like data sets in memory with no shuffling around whatsoever by virtue of harnessing the crystallization dynamic of phase-change memories.

In addition to these, many other alternative architectures have come up in the world of today.

It is obviously working with Von Neumann Architecture is not suitable to work in the future and it will be diminished in the near future. Some companies have already started to work with alternative architectures, and the rest of the world would most probably switch to the alternative architectures as the traditional Von Neumann Architecture will be unable to cater for the needs of future computers.

(based on https://dev.to/ucscmozilla/will-von-neumann-architecture-be-diminished-in-the-future-2844)

TASK 31. Build 5 questions of different types to the text and ask your groupmate.

UNIT 5

STORAGE DEVICES

TASK 1. Discuss the questions.

1. Where is information stored in a computer?
2. What types of memory do you know?
3. What memory is permanent?
4. What memory is temporary?
5. How can you transfer information from one computer to another?

_____VOCABULARY

TASK 2. Match the words to their Ukrainian equivalents. Learn the words.

1. actuator arm	a) чутлива панель
2. capacitor	b) вплив, впливати
3. capacity	c) отримувати, видобувати
4. charge	d) постачати
5. HDD (hard disk drive)	e) оперативна пам'ять
6. headphone	f) постійна пам'ять
7. influence	g) динамік
8. latency	h) навушник
9. manual	i) під'єднувати
10. non-volatile	j) твердотільний накопичувач
11. permanent	k) жорсткий диск
12. RAM (random access memory)	l) покладатися на
13. ROM (read-only memory)	m) обертатися
14. screw	n) заряд, заряджати
15. screwdriver	o) інструкція
16. sensitive pad	p) витирати
17. speaker	q) коромисло

18.speed	r) гвинт
19.SSD (solid-state drive)	s) переносити
20.temporary	t) обробляти
21.to allocate	u) виділяти (пам'ять)
22.to erase	v) конденсатор
23.to plug	w) затримка
24.to power	x) постійний
25.to process	y) тимчасовий
26.to rely on	z) енергозалежний
27.to retrieve	aa) енергонезалежний
28.to rotate	bb) викрутка
29.to spin	cc) ємність
30.to supply	dd) живити
31.to transfer	ee) швидкість
32.volatile	ff) обертатися

TASK 3. Use the words in the box to decipher the acronyms. Translate the acronyms.

static	dynamic	read	solid-state	system	random	only
output	random	memory	access	basic	access	memory
		input	drive	memory		

e.g. RAM stands for Random Access Memory.

- RAM
- SRAM
- DRAM
- SSD
- ROM-BIOS

_____*READING*

TASK 4. Read the text. Choose from (a-j) the one which best fits each space (1-10).

a) *The central processing unit (CPU), which reads and executes instructions, selects specific cells to read or write data depending on the task the user is asking the computer to do.*

b) *Memory ensures a device turns on and functions properly.*

c) *Examples include external hard drives, flash drives, memory cards and compact discs (CDs).*

d) *Internal memory consists of chips connected to the motherboard and needs to be connected directly to the device in order to use it.*

e) *Memory is used to store data and instructions for performing specific tasks on the computer system.*

f) *Your electronic device uses it for storing temporary data.*

g) *Dynamic random access memory (DRAM) is one of the two specific types of RAM seen in modern devices, such as laptops, desktops, portable devices and gaming systems.*

h) *It does not depend on the device to be turned on in order to save data.*

i) *Because it holds power longer, it's more expensive than DRAM, which typically makes it not as widely used.*

j) *For example, if you're on your laptop using the internet browser and your computer gets turned off, it may not have saved the web pages you were previously using because RAM only stores that information temporarily.*

Types of computer memory

Memory is the most essential element of a computing system because without it computer can't perform any tasks. (1) _____. The performance of the computer largely depends on its memory.

Computer memory consists of several cells, called memory cells, that each have a unique identification number. (2)_____. There are several kinds of memory in a computer.

Computer memory is important because devices cannot process tasks without it. (3)_____. In addition, it keeps your computer running quickly and allows you to use multiple applications at once. If you want to store data for later use, you also use certain types for that purpose.

Internal memory, also known as primary memory, stores small amounts of data that the computer can access while you're actively using it. (4)_____. There are two basic types of internal memory called RAM and ROM, and those have their own subsets of memories.

External memory, also known as secondary memory, is memory not directly connected to the CPU that you can attach or remove as needed. There are many types of external memory that individuals use in their devices. (5)_____. You can store data from a computer onto external memory, remove it from the device and connect it with another compatible device to transfer data.

Random-access memory (RAM) is the primary internal memory of the central processing unit (CPU). (6)_____. It does this by providing applications with a place to store data you're actively using so that they can quickly access the data. The amount of RAM on your device controls its performance and speed. If you don't have enough RAM, it may process programs slowly which can affect the output and speed with which you can use the computer.

RAM is volatile memory because it loses the data it was storing if you turn off the device. (7)_____.

(8)_____. It's the more affordable of the two types of RAM and produces high-capacity memory. It's made of two components, transistors and capacitors, which require a recharge every few seconds to retain its data. Like RAM, it also loses data when it loses power and has volatile memory.

Static random access memory (SRAM) is the second type of RAM and stores data as long as there is power in the system, unlike DRAM which is refreshed much more frequently. (9)_____. Users generally use SRAM for cache memory, which makes it a faster form of memory than DRAM.

Read-only memory (ROM) is another type of primary internal memory, but unlike RAM, ROM is non-volatile and stores data permanently. (10)_____. Instead, a programmer writes the data into individual cells using binary code, which represents text using the '1' and '0' two-symbol system. Because you cannot alter the data on ROM, you can use this type of memory for aspects that don't change, such as the boot-up of software or firmware instructions, which help a device function properly.

TASK 5. Answer the questions.

1. What is computer memory?
2. Why is computer memory important?
3. What is the difference between internal and external memory?
4. What is RAM?
5. Why RAM is called a volatile memory?
6. What is the difference between DRAM and SRAM?
7. What memory is associated with cache memory?
8. What is ROM?
9. What is the fastest type of computer memory?

_____*VIDEO*

TASK 6. Watch the video 'How computer memory works' (by Kanawat Senananon) on https://www.youtube.com/watch?v=p3q5zWCw8J4 and complete the sentences.

1. A memory cell that can switch between two states for two possible values _____.
2. Files and programs consist of millions of these bits, all processed in _____.
3. Computers have short-term memory for _____, and long-term memory for _____.
4. The memory's latency is the time _____.
5. Because program instructions must be processed quickly and continuously, all locations within the short-term memory can be accessed _____.
6. Each memory cell consists of a tiny transistor and a capacitor that store _____.

7. Dynamic memory holds charges briefly before they _____.
8. SRAM is the _____ memory in a computer system, but also the _____, and takes up three times more space than DRAM.
9. RAM and cache can only hold data as long as _____.
10. In magnetic storage, which is the _____, data is stored as a magnetic pattern on a _____ coated with _____.
11. Optical-based storage like DVD and Blu-ray also uses spinning discs, but with a _____.
12. Solid-state drives have no _____, instead using _____ that store bits by trapping or removing _____ within their specially designed internal structures.
13. Computer memory actually _____ fairly quickly.
14. The heat generated from a device and its environment will eventually _____ hard drives, _____ the dye in optical media, and cause _____ in floating gates.
15. Repeatedly writing to floating gate transistors _____ them, eventually rendering them _____.

TASK 7. Watch the video 'How computer memory works' (by Kanawat Senananon) on https://www.youtube.com/watch?v=p3q5zWCw8J4 and match the words to build the word combinations. Build your sentences with them.

1. memory		a) charge
2. short-term		b) memory
3. long-term		c) memory
4. permanent		d) disc
5. electrical		e) stick
6. magnetic		f) storage
7. magnetic		g) storage
8. spinning		h) coating
9. reflective		i) cell
10. solid-state		j) drive
11. flash		k) expectancy
12. charge		l) leakage
13. life		m) film

VOCABULARY IN USE
_____

TASK 8. Match the words with their definitions.

latency	volatility	cost	reliability	speed	capacity
	availability		transportability		

Computer memory is evaluated in accordance with the following criteria:

1. _____ – if the device retains data when the computer is off;
2. _____ – the amount of data the device can store;
3. _____ – refers to the delay that occurs in data transmission between computer RAM and the CPU;
4. _____ – measures the time from initialising to the first/next failure;
5. _____ – the proportion of time the device is on and running;
6. _____ – when memory can be trasferred from one device to another;
7. _____ – the time needed to release data after the CPU makes a request;
8. _____ – typically expressed as a ratio of dollars per bite.

TASK 9. Read the text about computer memory and retell it in English. Use topical vocabulary.

Пам'ять комп'ютера поділяють на оперативну, кеш-пам'ять, пам'ять базової системи введення-виведення операційної системи (BIOS), зовнішню (дискову).

Оперативна пам'ять – це основна пам'ять, яка призначена для зберігання оперативних даних і програм, що виконуються. Дані і програми зберігаються в пам'яті, поки комп'ютер працює; після вимкнення живлення комп'ютера весь простір оперативної пам'яті очищується. Сукупність оперативної пам'яті утворюють комірки, кожна з яких призначена для збереження даних обсягом один байт. Обсяг оперативної пам'яті сучасних комп'ютерів становить 4 Гб, 8 Гб, 16 Гб або 32 Гб.

Кеш-пам'ять – це супершвидка пам'ять, в якій зберігається інформація, що необхідна процесору. Кеш-пам'ять виконує проміжне збереження даних під час обміну між центральним процесором і оперативною пам'яттю. Вона призначена для підвищення швидкості інформаційного обміну загалом.

TASK 10. Answer the questions.

1. Why does a computer need to use several types of memory?

2. Give examples of an outdated memory or storage device. What do you think is the main reason they are outdated?

3. Among the properties of a memory device (speed, capacity, cost, data life-span) which one, in your opinion is the most important, and why?

4. As our digital devices become smarter and capable of storing more data than ever, they are making our lives easier. But do you think we are too dependent on them?

TASK 11. Choose the proper option.

1. The data and applications of your computer are stored on the _____.
    a) hard driver
    b) hard drive
    c) power supply
    d) motherboard
2. My computer's hard drive has a _____ of 1TB.
    a) size
    b) capacity
    c) volume
    d) dimension
3. To run this application you need at least 100 Mb of _____ on your hard drive.
    a) free size
    b) free space
    c) free capacity
    d) free volume
4. Which of the following is the fastest memory?
    a) DRAM
    b) Hard drive
    c) SRAM
    d) CD-ROM
5. What is the common feature between DRAM and SRAM?
    a) They are both made of a transistor and a capacitor
    b) They are both made of six transistors
    c) They both lose their contents when powered off
    d) They both store data by the way of trapping electrons
6. An unopened photo is kept in the _____ of a computer.
    a) CPU's cache
    b) Hard drive
    c) RAM
    d) None of the above
7. What is the fundamental memory element in flash memory?
    a) Magnetic disks
    b) Optical disks
    c) Transistors and capacitors
    d) Floating-gate transistors
8. Any hardware attached to the tower:
    a) CPU
    b) Software
    c) Peripherals
    d) Storage

TASK 12. Read and translate the text.

SSD vs. HDD: Which is Better for You?

What's the difference between SSDs and HDDs? Solid-state drives and hard disk drives are similar in their physical specifications, but they store data very differently. There are advantages and disadvantages of each type of drive, and the choice of which type is right for you depends on what you use your computer for.

HDD. The technology behind hard disk drives is well-known and well-tested. Hard disk drives have been around for more than 50 years, steadily increasing their storage capacity and decreasing their physical size. HDDs rely on spinning disks, or platters, to read and write data. Hard disk drives consist of one or more magnetically sensitive platters, an actuator arm with a read/write head on it for each platter, and a motor to spin the platters and move the arms. There is also an I/O controller and firmware that tells the hardware what to do and communicates with the rest of the system.

Each platter is organized into concentric circles, called tracks. Tracks are divided into logical units called sectors. Each track and sector number results in a unique address that can be used to organize and locate data. Data is written to the nearest available area. There is an algorithm that processes the data before it's written, allowing the firmware to detect and correct errors. The platters spin at preset speeds (4200 rpm to 10000 rpm for consumer computers), those speeds correlate to read/write rates. The higher the preset speed, the faster a hard drive will be able to read and write data.

Each time you ask your computer to retrieve or update data, the I/O controller tells the actuator arm where that data is located, and the read/write head gathers the data by reading the presence or absence of a charge in each address. If the request was to update the data, the read/write head changes the charge on the affected track and sector. The time it takes for the platter to spin and the actuator arm to find the correct track and sector is known as latency.

The drawbacks to HDDs are a result of the mechanical parts used to read and write data, as physically finding and retrieving data takes more time than electronically finding and retrieving data. The mechanical parts can skip or even fail if they are handled roughly or dropped. This is a concern in laptops, but not as much in desktops. HDDs are also heavier and use more energy than comparable SSDs.

The benefits of a hard disk drive are that they are a proven technology, are frequently less expensive than a solid-state drive for the same amount of storage.

SSD. Solid-state drives are a newer technology but have progressed rapidly, adding more storage capacity each year. SSDs rely on electronic storage in non-volatile memory, meaning that data won't disappear when the computer is turned off.

SSDs can be thought of as large USB drives; they use the same base technology. NAND, the technology in solid-state drives is a kind of flash memory. At the lowest level, floating gate transistors record a charge (or lack of a charge) to store data. The gates are organized in a grid pattern, which is further organized into a block. Block size can vary, but each row that makes up the grid is called a page. There is an SSD controller that performs several functions, including keeping track of where data is located. Each time you ask your computer to retrieve or update data, the SSD controller looks at the address of the data requested and reads the charge status.

SSDs are a newer technology, and as such, are more expensive than HDDs. Although they are catching up, it can be harder to find very large-capacity solid-state drives. HDDs can be as much as 2.5 times larger.

Solid-state drives deliver faster load times for games, applications, and movies. Because of the technology they use, SSDs are lighter and more able to withstand being moved and dropped. In addition, solid-state drives use less energy, keeping the computer they're used in cooler.

The difference between hard drives and solid-state drives is in the technology used to store and retrieve data. HDDs are cheaper and you can get more storage space. SSDs, however, are faster, lighter, more durable, and use less energy. Your needs will dictate which storage drive will work best for you.

(Based on: http://www.crucial.com/usa/en/learn-with-crucial/about-ssd/ssd-vs-hdd)

TASK 13. Reread the text and find English equivalents of the Ukrainian words and word combinations.

Зберігати данні по-різному, добре перевірена технологія, ємність пам'яті, обертові диски, магнітні пластини, голівка зчитування запису, попередньо задана швидкість, отримати інформацію, оновити інформацію, транзистор з пла́вним затво́ром, енергонезалеежна пам'ять, відслідковувати розташування данних, здатний витримати переміщення та падіння.

TASK 14. Answer the questions.

1. What is the difference between HHDs and SSDs?
2. What does HHD consist of?
3. What are platters? What do platters consist of?
4. What speed do the platters spin at?
5. What is the function of the I/O controller?
6. What is latency?
7. What are the advantages of HHDs?
8. What are the disadvantages of HHDs?
9. What technology are SSDs based on?
10. What is the function of floating gate transistors?

11. What is the function of an SSD controller?
12. What are the advantages of SSDs?
13. What are the disadvantages of SSDs?

TASK 15. Look at the picture of HDD and SSD. Compare two disks. Be sure to mention the size, the construction and the constituent parts.
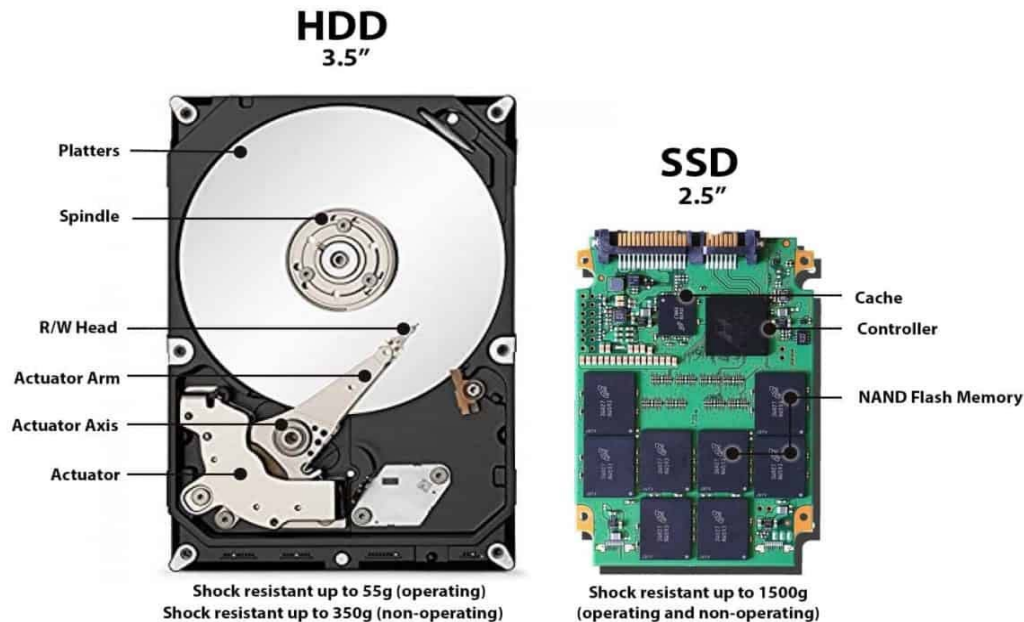
TASK 16. Arrange the steps of how to install an SSD on your laptop in the proper order.

Laptop SSD installation instructions

A. Gather supplies. Take a 2.5-inch Crucial® SSD, a screwdriver, your computer's owner's manual (which will specify the type of screwdriver you need).
B. Reassemble your laptop.
C. Ground yourself by touching an unpainted metal surface. This is an extra safeguard that protects your drive and components from static damage during the installation process.
D. Hold down the power button for 5 seconds to discharge residual electricity.
E. Open your laptop's case. Refer to your owner's manual for how to do this.
F. Make sure you're working in a static-safe environment. Remove any plastic bags or papers from your work space.
G. Locate the storage bay. Refer to your owner's manual for the exact location and note the size of the bays. Remove the old storage drive. Look closely at the old storage drive for any brackets, adapters, support frames, braces, pull tabs, or screws that might be attached to it. If anything is attached to the old drive, remove it and put it on the SSD in the same manner.
H. Shut down your system. Disconnect the power cable and remove the battery. Refer to your system's owner's manual for how to do this.

I. Power on your computer.

J. Plug the SSD into your system. Don't force the connection – it should plug in easily and fit snugly. If the SSD doesn't fit snugly, use the spacer that comes with your Crucial® SSD and attach it to the SSD by peeling off the adhesive and sticking the spacer onto the drive. Attaching the spacer allows the SSD to achieve the same level of thickness as the existing drive you removed. Note: many installations don't require the spacer, so you might not need to use it.

(Based on: http://www.crucial.com/usa/en/learn-with-crucial/about-ssd/how-to-install-ssd-in-laptop)

_____*VOCABULARY IN USE*

TASK 17. Fill in the gaps with the proper word or word combination.

chips	upgraded	megabytes	megahertz	speed
		motherboard	processor	

The 'brain' of a computer is the 1. _____. Most of these are made by Intel and AMD, and are sometimes referred to as 2. '_____'. The 3. _____ of a processor is measured in 4. _____.
A computer's memory is measured in 5. _____. The processor and memory modules are located on the 6. _____. Changing a computer's processor is not generally practical, but the memory can usually be 7. _____.

data	developed	devices	enabled	signals
	wireless	telecommunications		

Bluetooth® technology enables 1. _____ communication between 2. _____ such as laptop computers, mobile phones and PDAs. Bluetooth® 3. _____ devices use short-range radio 4. _____ to exchange 5. _____ quickly and easily. The technology was 6. _____ by a group of computer and 7. _____ companies including IBM, Intel, Nokia and Ericsson.

_____*VIDEO*

TASK 18. Watch the video about CPU cache on https://www.youtube.com/watch?v=yi0FhRqDJfo&t=42s and answer the questions.

1. What does DRAM stand for?
2. What does DRAM work on?
3. What does SRAM stand for?
4. Why is SRAM faster than DRAM?
5. What is the function of the CPU cache?

6. Why is cache memory important?
7. Where is Level 1 cache located?
8. What is the function of Level 2 cache?
9. Which level of cache is used to catch recent data accesses from the processor?
10. What is the fastest level of cache?

_____*GRAMMAR*

TASK 19. Study the table.

Passive Voice			
	Active	**Passive**	
Present simple	The CPU **processes** instructions.	Am Is + Verb 3 Are	Instructions **are processed** by the CPU.
Past simple	Charles Babbage **invented** the computer.	Was + Verb 3 Were	The computer **was invented** by Charles Babbage.
Future simple	Robots **will replace** humans in dangerous tasks.	Will be + Verb3	Humans **will be replaced** by robots in dangerous tasks.
Present continuous	The students **are writing** the test now.	Am Is + being+ V3 are	The test **is being written** now.
Past continuous	They **were upgrading** the computer all evening.	Was + being+V3 Were	The computer **was being upgraded** all evening.
Present perfect	They **have** already **written** the article.	Have + been+V3 Has	The article **has** already **been written**.
Past perfect	They **had fixed** the computer before the lesson yesterday.	Had + been + V3	The computer **had been fixed** before the lesson yesterday.
Future perfect	They **will have fixed** the computer by tomorrow.	Will have been + Verb3	The computer **will have been fixed** by tomorrow.

	They **must build** a new engine. They **are going to build** a new engine.	Must Can Could May + be + V3 Might Should Be going to	A new engine **must be built.** A new engine **is going to be built**.
Modal verbs			

TASK 20. Put the verbs in brackets into the correct Passive Voice form.

1. When a particular program _____ (run), the data _____ (process) by the computer very rapidly.
2. In the 1970s, new languages such as LISP and PROLOG _____ (design) for research into Artificial Intelligence.
3. Computers and microchips have become part of our everyday lives: we visit shops and offices that _____ (design) with the help of computers, and we read magazines that _____ (produce) on computers.
4. By the time Microsoft made its operating system Windows 95, the graphic user interface _____widely _____ (use) by Macintosh.
5. BASIC enables the user to interact with the program while it _____ (execute), which means that data can be input while the program is running.
6. All computers _____ (bring) to a virtual standstill by the mysterious bug.
7. If the market for possible computers grow, prices _____ (reduce).
8. By the year 2030 human labour in industry will _____ (replace) by robots.
9. The stuff _____ (instruct) by the manager tomorrow morning.
10. _____ those innovations _____ (send) yesterday? – No, they _____. They _____(send) a bit later today.
11. _____ the laser printer often _____ (use) in your institute? – Yes, it _____. It _____ (use) every week.
12. _____ the new software _____ (set) up yesterday? – No, it _____ (set) up because of the problems with electricity in the office. It _____ (set) up tomorrow morning.
13. Who _____ the tests _____ (usually check) by? – They _____ (usually check) by our professor.
14. Why didn't you phone me after the presentation yesterday? – Sorry, the phone _____ (repair) at that time.
15. The church is three hundred years old. How long _____ this church _____ (build)? – It _____ (build) for thirty-five years.
16. Can you give me a lift? – Sorry, my car _____ (service) now.

## TASK 21. Rewrite the following sentences using the Passive.

e.g. Thomas Edison invented the light bulb. – The light bulb was invented by Thomas Edison.

1. People all over the world drive cars.

2. They are designing a new model of the TV receiver.
3. Smith Ltd is supplying our company with computers.
4. They are installing the new computer system next month.
5. They are going to sell headphones that are safe for hearing soon.
6. She offered me the job as a hardware engineer but I refused it.
7. Local businesses have provided technical support.
8. We use computers to process our sales information.
9. He found that someone had stolen his pen earbuds.
10. The police have just found the missing digital camera.
11. They must do something with this printer.
12. They will tell you how long the delivery takes.
13. Last Thursday we appointed a new system analyst.
14. Portable PCs will replace desktop PCs in a few years.
15. They have fully computerized the factory.
16. Governments can take measures against computer crime.
17. Professor Niklaus Wirth and his colleagues developed the Pascal language.
18. No one has seen the Senior Programmer since the day of the exhibition.
19. They program the computer to warn users before it deletes information.
20. The computer didn't carry out the instructions because of a syntax error.
21. We'll complete the testing of the new computer program by next week.
22. Computer Services Engineer Technician has been restoring the data for several hours.
23. Scientists may discover new electronic components.
24. Software manufacturers will have made hundreds of new programs by this time next year.

_____*SPEAKING*

TASK 22. Look at the diagram below and describe computer memory types. Use the active vocabulary and information from the previous exercises.
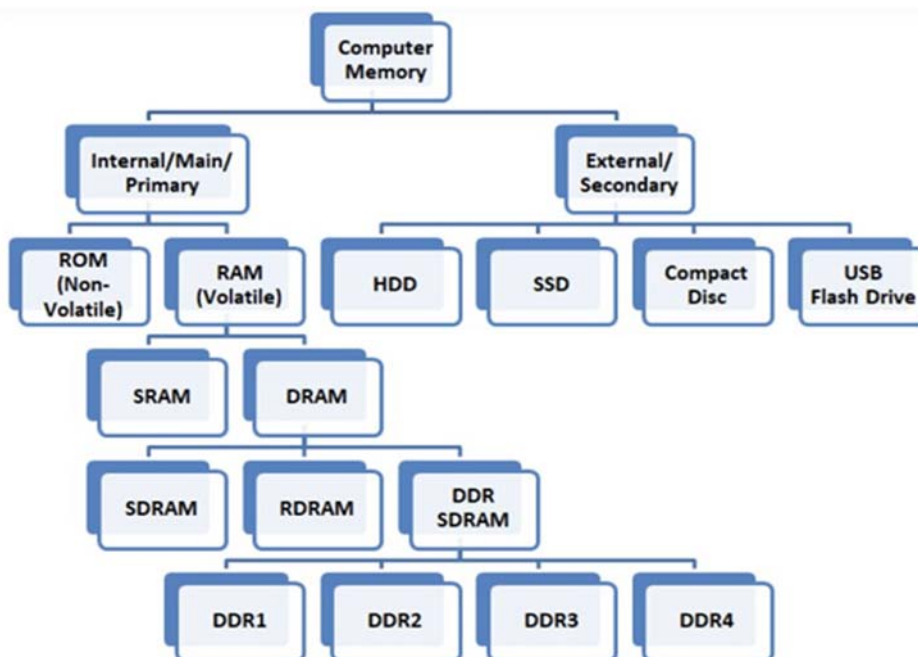
TASK 23. Read the writing task and write your email in 150 words.

Your friend asks you for some advice. He wants to buy a new **hard drive**. But he doesn't know what to choose, HDD or SSD? Write an email to him / her in which you:

- Give advice about the hard drive.
- Give arguments for your choice.
- Compare HDD and SSD. Mention their advantages and disadvantages.

_____*PROFESSIONAL READING*

TASK 24. Read and translate the text.

Cloud storage
(by Michael Muchmore)

Online file storage, syncing and sharing services play a huge role in letting you collaborate smoothly with your colleagues no matter where you're working. Computer systems have been steadily moving away from local storage to remote, server-based storage and processing – also known as the *cloud*. By keeping your documents and media in the cloud, you can enjoy anywhere-access to your entertainment and improve business collaboration. These services provide seamless access to all your data – Word docs, PDFs, spreadsheets, photos, and any other digital assets – wherever you are. You no longer need to be sitting at your work PC to see your work files. With cloud syncing you can get to them from your laptop at home, your smartphone on the go, or from your tablet on your couch. Using one of these services means no more having to email files to yourself or plug and unplug USB flash drives.

If you don't yet have a service for storing and syncing your data in the cloud, you should seriously consider one. Which one you choose depends on the kinds of files you store, how much security you need, whether you plan to collaborate with other people, and which devices you use to edit and access your files. It may also depend on your comfort level with computers in general. Most of these services are extremely user-friendly, while others offer advanced customization for more experienced techies.

The range of capabilities of cloud-based storage services is incredible. Many of them specialize in a specific area. For example, Dropbox and SugarSync focus on keeping a synced folder accessible everywhere. SpiderOak emphasizes security. Some cloud storage services, such as Apple iCloud, Google Drive and Microsoft OneDrive, are generalists, offering not only folder and file syncing, but also media-playing and device syncing. These products also offer real-time document co-editing.

Most cloud services offer some level of backup, almost as a consequence of their intended function. It follows logically that any files uploaded to a cloud service are also protected from disk failures since there are copies of them in the cloud. But true online backup services can back up all your computer's files, not just those in a synced folder structure. Whereas syncing is about managing select files, backup tends to be a bulk, just-in-case play. With syncing, you choose the folders, documents, and media that you want ready access to and save them in the cloud. With backup, you protect everything you think you might regret losing.

Just to clear up any confusion, the *cloud* part of cloud-based storage services refers to storing your files somewhere other than your computer's hard drive, usually on the provider's servers. There's a half-joke saying in the tech world, 'There is no cloud. It's just someone else's computer.'

Having data in the cloud gives you the ability to access those files through the internet. Your data is usually encrypted before making the journey over the internet to the providers' servers, and while it lives on those servers it's also encrypted. Well-designed services don't upload entire files every time they change. They just upload the changes, saving your connection bandwidth.

You can access your cloud files through an app or utility software installed on your computer. Once it's installed, it usually shows a small notification icon and creates your synced folder structure that fits into Windows Explorer or the macOS Finder. You can also get to the files via your web browser. Of course, you need an internet connection for it to work, but if you temporarily are without a connection, that's okay. The service waits until the next time you do have a connection and takes care of business then.

Many cloud storage services have a free account that usually comes with some limitations, such as the amount of storage or a size limit on files you can upload. We prefer providers that offer some level of free service, even if you get only 2GB of storage space, rather than a time-based trial because a free account lets you fully integrate a service into your life for several weeks. During that time, you get a feel for how it works and what might go wrong with your setup.

What could possibly go wrong? Human error accounts for a good deal of cloud storage tragedies, but the dropped internet connection is another common troublemaker. Not to mention that every internet service suffers the occasional outrage. One of the benefits of paying for an account is that it usually comes with additional support from the provider, so if anything does go wrong, someone from the company can help you resolve the issue.

There are many other reasons to pay for cloud storage, from getting a lot more space to being able to upload huge files. That last benefit is relevant to graphic designers, video editors, and other visual artists who often host enormous files.

Other perks of paying for your cloud storage often include increased access to file-version history (meaning you can restore an important business proposal to the version you had before your colleague made a bunch of erroneous changes), more security, and more features for collaboration and teamwork.

TASK 25. Answer the questions.

1. What is cloud storage?
2. What are the benefits of cloud storage?
3. What actors should you pay attention to when choosing the service for cloud storage?
4. Compare the cloud storage services described in the text. What is the difference between them?
5. What is the difference between syncing files and file backup?
6. Where exactly are your files stored in cloud-based storage services?
7. Why is all your data encrypted in cloud storage?
8. Do cloud-based storage services upload entire files every time they change?
9. How can you access your cloud files?
10. Are cloud services free?
11. Why is it recommended to have a paid version of the cloud storage app?
12. What problems can you have with cloud storage services?

TASK 26. Talk about your experience of using cloud storage services. Be sure to mention:

- Do you use cloud storage? Why?
- If not, do you plan to start using it?
- Have you ever had any problems with cloud storage?
- What do you usually store on a cloud?
- What cloud storage service (app) do you use? What do you like (dislike) about it?

UNIT 6

COMPUTER PERIPHERALS

TASK 1. Look at the picture above and name the peripheral devices shown there. Then discuss the questions.

1. What peripheral devices do you have at home? What do you use them for?
2. What peripheral devices would you like to buy? Why?

_____*VOCABULARY*

TASK 2. Match the words and word combinations with their Ukrainian equivalents. Learn the words.

1.	amplify	a)	купувати
2.	aspect ratio	b)	випромінення
3.	barcode	c)	замість
4.	bit-mapped	d)	прикріпити, приєднати
5.	blank space	e)	зменшувати
6.	built-in	f)	технічні характеристики
7.	characters	g)	частота оновлення
8.	compatible	h)	підсилювати
9.	contrast ratio	i)	щільність, густина

10.density	j) отримувати
11.emission	k) растровий
12.external	l) зовнішній
13.film	m) вбудований
14.headphones, earpieces	n) штрихкод
15.headset	o) захопити
16.inch	p) сумісний
17.instead of	q) показувати
18.lower-case letters	r) навушники
19.refresh rate	s) дюйм
20.response time	t) гарнітура
21.space bar	u) контрастність
22.speakers	v) колонки
23.specifications (specs)	w) символи
24.three dimensional (3D)	x) час відгуку
25.to attach	y) кути огляду
26.to capture	z) клавіша пробіл
27.to display	aa) видаляти
28.to obtain	bb) літери верхнього регістру
29.to purchase	cc) клавіша пробіл
30.to reduce	dd) плівка
31.to remove	ee) трьохвимірний
32.upper-case letters	ff) літери нижнього регістру
33.viewing angles	gg) співвідношення сторін (дисплея)

TASK 3. Match a computer component with its description.

1. Motherboard (system board)	a) It is the TV-type screen that you view your programs on. They are supplied in different sizes, common sizes range from 15" to 21" screens. You should be aware that poor quality or badly maintained items can harm your eyesight.
2. CPU (Central Processing Unit)	b) Many computers are now supplied with these items. That means, when you run multi-media programs, you can listen to sounds that are played back via your computer. If you have a microphone and suitable software, you can also record sounds.
3. Monitor	c) You will see one or more such sockets at the back of the system unit, allowing you to plug in devices designed for this type of connection.
4. Universal Serial Bus (USB)	d) It is a special chip held on your computer's system board. It contains software that is required to make your computer work with your operating system, for instance, it is responsible for copying your operating system into RAM when you switch on your computer.

5. Serial port	e) It is the main printed circuit board found in any computer system. It holds crucial electronic components of a system, such as the central processing unit (CPU) and memory and allows communication between computer elements and peripheral devices.
6. RAM (Random Access Memory)	f) It is the most important element of a computer system where most calculations take place. It is responsible for interpreting and executing most of the commands from the computer's hardware and software. It determines how fast your computer will run and is measured by its MHz speed.
7. ROM-BIOS (Read Only Memory – Basic Input Output System)	g) It is a form of computer data storage that allows information to be stored and retrieved on a computer. It is where the operating system is loaded to when you switch on your computer and also where your applications are copied to when you load an application, such as a word processor or database program. When you create data, (e.g. letters and pictures), these are initially created and held in this memory and then copied to the disk when you save the data.
8. Sound cards and speakers	h) It is a socket located at the back of your computer that enables you to connect items to the computer, such as a modem. They are commonly labelled as COM1 or COM2.

TASK 4. Use the words in the box to decipher the acronyms. Translate the acronyms. Describe each of them.

> ***e.g.*** *TFT stands for Thin-film Transistor; it is used in LCD screens.*

Liquid	Automated	Organic	Cathode-Ray	Teller	Tube
In-Plane	Light-Emitting	Display	Switching	Universal	
Port	Serial	Bus	Thin-Film	Number	Identification
Machines	Diode	Transistor	Display	Personal	Crystal

- TFT – _____;
- LCD – _____;
- CRT – _____;
- ATM – _____;
- DP – _____;
- USB – _____;
- IPS – _____;
- OLED – _____;
- PIN – _____.

READING
_____

TASK 5. Read and translate the text.

Peripheral devices are any kinds of devices used to enter information and instructions into a computer for processing and to deliver the output to a human user or a machine controlled by a computer. They are usually divided into input devices and output devices.

Input devices.

An input device converts incoming data into a pattern of electrical signals in binary code to make them comprehensible to a digital computer. It can send data to another device, but it cannot receive data from it. For example, a keyboard and a mouse can send data to the computer, but they cannot receive or reproduce information.

Input devices can be manual or automated. Manual peripherals are input units that allow the user to interact directly with the computer as in the case of a keyboard, a mouse or a video capturing device.

The **keyboard** is still the most commonly used and versatile device which helps in inputting data into the computer. The most common type of keyboard is QWERTY. The name comes from the first row of letters on the left-hand side of the keyboard. Each key is connected to a switch that closes when the key is pressed and which, in this way, sends the appropriate electrical signal to the CPU. Keyboards can be connected to your computer by a wire, or by using wireless technology. Virtual keyboards are commonly used as on-screen input methods in devices with no physical keyboard, usually where there is no room for one, as in tablet computers or smartphones.

The **mouse** is a pointing device that controls the movement of the cursor on the computer screen and allows users to move and select folders, text, files, and icons on the computer screen. It has two or three buttons that control the cursor movements. It can be wired or wireless, mechanical, optical or laser.

Prototype of the first mouse
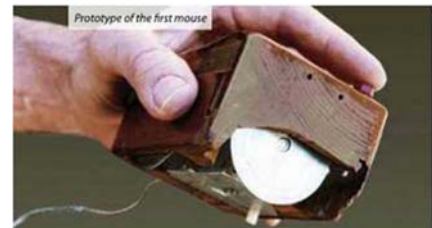
Laptops are equipped with **touchpads**. Movements of a finger along the surface of the touchpad are transformed into cursor movements across the screen.

The **joystick** is also a pointing device that is used to move the cursor position on a monitor screen. Joysticks can be moved in all four directions.

The **microphone** receives the sound vibrations and converts them into audio signals or sends them to a recording medium. The audio signals are converted into digital data and stored in the computer. The microphone enables the user to telecommunicate with others. It is also used to add sound to presentations and with webcams for video conferencing.

Scanners provide a capability for direct data entry into the computer system. They are used for inputting images (photographs, pictures, slides) and texts. Scanners capture images from the source, then they are converted into a digital form that can be edited and stored on the computer.

The **digitizer** (also known as Tablet or Graphics Tablet) enables the user to draw images and graphics using the stylus as we draw on paper with a pencil. The images or graphics drawn on the digitizer appear on the computer monitor or display screen. The software converts the touch inputs into lines and can also convert handwritten text to typewritten words.

Automated input devices use methods of capturing and entering data directly without any human intervention. This mechanism, called direct data entry (DDE), is used when very large amounts of data need to be input quickly and accurately. Direct data entry devices read data and transfer it directly to the computer system. The most common types of such devices include sensors and different types of card readers. Let's have a closer look at some of them.

The **magnetic stripe reader** is used to read data from magnetic stripes quickly and accurately on banking cards. But the magnetic stripe has a very limited storage capacity and the data is not secure as the data stored on the chip. To read data from the chip on bank cards **chip readers** are used.

PIN pads are used to enter data into Automated Teller Machines (ATM), handheld devices, EFTPOS (Electronic Funds Transfer at Point Of Sale) systems, entry doors, etc. On the one hand, PIN codes help prevent unauthorized access but, on the other hand, anyone with the correct code can use the device, a PIN code can be forgotten or people can be seen entering the code.

Bar Code Readers are devices used for scanning bar-coded data (data in the form of light and dark lines) directly from the products, books and membership cards.

Output devices.
The output devices display the results of the data processing. There are a number of output devices that display output in different ways such as text, images, hard copies, audio or video.

A **printer** enables the user to print images, text or any other information onto paper. Printers vary greatly in performance and design. There are different types of printers including inkjet printers, laser printers, thermal printers, 3D printers, etc.

Personal printers are primarily designed to support individual users and may be connected to only a single computer. Usually, they are ink-jet printers and laser printers. These printers are designed for low-volume print jobs, requiring minimal

setup time to produce a hard copy of a given document. They are generally slow devices ranging from 6 to around 25 pages per minute (ppm). Some printers can print documents stored on memory cards or from digital cameras and scanners.

Networked or shared printers are usually shared by many users on a network and can print at speeds of 45 to around 100 ppm.

A barcode printer is a computer peripheral for printing barcode labels or tags that can be attached to or printed directly on physical objects. Barcode printers are commonly used to label cartons before shipment, or to label retail items.

A 3D printer is a device for making a three-dimensional object from a 3D model or another electronic data source through additive processes in which successive layers of material (including plastics, metals, food, cement, wood, and other materials) are laid down under computer control. It is called a printer by analogy with an inkjet printer which produces a two-dimensional document by a similar process of depositing a layer of ink on paper.

A **projector** is an optical device that projects an image or moving images onto a surface. It can be connected to a computer and similar devices to project its output onto a screen. Most projectors create an image by shining a light through a small transparent lens, but some newer types of projectors can project the image directly, by using lasers. It produces magnified texts, images, and videos. So, it is an ideal output device to give presentations or teach a large number of people.

Speakers are electrical devices used to reproduce sound or music. They can be connected directly to a computer or be built into the monitor or the computer case, as in the case of laptop computers. Digital data from the computer are converted into analogue form, and the signal is then amplified through the speakers.

Headphones are pairs of head-mounted speakers that are positioned over the ears. A combination of a microphone and headphones is called a headset.

The **monitor** is the main output device for the presentation of processed information in the form of text, images, audio or video.

Some devices can be both input and output (I/O) devices. They can both send to and receive data from another device. An example of I/O is the **touch screen.** A touch screen is a display device that allows the user to interact with a computer using their finger or stylus. They're a useful alternative to a mouse or keyboard for navigating a GUI (graphical user interface). Touch screens are used on a variety of devices, such as computers and laptop displays, smartphones, tablets, and cash registers.

TASK 6. Reread the text and find English equivalents of the Ukrainian words and word combinations in the text.

Зрозумілий для цифрового комп'ютера, взаємодіяти напряму з комп'ютером, універсальний пристрій, надсилати відповідний електричний сигнал, вказівний пристрій, обирати папки на екрані, захопити зображення, перетворити рукописний текст в друковані слова, без втручання людини, зчитати данні з магнітної стрічки, обмежена ємність пам'яті, запобігти неавторизованому доступу, струменевий принтер, маркувати коробки перед відправкою, роздрібний товар, тривимірний предмет, послідовні шари матеріалу, прозора лінза, збільшений текст, сигнал підсилюється через динаміки.

_____*VIDEO*

TASK 7. Watch the video about 3D printing on https://www.youtube.com/watch?v=Vx0Z6LplaMU&t=1s and reproduce its content in your own words. Write about 50 words. You aren't allowed to use the sentences from the script!!! Be sure to mention:

- how 3D objects are created;
- the basic principle of 3D printing work;
- materials used for printing;
- application of 3D printing;
- express your attitude towards this technology.

_____*VOCABULARY IN USE*

TASK 8. Read the definitions and solve the puzzles.

1. An input device used to create letters, numbers, and symbols, and perform additional functions.

		y		o			

2. A small handheld input device that controls a computer screen's pointer.

		u		

3. This device will produce high-quality output with sharp text and impressive quality of graphics.

	r					r	

4. These devices produce voice output and play back any sounds.

	p		k			

5. This device is used for inputting of images (photographs, pictures, slides) and texts and converting them into the digital form that can be stored on the disc.

	c		**n**			

TASK 9. Match the description with the names of keys on the keyboard.

shift   alt   delete   arrows   escape   backspace caps lock   tab   space bar   enter

1. It removes the character on the left of the cursor.
2. It produces upper-case letters, but it doesn't affect numbers and symbols.
3. It produces upper-case characters.
4. Each time it is pressed, it produces a blank space.
5. It moves the cursor horizontally to the right for a fixed number of spaces (in tabulations and data fields).
6. To stop the computer from doing something, you can press the _____.
7. Select the text you want to remove, and hit the _____.
8. It works in combination with other keys to produce special characters or specific actions.
9. They are used to move the cursor as an alternative to the mouse.
10. It moves the cursor to the beginning of a new line.

TASK 10. Fill in the gaps with one of the words from the box. Change the form if necessary.

laser printer   pixel   keyboard   wireless   video adapter aspect ratio   resolution   peripherals   colour depth amplify

1. The mouse is _____, so the user doesn't have to plug it in.
2. The student types fifty words per minute on his _____.
3. The new _____ produces clearer and more precise images on each page than the ink-jet one.

4. A monitor and a mouse are types of _____.
5. It is the smallest unit on a display screen or bitmapped image.
6. It is an expansion card that generates the video signal sent to a computer display.
7. It is the width of the screen in proportion to its height.
8. The number of pixels contained in a display, horizontally or vertically, is called _____.
9. It is the number of bits used to hold a colour pixel; this determines the maximum number of colours that can be displayed.
10. The speakers _____ sound signals.

TASK 11. Complete each sentence using the correct preposition. Some of them can be used more than once.

in	into	from	by	between	or	outside	on
		either	to	of	without		

1. The CPU is a large chip _____ the computer.
2. Data always flows _____ the CPU _____ the address bus.
3. The CPU can be divided _____ three parts.
4. Data flows _____ the CPU and the memory.
5. Peripherals are devices located _____ the computer but linked _____ it.
6. The signal moves _____ the VDU screen _____ one side _____ the other.
7. Projectors receive signals that can be _____ analogue _____ digital from a computer.
8. Laser scanners are usually used _____ archaeologists to reproduce 3D images of buildings, objects and historical sites.
9. Automated input device use methods _____ capturing and entering data _____ any human intervention.
10. It is easy to transfer information _____ two devices.

_____*VIDEO*

TASK 12. Watch the video 'Computer Monitor Buying Guide' on https://www.youtube.com/watch?v=1UkbALUz8Aw&t=211s and do tasks *A* and *B*.

A. Answer the questions.
1. What aspects will you take into consideration when buying a new monitor?
2. What unit of measurement is the size of computer monitors measured in?
3. What size of the monitor is the best compromise between the screen size and the amount of desk space it occupies?
4. What is resolution measured in?
5. What is the difference between FullHD resolution, QHD and 4K resolution?

6. What is the aspect ratio?
7. What are the main panel types?
8. What inputs are standard for all the monitors?

B. Decide if the following statements are true or false. Correct the false ones.
1. Most computer monitors range from 19'' to 32'', measured horizontally from side to side.
2. The monitor with the higher resolution will display less information than the monitor with the lower resolution even if the monitors are the same size.
3. A screen's resolution is a measurement of the amount of information it can display.
4. Pixels can be compared with the tiny circles of light that work together to form the image on a screen.
5. The greater amount of pixels means the greater amount of more detailed information the monitor can display.
6. 1080p resolution is also referred to as Full HD.
7. 4K offers four times the details of 1080p resolution.
8. The most common aspect ratio nowadays is 4:3.
9. A monitor's aspect ratio details the relationship between its width and height.
10. An aspect ratio of 4:3 means that for every four inches in width, the screen has three inches of height.
11. QHD resolution increases the number of pixels by 23% in each direction.
12. A TN panel prioritizes speed over everything else, offering fast response times and refresh rates but lesser colour accuracy and viewing angles.
13. HDMI carries only video signals through a single cable.
14. IPS stands for In-planar switching.
15. The response time of a monitor is the time it takes for a pixel to change colours.

_____ *VOCABULARY IN USE*

TASK 13. Read the text and fill in the gaps with the suitable word.

Monitor panel types

The general (1)_____ typically has very limited knowledge about the different types of LCD panels on the market. LCD (2)_____ liquid-crystal display. Over the years, LCD technology has become ubiquitous in various commercial and industrial screen manufacturing. LCDs (3)_____ of flat panels that contain liquid crystals with light modulating properties. This means that these liquid crystals use a backlight or reflector to emit light and produce either monochromatic or coloured images. LCDs are used to construct all sorts of displays from cellphones to computer screens to flat-screen TVs.

TN (Twisted Nematic) LCDs are the most commonly (4)_____ and used types of monitors across a wide range of industries. They prioritize speed over everything else, (5)_____ fast response times and refresh rates but lesser colour accuracy and viewing angles. TN panels are also the least expensive option, making them a good choice for shoppers on a budget. The only real downside to these monitors is that they possess low quality and limited contrast ratios, colour (6)_____, and viewing angles. However, they suffice for everyday operations.

IPS (In-Plane Switching) displays are considered to be among the best of the best when it comes to LCD technology as they offer superior viewing angles, excellent image quality, and vibrant colour accuracy and contrast. (7)_____ IPS glow and backlight bleeding steer some folks away from these panels. These defects can (8)_____ the corners or edges of the screen to appear slightly lighter.

VA (Vertical Alignment) panels fall somewhere in the middle between TN and IPS panel technology. While they have much (9)_____ viewing angles and higher quality colour reproduction features than TN panels, they also tend to have significantly slower response times. However, even their most positive aspects still don't come anywhere close to holding a candle to IPS panels, which is why they're much more (10)_____ and suitable for everyday use.

Although OLED monitors are still quite expensive for most consumers, they offer (11)_____ contrast ratios, colour reproduction, and response times. (12)_____ using LED backlights to illuminate the screen, OLED monitors are capable of lighting each pixel individually. This gives them the ability to create incredible levels of black, simply by turning off specific pixels. As a result, these screens can offer up truly remarkable picture quality unmatched by these other technologies.

	A	B	C	D
1	collector	consumer	manufacturer	competitor
2	stands on	stands	stands for	stands in
3	constructed	is constructed	construct	are constructed
4	manufactured	manufacture	manufacturing	are manufactured
5	offer	offering	offered	are offered
6	reproduce	reproducing	reproduced	reproduction
7	although	however	moreover	despite
8	cause	aim	mean	call
9	good	gooder	better	the best
10	afford	affordable	affording	afforded
11	inspiring	increase	input	incredible
12	instead of	however	due	in order to

TASK 14. Reread the text above and compare monitor panel types.

e.g. *TNs are fast but they have limited contrast ratios.*

TASK 15. Choose the proper option.

1. Input-output devices allow the computer to _____ with its external environment.
    a) compute
    b) command
    c) communicate
2. To navigate the pointer on the screen of a laptop, you can use the _____.
    a) tablet
    b) digitizer
    c) touchpad
3. The _____ of a scanner is measured in dpi.
    a) aspect ratio
    b) colour depth
    c) resolution
4. The mouse moves on a _____.
    a) mouse mat
    b) mouse carpet
    c) mouse table
5. TV and computer screens are usually measured in _____.
    a) feet
    b) miles
    c) inches
6. Before you start work, _____ the height of your chair.
    a) adjust
    b) change
    c) rearrange
7. To get sound from your computer, plug in a pair of _____.
    a) loudhailers
    b) loudspeakers
    c) loud voices
8. You can increase the functions or performance of a computer with an _____.
    a) extension card
    b) exploding card
    c) expansion card
9. You can plug in your mobile phone _____.
    a) charger
    b) power
    c) electrification
10. The computer is cooled by a _____.
    a) fun
    b) fan
    c) file
11. The printer has _____ of ink.
    a) finished
    b) ended
    c) run out

12. I had only had my computer for three weeks when I had to have the hard drive _____.
   a) replaced
   b) restored
   c) revived

13. The data and applications on your computer are stored on the _____.
   a) hard drive
   b) hard driver
   c) storage drive

14. My computer's hard drive has a _____ of 1TB.
   a) capacitor
   b) capacity
   c) capability

15. The speed with which a modem can process data is measured in _____.
   a) bandwidth
   b) bits per second (bps)
   c) signals

16. Devices that enter information and let you communicate with the computer:
    a) Software
    b) Output devices
    c) Hardware
    d) Input devices

_____*GRAMMAR*

TASK 16. Study the information in the table about relative pronouns.

Relative Pronouns		
Relative Pronouns take the place of nouns or pronouns. They are called relative pronouns because they always relate back to something or someone else. They are used to join two sentences about the same person or thing.		
Pronouns	**Usage**	**Examples**
who	replace the subject pronouns *I, she, he, we* and **they**	This is the man **who** broke the window.
whose	show possession or relationship.	She knew the family **whose** house we bought.
whom	replace the object pronouns *me, her, him, us* and **them**	They have found the lady **whom** they want to interview.
which	Clauses that begin with **which** are almost always non-restrictive	My precious blue lamp, **which** was in the room, was broken.
that	Clauses that begin with **that** are almost always restrictive clauses	The lamp **that** was in the room was broken.

TASK 17. Fill in the gaps with a relative pronoun. Use all possible alternatives.

1. John von Neumann is the computer scientist _____ first described computer architecture.
2. Hardware is the part of a computer _____ we can touch.
3. A storage device is _____ we can save data.
4. The ALU is the part of the CPU with _____ the computer can do logical operations.
5. The Control Unit is the part of the CPU _____ function is that of controlling data flow.
6. The motherboard is _____ the RAM is attached.
7. Cache memory is a high-speed memory _____ holds data and programs.
8. A hard disk drive is a storage device on _____ we can store a large amount of data.
9. People _____ use magnetic storage say that it is relatively cheaper if compared with other storage technologies.
10. Charles Babbage is the scientist _____ developed Analytical engine.

TASK 18. Link the two sentences with a non-defining relative clause.

> *e.g.* *PROM enables users to load read-only programs and data. It is a variation of ROM. – PROM, which is a variation of ROM, enables users to load read-only programs and data.*

1. John von Neumann first described computer architecture. He was a brilliant scientist.
2. The ALU does all the logical operations. It is internal to the CPU.
3. System software includes the operating system, drivers and utility software. It is used to run and maintain the computer.
4. Clock speed is expressed in cycles per second or Herz. It measures the number of cycles the CPU carries out a second.
5. The operating system is loaded by a boot loader. A bootloader provides an interface for the user to load an operating system and applications.
6. Primary storage includes registers, cache and RAM. Data and applications are temporarily stored there.
7. Gary Kasparov was defeated by the computer Deep Blue in a game of chess. He was a champion.
8. An integrated circuit contains a huge amount of microelectronic devices. It is a tiny component.
9. PCWorld is a digital magazine. It publishes information about cutting-edge IT technologies.
10. Alan Turing was a British mathematician and computer scientist. He laid the foundation for modern computing and developed a theory about artificial intelligence.

TASK 19. Complete the second sentence so that it means the same as the first. Use no more than three words.

1. That's the pen drive on which I saved my presentation. – That's the pen drive _____ presentation on.
2. That's the programmer to whom I talked yesterday. – That's the programmer I _____ yesterday.
3. It was kind of you to fix my computer. – You fixed my computer, _____ of you.
4. Here is the computer lab I work in. – Here is the computer lab in _____ work.
5. That's the new hard disk I bought yesterday. – That's the new hard disk which _____.
6. Here is the new pen drive. Its capacity is 32 GB. – Here is the new pen drive _____ is 32 GB.

_____*SPEAKING*

TASK 20. Act out the dialogues with your groupmate. You are a customer, your groupmate is a shop assistant at the electronic store.

A. The customer wants to know the difference between two monitors. The shop assistant tells about the technical characteristics of the monitors and helps to make a choice.
B. The customer wants to buy a printer but he doesn't know what to choose – a laser model or an ink-jet model. The shop assistant explains the difference between these models and helps to make a choice.

_____*WRITING*

TASK 21. You have a problem with your printer. Write an email to Customer Service to explain your problem and ask for help. In your email you should:
- provide all the details about your printer (brand, type, model, etc.);
- describe the problem;
- ask for help (e.g. substitution, repair, refund, etc.)

_____*PROFESSIONAL READING*

TASK 22. Read and translate the text.

Computer Monitor Buying Guide: Everything You Need to Know

By Carl P., Electronics & Audio Specialist

Picking the best monitor for your computer can be confusing. It's a common misconception that computers and their peripherals are obsolete a few years after

you buy them. So it makes sense to take time to research the different types of monitors. These are the things to pay attention to while choosing a new monitor.

Monitor Sizes

The first thing you'll need to figure out is what screen size suits your needs. Most computer monitors range from 19 to 34 inches, measured diagonally from corner to corner. The average user will be happy with 22-24'' screens. This range provides a screen large enough for general productivity tasks and even some multitasking without overcrowding your desktop. A 27'' monitor offers 25% more space than a 24'' monitor. The extra space can be incredibly helpful for photo/video editing, gaming, multitasking, and readability. The largest monitors make multitasking even easier and can be a good alternative to dual monitor setups.

Computer Monitor Resolution

A screen's **resolution** is a measurement of the amount of information it can display. Resolution is measured in **pixels**, the tiny squares of light that work together to form the image on a screen. The smaller the squares (pixels) are, the more of them you can fit on the page (screen). The more pixels you have, the more detailed an image you can create. A monitor's resolution is usually listed as its length x height in pixels. 1920 x 1080 (nineteen-twenty by ten-eighty) is the most common resolution these days. This resolution is also referred to as Full HD or 1080p. It's perfect for a typical computer user, providing enough room to comfortably browse websites or compare documents located side-by-side. 1920 x 1080 is also the standard resolution for most broadcast and streaming TV shows.

1440p refers to a resolution of 2560 x 1440 pixels. These screens offer a little less than twice the detail of 1080p. Multitaskers will love the ability to keep more windows in view on a 1440p screen. Content creators/editors will love the extra detail the screen provides.

Just be aware that higher resolutions require more of your computer. Web browsing, streaming, and standard office work won't be very taxing. But editing high-resolution pictures and videos or playing games at a higher resolution will likely require a computer with a powerful graphics card and/or processor.

4K refers to a resolution of 3840 x 2160 pixels. These screens offer four times the detail of 1080p. Media editing and gaming on 4K monitors will require an even more powerful graphics card.

You can always turn down the resolution of a monitor, (from 4K to 1440p, for example) if your computer struggles to keep up. But no upgrades or adjustments will let a 1440p monitor display 4K worth of pixels.

There are also 5K, 8K, 16K screens but such resolutions are significantly less common and more expensive.

Monitor Connection Types/Monitor Ports

There are a number of different cables you can use to connect a monitor to a computer.

Most monitors today connect to your computer via an **HDMI** port. HDMI carries both audio and video signals through a single cable. Virtually all HDMI ports and cables retain the same size and shape.

Display Port (DP) and **Mini Display Port (mDP)** both use the same, newer data transfer interface. The only real difference between the two is the size of their port. Much like HDMI, Display Port carries both video and audio over a single cable. There are a few versions of Display Port, with varying throughput. Display Port 1.2 works up to 60 Hz for 4K screens. Display Port 1.3 doubles that, offering 120 Hz for 4K and 30 Hz for 8K! The most current version, Display Port 1.4, doubles throughput again, providing 8K media at 60 Hz with HDR. Lastly, Display Port 2.0 makes 4K 144 Hz HDR gaming possible and will be able to show 16K media at 60 Hz.

The newest port you might find on a monitor is a **USB-C** port. USB-C offers the ability to transfer data and power via a single connection. Because of this, it's been used as the power cable for Android phones and Apple computers for years now.

Aspect Ratio

A monitor's **aspect ratio** details the relationship between its width and height. Early cathode ray tube (CRT) monitors and TVs had an aspect ratio of 4:3. This means that for every four inches in width, the screens had three inches of height. As widescreen TVs and high-definition content grew in popularity, so did widescreen computer monitors. As a result, most computer monitors use a 16:9 aspect ratio (almost twice as wide as they are tall), the same as an HDTV.

Ultrawide monitors, those with an aspect ratio of 21:9, are becoming a popular option both for productivity and entertainment. Ultrawides are about 33% wider than a normal monitor and offer a good alternative to a two-monitor setup. They allow you to organize windows in a variety of new ways and keep more information accessible at any given time.

Monitor Panel Types

The screen or display of a computer monitor is referred to as a **panel.** Most computer panels use one of three LCD technologies to create an image. These three technologies are **TN** (Twisted Nematic), **IPS** (In-Plane Switching), and **VA** (Vertical Alignment) panels. Each offers a distinct set of benefits and drawbacks. There are also **OLED** (Organic Light-Emitting Diode) monitors, **Plasma** monitors.

While it might be a little confusing, TN, IPS and VA panels are both LCD and LED monitors. LCD (Liquid Crystal Displays) is the broadest term, referring to how the screen image is created. LED (Light Emitting Diode) screens provide light to the screen with LEDs as opposed to older technology that used CCFLs (cold cathode fluorescent lamps). TN, IPS, and VA technologies refer to the way the LCD creates an image.

OLED panels, on the other hand, are neither LED monitors nor LCD monitors. They use another technology to create both the light and image for their screens and have started to show up in the monitor market. However, the technology is more commonly used for TVs and smartphones.

Refresh Rate

Digital screens, like films, work by rapidly displaying a series of still images, one after the other, often giving the illusion of movement. The number of images a screen can display in one second is called its **refresh rate** and is measured in Hertz (Hz). Screens typically offer between 30 Hz and 244 Hz. High refresh rates offer a smoother visual experience, especially important for gamers, and are noticeable when watching sports or movies with lots of movement. The more images a screen produces every second, the smaller the jump from one image to the next.

Response Time/Input Lag

The **response time** of a monitor is the time it takes for a pixel to change colours. Similarly, input lag is the time it takes for the monitor to respond to commands, like pressing a button.

Glossy/Matte Finish

Just like the old days of printed photos, some monitors come with your choice of either glossy or matte screens. Glossy screens offer more vibrant colours and deeper blacks but also suffer from glare much more than the matte counterparts. Matte screens are far less susceptible to glare because of a polarized coating they use to diffuse light. Just be aware that the matte coating also limits the screen's contrast and viewing angles.

In Summary

Hopefully, the above guide taught you everything you ever wanted to know about the different types of computer monitors. For most people, focusing on screen size, resolution, and connection type should be all they need to find the perfect monitor. If you're a gamer, a monitor's refresh rate is the next most important variable. Competitive gamers often prioritize input lag and response time. If you're an artist, look for monitors with a high bit depth and a panel with accurate colour representation.

<div style="text-align: right;">(based on https://www.abt.com/learn/computer-monitor-buying-guide)</div>

TASK 23. Build 10 questions to the text and ask your groupmates.

UNIT 7

SOFTWARE. TYPES OF SOFTWARE

TASK 1. Discuss the questions.

1. What is software?
2. Give examples of the programs you often use.
3. What is an operating system?
4. What operating systems do you know?
5. What is the function of the operating system?

_____*VOCABULARY*

TASK 2. Match the words and word combinations with their Ukrainian equivalents. Learn the words.

1. application software	a)	вихідний код
2. back-up	b)	відновлювати
3. bug	c)	диспетчер завдань
4. calculation	d)	блок-схема
5. closed source	e)	послідовність
6. compatible	f)	обчислення
7. database	g)	відлагоджувати
8. desktop publishing	h)	вбудований
9. embedded	i)	файл підкачки
10. end user	j)	ядро
11. error	k)	резервне копіювання
12. feature	l)	перервати
13. firmware	m)	помилка спричинена програмістом
14. flowchart	n)	із закритим кодом

15. IDE (integrated development environment)	o) сумісний
	p) кінцевий користувач
	q) помилка, яка спричинена неуважністю
16. kernel	r) особливість, функція
17. manually	s) інтегроване середовище розробки
18. open source software	t) вбудоване програмне забезпечення, прошивка
19. paging file (page file)	
20. proprietary software	u) програмне забезпечення з відкритим кодом
21. restriction	v) власницьке (пропрієтарне) програмне забезпечення
22. sequence	
23. source code	w) обмеження
24. spreadsheet	x) зручність у користуванні
25. system software	y) широкий спектр
26. task manager	z) виправити, відремонтувати
27. to abort	aa) вручну
28. to compile	bb) компілювати, упорядковувати
29. to debug	cc) електронна таблиця
30. to edit	dd) база даних
31. to fix	ee) комп'ютерна верстка
32. to restore	ff) системне програмне забезпечення
33. to terminate, to restrict	gg) прикладне програмне забезпечення
34. usability	hh) текстова обробка
35. wide range	ii) текстовий редактор
36. word processing	jj) редагувати
37. word processor	kk) обмежувати

TASK 3. Translate the sentences into Ukrainian. Pay attention to the correct translation of the words in bold.

1. He has tried several different **word processing** applications.
2. I'll send the **spreadsheet** as an attachment.
3. **System software** is a type of computer program that is designed to run a computer's hardware and application programs.
4. **Desktop publishing** is the production of page designs with your computer using a special DTP software that integrates text and images.
5. A **database** is any collection of data, that is specially organized for rapid search and retrieval by a computer.
6. A **page file** is a reserved portion of a hard disk that is used as an extension of random access memory.
7. **Source code** is the set of instructions written by a programmer using a computer programming language.
8. **Task managers** are used to review which applications and background processes are running, as well as to stop an app that is not responding.
9. **Proprietary software** is any copyrighted software.
10. This allowed them to write and **debug** software before the new computer hardware was complete.

11. A **flowchart** is a visual representation of the **sequence** of steps and decisions needed to perform a process; each step in the sequence is noted within a diagram shape.
12. The mission had to be **aborted** at the last minute.
13. Now that the **kernel** is configured, it is time to **compile** and install it.
14. You may **terminate** your agreement with us at any time.
15. The **firmware** was tightly integrated with Google services.

TASK 4. Match the words with their definitions.

1. software	a. an error in a computer program or system;
2. operating system	b. is the process of identifying and removing errors from computer hardware or software;
3. bug	c. a person whose job involves writing programs for computers;
4. programmer	d. the collection of computer programs and related data that provide the instructions telling a computer what to do;
5. flow chart	e. a computer operating system that controls and manages files and programs stored on disk;
6. graphical user interface	f. the system software that allows all the hardware and software components to work together; a set of programs that manages all the computer's resources;
7. disk operating system	g. a set of instructions that a computer follows to perform a particular task
8. program	h. a visual way of interacting with a computer using items such as windows, icons, and menus, used by most modern operating systems;
9. debugging	i. a graphical representation of a computer program with its sequence of functions

TASK 5. Complete the puzzles using the clues.

1. a set of rules to be followed in calculations or other problem-solving operations, especially by a computer:

a				r				

2. a graphical representation of a computer program with its sequence of functions:

	l			c			r	

3. a program that controls the operation of a device such as a printer or a scanner:

	r		v		

4. the simultaneous execution of more than one task by a single CPU:

m		l			t						g

TASK 6. Read the information about different types of software.

> The suffix **-ware** refers to products of the same type. In computing, **software** refers to programs executed by a computer, as opposed to **hardware** which concerns physical devices on which programs run. It is commonly used to form jargon terms for different classes of software:

Firmware – permanent software programmed into a read-only memory.

Malware – (MALicious softWARE) software designed to destroy data, steal information or aggravate the user.

Betaware – software that is given to many users for beta testing before its official release.

Adware – free software supported by advertising messages.

Shareware – its concept is that users try a product, and if they like it, they voluntarily pay a set registration fee or make a donation to the program's creator.

Spyware – software that sends information about your Web surfing habits to its website.

Bloatware – applications that are overloaded with features and therefore is slow and occupies an excessive amount of memory or disk space.

Vaporware - software that is announced long before it is ready for sale, and that sometimes never comes in production.

Trialware – software that can be run for a limited period of time before it expires. In order to keep running the application, a registration key (password) must be purchased and entered into the trial version.

Crippleware – software used to demonstrate how a program works, but severely limited in functionality. The user is able to see how the full program operates, but cannot use the program for any meaningful work.

Freeware – software that is available for free, usually over the Internet.

Kruegerware – software that degrades or destroys a computer, the term may refer to spyware or page hijacking software that is difficult to remove.

TASK 7. Match the type of software with the definition.

1. trial version 2. shareware 3. freeware 4. home-use version 5. professional version	a) It is a simplified version that is cheaper to buy. b) This software is in the public domain, anybody can use it without paying. c) It is the full version with all the features. d) You can try it for a while for free. Then if you want to keep using it, you are expected to pay a small fee to the writer. e) You can use it for free for a while (often a month). When the trial period finishes, you have to pay, or the program will de-activate.

TASK 8. Read and translate the text.

Software is the term used to refer to computer programs written by a **programmer** who tells the computer what to do. Programmers are also known as 'software developers', or just 'developers'. There is system software and application software. ***System software*** is used to run and maintain the computer, while ***application software*** is used to carry out specific tasks. System software includes:

- the operating system *(e.g. Windows or Mac)*;
- drivers *(e.g. printer drivers to connect a printer to the computer)*;
- utility software *(e.g. file manager to save or delete files)*.
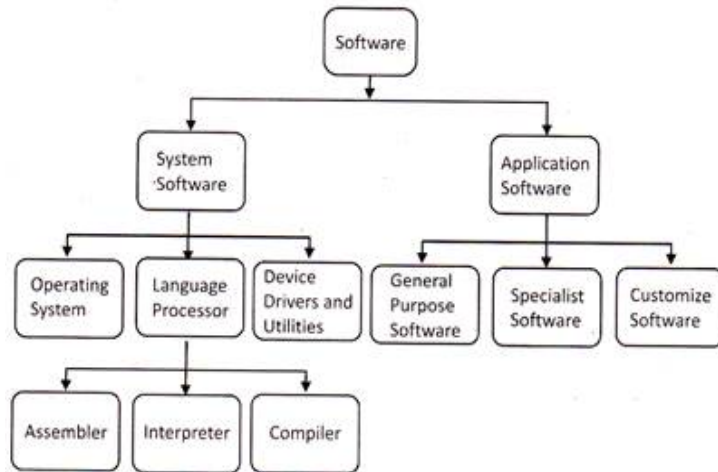
Application software, or application programs, is used to **carry out** tasks on a computer. The most common types of application software are:

- word processing;
- presentation software;
- modelling software (spreadsheets);
- data-handling software (databases);
- desktop publishing and video editing software;
- web browsers;
- application software or apps.

Some software, such as word processors, spreadsheets and desktop publishers is called general purpose software because it can be used to carry out different tasks with the same application. Other software is called special purpose software because it is used to perform one specific task, e.g. payroll software or flight simulator software. Software makes hardware useable by giving it the instructions that it needs in order to operate.

Nothing much is simple about software. Software programs can have millions of lines of code. If one line doesn't work, the whole program can break.

Software is characterised by its **features**. Unfortunately, sometimes it can have **bugs**. When software has a bug, there are a few things that can happen. The program can **crash** and **terminate**. Then **end users** can have some **error** messages. Sometimes when the software stops responding you are forced to manually **abort** the program yourself by pressing some combination of keys such as *ctrl-alt-delete*.

Software programs are normally written and compiled for certain hardware platforms. The software must be **compatible** with all the components of the computer. For instance, you cannot run software written for a Windows computer on a Macintosh computer or a Linux computer. Actually, you can, but you need to have special emulation software or a virtual machine installed. Even with this special software installed, it is still normally best to run a program on the kind of computer for which it was intended.

The software can be **closed source** or **proprietary**. If the software is proprietary, it means its source code is kept secret. The source code reveals how the product works, so by concealing it, developers prevent users from modifying the product and competitors from stealing the ideas behind the source code. Proprietary software is owned by an individual or company. It's therefore subject to copyright laws, and only the author or owner has control over its development and can modify and improve it. An example of this kind of software is Microsoft Windows or Adobe Photoshop.

The other kind of software is called **open source** software. Open source software (OSS) is software that is distributed with its source code, making it available for use, modification, and distribution with its original rights. Programmers who have access to source code can change a program (with some **restrictions,** of course). OSS typically includes a license that allows programmers to modify the software to best fit their needs and control how the software can be distributed. Examples of this type of software include most popular programming languages, operating systems such as Linux, and thousands of applications such as Mozilla Firefox and Open Office.

TASK 9. Match the words in bold in the text to their synonyms.

possessorship

characteristic

fault

computer system failure

well suited

customer

Perform

limitation

computer specialist

TASK 10. Complete the word combinations with prepositions from the box and translate them.

of	with (x3)	for (x2)	in	between	into	over
		by (x2)	to			

1. compatible _____ all the components;
2. software written _____ Windows computers;
3. two basic kinds _____ software;
4. difference _____ open source and closed source;
5. to turn the source code _____ a binary file;
6. instructions written _____ a programmer;
7. to take everything _____ small steps;
8. deal _____ a wide range of IT-related issues;
9. get along _____ programmers better;
10. characterised _____ its features;
11. be available _____ use;
12. be subject _____ copyright laws;
13. have control _____ the program.

_____*VOCABULARY IN USE*

TASK 11. Choose the best definition of the word or phrase.

1. Software is _____.
   a) computer programs
   b) computer programs and instructions
   c) computer instructions
   d) programs, instructions and data
2. System software includes _____.
   a) operating system, drivers and apps
   b) operating system, drivers and utilities
   c) operating system, utilities and word processing
   d) operating system, utilities and applications
3. Software used to perform one specific task is called _____.
   a) general purpose software
   b) special purpose software
   c) operating system
   d) RAM and ROM
4. Microsoft Word, Adobe Acrobat and CorelDraw are programs or _____.
   a) system software
   b) application software
   c) utilities
   d) drivers

5. IDE (integrated development environment) is _____.
   a) a measure of how easy or hard a program is to use;
   b) a rule or law which limits or controls access to something;
   c) an application normally consisting of a source code editor, a compiler and/or interpreter, build-automation tools, and a debugger;
6. The term '*restriction*' means _____.
   a) privately developed and owned technology;
   b) something a computer program is 'supposed' to do; often a reason to buy or upgrade software;
   c) a rule or law which limits or controls access to something to end a program or a process before its completion;
7. The term 'abort' means _____.
   a) to end a program or a process before its completion;
   b) to start a program on a computer;
   c) to switch or reverse a value, such as from on to off;
8. The term 'usability' means _____.
   a) a measure of how easy or hard a program is to use;
   b) a program in which the code is distributed allowing programmers to alter and change the original software as much as they like;
   c) an error or glitch in a computer program caused by a programmer's mistake;
9. The term 'error' means _____.
   a) an incorrect action attributable to poor judgment, ignorance, or inattention;
   b) software in which the license stipulates that the user cannot see, edit, or manipulate the source code of a software program;
   c) an application normally consisting of a source code editor, a compiler and/or interpreter, build-automation tools, and a debugger;
10. An end-user is _____.
   a) a person who uses a product or service on a computer;
   b) a position responsible for organizing and delivering a project on time and on budget; often acts as a bridge between developers and stake-holders;
   c) a person who writes or modifies software;
11. The term 'crash' means _____.
   a) a program in which the code is distributed allowing programmers to alter and change the original software as much as they like;
   b) an application normally consisting of a source code editor, a compiler and/or interpreter, build-automation tools, and a debugger;
   c) a computer failure that aborts an application or freezes an operating system;
12. The term 'open source' means _____.
   a) a program in which the code is distributed allowing programmers to alter and change the original software as much as they like;

b) software in which the license stipulates that the user cannot see, edit, or manipulate the source code of a software program;

c) a computer failure that aborts an application or freezes an operating system;

13. The term 'feature' means _____.
   a) something a computer program is 'supposed' to do; often a reason to buy or upgrade software;
   b) software in which the license stipulates that the user cannot see, edit, or manipulate the source code of a software program;
   c) an error or glitch in a computer program caused by a programmer's mistake;

14. The term 'closed source' means _____.
   a) a program in which the code is distributed allowing programmers to alter and change the original software as much as they like;
   b) software in which the license stipulates that the user cannot see, edit, or manipulate the source code of a software program;
   c) an error or glitch in a computer program caused by a programmer's mistake;

15. The term 'to execute' means _____.
   a) to end a program or a process before its completion;
   b) to start a program on a computer;
   c) to transfer a file from a local computer to a remote computer;

16. The term 'proprietary' means _____.
   a) software in which the license stipulates that the user cannot see, edit, or manipulate the source code of a software program;
   b) an error or glitch in a computer program caused by a programmer's mistake;
   c) privately developed and owned technology;

17. The term 'bug' means _____.
   a) a computer failure that aborts an application or freezes an operating system;
   b) an error or glitch in a computer program caused by a programmer's mistake;
   c) a rule or law which limits or controls access to something;

18. The term 'compatible' means _____.
   a) interchangeable and replaceable;
   b) capable of being used without modification;
   c) completely broken in some mysterious way; corrupted;

19. A 'programmer' is _____.
   a) a person who writes or modifies software;
   b) a person who uses a product or service on a computer;
   c) someone who successfully defines a path for the rest of the industry to follow.

TASK 12. Read the text below and complete it with the word combinations from the box.

> *applications software   operating system   system software   software*

      Information provided by programs and data is known as (1) _____. Programs are sets of instructions that make the computer execute operations and tasks. There are two main types of software. The (2) _____ refers to all the programs which control the basic functions of a computer. They include operating systems, system utilities *(e.g. an anti-virus program, a back-up utility)* and language translators *(e.g. a compiler − the software that translates instructions into machine code)*. The (3) _____ refers to all those applications − such as word processors and spreadsheets − which are used for specific purposes. Applications are usually stored on disks loaded into the RAM when activated by the user.

      The (4) _____ is the most important type of system software. It is usually supplied by the manufacturers and comprises a set of programs and files that control the hardware and software resources of a computer system. It controls all the elements that the user sees, and it communicates directly with the computer. In most configurations, the OS is automatically loaded into the RAM section when the computer is started up.

TASK 13. Match the descriptions on the left with these applications; say what we can do with these programs.

1. word processor	**a.** Adobe Photoshop
2. spreadsheet	**b.** Gmail
3. virus protection	**c.** Microsoft Word
4. browser	**d.** Microsoft Excel
5. image editor	**e.** Microsoft PowerPoint
6. media player	**f.** Norton AntiVirus
7. email software	**g.** Outlook Express
8. presentation software	**h.** Adobe PageMaker
9. graphic design software	**i.** RealPlayer

TASK 14. Complete each sentence with the word from the box.

> *accounting   office suite   enterprise software   image editing*
> *web browser   spreadsheet*

1. _____ software is used by bookkeepers and business owners to record and process financial transactions and to manage accounts.

2. A(n) _____ ususally includes a word processor.
3. Many large corporations use _____ to maintain consistency in all their systems.
4. _____ software can be used to retouch photographs.
5. Users often check their email using a(n) _____.
6. _____ can be used for organization, analysis, and storage of large sets of data in tabular form.

TASK 15. Read the text and fill in the gaps with suitable phrases to form a logically correct text. There are two extra sentences.

a) ....printed as many times as you ....
b) ....each copy looking as good as the first.
c) .....more efficient way to store documents.
d) ..... creating, editing, formatting, and printing.
e) .....a sequence of commands & keystrokes that are recorded & saved.
f) ....saving the document....
g) ....ease with which changes can be made.
h) .....will have opportunities to arrange the page layout.

The most widely used computer application is word processing. These programs allow computers to produce and modify documents such as letters, reports and memos. One main advantage to word processing packages is the (1)_____. Because the document is stored electronically, you can add, delete, or rearrange words, sentences, or entire sections. When done, the document can be (2)_____ like with (3)_____. Using word processing software provides a (4)_____.

Producing a document using word processing usually consists of 4 steps: (5)_____. A 5th step, (6) _____, should be performed frequently throughout the process so that work will not be lost. Most programs have an optional AutoSave feature that automatically saves open documents at specified intervals.

TASK 16. Read the text and fill in the gaps with the suitable word.

Desktop publishing (1)_____ to the software packages which allow the user to design and produce high-quality documents which may contain text, graphics, and unique colours. DTP software contains special tools for (2)_____ graphics & text to present newsletters, pamphlets, flyers, posters, and annual reports.

Many people can now produce marketing literature, catalogues, and annual reports using a DTP software package with a personal computer. Certainly, a good-quality printer is a (3)_____!

In these programs, you will have opportunities to (4) _____ the page layout, select the text type, insert text and graphics, use colour palettes and tinting

options, change the paper sizes, and wrap your text around graphic images. There is usually an option that will allow you to 'rotate' text or graphics to make it (5)_____ differently on the page. There is even a 'Make It Fit' option that is (6)_____ when you need a graphic or text to fit in a certain area.

With desktop publishing, you can create professional-looking documents on your own computer which could (7) _____ be done only by graphic artists. DTP programs save cost and time in producing quality documents. Some popular DTP packages include PageMaker, Corel Presentations, Corel Print House, and Corel Ventura.

	A	**B**	**C**	**D**
1	responds	recollects	refers	represents
2	manipulate	manipulating	manipulation	manipulated
3	reproach	reproduction	representation	requirement
4	arrange	organise	omit	advance
5	arrive	appear	publish	introduce
6	helpy	helpless	helpful	help
7	afterwards	presently	currently	previously

TASK 17. Read the text about spreadsheets and find answers to the questions.

1. What is a spreadsheet?
2. How is data organized in a spreadsheet?
3. How are columns and rows identified in spreadsheets?
4. What is a cell?
5. What types of data can cells contain?
6. What are functions?
7. What is a macro?
8. What happens when a macro is run?
9. Where can spreadsheets be used?

A spreadsheet is the organization of numeric data in a table format. It can easily be produced by using spreadsheet software. A spreadsheet is like a notebook with up to 255 sheets. Herein, data is organized horizontally in *rows*, and vertically in *columns*. Some popular software programs are *Lotus 1-2-3*, *Quattro Pro*, *AccPac Plus*, and *Microsoft Excel*.

In these programs, columns are usually identified by a *letter* and rows are identified by a *number*. Only a small fraction of the active spreadsheet may be displayed on the screen at the same time. The intersection where a column and a row meet is called a *cell*. There can be more than 16 million cells for entering given data in any spreadsheet.

Cells can contain 3 types of data: *labels* (text), *values* (numbers), and *formulas*. Text or labels identify the data and help organize the worksheet. Values represent the working numbers or information presented. Formulas perform calculations on the data in the spreadsheet and display the resulting values. *Functions* are stored formulas that perform common calculations (such as generating a value for the time or date.) Another time-saving feature available in spreadsheets is a *macro* (a sequence of commands and keystrokes that are recorded and saved.) When the macro is run, the sequence of commands and keystrokes is performed, hence, reducing the number of keystrokes required for frequently performed tasks (*e.g.* when moving data from one spreadsheet to another or printing a portion of a spreadsheet.)

Spreadsheets are useful for calculations concerning profit, revenues, and accounting costs.

LISTENING

TASK 18. Listen to the audio and do tasks A and B.

A. Listen to the audio, and decide if the statements are true (T) or false (F).
    a) The company's security software package includes protection against spyware;
    b) The antivirus software destroys files that are infected by malware;
    c) The pre-installed firewall does not allow access to unauthorised users.

B. Listen to a conversation between a company manager and a software engineer. Choose the correct answers to the questions.

1. What is the main idea of the conversation?
    a) How much damage was caused by a virus;
    b) Which information was stolen by a spyware program;
    c) Why the company should update its antivirus software;
    d) What caused a failure in the company's firewall
2. What prediction does the woman make?
    a) Unauthorised users will attempt to access the network again;
    b) The company's systems will be damaged by a virus;
    c) A new firewall will probably be not effective;
    d) The company's files need to be quarantined.

C. Listen to the lecture about programming software and decide if the following statements are true (T) or false (F).

    a) Programmers use text editors to interpret commands.
    b) Text editors are a type of source code editor.
    c) An IDE is the most basic type of programming software.

D. Listen to a conversation between two students. Choose the correct answers.

    1. What is the conversation mostly about?

117

a) How to interpret instructions in programming code;
b) The difference between the two types of computer programs;
c) The importance of learning different programming languages.

2. According to the woman, what is sometimes needed to run programs correctly?
a) Using a linker and a compiler together;
b) Allowing programs to connect to the Internet;
c) Writing new instructions in a programming language;
d) Translating lines of codes into a different programming language.

_____ *VOCABULARY IN USE*

TASK 19. Choose the proper option.

1. Software which is easy to use is _____.
   a) user-easy
   b) user-friendly
   c) usable

2. Software which is obvious to use is _____.
   a) intuitive
   b) guessable
   c) comprehensible

3. Software which is not obvious to use is _____.
   a) counter-intuitive
   b) unintuitive
   c) non-intuitive

4. Software for use by children and schools is _____.
   a) learning
   b) teaching
   c) educational

5. Software for use by businesses is _____.
   a) commercial
   b) businesslike
   c) busy

6. Software made especially for one company is _____.
   a) one-off
   b) unique
   c) tailor-made

7. Software for use at the place you live is _____.
   a) for home use
   b) for house use
   c) for household use

8. Software that has been illegally copied is _____.
   a) unreal
   b) pirated
   c) fake

9. Software which has been bought from the company that produced it is _____.
   a) real
   b) justified
   c) licensed

10. They tried very hard to install the new components on the computer but the language in the manual was too _____ for them to understand.
   a) technical
   b) technician
   c) technically

11. In order to _____ the method by which staff pay is calculated the company has bought a new software package.
   a) facility
   b) factual
   c) facilitate

12. Without the right software I'm afraid you can't _____ that particular program.
   a) reach
   b) access
   c) find

13. I have tried and tried again and again and no matter what I do it still shows 'error' — I just can't _____ what's wrong.
   a) check out
   b) figure out
   c) bring out

14. I spent hours writing that report and checking all the information was correct and then without thinking I pressed the _____ button.
   a) destroy
   b) delete
   c) deny

15. Unfortunately, this program is not _____ with the operating system on my computer.
   a) amicable
   b) compatible
   c) adaptable

16. When you see that particular symbol on the screen, you have to take that as a _____ that something is wrong.
   a) indicating
   b) checking
   c) warning

17. With this program, you can always check your spelling and grammar and if you don't want to accept what it shows, you simply press _____.
   a) 'ignore'
   b) 'quit'
   c) 'leave'

TASK 20. Study the information in the table.

PREFIX	MEANING	EXAMPLE
a- / dis- / de-	opposite of / not	*asynchronous, disconnect, decode*
in- (il- / im- / ir-)	opposite of / not	*impossible, irreplaceable, illegal*
un-, non-	opposite of / not	*uninstall, non-volatile, unzip*
mis- / mal-	wrong(ly)/bad(ly)	*misuse, misdirect, malfunction*
over-	too much	*overload, overheat*
out-	surpassing	*outrun, outperform*
re-	again	*re-centre, re-designed*
multi-	many	*multiprocessors, multicore*
intra- / inter-	within / inside of	*infrared, interface*

TASK 21. Build the words using the correct prefixes from the box.

im- , dis-, il-, un-, multi-, re- (x2), inter-, mal-,

- connect – _____,
- possible – _____,
- charge – _____,
- legal – _____,
- name – _____,
- plug – _____,
- function – _____,
- core – _____,
- connect – _____.

TASK 22. Study the information in the table.

ADJECTIVAL SUFFIX	MEANING	EXAMPLE
-ful	full of	*helpful, useful*
-less	without	*wireless*
-able / -ible	capable of	*attachable, flexible*
-proof	that can resist something	*hackerproof*
-ical	connected with	*optical, optional*

NOUN SUFFIX	MEANING	EXAMPLE
-ability / -ibility	quality of being	*usability, accessibility*
-ing	doing the action of	*programming, coding*
-ment / -age	state	*development, storage*
-tion, -sion	state	*communication, conversion*
-er, -or	executor of the verb	*compiler, operator*
-ship	status	*leadership*
-age	state	*shortage, advantage*

ADVERBIAL SUFFIX	MEANING	EXAMPLE
-ly / -ally	modality	*digitally, virtually*
-ward(s)	in the direction of	*forward(s), backward(s)*
-wise	similar to, as regards	*bytewise, bitwise*

TASK 23. Fill in the gaps with the proper word derivative using word formation elements; translate the words.

Noun	Verb	Adjective
operation	operate	operated, operating
		calculated
accuracy		
	rely	
		managing
	maintain	
delivery		
		equipped
	improve	
evaluation		
	collaborate	
		modifying
	implement	
identification		
	permit	
		interactive
width		
	deepen	

TASK 24. Choose the correct word to complete each sentence. You may have to change some words slightly.

1. user, usage, use, useful, useless

   a) When designing a _____-friendly interface, there are some basic principles and guidelines that you should adhere to.
   b) The quality ranged from acceptable to worse than _____.
   c) Computer _____ is predicted to be increasing over the next 10 years.
   d) You should always provide _____ documentation and support for your application.
   e) Have you ever _____ this software before?

2. variable, vary, various, variety, varying

   a) New techniques were introduced with _____ degrees of success.
   b) With so many _____ to consider, it is difficult to calculate the cost of the product.
   c) There is a wide _____ of patterns to choose from.
   d) She took the job of a computer operator for _____ reasons
   e) The real strength of word processors is their ability to edit and format documents, and they _____ in the strength and variety of these functions.

3. customization, customer, customized, customize

   a) You can _____ the software in several ways.
   b) This _____ does not only let the user move things around, but it also makes the interface looks good.
   c) XML is extensible because it lets website developers create their own set of _____ tags for documents.
   d) They know me – I'm a regular _____.

4. access (v), access (n), accessible

   a) These documents are not _____ to the public.
   b) Each record must obviously have a unique identifier so that it can be _____ in the database.
   c) To _____ a server, you should have a stable Internet connection.
   d) You need a password to get _____ to the computer system.

5. design (v), design (n), designer

   a) This course is primarily _____ as an introduction to the subject
   b) Graphics can be developed for a variety of uses including presentations, desktop publishing, illustrations, architectural _____ and detailed engineering drawings.
   c) In large organisations, several _____ might work on the same project.
   d) XML is a set of rules for _____ text formats.

_____*SPEAKING*

TASK 25. Browse the Internet and find information about other types of software. Be sure to mention:

- What type of software is it? What is this software used for?
- How does it help you in your work?
- Describe its basic features. Which features do you find most useful? Why?
- Does it have any limitations which annoy you? What are they?
- What changes would you make to this software?

TASK 26. Discuss the questions.

1. Have you ever written or modified any software? If so, what were the challenges you faced? If not, why not?

2. Pretend you are the world's best programmer and can write computer code as fast as you can think. What kind of software would you write?

3. In what way is writing instructions for a computer more difficult than writing instructions for a person? Is it easier or more difficult?

_____*WRITING*

TASK 27. Different programs can be used for to edit pictures. Write a passage (150-200 words long) about two programs for picture editing:

- Give brief characteristics of each of them.
- Describe their basic features. Compare the programs.
- Outline their advantages and disadvantages.

UNIT 8

OPERATING SYSTEMS.
GRAPHICAL USER INTERFACE

_____*LEAD-IN*

TASK 1. Answer the questions.
1. Look at the picture above and say what you know about operating systems?
2. What are the differences between operating systems?
3. What is the function of an operating system?
4. What operating system does your computer work on?
5. Would you like to change the operating system of your computer? Why?
6. What is GUI?
7. Why were GUIs developed?

_____*VOCABULARY*

TASK 2. Match the words with their Ukrainian equivalents. Learn the words.

1.	allocates	a)	розпізнавання мовлення
2.	assembly language	b)	взаємодіяти
3.	background	c)	взаємодія
4.	button	d)	споживча електроніка
5.	check box	e)	розширювати
6.	consumer electronics	f)	покращувати
7.	desktop	g)	розпізнавання рукописного тексту

8. drop-down menu	h) отримати перевагу
9. folder	i) включати, залучати
10. handwriting recognition	j) вплив
11. high-level language	k) панель завдань
12. impact	l) підменю
13. interaction	m) робочий стіл
14. kernel	n) кнопка, клавіша
15. pointer	o) випадне меню
16. portability	p) позначка, прапорець
17. recycle bin, wastebasket	q) позначати; перевірити
18. scrollbar	r) зняти позначку
19. shell	s) панель прокрутки
20. speech recognition	t) папка
21. submenu	u) фон
22. taskbar	v) корзина
23. to benefit	w) вказівник
24. to broaden	x) портативність
25. to check	y) ядро
26. to improve	z) мова асемблера
27. to interact	aa) високорівнева мова
28. to involve	bb) оболонка
29. to uncheck	cc) виділяти

_____*VIDEO*

TASK 3. Watch the video about operating systems on https://www.youtube.com/watch?v=fkGCLIQx1MI&t=83s and fill in the gaps with the words you hear.

Did you know that you and your computer speak different languages? It doesn't speak Spanish or Swedish or Chinese. It speaks in _____ and _____. You can't communicate directly with your computer. But that's where your _____ _____ comes in.

The operating system or OS is the program that lets you _____ with your computer. Together the operating system and computer _____ form a complete system that determines what your computer can do.

There are many different operating systems. Two of the most common ones are Microsoft Windows and macOS. Windows comes _____ on most personal computers while MacOS _____ on all new Macs.

Operating systems aren't just for _____ and _____ computers. _____ devices run mobile operating systems like Apple IOS or Google Android which are designed for interactions with smaller touch screens.

Before _____ a new program or application be aware that it may not be _____ for your operating system. Some _____ work on all devices while others only work on certain ones. So get to know your operating system to see how it works and what it can do.

_____*READING*

TASK 4. **Read and translate the text. Write out the words in bold, translate and learn them.**

The OS (operating system) is the set of computer programs that allow the user to perform basic tasks like copying, moving, saving and printing files. It also provides an **interface** between (*i.e.* it provides **communication** between) applications programs (e.g. **wordprocessors** or **spreadsheets**) and the computer hardware. As a user interacts with an applications program on the screen, the applications program communicates with the operating system and the operating system communicates with the computer hardware. The work of the operating system takes place in the background and is not always obvious to the user.

The computer's **operating system** (**OS**) manages all of the software and hardware on the computer. Most of the time, there are several different computer programs running at the same time, and they all need to access your computer's central processing unit (CPU), memory, and storage. The operating system coordinates their work.

Operating systems usually come **pre-loaded** on any computer you buy. Most people use the operating system that comes with their computer, but it's possible to upgrade or even change operating systems. The most common operating systems for personal computers are Microsoft Windows, macOS, and Linux.

Modern operating systems use a **graphical user interface**, or GUI (pronounced *gooey*). A GUI lets you use your mouse to click **icons**, **buttons**, and **menus**, and everything is clearly displayed on the screen using a combination of graphics and text.

Microsoft created the Windows operating system in the mid-1980s. There have been many different versions of Windows, but the most recent ones are Windows 11 (released in 2021), Windows 10 (released in 2015), Windows 8 (2012). Windows often comes pre-loaded on PCs, which helps to make it the most popular operating system in the world.

MacOS (previously called OS X) is a line of operating systems created by Apple. It comes pre-loaded on all Macintosh computers, or Macs. Some of the specific versions include Mojave (released in 2018), High Sierra (2017), and Sierra (2016).

According to StatCounter Global Stats, MacOS users account for less than 10% of global operating systems – much lower than the percentage of

Windows users (more than 80%). One reason for this is that Apple computers tend to be more expensive. However, many people do prefer the look and feel of macOS over Windows.

The Unix operating system was first released in 1971 and was initially entirely written in **assembly language**. In 1973 it was rewritten in C with exceptions of the **kernel** and I/O. The availability of an operating system written in a **high-level language** allowed easier **portability** to different computer platforms. Unix quickly grew and became widely adopted by academic institutions and businesses. In 1984 it started to be sold as a **proprietary** product by AT&T. The Unix OS is made up of three parts: the kernel, the **shell** and the commands or programs. The kernel, i.e. the central OS component, of Unix is the hub of the operating system. It **allocates** time and memory to programs and handles the files and communications in response to system calls. The shell acts as an interface between the user and the kernel. When a user logs in, the login program checks the username and password and then starts another program called the shell. The shell keeps a list of the commands the user has typed in.

Linux is a Unix-like, **open-source** operating system, which means it can be modified and distributed by anyone around the world. This is different from proprietary software like Windows, which can only be modified by the company that owns it. The kernel was released by Linux Torvalds in 1991. The advantages of Linux are that it is **free**, and there are many different **distributions** (versions) you can choose from. Linux has mainly been used as a server operating system because it's relatively easy to customize. But its low cost, flexibility, and Unix background make it suitable for a wide range of applications. It is often used in embedded systems such as mobile phones and handheld devices, but also in supercomputers.

Mobile devices such as phones, tablet computers, and MP3 players are different from desktop and laptop computers, so they run operating systems that are designed specifically for mobile devices. Examples of mobile operating systems include Apple iOS and Google Android. Operating systems for mobile devices generally aren't as fully featured as those made for desktop and laptop computers, and they aren't able to run all of the same software. However, you can still do a lot of things with them, like watch movies, browse the Web, manage your calendar, and play games.

TASK 5. Answer the questions.

1. What is the main function of the operating system?
2. What are the most popular operating systems?
3. What is the function of the GUI?
4. Which operating system is the most popular/ expensive / can be modified?
5. What is the difference between proprietary software and open-source software?

6. What is Unix made up of?
7. Why is Linux more widely used for servers?
8. What are the differences between the PC operating systems and mobile operating systems?

_____*VIDEO*

TASK 6. Watch the video about Windows operating system evolution on https://www.youtube.com/watch?v=JekE1C-fWn0 and fill in the table.

Type	Year	Characteristics
Windows 1.0		
Windows 2.0		
Windows 3.0		
Windows 3.1		
Windows NT 3.1		
Windows NT 3.5		
Windows NT 3.51		
Windows 95		
Windows NT 4.0		
Windows 98		
Windows 2000		
Windows ME		
Windows XP		
Windows Vista		
Windows 7		
Windows 8		
Windows 8.1		
Windows 10		

TASK 7. Find information about the newest version of Windows and describe its characteristics.

_____*VOCABULARY IN USE*

TASK 8. Read the text and fill in the gaps with the suitable word.

The Macintosh Operating System (Mac OS) is an operating system (OS) designed by Apple Inc. (1)_____ and operated on the Apple Macintosh series of computers. Introduced in 1984, it is a graphical user interface (GUI) based OS that since then (2)_____ as multiple different versions.

Mac OS is considered the pioneer of GUI-based operating systems, as it (3)_____ when MS-DOS was the industry standard. Mac OS is a completely capable OS that (4)_____ functionality and services similar to Windows or Linux OS.

128

Most computer operating systems eventually (5)_____ the GUI model. In the 1980s Apple made an agreement allowing Microsoft to use certain aspects of the Mac interface in early versions of Windows. However, except for a brief period in the 1990s, Mac OS never (6)_____ for use with computers made by manufacturers other than Apple.

From 2007 Apple (7)_____ a number of mobile devices that could access the Internet, including the iPhone smartphone and the iPad tablet computer. In 2011 Apple introduced iCloud, a cloud (8)_____ service that allowed users to share data among all of their Apple devices, for both OS X and the mobile operating system iOS. Apple added more features allowing (9)_____ between devices to successive updates of OS X, iOS, and later watchOS (the operating system for the Apple Watch). These features included the ability to receive phone calls (made to the iPhone) and the means of quickly (10)_____ data (such as photos and text) among devices.

As of 2012, Mac OS released several versions, including Macintosh 128k, Mac OS 7, Mac OS X and Mac Mountain Lion.

(based on https://www.britannica.com/technology/Mac-OS)

	A	B	C	D
1	to be installed	installed	install	installing
2	released	has released	has been released	release
3	is launched	was launched	launched	launch
4	is provided	provide	provided	provides
5	adopted	adopt	adoption	has adopt
6	license	licensed	has been licensed	is licensing
7	unveil	unveiled	unveiling	is unveiled
8	computing	computer	compute	computation
9	connect	connection	connectivity	connecting
10	share	shared	was shared	sharing

TASK 9. Read and translate the text about Linux. Complete the text with *a, an, the* or *zero article*.

Linux is (1) _____ operating system and it was initially created as (2) _____ hobby by (3)_____ young student, Linus Torvalds, at (4)_____ University of Helsinki in Finland. Version 1.0 of the Linux kernel was released in 1994. (5)_____ kernel, at the heart of all Linux systems, is developed and released under GNU General Public License, and its source code is freely available to everyone.

Apart from the fact that it's freely distributed, (6) _____ Linux's functionality, adaptability and robustness have made it (7)_____ main alternative for proprietary Unix and Microsoft operating systems. IBM, Hewlett-Packard and other giants of (8)_____ computing world have embraced Linux and supported its ongoing development. More than (9)_____ decade after its initial release, Linux is being adopted worldwide, primarily as (10)_____ server platform. Its use as a home and office desktop operating system is also on the rise. (11)_____ operating system can also be incorporated directly into (12)_____ microchips in a process called (13)_____ embedding, and it is increasingly being used this way in appliances and devices.

TASK 10. Match the synonyms.

1. drop-down list	a) drop-down menu
2. context menu	b) trash
3. recycle bin	c) tickbox
4. wallpaper	d) pop-up menu
5. checkbox	e) (desktop) background

TASK 11. Match the terms.

1. drop-down list	a) a list of choices that appears on a computer screen when a person clicks on the menu's title;
2. context menu	b) storage space or container used to group files;
	c) a menu that appears when an option is selected;
3. progress bar	d) indicates the progression of a task;
	e) a folder where deleted items are temporarily stored;
4. recycle bin	f) an adjustment in a software program or hardware device that adjusts it to the user's preference;
5. settings	
6. folder	g) is a link to a file, folder, disk, or program;
7. taskbar	h) is an element of an operating system located at the bottom of the screen, it allows you to locate and launch programs;
8. shortcut icon	i) is an image that fills the background of a computer screen;
9. toolbar	j) is a graphical widget that permits the user to make a choice between one of some possible variants;
10. wallpaper	
11. checkbox	k) allows the user to change a setting between two states;
12. toggle	l) is a row of buttons, often near the top of an application window, that controls software functions.

TASK 12. Match the pictures with the corresponding words in the box.

drop-down list	folder	context menu	progress bar	settings
recycle bin	shortcut icon	task bar	toolbar	wallpaper
	toggle	search box		

1. _____	2. _____	3. _____
4. _____	5. _____	6. _____
7. _____	8._____	9._____
10._____	11._____	12 _____
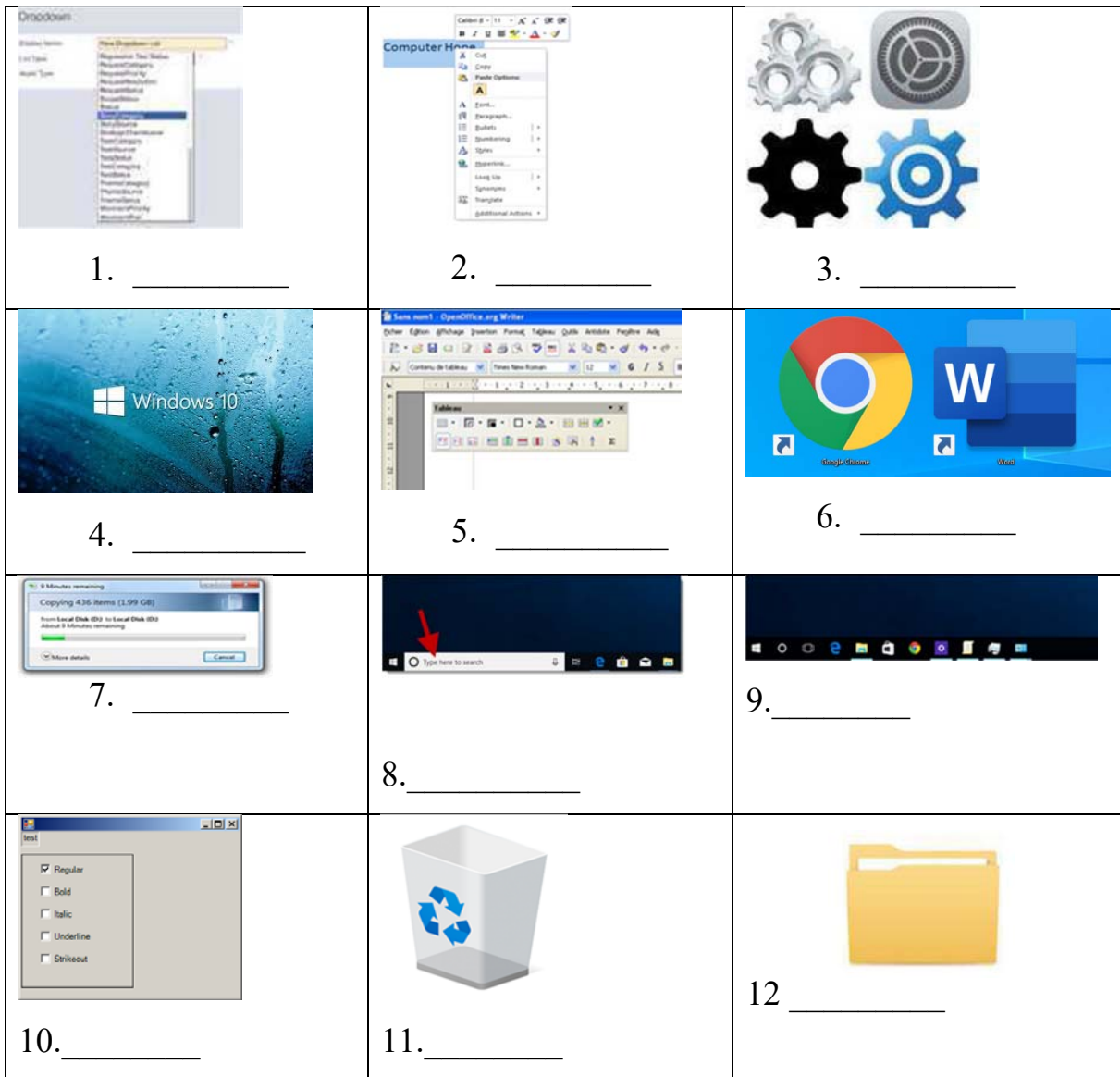
TASK 13. Complete each sentence with the word from the box.

folder   swipe in   paste   share   uninstall   switch off
reboot   process   link   short cut icon   slides

1. Young people _____ too much personal information online.
2. A _____ is a virtual and organised location of files.
3. The student's presentation was made up of 20 _____.
4. This computer isn't fast enough to _____ all the data.
5. To _____ a PC means to restart its operating system.
6. Today, you have to _____ your room card to get into your hotel room.
7. You can _____ an app if you no longer want it on your mobile.
8. A _____ allows quicker access to data.
9. Don't forget to_____ your mobiles before the beginning of the show.
10. With a word processor, it is easy to copy and _____ a text.
11. You can _____ your Instagram account to your Facebook account.

TASK 14. Read the text. Choose from (A-F) the one that best fits each space (1-6).

GUI operating systems

a) ... another operating system based on graphics and intuitive tools.
b) ... the first computer with a mouse and a graphical user interface (GUI).
c) ... just to see the contents of a disk, to copy files or to respond to a single prompt.
d) ... which means you can run several programs and do various tasks at the same time.
e) ... your PC opens a window that lets you work with different tools.
f) ... which contains labelled pictures called icons.

The term Graphical User Interface refers to the standard procedures that the user follows in order to interact with a computer. In the late 1970s and early 80s, the way users accessed computer systems was very complex. They had to memorize and type a lot of commands (1)_____. In fact, it was only experts who used computers, so there was no need for a user-friendly interface.

In 1984, Apple produced the Macintosh, (2)_____. Macs were designed with one clear aim: to facilitate interaction with the computer. A few years later, Microsoft launched Windows, (3)_____. Nowadays, computers are used by all kinds of people, and as a result, there is a growing emphasis on accessibility and user-friendly systems.

A GUI makes use of a WIMP environment: windows, icons, menus and pointer. The background of the screen is called the desktop, (4)_____. These icons represent files or folders. Double-clicking a folder opens a window that contains programs, documents, or more nested folders. When you are in a folder, you can launch a program or document by double-clicking the icon, or you can drag it to another location. When you run a program or document, (5)_____. All the programs have a high level of consistency, with similar toolbars, buttons and dialogue boxes. A modern OS also provides access to networks and allows multitasking, (6)_____.

TASK 15. Read the text and fill in the gaps with the suitable word.

select	drag-and-drop	folder	right-click	pop-up menu
	recycle bin	double-click	delete	

To create a new (1)_____ you should just right-click in a blank area of the desktop. Then select *New* from the (2)_____ and choose *Folder*, type in a new name and press *Enter*. After that, (3)_____ the folder and create a new file in it in a similar manner but this time (4)_____ *File* from the pop-up menu. Name your file.

There are two ways how to delete the file. First, you can (5)_____ the file into the (6)_____ icon. Or you can just (7) _____ the file and select (8)_____.

TASK 16. Match actions 1-7 to their results a-g.

1. Double click on the title bar	a) to open a new menu.
2. Click on a menu	b) and the window fills the screen.
3. Right-click on an icon	c) if you want to move the window.
4. Slide the scrollbar down	d) to hide the window.
5. Click the 'Minimize' button	e) to scroll the window down.
6. Drag the title bar	f) to open it.
7. Select the icon	g) and its background changes colour.

TASK 17. Replace the italicized words with the equivalents from the box.

hard	get rid of	contain	explanation	stable	basic	parts
			order			

1. System software is a ***permanent*** component of the computer that controls its functions.
2. Most programmers in ***large*** corporations work in teams.
3. Often the most ***difficult*** step in program development is the debugging stage.
4. When you debug the program you ***eliminate*** programming mistakes.
5. The program's algorithms ***include*** instructions.
6. Algorithms are the ***sequences*** of steps that a program follows to process the information.
7. Software specifications are a detailed ***description*** of the required tasks.
8. Large programs consist of dozens of modules broken up into smaller ***units***.

TASK 18. Complete the following sentences with the words from the box.

encoded	interface	instructions	programmers	loaded
	programs sequences		eliminate	bugs

1. Applications are _____ into the computer as needed to perform specific tasks for the user.
2. Modern operating systems provide graphical user _____ to make the applications software easier to use.
3. A database system includes _____ that allow multiple users to access the files concurrently.
4. Software is written by _____.
5. The code is the program instructions _____ in a particular programming language.
6. To debug the program is to _____ mistakes, which are called _____.

7. Algorithms are the _____ of steps that a program follows to process the information.
8. The program algorithms include a set of _____.

TASK 19. Choose the proper option.

1. Windows XP, Macintosh OSX and Linux are _____.
    a) operating systems
    b) operating tools
    c) operation systems

2. Microsoft Word, Adobe Acrobat and CorelDraw are programs or _____.
    a) applicators
    b) appliers
    c) applications

3. I keep all my digital photos in a _____ called 'Photos'.
    a) folder
    b) packet
    c) box

4. Is it possible to open Microsoft Excel _____ in Word?
    a) texts
    b) files
    c) pages

5. When you _____ a document, it's sent to the recycle bin.
    a) destroy
    b) erase
    c) delete

6. Deleted documents stay in the recycle bin until you _____ it.
    a) emptify
    b) empty
    c) clean

7. Computers that are connected together within one building form a _____.
    a) WAN
    b) ISP
    c) LAN

8. If you transfer a file from a remote computer to your computer, you _____ it.
    a) download
    b) upload
    c) run

9. To send out information to another computer is to _____ it.

a) signal
b) packet
c) transmit

10. A document containing information and graphics that can be accessed on the internet is _____.
a) a website
b) a web page
c) the World Wide Web

11. Multitasking means _____.
a) two or more things can be done at the same time
b) one task can be done at a time
c) none of the above

_____*GRAMMAR*

TASK 20. Study the information in the table about the types of Conditional sentences.

Type	Condition (subordinate clause)	Consequence (main clause)	Example
Zero Conditional: general truths	**If + Present Simple**	**Present simple**	*If you give instructions to a computer, the computer executes them.*
First Conditional: likely situations in the future	**If + Present Simple**	**Will + bare infinitive**	*If there are no mistakes in the code, the program will work.*
Second Conditional: improbable or impossible situations in the future	**If + Past Simple**	**Would + bare infinitive**	*If computers spoke English, programming languages would not (wouldn't)be necessary.* *If I were you, I would('d) write computer games.*

Third Conditional: situations that did not happen in the past	If + Past Perfect	Would have + past participle	*If you had ('d) checked your code more carefully, there would not (wouldn't) have been any syntax errors.*

TASK 21. Fill in the gaps with the correct forms of the verbs in brackets. Use the First Conditional.

1. If there _____ (be) no operating system, a computer _____ (not work).
2. If the user _____ (interact) with the computer in real time, the computer _____ (respond) immediately to the input.
3. If differert users _____ (use) the same computer system at the same time, resources and time _____ (be) shared among the users.
4. If you _____ (want) to use different operating systems simultaneously, your computer _____ (need) a virtual machine operating system.
5. If companies _____ (buy) a good operating system, workers and employees _____ (work) more efficiently.

TASK 22. Rewrite the sentences using *unless*.

e.g. If we don't finish this project, we won't have a break. – Unless we finish this project, we won't have a break.

1. If you don't use an interpreter or a compiler, the computer will not understand your program.
2. If you don't install an operating system, the computer won't work.
3. If you don't make mistakes, your program will run.
4. If you don't have a graphical user interface, you'll have to learn a list of commands.
5. If you don't update your operating system, your computer won't work properly.

TASK 23. Fill in the gaps with the correct forms of the verbs in brackets. Use the Second Conditional.

1. If programmers _____ (write) in binary code, it _____ (be) easier for the computers to understard the instructions.
2. If operating systems _____ (be) perfect, new releases _____ (not be) necessary.
3. If I _____ (be) you, I _____ (change) that old operating system.
4. If I _____ (have to) install a new operating system, I _____ (choose) Ubuntu.
5. If I _____ (buy) a new computer, I _____ (install) two different operating systems.
6. It there _____ (be) more open source operating systems, people in developing countries _____ (have) access to computers more easily.

TASK 24. Fill in the gaps with the correct forms of the verbs in brackets. Use the Third Conditional.

1. If Windows XP _____ (not be) a good operating system, it _____ (not last) so long.
2. If Windows Vista _____ (not be) buggy, Windows 7 _____ (not replace) it.
3. If Windows 10 _____ (succeed) in unifying different systems, we _____ (continue) to use different systems for PC and smart phones.
4. If Steve Jobs _____ (not be) so clever, he _____ (not invent) the Mac OS.
5. If the Linux kernel _____ (not be) available. Canonical _____ (not release) the Ubuntu operating system.

TASK 25. Complete the sentences with your own ideas.

1. If I could write good programming code,...
2. If I were a programmer,...
3. If you install an open source operating system,...
4. If programs were not inspected,...
5. If there is a syntax error,...

TASK 26. For each question, complete the second sentence so that it means the same as the first. Use no more than three words.

1. If you don't practice coding, you won't improve. – You won't improve _____ you practice coding.
2. Why don't you start learning Java? – If I were you, I _____ learning Java.
3. What about earning how to use Ubuntu? – If I _____ I would learn how to use Ubuntu.
4. Unless you draw a flowchart, it is very difficult to understand an algorithm. – _____ don't draw a flowchart, it is very difficult to understand the algorithm.
5. If I am right, there is an error in the code. – If I am not _____, there is a mistake in the program.

_____*SPEAKING*

TASK 27. Ask each other how to perform these actions. Give a detailed answer.

e.g. How can I move a file to another folder? – To move a file, locate and open the folder. Right-click the file you want to move; then click Cut on the shortcut menu. Locate and open the folder where you want to put the file. Right-click the folder; then click Paste on the shortcut menu.

1. How can I create a new document?
2. How can I quit a program?

3. How can I shut down the system?
4. How can I save a file onto an external storage device?
5. How can I arrange the icons?
6. How can I change the time on my PC?
7. How can I print out a document?

WRITING

TASK 28. Your friend wants to buy a new smartphone. He is choosing between an Android-based phone and iOs. Write an email to him in which you:

- **tell him/her what operating system you use;**
- **give it characteristics;**
- **explain its advantages.**

PROFESSIONAL READING

TASK 29. Read and translate the text.

An operating system (commonly abbreviated as either _OS_ or _O/S_) is an interface between hardware and user. An OS is responsible for the management and coordination of activities and the sharing of the resources of the computer. The operating system acts as a host for computing applications run on the machine.

One of the purposes of an operating system is to handle the details of the operation of the hardware. Operating systems offer a number of services to application programs and users. Applications access these services through application programming interfaces (_APIs_) or system calls. By invoking these interfaces, the application can request a service from the operating system, pass parameters, and receive the results of the operation. Users may also interact with the operating system with some kind of software user interface (_SUI_) such as typing commands by using the command-line interface (_CLI_) or using a graphical user interface (_GUI_, commonly pronounced 'gooey'). For hand-held and desktop computers, the user interface is generally considered part of the operating system. On large multi-user systems like Unix and Unix-like systems, the user interface is generally implemented as an application program that runs outside the operating system. Whether the user interface should be included as a part of the operating system is now a point of contention.

Common contemporary operating system families include BSD, Darwin (Mac OS X), GNU/Linux, SunOS (Solaris/Open Solaris), and Windows (10/11). While servers generally run Unix or some Unix-like operating system, embedded system markets are split amongst several operating systems. Dave Cutler developed the VMS operating system for Digital Equipment Corporation for Microsoft. Steve Jobs, a co-founder of Apple Inc., started NeXT Computer Inc., which developed

the Unix-like NEXTSTEP operating system. NEXTSTEP would later be acquired by Apple Inc. and used, along with code from FreeBSD as the core of Mac OS X. Minix, an academic teaching tool that could be run on early PCs would inspire another reimplementation of Unix, called Linux. Started by computer science student Linus Torvalds with cooperation from volunteers over the Internet, an operating system was developed with the tools from the GNU Project. The Berkeley Software Distribution, known as BSD, is the UNIX derivative distributed by the University of California. Microsoft Windows is a family of proprietary operating systems that originated as an add-on to the older MS-DOS operating system for the IBM PC. Modern versions are based on the newer Windows NT kernel that was originally intended for OS/2. Windows runs on x86, x86-64 and Itanium processors. A Unix-like family is a diverse group of operating systems with several major sub-categories including System V, BSD, and Linux. The name 'UNIX' is a trademark of The Open Group, which licenses it for use with any operating system that has been shown to conform to their definitions. 'Unix-like' is commonly used to refer to the large set of operating systems, which resemble the original Unix. Unix-like systems run on a wide variety of machine architectures. They are used heavily for servers in business, as well as workstations in academic and engineering environments. Free Unix variants, such as GNU, Linux and BSD, are popular in these areas. Some Unix variants like HP's HP-UX and IBM's AIX are designed to run only on that vendor's hardware. Others, such as Solaris, can run on multiple types of hardware, including x86 servers and PCs. Apple's Mac OS X, a hybrid kernel-based BSD variant derived from NEXTSTEP, Mac, and FreeBSD, has replaced Apple's earlier (non-Unix) Mac OS. Unix interoperability was sought by establishing the POSIX standard. The POSIX standard can be applied to any operating system, although it was originally created for various Unix variants. Mac OS X is a line of partially proprietary, graphical operating systems developed, marketed, and sold by Apple Inc., the latest of which is pre-loaded on all currently shipping Macintosh computers. Mac OS X is the successor to the original Mac OS, which had been Apple's primary operating system since 1984. The most recent edition is Mac OS X v10.6, which was first made available on August 28, 2009. Releases of Mac OS X are named after big cats; the current version of Mac OS X is nicknamed "Snow Leopard". Mac OS X Server includes work group management and administration software tools that provide simplified access to key network services, including a mail transfer agent, a Samba server, an LDAP server, a domain name server, and others.

TASK 30. **Tick the ideas which were mentioned in the text.**

1. The description of operating systems.
2. The versions of Microsoft Windows family.
3. Some facts about microchips development.

4. The structure of the integrated circuit.
5. The history of languages of programming.
6. Characteristic of UNIX-like family.
7. The history of Mac OS.

TASK 31. Prove the following statements with the information from the text.

1. The Unix-like family is a diverse group of operating systems with several major sub-categories;
2. UNIX-like systems run on a wide variety of machine architectures;
3. Microsoft Windows versions are a family of proprietary operating systems.

TASK 32. Summarise the main ideas of the text using the following phrases.

1. This text concerns the problem of _____.
2. It is worth mentioning that _____.
3. The main idea of this text is _____.
4. We can draw a conclusion that _____.

UNIT 9

ERGONOMICS. A GOOD WORKSPACE. HEALTH AND SAFETY

_____*LEAD-IN*

TASK 1. Answer the questions.
1. What is ergonomics?
2. Why is it important to know how to work safely with computers?
3. Why is a working place important?
4. Are you satisfied with your working place? What would you change?
5. What advice would you give relating the proper workspace rganisation?

_____*VOCABULARY*

TASK 2. Match the words with their Ukrainian equivalents. Learn the words.

1. ache, pain	a) частий
2. angle	b) біль
3. copyholder	c) постава
4. edge	d) використовувати
5. excessive	e) зменшити, скоротити
6. frequent	f) тиск
7. glare	g) уникати
8. pad	h) підвернути, викрутити
9. posture	i) нагинати, вигинати
10. pressure	j) кут, розташовувати під кутом
11. reflection	k) підставка під папери
12. shortcut	l) край
13. strain	m) коврик

14. tilt	n) розташовувати
15. to adjust	o) нахил, нахиляти
16. to alternate	p) відхилити
17. to avoid	q) зап'ясток
18. to bend	r) друкувати, вводити (інформацію в комп'ютер)
19. to counteract	s) змінити, замінити
20. to eliminate	t) надлишковий
21. to key, to type	u) усунути
22. to position	v) блиск
23. to recline	w) відображення
24. to reduce	x) напруга, напруження
25. to support, to sustain	y) підтримувати, сприяти
26. to twist	z) важливий
27. to utilize	aa) протидіяти
28. vital	bb) регулювати
29. wrist	cc) ярлик
30. customize	dd) налаштувати

TASK 3. Match the synonyms.

1. ache	a) to change
2. to alternate	b) to assist
3. to help	c) to use
4. to key	d) to maintain
5. glare	e) flash
6. to sustain	f) to cut down
7. to tilt	g) recurring
8. to reduce	h) to angle
9. to utilize	i) to type
10. frequent	j) pain

_____*VIDEO*

TASK 4. Watch the video lecture of Gaylord Bridegan, an expert in computer ergonomics talking about health and safety on https://www.youtube.com/watch?v=K88q_oEwRS8. Write down 9 tips he gives.

_____*READING*

TASK 5. Read and translate the article.

Ergonomic Tips for Computer Users

Prolonged use of a computer keyboard and mouse can lead to frequent muscle aches and nerve pain unless a few guidelines are followed. You can work more comfortably and safely if you incorporate the following ergonomic tips into your work style:

Posture and positioning

- Maintain good posture when working at a keyboard.
- Utilize a chair with adjustable back support. Your chair should be fully adjustable and be able to be moved up or down.
- Keep your feet supported on the floor or on a footrest when you work to reduce pressure on your lower back.
- Your eyes should be at the same height as the top of the screen.
- Avoid twisting or bending your back on your neck.
- Keep your shoulders relaxed with your elbows close to your sides.
- Avoid resting your elbows on the hard surface or edge of your table. Pads can be used to protect your elbows if necessary or to relieve pressure on your wrists.
- Elbows should be positioned at 100 to 110 degrees when working in order to keep a relaxed position at the keyboard.
- Your wrists should be in a neutral or straight position when keying or using a pointing device. Wrist rest can assist you in maintaining a neutral position when used properly during pauses. Float the arms above the keyboard and wrist rest when keying. Avoid putting your wrist on the table or wrist rest. This can result in bending the wrists either up and down or side-to-side.
- Take breaks. These breaks can be brief and should include stretches for optimal results. If possible, take a one or two-minute break every 15 to 20 minutes, or a five-minute break every hour. Every few hours, get up, move around, and do an alternative activity.

Work technique

- Reduce keystrokes with the use of macros or software programs allowing 'sticky keys'. Sticky Keys is a Microsoft Windows accessibility feature that causes keys to remain active, even after they were pressed and released, making it easier to use keyboard shortcuts. For example, instead of having to press *Ctrl+Alt+Del* at the same time, you can press each of the keys individually to perform the same function. The Sticky Keys feature is enabled or disabled through the Windows Control Panel. You can also press *Shift* five times to open the option.
- Use keystroke combinations to reduce pointing device movements.
- Alternate tasks to make changes in your working position to avoid making the same movements for prolonged periods of time.
- Keep your fingers and knuckles relaxed when working at the keyboard.
- Avoid holding your pointing device tightly. Your hands should be relaxed.

- Never hold a pen or pencil in your hand when keying.
- Avoid hitting the keyboard with excessive force. Studies have shown that the average user hits the keyboard four times the required force when keying.
- Rest your eyes by focusing on distant objects intermittently when working.

Work environment
- Avoid excessive reaching. Your keyboard, pointing device, files and telephone should be within easy reach.
- Use a keyboard tray to properly position your keyboard and a pointing device.
- Use a copyholder positioned in line with your monitor and keyboard.
- When writing at the computer, avoid excessive reaching over the keyboard or work materials.
- Position the monitor so that the viewed part of the screen allows you to keep your neck in a neutral or straight position. The monitor should be centred directly in front of you. The top of the computer screen should be slightly below the top of your head so that you are looking at it with a slightly downward gaze.
- Position your monitor to eliminate excessive glare or reflections from windows and lighting.
- Customize your computer. The screen font, contrast, pointer size, speed, and colour can all be adjusted to maximize your comfort and efficiency.
- Make sure that the room where you use a computer is adequately lit and well ventilated. Ventilation is especially important if you use a laser printer which may produce ozone when printing.

Lifestyle
- Aerobic exercise will help to sustain strength, improve cardiovascular conditioning, and counteract the strain of sedentary computer use.
- Be aware that excessive typing or using a computer mouse can cause RSI (repetitive strain injury). RSI frequently affects your wrists and hands, forearms and elbows, neck and shoulders. Symptoms include pain, swelling, stiffness, weakness, sensitivity to cold or heat.
- If you begin to develop symptoms, notify your doctor. Slight changes made early can avoid future complications.

TASK 6. Reread the text and choose 5 tips you agree with and 5 tips you disagree with. Explain your choice.

TASK 7. Study the table and define the meaning of modal verbs.

Modal verbs		
Ability	Can (present) Could (past) Be able to (other tenses)	I **can** speak 3 languages. I **couldn't** swim when I was 5. When I am 20, I **will be able** to drive.
Permission Request	Can (informal) Could (polite) May (formal) Will (neutral) Would (polite)	**Can** you give me a lift to the station? **Could** I use your phone, please? **May** I have your attention? **Will** you wait for me?
Advice	Should Ought to (formal)	You look tired, you **should** have a rest. You **ought to** apply for this job.
Possibility Deduction	Must (sure) Can / could (possible) May (weak possibility) Might (still weaker possibility) Can't (impossible)	The phone is ringing. It **must** be Mary, she told me she would call me at 5. It **can't** be she. She left her phone at home. It **may** rain. It's getting cloudy.
Obligation	Must (sense of duty) Have to (external authority) Need (necessity)	You **must** be on time for the lessons. I **had to** get up early for the trip on Sunday.
Lack of obligation	Don't have to Needn't	You **don't have to** get up early at the weekend. You **needn't** hurry – we're early.
Prohibition	Mustn't (sense of duty) Can't (external authority)	You **mustn't** touch it. It's very hot! You **can't** touch this object.

TASK 8. Complete the sentences with the proper modal verb.

1. You _____ decide how to organize the content, before you start to make a website.

145

2. A source program _____ be directly processed by the computer until it has been compiled.
3. The documentation _____ include a statement of the purpose of the program, a description of the solution logic, a listing of the program instructions, and sample outputs from the completed programs.
4. _____ I use your laptop? I need to print out this report.
5. With a web page editor you _____ create a web document easily.
6. If I knew the Java language, I _____ include some attractive banners on my web page.
7. I _____ to make a back-up copy.
8. The logical structure of the data _____ be different from the way it is physically represented on backing store media.
9. No goto statements _____ to be used in writing code.
10. A graphical user interface saves a lot of time: you _____ to memorize commands in order to execute an application; you only _____ to point and click so that its content appears on the screen.
11. The instructions _____ follow the steps of the program logic plan.
12. Organizations using database management systems _____ choose to generate programs using the query language of the DBMS.
13. Computer consultants _____ specialize in too narrow a field.
14. Programmers _____ to know a range of up-to-date languages.
15. Before IBM set the standard for PCs, software houses _____ write different versions of their programs for every make of computer.
16. When he was a schoolboy, Bill Gates _____ write programs in BASIC.
17. Most website designers _____ use HTML and XML.
18. You _____ learn COBOL unless you want to work with business software.
19. To gain access to the Internet you _____ first open an account with the Internet service provider or a commercial online service provider.
20. Your computer _____ be infected by many different viruses.

TASK 9. Choose the correct form of the verb and translate the sentences.

1. When one computer system *is set up / sets up / set up* to communicate with another computer system, connectivity *becomes / become* an important system element.
2. People *are the most important component / is the most important component* of the computer system: they *create / creates / are created* the computer software instructions and respond to the procedures that those instructions present.
3. The computer *uses / is used / are using* to convert data into information and to store information in digital form.
4. Nowadays computer development *is rapidly progressing / rapidly progresses* at both the high and the low ends of the computing spectrum.

5. Researchers *are currently developed / are currently developing* microchips called digital signal processors (DSPs).
6. Data *feed / is feeding / is fed* into the computer's memory.
7. The main memory *holds / is holding / is held* the instructions and data which *are being processed / are processed / are processing* by the CPU.
8. Peripherals *include /are including / are included* storage devices and input/output devices.
9. Disk drives *are used / is used / are using* to read and write data on disks.
10. Input devices *enable / are enabled / were enabled* data to go into the computer's memory.

_____*SPEAKING*

TASK 10. Look at the picture and prove that the woman in the picture has a correct sitting posture. Say no less than 10 sentences. Use active vocabulary.

TASK 11. Be ready to talk on the topic 'How to make your working place more ergonomic'. Be sure to mention the following issues:

- The physical layout of the working place: desk areas, computer equipment, filing cabinets, etc.
- Lightning (overhead lights, desk lamps, etc.), glare and ventilation;
- Type of furniture;

- User-friendly and ergonomic devices: keyboards, mice, monitors, wrist rests, copyholders, etc.
- Layout of cables and switches for a wired network;
- Other features.

_____*WRITING*

TASK 12. Describe your own workplace. Mention its drawbacks. Suggest the ways of solution how to improve it. Write not less than 150 words.

_____*REVISION*

TASK 13. Choose the correct answer.

1. An error in a computer program or system is called…
   a) a bag
   b) a bug
   c) a beg
   d) a bot
2. The process of identifying and removing errors from computer hardware or software is called _____.
   a) a bug
   b) a debug
   c) debugging
   d) debugged
3. A person whose job involves writing programs for computers is called _____.
   a) a programmist
   b) a program
   c) a programming
   d) a programmer
4. The collection of computer programs and related data that provide the instructions telling a computer what to do.
   a) software
   b) hardware
   c) firmware
   d) application
5. A visual way of interacting with a computer using items such as windows, icons, and menus, used by most modern operating systems.
   a) graphical user interface
   b) graphics user interface
   c) graphical usage interface
   d) graphical user interchange
6. A set of rules to be followed in calculations or other problem-solving operations, especially by a computer.

a) algorithm
b) database
c) flowchart
d) software

7. A graphical representation of a computer program in relation to its sequence of functions.
   a) algorithm
   b) database
   c) flowchart
   d) software

8. A program that controls the operation of a device such as a printer or a scanner.
   a) drive
   b) driving
   c) driver
   d) flowchart

9. The simultaneous execution of more than one task by a single CPU.
   a) multiplication
   b) multiprocessing
   c) multitasking
   d) management

10. The applications which are used for specific purposes (such as word processors and spreadsheets) are called _____.
    a) system software
    b) applications software
    c) operating systems
    d) flowcharts

11. The background of the computer screen is called _____.
    a) the desk
    b) the desktop
    c) the desksize
    d) the deskpit

12. To _____ a program or document you should double-click the corresponding icon.
    a) land
    b) leave
    c) launch
    d) let

13. The system software that allows all the hardware and software components to work together and manages all the computer's resources.
    a) operate system
    b) operating system
    c) operated system
    d) operating system

14. When you debug the program you _____ programming mistakes.
    a) get rid of
    b) improve
    c) create
    d) function
15. Algorithms are the _____ of steps that a program follows to process the information.
    a) storage
    b) sequences
    c) software
    d) surface
16. The work of the operating system takes place in the _____ and is not always obvious to the user.
    a) backstage
    b) backstory
    c) background
    d) backspace
17. Operating systems usually come _____ on any computer you buy.
    a) pre-loaded
    b) under-loaded
    c) in-loaded
    d) super-loaded
18. _____ operating systems can be modified and distributed by anyone around the world.
    a) open-surface
    b) open-store
    c) open-source
    d) open-screen
19. _____ software can only be modified by the company that owns it.
    a) proper
    b) prosperous
    c) protected
    d) proprietary
20. Linux has many different free _____ you can choose from.
    a) distributions
    b) distinctions
    c) differences
    d) distractions
21. Operating systems for mobile devices generally aren't as fully _____ as those made for desktop and laptop computers.
    a) functions
    b) featured
    c) favoured
    d) formal

22. Applications are _____ into the computer as needed to perform specific tasks for the user.
   a) loaded
   b) launched
   c) landed
   d) liked

23. The code is the program instructions written in a particular _____ language.
   a) programming
   b) programmable
   c) program
   d) programmed

24. It is vital that you take regular _____ of the information that is stored on the computer.
   a) backheads
   b) backups
   c) backs
   d) bugs

25. The operating system is a special type of program that _____nautomatically when you start your computer.
   a) loaded
   b) loading
   c) loads
   d) led

26. To turn on the computer, _____ the 'Start' button.
   a) touch
   b) press
   c) switch
   d) pat

27. The printer has _____ of ink.
   a) finished
   b) ended
   c) run out
   d) is over
   e) finished

28. Please _____ the CD ROM.
   a) insert
   b) introduce
   c) inject
   d) press

29. The projector isn't working because it isn't _____.
   a) plugged
   b) plugged in
   c) plugged on
   d) plugged off

30. TV and computer screens are usually measured in _____ .
   a) feet
   b) miles
   c) inches
   d) feet
31. You can increase the functions or performance of a computer with an _____ .
   a) extension cord
   b) exploding card
   c) expansion card
   d) expensive card
32. I don't think this printer is _____ with my computer.
   a) compatible
   b) connectable
   c) suitable
   d) fitting
33. Applications like e-mail, multimedia, calendar or scheduler are _____ into watches, cell phones, glasses and even clothing.
   a) transmitted
   b) produced
   c) integrated
   d) produced
34. Mechanical engineers use _____ programs for applications in computer-aided design and computer-aided manufacturing.
   a) sophisticated
   b) serious
   c) solution
   d) smart
35. A mainframe is used by large organizations that need to _____ enormous amounts of data
   a) perform
   b) process
   c) produce
   d) permit
36. A PDA stands for _____ .
   a) Personal Device Assistant
   b) Personal Digital Assistant
   c) Personal Development Assistant
   d) Personal digital Advisor
37. Information in the form of data and programs is known as _____
   a) software
   b) hardware
   c) database
   d) malware

38. The electronic and mechanical parts that make up a computer system are called _____.
   a) hardware
   b) software
   c) server
   d) malware

39.CPU stands for _____.
   a) central performing unit
   b) central processor unit
   c) central processing unit
   d) central provider unit

40.Supercomputers can _____ a single program faster than a mainframe.
   a) examine
   b) explore
   c) execute
   d) extend

41. Servers control _____to all the resources on a network and provide a centralized storage area for programs, data, and information.
   a) access
   b) entrance
   c) admit
   d) exit

42. A touchpad is a _____pad that you can touch to move the pointer on the screen.
   a) sensible
   b) sincere
   c) sensitive
   d) serious

43. An electronic device that can accept data, process the data, produce output and store the results for future use is called _____.
   a) input
   b) computer
   c) software
   d) hardware

44. How is the permanent memory built into your computer called?
   a) ROM
   b) RAM
   c) CPU
   d) CD-ROM

45. Located in the tower, it communicates with other devices to perform tasks. It's the "heart" of the computer.
   a) CPU
   b) Peripherals
   c) Programs
   d) Software

46. The capacity of your hard drive is measured in_____.
    a) MHz
    b) Gigabytes
    c) Mbps
    d) pps
47. Any hardware attached to the tower is called _____.
    a) CPU
    b) Software
    c) Peripherals
    d) Storage
48. Devices that enter information and let you communicate with the computer are called _____.
    a) Software
    b) Output devices
    c) Hardware
    d) Input devices
49. Which of the following is NOT an input device?
    a) Keyboard
    b) Joystick
    c) Monitor
    d) Microphone
50. What kind of peripheral device is a hard disk drive?
    a) Input device
    b) Output device
    c) Storage device
    d) Saving device

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PRACTICAL ENGLISH FOR INFORMATION AND COMMUNICATION TECHNOLOGIES
Частина I

Навчальний посібник

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Редактор *О. Ткачук*

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