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Английский язык в сфере IT

Методические рекомендации

Репозиторий ВГУ

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Методические рекомендации состоят из трех тематических разделов, содержащих профессионально-ориентированный текстовой материал. В конце каждого раздела есть блок самоконтроля. Основная цель издания – совершенствование навыков и умений в различных видах чтения, а также обучение устным формам общения по профессиональной тематике.

Данные методические рекомендации предназначены для студентов дневного отделения факультета математики и информационных технологий, изучающих дисциплину «Иностранный язык».

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ПРЕДИСЛОВИЕ

Иноязычное профессиональное общение, обусловленное социальным заказом общества, является одной из основных составляющих содержания обучения специалистов. В связи с этим задачи вузовского курса дисциплины «иностранный язык» определяются коммуникативными и познавательными потребностями специалистов соответствующего профиля.

Данное учебное издание предназначено для студентов факультета математики и информационных технологий высших учебных заведений дневной формы обучения, которые уже имеют базовую начальную подготовку по английскому языку и овладели лексическим и грамматическим минимумом для осуществления речевой деятельности в ситуациях социально-бытовой сферы общения, а также для всех тех, кто интересуется компьютерными системами и информационными технологиями и совершенствует свои знания английского языка в профессиональной сфере.

Цель данного издания — сформировать у обучающихся навыки и умения различных видов чтения и говорения, развить способности извлекать и интерпретировать информацию, содержащуюся в оригинальных профессиональных текстах, а также осуществлять речевое взаимодействие для получения и обмена информацией. Соответственно, основное внимание в пособии уделяется работе с текстом как носителем информации и единицей деловой коммуникации, а также вербальному обеспечению речевого взаимодействия в профессиональной сфере. Это предполагает не только адекватное понимание, но и расширение активного и пассивного словарного запаса студентов.

Методические рекомендации состоят из трех тематических разделов (Unit), содержащих профессионально-ориентированный аутентичный и адаптированный текстовой материал. В конце каждого раздела есть блок самоконтроля (Self Check). Целенаправленный подбор текстов, основанный на принципе максимальной доступности в смысловом и языковом отношении, призван сформировать у обучаемых систему образов и понятий, относящихся к базовым профессиональным знаниям. Это активизирует познавательную деятельность студентов и будет способствовать приобщению к профессиональной концептуальной системе и развитию навыков профессионального сотрудничества на иностранном языке.

Разнообразный познавательный и информативный материал ориентирован как на аудиторную, так и на самостоятельную работу студентов с иноязычными аутентичными текстами.

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UNIT I. INFORMATION TECHNOLOGY AND RELATED JOBS

Text 1. INFORMATION TECHNOLOGY

Exercise 1. Brainstorming. What associations does the word collocation "Information Technology" call to mind? What does it include? What do we need it for?

Exercise 2. Choose the correct word to complete each sentence. You can change some words slightly.

1 *technology, technological, technologically, technologist*

A. The computer is the greatest _____ invention of the 20th century.
B. There are two _____involved in a clipboard PC.
C. Today's computers are _____far superior to those used a few years ago.

2 *compute, computing, computation, computerize, computerization*

A. The _____of the manufacturing division will be expensive in the short term, but cost-effective in the long term.
B. We should be able to _____our profit for next year fairly accurately with the new program.
C. I could tell from all the _____on the board that a maths lesson was in progress.

Exercise 3. Study the words and find their meanings in the dictionary. Make up word combinations with the word "data" using active vocabulary.

Development	manufacturing	to protect
installation	to produce	to advance
implementation	to manipulate	data management
application	to store	satellite
capability	to communicate	communications
data	to disseminate	automated office
databases	to retrieve	equipment
networks	to input	punch cards
robotics	to output	to be proficient in
graphics	to process	to compete in the
hardware	to store	workplace
software	to transmit	
services	to receive	to perform duties

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to install applications | to design computer networks

Exercise 4. Match the words with their definitions.

technology *manufacturing* *networks*
implementation *management*

1. The process or business of producing goods in factories.
2. New machines, equipment, and ways of doing things that are based on modern knowledge.
3. A set of computers that are connected to each other so that they can share information.
4. The activity of controlling and organizing the work that a company does.
5. The act of putting a plan into action or of starting to use something.

Exercise 5. Read the passage and say when the term "Information Technology" appeared.

Information Technology

Information Technology is abbreviated as IT and is defined as "the development, installation and implementation of computer systems and applications". When computer and communications technologies are combined, the result is information technology, or "infotech". Information technology is a general term that describes any technology that helps to produce, manipulate, store, communicate or disseminate information.

Humans have been storing, retrieving and communicating information since the Sumerians in Mesopotamia developed writing in about 3000 BC, but the term information technology in its modern sense first appeared in 1958. Encompassing the computer and information systems industries, information technology is the capability to electronically input, process, store, output, transmit, and receive data and information, including text, graphics, sound, and video, as well as the ability to control machines of all kinds electronically.

Information technology is comprised of computers, networks, satellite communications, robotics, videotext, cable television, electronic mail, electronic games, and automated office equipment. The information industry consists of all computer, communications, and electronics-related organizations, including hardware, software, and services. In the 1960s and 1970s, the term information technology (IT) was a little known phrase that was used by those who worked in places like banks and hospitals to describe the processes they used to store information. With the paradigm shift to computing technology and "paperless" workplaces, information technology has come to be a household phrase. It defines an industry that uses computers, networking, software programming, and other equipment and processes to store, process, retrieve, transmit, and protect information.

In the early days of computer development, there was no such thing as a college degree in IT. Software development and computer programming were best left to the computer scientists and mathematical engineers, due to their

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complicated nature. As time passed and technology advanced, such as with the advent of the personal computer in the 1980s and its everyday use in the home and the workplace, the world moved into the information age.

Great technological advances have been made since the days when computers were huge pieces of equipment that were stored in big, air conditioned rooms, getting their information from punch cards. The information technology industry has turned out to be a huge employer of people worldwide, as the focus shifts in some nations from manufacturing to service industries. It is a field where the barrier to entry is generally much lower than that of manufacturing, for example. In the current business environment, being proficient in computers is often a necessity for those who want to compete in the workplace.

In the 21st century, the term information has become very recognizable. IT professionals perform a variety of duties that range from installing applications to designing complex computer networks and information databases. A few of the duties that IT professionals perform may include data management, networking, engineering computer hardware, database and software design, as well as the management and administration of entire systems. Information technology is starting to spread farther than the conventional personal computer and network technology, and more into integrations of other technologies such as the use of cell phones, televisions, automobiles, and more, which is increasing the demand for such jobs.

Exercise 6. Find the corresponding English equivalents from the article to the given words.

Разработка и внедрение компьютерных программ; охватывая; способность контролировать машины; состоять из; смена парадигмы, рабочие места «без бумаг»; бытовая фраза; сложный характер; информационный век.

Exercise 7. Fill in the blanks with the suitable words.

1. When computer and communications technologies _____, the result is information technology, or “infotech”.
2. The term information technology in its modern sense first appeared in _____.
3. The information _____consists of all computer, communications, and electronics-related organizations, including hardware, software, and services.
4. The term information technology was a little known phrase that was used ___those who worked in places like banks and hospitals.
5. In the early days of computer development, there was no such thing as _____in IT.
6. The world moved into the information age with the advent of the personal computer in _____.

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7. _____proficient in computers is often a necessity for those who want to compete in the workplace.
8. A few of the duties that IT professionals perform may include _____.

Exercise 8. Answer the following questions.

1. How can we define information technology? 2. What is information technology comprised of ? 3. When was this term invented? 4. Who used the term information technology in the 1960s and 1970s? 5. What duties do IT professionals perform? 6. How do you see the future of IT?

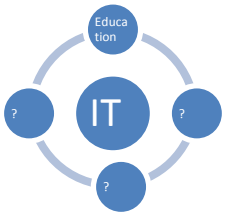
Exercise 9. Discussion. Work in pairs and discuss how information and computer technology changed the way you study.

Text 2. WHY IS INFORMATION TECHNOLOGY IMPORTANT IN BUSINESS?

Exercise 1. Brainstorming.* a) *Have you ever done these things?

a. sent and received emails
b. chatted in real time
c. booked a flight online
d. used your credit or debit card to pay for something over the internet
e. had a virus on your computer
f. had a problem with identity theft
g. downloaded a photo from a bulletin board
h. connected to the internet over a wireless connection
i. set up a wireless network in your own home or office

b) Discuss in pairs what spheres computers and IT are used in.



Exercise 2. Study the abbreviations. Match abbreviations with their meanings.

1. OCR a. Personal identification number

2. EPOC b. Enterprise resource planning, it's a business-management software

3. ATM c. Electronic point of sale cash tills used in the supermarkets

4. PIN d. Automatic teller machine used by banks

5. ERP e. Optical character recognition software that changes picture images of letters and numbers into digital form.

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Exercise 3. Choose the correct word. Name the devices used nowadays.

As computer systems become *the most/more* intelligent, they are used in a wider variety of work situations where previously it was necessary to *employ/ employee* people.

Police speed traps *are used/ used* to catch drivers that are breaking the official speed limit. Newer systems prevent "surfing" *for/by* using two computerised units with digital cameras. Each unit *record/records* the time that a vehicle passes it, as well as photographing and identifying the car licence number *using/used* OCR software.

Computer systems *can/have* be used in large supermarkets for financial calculations and in *stock/stork* control using EPOC tills. Each item on a shelf has a barcode label with a barcode *read/reading* by scanner devices.

Computers are also used to provide *cash/smash* to users and to process pin-protected bank cards using an ATM.

Exercise 4. Study the words and find their meanings in the dictionary.

Error	automated production
tool	sensitive information
upgradation	smooth functioning
proper	electronically stored
impact of	undergone quality
training in	click of the mouse
streamlining	soft skills
grasping	experienced professionals
to satisfy	operational and functional needs
to get rid of	human resource department
to adapt to	software manufacturing
to benefit from	special purpose applications
software packages	project management system
software applications	to fulfill requirements
hardware devices	to sign deals
web browser	to keep smb. aware of
fast access	to solve mathematical problems
confidential information	to keep a tab on
operating system	to handle software packages

Exercise 5. Read the article and say what spheres of business are dealt with.

Why is Information Technology Important in Business?

There are many businesses which are in need of the software packages for satisfying their operational as well as functional needs. For fulfilling this requirement, these companies sign deals with the software manufacturing companies. Information technology is useful in ensuring the smooth functioning of all the departments in a company such as the human resource department, finance department, manufacturing department and also in security related

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purposes. With the help of information technology, the companies in the automobile manufacturing sector are able to get rid of any sort of errors or mistakes in the proper functioning of the tools used for designing and manufacturing purposes. Due to the development of the information technology sector, the companies are being able to keep themselves aware of the changes in the global markets.

The software applications and the hardware devices are known to be the main elements of the use of information technology. The web browsers, the operating systems, ERP's and special purpose applications are the software which are used in information technology. Information technology plays an important role in easily solving the mathematical problems and also in the project management system. Information technology has a great use in the automated production of sensitive information, automated upgradation of the important business processes and the automated streamlining of the various business processes. It has also played an important role in the areas of communication and automated administration of entire systems.

Importance of information technology in educational sector is well known. Information technology helps the students as well as the teachers in studying the course material easily because of fast access. Studying the subjects with the help of online libraries and dictionaries has made grasping and increasing the knowledge easy for the students. The inclusion of information technology in the syllabus in schools, colleges and universities has helped them in grasping the subject well and getting their basics cleared. Since, many educational centers have the online grading system, it has been a boon for the parents of the children to keep a tab on their performances. Parents can also get the details of the attendance record of their child in schools.

Importance of information technology in management is quite significant. It helps the managers in adapting to the new business processes and also to predict the possible impact of new technologies. The managers can benefit from the efficiently prepared computer packages and the electronically stored confidential information. With just single click of the mouse, they can have the relevant information in front of their screen. However, in order to be able to handle these software packages in a better way, the managers should have undergone quality training in information technology. Taking this need into consideration, many corporate companies are seen taking special efforts for the development of these soft skills by training programs prepared by experienced software professionals.

Exercise 6. ***Mark each sentence as T (True) or F (False) according to the given information.***

1. Many businesses are in need of the software packages for satisfying their financial needs.
2. Information technology is useful in smooth functioning of all the departments.

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3. The companies are being able to keep themselves aware of the changes in the global markets with the help of computers.
4. The web browsers, the operating systems, ERP's and special purpose applications are the software which are used in information technology.
5. Importance of information technology in educational sector isn't well known.
6. IT helps the managers to adapt to new economical situations and also to predict the possible impact of new technologies.
7. To be able to handle software packages in a better way, the managers needn't have undergone quality training in information technology.

Exercise 7. Divide the article into logical parts and give each part a suitable title. Give a brief summary.

Exercise 8. Discussion. Work in groups. Choose one of the areas below and discuss what can be done with the help of computers in that area.

SUPERMARKETS	**HOSPITALS**
Identifying items; pricing; stock control; checking cash cards; controlling freezers;…	Patient record databases; appointments; staff records; statistics; using equipment;…
POLICE	**AIRPORTS**
Database of crimes, criminals, missing people; files of fingerprints and DNA data; staff records; ….	Plotting aircraft movements; air traffic control; check-in facilities; booking the flights;….

Text 3. JOBS IN IT

Exercise 1. Brainstorming. Think of the skills you need for the 21st-century workplace. Have you got them?

Exercise 2. Fill the gaps with the correct phrase from the box.

analyze information	*communicate well*	*problem solving*
good at making decisions	*the 21st century*	*age of technology*

1. We are living in ___. Some people call it the ___. 2. We need to learn skills such as ___ and we need to be able to ___ with other people around the world. 3. Employers are looking for people who can ___ well, people who are able to recognize whether information is reliable or not. 4. They also like people who are ___ without asking for help.

Exercise 3. Read the article and name the skills employers are looking for while choosing an employee.

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Have you got the skills you need for the 21st-century workplace?

We need to develop all kinds of skills to survive in the 21st century. Some, like IT skills and knowledge of the digital world, are taught explicitly in schools of the UK. Here are five less obvious ones for you to think about. These are the sorts of skills that employers may ask you questions about in interviews, so it's a good idea to think about how good you are in these areas. What are your strengths and weaknesses?

❖ *Imagination*

In the age of technology that we are living in now, it's no longer enough to keep on making the same products. Employers need people who can imagine new approaches to new ideas.

❖ *Problem solving*

Employers will value workers who are able to see problems before they happen and come up with creative solutions.

❖ *Communication skills*

Workers will have to be good communicators. They will have to be able to negotiate and discuss key issues and also write in a clear way without using too many words.

❖ *Critical analysis*

Employers want workers who are able to recognize the difference between information that can be believed and false information.

❖ *Decision making*

Individual workers have a growing amount of responsibility. It is important to be able to evaluate a situation and be confident in making a decision.

Exercise 4. Mark each sentence as T (True) or F (False) according to the given information.

1. 21st-century skills are not taught in schools in the UK. 2. Employers like workers to be imaginative. 3. Employers want workers to think about possible problems. 4. Employers like workers to be original when solving problems. 5. Future workers will need to be able to write concisely. 6. People communicate with each other less in the 21st century. 7. Employers believe it is useful to know a lot of information about celebrities. 8. Employers don't want workers to make decisions without asking them.

Exercise 5. Answer the following questions.

1. Think of an object or gadget you use every day. How could it be improved? Can you think of three improvements? 2. Imagine you are organizing an end-of –term social event at school. Think of some problems that you could face. Can you think of any solutions? 3. How do people communicate with each other in the 21st century? 4. Use the internet to find out three facts about a celebrity or famous figure. Can you verify the information by checking other websites? 5. Which three things could you do to (a) be healthier, (b) do better at your studies and (c) help others? Make a decision now to do at least one of these things. Then … just do it! 6. Which of the skills mentioned in the article do you think is the most important? Why?

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Exercise 6. What is the image of a programmer? Does he look like a person in the picture? What skills and qualities should a programmer possess?

Exercise 7. In pairs, read the two job advertisements and choose the most important qualities and abilities for each job. Add more to the list if you can. Which three things do you think are the most important for each job?

DIGITUM-UK

SENIOR PROGRAMMER required by DIGITUM-UK, a leading supplier of business systems to the insurance industry.

You will be able to work on the full range of software development activities – analysis, design, coding, testing, debugging and implementation. At least two years' experience of COBOL or C++ is necessary.

As we are active in Europe, fluency in French, Italian or another European language is desirable.

Don't miss this opportunity to learn new skills and develop your career.

Send your CV to CHRIS SCOTT, PERSONNEL MANAGER, DIGITUM-UK, 75 PARKSHILL STREET, LONDON SW14 3DE

You can visit our website at www.digitum-uk.com

DTP operator

required for a leading financial magazine.

We are looking for a bright, competent QuarkXPress operator with at least three years' experience in design and layout. Skills in Photoshop, Freehand or Illustrator an advantage.

Ability to work in a team and to tight deadlines is vital.

Please apply in writing, with CV and samples of your work, to Tom Parker, Production Manager, Financial Monthly, Stockton Street, London EC1A 4WW
Or apply online:

Apply now

		Senior programmer	DTP operator
1	logical reasoning		
2	patience and tenacity		
3	being good with figures		
4	imagination		
5	self-discipline		
6	accuracy		
7	leadership skills		
8	efficiency		
9	creativity		
10	drawing skills		

Exercise 8. Study the words and find their meanings in the dictionary.

database analyst
systems analyst
network analyst
web designer (web master)
software engineer
(application programmer,
systems programmers)
hardware engineer
network administrator
computer systems administrator
database administrator
computer operators
technical writers
help desk technician

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computer training instructor
project manager
DTP operator
web applications
IT device
malware
virus
spyware
accuracy
efficiency
data processing
troubleshooting
to be in charge of
to cater for
to install
to maintain
to be in charge of

Exercise 9. Read the information and name IT-related jobs.

Jobs in IT

Most IT-related jobs have developed to meet the need to analyze, design, develop, manage or support computer hardware, software and networks, including the Internet.

A database analyst is in charge of the research and development of databases; *network analysts* study the network requirements and recommend the most suitable type of network; *systems analysts* decide what IT system will cater for the requirements of a specific institution.

Web designers, also called *webmasters*, create and maintain web pages and web applications for websites. *Software engineers*, either *application programmers* or *systems programmers*, plan, design and test computer programs. *Hardware engineers* design and develop IT devices. *Security specialists* specialize in the design of software and hardware to protect information from malware: viruses, spyware, etc.

Network or *computer systems administrators* install and maintain networks. *Database administrators* manage the accuracy and efficiency of databases.

Computer operators control computer data processing. *Help desk technicians* are in charge of troubleshooting, the solution of technical problems. *Computer training instructors* or *trainers* teach people how to use hardware and software. *Technical writers* write the instructions for IT systems.

All the people involved in the different stages of development of a computer project, for example, analysts, programmers, support specialists, are controlled by *a project manager*.

Being employed in any of these jobs requires the person to have particular formal qualifications, personal qualities and technical skills.

Exercise 10. Classify these jobs under the heading that best describes their function.

software engineer	*help desk technician*	*database administrator*
trainer	*network analyst*	*systems analyst*
hardware engineer	*network administrator*	

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ANALYZE	DESIGN / DEVELOP	MANAGE	SUPPORT

Exercise 11. Match the definitions with jobs from the box.

software engineer	*computer security specialist*	*blog administrator*
DTP operator	*hardware engineer*	*network administrator*
help desk technician	*webmaster*	

1. A … designs and develops IT devices.
2. A … writes computer programs.
3. A … edits and deletes posts made by contributors to a blog.
4. A … uses page layout software to prepair electronic files for publication.
5. A … manages the hardware and software that comprise a network.
6. A … designs and maintains websites.
7. A … works with companies to build secure computer systems.
8. A … helps end-users with their computer problems in person, by e-mail or over the phone.

Exercise 12. What jobs are being offered in these advertisements?

We are seeking a person to operate peripheral computer equipment, and perform report distribution duties and backup procedures on our servers.

Major Responsibilities

- Operating printers and unloading reports from the printer and distributing them through the internal mail system
- Performing backups on various operating systems
- Analysing and troubleshooting problems in the Data Centre reported by Help Desks or IT support associates

The successful candidate will be responsible for maintaining logical and physical database models as well as managing the database.

Job Requirements

- Bachelor's degree in Computer Science, a related field or equivalent experience
- Analytical skills and a proficiency in developing structured logic

Exercise 13. Discussion.

a) Look in the job opportunities section of a newspaper to see if many jobs require applicants to be familiar with using computers. What types of experience are required? If you were now looking for a job, which types of experience would you want to have?

b) Write two paragraphs, one listing the benefits, the other listing the negative aspects of replacing people with computers.

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c) ***Tell your partner about your career plans. Talk about further qualifications, skills and positions.***

Text 4. FUTURE OF IT

Exercise 1. Brainstorming. How do you think developments in IT affect commerce, work, the relationship between humans and computers in the future?

Exercise 2. Complete the sentences with the correct future form of the verb in brackets.

1. Thanks to IT, by the year 2030 we (find) ___ cures for the major diseases of our time. 2. In twenty years' time, some people (live) ___ in space, perhaps inside a computerized colony. 3. By this time next week, I (work) ___ for IBM. 4. Next month I (buy) ___ that Blackberry that I've wanted to buy for months. 5. Scientists predict in thirty years' time nearly everyone (live) ___ in smart houses.

Exercise 3. Study the words and find their meanings in the dictionary.

Nanotechnology	appliances	pervasive computing
nanometer	smartphone	ubiquitous devices
nanocomputer	Bitcoin	smart home
nanomedicine	Bitcoin Cash	smart devices
nanobot	Bitcoin Core	digital money
nanomaterial	Bitcoin Cash wallet	cash system
nanotube	transaction	online exchanges
android	transaction fee	to embed
expert system	Artificial Intelligence	
biometrics	ubiquitous computing	

Exercise 4. Read the article and describe the trends in IT.

1 By all accounts, nanotechnology – the science of making devices from single atoms and molecules – is going to have a huge impact on both business and our daily lives. Nano devices are measured in nanometres (one billionth of a metre) and are expected to be used in the following areas.

- *Nanocomputers*: Chip makers will make tiny microprocessors with naanotransistors, ranging from 60 to 5 nanometres in size.
- *Nanomedicine*: By 2020, scientists believe that nano-sized robots, or nanobots, will be injected into the body's bloodstream to treat diseases at the cellular level.
- *Nanomaterials*: new materials will be made from carbon atoms in the form of nanotubes, which are more flexible, resistant and durable than steel or aluminium. They will be incorporated into all kinds of products, for example stain-resistant coatings for clothes and scratch-resistant paints for cars.

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2 Artificial Intelligence (AI) is the science of making intelligent machines and programs. The term originated in the 1940s, when Alan Turing said: “A machine has artificial intelligence when there is no discernible difference between the conversation generated by the machine and that of an intelligent person”. A typical AI application is robotics. One example is ASIMO, Honda’s intelligent humanoid robot. Soon, engineers will have built different types of android, with the form and capabilities of humans. Another AI applicationis expert systems – programs containing everything that an ‘expert’ knows about a subject. In a few years, doctors will be using expert systems to diagnose illnesses.

3 Imagine you are about to take a holiday in Europe. You walk out to the garage and talk to your car. Recognizing your voice, the car’s doors unlock. On the way to the airport, you stop at an ATM. A camera mounted on the bank machine looks you in the eye, recognizes the pattern of your iris and allows you to withdraw cash from your account.

When you enter the airport, a hidden camera compares the digitized image of your face to that of suspected criminals. AT the immigration checkpoint, you swipe a card and place your hand on a small metal surface. The geometry of your hand matches the code on the card, and the gate open. You are on your way.

Does it sound futuristic? Well, the future is here. Biometrics uses computer technology to identify people based on physical characteristics such as fingerprints, facial features, voice, iris and retina patterns.

4 Ubiquitous computing, also known as pervasive computing, is a new approach in which computer functions are integrated into everyday life, often in an invisible way. Ubiquitous devices can be anything from smartphones to tiny sensors in homes, offices and cars, connected to networks, which allow information to be accessed anytime and everywhere – in other words, ubiquitously. In the future people will interact naturally with hundreds of these smart devices (objects containing a microchip and memory) every day, each invisibly embedded in our environment and communicating with each other without cables.

5 In the ideal smart home, appliances and electronic devices work in sync to keep the house secure. For example, when a regular alarm system senses that someone is breaking into the house, it usually alerts the alarm company and then the police. A smart home system would go further, turning on the lights in the home and then sending a text message to the owner’s phone. Motorola *Homesight* even sends images captured by wireless cameras to phones and PCs.

Smart homes can remember your living patterns, so if you like to listen to some classical music when you come home from work, your house can do that for you automatically. They will also know when the house is empty and make sure all appliances are turned off. All home devices will be interconnected over a home area network where phones, cable services, home cinemas, touch screens, smart mirrors and even the refrigerator will cooperate to make our lives more comfortable.

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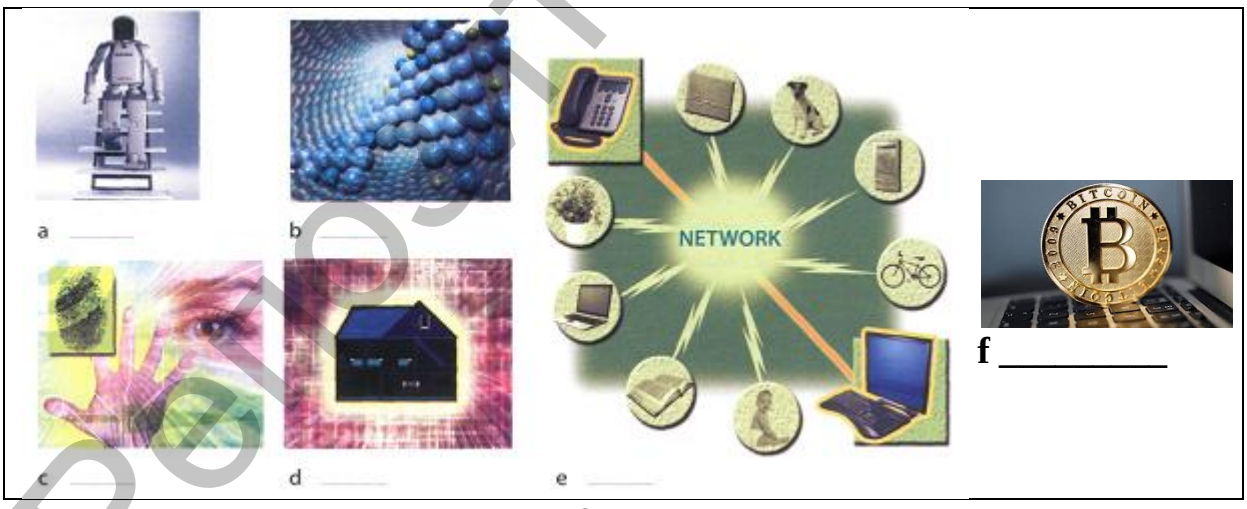
6 Since the Bitcoin network forked in August 2017, there has been some confusion on the differences between Bitcoin Cash (BCH) and Bitcoin Core (BTC). These differences between both versions of Bitcoin make them unique. For example, Bitcoin Cash has low transaction fees, and fast, reliable transactions, while Bitcoin Core is expensive and slow to use. But Bitcoin Cash is the only version of Bitcoin that can be used as digital money.

Bitcoin Cash is an electronic cash system that can be used to send real money directly to anyone, anywhere in the world. Unlike traditional payments, Bitcoin Cash is sent from one person to another without going through any banks, government, or other middlemen. Your Bitcoin Cash is controlled by you and you alone. No one can ever prevent you from sending or receiving it. The Bitcoin Cash network is always turned on and working at full capacity regardless of time or date. It can be bought and sold from online exchanges using dollars, euros, and many other currencies. Bitcoin Cash can also be purchased using a credit card. Users can even trade legacy money like paper cash or bank wires for Bitcoin Cash at special ATMs or by using services that match buyers with verified sellers nearby. It is stored on your smartphone, computer, or other mobile device using software called a 'Bitcoin Cash wallet'. With a Bitcoin Cash wallet, you can send or receive Bitcoin Cash with ease from your smartphone to anyone else in the world within seconds. The Bitcoin Cash network is made of millions of individual users just like you and me. Bitcoin Cash is fast, convenient and offers financial freedom to everyone in the world. It's changing the way people think about money.

Exercise 5. Match the paragraphs (1-6) with the pictures (a-f).



Exercise 6. Find the words with the following meanings in the article above.

1. A microscopic robot, built with nanotechnology.
2. A robot that resembles a human.
3. Biological identification of a person.
4. Integrated, inserted into.
5. Electrical devices, or machines, used in the home.
6. A form of money that is used on the Internet.

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Exercise 7. Answer the following questions.

1. Which unit of measurement is used in nanotechnology? 2. What are the advantages of nanotubes over regular materials? 3. What will doctors use expert systems for? 4. What features are analyzed by biometrics? 5. Which trend refers to computers embedded in everyday devices, communicating with each other over wireless networks? 6. What will the alarm system do if someone breaks into a smart home? 7. How will devices be interconnected inside the smart home? 8. What is Bitcoin? What is it used for?

Exercise 8. Work in pairs, discuss these predictions. Do you agree or disagree? Begin the following sentences with the words:

I think that …I'm not sure that …I completely agree/disagree with …

1. Some day, we'll be talking to computers naturally, like friends.
2. Microchips implanted in our arms will serve as ID cards and contain our medical records.
3. Robots will learn to build themselves without human help.
4. Smart homes will be voice activated.
5. Computers will be ubiquitous and almost invisible, embedded into our homes and integrated into our lives.

Exercise 9. Study these predictions of developments in Information Technology from 2000. Which, if any, have come true? How likely are the others to come true? Give reasons for your decisions and compare answers with your partner.

Exercise 10. Discussion. Think of arguments for and against this statement: "Computers will have caught up with the power and speed of the human brain by 2050. Some time after that they will start outstripping us and taking over from us".

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SELF-CHECK

Translate the article from Russian into English using active vocabulary. Render the article.

Сфера IT-технологий была четко определена и в терминологии, одобренной ЮНЕСКО. В соответствии с таким подходом, под ИТ принято понимать дисциплины, связанные между собой и касающиеся техники, науки, инженерии. Они помогают сделать труд максимально эффективным. В первую очередь область ИТ направлена на улучшение условий труда занятых обработкой информационных баз людей, а также занимается вопросами, связанными с обеспечением сохранности данных. ИТ предполагает применение наиболее современных организационных методов, технических возможностей, позволяющих обеспечить взаимодействие между персоналом и оборудованием.

В наше время новые IT-технологии – отрасль, актуальная для образовательных задач и медицинских исследований, для области предоставления услуг, управленческих и производственных процессов. ИТ оказывает серьезное влияние на социальную интеграцию, изменение общества, которое под влиянием современных технологий существенно ускорилось.

Ключевые особенности информационных технологий (IT):

- Возможность передачи данных на внушительные расстояния.
- Структурированность, стандартизация обмена сведениями с применением специфических алгоритмов.
- Применение компьютерных возможностей для сохранения данных и обеспечения доступа к ним в виде, понятном конечному пользователю

Наиболее широкая трактовка рассматриваемого термина предполагает анализ областей, через которые выполняются следующие действия с данными:

- ✓ Сохраняются.
- ✓ Формируются.
- ✓ Транспортируются.
- ✓ Воспринимаются.

Развитие IT-технологий привело к формированию из небольшого раздела в целую отрасль, которая в наше время тесно пересекается с самыми разными областями жизни. Занимается она различными информсистемами: их формированием, усовершенствованием, использованием. ИТ помогают сделать рабочий процесс более эффективным, организованным, результативным. Для этого важно рационально применять наиболее современные достижения, открытия, технологии. ИТ предполагает применение самых актуальных методов коммуникационного взаимодействия, а также современного программного обеспечения. Для достижения успеха необходимо привлекать к рабочему процессу опытных специалистов.

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UNIT II. COMPUTER HARDWARE

Text 1. COMPUTER SYSTEM

Exercise 1. Brainstorming. What kind of computers have you got? What do you use it for? What kinds of computers are popular among young people? What characteristics must new computers have?

Exercise 2. Match the types of computers with the pictures and definitions.

1. A single-user computer. It typically refers to a Windows PC or Mac, but may also refer to a Linux PC.
2. A state-of-the-art computer for mission critical tasks. Today, it refers to a class of ultra-reliable servers from IBM that is designed for enterprise-class and carrier-class operations.
3. An earlier handheld computer for managing contacts, appointments and tasks. It's got functions of a computer-based personal information manager.
4. A portable computer with an LCD screen that weighs from two to 10 pounds. It uses batteries for mobile use and AC power for charging and desktop use.
5. It was designed to function like a portable writing instrument. It included handwriting recognition for converting characters to text as well as the capability of storing handwritten words and annotations as images.

Exercise 3. Mark each sentence as T (True) or F (False).

- A mainframe computer is less powerful than a PC.
- A mainframe is used by large organizations that need to process enormous amounts of data.
- The most suitable computers for home use are desktop PCs.
- A laptop is not portable.
- Laptops are not as powerful as desktop PCs.
- Using a stylus, you can write directly onto the screen of a tablet PC.
- A PDA does not allow you to surf the Web.

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Exercise 4. To understand the computer insides study the words and find their meanings in the dictionary.

hardware	keyboard	storage devices
software	mouse	flash drives
number	monitor	memory cards
sound	printer	memory sticks
image	modem	cloud storage
processor	spreadsheets	to attach
memory	computer system	to convert
storage	operating system	to manipulate
utilities	application software	to perform
CPU	electronic device	to accomplish
SSD	network interface card	to interact with
byte	input/ output devices	to run the program
to execute the program		

Exercise 5. Match the words with their definitions.

hardware	*operating system*	*flash drive*	*output device*
software	*CPU*	*cloud storage*	*application*

1. A solid state storage module that plugs into the computer's USB port.
2. A backup and storage service on the Internet.
3. Any peripheral that presents output from the computer, such as a screen or printer.
4. The computer's master control program.
5. The computing part of the computer, also called the "processor”.
6. Software that is used for business or entertainment.
7. Machinery and equipment.
8. Instructions for the computer.

Exercise 6. Read the article and name the main parts of a computer system.

The Parts of the Computer System

A computer is an electronic device used to process data, converting it into information that is useful to people. A complete computer system includes hardware, software, data, and people. Hardware consists of electronic devices, the parts you can see. Software, also known as programs, consists of organized sets of instructions for controlling the computer. Data consists of text, numbers, sounds, and images that the computer can manipulate.

Looking Inside the Machine

The hardware, or physical components, of a computer consists of a processor, memory, input and output (I/O) devices, and storage. The processing function is divided between the processor and memory. The processor, or CPU, is the brain of the machine. Memory holds data and program instructions as the CPU works with them. The units of measure for memory are the byte, kilobyte,

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megabyte, gigabyte, and terabyte. The role of input devices is to provide data from the user or another source. The most common input devices are a keyboard and a mouse. The function of output devices is to present processed data to the user or to another computer. The most common output devices are a monitor and a printer. Communications devices, such as modems and network interface cards, perform both input and output functions, allowing computers to share information. Storage devices hold data not currently being used by the CPU. The most common storage devices nowadays are USB flash drives; memory cards; memory sticks; SSD; online and cloud storage.

Software: Bringing the Machine to Life

Programs are electronic instructions that tell the computer how to accomplish certain tasks. When a computer is using a particular program, it is said to be running or executing the program. The operating system tells the computer how to interact with the user and how to use the hardware devices attached to the computer. Application software tells the computer how to accomplish tasks the user requires. Some important kinds of application software are word processing programs, spreadsheets, database management software, presentation programs, graphics programs, multimedia applications, entertainment and education software, Web design tools and Web browsers, Internet applications, utilities, and networking and communications software.

Exercise 7. Fill in the blanks with the suitable words.

1. A computer is an _____ device used for processing data.
2. A computer system consists of _____, _____, people and data.
3. Software, or _____, includes _____ for controlling the computer.
4. Data is _____, _____, _____ and _____.
5. The hardware of a computer consists of _____, _____, _____ and _____.
6. The units of measure for memory are _____, _____, _____, _____ and _____.
7. Input devices _____ data from the user or another source.
8. Communications devices allow computers _____ information.
9. Programs are electronic _____ that tell the computer how to accomplish certain tasks.
10. Some important kinds of application software are _____, _____, _____, _____, _____, _____.

Exercise 8. Answer the following questions.

1. What components does a computer system include?
2. What is hardware? software? data?
3. What does the hardware consist of?
4. What components of a computer system perform data processing?
5. What is the function of memory?

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6. What are the most common units of measure for memory?
7. What task do input devices perform?
8. What is the purpose of output devices?
9. What devices perform input and output functions?
10. What function do storage devices perform?
11. What is a program?
12. What is the task of an operating system?
13. Give the examples of application software.

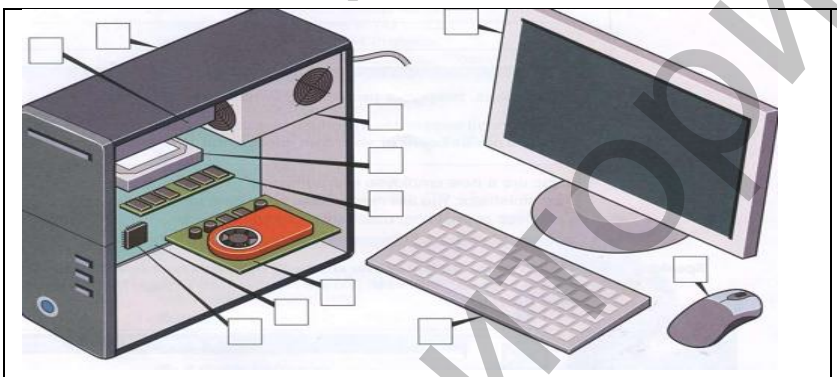
Exercise 9. Render the article using the active vocabulary.

Exercise 10. Discussion. Work in groups. Discuss pros and cons of using computers.

Text 2. CENTRAL PROCESSING UNIT (CPU)

Exercise 1. Brainstorming. Define what it means to be computer literate. Name the main hardware pats of computers. What is CPU? Identify its main parts.

Exercise 2. Label the picture with the correct items.



1. Monitor, 2. case, 3. CPU, 4. RAM, 5. motherboard, 6. expansion cards, 7. power supply unit, 8. optical disk drive, 9. hard disk drive, 10. keyboard, 11. mouse.

Exercise 3. Match each item with its function.

RAM	controls the cursor
Processor	inputs data through keys like a typewriter
Mouse	displays the output from a computer on a screen
Clock	reads DVD-ROMs
Flash memory key	reads and writes to electronic chips on a card
Monitor	holds instructions which are needed to start up the computer
Keyboard	holds data read or written to it by the processor
DVD-ROM drive	provides extremely fast access for sections of a program and its data
Cache	controls the timing of signals in the computer
ROM	controls all the operations in a computer

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Exercise 4. Choose the most suitable verb from the box.

Back up click on type close down have enter open run goes down

1. Please _____ your user name and password. 2. You don't have to _____it all in again – just cut and paste it from the first document. 3. If you forget to _____your work and the system _____, you may lose everything. 4. If you want to open the program, just _____ the icon. 5. If you _____trouble downloading files, it may be because the file sizes are too large. 6. You can _____Excel files in Word. 7. Your computer will _____faster if you _____the programs you're not using.

Exercise 5. Study the words and find their meanings in the dictionary.

CPU	division	machine cycle
ALU	fetching	central processing unit
memory	decoding	multiple processing
motherboard	equal to	units
circuit	not equal to	to carry out
chip	to manipulate	commands
register	to direct	to carry out
silicon	to list	mathematical
microprocessor	to convert	operations
microcode	to be built into	to execute operations
location	flow of data	to encounter an
addition	basic directions	instruction
subtraction	circuit board	to pass instructions
multiplication	instruction set	to compare numbers

Exercise 6. Read the article and identify the main parts of the CPU and their functions. Complete the table.

Computer parts	**definition**	**function**
CPU		
Control unit		
ALU		

Central Processing Unit (CPU)

Two components handle processing in a computer: the central processing unit, or CPU, and the memory. They are located on the computer's motherboard, the circuit board that connects the CPU to the other hardware devices.

The CPU, or processor, is the place where data is manipulated. In a personal computer, the processor usually consists of one or more microprocessors (sometimes called "chips") which are slivers of silicon or other material with many tiny electronic circuits. Today, the CPUs of almost all computers are contained on a single microprocessor chip. In fact, multiple

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processing units on one chip are commonplace. The CPU has two basic parts: the control unit and the arithmetic logic unit.

The Control Unit. All the computer's resources are managed from the control unit. The control unit directs the flow of data through the CPU, and to and from other devices. The CPU's instructions for carrying out commands are built into the control unit. The instructions, or instruction set, list all the operations that the CPU can perform. Each instruction in the instruction set is expressed in microcode – a series of basic directions that tells the CPU how to execute more complex operations. When the control unit encounters an instruction that involves arithmetic or logic, it passes that instruction to the second component of the CPU, the arithmetic logic unit, or ALU.

The Arithmetic Logic Unit. Because all computer data is stored as numbers, the processing involves comparing numbers or carrying out mathematical operations. The computer performs two types of operations: arithmetic operations and logical operations. Arithmetic operations include addition, subtraction, multiplication, and division. Logical operations include the following ones: “equal to”, “not equal to”, “greater than”, or “less than”. The ALU includes a group of registers – high-speed memory locations in the CPU that are used to hold the data currently being processed. For example, the control unit may load two numbers from memory into the registers in the ALU. Then it may tell the ALU to divide the two numbers (an arithmetic operation) or to see whether the numbers are equal (a logical operation).

Each time the CPU executes an instruction, it takes a series of steps that is called a machine cycle. A machine cycle can be broken down into two smaller cycles: the instruction cycle and the execution cycle. During the instruction cycle the CPU takes two steps: fetching (the control unit retrieves, or “fetches”, a command or data from the computer's memory) and decoding (the control unit breaks down, or decodes, the command into instructions that correspond to those in the CPU's instruction set. At this point, the CPU is ready to begin the execution cycle. When the command is executed, the CPU carries out the instructions in order by converting them into microcode. The CPU may be required to store the results of an instruction in memory (but this condition is not always required).

Exercise 7. Mark each sentence as T (True) or F (False) according to the given information .

- In a personal computer, the processor usually consists of one or more microprocessors.
- Data is manipulated in memory.
- The CPU's instructions for carrying out commands are built into the arithmetic logic unit.
- Processing is a series of basic directions that tells the CPU how to execute more complex operations.

Exercise 8. Answer the questions.

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1. Which components of a computer system handle data processing? 2. Where are the memory and the central processing unit located? 3. Name the basic parts of a microprocessor. 4. What function does the control unit perform? 5. What does the instruction set include? 6. How many operations does the computer perform? 7. Name arithmetic operations. 8. What logical operations are performed by the ALU? 9. What is the task of registers? 10. What are the parts of a machine cycle? 11. What operations does the CPU perform during the instruction cycle?

Exercise 9. Complete the summary and be ready to render.

The most important processing hardware component is the _____, which comprises the control unit and the _____. Today CPUs are manufactured from silicon; one wafer from a silicon ingot can hold hundreds of chips, also called ____. The control unit of the CPU is responsible for directing and coordinating most of the computer system _____. The ALU performs all _____ and logical comparison functions. _____ are special temporary storage locations within the CPU that very quickly accept, store, and transfer data and instructions that are being used immediately. The cycle that the computer goes through to fetch and execute one instruction is called the _____. In the _____cycle, the instruction is retrieved from main memory and is decoded in the CPU. In the _____cycle, the instruction is executed and the result is stored.

Exercise 10. Discussion. Work in pairs. Advances are made almost every day in microprocessor chip technology. What are some of the most recent ones? In what computers are these chips used? (Use the net or special periodicals to find information.)

Text 3. MEMORY

Exercise 1. Brainstorming. What is the memory size of your computer? Why is it better to have more main memory? When do people need to add more computer memory?

Exercise 2. Study the table and find an IT term for each of these definitions. Each term includes one of the prefixes listed below.

- A system of numbers with 2 as its base (b____y)
- A way of communicating between a user and a computer(i_____e)
- 1048576 bytes of information (m_____e)
- Having many different modes of input (m_____al)
- A computer higher in scale than any other (s_____er)
- A very small but powerful processor (m____r)
- A system used by many people (m____user)

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These prefixes are common in IT terminology.

Quantity

prefix	*meaning*	*examples*
bi	two	bi-directional
uni	one	uni-directional
tera	10^{12}	terabyte*
giga	10^{9}	gigahertz
mega	10^{6}	megahertz
kilo	10^{3}	kilohm
milli	10^{-3}	millisecond
macro	large	macroinstruction
micro	small	microcomputer
multi	many	multimedia

(* approximate decimal value)

Prepositions

prefix	*meaning*	*examples*
anti	against	anti-virus software
infra	below	infrared
intra	within	intranet
inter	between	Internet
hyper	above, beyond	hyperlink
tele	distant, far	telecommunications

Others

prefix	*meaning*	*examples*
auto	by itself	automated
cyber	machine control	cyberspace
super	higher in quantity or degree	superhighway

Exercise 3. Match the prefixes in the box to these numbers.

dual- giga- kilo- mega- micro- milli- nano- quad- tera-

1 1,000,000,000,000 _____
2 1,000,000,000 _____
3 1,000,000 _____
4 1,000 _____
5 0.000000001 _____
6 0.000001 _____
7 1,000,000 _____
8 4 _____
9 2 _____

Exercise 4. Study the collocations with the word "computer". Make up sentences using 7 collocations.

a) *VERB+COMPUTER. Use a computer; log onto a computer; log off a computer; switch a computer on/off; start up/boot up a computer; shut down a computer; restart/reboot a computer; program a computer; hold/store something on a computer; a computer starts up/boots up; .a computer crashes; a computer is down/up; software/a program runs on a computer.*

b) ACTIONS WHEN USING A COMPUTER. *Click on something; download/.upload; scroll up/down; enter; delete; cut and paste; save; close.*

Exercise 5. Read the article using the correct forms of the verbs. Why is it important not to waste memory?

Memory is an important resource that cannot *(to waste)*. It must be allocated by the operating system as well as by applications and then *(to release)* when no longer needed. Errant programs can *(to grab)* memory and not let go, which results in less and less memory available to other programs. Restarting the computer *(to give)* memory a clean slate, which *(to be)* why rebooting the computer clears up so many problems with applications.

In addition, if the operating system *(to have)* bugs, a malfunctioning application can write into the same memory used by another program, *(to cause)* unspecified behavior such as the system locking up. If one were able to look into and watch how fast data and instructions *(to write)* into and out of memory in the course of a single second, it would become obvious that it is a miracle it works at all.

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Exercise 6. Study the words and find their meanings in the dictionary.

Memory	volatile	at a time
ROM	permanent	memory address
RAM	temporary	memory device
space	dynamic	cache memory
location	static	hard drive
nonvolatile	to erase	solid state drive

Exercise 7. Read the article and describe the difference between ROM and RAM.

Memory

The CPU contains the basic instructions to operate the computer, but it cannot store entire programs or large sets of data permanently. It contains registers which are small areas that can hold only a few bytes at a time. In addition to registers, the CPU has millions of bytes of space where it can quickly read or write programs and data in use. This area is called memory. Physically, memory consists of chips either on the motherboard or on a small circuit board attached to the motherboard. This electronic memory allows the CPU to store and retrieve data quickly.

There are two types of memory: read-only memory, or ROM, and random access memory, or RAM.

Read-only memory (ROM) is nonvolatile (or permanent); it holds instructions that run the computer when the power is first turned on. ROM contains a set of start-up instructions, which ensures that the rest of memory is functioning properly, checks for hardware devices, and checks for an operating system on the computer's disk drives. The data in ROM cannot be changed.

Random-access memory (RAM) is volatile (read/write, or temporary); programs and data can be written to and erased from RAM as needed. The purpose of RAM is to hold programs and data while they are in use. The more RAM a computer has, the more it can do and the faster it can perform certain tasks.

The CPU accesses each location in memory by using a unique number called the memory address. A memory address is a number that indicates a location on the memory chips.

There are two types of RAM: dynamic and static. Dynamic RAM (DRAM) must be refreshed, or recharged with electricity frequently; otherwise, it will lose its contents. Static RAM is not refreshed often and can hold its contents longer than dynamic RAM. SRAM is also considerably faster than DRAM.

Moving data between RAM and the CPU's registers is one of the most time-consuming operations the CPU must perform, simply because RAM is much slower than the CPU. A partial solution to this problem is to include a cache memory in the CPU. Cache memory is a type of high-speed memory that

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contains the most recent data and instructions loaded by the CPU. The amount of cache memory has a tremendous impact on the computer's speed.

To always be clear, avoid using the term memory, and instead use "RAM" for temporary memory and "storage" for permanent memory. RAM capacity in today's computing devices ranges from four to 32GB (gigabytes). Storage goes from 120GB to terabytes (TB).

Oddly enough, memory does not "remember" anything when the power is turned off. So why do they call it memory? Because the first memory did "remember," but today's RAM chips do not. Although there are memory chips that do hold their content permanently (ROMs, EEPROMs, flash memory, etc.), they are used for internal control purposes and data storage, not for processing. To make it even more confusing, it appears that the next generation of memory may again "remember" The main "remembering" memory in a computer system are the hard drives and solid state drives, which are sometimes called "memory devices," which only adds confusion.

Exercise 8. Mark each sentence as T (True) or F (False) according to the given information.

- The CPU can hold large amounts of data permanently.
- The data in ROM can be changed.
- If a memory chip loses its contents when the computer's power is turned off, the type of memory is said to be volatile.
- More RAM can make a computer run faster.

Exercise 9. Answer the following questions.

1. What is memory? 2. What does memory consist of? 3. Which type of memory is permanent? temporary? 4. What does the term "non-volatile" mean? 5. What are the functions of ROM instructions? 6. Can the data in random access memory be changed? 7. What is the purpose of RAM? 8. How does the amount of RAM affect the computer's speed? 9. What is a memory address? 10. What is the difference between two types of RAM? 11. What do you know about cache memory?

Exercise 10. Fill in the gabs with the correct prepositions.

All program execution and data processing takes place ____ memory often called "main memory." The program's instructions are copied into memory ____storage or the network and then extracted into the CPU's control unit circuit ___analysis and execution. The instructions direct the computer or mobile device ___input, process and output data. As data are entered ____memory, the previous contents of that space are lost. Only in memory can data ____ be processed (calculated, compared and copied). The results are copied _____memory ____ a screen, printer, storage device or the network.

Exercise 11. Discussion. Research into the current uses of and the latest advances in Rom technology. How will it affect the way we currently use microcomputers?

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Text 4. PERIPHERALS

Exercise 1. Brainstorming. Do you know what the word "peripherals" means? What peripherals do you use most? Why?

Exercise 2. Match photos A-H with definitions 1-8.

1. NAS (network attached storage)
2. Touchpad
3. Stylus
4. Graphic tablet and stylus
5. Touch screen
6. Projector
7. Headset
8. Multifunction printer

Write I next to the Input devices and O next to the Output devices. Which ones are both? Which ones are neither?

Exercise 3. What input device would you use for these tasks?

- To play computer games
- To copy images from paper into a computer
- To select text and click on links on web pages
- To enter drawings and sketches into a computer
- To input voice commands and dictate text
- To draw pictures or select menu options directly on the screen
- To take and store pictures and then download them to a computer

Exercise 4. Label the picture of the standard keyboard with the groups of keys.
a)

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1. **Alphanumeric keys** represent letters and numbers, arranged as on a typewriter.
2. **A numeric keypad** appears to the right of the main keyboard and contains numeric and editing keys; the *Num Lock* key is used to switch from numbers to editing functions.
3. **Function keys** appear at the top of the keyboard and can be programmed to do special jobs.
4. **Cursor keys** include 'arrow keys' which move the insertion point, and keys such as *Home, End, Page Up, and Page Down*, which let you move around documents.
5. **Dedicated keys** are used to issue commands or produce alternative characters. For example, *Ctrl*.

b) Match the descriptions with the names of the keys.

Ctrl	enters a space.
Caps Lock	advances the cursor to the next tab stop.
Enter (or	deletes the character to the left of your current position.
Return)	changes the functions of other keys.
Backspace	moves the cursor up, down, left and right.
Arrow key	types capital letters and other alternate "upper" characters.
Shift key	sets the keyboard in 'CAPFTALS' mode; it only affects
Tab key	letters.
Space bar	selects options from a menu or to start a new paragraph.

Exercise 5. Complete the sentences with the correct "mouse action".

- to **click**, **press** and **release** the left button.
- to **double-click**, **press** and **release** the left button twice.
- to **drag**, **hold down** the button, **move** the pointer to a new place and then **release** the button.
- to **right-click**, **press** and **release** the right button; this action displays a list of commands.

1. To start a program or open a document you _____ on its icon – that is, you rapidly press and release the mouse button twice.
2. If you want to select a menu option, you just _____on the left button.
3. If you want to find the commands for a particular text, image, etc., you have to _____ on it.
4. If you want to move an object, press the button and _____the object to the desired location.

Exercise 6. Study the words and find their meanings in the dictionary.

Peripherals	bus	mouse
transmission	reception	trackball

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joystick,	SATA	direct-entry
trackpad	comprehensible	display terminals
digitized	external	ink-jet printer
microphone	internal	flow valve
webcam	serial	USB hub
sensor	parallel	Blu-Ray
scanner	to reverse	hard drive
loudspeaker	handheld devices	wearable device
headphones	input devices	network interfaces
modem	output devices	pressure-sensitive pad
Firewire	storage devices	USB keychain
USB	incoming data	iPod nano
EIDE	binary code	

Exercise 7. Read the article and entitle it.

Computer peripherals are devices used to input information and instructions into a computer for storage or processing and to output the processed data. In addition, devices that enable the transmission and reception of data between computers are often classified as peripherals.

Peripherals are commonly divided into three kinds: input devices, output devices, and storage devices (which partake of the characteristics of the first two). An input device converts incoming data and instructions into a pattern of electrical signals in binary code that are comprehensible to a digital computer. An output device reverses the process, translating the digitized signals into a form intelligible to the user. At one time punched-card and paper-tape readers were extensively used for inputting, but these have now been supplanted by more efficient devices.

Input devices include typewriter-like keyboards; handheld devices such as the mouse, trackball, joystick, trackpad, and special pen with pressure-sensitive pad; microphones, webcams, and digital cameras. They also include sensors that provide information about their environment—temperature, pressure, and so forth—to a computer. Another direct-entry mechanism is the optical laser scanner (e.g., scanners used with point-of-sale terminals in retail stores) that can read bar-coded data or optical character fonts.

Output equipment includes video display terminals, ink-jet and laser printers, loudspeakers, headphones, and devices such as flow valves that control machinery, often in response to computer processing of sensor input data. Some devices, such as video display terminals and USB hubs, may provide both input and output. Other examples are devices that enable the transmission and reception of data between computers—e.g., modems and network interfaces.

Most auxiliary *storage devices*—as, for example, CD-ROM and DVD drives, flash memory drives, and external disk drives also double as input/output devices. Even devices such as smartphones, tablet computers, and wearable devices like fitness trackers and smartwatches can be considered as peripherals, albeit ones that can function independently.

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Currently there are three types of devices we use in everyday tasks to store and move information:
Optical: CDs, DVDs, Blu-Ray, etc.
Magnetic and mechanical: Hard disks, magnetic tapes, diskettes, etc.
Electronic (no mechanics parts inside): SSD, flash drives, memory cards, etc.

A computer storage device is any type of hardware that stores data. The most common type of storage device, which nearly all computers have, is a hard drive. The computer's primary hard drive stores the operating system, applications, and files and folders for users of the computer. While the hard drive is the most ubiquitous of all storage devices, several other types are common as well. Flash memory devices, such as USB keychain drives and iPod nanos are popular ways to store data in a small, mobile format. Other types of flash memory, such as compact flash and SD cards are popular ways to store images taken by digital cameras. External hard drives that connect via Firewire and USB are also common. These types of drives are often used for backing up internal hard drives, storing video or photo libraries, or for simply adding extra storage. Finally, tape drives, which use reels of tape to store data, are another type of storage device and are typically used for backing up data.

Various standards for connecting peripherals to computers exist. For example, enhanced integrated drive electronics (EIDE) and serial advanced technology attachment (SATA) are common interfaces, or buses, for magnetic disk drives. *A bus* (also known as a port) can be either serial or parallel, depending on whether the data path carries one bit at a time (serial) or many at once (parallel). Serial connections, which use relatively few wires, are generally simpler and slower than parallel connections. Universal serial bus (USB) is a common serial bus. A common example of a parallel bus is the SATA bus.

Exercise 8. Mark each sentence as T(True) or F(False) according to the given information.

- Devices that enable the transaction and reception of data between computers are often classified as peripherals.
- An input device converts incoming data and instructions into a pattern of digital signals in binary code.
- An output device reverses the process, translating the digitized signals into a form intelligible to the user.
- A computer storage device is any type of software that stores data.
- A bus (also known as a port) can be only parallel.

Exercise 9. Answer the following questions. Render the article.

1. What devices can be classified as peripherals?
2. What are the functions of input and output devices?
3. What devices can be classified as storage ones?
4. Give the examples of input/output and storage devices.

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5. How many standards for connecting peripherals to computer do you know?

Exercise 10. Fill in the gabs using active words.

A monitor is the most common type of output device. It (1) … the output from the computer on a screen. Because (2) … sees the computer in action using the monitor screen, (3) … of the monitor can make a tremendous difference to the way the user (4) … with the computer, and feels about the computer. The display image on a monitor screen can be thought of as being made up of a (5) … .

A keyboard is the most common type of input device. A keyboard is a (6) … interface device which is represented as a (7) … . Each button, or key, can be used to either input a (8) … to a computer, or to call upon a (9) … of the computer. Traditional keyboards use (10) … buttons, though newer variations employ (11) … , or even projected keyboards.

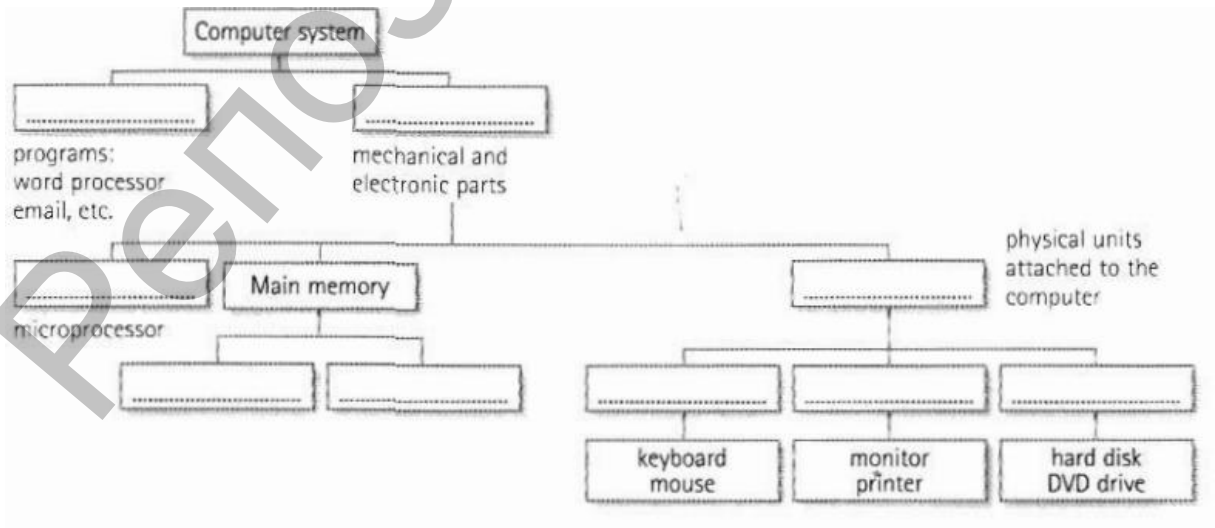
Active words*: displays; interacts; linguistic character; particular function; spring-based; layout of buttons; human; computer; shows; the quality; virtual keys; the user; series of dots; the price.*

Exercise 11. Discussion. Discuss the given statements in groups.

- ***Different types of computers varying in size and power make our world smaller and smarter.***
- ***Contemporary peripherals make the diversity of input and output devices.***

SELF-CHECK

a) Label the diagram with the correct terms



b) Translate the article from Russian into English using active vocabulary. Render the article.

Репозиторий БГУ

Компьютер – это электронно-вычислительная машина, способная выполнять заданную последовательность операций, называемую программой. Само слово «компьютер» произошло от английских to compute («вычислять») и computer («вычислитель»). В наши дни современные компьютеры способны выполнять сотни различных задач, даже косвенно не связанных с математикой.

Главной частью любого настольного стационарного компьютера является системный блок. Именно к нему подключены все другие устройства (монитор, мышь, клавиатура и так далее). Именно поэтому иногда под словом «компьютер» имеется ввиду не вся система, а лишь системный блок. В этом случае остальные устройства называются периферийными, так как лишь облегчают выполнение задач. «Мозгом» системного блока является процессор. Он крепится на материнскую плату. Кроме процессора в материнскую плату вставляется сетевая, звуковая и видеокарта, платы оперативной памяти. Сама "материнка" снабжена контроллерами (модулями управления периферийными устройствами). Внутри системного блока находится блок питания, который обеспечивает подачу электроэнергии к платам. Кроме того, внутри корпуса системного блока расположены жесткие диски (винчестеры), на которых хранится вся информация, в том числе и операционная система. Ни один системный блок не будет работать, если не установить системы охлаждения и панель управления включением-выключением.

К устройствам ввода информации относят в первую очередь клавиатуру и мышь. До недавнего времени без них настольный компьютер и представить было нельзя. Однако сейчас достаточно широко используются сенсорные дисплеи, вводить информацию на которых можно нажатием пальца на виртуальной панели, открывающейся на экране. Джойстики, веб-камеры, микрофоны также относят к устройствам ввода информации.

Все перечисленные устройства ввода информации работают по желанию человека. DVD-ROM или картридер считывают информацию с внешних носителей, подчиняясь командам операционной системы. Иногда их выделяют в отдельный подвид, именуя приводами внешних носителей данных.

Устройствами вывода информации являются монитор и принтер. Но если первый позволяет увидеть динамически изменяющуюся информацию в графическом виде, то второй способен выводить только статические страницы на бумагу. Важным периферийным устройством вывода является аудиосистема (колонки или наушники).

Существует и еще ряд устройств, которые не укладываются в приведенную классификацию: роутеры, модемы, внешние жесткие диски, usb-лампы и подогревающие подставки для кружек и сотни других.

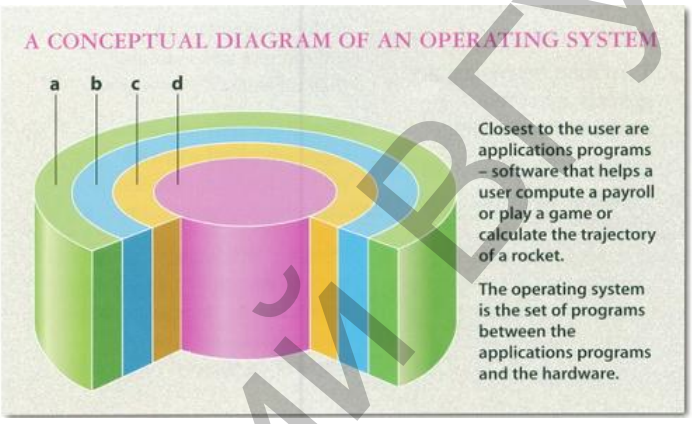
Репозиторий ВГУ

Unit III. COMPUTER SOFTWARE

Text 1. SYSTEM SOFTWARE

Exercise 1. Brainstorming. What is software? What types of software allow computers to operate? Why do people prefer one operating system to another?

Exercise 2. Match the labels to the four layers of this diagram with the help of the diagram caption.



1 applications programs
2 user
3 hardware
4 operating system

Exercise 3. Study the words and find their meanings in the dictionary.

Software	system software	IDE (integrated development environment)
multitasking	application software	to run a program
tablet	network software	to give access (to)
debugger	operating system (OS)	to execute
linker	application development	to configure
compiler	proprietary system programming software	to maintain a computer
interpreter	utility software	to back up
Windows	source code editor	to reboot a computer
Android	text editor	to partition
iOS	programming language	to restart
Linux		
installation		
BIOS		
boot drive		

Exercise 4. Complete the gaps with** because, so, to **or** for **to make up sentences.

1. Back up everything
2. Put the DVD in the drive
3. Press ‘F2’ while rebooting the computer
4. During the installation process, the computer will ask you some questions
5. You might want to partition the hard drive
6. Change the boot drive

a) _____ enter the BIOS.
b) _____ that the computer restarts from the operating system DVD.
c) _____ use the different partitions for different purposes.
d) _____ safety.
e) _____ that the process can start.
f) _____ it needs to know some information, such as where you are.

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Exercise 5. Match the words with their definitions.

computer software	*multitasking*
system software	*programming software*
operating system	*utility software*

1. System software designed to help analyze, configure, optimize or maintain a computer.
2. A system in a computer that helps all the programs in it to work together
3. A computer's ability to do more than one job at a time
4. The sets of programs that tell a computer how to do a particular job
5. Software which helps the programmer in developing other software.
6. Computer software which is used to control and coordinate the computer hardware and to provide an environment for executing application software.

Exercise 6. Read the article and name the parts of system software.

System software

Computer software, or simply *software*, is a generic term that refers to a collection of data or computer instructions that tell the computer how to work. The two major software categories are *system software* and *application software*. A third software category is that of *network software*, which coordinates communication between the computers linked in a network.

System software controls the basic functions of a computer: operating systems, programming software and utility programs.

An operating system (OS) is a set of programs that control the hardware and allow people and applications to communicate with the hardware. Typical functions of the OS are handling input/output operations, running programs and organizing files on disks. The OS also gives access to networks and allows multitasking: a user can run several programs and do various tasks at a time. All PCs, laptops, tablets, smartphones, and servers require an OS. Developers may use specific operating systems that are more conducive to programming and application development, while the average employee will likely use a proprietary system for more common, everyday usage. Now we'll see the the most popular operating system for each category.

- *Windows 7* is the most popular operating system for desktop and laptop computers.
- *Android* is the most popular smartphone operating system.
- *iOS* is the most popular tablet operating system.
- Variants of *Linux* are most widely used in the Internet of things and smart devices.
- Other variants of *Linux* are the most popular operating system on other web server sand supercomputers.

Programming software allows programmers to develop new programs. The most basic programming software is a source code editor. These programs are usually basic text editors. Programmers use them to enter lines of code into a computer. Lines of code are written in a programming language. Programmers

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use this to write series of commands. When executed together, these commands form a complete program. Other programming software is complex. An IDE (integrated development environment) provides tools for writing programs. These usually include a text editor and a debugger. Other tools may include a linker, a compiler, or an interpreter.

Utility software is system software designed to help analyze, configure, optimize or maintain a computer. It is used to support the computer infrastructure in contrast to application software, which is aimed at directly performing tasks that benefit ordinary users.

Exercise 7. Mark each sentence as T (True) or F (False) according to the given information.

1. There are four main software categories.
2. System software is any program that allows computers to perform basic operations.
3. Programmers use text editors to interpret commands.
4. Text editors are a type of source code editor.
5. An IDE is the most basic type of programming software.
6. Utility software expands the performance of the operating system by adding functions that are not part of the original OS.

Exercise 8. Answer the following questions.

1. What is computer software? 2. There are two major software categories, aren't there? What are they? 3. What does system software control? 4. Define the term 'operating system'.5. Name the most popular operating systems. 6. What kind OS do you prefer to use? Why? 7. Does programming software allow programmers to develop new programs? 8. Why do we need utilities?

Exercise 9. Put these steps in reinstalling an operating system in the correct order.

1. Before you start, back up everything.

o During the process, the computer will restart by itself several times.

o Near the end of the process, you can partition the hard drives.

o In the BIOS, set the first boot drive to DVD. Then reboot again.

o At the end of the process, the operating system will ask for the product key, time, date, network type and details for user accounts.

o First, put the installation DVD into the optical drive. Then reboot the computer while you press the 'F2' key. The BIOS will now start.

o This time, the computer will boot form the DVD and installation will begin.

o Near the start of the process, it will ask you to agree to the license terms.

Exercise 10. Discussion. You are technicians in an advertising company. You look after operating systems and software. Look at this e-mail from your manager and decide what operating system to use. Explain your decision to the class.

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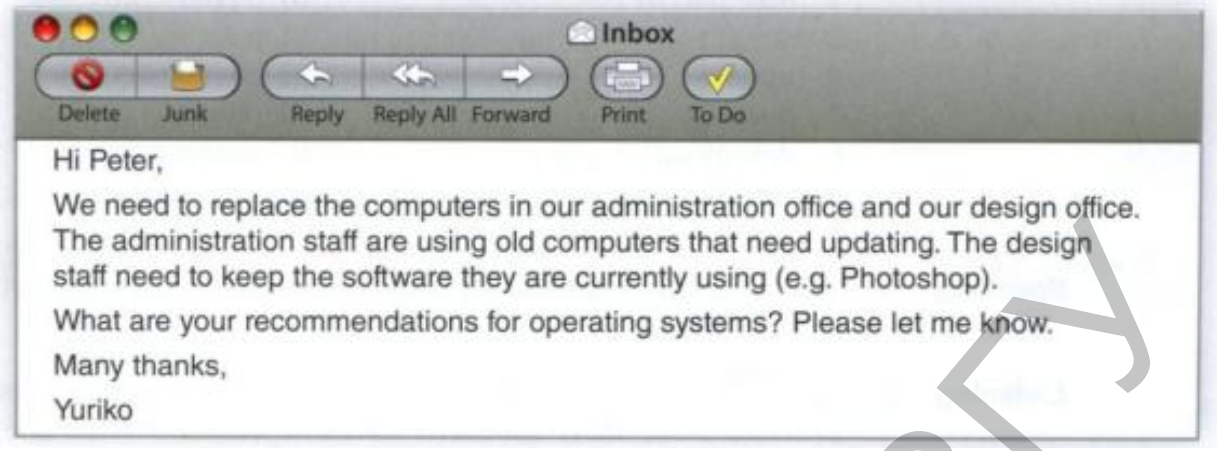

Text 2. APPLICATION SOFTWARE

Exercise 1. Brainstorming. What is application software? What is it used for?

Exercise 2. Study the words and find their meanings in the dictionary.

Layout	clipboard	translation software
capability	application software	Standard Toolbar
built-in	(apps)	to perform functions
template	word processor	to facilitate
spreadsheet	word processing	to preview
worksheet	“cut-and-paste”	to edit
column	typographic fonts	to replace
row	strings of characters	to carry out
cell	word counts	to store
query	desktop publishing	to retrieve
label	recipient address	to select
entry	numeric value	to click
equation	entertainment	to right-click
chart	software	to drag
database	translation software	
hyperlink	mapping software	

Exercise 3. Ask and answer questions about how to do these things.

Enter data in a database (form)

A: How do you enter data in the database?

B: You can do that by opening a form and entering the data into the field.

1. find information in a database (query)
2. add a column of numbers in a spreadsheet (sum/formula/spreadsheet)
3. make sure each record in a database is unique (use/primary key)
4. print information from a database (run/report)/

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Exercises 4. Complete these instructions for how to Copy and Paste in Word with verbs from the box.

click (2)	*select*	*position*	*right-click*	*drag*

1. First, _____ the text you wish to copy. To select text, _____ the mouse over the portion of the text that you want to copy. This part should then be highlighted.
2. Then ____ on the *Copy* icon on the Standard Toolbar. This copies the selected text to an invisible clipboard.
3. Next, _____ the cursor where you want the text to appear.
4. Finally, _____ the *Paste* icon. This inserts the content of the clipboard at the insertion point. As well as the icons on the toolbar, you can use the keys *Ctrl+C* for *Copy*, and *Ctrl+V* for *Paste*. These options also comes up if you _____ the selected text.

Exercise 5. Read the passage and name the main categories of application software.

Application software

Application software (apps) is used to perform specialized functions or specific jobs such as writing letters, doing calculations, drawing or playing games. Users can choose from thousands of apps to facilitate the job. The software publishing industry tracks more than 35 categories. Four of the major categories that represent the progress of application software are: word processing, spreadsheet, database management and entertainment.

Word processor, computer program used to write and revise documents, compose the layout of the text, and preview on a computer monitor how the printed copy will appear. The last capability is known as “what you see is what you get” (WYSIWYG).Word processors facilitate writing and editing, especially with their ability to copy and move text (“cut-and-paste”), their built-in dictionaries to check spelling, and their grammar checkers. Other common features include a wide choice of typographic fonts and sizes, various paragraph and page layouts, tools for finding and replacing strings of characters, and word counts. Modern word processors have also acquired many of the features once reserved for desktop publishingsystems, such as table creation and importation of graphic images. They typically provide templates for common document types, such as letters, memos, and résumés, and can generate multiple copies of a document with recipient addresses drawn from a list (“mail merge”).

Spreadsheet is software that simulates a paper spreadsheet (worksheet), in which columns of numbers are summed for budgets and plans. It appears on screen as a matrix of rows and columns, the intersections of which are called "cells." The cells are filled with (1) labels, (2) numeric values or (3) formulae. Formulae are entries that have an equation which calculates the value to display: we can use them to calculate totals, percentages, discounts, etc. Spreadsheets have many built-in functions, pre-written instructions that can be carried out by referring to the function by name. Use the spreadsheet program to:

- perform calculations about cost and revenue;

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- create formulae using different functions and operators;
- analyze sales data;
- create graphs and charts that show profits.

A *database* is a collection of related data, and the software used in databases to store, organize and retrieve the data is called the *database management system*, or DBMS. A database can manage any type of data, including text, numbers, images, sound, video and hyperlinks. Use the database program to:

- organize and sort large amounts of data regarding clients;
- enter the client names and addresses into database fields;
- perform complex queries;
- search multiple tablets for client information.

*Entertainment software is any software that supports a hobby or provides a form of amusement***.** Entertainment software includes video games, videos and any other software that a user feels is enjoyable. One of the most common forms of entertainment software is video games. Entertainment software doesn't have to solely be for amusement purposes. *Education and entertainment software* is a powerful tool for educational agencies, especially those that deal with educating young children. Connection offers a wide range of entertainment software such as computer games, educational games, translation software, and mapping software, among others.

Exercise 6. Mark each sentence as T (True) or F (False) according to the given information.

1. Only four categories represent application software.
2. A word processor enables you to create a document, store it electronically on a disk and display it on a screen.
3. A database is a program used for preparing documents and letters.
4. A spreadsheet displays information in the form of a table with a lot of columns and rows.
5. In a spreadsheet you can only enter numbers and formulae.
6. Spreadsheets cannot be used as databases.
7. Entertainment software can’t be educational.

Exercise 7. Answer the following questions.

1. What is a word processor? 2. What kind of tasks do people use word processor for? 3. How many different word processing programs can you name? Which one is the most popular? 4. Define the term “spreadsheet”. 5. Do you use spreadsheets? What for? What do you find easy/difficult about using them? 6. What database programs do you know? 7. What do people use databases for? Give examples. 8. Prove that educational software can be educational.

Exercise 8. Discussion. Read this scenario and discuss possible solutions to each problem.

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E.g. By scanning your documents, you will use less paper.

A company has these problems:
- Information on paper takes up too much space in the office.
- It is difficult to find information on paper.
- Admin staff spend a lot of time entering data. Surely computers can do this?
- They enter the same data into different spreadsheets.
- Copying and pasting data from spreadsheets into word processor documents is very slow and doesn't look very good.

Possible solutions:
- scanning
- optical character recognition (OCR)
- set up a database
- run reports

Text 3. PROGRAMMING LANGUAGES

Exercise 1.Brainstorming. What is programming? What programming languages do you know?

Exercise 2. Choose the correct word to complete each sentence.

1 *program, programmers, programming, programmable*

A._____ is the process of writing a program using a computer language.

B. A computer _____ is a set of instructions that tells the computer how to do a specific task.

C. Most computer _____ make a plan of the program before they write it.

D. A _____ keyboard allows the user to configure the layout and meaning of the keys.

2 *compile, compiler, compilation*

A. Programs written in a high-level language require _____ - that is, translation into machine code, the language understood by the processor.

B. A source program is converted into machine code by software called a _____.

C. Programmers usually _____ their programs to generate an object program and diagnose possible errors.

3 *bug, debug, debugger, debugger*

A. Any error or malfunction of a computer program is known as a _____.

B. A _____ is program used to test and _____ other programs.

C. The process of going through the code to identify the cause of errors and fixing them is called _____.

Exercise 3. Study the words and find their meanings in the dictionary.

Programming	coding	program
machine code	bug	documentation
source code	debugging	maintenance program
object code	markup tag	to compile
logic board	assembly language	to run the program
assembler	low-level language	to detect
interpreter	high-level language	to format
mainstay	markup language	to link
flowchart	at a very fast pace	

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Exercise 4. Match the words with their definitions.

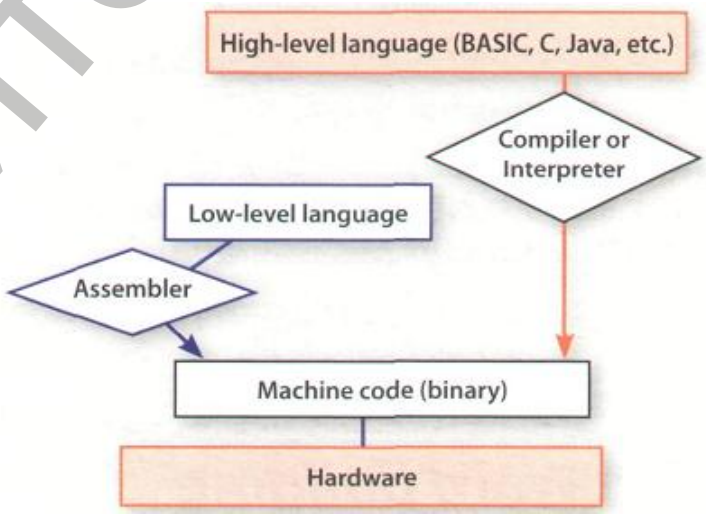
Programming	*assembly language*	*compiler*
machine code	*high-level language*	*markup language*

1. Basic language which consists of binary codes.
2. Programming language such as C, Java or Visual BASIC.
3. Writing computer programs.
4. Low-level language translated into machine code by an assembler.
5. Software which converts a source program into machine code.
6. Language used to create and format documents for the Web.

Exercise 5. Read the passage and name programming languages.

Programming Languages

Programming is the process of writing a program using a computer language. A program is a set of instructions which a computer uses to do a specific task. The only language a PC can directly execute is machine code, which consists of 1s and 0s. This language is difficult to write, so we use symbolic languages that are easier to understand. For example, assembly languages use abbreviations such as ADD, SUB, MPY to represent instructions. The program is then translated into machine code by a piece of software called an assembler. Machine code and assembly languages are called low-level languages because they are closer to the hardware. They are quite complex and restricted to particular machines. To make the programs easier to write, and to overcome the problem of intercommunication between different types of computer, software developers designed high-level languages. Some of them include the following: FORTRAN, COBOL, BASIC, Pascal, C, C++, Java, etc.



Programs written in high-level languages must be translated into machine code by a compiler or an interpreter. A compiler translates the source code into object code – that is, it converts the entire program into machine code in one go. On the other hand, an interpreter translates the source code line by line as the program is running. Most popular programming languages nowadays are Java, Python, C, C++, PHP, Javascript, C#, Ruby, Swift.

With the evolution of new processors, logic boards and the need for more performance, new programming languages are gaining ground. Developers usually get these kind of questions a lot – what to learn next? The industry is changing at a very fast pace, and you always find something new to learn. Some

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new programming languages that have a chance to become industry mainstays are Kotlin, Elm, Elixir, Rust, Crystal, Groovy, R, Go.

To write a program, software developers usually follow these steps:

- First they try to understand the problem and define the purpose of the program.
- They design a flowchart, a diagram which shows the successive logical steps of the program.
- Next they write the instructions in a high-level language. This is called coding. The program is then compiled.
- When the program is written, they test it: they run the program to see if it works and use special tools to detect bugs, or errors. Any errors are corrected until it runs smoothly. This is called debugging, or bug fixing.
- Finally, software companies write a detailed description of how the program works, called program documentation. They also have a maintenance program. They get reports from users about any errors found in the program. After it has been proved, it is published as an updated version.

It is important not to confuse programming languages with markup languages, used to create web documents. Markup languages use instructions, known as markup tags, to format and link text files. Some examples are HTML, XML, VoiceXML.

Exercise 6. Mark each sentence as T (True) or F (False) according to the given information.

1. The only language a computer can directly execute is machine language.
2. Assembly-languages and higher-level languages were developed because people have difficulty understanding machine code.
3. Compilers and interpreters can't correct the programmer's errors when creating object code.
4. Machine languages are the most advanced of all programming languages.
5. Assembly languages are based on binary number system.
6. Most popular programming languages nowadays are Kotlin, Elm, Elixir, Rust, Crystal, Groovy, R, Go.
7. Programming languages are used to create web documents.
8. HTML is an example of a low-level programming language.

Exercise 7. Answer the following questions.

1. What is programming? 2. Do computers understand human languages? Why? / Why not? 3. What is the function of an assembler? 4. Why did software developers design high-level languages? 5. What is the difference between a compiler and an interpreter? 6. Name most popular programming languages. 7. What programming languages can become industry mainstays? 8. Why are HTML and VoiceXML called markup languages?

Exercise 8. Discussion.

a) Have you ever written a program? Discuss with your partner the steps in programming listed below. Fill in the gaps with the missing stages.

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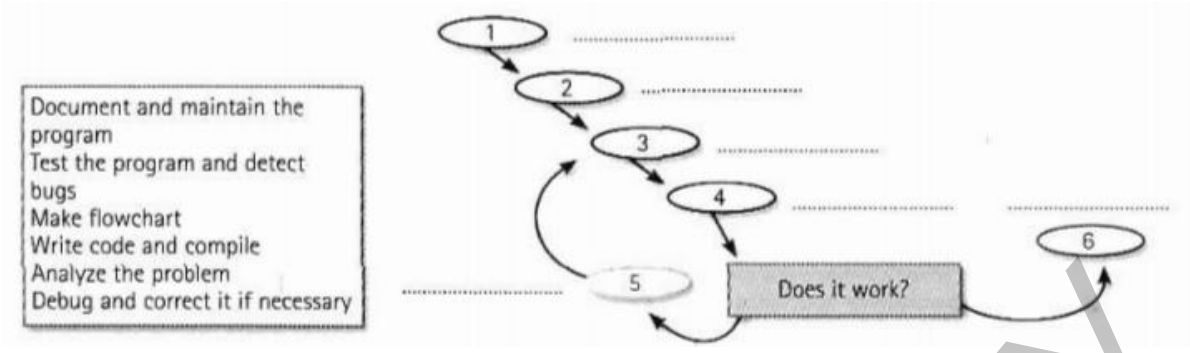

b) Read the statements below. Which do you agree with more? Why?

- *I think learning a programming language is like learning any human language, you just communicate with a computer instead of another person.*
- *Obviously, programming languages and human languages have almost nothing in common. They can't be compared.*

Text 4. NETWORKS

Exercise 1. Brainstorming. What is a computer network? What are the benefits of using networks?

Exercise 2. Study the words and find their meanings in the dictionary.

node	bus network
client	star network
topology	ring network
hub	network protocol
loop	wired networks
router	wireless networks
cord	to configure
jack	to be online
hotpot	to log on
PANs (Personal Area Networks)	to log off
LANs (Local Area Networks)	to break into
MANs (Metropolitan Area Networks)	to transmit
	to roam
WANs (Wide Area Networks)	to set up
client-server network	to sign up
peer-to-peer network	to plug into

Exercise 3. Match the questions with the answers.

1. Why was the hacker arrested? 2. Is it OK to *log on* to my bank account using public computers in a cybercafé? 3. How do I *set up* an internet connection at home?	a. Yes, but always remember to *log off* after you've ended your session. b. Yes, you can even *try* the program *out* for a period before you buy them! c. Because he *broke into* a computer system and stole confidential data.

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4. Can I download software from your site? 5. How can I add video to instant messaging? 6. What do I need to do to *sign up* for a *Yahoo!* email account?	d. Simply install this program and *plug* the webcam *into* your computer. e. You need to install the software for your router. Follow the instructions provided by your ISP, probably in the form of a pdf file on a CD. f. You have to create a username and password and then give some personal details.

Exercise 4. With the help of this diagram, try to describe the function of these components of the typical network system:

1 a file server *3 a router* *5 a LAN* *7 a modem*
2 a bridge *4 a backbone* *6 a gateway*

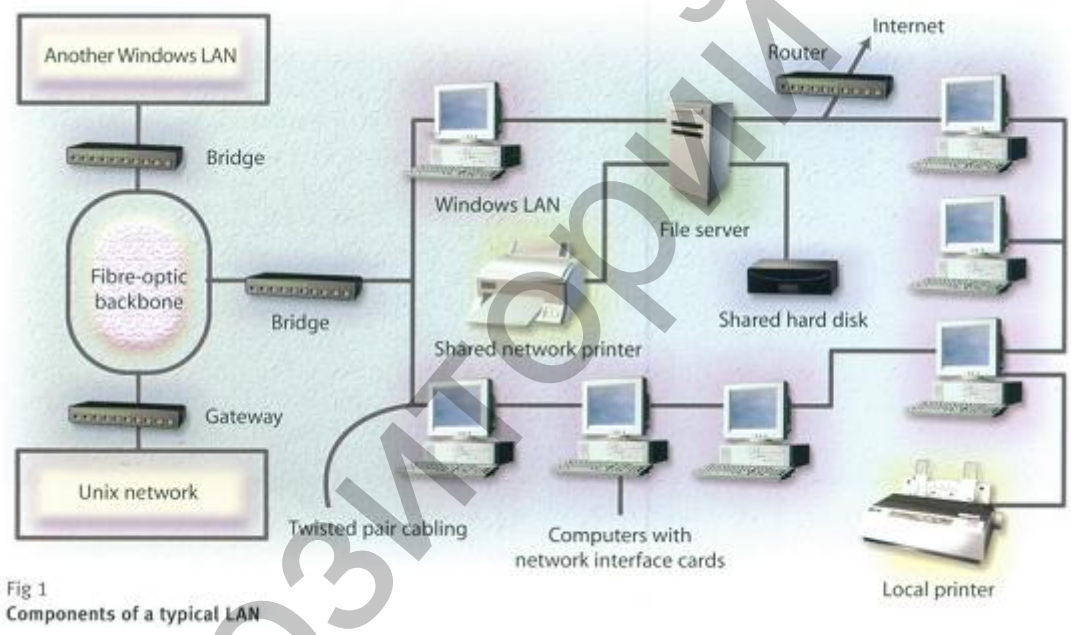

Fig 1
Components of a typical LAN

Exercise 5. Complete these definitions with the correct participle of the verb given in brackets.

1. A *gateway* is an interface (enable) dissimilar networks to communicate. 2. A *bridge* is a hardware and software combination (use) to connect the same type of networks. 3. A *backbone* is a network transmission path (handle) major data traffic. 4. A *router* is a special computer (direct) messages when several networks are linked. 5. A *network* is a number of computers and peripherals (link) together. 6. A *LAN* is a network (connect) computers over a small distance such as within a company. 7. A *server* is a powerful computer (store) many programs (share) by all the clients in the network. 8. A *modem* is a device for converting digital signals to analogue signals and vice versa to enable a computer to transmit and receive data (use) an ordinary telephone line.

Exercise 6. Read the following information and answer networking FAGs.

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Networking FAQs

i How many types of network are there?
Networks are classified according to different criteria:

- **Geographical area**: **PANs** (**P**ersonal **A**rea **N**etworks) typically include a laptop, a mobile phone and a PDA; **LANs** cover a building; **MANs** (**M**etropolitan **A**rea **N**etworks) cover a campus or a city; **WANs** (**W**ide **A**rea **N**etworks) cover a country or a continent.
- **Architecture**: In a **client-server** network, a computer acts as a server and stores and distributes information to the other nodes, or *clients*. In a **peer-to-peer** network, all the computers have the same capabilities – that is, share files and peripherals without requiring a separate server computer.
- **Topology**, or layout: In a **bus** network, all the computers are connected to a main cable, or bus. In a **star** network, all data flows through a central hub, a common connection point for the devices in the network. In a **ring** network, all devices are connected to one another in a continuous loop, or ring.
- **Network protocol**: This is the language, or set of rules, that computers use to communicate with each other. Networks use different protocols. For instance, the Internet uses TCP/IP.

ii How do I install a wired modem router?
A modem **router** is a device that connects your computer or home LAN to the Internet.

- Plug one end of the phone cord directly into a phone jack, and the other end into the ADSL port on the router.
- Plug one end of the Ethernet cable into your computer's network port and the other end into an Ethernet port on the router.
- Turn on your computer. To set up, or configure, the router, you'll need to input some parameters, for example your ISP's name and phone number.

NOTE: A router has various Ethernet ports, so you can connect various PCs to the router via Ethernet cables. If you already have a hub or switch connecting a LAN, you only need one cable to connect the hub to the router.

iii How do I log on to the Internet Service Provider?
You need to type in your username and password. Once you are online, you can get email, look for information on the Web, look up IT words in dictionaries, try out new software, and sign up for RSS feeds, newsletters, etc. It is important that you remember to log off after using the Internet. An open line increases the risk of viruses, and hackers might break into your computer to steal confidential data.

iv What is wireless networking?
Wired networks are linked by Ethernet cables, phone lines and high-speed fibre optic cables. Wireless networks, however, use electromagnetic waves, such as radio waves, to transmit data. These are the main types of wireless networks:

- **Satellites** – for long distances
- **WiMAX** – for connecting Wi-Fi hotspots
- **Wi-Fi** – for medium-range distances
- **Bluetooth** – for short distances
- **GSM** – for mobile phones

v What do I need to set up a home wireless LAN?
You'll need computers equipped with a wireless adapter or wireless card, a wireless access point (a wireless router) and a broadband internet connection.

vi Which is better, a wired or wireless LAN?
Wired LANs are more difficult to install, but they are cheaper, faster and more reliable. Wireless networks let you move, or roam, from one access point to another, but they are less secure and subject to interference.

Exercise 7. Complete the following sentences with suitable words.

1. _____ typically consists of two or more local areas networks, covering a large geographical area. 2. _____ network doesn't have a dedicated server, all the computers are independent. 3. On this topology, all devices are connected to the same circuit, forming a continuous loop. It's a _____ network. 4. The language used by computers to communicate with each other on the Internet is called _____ . 5. _____ cables are used to transfer information for the Internet over long distances at high speeds. 6. _____ allows several computers on a local network to share an internet connection. 7. _____ serves as a common connection point for devices in a wireless network. 8. Bluetooth is a wireless technology that uses radio waves to transmit data over _____ .

Exercise 8. Read these descriptions of different physical topologies of communication networks and name them.

1. All the devices are connected to a central station.
2. In this type of network there is a cable to which all the computers and peripherals are connected.

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3. Two or more star networks connected together; the central computers are connected to a main bus.
4. All devices (computers, printers, etc.) are connected to one another forming a continuous loop.

Exercise 9. Answer the following questions.

1. What does PAN stand for? 2. What is a network protocol? 3. How do you log on to an Internet Service Provider? 4. WiMAX is a type of wireless network. What is it used for? 5. What equipment do you need to set up a wireless LAN? 6. What are the main types of wireless networks?

Exercise 10. Discussion.

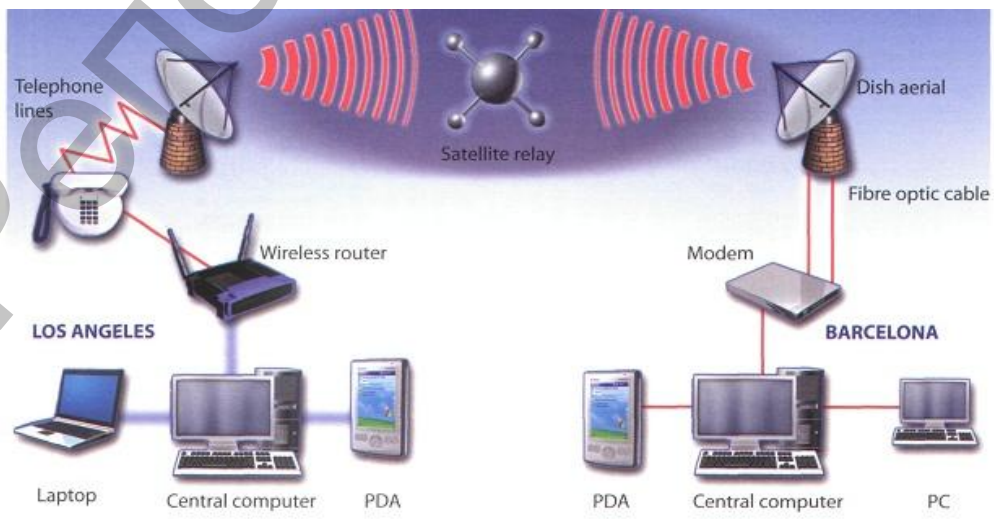
a) Speak on the advantages and disadvantages of wireless networks.

b) A network administrator has set up a new network in a school. Which topology has he chosen?

We have decided to install computers in all the departments but we haven't spent a lot of money on them. Actually, only the one in the staff room is really powerful (and expensive!). They all have common access to the Net and share a laser printer. The teachers in this school have built up a general file of resources kept in the main computer to which all the others in the network have access.

c) Prepare the description of the network below to present to the rest of the group. You may use the following phrases:

The diagram represents/shows… *This network is made up of/consists of …* *Two networks are connected via …* *The computers are linked up to …*	*The satellite receives signals from …* *The signals are sent on to …* *The purpose of … is to …*



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SELF-CHECK

Translate the article from Russian into English using active vocabulary. Render the article.

Компьютерная система

Компьютерная система представляет собой совокупность компонентов, которые работают вместе, чтобы обработать данные. Цель компьютерной системы состоит в том, чтобы сделать это настолько легким насколько возможно для вашего пользования компьютером, чтобы решать задачи. Функционирующая компьютерная система сочетает в себе элементы аппаратных средств с элементами программного обеспечения. Элементы аппаратных средств - механические устройства в системе, машинах и электронике, которая выполняет физические функции.

Элементы программного обеспечения - программы, написанные для системы; эти программы выполняют логические и математические операции и вас средствами для управления системой. Документация включает руководства и списки, которые говорят вам, как использовать аппаратные средства и программное обеспечение.

В совокупности эти компоненты обеспечивают компьютерную систему в целом: аппаратные средства системы + программное обеспечение системы + документация системы = компьютерная система. Как правило, компьютерная система требует эти основные пункты комплекта оборудования: компьютер, который выполняет всю обработку данных; терминал, используемый как пишущая машинка для двухсторонней коммуникации между пользователем и системой; и носитель информации для того, чтобы хранить программы и данные.

Программное обеспечение системы представляет собой организованный набор поставляемых программ, которые эффективно преобразовывают компоненты аппаратных средств системы в используемые инструменты. Эти программы включают в себя операции, функции и процедуры, которые облегчают для вас использование аппаратных средств, чтобы решить проблемы и произвести результаты.

Например, некоторые системные программы хранения и извлечения данных между различными периферийными устройствами. Другие выполняют сложные или длительные математические расчеты. Некоторые программы позволяют вам создавать, редактировать и обрабатывать собственные прикладные программы. Программное обеспечение системы всегда включает в себя операционные системы, которые являются "интеллектом" компьютерной системы.

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