



Technical English for Beginners



**УЧЕБНО-МЕТОДИЧЕСКОЕ
ПОСОБИЕ**

Technical for English Beginners

Технический английский для начинающих

Учебно-методическое пособие
для студентов I курса
факультета прикладной
математики и информатики

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Составители:

**С. К. Видишева, Л. А. Кибальник,
Л. Н. Соболевская, С. А. Стаханова**

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Рецензенты:

зав. кафедрой иностранных языков БГТУ
кандидат филологических наук, доцент *А. В. Посох*;
доцент кафедры английского языка гуманитарных факультетов БГУ
кандидат филологических наук *Н. И. Князева*

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Учебно-методическое пособие предназначено для студентов факультета
прикладной математики и информатики и может быть использовано для
аудиторных занятий, а также для самостоятельной работы студентов.

Данное пособие разработано для студентов начинающего и среднего
уровней.

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ПРЕДИСЛОВИЕ

Цель пособия – изучение компьютерной лексики на английском языке, употребление компьютерных терминов в речи, а также чтение и перевод технической документации и литературы. Данное пособие разработано для студентов факультета прикладной математики и информатики начинающего и среднего уровней.

Пособие состоит из 23 разделов (юнитов), содержащих широкий ряд тем – от применения компьютеров и интернета до новейших технологий в этой области.

Каждый раздел включает тексты с упражнениями на тренировку и закрепление лексики, а также даются наиболее употребляемые устойчивые выражения в речи, некоторые грамматические аспекты и пояснения к ним. Содержатся упражнения на перевод, что стимулирует запоминание технической лексики. Кроме того, в пособие включен аудиоматериал, что тоже позволяет студентам интенсивнее работать.

Пособие отвечает современным требованиям образования и рекомендуется для использования на факультете прикладной математики и информатики.

UNIT 1

COMPUTER APPLICATIONS

READING MATERIAL

TEXT A

Task. a) Tick the computer uses mentioned in the following article.

home	art
hospital	banking
engineering	libraries
shopping	film-making
television advertising	schools

b) Read the text, translate it and get ready to do the exercises after the text.

Computers in everyday life

Computers are part of our everyday lives. They have an effect on almost everything you do. When you buy groceries at a supermarket, a computer is used with laser and barcode technology to scan the price of each item and present a total. Barcoding items (clothes, food, and books) requires a computer to generate the barcode labels and maintain the graphics produced by a computer. In hospitals, bedside terminals connected to the hospital's main computer allow doctors to type in orders for blood tests and to schedule operations. Banks use computers to look after their customers' money. In libraries and bookshops, computers can help you to find the book you want as quickly as possible.

Computers can help students perform mathematical operations and solve difficult questions. They can be used to access the Internet, teach courses such as computer-aided design, language learning, programming, mathematics, etc.

PCs (personal computers) are also used for administrative purposes: for example, schools use databases and word processors to keep records of students, teachers and materials.

Airline pilots use computers to help them control the plane. For example, monitors display data about fuel consumption and weather conditions.

In airport control towers, computers are used to manage radar systems and regulate air traffic.

On the ground, airlines are connected to travel agencies by computer. Travel agents use computers to find out about the availability of flights, prices, times, and many other details.

Ex. 1. a) Match the places in column A with the computer uses in column B.

A	B
banks	control machines
factories	calculate the bill
homes	look after patient records and medicines
hospitals	provide entertainment and information
shops	control our money

b) Now fill in the gaps in this paragraph about computer uses.

Computers are now part of our everyday life. In shops, they In factories, they In ... , they look after patient records and medicines. When we have a bank account, a computer In our homes, computers

Language work: Articles

Ex. 1. a) Study these nouns: a supermarket, technology, a computer, money.

Supermarket and *computer* are countable nouns. We say *supermarket* and *supermarkets*.

Technology and *money* are uncountable nouns. They have no plural and you cannot use them with *a* or *an*.

b) Study this paragraph.

Computers have many uses. In shops a computer scans the price of each item. Then the computer calculates the total cost of all the items.

We use a plural noun with no article, or an uncountable noun, when we talk about things in general.

Computers have many uses.

Information technology is popular.

We use a/an when we mention a countable noun for the first time.

In shops a computer scans the price of each item.

When we mention the same noun again, we use the.

The computer calculates the total cost.

We use the with countable and uncountable nouns to refer to specific things.

The speed of this computer.

1. capacity	4. disk	7. monitor	10. speed
2. data	5. drive	8. mouse	
3. device	6. memory	9. software	

How do you say ... ?

electrical engineer, secretary, librarian, composer

<i>Speaker</i>	<i>Job</i>	<i>What they use computers for</i>
1		
2		
3		
4		

6

TEXT B

Task. a) Write a list of as many uses of the computer, or computer applications, as you can think of.

b) Now read the text below and underline any applications that are not in your list.

What can computers do?

Computers and microchips have become part of our everyday lives; we visit shops and offices, which have been designed with the help of computers, we read magazines which have been produced on computer, we pay bills prepared by computers. Just picking up a telephone and dialling a number involves the use of a sophisticated computer system, as does making a flight reservation or bank transaction.

We encounter daily many computers (e.g. calculators, the car's electronic ignition, the timer in the microwave, or the programmer inside the TV set), all of which use chip technology.

What makes your computer such a miraculous device? Each time you turn it on, it is capable of doing anything you ask. It is a calculating machine that speeds up financial calculations. It is an electronic filing cabinet which manages large collections of data such as customers' lists, accounts, or inventories. It is a magical typewriter that allows you to type and print any kind of document – letters, memos or legal documents. It is a personal communicator that enables you to interact with other computers and with people around the world. If you like gadgets and electronic entertainment, you can even use your PC to relax with computer games.

Language work: The Present Simple Passive

Ex. 1. a) You form the present simple passive with am/is/are + past participle, e.g.:

- *This program **is written** in a special computer language.*
- *Programs and data **are usually stored** on disks.*

Remember that the word data takes a singular verb (3rd person singular) when it refers to the information operated on in a computer program.

- *The data **is** ready for processing.*

b) Fill in the blanks with the correct form of the verbs in brackets.

Example *Houses (design) ... with the help of computers.*
 Houses are designed with the help of computers.

1. Various terminals (connect) ... to this workstation.
2. Microcomputers (know) ... as “PCs”.
3. Magazines (typeset) ... by computers.
4. When a particular program is run, the data (process) ... by the computer very rapidly.
5. The Web (use) ... to search for information and buy products online.
6. The drug-detecting test in the Tour de France (support) ... by computers.
7. All the activities of the computer system (coordinate) ... by the central processing unit.
8. In some modem systems information (hold) ... in optical disks.

c) Rewrite these sentences in the passive.

1. They use computers in education.
2. We use financial software to make calculations.
3. They write and edit the newspaper on PCs and Macintosh computers.
4. They use different data communications systems – fax machines, e-mail, etc. – to communicate with newspaper correspondents.
5. They convert files into HTML code and display them on the Web.
6. Epson ink-jet and laser printers print black-and-white proofs.
7. Compatible word processors type and edit the text.
8. They don't transmit data from handheld computers to desktop PCs and peripherals.
9. A computer accepts, processes, stores and outputs information.

TEXT C

Task. Read the text, translate it and get ready to do the exercises after the text.

Living with computers

a) Computers: friend ...

People who have grown up with PCs and microchips are often called the digital generation. This is how some people answered when questioned about the use of computers in their lives.

1. I have a GPS, Global Positioning System fitted in my car. With this navigation system I never get lost. And the DVD recorder is perfect for my children's entertainment.
2. I use an interactive whiteboard, like a large touchscreen monitor, at school. I find computers very useful in education.

3. Assistive technology, for people with disabilities, has helped me a lot. I can hardly see, so I use a screen reader, a program that reads aloud onscreen text, menus and icons.
4. This new HMD, head-mounted display, allows me to watch films, and enjoy virtual reality, the artificial environment of the latest video games.
5. The upgraded wireless network at my university is great: we can connect our laptops, PDAs, and Wi-Fi cell phones to the network anywhere in the campus. Communication is becoming easier and easier.

b) ... or foe?

1. Our society has developed technological dependence. When computers are down, our way of life breaks down: planes stop flying, telephones don't work, banks have to close.
2. Computers produce electronic waste, plastic cases and microchips that are not biodegradable and have to be recycled or just thrown away.
3. They are responsible for health problems, e.g. computer addiction, an inappropriate and excessive use of computers.
4. Cybercrime, crime committed with the help of computers, is creating serious problems.
5. Citizens may feel a loss of privacy because of unauthorized use of personal data or receiving unwanted electronic messages.

c) Things we can do on the computer.

A secretary: "I use computers to do the usual office things like write letters and faxes, but what I find really useful is email. We are an international company and I send emails to our offices all over the world."

A publisher: "We use PCs to produce all sorts of texts in digital format. We publish e-books (electronic books) and interactive e-learning programs on CD, and we help local company to design an online newspaper, displayed on the Web."

A bank manager: "We use financial software to make calculations and then generate graphs or charts. We also use a database to store information so that it can be easily searched."

A home user: "I like to retouch photos on my computer; I improve them by making a few touches and then save them on a CD. I also enjoy looking at music portals on the Web. I surf the Web every day and I often download files. I copy music files from the Net to my PC."

Ex. 1. Complete these sentences with words from text 'a'.

1. The ... is a piece of software that interfaces with your PC and allows you, via keyboard commands, to get any text information read to you in synthetic speech.

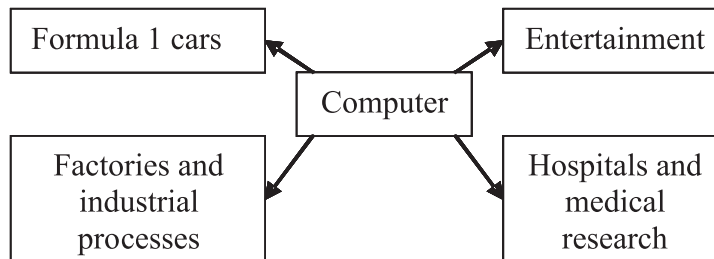
2. A ... , as popularized by virtual reality, lets the user immerse him/herself in a synthetically generated environment.
3. An ... is a touch-sensitive device where a special pen or your finger can act as a mouse.
4. Tony Adams is now the proud owner of a dark silver Vogue, complete with leather interior, ... navigation, and a ... with LCD TV screens.

Ex. 2. Read text 'b'. What problem do these sentences refer to?

1. We are sorry to announce that most flights are delayed or cancelled.
2. He should go to a psychologist. He spends hours surfing the Web.
3. Technology changes so quickly that we have to scrap computers when they become obsolete.
4. I've been getting emails about offers for lots of different products.
5. My computer system has been broken into and some useful information has been destroyed.

Other applications

Ex. 1. In small groups, choose one of the areas in the diagram below and discuss what computers can do in this area.



Useful words

Formula 1: *racing car, car body, design, mechanical parts, electronic components, engine speed*

Entertainment: *game, music, animated image, multimedia, encyclopedia*

Factories: *machinery, robot, production line, computer-aided manufacturing software*

Hospitals: *patients, medical personnel, database program, records, scanner, diagnose, disease, robot, surgery*

Useful constructions

Computers are used to ...

A PC can also be used for...

Computers can help ... make ... control... store ... keep ... provide ... manage ... give ... perform ... measure ... test... provide access to ...

Ex. 2. Now write a short paragraph summarizing your discussion. Then ask one person from your group to give a summary of the group's ideas to the rest of the class.

Examples In business, computers are used for financial planning, accounting and specific calculations.

In the office, computers are used to write letters and e-mails, and keep records of clients, suppliers and employees.

UNIT 2

COMPUTER ESSENTIALS

READING MATERIAL

TEXT A

Task. a) In pairs, discuss the elements of a simple computer system.

b) Read the text, translate it and get ready to do the exercises after the text.

What is a computer?

Computers are electronic machines which can accept data in a certain form, process the data and give the results of the processing in a specified format as information.

Three basic steps are involved in the process. First, data is fed into the computer's memory. Then, when the program is run, the computer performs a set of instructions and processes the data. Finally, we can see the results (the output) on the screen or in printed form.

Information in the form of data and programs is known as software, and the electronic and mechanical parts that make up a computer system are called hardware. A standard computer system consists of three main sections: the central processing Unit (CPU), the main memory and the peripherals.

Perhaps the most influential component is the central processing unit. Its function is to execute program instructions and coordinate the activities of all the other units. In a way, it is the 'brain' of the computer. The main memory holds the instructions and data which are currently being processed by the CPU. It has two main sections: RAM (random access memory) and ROM (read only memory). The peripherals are the physical units attached to the computer. They include storage devices and input/output devices.

Storage devices (floppy, hard or optical disks) provide a permanent storage of both data and programs. Disk drives are used to handle one or more floppy disks. Input devices enable data to go into the computer's memory. The most common input devices are the mouse and the keyboard. Output devices enable us to extract the finished product from the system. For example, the computer shows the output on the monitor or prints the results onto paper by means of a printer.

On the rear panel of the computer there are several ports into which we can plug a wide range of peripherals – modems, fax machines, optical drives and scanners.

These are the main physical units of a computer system, generally known as the configuration

Ex. 1. Use the information in the text to help you match the terms in the box with the appropriate explanation or definition below.

a. software	1. The brain of the computer.
b. peripheral devices	2. Physical parts that make up a computer system.
c. monitor	3. Programs which can be used on a particular computer system.
d. floppy disk	4. The information which is presented to the computer.
e. hardware	5. Results produced by a computer.
f. input	6. Hardware equipment attached to the CPU.
g. port	7. Visual display unit.
h. output	8. Small device used to store information. Same as "diskette".
i. central processing unit	9. Any socket or channel in a computer system into which an input/output device may be connected.
j. speaker	10. A device used to produce voice output and play back music.
k. CD/DVD drive	11. Mechanism that reads and/or writes to optical discs.

Ex. 2. Read these slogans or quotations, and say what computer element they refer to.

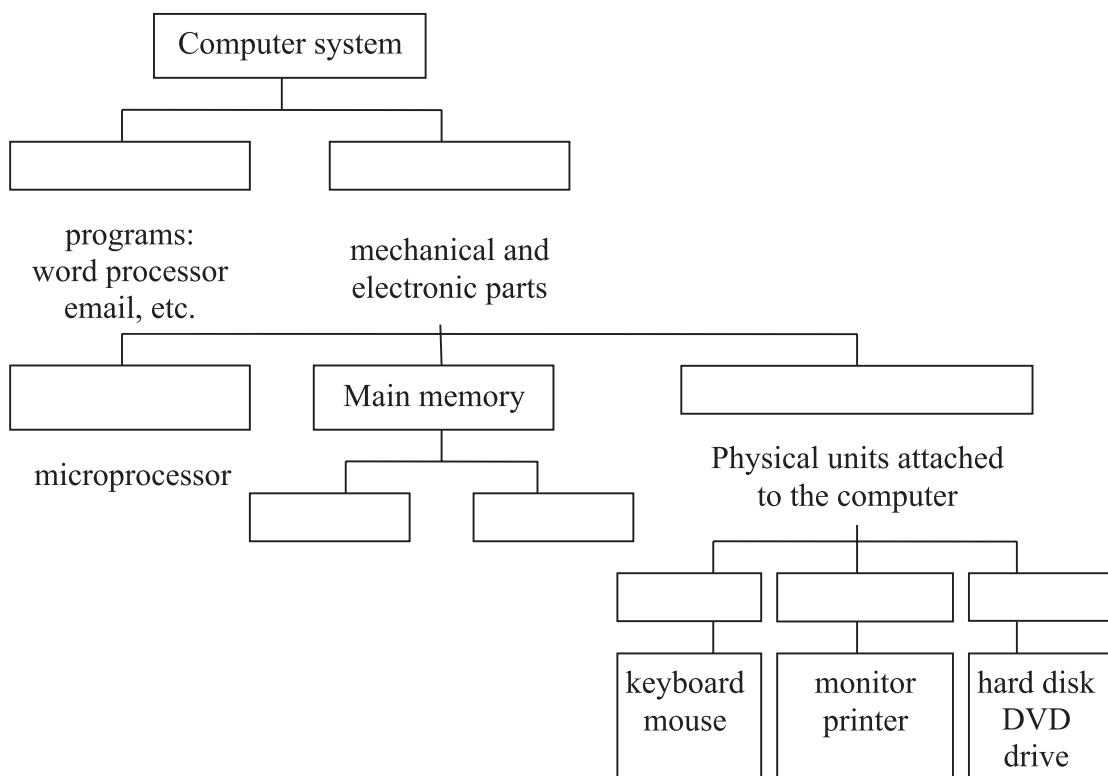
- "Point and click here for power."
 - "Right click to display a context-sensitive menu."
- "Displays your ideas with perfect brilliance."
 - "See the difference – sharp images and a fantastic range of colours."
- "I love this drive. It's quiet and fast."
 - "With this it's easy to back up your data before it's too late."
- "Power and speed on the inside."
 - "Let your computer's brain do the work."

5. a) ... a big impact on the production of text and graphics.”
b) “This will produce high-quality output, with sharp text and impressive graphics.”
6. a) “Press any key to continue.”
b) They consist of flexible plastic material.

Ex. 3. Answer these questions.

1. Have you got a computer at home, school or work? What kind is it?
2. How often do you use it? What do you use it for?
3. What are the main components and features (the configuration) of your computer system?

Ex. 4. Label this diagram with the correct terms.



Ex. 5. Complete the sentences below with the following words: storage, output, input, processing.

1. Computer ... is the visible or audible result of data processing – information that can be read, printed or heard by the user.
2. The CPU will process data as instructed by the programs you’re running. ... includes functions like calculating, sorting, editing, drawing and searching.
3. DVDs are expected to replace CDs as ... devices.
4. As a scanner, the Sigma-100 can be used to ... photographs as well as documents into the computer.

UNIT 3

TYPES OF COMPUTER SYSTEM

READING MATERIAL

TEXT A

Task. a) Study in the table the details of different types of computer.

b) Find the answers to these questions. Which type of computer is:

1. The most common?
2. Small enough for a pocket?
3. The most common portable?
4. Used by many people at the same time
5. Used like mainframes?
6. Also called a handheld computer?
7. The most powerful?
8. Not suitable for a lot of typing?

Types of computer	Notes
Mainframes	Large, powerful, expensive. Multi-user systems – used by many people at the same time. Used for processing very large amounts of data. The most powerful mainframes are called supercomputers.
Minicomputers	Used like mainframes. Not as big, powerful, or expensive as mainframes. Less common now because microcomputers have improved.
Microcomputers or Personal computers (PCs)	The most common type of computer. Smaller, cheaper, and less powerful than mainframes and minicomputers.
Types of portable	Notes
Laptop	About the size of a small typewriter. Less common now because smaller and lighter portables are available.
Notebook	About the size of a piece of writing paper. The most common type of portable.
Subnotebook	Not quite as big as notebooks. Can fit into a jacket pocket.
Handheld or Palmtop	Small enough to fit into the palm of one hand. Not easy to type with because of their size. Often used as personal organizers.

c) Who uses these types of computer? Where do they use them? Make a list.

From mainframes to wearable computers

A mainframe is the most powerful type of computer. It can process and store large amounts of data. It supports multiple users at the same time and can support more simultaneous processes than a PC. The central system is a large server connected to hundreds of terminals over a network. Mainframes are used for large-scale computing purposes in banks, big companies and universities.

A desktop PC has its own processing unit (or CPU), monitor and keyboard. It is used as a personal computer in the home or as a workstation for group work. Typical examples are the IBM PC and the Apple Macintosh. It's designed to be placed on your desk. Some models have a vertical case called a tower.

A laptop (also called a notebook PC) is a lightweight computer that you can transport easily. It can work as fast as a desktop PC, with similar processors, memory capacity, and disk drives, but it is portable and has smaller screen. Modern notebooks have a TFT (Thin Film Transistor) screen that produces very sharp images.

Instead of a mouse, they have a touchpad built into the keyboard – a sensitive pad that you can touch to move the pointer on the screen.

They offer a lot of connectivity options: USB (Universal Serial Bus) ports for connecting peripherals, slots for memory cards, etc.

They come with battery packs, which let you use the computer when there are no electrical outlets available.

A tablet PC looks like a book, with an LCD screen on which you can write using a special digital pen. You can fold and rotate the screen 180 degrees. Your handwriting can be recognized and converted into editable text. You can also type at the detached keyboard or use voice recognition. It's mobile and versatile.

A personal digital assistant or PDA is a tiny computer which can be held in one hand. The term PDA refers to a wide variety of hand-held devices, palmtops and pocket PCs.

For input, you type at a small keyboard or use a stylus – a special pen used with a touch screen to select items, draw pictures, etc. Some models incorporate handwriting recognition, which enables a PDA to recognize characters written by hand. Some PDAs recognize spoken words by using voice recognition software.

They can be used as mobile phones or as personal organizers for storing notes, reminders and addresses. They also let you access the Internet via wireless technology, without cables.

A wearable computer runs on batteries and is worn on the user's body, e.g. on a belt, backpack or vest; it is designed for mobile or hands-free operation. Some devices are equipped with a wireless modem, a small keyboard and a screen; others are voice-activated and can access email or voice mail.

Ex. 1. Look at the text. Which type of computer do these descriptions refer to?

1. a hand-held computer which can be used as a telephone, a web explorer and a personal organizer
2. a typical computer found in many businesses and popular for home use
3. a large computer used for intensive data processing and often linked to many terminals
4. a small computer that fits into items of clothing
5. a portable computer that can be closed up like a briefcase, but it can be as powerful as a desktop PC
6. a full-function PC, though it only weighs 1.2 kg – you can go to a meeting and write your notes on it, like a paper notepad; its screen mode can be changed from portrait to landscape

Ex. 2. Look at the computer advertisement below and find this information.

1. What type of computer is advertised?
2. What kind of screen does it have?
3. Which pointing device replaces the mouse?
4. What type of ports does it have for connecting cameras and music players?
5. What sort of power supply does it use?

Toshiba Satellite
<ul style="list-style-type: none"> • Intel Centrino processor • 1,024 MB RAM, 100 GB hard disk drive • DVD SuperMulti (+/-R double layer) drive • 15.4» widescreen TFT active-matrix LCD display • 85-key keyboard and touchpad • 2 memory slots, 1 PC Card or PCMCIA slot • Wireless communications: Wi-Fi compliancy and Bluetooth • USB ports for connecting peripherals: digital camera, MP3 player, modem, etc. • 6-cell rechargeable Lithium-ion battery pack

Ex. 3. Read this interview with Adam Hawkins, an IT manager, and complete it with words from the PDA section of the text.

Interviewer: What are the basic features of a PDA?

Adam: Well, a typical PDA is a (1) ... device that runs on batteries and combines computing, phone and Net capabilities.

Interviewer: And how do you enter information?

Adam: For input, you use a (2) ... or pen to write and make selections on a (3) ...; they also have buttons for launching programs. Some models have a small keyboard. They may have a (4) ... system that reacts to the user's voice.

Interviewer: Do they need special software?

Adam: Yes, most of them run on Windows Mobile. Palmtops supported by Palm Inc. use Palm OS. Pen-based systems include (5) ..., so you write on the screen and the computer recognizes your handwriting and inserts the appropriate letters.

Interviewer: What sort of things can you do with a PDA?

Adam: You can store personal information, take notes, draw diagrams and make calculations. Many PDAs can access the Net via (6) ... technology.

Ex. 4. a) Write down two benefits and two limitations of PDAs.

b) Explain in a paragraph how laptops can be beneficial to business people.

c) Write three examples of how tablet PCs can be used in the classroom.

Language work: Comparison

Ex. 1. Study this comparison of three types of computer.

	Mainframes	Minicomputers	Microcomputers
Size	+ + +	+ +	+
Power	+ + +	+ +	+
Cost	+ + +	+ +	+

1. We compare things using adjectives in two ways.
We can compare one type of computer with another.
Minicomputers *are bigger than* microcomputers.
Mainframes *are more expensive than* microcomputers.

For negative comparisons, we can say:

Microcomputers *are not as big as* minicomputers.

Microcomputers *are not as powerful as* mainframes.

2. We can compare mainframes to all other types of computer.

Mainframes *are the biggest* computers.

Mainframes *are the most powerful* computers.

Mainframes *are the most expensive* computers.

With short adjectives (big, small, fast), we add *-er* and *-est* (faster, fastest).

With longer adjectives (powerful, expensive), we use *more/less* and *the most/the least* before the adjective (more powerful, the most powerful).

Remember these two exceptions:

good – better – the best

bad – worse – the worst

far – farther/further – the farthest/furthest

much/many/a lot of – more – the most

little – less – the least

Ex. 2. Choose the correct adjective. Then fill in the gaps with the correct form of the adjective.

1. **light/heavy** Laptops are ... than desktop computers, but ... than notebooks.
2. **large/small** The mainframe is the ... type of computer. A minicomputer is ... than a microcomputer.
3. **common/good** Personal computers are ... than mainframes but mainframes are ... than personal computers at processing very large amounts of data.
4. **powerful/expensive** Minicomputers are ... than mainframes but they are also
5. **fast/cheap** New computers are ... and sometimes ... than older machines.
6. **powerful/expensive** Laptops are often ... than PCs but they are not as

Aids to communication

Here are some phrases to use when agreeing or disagreeing with someone.

A: (I think) The best computer for a ... is

B: I agree. / I think so too.

C: I disagree. / I don't think so.

Problem-solving

Ex. 1. In pairs, decide what sort of computer is best for each of these users.

1. John Wilmott is a salesperson and he spends a lot of time visiting customers. He wants a computer to carry with him so he can access data about his customers and record his sales.
2. Pal Nye is a personnel officer. She needs a computer to keep staff records and to keep a diary of appointments. She also needs a computer for writing letters.
3. The University of the North needs a computer to look after its accounts, its network, the records of all students and staff, and to help with scientific research.
4. The James family want a computer for entertainment, writing letters, the Internet and for calculating tax.

Writing

Ex. 1. Put the words in brackets into the correct form to make an accurate description of sizes of computers.

There are different types of computer. The (*large*) and (*powerful*) are mainframe computers. Minicomputers are (*small*) than mainframes but are still very powerful. Microcomputers are small enough to sit on a desk. They are the (*common*) type of computer. They are usually (*powerful*) than minicomputers.

Portable computers are (*small*) than desktops. The (*large*) portable is a laptop. (*Small*) portables, about the size of a piece of writing paper, are called notebook computers. Subnotebooks are (*small*) than notebooks. You can hold the (*small*) computers in one hand. They are called handheld computers or palmtop computers.

Language work: Compound Adjectives

Task. a) Find these noun phrases (*battery-powered systems, hands-free operations, waist-mounted computer, head-mounted display, voice-activated device*) in the text and explain their meaning as in the Help box.

Wearable computers, aren't they chic?

Can you imagine wearing a PC on your belt and getting e-mail on your eyeglasses? Wearable computers are battery-powered systems worn on the

user's body – on a belt, backpack or vest and are designed for mobile or hands-free operation, often incorporating a microphone and a head-mounted display.

Some devices are waist-mounted, equipped with a wireless modem, a keypad and a small screen. Others are voice-activated, worn like a scarf and can access e-mail or voice mail.

Users of wearable technology consider themselves 'cyborgs'. This term comes from 'cybernetic organism', referring to a being that is part robot, part human.

Help box

A compound adjective is made up of two parts and usually describes appearance. The second part is frequently a past participle.

e.g. blue-eyed girl = a girl who has got blue eyes

sugar-free product – a product that uses no sugar

A **menu-driven** program lets you select a command from a menu.

A **voice-activated** product is activated by the user's voice.

Object-oriented programming is based on objects and their effects on each other, rather than on a series of instructions.

Other common patterns include:

noun + present participle

Space-saving PCs take up very little desktop space.

noun + **adjective**

A **hands-free** device does not require the hands for operation.

A **stand-alone** computer or business can operate on its own.

b) Complete these sentences with a compound adjective from Help box.

1. A ...–... telephone allows people with limited mobility to dial and answer the phone with just the sound of their voice.
2. A fax machine is a ...–... device, so it does not require any other device to function.
3. A ...–... application is operated by making choices from menus instead of giving instructions on a keyboard.
4. In some countries it is obligatory to use a ...–... car kit when you are using a mobile phone while driving.
5. An ...–... language like C++ lets the programmer concentrate on individual units (e.g. a piece of text, a graphic or a table) and give each object functions which can be changed easily.
6. They've launched a new ...–... computer, an entire PC embedded inside a keyboard.

UNIT 4

INSIDE THE SYSTEM

READING MATERIAL

TEXT A

Task. a) Read the advertisement and translate the technical specifications into your own language.

Ulysses XT

- Pentium 4 microprocessor at 2GHz (2,000 MHz)
- 256 megabytes of RAM, upgradable to 1.5 GB
- 80 GB hard disk
- Comes with Microsoft Windows

b) Try to answer these questions.

1. What is the main function of a microprocessor?
2. What unit of frequency is used to measure processor speed?
3. What does 'RAM' stand for?

c) Read the text, translate it and get ready to do the exercises after the text.

What's inside a PC system?

The nerve centre of a PC is the central processing unit or CPU. This unit is built into a single microprocessor chip – an integrated circuit – which executes program instructions and supervises the computer's overall operation. The unit consists of three main parts:

1) the control unit, which examines the instructions in the user's program, interprets each instruction and causes the circuits and the rest of the components – disk drives, monitor, etc. – to be activated to execute the functions specified;

2) the arithmetic logic unit (ALU), which performs mathematical calculations (+, -, etc.) and logical operations (and, or, etc.);

3) the registers, which are high-speed units of memory used to store and control information. One of these registers is the program counter (PC) which keeps track of the next instruction to be performed in the main memory. Another is the instruction register (IR) which holds the instruction that is currently being executed.

One area where microprocessors differ is in the amount of data – the number of bits – they can work with at a time. There are 16, 32 and 64-bit

processors. The computer's internal architecture is evolving so quickly that the new 64-bit processors are able to address 4 billion times more information than a 32-bit system.

The programs and data which pass through the central processor must be loaded into the main memory (also called the internal memory) in order to be processed. Thus, when the user runs an application, the microprocessor looks for it on secondary storage devices (disks) and transfers a copy of the application into the RAM area. RAM (random access memory) is temporary, i.e. its information is lost when the computer is turned off. The amount of RAM determines the number of programs you can run simultaneously and how fast they operate. It can be expanded by adding extra RAM chips. However, the ROM section (read only memory) is permanent and contains instructions needed by the processor; the BIOS (basic input/output system) uses ROM to control communication with peripherals, e.g. disk drives.

The main circuit board is known as the mother-board. This contains the CPU, the memory chips, expansion slots and controllers for peripherals, connected by internal busses, or paths, that carry electronic signals. For example, the front side bus carries all data that passes from the CPU to other devices.

Most of today's computers have internal expansion slots that allow users to install 45 adapters or expansion boards. Popular adapters include high-resolution graphics boards, memory expansion boards, and internal modems.

The power and performance of a computer is partly determined by the speed of its microprocessor. A clock provides pulses at fixed intervals to measure and synchronize circuits and units. The clock speed is measured in MHz (megahertz) or GHz (gigahertz) and refers to the frequency at which pulses are emitted. For example, a CPU running at 1,600 MHz (1,600 million cycles per second) will enable the computer to handle the most demanding applications.

Ex. 1. Decide if the sentences are true (T) or false (F), and rewrite the false ones to make them true.

1. The CPU directs and coordinates the activities taking place within the computer system.
2. The arithmetic logic unit performs calculations on the data.
3. 32-bit processors can handle more information than 64-bit processors.
4. A chip is an electronic device composed of silicon elements containing a set of integrated circuits.
5. RAM, ROM and secondary storage are the components of the main memory.
6. Information cannot be processed by the microprocessor if it is not loaded into the main memory.

7. 'Permanent' storage of information is provided by RAM (random access memory).
8. The speed of the microprocessor is measured in gigahertz or megahertz. One GHz is equivalent to one thousand MHz. One MHz is equivalent to one million cycles per second.

Ex. 2. Look back in the text and find what the words in bold print refer to.

1. ... **which** executes program instructions and supervises
2. ... the instruction **that** is currently being executed.
3. ... the amount of data – the number of bits – **they** can work with at a time.
4. ... the microprocessor looks for **it** on
5. ... **its** information is lost when the computer is turned off.
6. ... expansion slots **that** allow users to install adapters or expansion boards.

Language work: Relative Clauses

Ex. 1. Look at the Help box and then complete the sentences below with suitable relative pronouns. Give alternative options if possible.

Help box

We can define people or things with a restrictive (defining) clause.

- *The teacher **who** is responsible for the computer centre has just arrived.*
We use the relative pronoun 'who' because it refers to a person. We could also use 'that'
- *The microprocessor is a chip **which** processes the information provided by the software.* We use the relative pronoun 'which' because it refers to a thing, not a person. We could also use 'that'.
- *The computer we saw at the exhibition runs at 2.5 GHz.* Relative pronouns can be left out when they are not the subject of the relative clause.

1. That's the CPU ... I'd like to buy.
2. A co-processor is an extra processor chip ... does calculations at high speed.
3. The microprocessor coordinates the activities ... take place in the computer system.
4. Last night I met someone ... works for GM as a computer programmer.
5. A palmtop is a computer ... is small enough to be held in the palm of one hand.

6. A megahertz is a unit of frequency ... is used to measure processor speed.
7. Here's the DVD .. you lent me!

Vocabulary quiz

Ex. 1. In groups of three, write answers to these questions. The winners are the group that answers the most questions correctly in four minutes.

1. What are the main parts of the CPU?
2. What is RAM?
3. What memory section is permanent and contains instructions needed by the CPU?
4. What information is lost when the computer is switched off?
5. What is the typical unit used to measure RAM memory and storage memory?
6. What is the meaning of the acronym SIMM?
7. What is a megahertz?
8. What is the ALU? What does it do?
9. What is the abbreviation for 'binary digit'?
10. How can we store data and programs permanently?

Ex. 2. Fill in the gaps with the necessary word.

chip	dual core	megabytes	megahertz
motherboard	processor	speed	upgraded

Processors and memory

The «brain» of a computer is the Most of these are made by Intel and AMD, and *are* sometimes referred to as "...". The fastest processors are ... which means that there are two processors working together. The ... of a processor is measured in ... which is usually written as MHz.

A computer's memory is measured in If a computer has 1,024 megabytes of memory. and the memory type is SDRAM, this is written as 1,024 MB SDRAM, and is pronounced "a thousand and twenty-four megabytes ess-dee-dram".

The processor and memory modules are located on the Changing a computer's processor is not generally practical, but the memory can usually be

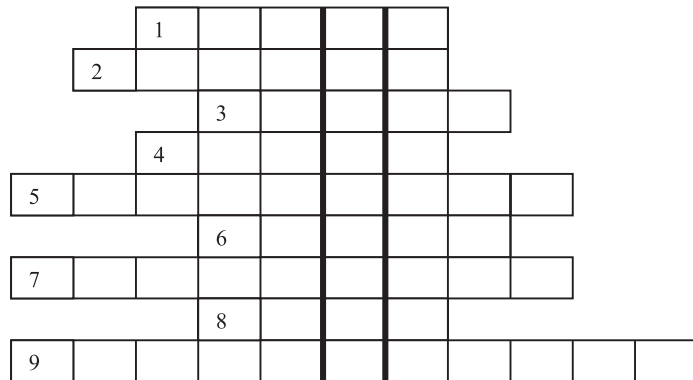
Ex. 3. Match the sentence beginnings (1–6) with the correct endings (a–f).

1. The CPU processes data and	a. Areas within the CPU.
2. The control unit is the part of the CPU that	b. you can't make changes to it.
3. The arithmetic and logic unit is able to make	c. controls the way instructions are executed
4. The registers are high-speed storage	d. the computer is turned off.
5. Data contained in RAM is lost when the computer	e. coordinates the other parts of the computer
6. ROM memory can only be read:	f. calculations: add, subtract; multiply and divide.

Ex. 4. Solve the clues and complete the puzzle with words from the opposite page.

Across

- Intel ... are used in many computers.
- Each 0 or 1 is called a bit, short for ... digit.
- Special cards can be inserted into expansion
- A ... controls the timing within the PC by sending signals to synchronize its circuits and operations.
- The processor speed is measured in ...
- ... carry signals to between different parts of a PC.
- ... cards improve the computer's performance.
- The ... uses ROM to control the input/output of data.
- The main printed circuit board is called the



Down: The brain of a computer.

Your ideal computer system

Task 1. Make notes about the features of the computer that you would like to have.

CPU:.....
 Speed:
 Optical disk drives:.....
 Minimum/maximum RAM;.....
 Monitor:.....
 Hard disk:.....
 Software:.....

Task 2. Now describe it to your partner.

Useful expressions

It has got ...

It's very fast It runs at ...

The standard RAM memory ... and it is expandable ...

The hard disk can hold ...

I need a SuperVGA monitor because ...

As for the Internet ...

UNIT 5

UNITS OF MEMORY

READING MATERIAL

TEXT A

Task. a) With a partner, try to answer these questions.

1. How many digits does a binary system use? What is a 'bit'?
2. What is the difference between binary notation and the decimal system?
Give some examples.
3. What is a collection of eight bits called?
4. One kilobyte (1K) equals 1,024 bytes.
5. Can you work out the value of these units? {kilo-: one thousand}
1 megabyte = bytes/1,024 kilobytes (mega-: one million)
1 gigabyte = bytes/1,024 megabytes (giga-: one thousand million)
6. What does the acronym 'ASCII' stand for? What is the purpose of this code?

b) Now read the text to check your answers or to find the correct answer.

Bits – basic units of memory

Information is processed and stored in computers as electrical signals. A computer contains thousands of electronic circuits connected by switches that can only be in one of two possible states: ON (the current is flowing through the wire) or OFF (the current is not flowing through the wire). To represent

these two conditions we use binary notation in which 1 means ON and 0 means OFF. This is the only way a computer can ‘understand’ anything. Everything about computers is based upon this binary process. Each 1 or 0 is called a binary digit or bit.

Bytes and characters

1s and 0s are grouped into eight-digit codes that typically represent characters (letters, numbers and symbols). Eight bits together are called a byte. Thus, each character in a keyboard has its own arrangement of eight bits. For example, 01000001 for the letter A, 01000010 for B and 01000011 for C.

The ASCII code

The majority of computers use a standard system for the binary representation of characters. This is the American Standard Code for Information Interchange, known popularly as ‘ASCII’ (pronounced ‘ask-key’). There are 256 different ways of combining 0 and 1 bits in a byte. So they can give us 256 different signals. However, the ASCII code only uses 128 bytes to represent characters. The rest of the bytes are used for other purposes.

The first 32 codes are reserved for characters such as the Return key, Tab, Escape, etc. Each letter of the alphabet, and many symbols (such as punctuation marks), as well as the ten numbers, have ASCII representations. What makes this system powerful is that these codes are standard.

Kilobytes, megabytes and gigabytes

In order to avoid astronomical figures and sums in the calculation of bytes, we use units such as kilobytes, megabytes and gigabytes. One kilobyte is 1,024 bytes (2^{10}) and it is represented as KB, or more informally as K, One megabyte is equivalent to 1,024 KB, and one gigabyte is 1,024 MB.

We use these units (KB, MB, GB) to describe the RAM memory, the storage capacity of disks and the size of any application or document.

Ex. 1. Fill in the blanks with the correct unit of memory.

1. One ... represents one character.
2. One ... represents 1,024 characters (about a small page of text).
3. One ... represents 1,000,000 characters (about the text of the book).
4. One ... represents 1,000,000,000 characters (about 1,000 books in a library).

Word building

Ex. 1. *The table gives some prefixes commonly used in computer science. Knowing the meaning of these prefixes will help you understand new words.*

<i>Prefix</i>	<i>Meaning</i>	<i>Examples</i>
deci-	Ten	<i>decimal, decimalize, decibel</i>
hexadeci-	sixteen	<i>hexadecimal</i>
kilo-	one thousand (1,000) (1,024 in binary: 2^{10})	<i>kilocycle, kilogram(me), kilowatt</i>
mega-	large; one million	<i>megahertz, megalith, megaton</i>
giga-	very large; one thousand million	<i>gigantic, gigabyte, gigahertz</i>
mini-	small	<i>minibus, minimum, minimize</i>
micro-	very small	<i>microfilm, microphone, microwave</i>
bi-	two	<i>bidirectional, bidimensional, binary</i>
tri-	three	<i>tripartite, tricycle, trilingual</i>
multi-	many	<i>multi-racial, multi-user, multitasking</i>
mono-	one	<i>monologue, monosyllable, monolingual</i>

Ex. 2. *Explain these expressions, taking into account the prefixes and root word.*

Example. The binary system is a notation which uses two digits, 0 and 1.

1. a minicomputer
2. a microcomputer
3. the decimal system
4. the hexadecimal system
5. a multi-user configuration
6. a bidimensional chessboard
7. a tricycle
8. a monochrome computer
9. a CPU with 256 MB of RAM
10. a document of 3 kilobytes

TEXT B

Task. a) *Did you know that...*

1. Bits can also be used to code pictures?
2. The information displayed on the computer screen corresponds, dot by dot, with bits held in the main memory?

3. On colour systems, if you have 8 bits per primary colour, the palette of your computer can obtain 16.7 million colours?

b) Read the text and study the diagram.

Bits for pictures

Each tiny dot on the screen of a computer is called a picture element or pixel. Images and text are formed by combining a large number of pixels.

In a bit-mapped display, the dots displayed on the screen correspond, pixel by pixel, with bits in the main memory of the computer. The bits are held in an area of the memory called the 'refresh buffer' and are stored in groups that represent the horizontal and vertical position of the pixels on the screen and whether the pixels are on or off.

On monochrome systems, one bit in this 'map' represents one pixel on the screen and can be either 'on' or 'off' (black or white).

On colour systems, each pixel is a certain combination of the three primary colours: red, green and blue. The total number of colours which can be shown on the screen is called the colour palette. The size of this palette depends on the graphics adaptor, a separate video card that converts the bits into visual signals. A graphics adaptor with 1 bit per primary colour can generate up to 8, or 2^3 , colours, as you can see from the table on page 19. A graphics adaptor with 8 bits per primary colour can generate 16.7 million or $(2^3)^8$ colours.

<i>Colour</i>	<i>Red</i>	<i>Green</i>	<i>Blue</i>
Black	0	0	0
Blue	0	0	1
Green	0	1	0
Cyan	0	1	1
Red	1	0	0
Magenta	1	0	1
Yellow	1	1	0
White	1	1	1

(One bit per primary colour.)

Ex. 1. Using the information in the passage and the illustrations, match the terms in the box with the appropriate explanation or definition.

a) pixel; b) bit; c) bit-mapped display; d) primary colours; e) palette.

1. The menu of colours available on a graphics system; its size depends on the hardware.
2. Red, green and blue (RGB) in computers.
3. The smallest element of a display surface.
4. A display on the screen which corresponds, pixel by pixel, with bits stored in memory cells.
5. The acronym for 'binary digit'; one of the digits (0 and 1) used in binary notation.

Ex. 2. a) Translate the last paragraph (starting from 'On colour systems, ...') into your language.

b) Do you understand the calculations made to obtain a palette of 16.7 million colours? (If you don't, ask a partner to explain them to you.)

Ex. 3. Translate these sentences into Russian.

1. Computer images can be black and white (monochrome), grayscale (полутоновый), or full-coloured pictures, depending on your equipment and software used.
2. The resolution and the number of colours in the file greatly affect file size; the quality and size of the image therefore depend on the computer's memory and disk space.
3. Data-generated graphics are bit-mapped images produced by a program using numeric information.
4. The data usually comes from spreadsheets but can also come from databases, text files, and direct input. The graphs and charts produced by data-generated software include maps, flowcharts (блок-схемы), and weather-forecasting graphics.

Ex. 4. Translate these sentences into English.

1. Все числа внутри компьютера представляются с помощью нулей и единиц.
2. Иными словами, компьютеры обычно работают в двоичной системе.
3. Единицей информации в компьютере является один бит, т. е. двоичный разряд, который может принимать значение 0 и 1.
4. Восемь последовательных битов составляют байт.
5. В одном байте можно закодировать значение одного символа из 256 возможных.
6. Более крупными единицами информации являются килобайт, мегабайт, гигабайт.

7. Для примера скажем, что если на странице текста помещается 2500 знаков, то 1 Мбайт – это примерно 400 страниц, а 1 Гбайт – 400 000 страниц.
8. В компьютерной литературе при описании обрабатываемых компьютером данных часто используют шестнадцатеричную систему счисления.
9. Она удобна тем, что очень просто соотносится с двоичной системой.
10. Одна шестнадцатеричная цифра соответствует четырем двоичным разрядам.

Buying a computer

Ex. 1. Read the descriptions of the four people and the four computers below. With a partner, choose the most suitable computer for each person. Give reasons for your choices.

1. Daniel is a history student. He needs a computer to write essays, assignments and letters. He likes surfing the web.
2. Sarah is the manager of an advertising company. She needs a powerful system which will work with optical disks and multimedia applications, integrating text and pictures with animation and voice annotations. Digitized images and sound occupy a lot of disk space.
3. Andy is a CAD engineer. His job involves computer-aided design, simulations and three-dimensional modelling. These applications require a lot of memory and a large drive.
4. Tanya is a sales representative. She needs a lightweight machine with which she can process orders and communicate with head office while she is on the road.

a) Sun workstation

- 900 MHz UltraSPARC processor
- Multiprocessor machine (expandable to two CPUs)
- 8-GB RAM capacity
- 72-GB internal hard drive
- DVD-ROM
- Supports several graphics formats
- Lets you attach any peripherals and link up to any network
- Allows you to handle your toughest technical, scientific, and business-critical applications
- Requires Solaris Operating system
- £5,049

b) Compaq Presario PC

- 500 MHz Pentium III processor
- 128 MB of RAM expandable to 384 MB
- 19 GB Quantum Bigfoot hard disk
- Built-in Zip drive
- DVD-ROM drive
- JBC speakers, Dolby Digital Surround Sound
- Integrated digital modem
- Windows
- £700

c) Compaq Evo Notebook N200

- Intel's 700 MHz Low Voltage Mobile Pentium III processor
- 192 MB RAM
- 20 GB hard drive
- Optional 1.44 MB diskette drive
- CD-RW, DVD-ROM
- 10.4" colour TFT display, with 1024 x 768 pixel resolution (16 million colours)
- Integrated keyboard, touch pad as pointing device
- Integrated mini-PCI modem
- Lithium-ion battery, with enough battery life for a workday
- Weight: 2.5 pounds
- Dimensions: 25.15 x 19.8x2.11 cm
- Windows comes pre-installed
- £. 1.190

d) Power Mac G4

- PowerPC processor at 933 MHz
- 256 MB of RAM expandable to 1.5 GB
- 2 MB of in-line cache on the processor card
- Graphics card with 64 MB of SDRAM
- 80 GB hard disk
- DVD-R and CD-RW Superdrive
- Comes with Apple monitor, sound board, built-in microphone, and stereo speakers
- Mac OS with QuickTime (an extension that lets you play video and animation on the computer), digital video editing and DVD authoring software
- £ 4,149

Ex. 2. Read the descriptions of these computers again and choose the one that is closest to your ideal. Explain the reason for your choice.

Ex. 3. A friend has written to you asking you to recommend a computer that suits his needs. Write a letter in reply, describing its technical features and saying why you recommend it.

UNIT 6

INPUT DEVICES-1

READING MATERIAL

TEXT A

Task. a) Read the definition of input devices.

Input devices are the pieces of hardware which allow you to enter information into the computer. The most common are the keyboard and the mouse. We can also interact with a computer by using one of these: a light pen, a scanner, a trackball, a graphics tablet, a joystick, a microphone, a webcam, a digital camera, a barcode reader, a touch screen, a touchpad.

b) Look at the list of input devices and say which one you would use for these tasks.

A light pen, a scanner, a joystick, a mouse, a graphics tablet, a barcode reader, a microphone, digital camera.

1. to play computer games;
2. to copy images from paper into a computer;
3. to read price labels in a shop;
4. to select text and click on links on web pages;
5. to enter drawings and sketches into a computer;
6. to input voice commands and dictate text;
7. to draw pictures or select menu options directly on the screen;
8. to take and store pictures and then download them to a computer.

Work in pairs

Ex. 1. a) Student A, read these notes about two input devices. Then describe them to your partner. They have to guess what you are describing. Use the Help box for describing function.

Help box

There are several ways of describing function.

Example.

for+-ing (This is a device for controlling the cursor and selecting items on the screen.);

relative pronoun+verb (This is a device which controls the cursor and selects items on the screen.);

relative pronoun+ is used+to+infinitive (This is a device which/that is used to control the cursor and to select items on the screen.);

used+to+infinitive (This is a device used to control the cursor and to select items on the screen.).

1. scans text and pictures; sends digitized image to computer.
2. allows you to control computer vocally; spoken commands do what is normally done with keyboard/mouse.

b) Student B, listen to your partner and guess which input devices they are describing.

Now use your notes to describe two input devices to Student A.

1. stationary device; controls the cursor and selects items on the screen; works like upside-down mouse; ball on top turned round with fingers.
2. graphics tool; lets you interact with computer; you move pressure-stylus across the surface of a tablet; creates graphics.

Ex. 2. Complete each sentence by choosing from the following devices: touch screen, trackball, touchpad, webcam.

1. A ... is a stationary device that works like a mouse turned upside down. You roll the ball with your hand to move the pointer on the screen.
2. Interactive ... are used in museums, information centers and Internet kiosks. You use your finger to point directly to objects on the screen.
3. A ... is used to send live video images via the Internet.
4. A ... is found on notebook PCs. You use it by pressing the sensitive pad with a finger.

TEXT B

Task. Read the following and do the exercises below.

About the keyboard

A standard PC keyboard has various groups of keys.

1. Alphanumeric keys represent letters and numbers in the same order as a typewriter.
2. Function keys are at the top of the keyboard and can be programmed to do special jobs.

3. Numeric keypad is a set of numeric or editing keys, which are to the right of the main keyboard. The Num Lock key is used to switch from numbers to editing functions.
4. Editing (or cursor) keys are cursor and other keys used within word processors to page up and down in a long document or to edit text.
5. Special (dedicated) keys are used to issue commands or to produce alternative characters in key combinations, for example, the Alt key.

Ex. 1. Identify the keys described below.

1. It produces upper-case letters, but it does not affect numbers and symbols.
2. It removes the character to the left of the cursor or any selected text.
3. It works in combination with other keys, e. g. you press this key and C to copy the selected text.
4. It is used to confirm commands; in a word processor, it creates a new paragraph.

Ex. 2. Match these descriptions with the names of keys: arrow keys, return, caps lock, shift, tab, escape, space bar, backspace, alt.

1. A long key at the bottom of the keyboard. Each time it is pressed, it produces a blank space.
2. It moves the cursor to the beginning of a new line. It is also used to confirm command.
3. It stops a program without losing the information from the main memory. Sometimes its use depends on the applications.
4. It works in combination with the other keys to produce special characters or specific actions.
5. It removes the character on the left of the cursor or any selected text.
6. It produces upper-case characters (or the upper-case character of the key).
7. It produces upper-case letters, but it does not affect numbers and symbols.
8. It moves the cursor horizontally to the right for a fixed number of spaces (in tabulations and data fields).
9. They are used to move the cursor, as an alternative to the mouse.

Ex. 3. Fill in the gaps in these sentences. Use the correct word from the list. *Shift key, alt key, control key, escape key, delete key, tab key, caps lock key, backspace key, standard keyboard, key in (or type in), enter, data input.*

1. To go back one space, hit the ...
2. To change to capital letters, press the ...
3. To change the capital letters permanently, hit the ...
4. To insert a tabulation, press the ...
5. To activate the 'Ctrl' functions, press the ...
6. To activate the 'alt' functions, hit the ...
7. To stop the computer doing something, you can press the ...

8. Select the text you want remove, and hit the ...
9. Please ... your password.
10. It took me two hours to... all the text.
11. A keyboard is a ... device.
12. Do you have a ...?
13. No. I have a special ... It's better for my arms and back.

TEXT C

Task. *Read the text and do the exercises below.*

The mouse

A mouse is a hand-held device that lets you move a pointer and select items on the screen. It has one or more buttons to communicate with the PC. A scroll wheel lets you move through your documents or web pages. The pointer looks like an I-bar, an arrow or a pointing hand.

An optical mouse has an optical sensor instead of a ball underneath. A cordless (wireless) mouse has no cable; it sends data via infrared signals or radio waves.

Mouse actions:

- 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.

Ex. 1. *Complete these sentences with the correct “mouse action”.*

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 move an object, press the button and ... the object to the desired location.
4. If you want to find the commands for a particular text, image, etc., you have to ... on it.

Ex. 2. *Fill in the gaps in these sentences. Use the correct word from the list.*

Scroll up, on, scroll down, joystick, hold down, optical, touchpad, single, repetitive strain injury, roll, double.

1. ... to see pages above.
2. ...to see pages below.
3. To select text, ... the left button, and move the mouse pointer.
4. If you use a mouse for many hours every day, you can get ... in your finger.

5. With a laptop computer, plug in a mouse, or use the ... in front of the keyboard.
6. To play some games, you need to use a ... instead of a mouse.
7. To move up and down a page, you can ... the mouse wheel.
8. This mouse doesn't have a ball. It's an ... mouse.
9. One click of a mouse button is called a ... click.
10. Two clicks of a mouse button are called a ... click.
11. Click ... the folder to open.

Ex. 3. Read this passage about a computer mouse. Fill in the gaps with verbs from the list.

Click, double-click, drag, grab, select, move, control.

A mouse allows you to (1)... the cursor and move around the screen very quickly. Making the same movements with the arrow key on the keyboard would take much longer. As you (2)... the mouse on your desk, the pointer on the screen moves in the same direction. The pointer usually looks like an I-bar, an arrow or a pointing hand, depending on what you are doing.

A mouse has one or more buttons to communicate with the computer. For example, if you want to place the insertion point or choose a menu option, you just (3)... (press or release) on the mouse button, and the option is chosen.

The mouse is used to (4) ... text and items on the screen. You can highlight text to be deleted, or you can select an item from a check-box or questionnaire.

The mouse is widely used in graphics and design. When you want to move an image, you position the pointer on the object you want to move, press the mouse button, and (5)... the image to a new location on the screen. Similarly, the mouse is used to change the shape of a graphic object. For example, if you want to convert a square into a rectangle, you (6) ... one corner of the square and stretch it into a rectangle.

The mouse is also used to start a program or open a document: you put the pointer on the file name and (7)... on the name – that is, you rapidly press and release the mouse button twice.

TEXT D

Task 1. Read the following and do the exercises below.

Voice input

Today you can also interact with your computer by voice-recognition system that converts voice into text, so you can dictate text directly onto your word processor or email program. You can also control your PC with voice commands; this means you can launch programs, open, save or print files. Some systems let you search the Web or chat using your voice instead of the keyboard.

Ex. 1. Make a list of things you can do with a voice-recognition system.

Ex. 2. Fill in the gaps in these sentences. Use the correct modal verb from the list.

Can (ability), must (necessity), should (advice), could (possibility), will (prediction).

1. If you intend to do a lot of dictation, you ... get a high-quality headset microphone.
2. You ... dictate text directly onto your word processor or e-mail program.
3. With many voice-recognition programs, the user ... first train the software to recognize individual pronunciations.
4. Speech-recognition software ... help children with special educational needs.
5. In a few years' time, a lot of people ... use their voices to interact with computers.

Task 2. Make up a summary about all these input devices.

UNIT 7

INPUT DEVICES-2

READING MATERIAL

TEXT A

Task. a) Read the following text and do the exercises below.

Input devices such as scanners and cameras (a digital camera or a camcorder) allow you to capture and copy images into a computer.

What does a scanner do?

A scanner “sees” images and converts the printed text or picture into electric codes that can be understood by the computer.

With a flatbed scanner, the paper with the image is placed face down on a glass screen similar to a photocopier. Beneath the glass are the lighting and measurement devices. Once the scanner is activated, it reads the image as a series of dots and then generates the digitized image that is sent to the computer and stored as a file.

A colour scanner operates by using three rotating lamps, each of which has a different coloured filter: red, green and blue. The resulting three separate images are combined into one by appropriate software.

There are different types of scanners: a flatbed scanner, a film scanner, a hand-held scanner, a pen scanner and a barcode scanner.

A flatbed scanner is used on a desktop; it can capture text, colour images and even small 3D objects.

A film scanner is used to scan film negatives or 35 mm slides – pictures on photographic film, mounted in a frame.

A hand-held scanner is small and T-shaped, ideal to capture small pictures and logos.

A pen scanner looks like a pen; you can scan text, figures, barcodes and handwritten numbers.

Barcode scanners read barcodes on the products sold in shops and send the price to the computer in the cash register. Barcodes consist of a series of black and white stripes used to give products a unique identification number.

The resolution of a scanner is measured in dpi or dots per inch. For example; a 1,200 dpi scanner gives clearer, more detailed images than a 300 dpi scanner.

What does a digital camera do?

A digital camera takes photos electronically and converts them into digital data (binary codes made up of 1s and 0s). It doesn't use the film found in a normal camera; instead it has a special light-sensitive silicon chip. Photographs are stored in the camera's memory before being sent to a computer. Some cameras can be also connected to a printer or TV set, to make viewing images easier. Many printers have a special socket so that you can print images directly from a memory card or camera.

What does a camcorder do?

A camcorder, or digital video camera, records moving pictures and converts them into digital data that can be stored and edited by a computer with a special video editing software.

Digital video cameras are used by home users to create their own movies, or by professionals in computer art and video conferencing.

They are also used to send live video images via the Internet. Then they are called Web cameras or webcams.

Ex. 1. Use the information from the texts and answer the questions.

1. Which device is used to input text and graphic images from a printed page?
2. How does a colour scanner work?
3. Do digital cameras use film? How do they store photos?

4. Which device would you use to take digital video?
5. What kind of software is used to manipulate video clips on the computer?
6. What do you think are the benefits of using scanners and cameras at home and in business?

Ex. 2. Complete the following sentences.

1. A scanner converts the printed text into...
2. A colour scanner operates by ...
3. A digital camera has a special ...
4. Photographs are stored in ...
5. Some cameras can be also ...
6. A camcorder records moving pictures and converts ...
7. Camcorders are used by home users to ...
8. Cameras used to send live video images via the Internet ...

Ex. 3. Decide if these sentences are True or False. If they are false, correct them.

1. The details detected by a scanner are not determined by its resolution.
2. A barcode scanner is a computer peripheral for reading barcode labels printed on products.
3. Scanners cannot handle optical character recognition.
4. A digital camera uses a light sensitive film instead of a memory card for storing the images.
5. A digital video (DV) camera is used to take still photos.
6. Video editing software allows you to manipulate video clips on the computer.

Ex. 4. a) Apart from slogans, advertisements often use the comparatives and superlatives of adjectives and adverbs. Read the following examples from the advertisements. What can you say from these examples about how comparatives and superlatives are formed?

1. ...only ten times faster.
2. It couldn't be cheaper.
3. The manufactures have chosen the highest technology ...
4. The cleverest personal scanner ...
5. The most revolutionary computer peripheral ...
6. The best scans with the least effort ...
7. Flatbed scanners are more accurate than ...
8. Now you can edit your document more easily than ever, and they'll look better than ever too with ...

b) Now compare your knowledge with the information in the table.

One-syllable adjectives	Old-older-the oldest; wise-wiser-the wisest	For most one-syllable adjectives, -er and -est are added
Two-syllable adjectives	Famous-more famous-the most famous; pleasant-more pleasant-the most pleasant	For most two-syllable adjectives, more and most are added
	Busy-busier-the busiest; pretty- prettier-the prettiest	-er and -est are used with two-syllable adjectives that end in -y. The -y is changed to -i
	Clever-cleverer- the cleverest, more clever-the most clever; friendly-friendlier-the friendliest, more friendly-the most friendly	Some two-syllable adjectives use either -er/ -est or more/ most : Able, angry, clever, common, cruel, friendly, gentle, handsome, narrow, pleasant, polite, quiet, simple, sour
Adjectives with three or more syllables	Important-more important-the most important	More and most are used with long adjectives
Irregular adjectives	Good-better- the best; bad-worse-the worst	Good and bad have irregular comparative and superlative forms
-ly adverbs	Carefully-more carefully-the most carefully; slowly-more slowly- the most slowly	More and most are used with adverbs that end in -ly
One-syllable adverbs	Fast-faster-the fastest	The -er and -est forms are used with one-syllable adverbs
Irregular adverbs	Well-better-the best; badly-worse-the worst; far-farther/further-the farthest/furthest; little-less-the least; much-more-the most	
Exception	Early is both an adjective and an adverb. Forms: earlier, earliest	

Ex. 5. Translate the following sentences into Russian paying attention to the comparatives and superlatives.

1. A mainframe is larger and more expensive than a microcomputer.
2. A fax board costs less than a fax machine.
3. This is the most popular package on the market today.
4. BASIC is probably the least difficult programming language to learn.
5. The best programs are those adapted specifically to your own needs.
6. The more memory your computer has, the more data it can store.
7. The bigger your computer system, the less time you spend waiting.

Ex. 6. Translate the following sentences into English.

1. Производители выбрали самую высокую технологию.
2. Наиболее широко распространенными устройствами ввода данных являются мышь и клавиатура.
3. Самые подходящие компьютеры для домашнего использования – это настольные компьютеры.
4. Карманные компьютеры меньше, чем портативные.
5. Самая значимая составляющая компьютера – это центральный процессор.
6. Более крупными единицами информации являются килобайт и мегабайт.
7. Компьютер – это самое универсальное средство для обработки информации.

Word building

The class of a word can often be changed by adding a suffix. For example, if *-er* is added to the verb *scan* (and the 'n' is doubled) we get the noun *scanner*.

Common adjectival suffixes are: *-ing*, *-y*, *-able*, *-ible*, *-al*, *-ed*, *-ful*, *-ive*.

Common noun suffixes are: *-er*, *-or*, *-ion*, *-tion*, *-ation*, *-ment*, *-ness*, *-ity*, *-ant*, *-logy*.

Ex. 1. Determine what words below are adjectives and nouns.

Computer, self-calibrating, easy, resolution, sharpness, information, printed, personal, capable, compression, technology, calculator, useful, assistant, expensive, possibility, reducible, investment.

Task 1. a) Write one reason for using a scanner at home or at work.

b) Do you have a digital camera? Describe its basic features and the things you do with it.

UNIT 8

OUTPUT DEVICES-1

READING MATERIAL

TEXT A

Task 1. a) Try to guess the meaning of any new words below. Dot, pixel, display, resolution, cathode ray tube, electron beam, scan, hertz, bit-mapped, visualize, flicker.

b) Read the text and translate it.

The monitor

The screen of a computer is often known as the monitor or VDU (visual display unit). Inside the computer, there is a video card which processes images and sends signals to the monitor.

The characters and pictures that we see on the screen are made of dots, also called picture elements (pixels). The total number of pixels in which the display is divided both horizontally and vertically is known as the resolution. If the number of pixels is very large, we obtain a high resolution display and therefore a sharp image. If the number of pixels is small, a low resolution is produced. Typical resolutions are 640×480 or $1,024 \times 768$ pixels.

The cathode ray tube of the monitor is very similar to that of a TV set. Inside the tube there is an electron beam which scans the screen. The beam begins in the top left corner, and scans the screen from left to right in a continuous sequence. This sequence is repeated 50, 70, or 85 times per second, depending of the system. If the rate of this repetition is low, we can perceive a flickering, unsteady screen, which can cause eye fatigue. However, a fast-moving 75 Hz 'refresh rate' eliminates this annoying flicker.

What we see on the screen is created and stored in an area of RAM, so that there is a memory cell allocated to each pixel. This type of display is called bit-mapped. On monochrome monitors, bits 0 are visualized as white dots, and bits 1 as black dots.

On colour displays, there are three electron guns at the back of the monitor's tube. Each gun shoots out a beam of electrons for each of the primary colours: red, green and blue. Three different phosphor materials are used – one each for red, green and blue. To create different colours, the intensity of each of the three electron beams is varied.

The monitor is controlled by a separate circuit board, known as the display adaptor, which plugs into the motherboard of the computer. Different boards drive different types of displays. For example, the VGA (video graphics array) card has become a standard for colour monitors.

Now flat-screen monitors are fashionable. They are inherently flat, and therefore require less space. In addition, they give crisp, clear images and eliminate screen flicker.

Portable computers use a flat liquid-crystal display (LCD). An LCD uses a grid of crystals and polarizing filters to show the image. The crystals block the light in different amounts to generate the dots in the image.

Ex. 1. Read the text again and answer the following questions.

1. According to the writer, what is the importance of 'pixel resolution'?
2. What is there inside the cathode ray tube?
3. In the writer's opinion, why can a low refresh rate produce eye fatigue?
4. What type of display is called bit-mapped?
5. What substance is used for red, green and blue?
6. What is the standard display system for many PCs?
7. What does 'LCD' stand for? What type of computers use LCD displays?

Ex. 2. Correct these false statements.

1. The images shown on a monitor are not generated by the video card.
2. All visible colours can be made from mixing the three primary colours of red, green and yellow.
3. Typical CRT-based displays occupy less space than LCD displays.
4. The size of the screen is measured horizontally.
5. Three different silver materials are used – one each for red, green and blue.

Ex. 3. Match each term with the correct definition.

- | | |
|-----------------|---|
| 1. phosphors | a. the frequency at which a monitor renews its image, measured in Hz; |
| 2. LCD screen | b. a flat-panel display which works by emitting light through a special liquid; |
| 3. pixel | c. the space between a display's pixels; |
| 4. dot pitch | d. the smallest element in a displayed image; |
| 5. refresh rate | e. materials that emit light and produce colours when they are activated by an electron beam. |

Ex. 4. Describe the monitor of your computer. Use these questions to help you.

1. Is it a monochrome or a coloured monitor?
2. What size is the screen?

3. Does it have a cathode ray tube or a flat LCD screen?
4. How can you change the picture using the controls?
5. Does it produce a high quality image?

Language work: Instructions and Advice

Ex. 1. Rewrite the sentences below about what you should do to protect your eyes. Use modal verbs in your sentences. Use the Help box.

Help box

Imperatives: *Position* your keyboard at the same height as your elbows.

Don't use a monitor that is fuzzy or distorts the image.

Should/ ought to: You *should* position your keyboard at the same height as your elbow.

You *shouldn't use* a monitor that is fuzzy or distorts the image.

1. Do not stare at the screen for long periods of time.
2. Avoid placing the monitor so that it reflects a source of bright light, such as a window.
3. Keep the screen clean to prevent distorting shadows.
4. If you work in an office with a large number of computers, don't sit too close to the sides or backs of the monitors.
5. Buy a protective filter that cuts down the ELF (extremely low frequency) emissions.

Ex. 2. Study these instructions for virus-checking a disk. Fill in the gaps with verbs from the list. Use Don't where appropriate.

Click, exit, put, select, start.

1. ... the disk into the drive.
2. ... the virus checking program.
3. ... the drive to be checked.
4. ... the 'Find' button.
5. ... the program until the check is complete.
6. ... 'Yes' or 'No' for the checking another disk.

Ex. 3. Translate the following sentences into English.

1. Я думаю, вам следует купить лазерный принтер.
2. Не покупайте матричный принтер. Они очень шумные.
3. Вам следует настроить монитор, он слишком яркий.
4. Вам следует отодвинуть принтер, он слишком близко стоит.
5. Вам следует сидеть на стуле со спинкой, так удобнее.

6. Кресло должно хорошо регулироваться и поддерживать спину.
7. Убедитесь, что экран монитора не мигает, чтобы вы могли спокойно читать.

Task 2. Read the text and then translate it in written form.

Have you noticed how much your computer screen flickers? This may be because your computer monitor uses CRT technology. This kind of technology offers colour and high-resolution pictures for relatively little money but the monitors are large, use a lot of energy, can flicker and emit electromagnetic radiation. In recent years flat screens have become increasingly popular. Users talk of benefits such as more desk space, how easy they are to adjust for tilt and height, crisper, clearer images and the total elimination of screen flicker. It's like having a different PC, they say, a new window on the world. Most flat screens are based on LCD technology which has a lot of benefits over CRT technology. Among them:

- LCDs are inherently flat, CRT monitors are not, so LCDs require much less space;
- LCDs use less power than CRTs;
- LCDs are distortion-free while typical CRTs are curved, which may cause image distortion;
- most LCD displays use a TFT (Thin Film Transistor) system offering a wider angle of vision and high-quality images.

But there is one major drawback to flat screens: their cost. They are expensive compared with CRT monitors. Prices are falling, however, and they'll soon find their way into homes, schools and businesses. Monitor manufacturers like Philips, Apple, Sharp or Panasonic offer compatible flat screens including built-in stereo speakers, headphone connection, and a USB port. Some models can also be removed from the stand and mounted on the wall. They come with stylish designs for a variety of applications. LCDs range from small-size PC screens and TVs to large-screen-projectors.

Ex. 4. Now decide whether these statements are true or false.

1. Most computers still use CRT monitors.
2. Typical CRT-based displays occupy less space than LCD displays.
3. Liquid-crystal displays are curved.
4. Flat LCD screens are becoming very popular.
5. LCD technology consumes less power than CRT technology.
6. Flat screens are cheaper than CRT monitors.
7. Users of flat-screen monitors can't adjust the angle of vision.

Task 3. Speak about monitors.

UNIT 9

OUTPUT DEVICES-2

READING MATERIAL

TEXT A

Task 1. a) *How many kinds of printers can you think of? Make a list.*
b) *Read the text below.*

Types of printers

Printing is the final stage in creating a document. That is the purpose of the printers. Printers vary in cost, speed, print quality and other factors such as noise or compatibility. In fact, printing technology is developing so quickly that there is always a printer for every application or personal requirement.

Dot-matrix printers use pins to print the dots required to shape a character. They print text and graphics and some of them can print up to 500 characters per second, however, they produce relatively low resolution output – 72 or 144 dots per inch. This level of quality is not recommended for reports or books. They are slower than laser printers but much cheaper.

Ink-jet printer operates by projecting small ink droplets onto paper to form the required image. This type of printer is quite fast, silent and so expensive as a laser printer. Their resolution is 720 dpi.

Laser printers produce output at great speed and with a very high resolution of 600/ 2,400 dpi. They scan the image with a laser beam and transfer it to paper with a special ink powder. They are constantly being improved.

We must not forget to mention thermal printers. They use heat, a special kind of paper and electrosensitive methods. They are silent and considered to be inexpensive. However, some colour models emulate HP (Hewlett Packard) plotters cost too much to be included in the same category.

Imagesetters can be regarded as an attractive alternative. They produce very high-resolution output (up to 3, 540 dpi) on paper and microfilm. They are extremely fast. They are used in desktop publishing. Although they produce the highest quality output they are expensive for homes and offices.

Finally, plotters are a special kind of printer.

Plotters use ink and fine pens held in a carriage to draw very detailed designs on paper. They are used for construction plans, engineering drawings and other technical illustrations.

Ex. 1. Complete this table with the most relevant information.

Type of printer	Technical specifications and other features
Dot-matrix Ink-jet Laser Thermal Imagesetter Plotter	

Ex. 2. Agree or disagree with the following statements.

1. Ink-jet printers are quieter than dot-matrix printers.
2. Ink-jet printers are cheaper than dot-matrix printers.
3. Ink-jet printers are not real competition for laser printers.
4. Ink-jet printers can easily print on envelopes, labels and transparencies.
5. Ink-jet colour printers use four inks: magenta, yellow, cyan and black.
6. Ink-jet printers are ideal for workgroups and large businesses.

Ex. 3. Read the following passage from the text and translate it in written form.

Printing is the final stage in creating a document. That is the purpose of the printers joined to your computing equipment. Since the results you can obtain with different types of printers will vary substantially, here is a guide to help you decide which one is most suitable for your needs.

To begin with, it must be taken into account that printers vary in cost, speed, print quality and other factors such as noise or compatibility.

Dot-matrix printers use pins to print the dots required to shape a character. They print text and graphics and some of them can print up to 500 characters per second (cps).

Ex. 4. Choose the most appropriate type of printer for these situations.

1. A home user who wants to print text documents and family photographs.
2. Business people who need to print in large quantities at high quality in an office.
3. Engineers who want to make detailed line drawings.
4. Professional typesetters in desktop publishing.
5. A company that wants to print carbon copies of bills and receipts.

Ex. 5. Fill in the gaps in comparison of printers.

There are three different types of printer: dot-matrix, inkjet, and laser. Dot-matrix printers are the ... kind of printer.

... their print quality is low and they are slow and They are ... to run.

Inkjets are ... expensive, but you get ... quality and quieter operation. However, they are relatively ... and also ... to run. They are good choice for colour.

Laser printers give the ... quality of output. They print ... than either of the other two ... printer and they cost ... to run than an inkjet. Unfortunately, they ... almost twice as ... as an inkjet.

Task 2. Read the advertisement for the printer below, and then make advertisements for a laser printer; ink-jet printer.

Stylus Dot- matrix Printer

Dot-matrix printer with 24 pins.

Prints text and graphics.

450 cps.

Compatible special interface.

Free unlimited hotline support for our customers.

One year on-site maintenance.

671£

Task 3. Describe the characteristics of the printer that you have or would like to have at home or at work.

UNIT 10

MAGNETIC DRIVES

Task 1. a) Look at the characteristics below and find out:

1. the size of a floppy disk
2. the storage capacity of a high density diskette
3. the name of a hard drive on a PC platform
4. the storage capacity of a SyQuest cartridge
5. the system that can hold 10 GB tapes
6. a type of drive used by digital cameras and music players.

3.5-inch diskette

A high-density (HD) floppy disk can store 1.44 MB of information. A floppy drive uses 3.5-inch disks and it's called drive A.

Hard disk

Most PCs have one hard drive, called drive C. It's used to keep software and files organized in a convenient way.

A hard disk can hold several gigabytes of data.

Removable hard drive

Popular drives are the Zip and Jaz systems from omega.

A Syquest cartridge can hold 1.5 GB.

Tape drive

A tape drive stores data on tape cartridges. It's used for backup purposes.

A digital Audio Tape drive can hold up to 10 GB data.

Pocket-sized drive

Ultra portable drives are used with mobile computers. They hold 40 MB disks.

The Peerless system can hold 20 GB disks, which allows you to store thousands of MP3s and video games.

Microdrive

A Microdrive is the smallest hard drive for digital cameras, laptops and audio players. It comes in 340 MB and 1 GB capacities. It uses a PC Card adapter.

b) In pairs, tell each other what you must or mustn't do to protect your data.

Example. You mustn't stack disks on top of each other.

1. disks in a protective case
2. into the disk drive very carefully
3. near magnets; they can damage the information stored on them
4. update your anti-virus program regularly since new viruses are created everyday
5. passwords and security devices to protect confidential information

Task 2. a) Read the text and match the terms in numbers with the explanations in letters.

1. backing store
 2. floppies
 3. disk drive
 4. formatting
 5. directory
 6. read/write heads
- a) a catalogue of where each piece of data is stored and how to find it
 - b) recording heads
 - c) secondary memory
 - d) diskettes
 - e) initializing; setting tracks and sectors on magnetic disks
 - f) a device which spins disks and contains a read/write head.

b) Translate the following words into Russian. Pay attention to the prepositions used in them.

consist of

divide into

insert smth. into smth
look for
read smth. into
at high speed
to be measured in
to distinguish between
to transmit data from smth.
to depend on

Task 3. Read the text. Translate it and do the exercises below.

Technical details

Floppy disks are so called because they consist of flexible plastic material which has a magnetizable surface.

The surface of a disk is divided into concentric circles or ‘tracks’, which are then divided into ‘sectors’. When you insert a blank disk into a disk drive, it must be ‘initialized, or formatted, before information can be recorded onto it.

This means that magnetic areas are created for each track and sector, along with a catalogue or ‘directory’ which will record the specific location of files.

When you save a .file the operating system moves the read/write heads of the disk drive is towards empty sectors, records the data and writes an entry for the directory Later on, when you open that file, the OS looks for its entry in the directory, moves the read/write heads to the correct sectors, and reads the file into the RAM area.

Hard disks work in the same way as floppies. But they have important advantages: they can hold much more data and spin at higher speed, so you can store and retrieve information much faster than with floppies. The speed at which a hard drive finds data is called ‘access time’ – or seek time. The average access time is measured in milliseconds (ms). Most hard drives have an access time of 8 to 14 ms.

You have to distinguish between access time (e.g. 9 ms) and ‘data transfer rate’ (the average speed required to transmit data from a disk system to the RAM, e.g. at 10 megabits per second). Remember that the transfer rate depends also on the power of your PC.

If you only use word-processing programs, you will need less storage capacity than if you use CAD, sound and animation programs. If you need an extra hard drive, you should consider the type of mechanism. There are ‘internal’ and ‘external’ drives which are both rigid disks sealed into the drive unit, either within or attached to the computer.

Another type of hard drive, known as 'removable', allows you to record data on 'cartridges', which can be removed and stored off-line for security purposes. Some systems allow you to back up your entire PC on one disk.

Laptops use pocket-sized drives. Digital cameras and music players use microdrives with special cards.

Ex. 1. Now read these sentences and decide if they are true (T) or false (F).

- 1 Hard drives are faster than floppy drives.
- 2 'Access time' refers to the average time required for the recording heads to move and access data.
- 3 'Access time' and 'data transfer rate' mean the same.
- 4 Hard disks use rigid rotating disks.
- 5 A hard drive is about 20 times faster than a floppy disk drive.
- 6 If you use multimedia applications you need the same storage capacity as required for word processors.
- 7 Removable cartridges are not transportable.

Ex. 2. Translate the following sentences into English.

1. Затем поверхность диска разделяется на «секторы».
2. Гибкие диски состоят из гибкого пластического материала.
3. Операционная система считывает файл на ЗУПВ.
4. Жесткие диски вращаются на более высокой скорости.
5. Время выборки (из ЗУ) измеряется в миллисекундах.
6. Вы должны различать разницу между временем выборки и скоростью передачи данных.
7. Скорость передачи данных зависит также от мощности вашего компьютера.

World building

Ex. 1. Look at the groups of words and decide what class each word belongs to: noun, verb, adjective or adverb. Complete the sentences.

magnet	magnetic	magnetically
magnetism	magnetize	magnetized

1. ... is the science of magnetic phenomena and properties.
2. Floppy and hard disks are considered as ... storage devices.
3. Data is recorded on a disk in the form of ... spots called bits.

record [ri'k0:d]	recorder	recording	recorded
------------------	----------	-----------	----------

4. All disks must be initialized before information can be ... onto them.
5. The ... heads follow the tracks and magnetize the coating along each track.
6. A disk drive works very much like a tape ... that can both play and record.

fragment	fragmentation	fragmented	defragmenter
----------	---------------	------------	--------------

7. After you create, delete and modify a lot of files, the hard disk becomes ..., with bits and pieces spread all over the disk.

8 ... slows down the speed at which data is accessed because the disk drive has to work harder to find the parts of a file stored in many different locations.

9. To reorganize your hard disk, you can use a disk optimizer or ... ; this will reorder your files into contiguous clusters.

UNIT 11

OPTICAL BREAKTHROUGH

READING MATERIAL

TEXT A

Task. a) *What are the advantages and disadvantages of optical disks?*

b) *Read the text to check your answer.*

Optical disks and drives

Optical disks can store information at much higher densities than magnetic disks. Thus, they are ideal for multimedia applications where images, animation and sound occupy a lot of disk space. Besides, they are not affected by magnetic fields. This means that they are secure and stable, e.g. they can be transported through airport metal detectors without damaging the data. However, optical drives are slower than hard drives. While there are hard drives with an average access time of 8 ms, most CD-ROM drives have an access time of 150 to 200 ms.

There are various types of optical drives:

CD-ROM systems offer everything, from shareware programs to dictionaries and encyclopedias, from multimedia databases to 3-D games. A lot of institutions have discovered that CD-ROM is the most economical way of sharing information. In fact, one CD-ROM disk (650 MB) can replace 300,000 pages of text (about 500 floppies), which represents a lot of savings in distributing materials and corporate databases. In addition, CD-ROM drives can play music CDs while you work. Yet CD-ROM technology has one disadvantage: you cannot write anything onto a CD-ROM disk. You can only 'read' it, like a book.

CD-Recorders come in two different forms: **CD-R** and **CD-RW**. CD-R machines record on CD-R (write-once) disks, allowing you to create and duplicate CDs. They are used to back up hard disks or to distribute and archive

information. In fact, these systems are the modern version of old WORM (write once, read many) disks. CD-RW (rewritable) disks can be erased and re-used, just as you would do with a hard disk.

The future of optical storage is called **DVD** (digital versatile disk). A DVD-ROM can hold 17 GB, about 25 times an ordinary CD-ROM. For this reason, it can store a large amount of multimedia software and complete Hollywood movies in different languages. They can also play music CDs and CD-ROMs. However, DVD-ROMs are 'read-only' devices. To avoid this limitation, companies also produce DVD-R and DVD rewritable disks.

Magneto-optical (MO) drives use both a laser and an electromagnet to record information. Consequently, MO disks are rewritable, i.e. they can be written to, erased, and then written again. They usually come in two formats: (i) 5.25" cartridges can hold more than 5.2 GB; (ii) 3.5" floptical disks have a capacity of 230 MB to 1.3 GB. They are ideal for back-up and portable mass storage.

Ex. 1. Read the text again and summarize in the table the most relevant information.

	<i>Technical specifications</i>	<i>Use</i>
CD-ROM		
CD-Recorder		
DVD		
Magneto-optical		

Ex. 2. Rewrite the following sentences in the passive.

- Optical disks can store information at much higher densities than magnetic disks.
- A lot of institutions have discovered that CD-ROM is the most economical way of shaving information.
- One CD-ROM disk can replace 300.000 pages of text.
- You cannot write anything onto a CD-ROM disk.
- A DVD-ROM can store a large amount of multimedia software.
- Magneto-optical drives use both a laser and an electromagnet to record information.

Ex. 3. Read these sentences and clauses and look back at the text A to find out what the words in bold refer to.

- ... **they** are secure and stable ...
- ... **which** represents a lot of savings in distributing materials ...
- **you** cannot write anything onto a CD-ROM disk...
- You can only 'read' **it** ...
- Magneto-optical (MO) drives use **both** a laser and an electromagnet to ...

Connectors and modifiers

Ex. 1. Look at the expressions in italics in these sentences and clauses.

1. *Thus*, they are ideal for multimedia applications ...
2. *Besides*, they are not affected by magnetic fields.
3. *However*, optical drives are slower than hard drives.
4. *In addition*, CD-ROM drives can play music CDs while you work.
5. *Yet* CD-ROM technology has one disadvantage:
6. *For this reason*, it can store a large amount of multimedia software.

Put each expression (1 to 6) into the right category: a, b or c.

- a. to show contrast
- b. to explain causes and results
- c. to add new ideas

Task 1. a) Which of the available products would be most suitable for the purposes below.

1. To store data and programs at home.
2. To hold large amounts of information in a big company.
3. To store an illustrated encyclopedia for children.
4. To hold historical records in the National Library.
5. To store high-quality audio and video, and hold several movies in different languages.

Products available

Hard disk drive

Superfast 8 ms hard drive. Capacity ranges from 6 to 80 GB.

Iomega's removable drives

The Zip series uses 100 MB and 250 MB disks. In the near future it could replace the floppy disk as the portable storage medium.

The Jaz series can hold 2 GB cartridges. Ideal to back up hard disks.

CD-ROM drive

Each CD disk holds 650 MB.

CD-Recordable drive

Makes it possible to write data to CDs as well as read it.

Magneto-optical (MO) disk systems

Erasable optical-magnetic 5.25" cartridges with 5.2 GB of storage capacity.

Can be erased and written on like a hard disk.

Rewritable 3.5" floptical disks with a storage capacity of 1.3 GB.

DAT Data tape drive

Digital audio tape drives to store computer data. Used for back-up purposes. Slow access.

Huge amounts of information (about 10 GB).

Digital Video Disk-ROM drive

Each DVD-ROM disk has a capacity of up to 17 GB, and can hold various full-screen movies. The drive can also read your CD-ROMs.

b) Discuss the pros and cons with a partner. You may use these expressions:

Useful expressions

For personal use, I would recommend ... because ... In a big company, it would be a good idea to ... However, ... is good for an encyclopedia because ... I agree/disagree with you.

Task 2. Read the clues and complete the crossword.

Crossword

Across

- | | | | | | | | | | |
|----|--|----|---|----|--|----|----|----|----|
| 1 | | | 2 | | | 3 | | 4 | 5 |
| | | | 6 | | | 7 | | | |
| | | | | | | | | | |
| 8 | | 9 | | 10 | | | 11 | | 12 |
| | | | | | | | | | |
| | | | | | | 13 | | | |
| | | 14 | | | | | | | |
| 15 | | | | | | | | | |
| | | | | | | | | 16 | |
| 17 | | | | | | 18 | | | |
| | | | | | | | | | |
| 22 | | | | | | 19 | | 20 | 21 |
| | | | | | | | | | |
1. Acronym for “light amplification by stimulated emission of radiation”. (5)
4. A microcomputer. (2)
6. To write information on a disk, magnetic tape or film. (6)
10. To record and keep for future use. (5)
12. Abbreviation of “binary digit”. (3)
14. Thousandth of a second. (11)
15. The type of computer with a 286 processor introduced by IBM in 1984. (2)
17. Concentric ring marked on the surface of a disk when the disk is formatted. (5)
18. Prefix meaning “very large” or “one thousand million”. (4)
20. Read only memory. (3)
22. The physical mechanism that accepts, reads and writes data on a disk. (5)

Down

1. Acronym for “local area network”. (3)
2. Opposite of “indelible”. (8)

3. Abbreviation of “high density” or “hard disk”. (2)
5. Way of storing a lot of information in a removable form. (9)
7. Abbreviation of “optical character recognition”. (3)
8. All disks must be “initialized” or ... when used for the first time. (9)
9. Indelible optical storage device: ‘write once, read many’. (4)
11. Not cheap. (9)
13. A flat, circular surface used to hold computer data. (4)
16. Opposite of “soft”. (4)
19. Disk that holds music. (2)
21. A thousand kilobytes. (2)

UNIT 12

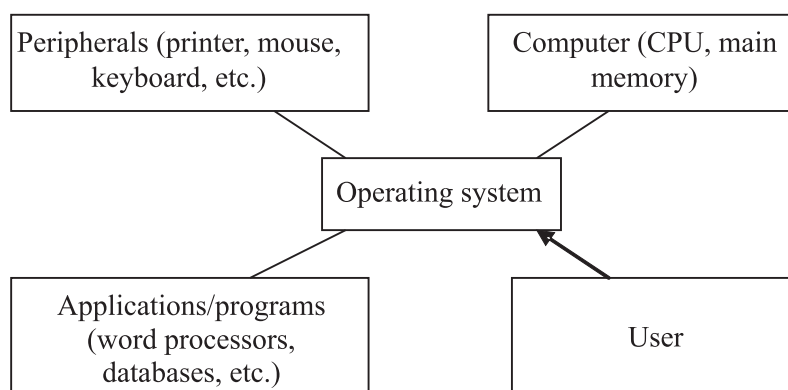
OPERATING SYSTEMS AND DATABASE SYSTEMS

READING MATERIAL

TEXT A

Task. a) Look at the diagram and discuss the following questions:

1. *What is the function of OS?*
2. *How many parts does it consist of?*



b) Learn to read the following words and word combinations and memorize them:

word processor [**`prousesq**] – текстовый редактор

graphics package [**`grxflks `pxklG**]

to handle operations – управлять операциями

to give access [**`xksqs**] – давать доступ

one at a time – по одному; at the same time – в то же время

source code [**`s0:s koud**] – исходный код

to modify [**`m0dlfaI**] – изменять
 reliable [**rI`laIqb**]– надежный
 an update – обновление, усовершенствование
 wireless connections [**`waIqlqs**] – беспроводные подключения
 a multitasking system – многозадачная система
 CAD programs = (computer-aided design)
 to select icons – выбирать пиктограммы
 below a menu bar [**`menjH**] – внизу меню
 environment – [**in`vairqnmnt**] – среда, окружающая обстановка
 utility programs [**jH`tlltI**] –пользовательские программы

c) Read the text, translate it and do the exercises below.

Operating Systems

Types of software:

1. **System software** controls the basic functions of a computer, e.g. operating systems, programming software and utility programs.
2. **Application software** lets you do specific jobs such as writing letters, doing calculations, drawing or playing games. Examples are a word processor or a graphics package.

An 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.

Examples are:

– the Windows family was designed by Microsoft and is used on most home PCs. Here are the most recent versions.

Windows 98, Internet access becomes part of the user interface. Its active desktop lets you find information easily with the same view of content on your PC, network or the Web. The system includes Outlook Express for e-mail, NetMeeting conferencing software, a chat program and a Web-page editor. It offers advancements such as USB and multimedia extensions.

Windows 2000 is built upon the Windows NT architecture and designed for business uses.

Windows Millennium is designed for home use. It includes new system safeguards and support for DVD, music players and mobile computers.

Windows XP is an update to all Windows versions, with a new visual design. It's more secure and reliable. It offers support for the latest technologies.

Mac OS was created by Apple and used on Macintosh computers.

The Mac OS combines the elegance of Macintosh and the power of UNIX. Large parts of the Mac OS are inside the System file and the Finder, kept in the System folder. The content of the System file is loaded automatically at start-up, and contains information which modifies the routines of the OS in the ROM chips. The Finder displays the Macintosh's desktop and enables the user to work with disks, programs and files. With the new Mac OS, you can create CDs and record DVDs. It also offers Internet capabilities, support for Java, and AirPort technology for wireless connections.

OS/2 Warp is the PC world's most technically sophisticated operating system. It provides true multi-tasking, allowing a program to be divided into "threads", many of which can run at the same time. Thus, not only can numerous programs run simultaneously, but one program can perform numerous tasks at the same time.

The IBM OS/2 Warp includes easy access to networks via modem, support for Java applications, and voice recognition technology.

UNIX OS, designed by Bell Laboratories for minicomputers and workstations, has been widely adopted by many corporate installations. From the very first, it was designed to be a multi-tasking system. It is written in C language.

It has become an operating environment for software development, available for any type of machine, from IBM PCs to Macs to Cray supercomputers. Unix is the most commonly used system for advanced CAD programs.

LINUX

Linux has its roots in a student project. In 1992, an undergraduate called Linus Torvalds was studying computer science in Helsinki, Finland. Like most computer science courses, a big component of it was taught on (and about) Unix. Unix was the wonder operating system of the 1970s and 1980s. But Unix was a commercial product and cost more than a student could pay.

Annoyed by the shortcomings of Minix (a compact Unix clone written as a teaching aid by Professor Andy Tannenbaum) Linus set out to write his own 'kernel' – the core of an operating system that handles memory allocation, talks to hardware devices, and makes sure everything keeps running. He used the GNU programming tools developed by Richard Stallman's Free Software Foundation, an organisation of volunteers dedicated to fulfilling Stallman's ideal of making good software that anyone could use without paying. When he'd written a basic kernel, he released the source code to the Linux kernel on the Internet.

Source code is important. It's the original from which compiled programs are generated. If you don't have the source code to a program, you can't modify it to fix bugs or add new features. Most software companies won't sell you their source code, or will only do so for an eye-watering price, because they believe that if they make it available it will destroy their revenue stream.

What happened next was astounding, from the conventional, commercial software industry point of view – and utterly predictable to anyone who knew about the Free Software Foundation. Programmers (mostly academics and students) began using Linux. They found that it didn't do things they wanted it to do so they fixed it. And where they improved it, they sent the improvements, to Linus, who rolled, them into the kernel. And Linux began to grow.

Protected under the GNU general public licence, Linux is the open source, cooperatively-developed POSIX-based, multi-tasking operating system. Linux is used as a high value, fully-functional UNIX workstation for applications ranging from Internet Servers to reliable work groups computing. Linux is available for Intel, Alpha and Sun SPARC platforms.

As more and more people got to know about Linux, some of them began to port the Linux Kernel to run on non-standard computers. Because it's free, Linux is now the most widely-ported operating system.

Ex. 1. Answer the following questions.

1. What is the difference between system software and application software?
2. Can you give examples of application software?
3. What is the meaning of multitasking?
4. Can you name the Windows family?
5. Who created the Mac operating system?
6. What do you know about Unix (Linux)?
7. How do you call a system that is easy to use?
8. How was the Linux kernel first made available to the people?

Ex. 2. Match the words with their definitions.

1. software	a. sets of instructions that make the computer execute operations and tasks
2. programs	b. stored on disks and loaded into main memory
3. hardware	c. control the basic functions of a computer system
4. systems programs	d. refers to all the programs which control the basic functions of a computer
5. operating system	e. the information used with computers and includes programs and data
6. application	f. the physical portion of a computer system
7. Unix	g. pictures representing programs or documents
8. icons	h. the OS used for advanced CAD programs

Ex. 3. Find the English equivalents to the following words.

Доступ – доступный; сеть; предлагать; надежный; быть загруженным; выполнять программу; при помощи чего-либо; технология распознавания

речи; взаимодействовать; текстовый редактор; обновление; выбирать; одновременно; в диапазоне от ... до.

Ex. 4. Mark these statements as True or False:

1. MS DOS was developed by Apple in 1981.
2. Windows XP is not secure and reliable.
3. Mac OS offers Internet capabilities.
4. Linux runs on more types of computers than any other OS.
5. Linux was created by a postgraduate in 1992 in Finland.
6. Minix is based on Unix.
7. Source code isn't sold by most software companies.

Ex. 5. Read this text and translate it into Russian in written form.

Information provided by programs and data is known as software. Programs are sets of instructions that make the computer execute operations and tasks. There are two main types of software:

The system software refers to all the programs which control the basic functions of a computer. They include operating systems, system utilities (e.g. an anti-virus program, a back-up utility) and language translators (e.g. a compiler – the software that translates instructions into machine code).

The application software refers to all those applications – such as word processors and spreadsheets – which are used for specific purposes. Applications are usually stored on disks loaded into the RAM memory when activated by the user.

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

Language work: Countable and Uncountable Nouns

Help box

Countable nouns are people or things that we can count. They have a singular and a plural form. They must have determiner (a, one, my, this, ...) in the singular though, this is not necessary in the plural.

e.g. *computer, website, bookmark*

Uncountable (mass) nouns are things that we can't count. They have no plural form.

e.g. *information, pirating, storage*

They are partly distinguished by the determiners they take.

Many, few, a few go with countable nouns.

We didn't take many pictures.

I have a few jobs to do.

Much, little, a little, a great deal of only go with uncountable nouns.

We didn't do much shopping.

I have little work to do.

Some, any, no, enough can go with both countable and uncountable nouns.

We listened to some music.

Did you buy any CDs?

I don't have enough money.

Some words are countable in most languages, but uncountable in English and are used with a singular verb:

advice, damage, equipment, furniture, research, luggage, news, progress, homework, weather

Ex. 1. Here are some common nouns in computing. Divide them into countable and uncountable nouns. Look at the HELP box and use a dictionary if necessary.

1 window	6 hacking	11 code
2 robotics	7 system	12 appliance
3 hardware	8 software	13 architecture
4 program	9 workstation	14 folder
5 hacker	10 graphics	15 menu

Ex. 2. These sentences contain typical errors. Correct them.

1. We are having a terrible weather.
2. Can you give me an advice?
3. I need some informations.
4. The news were very depressing.
5. I like the furnitures.
6. Much people use the Web today.
7. We had a lot of homeworks yesterday.
8. She is making a good progress with her English.
9. There are many equipment in this classroom.
10. We are going to sell all our furnitures.
11. The headphones on my new walkman are great.

Ex. 3. Complete these sentences, using *many, much, few, little, a lot of, plenty of*.

1. Have you got ... work to do today? – Quite
2. They are not rich. They've got ... money.
3. Ann is very busy these days. She has ... free time.
4. The museum was very crowded. There were too ... people.
5. I usually drink ... coffee in the morning.
6. She's lucky. She has ... problems.
7. We must be quick. We have ... time.
8. We'll find where to stay, there ... hotels in this town.
9. Do you mind if I ask you ... questions?
10. Have you ever been to Paris? – Yes, I've been there ... times.

Ex. 4. Choose the right option:

1. ... home PCs use Windows.
a) few b) little c) a lot of
2. One program can perform ... tasks at the same time.
a) much b) a few c) many
3. A computer system consists of ... different units.
a) many b) few c) much
4. There are ... programmers who began using Linux.
a) a few b) a great deal of c) little.
5. There is ... software that was designed to compile on Linux.
a) much b) little c) many
6. There are ... operating systems with graphical interfaces mentioned in this text. They are: MacOS, OS/2, Penpoint, Windows NT and others.
a) a lot of b) a few c) much
7. Spreadsheets have ... functions and instructions.
a) many b) few c) little

Ex. 5. Complete this text with *a, an, the* (or *nothing at all*) as necessary.

At school we have (1) ... computer in every classroom. We use (2) ... computer to do (3) ... projects and to study (4) ... music and languages.

The teachers use PCs to print articles, songs, or activities for use in class. This year, they are preparing (5) ... exchange with a college in Norfolk. We all use it to get (6) ... information from (7) ... Internet. At home I use my computer to send and receive (8) ... e-mail and to play (9) ... computer games. I have (10) ... ink-jet printer.

TEXT B

Task. a) Learn to read these words properly.

particular (a)	[pɑːˈtɪkjʊlə]	1) особый, особенный 2) отдельный
to purchase (v)	[ˈpɜːtʃəs]	покупать, закупать
purpose (n)	[ˈpɜːpəs]	1) цель, намерение 2) целеустремленность
an employee (n)	[emˈplɔɪ]	сотрудник, служащий
wage (n)	[ˈweɪdʒ]	зарплата
retrieval (n)	[rɪˈtriːvl]	поиск (информации)
spreadsheet (n)	[ˈspredʃiːt]	электронная таблица
finance (n)	[faɪˈnæns]	пл. финансы, доходы
row (n)	[raʊ]	ряд
a cell (n)	[sel]	1) ячейка, 2) клетка, 3) элемент
total (n)	[ˈtaʊtl]	итог
percentage (n)	[pɜːˈsentɪdʒ]	процентное отношение
font (n)	[fɒnt]	шрифт
alignment (n)	[q̣ˈlaɪnmənt]	выравнивание
query (n)	[ˈkwɪəri]	запрос

b) Memorize the following words and word combinations.

1. a record-keeping system – система сохранения записи
2. to fill in a form – заполнить бланк (форму)
3. relevant (information) – относящийся к делу, уместный
4. to assign (a number) – присвоить (число, номер)
5. once – поскольку, когда
6. to search one's database – искать чью-либо базу данных
7. to extract (information) – извлекать информацию
8. to perform a query – выполнить запрос

c) Read the text and discuss how the following ideas are expressed.

Systems, Programs and Databases

There are two different types of applications programs; namely custom programs and applications packages.

Custom programs are designed to suit a particular situation and are usually written by the user himself. Applications packages, however, are more general and are purchased complete with extensive documentation explaining how to use them for particular purposes.

A spreadsheet program helps you manage personal and business finances. Spreadsheets, or worksheets, are mathematical tables which show figures in **rows** and **columns**.

A **cell** can hold three types of data: text, numbers and 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**, prewritten instructions that can be carried out by referring to the function by name. For example, =SUM(D2:D7) means add up all the values in the cell D2 to D7.

The format menu lets you choose font, alignment, borders, etc.

A **column** is a vertical line of boxes, labelled with a letter.

A row is a horizontal line of boxes, labelled with a number.

A cell is the intersection of a column and a row. You enter data into the active cell.

Parts of a database

A **database** is essentially a computerized record-keeping system.

Each unit of information you create is called a **record** and each record is made up of a collection of **fields**. Typically, a single record consists of a set of field names like: Title, First Name, Surname, JobTitle, TelNo and ID. You fill in a form with the relevant information for each field to add a new record to the database. There are different data types.

Text – holds letters and numbers not used in calculations

Number – can only hold numbers used in calculations and reports

Memo – can store long texts

Date/Time – a date or time or combination of both

AutoNumber – assigns a number to each record

OLE Object – (object linking and embedding) holds sounds and pictures

Yes/No – for alternative values like true/false, yes/no, on/off, etc.

Hyperlink – adds a link to a website

Once you have added data to a set of records, **indexes** must be created to help the database find specific records and sort (classify) records faster. An **index** performs the same function as in the back of a book or in a library. For example, if you regularly search your database by surname, the index should be defined on this field.

Relational databases

Two database files can be **related** or joined as long as they hold a piece of data in common. A file of employee names, for example, could include a field called “DEPARTMENT NUMBER” and another file, containing details of the department itself, could include the same field. This common **field** can then be used to link the two files together.

Extracting information from a database is known as **performing a query**. For example, if you want to know all customers that spend more than £9,000 per month, the program will search the name field and the money field simultaneously.

Ex. 1. Look through the text and find the terms which correspond with these definitions.

1. software which allows data to be displayed and managed in a table format
2. it goes up and down and has letter labels
3. it goes across and has number labels
4. an area in a spreadsheet which contains data
5. the current cell where you enter information
6. mathematical equations that help you calculate and analyze data
7. ready-to-use formulae that help you perform specialized calculations, e.g. SUM AVERAGE, etc.

Ex. 2. Ask 2 questions to each of the following statements.

1. System programs control the basic functions of a computer system. (What? How?)
2. A spreadsheet program helps to manage personal and business finances. (General, alternative)
3. A database is a computerized record-keeping system. (Disjunctive, special)

Writing

Ex. 1. Complete the text below and translate it into Russian in written form.

A (1) ... program allows the user to store, change and retrieve information.

A database file is a collection of records. Each (2) ... contains a set of fields.

Each(3) ... holds a separate piece of information; for example, a student file contains a list of records, each of which consists of several fields which give their name, address, birthday, etc.

In a (4) ... database, information is stored in tables that have a connection or link with one another.

A database lets you create an (5) ... , a list of records ordered according to the content of certain fields; this helps you search and (6) ... records into numerical or alphabetical order very fast. It also has a (7) ... function which allows you to extract information that meets certain criteria.

Ex. 2. Translate these sentences into English using your active vocabulary.

1. Операционная система – это самый важный тип системного ПО.
2. Пакеты прикладных программ включают базы данных для поиска информации, текстовые редакторы для работы с текстом и электронные таблицы для финансового планирования и др.
3. Электронные таблицы имеют много функций и инструкций.

4. Одна запись базы данных состоит из заглавия, имени, фамилии, занимаемой должности, номера телефона и идентификационного номера.
5. База данных позволяет создавать список записей в соответствии с содержанием определенных полей (областей).

Ex. 3. Write some sentences explaining why 'Windows' family is so popular.

UNIT 13

THE GRAPHICAL USER INTERFACE

READING MATERIAL

TEXT A

Task. a) Read these definitions and memorize them.

- window: a viewing area less than or equal to the screen size. By using different windows you can work on several documents or applications simultaneously
- pull-down menu: a menu that the user 'pulls down' from a name in the menu bar at the top of the screen by selecting the name with the mouse
- the pointer: an arrow, controlled by the mouse, that allows you to move around the screen
- toolbar buttons: found at the top of a window, they take you to the Home folder and others.
- icons: graphic images (or intuitive symbols) used to represent an object or task
- folders: containers for documents and applications
- dock: set of icons at the bottom of the screen that give you instant access to the things you use most

b) Learn to read the following word-combinations and memorize them.

procedures [prq` sJGqs]

content [`k0ntent]

expert [`ekspWt]

emphasis [`emfqsIs]

intuitive [in` tjHitlv]

features [`fJCqz]

routines [rHtJnz]

innovative [In0` veItlv]

icons [aIkqnz] – пиктограмма

accessories [qk` sesqrlz] – принадлежности

further [ˈfʊdʒ] – добавочный, дополнительный
 major (adj) [ˈmeɪdʒ] – главный, большой
 connectivity [ˌkɒnˌnekˈtɪvɪti] –
 to interact with – взаимодействовать
 to respond to a prompt
 a user friendly interface
 moreover – кроме того, сверх того
 to save time – экономить время
 to execute [ˈeksɪkjʊt] – выполнять
 to facilitate interaction [ˌfəˈsɪleɪt] – облегчать, способствовать взаимодействию
 to take advantage of – воспользоваться преимуществом
 in addition – в дополнение к; кроме того, что
 to ensure [ɪnˈʃʊə] – гарантировать, обеспечивать
 consistency [ˌkɒnˈsɪstənsi] – последовательность
 to nest – вкладывать (один в другой)
 to launch a program [ˈlɒnʃ] – запустить программу
 compatibility [ˌkɒmpəˈtɪbɪlɪti] – совместимость
 to have an impact on smb – оказывать влияние на кого-либо

c) Read the text.

The Graphical User Interface

1 The term user interface refers to the standard procedures the user follows to interact with a particular computer. A few years ago, the way in which users had access to a computer system was quite complex. They had to memorize and type a lot of commands just to see the content of
 4 a disk, to copy files or to respond to a single prompt. In fact, only experts used computers, so there was no need for a user-friendly interface. Now, however, computers are used by all kinds of people and as a result there is a growing emphasis on the user interface.

A good user interface is important because when you buy a program
 10 you want to use it easily. Moreover, a graphical user interface saves a lot of time: you don't need to memorize commands in order to execute an application; you only have to point and click so that its content appears on the screen.

Macintosh computers – with a user interface based on graphics
 15 and intuitive tools – were designed with a single clear aim; to facilitate interaction with the computer. Their interface is called WIMP: Window, Icon, Menu (or Mouse) and Pointer and software products for the Macintosh have been designed to take full advantage of its features using this interface. In addition, the ROM chips of a Macintosh contain
 20 libraries that provide program developers with routines for generating

windows, dialog boxes, icons and pop-up menus. This ensures the creation of applications with a high level of consistency.

24 Today, the most innovative GUIs are the Macintosh, Microsoft
25 Windows and IBM OS/2 Warp. These three platforms include similar
26 features; a desktop with icons, windows and folders, a printer selector,
28 a file finder, a control panel and various desk accessories. Double-clicking
a folder opens a window which contains programs, documents or further
nested folders. At any time within a folder, you can launch the desired
program or document by double-clicking the icon, or you can drag it to
another location.

The three platforms differ in other areas such as device installation, network connectivity or compatibility with application programs.

These interfaces have been so successful because they are extremely easy to use. It is well known that computers running under an attractive interface stimulate users to be more creative and produce high quality results, which has a major impact on the general public.

Ex. 1. Look through the text and guess the meaning of these words in your own language.

user interface (line 1); commands (line 4); tools (line 15); program developers (line 20); platform (line 24); desktop (line 19); file finder (line 26); nested folders (line 28).

Ex. 2. Find answers to these questions.

1. What does the abbreviation “GUI” stand for?
2. What is the contribution of Macintosh computers to the development of graphic environments?
3. What does the acronym “WIMP” mean?
4. What computing environments based on graphics are mentioned in the text?
5. How do you run a program on a computer with a graphical interface?
6. Can you give two reasons for the importance of user-friendly interfaces?

Ex. 3. Find the English equivalents to the following words.

Запоминать; в результате; появляться на экране; ясная цель; иметь преимущества; обеспечить кого-либо, чем-либо; свойства; высокие результаты; указатель; рабочий стол компьютера.

Ex. 4. Mark these statements as True or False.

1. A user interface allows a user to interact with a computer.
2. A user-friendly interface doesn't make use of icons, menus and pointer.
3. A good user interface is important.
4. Macintosh computers with a GUI were designed to execute some applications and had different aims.
5. Double-clicking a folder icon opens a window, which shows the programs, documents and other folders.

6. Macintosh, Microsoft Windows and IBM OS/2 include both similar and opposite features.

Language work: The Passive Voice (Present, Past)

Help box

A passive verb indicates that the subject of the sentence did not perform the action of the verb. It shows that someone or something else performed this action.

Example. Computers are used by all kinds of people.
The first robot was designed in the 20th century.
New types of graphics software will be created in the future.)

Ex. 1. Look at the Help Box and change the following sentences so as to use Present Passive and Past Passive.

Example 1. A. You scan a picture into your PC.
B. A picture is scanned into your PC.

1. A modern computer performs millions of logical operations.
2. The main memory stores all the programs and data.
3. Engineers and architects use CAD (computer-aided design) to design everything.
4. Vector graphics represent images as mathematical formulae.
5. The user controls the program by choosing one item from the menu.
6. All computers do not use the same operating systems.
7. The operating system copies to disk backing storage the state of the real-time system.

Example 2. I saw her in the computer laboratory yesterday.
She was seen in the computer laboratory yesterday.

1. Xerox Corporation funded the initial research on personal computers in California.
2. Bill Gates founded Microsoft on the basis of MS/DOS.
3. In 1981 Microsoft developed MS-DOS.
4. Bell Laboratories designed Unix to be a multitasking system.
5. Helen learned 2 computer languages when she was at University.
6. Sun Microsystems invented Java to run on the web.
7. They used a fax machine some years ago.

Writing

Ex. 1. Summarize the text. You may like to follow these steps.

1. Read through the whole text again and think of a suitable title for it.
2. Make sure you understand all the main points. Go through the text and underline the relevant information in each paragraph.

3. Make notes about the main points:
 - omit repetitions and unnecessary phrases
 - leave out details, such as examples.
 E.g. notes on the first paragraph: In the past only experts used computers. But now, emphasis on user-friendly interfaces.
4. Make sentences from the notes and connect the sentences by using linking words (and, but, also, because, that's why, in fact, therefore, etc.). Write your first draft.
5. Improve your first draft by reducing sentences (see HELP box below),
6. Write the final version of your summary.

Help box

Ways of reducing sentences

- Transform a relative clause into an *-ing* participle clause
e.g. Icons are graphic images that represent tasks ...
= icons are graphic images representing tasks.
- Take out relative pronouns where possible
e.g. The software (that) we bought last year...
- Omit qualifying words (adjectives or modifying adverbs)
e.g. (quite) complex/(very) similar
- Take out that in reported speech or thought
e.g. It is well known (that) computers ...

I think (that) there's something wrong with this program.

- Cut out unnecessary phrases
e.g. Macintosh computers were designed with a clear aim: to facilitate the user's interaction with the computer,
= Macintosh machines were designed to facilitate the user's interaction with the computer.)

TEXT B

Task. a) Match the English word combinations with their Russian equivalents.

1. bar charts	a. ПО для презентаций
2. filters	b. редактировать картинки
3. presentation software	c. фильтры, эффекты
4. wire frame	d. 1) ограничение изображения 2) вырезка
5. clip-art	e. отражение, отсвет
6. reflection	f. каркасный корпус
7. edit pictures	g. иллюстративная вставка, графический фрагмент, заготовка

b) Read the text and do the following exercises.

Graphics and design

Computer graphics are pictures created, changed or processed by computers.

There are different types of graphics software.

Image manipulation programs let you edit your favourite images. For example, you can scan a picture into your PC or transfer a photo from your camera and then add different effects, or filters.

Painting and drawing programs, also called illustration packages, offer facilities for freehand drawing, with a wide choice of pens and brushes, colours and patterns. One example is Windows Paint.

Business graphics programs, also called presentation software, let you create pie charts, bar charts and line graphs of all kinds for slide shows and reports. You can import data from a database or spreadsheet to generate the graphs.

Computer-aided design (CAD) is used by engineers and architects to design everything from cars and planes to buildings and furniture. First they make a wireframe, a drawing with edges and contour lines. Then if they want to colour the objects and add texture, they create a surface for the object; this is called “filling the surface”. Finally, the design is rendered to make the object look realistic. Rendering is a process that adds realism to graphics by using shading, light sources and reflections.

Desktop publishing (DTP) is based around a page layout program, which lets you import text from a word processor, clip-art (ready-made pictures) from graphics packages, and images from scanners or cameras, and arrange them all on a page. It is used to design and publish books, newspapers, posters, advertisements, etc..

Digital art, or computer art, is done with applets that use mathematics formulae to create beautiful bright shapes called fractals. A fractal is a geometrical figure with special properties, e.g. the Koch snowflake or the Mandelbrot set. Fractals can also be used to model real objects like clouds, coastlines or landscapes.

Computer animation uses graphics programs (e.g. digital cartooning systems) to create or edit moving pictures. Each image in a sequence of images is called a ‘frame’.

Geographic information systems (GIS) allow cartographers to create detailed maps.

Ex. 1. Look through the text and decide which type of graphics software is best for the users.

1. a person who wants to edit photos at home
2. an economist who wants to present statistics in a form that can be easily understood
3. engineers who need to design the interior and exterior of a new aeroplane
4. a company which needs to design and publish a magazine
5. an artist who wants to produce illustrations and freehand drawings for a book
6. an organization that needs to make- maps and 3D virtual models of the surface of the Earth
7. computer animators who make movies like Toy Story and Shrek
8. a mathematician who wants to make fractal shapes of natural phenomena

Ex. 2 . Complete the sentences with words from the box.

wireframe, rendering, bitmap, filters, fractals, clip-art

1. Painting programs work by giving a colour to each pixel in an image, creating a Unlike vector graphics, the image is a single layer, so once something is painted, it becomes part of the whole picture.
2. In painting programs and image editors, ... are special effects that can be applied to a picture, including drop shadows, textures, distortions, etc.
3. The ... model is the simplest: interpretation of a true three-dimensional object. Here the object is represented by its edges and contours and is therefore similar in form to a normal engineering drawing or sketch.
4. ... adds textures to each surface, and generates realistic reflections, shadows and highlights.
5. Most illustration packages come with a bundle of resources that include ready-made ... images and a selection of fonts.
6. ... are geometrical patterns that are repeated at a small scale to generate irregular shapes, some of which are similar to objects in nature.

Writing

Ex. 1. Translate these sentences into English using your active vocabulary.

1. Интерфейс пользователя – это стандартные процедуры, при которых пользователь взаимодействует с компьютером.

2. Три самых новых ГИП – это Macintosh, Microsoft Windows и IBM OS/2 Warp и их чрезвычайно легко использовать.
3. Существует 3 типа графического ПО.
4. Программы для рисования называются пакетами программ для иллюстрации.
5. Компьютерное проектирование (CAD) используется инженерами и архитекторами для составления различных проектов: от автомобилей, самолетов до зданий, мебели и т. д.
6. Компьютерная анимация использует графические программы, чтобы создавать движущиеся картинки.

Ex. 2. Write about two possible applications of using computer graphics in business.

UNIT 14

WORD-PROCESSING FACILITIES

READING MATERIAL

TEXT A

Task. a) Match these words with their definitions.

1. word processor	a. allows you to direct the word processor to search for a particular word or phrase
2. font specifications	b. allows you to include illustrations and graphs in a document
3. layout	c. allows you to merge text from one file into another file
4. graphics	d. allows you to check the spelling of words
5. merge	e. allows you to change fonts within a document
6. spell checker	f. allows you to search for synonyms without leaving the word processor
7. thesaurus [ˈθɪzˌlɜːs]	g. allows you to specify different margins within a single document and to specify various methods for indenting paragraphs
8. find and replace	h. a program used for preparing documents and letters
9. word wrap	i. makes inputting a text much easier and then using a typewriter

b) Read the text and do the exercises below.

Word-processing facilities

Writing letters, memos or reports are the ways people use computers. They manipulate words and text on a screen – primarily to print at some later time and store for safe keeping. Computers alleviate much of the tedium associated with typing, proofing and manipulating words. Because computers can store and recall information so readily, documents need not be retyped from scratch just to make corrections or changes. The real strength of word processing lies in this ability to .store, retrieve *and* change information. Typing is still necessary (at least, for now) to put the information into the computer initially; but once in, the need to retype only applies to new information.

Word processing is more than just typing, however. Features such as Search and Replace allow users to find a particular phrase or word no matter where it is in a body of text. This becomes more useful as the amount of text grows.

Word processors usually include different ways to view the text. Some include a view that displays the text with editor's marks that show hidden characters or commands (spaces, returns, paragraph endings, applied styles, etc). Many word processors include the ability to show exactly how the text will appear on paper when printed. This is called WYSIWYG (What You See Is What You Get, pronounced 'wizzy-wig'). WYSIWYG shows bold, *italic*, underline and other type style characteristics on the screen so that the user can clearly see what he or she is typing. Another feature is the correct display of different typefaces and format characteristics (margins, indents, super- and sub-scripted characters, etc.). This allows the user to plan the document more accurately and reduces the frustration of printing something that doesn't look right.

Many word processors now have so many features that they approach the capabilities of layout applications for desktop publishing. They can import graphics, format multiple columns of text, run text around graphics, etc.

Two important features offered by word processors are automatic hyphenation and mail merging. Automatic hyphenation is the splitting of a word between two lines so that the text will fit better on the page. The word processor constantly monitors words typed and when it reaches the end of a line, if a word is too long to fit, it checks that word in a hyphenation dictionary. This dictionary contains a list of words with the preferred places to split it. If one of these cases fits part of the word at the end of the line, the word processor splits the word, adds a hyphen at the end and places the rest, on the next line. This happens extremely fast and gives text a more polished and professional look.

Mail merge applications are largely responsible for the explosion of ‘personalized’ mail. Form letters with designated spaces for names and addresses are stored as documents with links to lists of names and addresses of potential buyers or clients. By designating what information goes into which blank space, a computer can process a huge amount of correspondence substituting the ‘personal’ information into a form letter. The final document appears to be typed specifically to the person addressed.

Many word processors can also generate tables of numbers or figures, sophisticated indexes and comprehensive tables of contents.

Ex. 1. Answer the following questions.

1. What is a word processor?
2. What makes word processors superior to traditional typewriters?
3. Name the ability of word processors to show how the text will appear on paper.
4. What do the letters WYSIWYG stand for?
5. Describe two important features offered by word processors.
6. What word-processing feature is responsible for “personalized” mail?

Ex. 2. Mark these statements as True or False.

1. When you get to the end of each line, Word starts a new line automatically. This feature is called word wrap.
2. Documents have to be retyped to make corrections or changes.
3. The user can plan the document more accurately by means of format characteristics.
4. The word processor monitors words typed when it reaches the end of a line...
5. Some word processors can generate tables of numbers, indexes and tables of contents.

Ex. 3. Find the English equivalents to the following word combinations.

на экране; облегчать; отыскивать информацию; вид, проекция (текста); расстройство (планов), зд. намерение; разделить слово (для переноса); подходить, соответствовать; контролировать; быть ответственным за что-либо; подставлять, заменять; сложные индексы.

Ex. 4. Look at the words in the box and complete the following sentences with them. Use the information in the text.

type style, WYSIWYG, format, indent, font menu, justification, mail merging

1. ... stands for ‘What you see is what you get’. It means that your printout will precisely match what you see on the screen.

2. ... refers to the process by which the space between the words in a line is divided evenly to make the text flush with both left and right margins.
3. You can change font by selecting the font name and point size from the
4. ... refers to a distinguishing visual characteristic of a typeface; 'italic', for example is a ... that may be used with a number of typefaces.
5. The ... menu of a word processor allows you to .set margins, page numbers, spaces between columns and paragraph justifications.
6. ... enables you to combine two files, one containing names and addresses and the other containing a standard letter.
7. An ... is the distance between the beginning of a line and the left margin, or the end of a line and the right margin. Indented text is usually narrower than text without

Ex. 5. a) Read the descriptions of three major features of word processors.

b) There are three sentences which have been printed in the wrong position, decide where they should go.

1. **Spell checkers** can be used to compare words in the program's dictionary to those used in the user's document. The spell checker points out any words it cannot match, notifies the user and allows them to make any changes; it sometimes even suggests possible correct spellings.

Like a conventional thesaurus, this database of words contains definitions and suggestions of words with similar and opposite meanings. A word may be spelled correctly but still be wrong (*too* instead of *two*, for instance). This is a good first step at proofing a document because it can find many common errors, but users will still need to proofread documents to ensure complete accuracy.

2. Many word processors include an **online thesaurus** with which users can look up different words to use in similar instances. Their power comes not from knowing every grammatical rule, but from questioning the writer about certain parts of the text. Some even include information about pronunciation and histories of evolving meaning.

3. **Grammar checkers** are applications that attempt to check more than just spelling. They count words in sentences to flag possible run-on sentences. They look for words that show possible conflicts between verbs and subjects and they offer advice about corrections. Grammar checkers are a step beyond spell checkers, but they are still not a substitute for a human editor. However, this does not mean that all of the words in the document are spelled correctly. This gives the writer another chance to think about what he or she has written; the computer can alert writers to problems that wouldn't be obvious to them otherwise.

Language Work: -ing forms

Help box I: The Gerund

The gerund looks exactly like the present participle, i.e., it is formed from a verb and ends in *-ing*. The difference is that the present participle is a verbal adjective and the gerund is a verbal noun. Here are examples:

Smoking is not allowed in this carriage. Lucille likes *dancing*.

Seeing is *believing*. Olaf is fond of *walking*.

George earns his living by *selling washing-machines*!)

Forms of the Gerund

Active		Passive
simple	reading	being read
Perfect	having read	having been read

Ex. 1. Translate into Russian paying attention to the Gerund.

1. Reading French is easier than speaking it.
2. Looking after children requires patience.
3. We postponed making a decision till he had been given more information.
4. He walked a long way, without looking either to the right or left.
5. I don't mind being kept waiting.
6. When I'm on holiday, I enjoy not having to get up early.
7. Don't keep interrupting me while I'm speaking.
8. By inserting special command codes into the text, the user can control how it will be printed out.
9. Word-wrap facility makes inputting a text much easier than using a typewriter.
10. The user controls the program by choosing one item from the menu.
11. Automatic hyphenation is the splitting of a word between two lines.

Help box II: Gerund or Infinitive

Verbs followed by the Gerund

Some of the verbs followed by the gerund are: *avoid, dislike, enjoy, finish, mind* (= object to),

e.g. He couldn't **avoid** *meeting* them.

He **enjoys** *asking* questions but **dislikes** *answering* them.

Verbs followed by the Infinitive

Verbs followed by the Infinitive are: (a) all the modal verbs, (b) the verbs *expect, hope, mean* (= intend), *promise, want* and certain others, (Modal verbs)

e.g. You **ought to** *try* harder.

You **must** *do* this work. I **shall** *see* him tomorrow.

(Other verbs) e.g. My friends **expect** *to arrive* here on Saturday and I **hope** *to meet* them at the airport.

They mean *to stay* with us for a month. I **want** *to learn* English and I **promise** *to work* hard.

Verbs followed by the Infinitive or the Gerund

Some of these are: *begin, hate, learn, like, prefer, stop, forget, remember, hear, see,*

e.g. At school children **learn** *reading* and *writing*.

He is **learning** *to fly* an aeroplane.

In the examples just given, it doesn't make much difference in meaning whether the gerund or the infinitive is used, but with the verbs *stop, forget, remember* there is a difference.

Forget

The verb *forget* with the infinitive means «fail to remember»,
e.g. I am afraid that he will **forget** *to write*.

With the gerund it means «lose the memory of»,
e.g. I shall never **forget** *seeing* the Swiss Alps for the first time.

Remember

The infinitive used with, *remember* refers to a future action,
e.g. Please **remember** *to post* this letter before four o'clock.

The gerund used with *remember* refers to past action,
e.g. **I remember** *seeing* you at the Christmas party last year.

Ex. 2. Choose the right form (Gerund or Infinitive) in these sentences.

1. He remembered (to drive) along the road just before the accident happened, but he couldn't remember the accident itself.
2. She doesn't allow us (to smoke) in the house.
3. Don't forget (to pay) for the papers.
4. As we were driving along we saw a good restaurant, so we stopped (to have) dinner, and my friend stopped (to say) he was hungry.
5. I tried to make him (to understand) it was no good (to get) angry.
6. Lusy didn't feel like (to go) to the cinema last night and refused (to go) with me.
7. I hope Hob will remember (to meet) him.
8. I can't help (to feel) sorry for animals in a circus.

Ex. 3. Translate into English paying attention to the Gerund.

1. Плавание – один из самых популярных видов спорта.
2. Бесполезно звонить ему, в это время его никогда нет дома.
3. Я не люблю, когда мне говорят неправду.
4. Я помню, что опустила письмо в ящик.
5. Она не могла не думать о родителях.
6. Перестань пить крепкий чай перед сном – и ты будешь хорошо спать.

7. Программа Word используется для подготовки и редактирования писем и других документов.
8. Пользователь управляет программой, выбирая один пункт из меню.

Task 1. Work in pairs. Read the table below which summarizes the most relevant features of two word-processing programs. The characteristics of each program are marked with a tick (+). Student A has Printtext and Student B has Publisher. Explain to your partner why your program is better.

Example:

A: With Printtext I can ...

B: Yes, but you can't ...

A: However, it is possible to ... whereas with Publisher you can't...

B: Yes, but don't forget that with Publisher you can ... Moreover, ...

A: OK. I understand what you mean, but what about ...?

<i>Characteristics</i>	<i>Student A Printtext</i>	<i>Student B Publisher</i>
1. Instantaneous WYSIWYG and editing		
2. Variety of font types, styles and size		+
3. Editing facilities: Copy, Cut, Paste, Undo, Select All	+	+
4. Centring and indenting paragraphs. Special column formats. Hyphenation and justification of text with optimum line-breaking	+	+
5. Spell checker, grammar checker and thesaurus	+	+
6. Can find and replace words even in unopened files		+
7. Automatic numbering of chapters and sections. Automatic generation of indexes and tables of contents. Cross-reference facilities	+	+
8. Allows you to generate maths formulas, and diagrams		+
9. Graphics tools: You can have the text wrap around the graphic or flow through it. You can scale and rotate graphics		
10. Import and export facilities. You can transfer files to other IBM PCs and Macintosh applications	+	
11. You can record voice annotations to insert comments into a document	+	+
12. Includes Internet connection tools and allows you to create HTML pages for the Web		+

UNIT 15

DATABASES

READING MATERIAL

TEXT A

Task. *a) Companies often use databases to store information about customers, suppliers and their own personnel. Try to answer these questions.*

1. What is a database?
2. Which tasks can be performed by using a database? Make a list of possible applications.
3. “What do the terms mean in your language: File, record, field?”

b) Here is part of an article about databases. First, read all the way through and underline the basic features of a database.

Basic features of database programs

With a **database** you can store, organize and retrieve a large collection of related information on computer. If you like, it is the electronic equivalent of an indexed filing cabinet. Let us look at some features and applications.

- Information is entered on a database via **fields**. Each field holds a separate piece of information, and the fields are collected together into **records**. For example, a record about an employee might consist of several fields which give their name, address, telephone number, age, salary and length of employment with the company. Records are grouped together into **files** which hold large amounts of information. Files can easily be updated: you can always change fields, add new records or delete old ones. With the right database software, you are able to keep track of stock, sales, market trends, orders, invoices and many more details that can make your company successful.

- Another feature of database programs is that you can automatically look up and find records containing particular information. You can also search on more than one field at a time. For example, if a managing director wanted to know all the customers that spend more than £7,000 per month, the program would search on the name field and the money field simultaneously.

A computer database is much faster to consult and update than a card index system. It occupies a lot less space, and records can be automatically sorted into numerical or alphabetical order using any field.

The best packages also include networking facilities, which add a new dimension of productivity to businesses. For example, managers of different departments can have direct access to a common database, which represents an enormous advantage. Thanks to security devices, you can share part of your files on a network and control who sees the information. Most aspects of the program can be protected by user-defined passwords. For example, if you wanted to share an employee's personal details, but not their commission, you could protect the commission field.

In short, a database manager helps you control the data you have at home, in the library or in your business.

Ex. 1. Now make a list of the words you don't understand. Can you guess their meaning? Compare your ideas with other students.

Ex. 2. Using the information in the text, complete these statements.

1. A database is used to
2. information is entered on a database via
3. Each field holds
4. 'Updating' a file means
5. The advantages of a database program over a manual filing system are
6. Access to a common database can be protected by using

Ex. 3. Translate into English the words and expressions given in brackets.

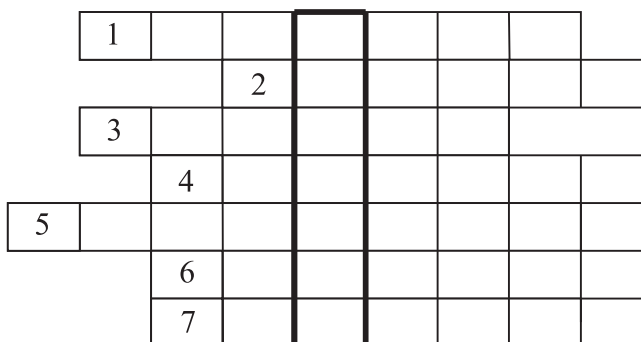
1. (Давайте взглянем) at some features and applications.
2. Records (сгруппированы) together into files.
3. Files can (легко) be updated; you can always (изменить) fields, (добавить) new records or (уничтожить) old ones.
4. You can find records, (содержащие) particular information.
5. You can also search on more than one field (за один раз).

Task 1. a) Complete the sentences by using a term from the list. Then write the words in the crossword to find the hidden message.

Puzzle

database, field, layout, merging, record, sorted, updated

1. In order to personalize a standard letter you can use 'mail ... ' (a technique which consists of combining a database with a document made with a word processor).
2. Records can be automatically ... into any order.



3. You can decide how many fields you want to have on a
4. Files can easily be ... by adding new information or deleting the old one.
5. A ... program can be used to store, organize and retrieve information of any kind.
6. The ... of the records can be designed by the user.
7. Each piece of information is given in a separate

b) Write the plural of these words.

1. slot	5. fax
2. key	6. mouse
3. directory	7. floppy
4. businessman	8. virus

UNIT 16

FACES OF THE INTERNET

Task. a) Which Internet utility (1 to 7) would you use to do each of these tasks (a to g)? Read the text below to check your answers.

1. e-mail	a. send a message to another person via the Internet
2. Web browser	b. transfer files from the Internet to your hard disk
3. Newsreader	c. have a live conversation (usually typed) on the Internet
4. IRC/chat program	d. connect to a remote computer by entering certain instructions and run programs on it
5. FTP software	e. take part in public discussion areas, called newsgroups
6. Videoconferencing	f. fetch and view Web pages on the Internet
7. Telnet	g. participate in live conversations, using text, audio and video

b) Read the text and translate it.

Internet software

Getting connected

The language used for data transfer on the Internet is known as TCP/IP (transmission control protocol/Internet protocol). This is like the Internet operating system.

The first program you need is a PPP (point to point protocol) driver. This piece of software allows the TCP/IP system to work with your modem; it dials

up your Internet service provider (ISP), transmits your password and log-in name and allows Internet programs to operate.

E-mail

E-mail is your personal connection to the Internet. It allows you to exchange messages with people all over the world. It can include text, pictures, and even audio and animation.

When you set up an account with an ISP, you are given a unique address and anyone can send you e-mail. The mail you receive is stored on the server of your ISP until you next connect and download it to your hard disk.

Web browsers

The Web is a hypertext-based system where you can find news, pictures, games, online shopping, virtual museums, electronic magazines – any topic you can imagine.

You navigate through the Web using a program called a ‘browser’, which allows you to search and print Web pages. You can also click on keywords or buttons that take you to other destinations on the net. This is possible because browsers understand hypertext markup language (HTML), a set of commands that indicate how a Web page is formatted and displayed.

IRC, audio and video chatting

IRC – Internet relay chat is a system for real-time (usually typed) conversation. It’s easy to use. To start a chat session you run an IRC program, which connects you to an IRC server – a computer dedicated to IRC. Then you join a channel, which connects you to a single chat area. Next you type a message and the other participants can see it.

Internet telephone and video chatting are based on IRC protocols. Videoconferencing programs enable users to talk to and see each other, and collaborate. They are used in intranets – company networks that use Internet software but make their Web site accessible only to employees and authorized users.

FTP and Telnet

With **FTP** software you can copy programs, games, images and sounds from the hard disk of a remote computer to your hard disk. Today this utility is built into Web browsers.

A **Telnet** program is used to log directly into remote computer systems. This enables you to run programs kept on them and edit files directly.

Newsgroups

Newsgroups are the public discussion areas which make up a system called ‘Usenet’. The contents of the newsgroups are contributed by people who send articles (messages) or *respond to articles*. *They are classified into categories: comp* (computers), *misc* (miscellaneous), *news* (news), *rec* (recreation), *soc* (society), *sci* (science), *talk* and *alt* (alternative).

Ex. 1. Read the text again and choose the right answer.

1. An Internet service provider (ISP) is
 - a). a program that connects you to the Internet,
 - b). a company that gives you access to the Internet.
2. HTML is
 - a). the software which allows you to fetch and see Web pages,
 - b). the codes used to create hypertext documents for the Web.
3. An IRC channel is
 - a). an IRC discussion area,
 - b). a computer system dedicated to IRC.
4. Usenet is
 - a). a big system of public discussion groups,
 - b). a newsgroup.
5. An intranet is
 - a). like a small version of the Internet inside a company,
 - b). a commercial online service.

Ex. 2. Ask your partner these questions.

1. What web site do you visit to chat with friends?
2. Which chat channels are you interested in?
3. Do you talk with strangers during web chats?
4. Do you use your real name or a nickname?
5. How long do you usually spend at the terminal?

Task 1. The picture below illustrates a typical web page. Look at the HELP box and then find the following features in the picture.

Help box

- **URL:** uniform resource locator, the address of a file on the Internet. A URL looks like this:
`http://www. netscape.com/`
 - 'http://' means hypertext transfer protocol and tells the program to look for a web page
 - 'www' means World Wide Web
 - 'netscape.com' is the domain name and tells people that it is a commercial enterprise
- **navigation buttons:** buttons on the toolbar which allow you to go back or forward to other web pages. You can also return to your start-up page or stop the transfer when the circuits are busy
- **links:** shortcuts (underlined text or images) that, when clicked, take you to other web pages
- **security on the Web:** just a few websites are secure. When the page is not encrypted, the security lock is open.)



1. URL address
2. Basic functions of the toolbar:
 - a. go to the home page
 - b. retrace your steps
 - c. go forward one page
 - d. interrupt the current transfer
 - e. update a page
 - f. find words within a page
 - g. load and display the page's images
3. Clickable image link
4. Clickable hypertext link

Task 2. a) Have you ever surfed the Web? What are your favourite web sites? Tell your partner about it.

b) Look at these tasks and choose the most suitable Web site from the cyberlist.

1. Read about environmental problems
2. Get news reports
3. Find out about specific hardware and software

<http://www.yahoo.com/>
<http://www.greenpeace.org/>
<http://www.ibm.com/>

- | | |
|---|---|
| 4 Make flight reservations | http ://www.gofly.com/ |
| 5 Read about films and Hollywood awards | http://www.telegraph.co.uk/ |
| 6 Search for web addresses | http://www.oscars.org/ |
-
- | | | |
|-------------------------|---|--|
| • User name or nickname | • The computer system where the user gets e-mail. “Sendanet” is an Internet service provider. | • Tells people that the company is based in Spain. Other countries include .fr for France, .nl for Holland, .uk for United Kingdom, etc. |
| • The @ sign means “at” | | |

Task 3. *Enter the Infotech website at www.cambridge.org/ett/infotech Then go to the Web links section and do the activity History of the Internet.*

UNIT 17

PROGRAMMING LANGUAGES

READING MATERIAL

TEXT A

Task. *a) In pairs, try to think of an answer for the question: What is programming?*

b) Complete the following definitions with the words and phrases below.

The various parts of the program, may occur in programs, language, binary numbers, a given problem.

1. **algorithm**
The step-by-step specification of how to reach the solution to ...
2. **flowchat**
A diagram representing the logical sequence between ...
3. **coding**
The translation of the logical steps into a programming ...
4. **machine code**
The basic instructions understood by computers. The processor operates on codes which consist of ...
5. **debugging**
The techniques of detecting, diagnosing and correcting errors (or ‘bugs’) which ...

c) Read the text. Translate it and do the exercises below.

Programming languages

Unfortunately, computers cannot understand ordinary spoken English or any other natural language. The only language they can understand directly is called machine code. This consists of the 1s and 0s (binary codes) that are processed by the CPU.

However, machine code as a means of communication is very difficult to write. For this reason, we use symbolic languages that are easier to understand. Then, by using a special program, these languages can be translated into machine code. For example, the so-called assembly languages use abbreviations such as ADD, SUB, MPY to represent instructions. These mnemonic codes are like labels easily associated with the items to which they refer.

Basic languages, where the program is similar to the machine code version, are known as low-level languages. In these languages, each instruction is equivalent to a single machine code instruction, and the program is converted into machine code by a special program called an assembler. These languages are still 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 machines, higher-level languages were designed such as BASIC, COBOL, FORTRAN or PASCAL. These are all problem-oriented rather than machine-oriented. Programs written in one of these languages (known as source programs) are converted into a lower-level language by means of a compiler (generating the object program). On compilation, each statement in a high-level language is generally translated into many machine code instructions.

People communicate instructions to the computer in symbolic languages and the easier this communication can be made, the wider the application of computers will be. Scientists are already working on Artificial Intelligence and the next generation of computers may be able to understand human languages.

Ex. 1. Answer the following questions.

1. Do computers understand human languages?
2. What are the differences between low-level and high-level languages?
3. What is an assembler?
4. What is the function of compiler?
5. What do you understand by the terms source program and object program?
6. In the future, could computers be programmed in Spanish, French or Japanese?

Task 1. a) Look at the groups of words and decide what part of speech each word is. Then complete the sentences with the correct word.

Compile, compiler, compilation.

1. Programs written in a high-level language require ..., or translation into machine code.
2. A ... generates several low-level instructions for each source language statement.
3. Programmers usually ... their programs to create an object program and diagnose possible errors.

Program, programmers, programming, programmable.

4. Most computer ... make a plan of the program before they write it. This plan is called a flowchart.
5. A computer ... is a set of instructions that tells the computer what to do.
6. Converting an algorithm into a sequence of instructions in a programming language is called ...

Bug, debug, debugger, debugging.

7. New programs need ... to make them work properly.
8. Any error or malfunction of a computer program is known as a ...
9. The best compilers usually include an integrated ... which detects syntax errors.

b) In the word debug the prefix de- is used. This prefix means 'to reverse an action'. Here are a few more examples:

Defrost, debrief, declassify, decode, decompose, decentralize.

Write down the base form of each verb. What do the verbs mean in your language? And what do the verbs with de- mean?

c) Can you think of any more verbs with de- in English?

Language work: Infinitive constructions

Ex. 1. Make sentences as in the example.

Example. Not easy/ write instructions in Pascal
It is not easy to write instructions in Pascal.
Use this Help box.

Help box

The infinitive is used:

- a. after adjectives
 - It is *difficult to use* machine code.
- b. after modal verbs with to: ought to, used to.
 - I *ought to make* a back-up copy.
 - Using a computer is much easier than it *used to be*.
- c. after modal and auxiliary verbs without to: can, could, may, might, shall, should, will, would, would rather, would sooner.
 - Unfortunately, computers *can't understand* English.
 - I'd *rather buy* a game than a spreadsheet.

1. advisable/ test the program under different conditions.
2. expensive/ set up a data-processing area.
3. unusual for a program/ work correctly the first time it is tested.
4. difficult for students/ learn FORTRAN.
5. important/ consider the capabilities of the programming language.
6. quite easy/ write instructions in BASIC.

Ex. 2. Read the information in the Help box and then look again at the text. Underline the infinitive constructions after modal verbs.

Example. Unfortunately, computers cannot understand ordinary spoken English ...

Ex. 3. Look at these pairs of examples and decide where there is an 'important' change in meaning.

1. a. I remember shutting down the computer before I left the room.
b. Please remember to buy the new program.
2. a. They stopped to look at the flowchart.
b. They stopped looking at the flowchart.
3. a. I like studying C language.
b. I like to study C language.
4. a. It has started to rain.
b. It has started raining.
5. a. He needs to work hard.
b. This hard disk needs repairing.

Ex. 4. Translate the following sentences into English.

1. Слово «компьютер» означает «вычислитель», т. е. устройство, чтобы делать вычисления.
2. Компьютеры могут хранить в памяти полученные промежуточные и итоговые результаты.
3. Компьютеры могут обрабатывать и другие виды информации.
4. Это устройство может обмениваться информацией с оперативной памятью и внешними устройствами.
5. Для того чтобы компьютер мог осуществить определенные действия, необходимо составить программу.
6. Для эффективного использования компьютера необходимо знать назначение и свойства необходимых программ.
7. Операционная система – это программа, которая может управлять компьютером.

Task 2. Using Infinitive constructions, retell the text 'Programming languages'.

UNIT 18

LANGUAGES

READING MATERIAL

TEXT A

Task 1. a) Make a list of as many computer languages as you can think of.

b) Do you know any language used to interact with the Internet through voice-recognition?

c) Study this table and answer the questions below.

The VoiceXML language

Language	Date	Characteristics	Uses
VXML or Voice XML (Voice Extensible Markup Language)	2000	Based on the XML language. For input, VoiceXML uses voice recognition. For output, it uses prerecorded audio content and speech synthesis (text-to-speech). How do you access a voice web portal? First,	Used to create voice-user interfaces. Makes Internet content accessible via voice and phone. Instead of using a web browser on a PC, you use the telephone to access voice-equipped websites via a VoiceXML interpreter (a voice browser).
Created by a Working Group of four companies – AT&T, Lucent, Motorola and IBM		you dial its phone number. Then the call is received by a telephone server and the VoiceXML pages are fetched via HTTP. Finally, you get the required information. A typical VoiceXML page could be 'sports.vxml.'	Applications: – Voice portals (telephone services where you can hear information about sports, news, traffic, etc.) – Voice-enabled intranets – Voice e-commerce – Home appliances controlled by voice.

Ex. 1. Answer the following questions.

1. What does VXML mean?
2. Who created VoiceXML?
3. When was it developed?
4. What technologies does it use for input and output?
5. What are the most suitable applications for VoiceXML?
6. What do you think are the benefits of having a voice Web?

Language work: The passive

Ex. 1. a) Complete these sentences with a suitable verb form.

Use this Help box.

Help box

The passive is formed with the verb to be in the correct tense and the past participle of the main verb.

Example. Instructions *are processed* by the CPU.

The computer *was invented* by Charles Babbage.)

1. COBOL (use) for business applications.
2. Original programs (write) in a high-level language.
3. All computer languages (must translate) into binary commands.
4. The ADA language (develop) in 1979.
5. In the 1970s, new languages such as LISP and PROLOG (design) for research into Artificial Intelligence.
6. A new version of TurboPascal (release) just.
7. In the next century, computers (program) in natural languages like English or French.

b) How do you make the passive in your language?

Ex. 2. Translate the following sentences into English using the passive.

1. COBOL был впервые представлен в 1959 г.
2. Microsoft был основан на базе развития MS/DOS.
3. Организация была создана для рекламы использования компьютеров в образовании.
4. Сегодня компьютеры все чаще используются.
5. Первый цифровой компьютер был создан в 1946 г.
6. В следующем году продадут больше компьютеров.
7. В компьютерной технологии сделано много улучшений.
8. Эту программу нужно усовершенствовать.

9. Данные постоянно передаются.
10. Другим пользователям автоматически отказано в доступе к этим записям.

Ex. 3. Read the passage and complete it with the verbs in brackets in the correct form.

A short description of Visual Basic

Visual Basic is a programming language and an environment (1) (develop) by Microsoft in 1990. It (2) (use) to create applications for Windows operating systems.

The name 'BASIC' (3) (stand) for Beginner's All-purpose Symbolic Instruction Code. The original BASIC language (4) (create) in 1965 and adopted by many programmers and PC manufacturers because it was user-friendly and easy to learn.

The adjective 'Visual' refers to the technique used to create a graphical user interface. Instead of (5) (write) a lot of instructions to describe interface elements, you just (6) (add) pre-defined objects such as buttons and dialog boxes, which can (7) (choose) from a toolbox. It (8) (take) only a few minutes to create a Visual BASIC program. Using the mouse, you simply (9) (drag) and drop controls (e.g. option buttons, text boxes, icons, menu bars, etc.) into the required position, and then define their colour, size and behaviour.

Thanks to its object-oriented philosophy and interactive nature, Visual BASIC (10) (enable) the programmer to quickly create all sorts of applications from small system utilities to database programs and Internet server applications.

Task 2. Work in pairs.

a) Student A, complete the table by asking for information, like this:

1. What does 'COBOL' mean?
2. 'COBOL' stands for...
3. When was it developed?
4. In ...
5. What's it used for?
6. It's used for ...
7. What features has it got?
8. It is easy to use and it's written in English. It can handle very large data files.

b) Answer your partner's questions too.

Computer language	Date	Characteristics	Uses
COBOL (Common Business Oriented Language)	1958-1959	Easy to read. Able to handle very large files. Written in English.	Mainly used for business applications.
BASIC	General purpose language. Used to teach programming.
Pascal (named after ...)	1970-1973	Structured language with algorithmic features designed for fast execution of the object program. A fast compiler called TurboPascal was created in 1982-very popular.	...
LOGO	1969	...	Designed for use in schools to encourage children to experiment with programming.
SQL (...) Introduced by Oracle Corp.	1979	Supports distributed databases, which run on several computer systems. Allows various users on a LAN to access the same database at the same time.	...

c) Student B, complete the table by asking for information, like this:

1. What does 'COBOL' mean?
2. 'COBOL' stands for ...
3. When was it developed?
4. In...
5. What's it used for?
6. It is used for...
7. What features has it got?
8. It is easy to use and it's written in English. It can handle very large data files.

d) Answer your partner's questions too.

Computer language	Date	Characteristics	Uses
COBOL (Common Business Oriented Language)	1958-1959	Easy to read. Able to handle very large files. Written in English.	Mainly used for business applications.
... (Beginner's All-purpose Symbolic Instruction Code)	1964-1965	High-level programming language. Interactive. Easy to learn. Displays error messages that help users to correct mistakes. Has a large number of dialects.	...
Pascal (named after the famous scientist Blaise Pascal)	1970-1973	...	General purpose. Often used in colleges and universities to teach programming.
LOGO	...	Easy to learn. Flexible- it can do maths, make lists, construct graphs, etc. Its drawing capabilities allow children to construct simple graphics programs.	...
Structured Query Language	A standard query language used for requesting information from a database. It allows users to specify search criteria in databases.

Task 3. Summarize everything you've learnt about these computing languages.

TEXT B

Task. a) The term ‘Java’ refers to three things:

- *an island in Indonesia*
- *a cup of coffee, in American slang*
- *a language for Internet applications.*

But what exactly is Java?

b) Can you guess the meaning of these words? Use the dictionary if necessary.

Applet, object-oriented, compiler, plug-in, real-time, download.

c) Read the text.

What is Java?

Java is a programming language developed by Sun Microsystems. When you see a web page that uses Java, a small program called ‘applet’ is done automatically. Java applets let you watch animated characters and moving text, play music and interact with information on the screen.

Characteristics of the Java language.

Java is an object-oriented language similar to C++, but it is more dynamic and simplified to eliminate possible programming errors.

A Java program is both compiled and interpreted. First the source code is compiled and converted into a format called bytecode, which can then be executed by a Java interpreter. Compiled Java code runs on most computers, because there are Java interpreters, known as Java Virtual Machines.

Java is multi-threaded. A Java program can have multiple threads (parts), i.e. many different things processing independently and continuously.

Why is Java cool?

Java lets you create moving images and animated drawings. You can also create graphical objects (e.g. bar charts, graphs, diagrams) and new ‘controls’ (e.g. buttons, check boxes, pushbuttons with special properties). A web page that uses Java can have inline sounds that play in real-time, music that plays in the background, cartoon style animations, real-time video and interactive games.

Alternatives to Java.

One alternative technology is ActiveX, the Microsoft product for including multimedia effects on web pages. Another competitor is Macromedia’s Shockwave, a plug-in that lets you animate pictures, add sound and even make interactive pages so that people can play games on websites.

Ex. 1. These statements about Java are all false. Correct them.

1. Java was invented by Microsoft.
2. Small applications written in Java are called 'animations'.
3. With the interpreter, a program is first converted into Java bytecodes.
4. Java is not compatible with most computing platforms.
5. The Java language is single-threaded, one part executing at a time.
6. Java doesn't let you watch animated characters on your webpages.
7. ActiveX and Shockwave are not real competitors for Java.

Ex. 2. Solve the anagrams in the right-hand column and match them with the words in the left-hand column to complete the phrases. The first one has been done for you.

1. <u>high-level</u>	a. mestnttae	_____
2. machine	b. thirmacite	_____
3. systems	c. peat	_____
4. object	d. taporeor	_____
5. linkage	e. omelud	_____
6. magnetic	f. <u>eggualan</u>	<u>language</u>
7. binary	g. trodite	_____
8. declaration	h. deco	_____
9. comment	i. enil	_____
10. relational	j. nituroe	_____

Ex. 3. a) Match each word on the left with its partner to make a common technical term.

1. programming	a. browser
2. web	b. error
3. Java	c. code
4. multimedia	d. protection
5. source	e. format
6. virus	f. effects
7. compression	g. applet

b) Which verbs on the left are often found with nouns on the right?

1. to download	a. the Web
2. to play	b. a source program
3. to run	c. files
4. to browse	d. an application
5. to compile	e. data
6. to process	f. music

Language work: The Past Simple

Ex. 1. Put these verbs in the right column. Use this Help box.

Help box

The Past Simple.

Regular verbs add *-ed* to form the past simple (the affirmative form).

The *-ed* is pronounced as:

-/t/ after voiceless sounds: /p/, /k/, /θ/, /s/, /f/, /tʃ/: stopped, talked.

- /d/, after voiced sounds: /b/, /g/, /ð/, /z/, /v/, /ʒ/, /l/, /r/, nasal consonants /m/, /n/, /ŋ/, and vowels: visualized, plugged, specified.

-/ɪd/ after /t/ or /d/: wanted, needed.

Developed, asked, described, decided, produced, supplied, watched, generated, published, persuaded, programmed, combined, scaled, interpreted, arranged.

/t/

/d/

/ɪd/

.....

Ex. 2. Read the passage below and complete it with the correct form of the verbs.

Call, decide, develop, be, begin, can, rename, have, support, base.

The idea for Java started in 1990 when a team of software engineers at Sun Microsystems (1) ... to create a language for handheld device that could control and interact with various kinds of electronic appliances ranging from Nintendo game boys to VCRs and TV set-top boxes. They (2) ... an object-oriented programming language that Gosling (3) ... 'Oak', after the tree outside his window. The device (4) ... an animated character named 'duke', which would go on to become Java's mascot.

With the advent of the Web in 1993, the company made a web browser (5) ... on the Oak language. Later on, this language was adapted to the Internet and (6) ... 'Java'. The 1.0 version of Java was officially introduced by Sun in May 1995.

At that time, web pages (7) ... only display text, pictures and hyperlinks. With the arrival of Java, web designers (8) ... able to include animation and interactive programs on web pages. The first major application created with Java was the HotJava browser. The Java language (9) ... to attract serious attention from the Internet community and was soon (10) ... by Netscape Navigator and Microsoft Internet Explorer. Today Java is a hot technology that runs on any computer.

Ex. 3. Complete the chart below with notes about the different stages in your 'computer history'. For example: 1985: First used computer at school.

Add more boxes to the chart if you want to.

Possible stages:

- first computer game;
- first computer lesson at school/ college;
- first programming language learnt;
- first software used;
- first computer course/ qualification;
- first job involving computers;
- first steps on the Internet.

1.
2.
3.
4.
5.

Ex. 4. Ask a partner about their computer history. For example:

- 'When did you first ...?'
- 'How long ago did you ...?'
- 'How old were you when you ...?'
- 'Where did you first...?'

Task 1. Read the statements below. Which do you agree with more? Why?

- a)** 'Learning a programming language is like learning any natural language. The difference is that you communicate with a machine instead of another person.'
- b)** 'I hate when I hear people compare programming languages with natural languages. These languages have nothing in common.'

Task 2. Translate in written form the following passage.

C was developed in 1970 to support the UNIX operating system. C++ was developed from the C language. It was designed as a systems programming language with features that make it easy to control the computer hardware efficiently. It was used to produce the Microsoft Windows operating system. It is portable, i.e. programs written in C++ can be easily adapted for use on many different types of computer systems.

JavaScript is a simplified form of the Java language. It is powerful and easy to use. Scripts are small programs that can be used to perform simple tasks or tie other programs together. JavaScript is designed for use inside webpages. It can enable a webpage to respond to a mouse click or input on a form. It can also provide a way of moving through webpages and produce simple animation.

Task 3. Give a summary about languages described in this Unit.

UNIT 19

JOBS IN COMPUTING

READING MATERIAL

TEXT A

Task. a) Read the text and do the following exercises.

Jobs in Computing

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

All the people involved in the different stages of development of a computer project, i.e. analysts, programmers, support specialists, etc. are controlled by a project manager.

Analyze

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; system analysts decide what ICT system will cater for the requirements of a specific instruction.

Design and develop

Web designers, also called webmasters, create and maintain web pages and web applications for websites.

Software engineers, either application programmers or system programmers, plan design, and test computer programs.

Hardware engineers design and develop ICT devices.

Security specialists specialize in the design of software and hardware to protect information from malware: viruses, spyware, etc.

Manage

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

Support

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 ICT systems.

Ex. 1. Classify these jobs under the heading that best describes their function.

Software engineer, help desk technician, database administrator, trainer, network analyst, system analyst, hardware engineer, network administrator.

analyze	design/develop	manage	support
a.../b...	c.../d...	e.../f...	g.../h...

Ex. 2. Draw lines between the columns to make true sentences about jobs.

A technical designer	controls all the operations and people in a project.
A project writer	writes documentation of a program or device.
A web specialist	plans and keeps websites updated.
A security manager	designs applications against viruses.

Ex. 3. Study the personal profile of Charles Graham. Which is the most suitable job for him?

Charles Graham

- 28 years old.
- Education: 3 A-levels.
- In-depth knowledge of Apple Macintosh equipment.
- Course in graphic design and page-layout applications from Highland Art School.
- Proficient in Adobe PageMaker.
- Diploma in word processing. Wide experience in MS Word and WordPerfect.
- Present job: Computer operator for PromoPrint, a company specializing in publishing catalogues and promotional material.

Language work: Past Activities

Ex. 1. a) Complete the sentences below using *for*, *since* or *ago*. Use this Help box.

Help box

For: We've used Microsoft Internet Explorer *for* two years.

Since: I've been a programmer *since* 1993.

Ago: I left university seven years *ago*.

1. I've been looking for a job ... April.
2. They've used a fax machine ... the past two years.
3. Kate Jackson studied computer sciences ... three years.
4. I got married six years...
5. She's been working for this firm ...1990.

b) What is the difference in meaning between these two sentences?

- a. I've worked for a year as a senior programmer.
- b. I worked for a year as a senior programmer.

Ex. 2. Sarah Brown is one of the applicants for the job of Senior Programmer. Read her letter of application and put the verbs in brackets into the correct tense.

*19 Sandford Street
London NW 7 4HH*

*Mr. Scott
Personnel Manager
Digitum
75 Parkhill Street
London SW2 3DE*

Dear Mr. Scott,

I am writing to (1) (apply) ... for the position of Senior Programmer which (2) (advertise) ... on 28 February in The Times

I (3) (work) ... as a computer programmer for the last three years. After graduation I (4) (work) ... for a year with NCR and (5) (be) ... now ... with Intelligent Software for two years. I design systems in COBOL for use in large retail chains. These have been very successful and we (6) (win) ... several new contracts in the UK and Europe on the strength of my team's success.

Last year I (7) (spend) ... three months in Spain testing our programs and also (8) (make) ... several short visits to Italy so I have a basic knowledge of Spanish and Italian. Now I feel ready for more responsibility and more challenging work and would welcome the opportunity to learn about a new industry.

I enclose my curriculum vitae and look forward to hearing from you.

Yours sincerely,

Sarah Brown.

Task 1. Ex. 1. a) Here is a form of Curriculum Vitae.

CURRICULUM VITAE

Personal details

Name _____

Date of birth _____

Address _____

Telephone number _____

Education _____

Work experience _____

Other information _____

Referees _____

b) Complete the CV with all the relevant information about yourself according to the CV of David William Manning

CURRICULUM VITAE

Personal details

Name	<u>David William Manning</u>
Date of birth	<u>29 May 1987</u>
Marital Status	<u>Single</u>
Address	<u>318 Leadhill Street London EC1 1DR</u>
Telephone number	<u>071 263 6925</u>

Education

1994-2004	<u>St. Godric's School, Buckingham</u> <u>General Certificate of Education</u>
2007-2007	<u>Aston Technical College, Birmingham</u> <u>OND in Computing</u>

Work experience

2007 to present	<u>Company: GCG Merchant Bank</u> <u>Post: a Systems Programmer</u>
-----------------	--

Other information	<u>Clean driving licence</u>
-------------------	------------------------------

Referees	<u>Mr Joseph Morse</u> <u>System Manager</u> <u>GCG Merchant Bank</u> <u>Threadneedle Street</u> <u>London EC1 7GH</u>
----------	--

Ex. 2. Maria Quintana, from Spain, is interested in the job of computer operator as advertised below. Use her notes to write a letter. You can start like this: I'm writing to apply for...

International Mercury Computers Requires Computer Operators

We have vacancies for experienced operators to work on their own initiative in a busy company. You will be responsible for the day-to-day running of our data-processing equipment. You must be highly communicative and have good problem-solving skills. We can offer an excellent salary, training and good promotional prospects to the right candidate.

Send your CV and a covering letter to James Taylor, International Mercury Computers, 37 Charles Place, London SW 10 6XX

Notes for the CV

- Cambridge Certificate of proficiency in English.
- Computer Sciences degree from Zaragoza University, Spain.

- *Knowledge of both Macintosh and Windows environments.*
- *Two years' experience working on 'Linea Directa', a local magazine for computer users.*
- *Present job: Computer Operator for Graphic Color SL. This involves data control and editing, data preparation, and computer operating.*
- *Reasons for applying: Wants to develop operating skills and move into management.*

Task 2. *Is there the job of your dreams? Select your favourite career and, while you are reading the article, write down the personal qualities and professional abilities required for the job.*

There are so many reasons to plop down at the computer and play for hours. For some teens, computer time is a fun way to relax. But for students with strong math skills and technology know-how, computers can lead to successful careers.

Changing technology is one reason computer professionals will continue to be in demand in the future. Short supply is another major factor. David Overbye, director of curriculum at DeVry University, says the dot-com bust has stopped many students from enrolling in computer programs. What kind of computer careers are available? Hot jobs include video game creator, network security administrator, webmaster and animator.

Animator

Movies, television and Web pages all use high-tech animation. In the long term, Overbye says, animation is a growing industry.

Students interested in a career in animation should be creative and have an eye for design. "It is a more top-level skill," Overbye says. "These are going to be the more artistic types, the people who are good at laying things out."

Computer animators also need to have strong computer skills and "know the tools they are using," Overbye says. Animators can be hired by movie studios, television networks or companies looking for Web designers.

"You're seeing a general trend toward higher (Internet) speeds to the home, so content going on the Web is becoming more dynamic," he says.

Video game creator

The field of video games and simulation is growing quickly. Computer professionals design video games, military flight simulators and job training programs. Many colleges have created bachelor's degrees in game simulation

and programming because of increased need. Simulation tools have become cheaper, so that means more businesses are interested in buying the programs. Taxi cab drivers, for example, could be trained with a simulation program to learn how to drive a route, Overbye says.

Video gaming is also a growing industry in need of professionals to create consoles, handheld systems and computer games. Overbye says students who are thinking about careers in simulation or game programming should have a strong interest in computers, math and physics. Employers will also expect students to take courses in English, humanities and social sciences to learn communication skills.

Network security administrator

One of the oldest crimes in the world is stealing money, Overbye says. And that crime has gone high-tech as banks and businesses trade money and financial information over networks. Any time you use a credit card at a fast food restaurant, for example, the restaurant network has to send the information to its and your bank. Hackers want to get into the network to steal money, and it's security's job to protect the system.

Start a career in network security with a degree in computer information systems. Overbye says students who are considering this degree should have strong math, science and programming skills. They should also be creative types who tend to ask a lot of questions.

Webmaster

Someone has to design all those good-looking Web pages. Web design is a growing field with beginning designers starting at \$35,000 a year, says Sung Kang, an assistant professor of graphic design at Iowa State University in Ames.

Creativity and critical thinking are the most important skills for a Web designer. "All the new technology they can learn, but sometimes creatively thinking is very difficult to teach," Kang says.

To become a Web designer, earn a degree in computer programming. Or, study graphic design while taking a few programming courses from the computer science department, Kang says.

Task 3. Tell about your future job. What skills should you have? What personal qualities should you have? What professional abilities are required for your future job? What perspectives do you expect?

UNIT 20

ELECTRONIC COMMUNICATIONS

READING MATERIAL

TEXT A

Task. a) Try to answer these questions.

- 1. How can a PC be connected to another computer?**
- 2. What data communication systems can you think of? Make a list.**

b) Match the data communication services on the left with the requirements on the right. Then read the passage and check your answers.

- | | |
|--------------------------------------|--|
| 1. fax | a. To send a personal message to a friend who is at a different workstation. |
| 2. electronic mail (e-mail) | b. To send a copy of a paper document -for instance, a scientific article - from Trento University to Cambridge University. |
| 3. teletext | c. To access massive databases containing all kinds of information, or to be connected with an airline reservations service. |
| 4. local bulletin board system (BBS) | d. To receive shareware and public domain programs from a user group. |
| 5. commercial online service | e. To find out weather forecasts and sports information from the television. |

c) Read the following text and do the following exercises.

Channels of communication

What are “telecommunications”?

This term refers to the transmission of information over long distances using the telephone system, radio, TV satellite or computer links. Examples are two people speaking on the phone, a sales department sending a fax to a client or someone reading the teletext pages on TV. But in the modern world, telecommunications mainly means transferring information from one PC to another via modem and phone lines (or fibre-optic cables).

What can you do with a modem?

A modem is your computer's link to the external world. With a modem you can exchange e-mail and files with friends and colleagues; you

can access the Web and search for information about the stock market, current, affairs, entertainment, etc.; you can participate in newsgroups and live conversations; you can make bank transactions and buy things from the comfort of your home. You can also access your office from your computer at home or your laptop in a hotel room.

Modems

Your PC is a digital device (it works with 1s and 0s). However, the telephone is an analogue device, designed to transmit the sounds of the human voice. That's why we need a modem – a bridge between digital and analogue signals. The word “modem” is an acronym for MODulator/DEModulator. When a modem modulates, it sends rapid on/off pulses. The computer on the other end translates (demodulates) those signals into intelligible text or graphics. Modem transmission speeds are measured in kilobits per second. The conventional modem transmits data at 56 kbps; a cable modem offers speeds of up to 2Mbps; and an ADSL modem supports data rates of 1.5 to 9 Mbps.

Today a lot of companies find it more efficient to have some employees doing their work at home. Using a modem, they transfer their work into the office where it is printed and distributed. The list of applications is endless.

What do you need to telecommunicate?

You just need a PC (or a terminal), a modem connected to the computer and the telephone line, and communication software. Once you have installed and configured your modem, you can communicate with people through bulletin boards and online services.

Local bulletin boards

Bulletin board systems (BBS) are frequently free because they are run by enthusiasts and sponsored by user groups or small businesses. The person who administers the BBS is called sysop (system operator). You can use a BBS to download artwork, games and programs, or you can participate in ongoing discussions. You can also upload (send) programs, but make sure they are shareware or public domain programs.

Online service providers

To gain access to the Net you must first open an account with a service provider.

Internet service providers give you a software package, username, password and access phone number. You can then log on to the Internet and browse the web, download files from FTP sites, and send and receive e-mail. Most ISPs charge a flat monthly or annual fee that gives you unlimited access.

Commercial online services e.g. America Online, CompuServe and the Microsoft Network. They differ from dedicated ISPs in two ways: (1) they use a smooth, easy-to-use interface, and (2) they have extra services for members only (but they charge higher prices). For example, they offer airline reservations, professional forums, etc.

Types of devices and services

At present most of the devices used in ICT systems are multi-purpose: mobile phones can be used as digital cameras or agendas, printers are also scanners and faxes. Not only is there media integration in the hardware, but also in the services offered by these telecommunication systems.

1. Call centres are one example of computer telephony integration where companies use databases and telephones for telemarketing.
2. Faxes or telefaxes use telecommunication technology to send copies of documents through telephone lines.
3. Digital television uses digital technology to increase the number of channels and their quality of image. It also enables viewers to interact with the content and provide feedback to the programmer via telephone line, cable or satellite.
4. Radio has also adopted the digital technology DAB, Digital Audio Broadcasting. Most digital radio stations are broadcast together with television signals.
5. Teletext is a text-based information service provided by television companies. It uses part of the TV signal and is visible on sets with suitable decoders.
6. The Internet, a digital network of computers, enables users to exchange files, send emails and surf the Web to find information, take part in e-commerce, etc.

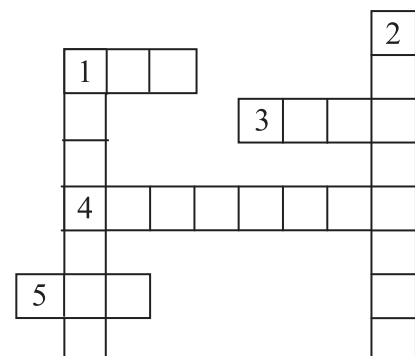
Task 1. a) Solve the clues and complete the puzzle with words from the text above.

Across

1. A new radio communication system.
3. A system that integrates telephones and computer is a ... centre.
4. A global system of networks of integrated services.
5. A device used to send and receive exact copies of documents.

Down

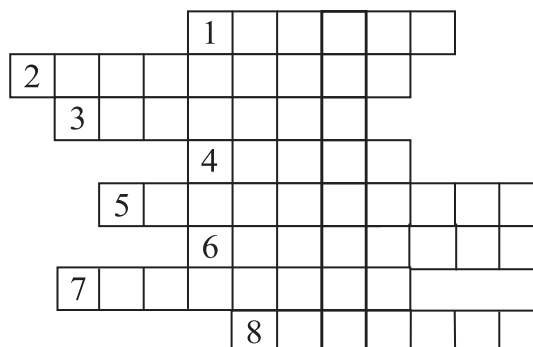
1. Similar to interactive TV.
2. Written information you get on your TV screen.



b) Complete the sentences by using a term from the list. Then write the words in the crossword.

Modem, network, online, download, newsgroups, services, account, telephone

1. When you are connected to the Internet you are described as being
2. To communicate via the Internet you need a PC, a modem and a ... line.
3. To have access to the Internet you must first open an ... with an Internet service provider.
4. You need a ... to convert computer data into a form that can be transmitted over the phone lines.
5. The public discussion areas on the Internet are called
6. You can use a BBS to ... clip-art, games and shareware to your PC.
7. CompuServe and America Online offer exclusive ... to their customers.
8. The Internet is a global ... of computer networks.



Task 2. Match and link the pairs of expressions that have the same meaning.

file of structured data	system operator	bulletin board system
BBS	modem	IRC
facsimile machine	Internet relay chat	modulator/demodulator
FTP	phone network	file transfer protocol
sysop	fax	kbps
kilobits per second	database	telephone wires

Word building: Prefixes

Ex. 1. In pairs, look at the words below and decide:

- what part of speech each word is
- where the stress falls on each item.

If you are not sure, look them up in a dictionary.

tele- means 'at/over a distance'

1 telegram	5 teletype	9 telegraphic	13 telescope
2 telephoto	6 teletext	10 telegraphically	14 telescopic
3 televise	7 telegraph	11 telepathy	15 telephonist
4 television	8 telegrapher	12 telepathic	

Ex. 2. Now write down some words formed by adding these prefixes.

- 1 auto- (means 'self')
- 2 trans- (means 'across from one place to another')
- 3 inter- (means 'between', 'among')

Help box -1

Common prefixes.

We can form new words by using prefixes and suffixes, e.g. micro-process-or

prefix + root + suffix.

Prefixes come before the root word and usually change its meaning. Here are some common ones in ICT.

- Negative prefixes meaning 'not':

non- Non-volatile memory retains its content when the power is turned off.

un- An unformatted disk has not been 'initialized'; it doesn't allow data to be stored.

- Prefixes of location:

trans- (= across) Data transmission can be wired or wireless.

inter- (= between) The Internet consists of millions of computers interconnected in a global network.

intra- (= within) An intranet is a private network, restricted to a company's internal use.

extra- (= outside, in addition to) An extranet links a company with its customers and suppliers.

tele- (= over a distance) Teleconferencing enables users in different places to talk to and see each other.

- Prefixes of size:

super- (= half, better) A supersite offers links to other websites on a certain topic.

semi- (= half, partly) A semiconductor is neither a good conductor nor a good insulator (e.g. silicon, used to make computer chips).

micro- (= small) A microbrowser is designed to display web pages on PDAs and mobiles.

Prefixes of size are also used in units of memory like megabyte and gigabyte.

- Another common prefix is re- in words like reprint, rewritable and reboot, to start the computer again.

Ex. 3. Use words from Help box-1 to complete these sentences.

1. Medical researchers in many countries exchange information through email and

2. ... memory (e.g. ROM or flash memory) is able to hold data when switched off.
3. Blogs and web portals are examples of ... ; they offer news, opinions and web links.
4. ... are used for making integrated circuits and computers.
5. I'll post the agenda for next week's meeting on the company's
6. A home network is two or more computers ... to form a local area network.

Ex. 4. Complete these definitions with words from Help box-1.

1. ... : a disk that is completely blank, so information can't be recorded onto it.
2. ... : a network that allows communication between a company and the people it deals with
3. ... :the process of sending data over a communication channel
4. ... : to restart the computer, without switching it off completely
5. ... : a web browser designed for small screens on hand-held devices

Help box -2

Verb prefixes

Prefixes used to form verbs which mean "to cause to be something":

en- encrypt: to change data into a secret code so that only someone with a key can read it

up- update: to modify data in a file and thus ensure the file reflects the latest situation

upgrade: to add or replace hardware or software in order to expand the computer's power

upload: to send files to a central, often remote computer; compare with "download"

Prefixes that mean "the opposite of an action" or "to reverse an action":

de- decrypt: to convert secretly coded (encrypted) data back into its original form

decompress: to restore compressed data back to its original size

debug: to correct errors in a program or system

defragment: to reorganize data stored on disk by putting files into contiguous order

un- uninstall: to remove hardware or software from a computer system

Ex. 5. Complete these sentences with words from Help box-2 and make any necessary changes.

1. The program ran so slowly, I had to un ... it.
2. Your financial information is fully en ... and cannot be accessed.
3. Message encrypted using a public key can only be de ...by someone with the corresponding private key.
4. The computer compresses and de ... a colour image in less than a second.
5. Once you've written a program, you have to test it and de ... it to remove all the errors.
6. In cyberspace, "up ... " means to send a file.
7. You can easily up ... your files by adding or deleting information.
8. To de ... your hard disk you need a disk optimizer, a program that will reorder your files.
9. There are minimum system requirements for your PC to be suitable for ... to Windows Vista.

Help box -3

The prefixes e- and cyber-

The e- prefix means "electronic"; cyber- describes things relating to computer networks.

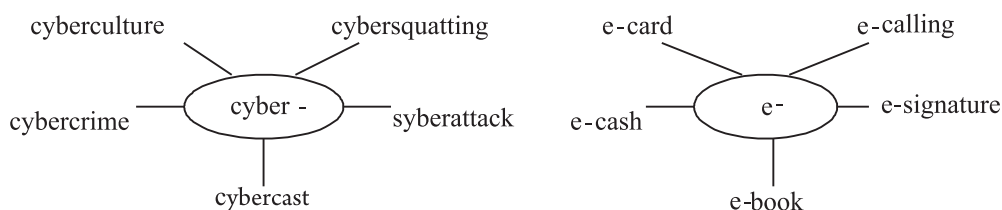
e- The term e-learning refers to the use of ICT to provide education and training.

An e-zine is a magazine or newsletter published online.

E-commerce is the buying and selling of products or services over the Internet.

cyber- The electronic space in which online communication takes place is called cyberspace. Cyberslacking means using a company's Internet access for activities which are not work-related, e.g. emailing friends, playing games, etc.: it is also called "cuberloating".

Ex. 6. With the help of an online computer dictionary, find the meaning of these words.



Mini-project: Plan your own cybercafé!

Task 1. Imagine you want to open an Internet cafe in town. In pairs, look at the Help box and make a project about a cafe.

Help box

Consider the following:

- the **money** you need to set up and run your cybercafe
- the kind of **visitors** you would like to have
- the **location**
- the **services** you want to offer (food, drinks, coffees, etc.)
- the type of **furniture**
- the things that can help you create a **relaxing atmosphere** (music, decoration, lighting, private areas, etc.)
- whether you want to have second-hand **books**, classic literature or **magazines** about computers and the Internet.

Make decisions about:

- the type of Internet connection: via a cable modem, an ADSL modem, etc.
- hardware equipment (Macs and PCs, printer, fax, etc.)
- software (web browser, e-mail, online chatting, games on CD-ROMs, etc.)
- how much you will charge customers for your services
- classes for users.

Now choose a name and a slogan for your cybercafe

UNIT 21

INTERNET ISSUES

READING MATERIAL

TEXT A

Task. a) Try to answer these questions.

1. Is it technically possible for computer criminals to infiltrate into the Internet and steal sensitive information?
2. What is a hacker?
3. Can viruses enter your PC from the Internet?

b) Translate the sentences (1-4) into your language.

1. Web browsers warn you if the connection is not secure; they display a message when you try to send personal information to a server.

2. Private networks use a software and hardware mechanism, called a 'firewall', to block unauthorized traffic from the Internet.
3. You have to type your user name and password to access a locked computer system or network.
4. An open padlock in Netscape Communicator indicates the page is not secure; a closed padlock indicates the page is encrypted (secure).

c) Read the text and do the exercises below.

Security and privacy on the Internet

There are a lot of benefits from an open system like the Internet, but we are also exposed to hackers who break into computer systems just for fun, as well as to steal information or propagate viruses. So how do you go about making online transactions secure?

Security on the Web

The question of security is crucial when sending confidential information such as credit card numbers. For example, consider the process of buying a book on the Web. You have to type your credit card number into an order form which passes from computer to computer on its way to the online bookstore. If one of the intermediary computers is infiltrated by hackers, your data can be copied. It is difficult to say how often this happens, but it's technically possible.

To avoid risks, you should set all security alerts to high on your Web browser. Netscape Communicator and Internet Explorer display a lock when the Web page is secure and allow you to disable or delete "cookies".

If you use online bank services, make sure your bank uses digital certificates. A popular security standard is SET (secure electronic transactions).

E-mail privacy

Similarly, as your e-mail message travels across the net, it is copied temporarily on many computers in between. This means it can be read, by unscrupulous people who illegally enter computer systems.

The only way to protect a message is to put it in a sort of 'envelope', that is, to encode it with some form of encryption. A system designed to send e-mail privately is Pretty Good Privacy, a freeware program written by Phil Zimmerman.

Network security

Private networks connected to the Internet can be attacked by intruders who attempt to take valuable information such as Social Security numbers, bank accounts or research and business reports.

To protect crucial data, companies hire security consultants who analyse the risks and provide security solutions. The most common methods of protection are passwords for access control, encryption and decryption systems, and firewalls.

Virus protection

Viruses can enter a PC through files from disks, the Internet or bulletin board systems. If you want to protect your system, don't open e-mail attachments from strangers and take care when downloading files from the Web. (Plain text e-mail alone can't pass a virus.)

Remember also to update your anti-virus software as often as possible, since new viruses are being created all the time.

Preventative tips

Don't open email attachments from unknown people; always take note of the file extension.

Run and update antivirus programs, e.g. virus scanners.

Install a firewall, a program designed to prevent spyware from gaining access to the internal network.

Make backup copies of your files regularly.

Don't accept files from high-risk sources.

Use a digital certificate, an electronic way of proving your identity, when you are doing business on the Internet. Avoid giving credit card numbers.

Don't believe everything you read on the Net. Have a suspicious attitude toward its contents.

Help box

- **hacker**: a person who obtains unauthorized access to computer data
- **cookies**: small files used by Web servers to know if you have visited their site before
- **certificates**: files that identify users and Web servers on the net, like digital identification cards
- **encryption**: the process of encoding data so that unauthorized users can't read it
- **decryption**: the process of decoding encrypted data transmitted to you

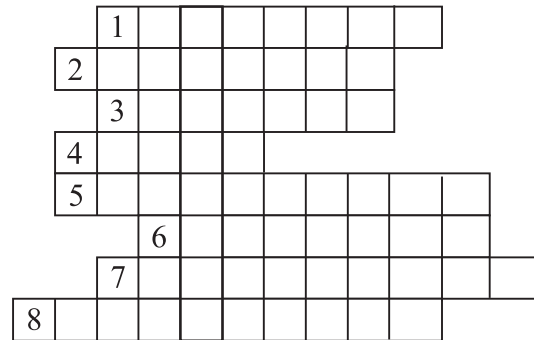
Ex. 1. Find the answers to these questions.

1. Why is security so important on the Internet?
2. What security features are offered by Netscape Communicator and Internet Explorer?
3. What security standard is used by most banks to make online transactions secure?
4. How can we protect and keep our e-mail private?
5. What methods are used by companies to make internal networks secure?
6. Which ways can a virus enter a computer system?

Ex. 2. Complete these sentences by using a term from the text. Then write the words in the puzzle.

Users have to enter a p ... to gain access to a network.

1. You can download a lot of f ... or public domain programs from the net.
2. Hundreds of h ... break into computer systems every year.
3. A computer v ... can infect your files and corrupt your hard disk.



4. The process of encoding data so that unauthorized users can't read the data is known as e
5. A f ... is a device which allows limited access to an internal network from the Internet.
6. You can include an a ... as part of your e-mail message.
7. This company uses d ... techniques to decode (or decipher) secret data.

Ex. 3. Fill in the gaps in these security tips with words from the box.

digital, certificate, malware, virus, scanner, spyware, firewall, antivirus

1. Malicious software, (1) ... , can be avoided by following some basic rules.
2. Internet users who like cybershopping should get a (2) ... , an electronic identity card.
3. To prevent crackers from breaking into your internal network and obtaining your data, install a (3) It will protect you from (4)
4. If you have been hit by a (5) ... , don't panic! Download a clean-up utility and always remember to use on (6) ... program, for example, a virus (7)

TEXT B

Task. *Read the text and do the following exercises.*

Internet security

Internet crime

The Internet provides a wide variety of opportunities for communication and development, but unfortunately it also has its dark side.

Crackers, or black-hat hackers, are computer criminals who use technology to perform a variety of crimes: virus propagation, fraud, intellectual property theft, etc.

Internet-based crimes include scam, email fraud to obtain money or valuables, and phishing, bank fraud, to get banking information such as passwords of Internet bank accounts or credit card details. Both crimes use emails OF websites that look like those of real organizations.

Due to its anonymity, the Internet also provides the right environment for cyberstalking, online harassment or abuse, mainly in chat rooms or newsgroups.

Piracy, the illegal copying and distribution of copyrighted software, information, music and video files, is widespread.

But by far the most common type of crime involves malware.

Malware: viruses, worms, trojans and spyware

Malware (malicious software) is software created to damage or alter the computer data or its operations. These are the main types.

- Viruses are programs that spread by attaching themselves to executable files or documents. When the infected program is run, the virus propagates to other files or programs on the computer. Some viruses are designed to work at a particular time or on a specific date, e.g. on Friday 13th. An email virus spreads by sending a copy of itself to everyone in an email address book.
- Worms are self-copying programs that have the capacity to move from one computer to another without human help, by exploiting security flaws in computer networks. Worms are self-contained and don't need to be attached to a document or program the way viruses do.
- Trojan horses are malicious programs disguised as innocent-looking files or embedded within legitimate software. Once they are activated, they may

affect the computer in a variety of ways: some are just annoying, others are more ominous, creating a backdoor to the computer which can be used to collect stored data. They don't copy themselves or reproduce by infecting other files.

▪ Spyware, software designed to collect information from computers for commercial or criminal purposes, is another example of malicious software. It usually comes hidden in fake freeware or shareware applications downloadable from the Internet.

Ex. 1. Identify the Internet crimes sentences (1–6) refer to. Then match them with the advice below (a–f).

1. Crackers try to find a way to copy the latest game or computer program.
 2. A study has revealed that half a million people will automatically open an email they believe to be from their bank and happily send off all their security details.
 3. This software's danger is hidden behind an attractive appearance. That's why it is often wrapped in attractive packages promising photos of celebrities like Anna Kournikova or Jennifer Lopez.
 4. There is a particular danger in Internet commerce and emails. Many people believe they have been offered a special gift only to find out later they have been deceived.
 5. 'Nimda' spreads by sending infected emails and is also able to infect websites, so when a user visits a compromised website, the browser can infect the computer.
 6. Every day, millions of children spend time in Internet chat rooms talking to strangers. But what many of them don't realize is that some of the surfers chatting with them may be sexual predators.
-
- a. People shouldn't buy cracked software or download music illegally from the Internet.
 - b. Be suspicious of wonderful offers. Don't buy if you aren't sure.
 - c. It's dangerous to give personal information to people you contact in chat rooms.
 - d. Don't open attachments from people you don't know even if the subject looks attractive.
 - e. Scan your email and be careful about which websites you visit.
 - f. Check with your bank before sending information.

TEXT C

Task. *Read the text in order to answer the questions below.*

Hackers!

- Sept '70** John Draper, also known as Captain Crunch, discovers that the penny whistle offered in boxes of Cap'n Crunch breakfast cereal perfectly generates the 2,600 cycles per second (Hz) signal that AT&T used to control its phone network at the time. He starts to make free calls.
- Aug '74** Kevin Mitnick, a legend among hackers, begins his career, hacking into banking networks and destroying data, altering credit reports of his enemies, and disconnecting the phone lines of celebrities. His most famous exploit – hacking into the North American Defense Command in Colorado Springs – inspired *War Games*, the 1983 movie.
- Jul '81** Ian Murphy, a 23-year-old known as Captain Zap on the networks, gains instant notoriety when he hacks into the White House and the Pentagon.
- Dec '87** IBM international network is paralysed by hacker's Christmas message.
- Jul '88** Union Bank of Switzerland 'almost' loses £32 million to hacker criminals. Nicholas Whitely is arrested in connection with virus propagation.
- Oct '89** Fifteen-year-old hacker cracks US defence computer.
- Nov '90** Hong Kong introduces anti-hacking legislation.
- Aug '91** Israelis arrest 18-year-old for hacking foreign banking and credit card networks.
- Dec '92** Kevin Poulsen, known as 'Dark Dante' on the networks, is charged with stealing tasking orders relating to an Air Force military exercise. He is accused of theft of US national secrets and faces up to 10 years in jail.
- Feb '97** German Chaos Computer Club shows on TV the way to electronically obtain money from bank accounts using a special program on the Web.
- May '99** Computer criminals propagate a lot of viruses through the Internet.
- Feb '00** A massive 'denial of service' attack is launched against websites like Yahoo, Amazon and eBay.
- Aug '01** 'Code Red' computer worm infects many PCs through the Internet.

Ex. 1. Answer the following questions.

1. Which hacking case inspired the film War Games?
2. Why was Nicholas Whitely arrested in 1988?
3. How old was the hacker that cracked the US defence computer in October 1989?
4. Who was known as 'Dark Dante' on the networks? What was he accused of?
5. Which computer club showed on TV a way to attack bank accounts?
6. What type of virus infected thousands of PCs in 2001?

Language work: The Past Simple (revision)

Ex. 1. Look at the text C again and put the verbs into the past.

Example. In September 1970, John Draper discovered that the penny whistle ... generated ... He started to make free calls.

Ex. 2. Put each verb given into either Past simple or Past continuous.

1. They (visit) cybercafé very often last week.
2. He (have) a bath when the phone rang.
3. He suddenly realized that he (travel) in the wrong direction.
4. He (talk) to people over the Internet at 8 o'clock yesterday.
5. You looked very busy when I saw you last night. What you (do)?
6. The boys (play) computer games when they (hear) their father's steps. They immediately (switch) off the computer and (take) out their textbooks.
7. When I (hear) the knock I (go) to the door and (open) it, but I (not recognize) him at first because he (wear) dark glasses.
8. A private e-mail account (cost) £10 a month last year.

Task 1. a) Look at the list of cybercrimes. Discuss these questions in small groups.

Crimes on the Internet

- Virus propagation
- Software piracy
- Stealing data and passwords by using a sniffer program
- IP spoofing (making one computer look like another to gain unauthorized access)
- Fraudulent use of credit card numbers
- Child pornography
- Violence and racist propaganda

b) Discuss these questions in small groups.

1. What type of crime is more dangerous?
2. What measures can be taken by governments against computer crime?
3. Personal information – address, salary, civil and criminal records – is usually kept or sold by governments and industries in electronic databases. Is personal privacy in danger?
4. Is it right to put restrictions on the contents of the Internet?

Task 2. Write a summary of the discussion. Then present your view to the rest of the class.

UNIT 22

LANs AND WANs

READING MATERIAL

TEXT A

Task 1. a) Try to answer these questions.

1. What is a computer network?
2. What are the benefits of connecting computers and peripherals in a network?

b) Read the text and match the technical terms on the left with the explanations on the right.

- | | |
|----------------|---|
| 1. LAN | b. the hardware that emits and receives signals in a |
| 2. Network | computer network; |
| architecture | c. a network contained in a relatively small area; |
| 3. Nodes | d. the arrangement of nodes in a communication |
| 4. Protocol | system (i.e. the distribution of elements in a |
| 5. Transceiver | network); |
| 6. Token | e. a device that translates protocols between different |
| 7. Gateway | types of networks (e.g. it can link networks of PCs |
| | and Macs to mainframes and minicomputers); |
| | f. a special unit of data which acts as a key on a |
| | Token Ring network; only the machine in possession |
| | of this piece of software can transmit on the |
| | network; |
| | g. a set of rules that allows the exchange of information |
| | over a network; |
| | h. computer devices interconnected in a network. |

Network configurations

A network is a group of devices (PCs, printers, etc.) or ‘nodes’ connected by communications circuits so that users can share not only data, programs but also hardware like printers and other computer resources such as fax. A network has two main elements: the physical structure that links the equipment and the software that allows communication.

The physical distribution of nodes and their circuits is known as network ‘topology’ or ‘architecture’. The software consists of the protocols, i.e. the rules which determine the formats by which information may be exchanged between different systems. We could say that cables and transceivers (the architecture) allow computers to ‘hear’ one another, while the software is the ‘language’ that they use to ‘talk’ to one another over the network.

As regards the cables, they consist essentially of the transceiver – the hardware that sends and receives network signals. At present the most widely used transceivers are Token Ring, Ethernet and LocalTalk. Token Ring is the most common method of connecting PCs and IBM mainframes. Most Token Ring adapters transmit data at a speed of 16 megabits per second. With Ethernet, data is transmitted at 100 Mbits/sec. The newest version, Gigabit Ethernet, supports data rates of 1Gb per second. Ethernet provides a very robust, trouble-free architecture with good levels of performance. In this regard, Ethernet is the best solution for fast and intensive activity.

LocalTalk transceivers are the cheapest of all because they are directly included in each Macintosh. However, they’re a bit slow, which is why most Macs come with built-in Ethernet.

As for protocols, these are rules which describe things like transmission speed and physical interfaces. The Token Ring protocol avoids the possibility of collisions. To transmit data, a workstation needs a token, and as there is only one token per network, holding one guarantees sole use of the network. With Ethernet there are other options, of which TCP/IP (Transmission Control Protocol/Internet Protocol) is perhaps the most useful since it allows different operating systems to communicate with each other. With regard to LocalTalk networks, they use AppleTalk protocols. The Macintosh operating system includes the AppleTalk manager and a set of drivers that let programs on different Macs exchange information.

LANs can be interconnected by gateways. These devices help manage communications and control traffic on large networks. They change the data to make it compatible with the protocols of different networks.

Most networks link computers within a limited area – within a department, an office, or a building. These are called Local Area Networks, or LANs. But

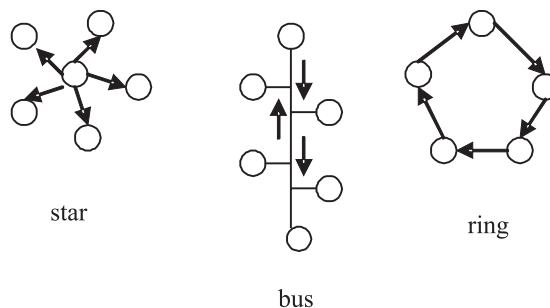
networks can link computers across the world, so you can share information with someone on the other side of the world as easily as sharing with a person at the next desk. When networks are linked together in this way, they are called Wide Area Networks, or WANs.

Networks increase productivity by allowing workers to share information easily without printing, copying, telephoning, or posting. They also save money by sharing peripherals such as printers.

Network topology

Topology refers to the shape of a network. There are three basic physical topologies.

- Star: there is a central device to which all the workstations are directly connected. The central position can be occupied by a server or a hub, a connection point of the elements of a network that redistributes the data.
- Bus: every workstation is connected to a main cable called a bus.
- Ring: the workstations are connected to one another in a closed loop configuration.
- There are also mixed topologies like the tree, a group of stars connected to a central bus.



Ex. 1. Read these descriptions of different physical topologies of communication networks and match them with the terms in the text “Network topology”.

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.
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.

Ex. 2. Which topologies do these statements refer to?

1. If one of computers fails, the whole network will be affected.
2. If we remove a computer from the network, it won't affect the other computers.
3. If the main cable fails, the whole networks will fail.
4. If the central server fails, the whole network will fail.
5. If a cable breaks, the whole network will be affected.
6. If a computer fails, it won't affect the other computers.

Language work: Predicting Consequences

The sentences in Ex. 2 predict the consequences of an action. For example:

The cable fails. The whole network will fail.

(action) (consequence)

If the cable fails, the whole network will fail.

Note that the action is in the Present simple, and the consequence in the Future simple.

Study these other examples.

If you don't use the right password, you won't get access to the network.

If you don't save your document, you will lose the information.

Ex. 1. Link each action (1-10) with a suitable consequence (a-j).

Example. *If you place a floppy disk near a magnet, you will destroy the data.*

- | | |
|--|---------------------------------------|
| 1. you place a floppy disk near a magnet | a. the cursor moves to the left |
| 2. you press Print Screen | b. the computer hangs |
| 3. you input the correct password | c. it is not lost when you switch off |
| 4. you add memory to a computer | d. you damage the drive |
| 5. you move the mouse to the left | e. you copy the screen |
| 6. you store data in RAM | f. you have access to the network |
| 7. you use a faster modem | g. you destroy the data |
| 8. there is a memory fault | h. it runs faster |
| 9. you press the arrow key | i. your phone bills are lower |
| 10. you move a CD-ROM drive with the disk in place | j. the cursor moves across the screen |

Ex. 2. Complete these statements with a suitable action or consequence.

1. If you select the Cancel button on the Exit Windows dialog box,
2. ... , you will close down Windows programs.
3. If you input the wrong password,
4. ... , your printer will not print.
5. If your monitor is too bright,

Task 2. a) If you use a network write a short description of it, with details of its architecture and protocol. Say what you and your colleagues use the network for.

b) Write a list of the advantages and disadvantages of using networks.

TEXT B

Task. a) Try to answer these questions.

1. What is a WAN?
2. How can computers be linked up over a long distance?
3. What are the advantages of optical-fibre cables over telephone lines?
4. What is the function of communications satellites?

b) Now read the passage and find out if your answers were correct.

WANs and worldwide communications

For long-distance or worldwide communications, computers and LANs are usually connected into a wide area network (WAN) to form a single, integrated network. The largest WAN in existence is the Internet.

Networks can be linked together by either telephone lines or fibre-optic cables. For example, ISDN (integrated services digital network) and ADSL (Asymmetric Digital Subscriber Line) are an international standard for transmitting digital text, sound, voice and video data over telephone lines. On the other hand, FDDI (fibre distributed data interface) is an optical-fibre network. It transmits data at great speed – 100 megabits per second. A variation called FDDT transmits data at 200 Mbps. The main transmission paths within a WAN are high-speed lines called backbones. FDDI networks are typically used as backbones for wide area networks. Wireless WANs use mobile telephone networks.

Modern telecommunications use fibre-optic cables because data can be transmitted at a very high speed through the extremely wide bandwidths of glass fibres. The fibre system operates by transmitting light

pulses at high frequencies along the glass fibre. This offers considerable advantages: (i) the cables require little physical space; (ii) they are safe because they don't carry electricity; (iii) they avoid electromagnetic interference.

Networks on different continents can also be connected via satellite. Computers are connected by a modem either to ordinary telephone wires or fibre-optic cables, which are linked to a dish aerial. This aerial has a large concave reflector for the reception and sending of signals. Then, when signals are received by the satellite, they are amplified and sent on to workstations in another part of the world.

UNIT 23

NEW TECHNOLOGIES

READING MATERIAL

TEXT A

Task. a) Read the following text.

New products

Not long ago, mobile phones could just transmit voice and SMS messages. Now they can display Internet information thanks to the Wireless Application Protocol or WAP.

Some hybrid models combine a phone with a PDA. They look like a regular phone with a dialpad and a small screen on its front. But if you flip up the front cover you find a larger screen that is touch-sensitive. Some include a virtual keyboard which pops up when you want to enter email text or a WAP address.

But the future is called 'third-generation' (3G) mobiles. They transmit a caller's picture and voice simultaneously. UMTS mobile phones deliver users information, e-commerce, games and videoconferencing via fixed, wireless and satellite networks.

Internet TV sets allow you to surf the Web and have e-mail while you are watching TV, or vice versa. Imagine watching a film on TV and simultaneously accessing a Web site where you get information on the actors in the film. This is ideal for people who are reluctant to use PCs but are interested in the Internet.

WebTV was the first company which brought Internet services to TV viewers through a set-top computer box. Another option is WorldGate's technology, which offers the Internet through cable TV.

The model built by OEM Metec integrates a complete Windows PC in a TV-set. The next generation of Internet-enabled televisions will incorporate a smart-card for home shopping, banking and other interactive services.

Virtual reality lets people interact with artificial objects and environments through three-dimensional computer simulation. In a VR system, you are hooked to a computer through a controlling device, such as a glove, and head-mounted displays give you the feeling of being propelled into an artificial three-dimensional world. The computer brings to life events in a distant, virtual world using databases or real-time objects and sounds. Your senses are immersed in an illusionary, yet sensate, world.

VR can be applied to anything from video games, testing a motor vehicle, visiting a virtual exhibition, to checking out imaginary kitchen designs.

Bluetooth is a standard wireless technology designed to connect mobile phones, computers and other devices, replacing direct cable links. Since it uses high-frequency radio waves, the transfer of data and voice is very fast. All data are protected by advanced methods of encryption and authentication.

Bluetooth was initiated by Ericsson and the objective was to eliminate cables between mobile phones, PC cards, headsets, etc. Today it is supported by companies such as Nokia, IBM, Toshiba and Intel.

With Bluetooth, a handheld computer can be used to surf the Internet wherever you are, or to transfer files with other participants in meetings. Mobile phones will soon be used to control all sorts of gadgets in the house, from TV sets to refrigerators.

Ex. 1. Match the terms on the left with the explanations on the right.

1. Internet-enabled TV	a. location on the Internet where a company puts web pages
2. Website	b. technology that allows users to see a computer simulated world in which they can move
3. Virtual reality	c. TV set used as an Internet device
4. WAP	d. device that can handle multiple data types including voice and video
5. Wireless	e. protocol that enables mobile phones to access Internet information
6. 3G mobile phone	f. without the use of cables

Ex. 2. How do you say these expressions in your language?

- | | |
|----------------------------|---------------------------------|
| 1. rechargeable batteries | 5. a Persona! Digital Assistant |
| 2. a flat LCD screen | 6. an infra-red port |
| 3. a pen-based interface | 7. a portable supplement |
| 4. handwriting recognition | |

TEXT B

Task. *Read the following text and do the exercise below.*

Mobile phones: definition and technology

Mobile phones, or cellular phones, are devices that enable communication to all types of telephones while moving over a wide area called the coverage area.

The term ‘cellular’ comes from the fact that the phone calls are made through base stations, communication towers or antennas, which divide the coverage area into cells. As you move from cell to cell, the calls are transferred to different base stations belonging to the same or a different telephone company. This capability of mobile phones is called roaming. The phone is said to be out of range when it cannot communicate with a base station.

Ex. 1. *Complete this text about basic principles of mobile telephony with words from text B.*

Mobile phones, also called (1) ... , or cell phones for short, need a network of towers or antennas to transmit calls. In a cellular system, a city is divided into smaller sections or (2) ... where the (3) ... usually occupy a central position. When you are outside your service provider’s (4) ... area, your telephone may become out of (5) ... unless your telephone allows (6) ... , i.e. the ability to use another service provider’s network.

TEXT C

Task. *Read the text.*

A brief history

- 1G, First Generation phones started in the 1980s when Motorola introduced the first hand-held phones. They used analogue technology and the main drawback was the small number of channels that could be used at a time.
- In the 1990s, 2G mobiles introduced digital transmission methods that converted voice into binary information, increasing the number of channels, the speed of transmission between the phone and the base station and enabling a reduction in size. The most common standard, GSM, Global System for Mobile communications, started to be used at this stage. One of the features of this technology is the use of SIM cards, a type of smart

card that contains the user's information, the connection data and the phonebook. It also enables the user to change service provider without changing the handset.

- 3G phones offer a high-speed data transfer capability. Some of these phones are called smart phones and combine PDA capabilities with the usual functions of a digital phone. The new communication standard, UMTS, Universal Mobile Telecommunications System, enables the multimedia transmissions that are becoming common nowadays.
- New standards are being developed that will open the way to new 4G phones with an emphasis on multimedia, real-time television and radio.

Ex. 1. Decide if these sentences are True or False. If they are false, correct them.

1. 1G phones had a slower transmission speed than 2G.
2. 2G phones introduced analogue technology.
3. GSM started to be used in the 80s.
4. Smart phones can be used for other purposes, e.g. as a personal digital assistant.
5. People won't be able to watch live TV on 4G phones.
6. SIM cards enable users to keep important information.
7. UMTS, the standard used in 3G phones, has made video phones a commercial reality.

TEXT D

Task 1. Read the text.

Features and functions

Mobiles have become an essential part of our lives and there are many uses for them.

1. "I've bought a new mobile with Bluetooth, a wireless technology, to connect my phone to other devices at home or in my office. It also has WAP. Wireless Application Protocol, which enables access to the wireless Web, and an integrated PDA, a digital assistant, where I keep my appointments and sales records".
2. "I'm mad about music, so I love having a mobile which integrates radio and MP3, the most usual music the format on the Web. I can download music from the Net and listen to it on my mobile".
3. "My mobile has programmable ring tones. So I can personalize my phone's melodies or sounds, and changeable faceplates, which make the front look

different. I used to just send SMS (short message service), short text messages. Now I can also take and send pictures with the built-in digital camera”.

4. “I’m very concerned about safety in the car. That’s why I bought a hands-free kit, so I can drive and talk on the phone without taking risks”.
5. “This mobile also has a speakerphone: I can talk without holding the handset. I also use it when I want several people to participate in the calls”.

Ex. 1. Read the text again and match the CNET.com phone reviews (1–5) to the descriptions of users who might be interested in them (a–e).

1. This is the best multimedia phone, with a 1,3-megapixel digital camera, TransFlash card slot, Bluetooth and an MP3 player.
 2. This is the best smart phone, with wireless support (Bluetooth and Wi-Fi), WAP and email.
 3. This model is the best phone for SMS addicts, with a QWERTY keyboard and multiple messaging options.
 4. This is the best status-symbol phone, with a striking design, beautiful display and speakerphone; it’s a world phone. Hands-free kit included.
 5. This phone is the best for teens, with an eye-catching pop-up display, vibration feedback for game playing, programmable ring tones and changeable faceplates.
-
- a. People who love talking, playing games and unusual ring tones
 - b. People who prefer writing to phoning
 - c. Phone users who love taking pictures and watching videos, and music lovers
 - d. People who want email and to surf the Web
 - e. Mobile phone fanatics who travel a lot and want to make an impression

Task 2. Make a report about recent developments in the world of IT.

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Видишева Светлана Константиновна
Кибальник Людмила Александровна
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Стаханова Светлана Алексеевна

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Художник обложки *Т. Ю. Таран*
Технический редактор *Г. М. Романчук*
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