НАРОДНА УКРАЇНСЬКА АКАДЕМІЯ

ПРАКТИКУМ З ПЕРЕКЛАДУ З АНГЛІЙСЬКОЇ МОВИ («НАУКОВО-ТЕХНІЧНИЙ ПЕРЕКЛАД» БЛОК «ІНФОРМАЦІЙНІ ТЕХНОЛОГІЇ»)

Видавництво НУА

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Навчальний посібник

для студентів V курсу факультету заочно-дистанційної освіти

Харків

Видавництво НУА

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П 69

Затверджено на засіданні кафедри теорії та практики перекладу

Народної української академії.

Протокол № 2 від 08.09.2014

А в т о р-у п о р я д н и к *М. М. Козлова*

Р е ц е н з е н т *В.В. Ільченко*

П 69

Практикум з перекладу з англійської мови («Науково-технічний переклад», блок «Інформаційні технології») : навч. посіб. для студ. 5 курсу ф-ту заочно-дистанційної освіти / Нар. укр. акад., [каф. теорії та практики перекладу ; авт.-упоряд. М. М. Козлова]. – Х. : Вид-во НУА. 2015. – 80 с.

Дані навчально-методичні матеріали розраховані на студентів 5 курсу факультету заочно-дистанційної освіти «Референт-перекладач» й мають на меті розвинути в студентів навички та уміння перекладу з англійської мови на українську/російську та з української/російської на англійську в усній та письмовій формах професійно-орієнтованих текстів; сформувати системи умінь з усного послідовного двобічного перекладу й письмового перекладу текстів, присвячених вивченню інформаційних технологій. Навчальні матеріали складаються з 10 розділів. Кожен розділ побудований на основі ілюстрованого матеріалу у вигляді першоджерельних текстів, лексичних вправ за темою заняття, роботи з понятійним апаратом розділу та безпосередньо вправ на переклад. .

УДК 811.111’255.2 :6

ББК 81.432.1-923.7

ЗМІСТ

ПЕРЕДМОВА

Дані навчально-методичні матеріали розроблено згідно навчальної та робочої програм з курсу практики перекладу з англійської мови (аспект «Науково-технічний переклад») та розраховано на студентів 5 курсу факультету заочно-дистанційної освіти «Референт-перекладач». Навчальні матеріали мають своєю метою розвинути в студентів навички та уміння перекладу з англійської мови на українську/російську та з української/російської на англійську в усній та письмовій формах професійно-орієнтованих текстів; сформувати системи умінь з усного послідовного двобічного перекладу й письмового перекладу текстів, присвячених вивченню інформаційних технологій. Навчальні матеріали складаються з 10 розділів:

Unit 1. A Typical PC. Unit 2. What Is Inside a PC System? Unit 3. Input Devices. Unit 4. Output Devices. Unit 5. Storage Devices. Unit 6. Operating Systems. Unit 7. Faces of the Internet. Unit 8. The Web. Unit 9. Conferencing. Internet Security. Unit 10. Creative Software. Graphics and Design. Multimedia

Кожен розділ побудований на основі ілюстрованого матеріалу у вигляді першоджерельних текстів, лексичних вправ за темою заняття, роботи з понятійним апаратом розділу та безпосередньо вправ на переклад. Кожний розділ супроводжується аудіо- та відеоматеріалами та вправами на опрацювання матеріалу, в них викладеному.

UNIT 1. A TYPICAL PC

Ex. 1. Translate the following text into your native language.

Picture 1. Computer Essentials

PARTS OF A COMPUTER

A computer is am electronic machine that accepts, processes, stores and outputs information. A typical computer consists of two parts: hardware and software. Hardware is any electronic or mechanical part of the computer system that you can see of touch. Software is a set of instructions called a program which tells a computer what to do. There are three basic hardware sections:

1. The CPU is the heart of the computer, a microprocessor chip which processes data and coordinates the activities of all the other units.

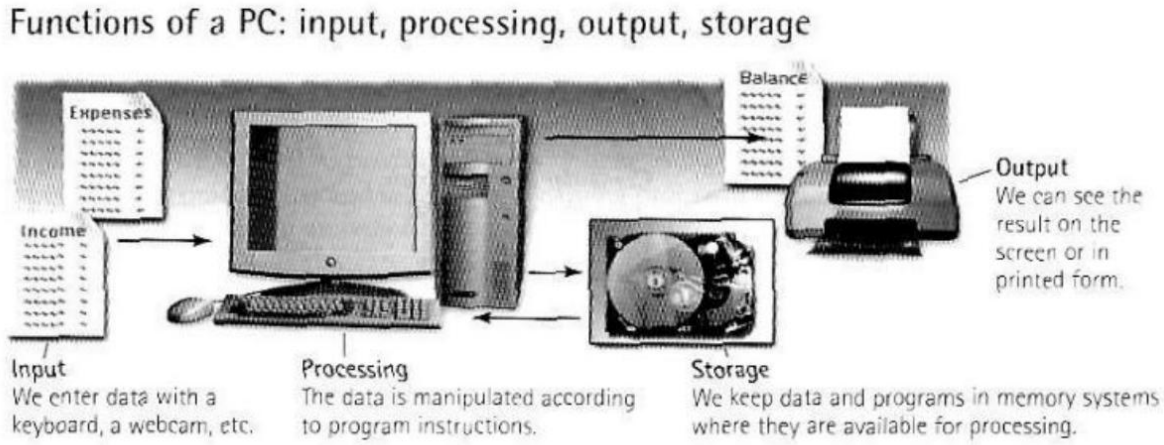
2. The main memory holds the instructions and data which are being processed by the CPU. It has two main sections: RAM (random access memory) and ROM (read only memory).

3. Peripherals are the physical units attached to the computer. They include:

- Input devices, which let us enter data and command (e.g. the keyboard and the mouse).
- Output devices, which let us extract the results (e.g. the monitor and the printer).
- Disk drives, which are used to store information permanently (e.g. hard disks and DVD-RW drives).

At the back of the computer there are ports into which we can plug external devices (e.g. a scanner, a modem, etc.). They allow communication

between the computer and the devices. Some functions are shown at the Picture 2.

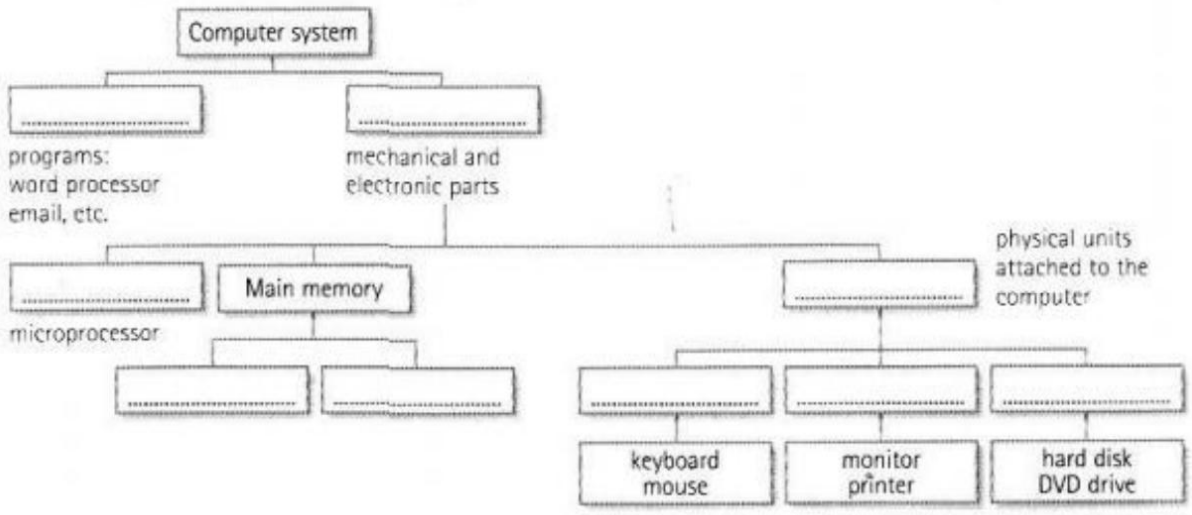


Picture 2. Functions of a PC

Ex. 2. Look back at the Picture 1. Read these quotations and say which computer essential they refer to.

1. ‘Accelerate you digital lifestyle by choosing a Pentium at 4.3 GHz’.
2. ‘Right-click to display a context-sensitive menu’.
3. ‘You will see vivid, detailed images on a 17” display’.
4. ‘This will produce high quality output, with sharp text and impressive graphics’.
5. ‘Use it when you want to let the grandparents watch the new baby sleeping’.
6. ‘Press any key to continue’.

Ex. 3. Use the information from Ex. 1 and label this diagram with the correct terms.



Ex. 4. Translate the following text into your native language.

TYPES OF COMPUTER SYSTEMS

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 cam 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 Mackintosh. It's designed to be in 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 a smaller 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 hand writing can be recognized and converted into the editable text. You can also type at the detached keyboard or use voice recognition. It's mobile and versatile.

A personal digital assistant of 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 and 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 band. 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.

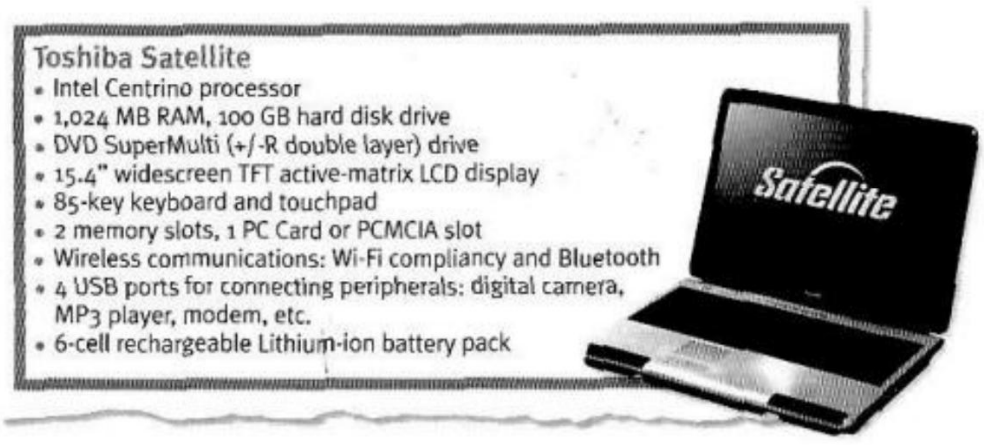
A wearable computer runs on batteries and is worn on the user's body, e.g. in a belt of backpack of vest; it is designed for mobile of hands-free operation. Some devices are equipped with a wireless modem, a small keyboard and a screen; others are voice-activated and can access email of voice mail.

Ex. 5. Employing the information from Ex. 4 determine which type of computer 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.

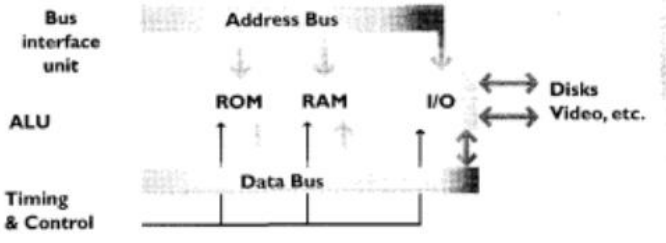
Ex. 6. Look at the computer advertisement and find this information.

1. What type of the computer is advertized?
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?



Picture 3. Computer Advertisement

Ex. 7. Study these examples of prepositions of place and complete each sentence below with the correct preposition.



1 Data moves *between* the CPU and RAM.
2 Data flows *from* ROM to the CPU.
3 A program is read *from* disk *into* memory.
4 Data is transferred *along* the data bus.
5 The address number is put *onto* the address bus.

Fig 3
Computer buses

Fig 4
Hard disk

6 The hard disk drive is *inside* a sealed case.
7 Heads move *across* the disk.
8 Tracks are divided *into* sectors.

1 The CPU is a large chip ..... the computer.
2 Data always flows ..... the CPU ..... the address bus.
3 The CPU can be divided ..... three parts.
4 Data flows ..... the CPU and memory.
5 Peripherals are devices ..... the computer but linked ..... it.
6 The signal moves ..... the VDU screen ..... one side ..... the other.
7 The CPU puts the address ..... the address bus.
8 The CPU can fetch data ..... memory ..... the data bus.

Ex. 8. Translate the following text into your native language and determine the functions of the computer.

WHAT IS A COMPUTER?

A computer is a machine with an intricate network of electronic circuits that operate switches or magnetize tiny metal cores. The switches, like the cores, are capable of being in one or two possible states, that is, on or off; magnetized or demagnetized. The machine is capable of storing and manipulating numbers, letters, and characters (symbols).

The basic idea of a computer is that we can make the machine do what we want by inputting signals that turn certain switches on and turn others off, or magnetize or do not magnetize the cores. The basic job of computers is processing of information. For this reason computers can be defined as devices which accept information in the form of instructions, called a program, and characters, called data, perform mathematical and / or logical operations on the information, and then supply results of these operations. The program, or part of it, which tells the computers what to do and the data, which provide the

information needed to solve the problem, are kept inside the computer in a place called memory.

It is considered that computers have many remarkable powers. However most computers, whether large or small, have three basic capabilities. First, computers have circuits for performing arithmetic operations, such as: addition, subtraction, division, multiplication and exponentiation.

Second, computers have a means of communicating with the user. After all, if we couldn't feed information in and get results back, these machines wouldn't be of much use. Some of the most common methods of inputting information are to use terminals, diskettes, disks and magnetic tapes. The computer's input device (a disk drive or tape drive) reads the information into the computer. For outputting information two common devices used are: a printer, printing the new information on paper, and a cathode-ray-tube display, which shows the results on a TV-like screen.

Third, computers have circuits which can make decisions. The kinds of decisions which computer circuits can make are not of the type: "Who would win the war between two countries?" or "Who is the richest person in the world?"

Unfortunately, the computer can only decide three things, namely: Is one number less than another? Are two numbers equal? and, Is one number greater than another?

A computer can solve a series of problems and make thousands of logical decisions without becoming tired. It can find the solution to a problem in a fraction of the time it takes a human being to do the job.

A computer can replace people in dull, routine tasks, but it works according to the instructions given to it. There are times when a computer seems to operate like a mechanical 'brain', but its achievements are limited by the minds of human beings. A computer cannot do anything unless a person tells it what to do and gives it the necessary information; but because electric pulses can move at the speed of light, a computer can carry out great numbers of arithmetic-logical operations almost instantaneously. A person can do the same, but in many cases that person would be dead long before the job was finished.

UNIT 2. WHAT IS INSIDE A PC SYSTEM?

Ex. 1. Translate the following text into your native language.

Processing

The nerve centre of a PC is a **processor**, also called the **CPU** or central processing unit. This is built into a single **chip** which executes program instructions and coordinates the activities which take place within the computer system. The chip itself is a small piece of silicon with a complex electrical circuit called an **integrated circuit**. The processor consists of three main parts:

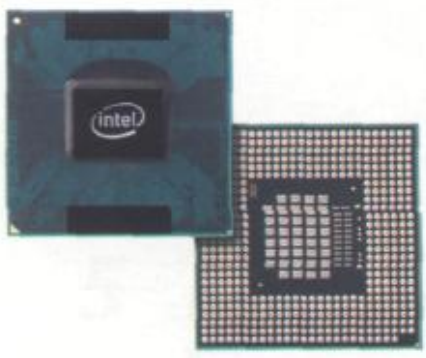
- The **control unit,** examines выбирает the instructions in the user's program, interprets each instruction and causes the circuits and the rest of the component – monitor, disk drives, etc. – to execute the functions specified.

- The **arithmetical logic unit** (ALU) performs mathematical calculations (+, -, etc.) and logical operations (AND, OR, NOT).

- The **registers** are high-speed units of memory used to store and control data. One of the registers (the program counter, or PC) keeps track of the next instruction to be performed in the main memory. The other (the instruction register or IR) holds the instruction that is being executed (see Fig. 1).

The power and performance of a computer is partly determined by the speed of its processor. A **system clock** sends out signals at fixed intervals to measure and synchronize the flow of data. **Clock speed** is measured in **gigahertz** (GHz). For example, a CPU running at 4 GHz (four thousand million hertz, or cycles per second) will enable you to handle the most demanding applications.

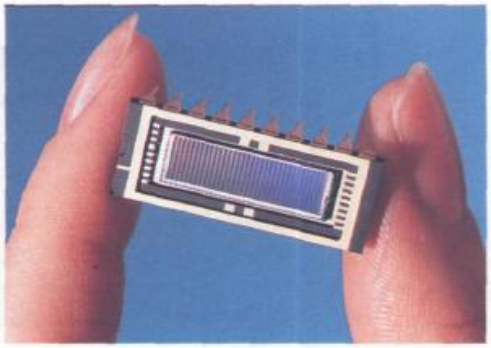
RAM and ROM



The Intel Core 2 Duo processor; other chip manufacturers are AMD and Motorola

The programs and data which pass through the processor must be loaded into the main memory in order to be processed. Therefore, when the user runs a program, the CPU looks for it on the hard disk and transfers a copy into the **RAM** chips микросхема. RAM (random access memory) is volatile– that is, its information is lost when the computer is turned off. However **ROM** (read only memory) is non-volatile, containing instructions and routines подпрограмма for the basic operations of the CPU. The **BIOS** (**basic input/output system**) uses ROM to control communication with peripherals.

RAM capacity can be expanded by adding extra chips, usually contained in small circuit boards called dual in-line memory modules (**DIMMs**).

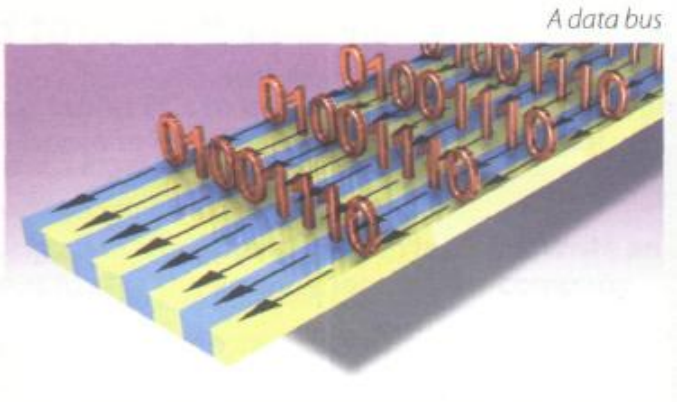


A RAM chip

Buses and cards

The main circuit board inside your system is called motherboard and contains the processor, the memory chips expansions slots слот расширения, and controllers for peripherals, connected by buses – electrical channels which allow devices inside the computer to communicate with each other. For example, the front side bus внешняя шина carries all data that passes from the CPU to other devices.

The size of a bus, called bus width, determines how much data can be transmitted. It can be compared to the number of lanes линий on a motorway – the larger the width, the more data can travel along the bus. For example, a 64-bit bus can transmit 64 bits of data. Expansion slots allow users to install expansion cards карта расширения, adding features like sound, memory and network capabilities.



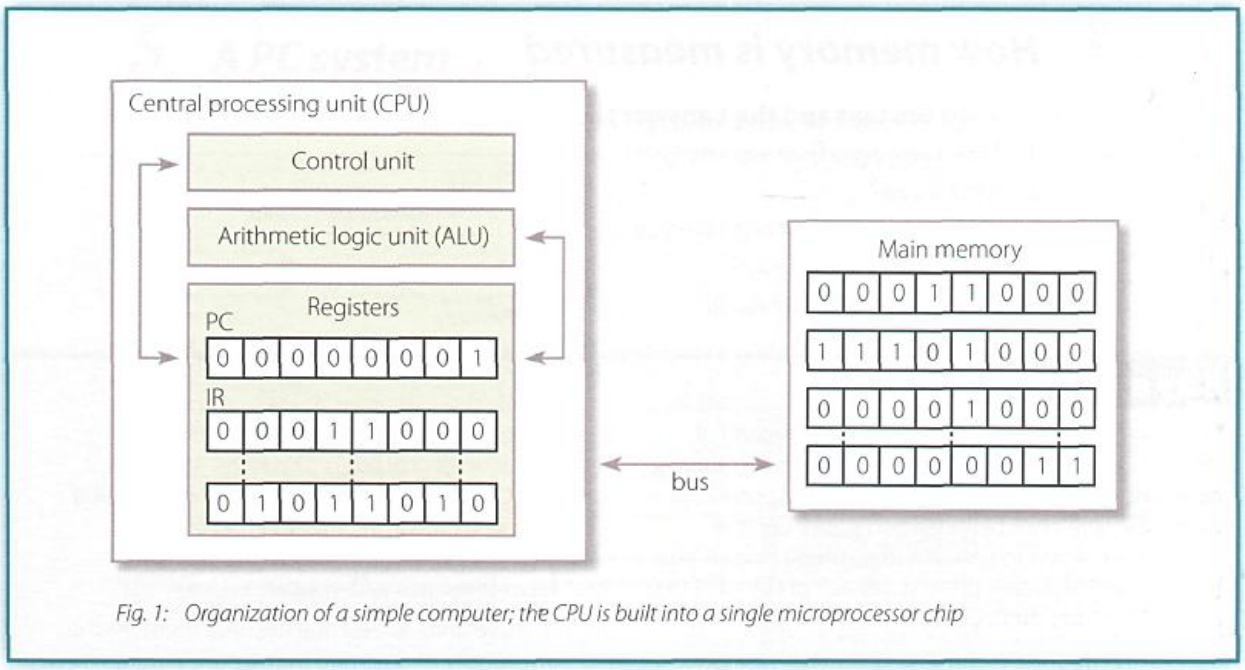


Fig. 1: Organization of a simple computer; the CPU is built into a single microprocessor chip

Ex. 2. Read the text and then answer these questions.

1. How many digits does a binary system use?
2. What is a bit?
3. What is a collection of eight bits called?
4. What does ASCII stand for?

5. What is the purpose of ASCII?

Bits and bytes

Computers do all calculations using a code made of just two numbers – 0 and 1. This system is called **binary code**. The electronic circuits in a digital computer detect the difference between two states: ON (the current passes through) or OFF (the current doesn't pass through) and represent these states as 1 or 0. Each 1 or 0 is called a **binary digit**, or **bit**.

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

One bit

01000011

Example of a byte

Computers use a standard code for the binary representation of characters. This is the American Standard Code for Information Interchange, or **ASCII** – pronounced /'æski/. In order to avoid complex calculations of bytes, we use bigger units such as kilobytes, megabytes and gigabytes.

We use these units to describe the RAM memory, the storage capacity of disks and the size of a program or document.

Note: **bit** is pronounced /bɪt/; **byte** is pronounced /baɪt/

Unit of memory	Abbreviation	Exact memory amount
Binary digit	bit, b	1 or 0
Byte	B	8 bits
Kilobyte	KB or K	1,024 bytes (2^{10})
Megabyte	MB	1,024 KB, or 1,048,576 bytes (2^{20})
Gigabyte	GB	1,024 MB, or 1,073,741,824 bytes (2^{30})
Terabyte	TB	1,024 GB, or 1,099,511,627,776 bytes (2^{40})

Ex. 3. Complete these descriptions with the correct unit of memory.

A ….. is a bout one trillion bytes – about as much text as the books and magazines in a huge library.

A ….. is about one million bytes – about as much text as a 300-page novel.

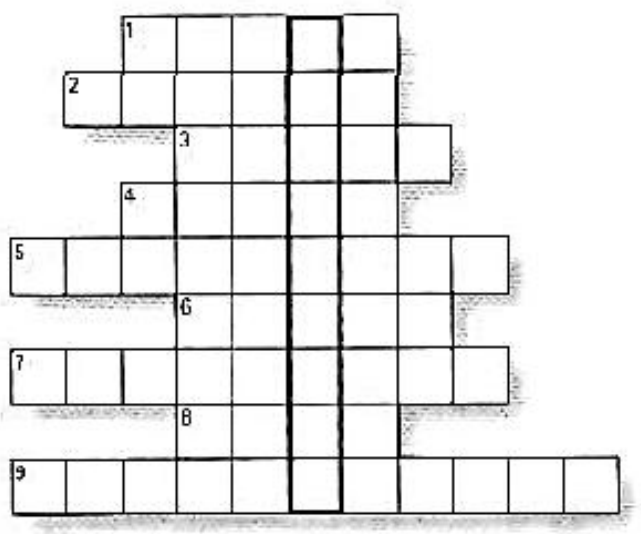
A ….. is about one thousand bytes – equivalent to one sheet of A4.

A ….. is about one billion bytes – about as much text as 1,000 books.

A ….. can store a single character, such as the letter h or number 7.

Ex. 4. Solve the clues and complete the puzzle with words from previous exercises.

1. Intel ….. are used in many computers.
2. Each 0 or 1 is called a bit, short for ….. digit.
3. Special cards can be inserted into expansion …. .



4. A ….. controls the timing within the PC by sending signals to synchronize its circuits and operations.
5. The processor speed in measured in ….. .
6. ….. carry signals between different parts of a PC.
7. ….. cards improve the computer's performance.
8. The ….. uses ROM to control the input/output of data.
9. The main printed circuit board is called the …… .

Down: The brain of a computer.

Ex. 5. Listen to two people making enquiries in a computer shop and complete the product descriptions.

iMac

Processor speed 2.33GHz

RAM .....

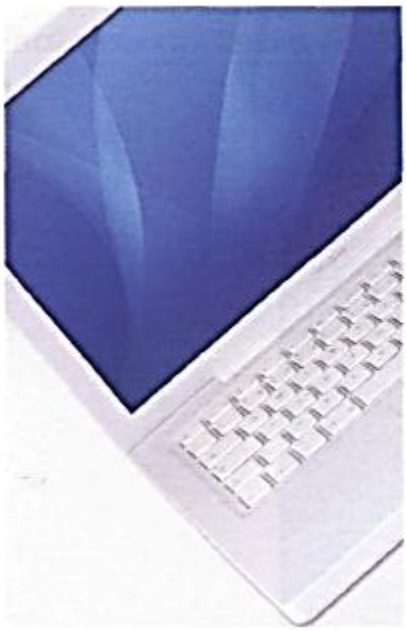
Hard drive capacity .....

DVD drive included? Yes

Operating system .....

Includes internet software

Price .....



MacBook

Processor speed .....

RAM .....

Hard drive capacity .....

DVD drive included? .....

Operating system .....

Includes internet software

Price £1,029

Ex. 6. Complete the extract from the previous conversation.

Assistant: Do you need any (1) ..... ?

Paul: Um, yes, we're looking for a Mac computer. Have you got any fairly basic ones?

Assistant: Yes, sure. If you'd like to come over here.

Paul: What different (2) ..... are there?

Assistant: At the moment we've got these two models: the iMac, which is a desktop computer with an Intel Core 2 Duo processor (3) ..... at 2.33 gigahertz, and the portable MacBook, which has a processor (4) ..... at 2.0 gigahertz. Core Duo technology actually means two cores, or processors, built into a single chip, offering up to twice the speed of a traditional chip.

Sue: So they're both very (5) ..... , then. And which one has more memory? I mean, which has more RAM?

Assistant: Well, the iMac has two gigabytes of RAM, which can be (6) ..... up to three gigabytes, and the MacBook has one gigabyte, expandable to two gigabytes. It all depends on your needs. The iMac is (7) ..... for home users and small offices. The MacBook is more (8) ..... if you travel a lot.

Ex. 7. Listen to four people talking about their computer needs and take notes. In pairs, read the descriptions from the computer shop website and choose the most suitable computer for each person. Give reasons for you choices.

Speaker 1 ..... Speaker 3 .....

Speaker 2 ..... Speaker 4 .....

Sun workstation

Two AMD Opteron processors at 3.0GHz

4GB RAM; 32GB maximum

1 terabyte hard drive and dual DVD drive

19" Sun TFT flat-panel LCD

Supports several graphics formats

Allows you to handle your toughest technical, scientific, and business-critical applications

Supports Solaris, Windows and Linux

£3,249

Gateway C-120 convertible notebook

Intel Core 2 Duo ULV processor at 1.06GHz
12.1" WXGA TFT touch screen
Gateway Executive stylus pen
1024MB DDR2 SDRAM
80GB serial ATA hard drive
DVD-ROM drive (optical DVD burner)
Integrated modem and Bluetooth
Windows Vista Home Premium
Thin and lightweight (1.17", 2.4 kg)

£805

Sony Vaio AR laptop (VGN-AR51E)

Intel Core 2 Duo Processor at 2GHz
2GB DDR2 SDRAM
200GB hard drive
DVD+/-RW optical drive
17" WXGA high-definition LCD screen
Memory Stick slot
Three USB 2.0 ports
Integrated wireless LAN
Built-in 'Motion Eye' digital camera
Lithium-ion battery
Windows Vista Ultimate

£899

Dell Inspiron 531 desktop PC

AMD Athlon 64 X2 Dual Core Processor
3072MB DDR2 SDRAM
Dell 22" Wide Flat Panel
256MB NVIDIA GeForce 8600GT video card
1.0TB Hard Drive
16x DVD+/- RW Drive
Integrated 7.1 Channel High Definition Audio
Windows Vista Home Premium
Optional features: Windows Media Center, integrated TV Tuner, and a Blu-ray disc drive for high-definiton content

From £849

Ex. 8. Translate the following text into your native language.

DEVELOPMENT OF ELECTRONICS

Electronics is a field of engineering and applied physics dealing with the design and application of electronic circuits. The operation of circuits depends on the flow of electrons for generation, transmission, reception and storage of information.

Today it is difficult to imagine our life without electronics. It surrounds us everywhere. Electronic devices are widely used in scientific research and industrial designing, they control the work of plants and power stations, calculate the trajectories of space-ships and help the people discover new phenomena of nature. Automatization of production processes and studies on living organisms became possible due to electronics.

The invention of vacuum tubes at the beginning of the 20th century was, the starting point of the rapid growth of modern electronics. Vacuum tubes assisted in manipulation of signals. The development of a large variety of tubes designed for specialized functions made possible the progress in radio communication technology before the World War II and in the creation of early computers during and shortly after the war.

The transistor invented by American scientists W. Shockly, J.Bardeen and W. Brattain in 1948 completely replaced the vacuum tube. The transistor, a small piece of a semiconductor with three electrodes, had great advantages over the best vacuum tubes. It provided the same functions as the vacuum tube but at reduced weight, cost, power consumption, and with high reliability. With the invention of the transistor all essential circuit functions could be carried out inside solid bodies. The aim of creating electronic circuits with entirely solid-state components had finally been realized. Early transistors could respond at a rate of a few million times a second. This was fast enough to serve in radio circuits, but far below the speed needed for highspeed computers or for microwave communication systems.

The progress in semiconductor technology led to the development of the integrated circuit (1C), which was discovered due to the efforts of John Kilby in 1958. There appeared a new field of science — integrated electronics. The essence of it is batch processing. Instead of making, testing and assembling descrete components on a chip one at a time, large groupings of these components together with their interconnections were made all at a time. 1C greatly reduced the size of devices, lowered manufacturing costs and at the same time they provided high speed and increased reliability.

Ex. 9. Answer the following questions in writing.

1. What is electronics? 2, Can you imagine modern life without electronics? 3. Where are electronic devices used? 4. What was the beginning of electronics development? 5. What made the progress in radio communication technology possible? 6. What is the transistor? 7. When was the transistor invented? 8. What aim was realized with the invention of the transistor? 9. When were integrated

circuits discovered? 10. What advantages did the transistors have over the vacuum tubes?

Ex. 10. Find the equivalents for the following expressions in the text.

Прикладная физика; передача и прием информации; поток электронов; трудно представить; научные исследования; промышленное проектирование; вычислять траекторию космических кораблей; обнаруживать явления природы; благодаря электронике; отправная точка; способствовать управлению сигналами; быстрый рост; разнообразие ламп; создание первых компьютеров; полностью заменил; полупроводниковый кристалл; уменьшить вес; сократить стоимость; потребление электроэнергии; высокая надежность; твердотельные компоненты; довольно быстро... но гораздо ниже; высокоскоростной компьютер; микроволновые системы связи; полупроводниковая технология; область науки; интегральная схема; пакетная обработка; сборка дискретных компонентов на кристалле; снизить производственные затраты; обеспечить высокую скорость.

UNIT 3. INPUT DEVICES

Ex. 1. Read of input devices and then label the pictures (1-8) with words from the text.

Ex. 2. Listen to a computer technical describing three input devices. Write which devices he's talking about.

1 ……. 2 ……. 3 ……..

Ex. 3. Listen again and complete these extracts.

1 This device is _____ enter information into the computer.
2 … it may also _____ function keys and editing keys _____ special purposes.
3 This is a device _____ the cursor and selecting items on the screen.
4 It usually _____ two buttons and a wheel.
5 … the user _____ activate icons or select items and text.
6 It _____ detecting light from the computer screen and is used by pointing it directly at the screen display.
7 It _____ the user _____ answer multiple-choice questions and …

Ex. 4. Look at the HELP box and then use the notes below to write a description of the Sony PlayStation 3 controller.

Sony PlayStation 3 controller

Functions

- control video games
- hold it with both hands, use thumbs to handle directional sticks and face buttons

Features

- six-axis sensing system (capable of sensing motion in six directions: up, down, left, right, forwards and backwards)
- wireless controller (Bluetooth)
- USB mini port and cable for wired play and automatic battery charging

HELP box

Describing functions

In the listening, the mouse was described using **for** + gerund:

*This is a device **for controlling** the cursor and selecting items on the screen.*

There are other ways of describing a device's function:

- **used** + **to** + infinitive
  *It's **used to control** …*
- relative pronoun + verb
  *This is a device **which controls** …*
- relative pronoun + **used** + **to** + infinitive
  *This is a device **which/that** is **used to control** …*
- **work by** + gerund
  *It **works by detecting** light from the computer screen.*

Describing features

We can describe features like this:

*An optical mouse **has** an optical sensor instead of a ball underneath.*

*It usually **features** two buttons and a wheel.*

*You **can** connect it to a USB port.*

*A wireless mouse **works/operates** without cables.*

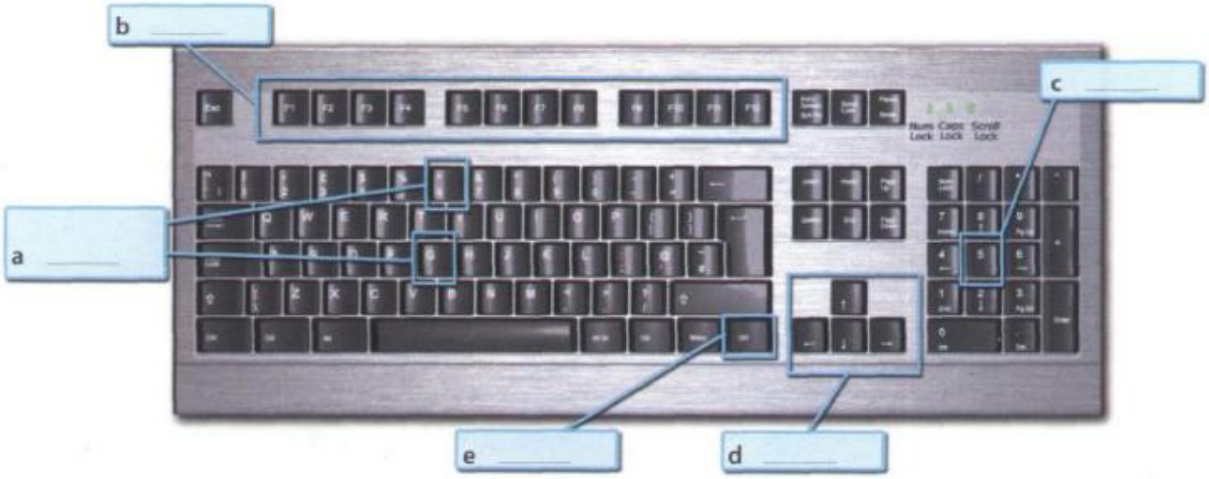
*It **allows** the user **to** answer multiple-choice questions and …*

Ex. 5. Label the picture of a standard keyboard with the groups of keys (1-5).

1. Cursor control keys include arrow keys that move the insertion point up, down, right and left, and keys such as End, Home, Page Up and Page Down, which are used in word processing to move around a long document.
2. Alphanumeric keys represent letters and numbers, as arranged on a typewriter.
3. Function keys appear at the top of the keyboard and can be programmed to do special tasks.

4. Dedicated keys are used to issue commands or to produce alternative characters, e. g. the Ctrl key or the Alt key.

5. A numeric keypad appears to the right of the main keyboard. The Num Lock key is used to switch from numbers to editing keys.



A PC-compatible keyboard

Ex. 6. Match the descriptions (1-8) with the names of the keys (a-h).

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 commands.
3 It works in combination with other keys. For example, you press this key and *C* to copy the selected text.
4 It removes the character to the left of the cursor or any selected text.
5 It produces UPPER CASE characters.
6 It produces UPPER CASE letters, but it does not affect numbers and symbols.
7 It moves the cursor horizontally to the right for a fixed number of spaces (in tabulations and data fields).
8 They are used to move the cursor, as an alternative to the mouse.

a arrrow keys
b return/enter
c Caps Lock
d shift
e tab
f space bar
g backspace
h Ctrl

Ex. 7. Complete this text about the mouse with verbs from the box.

click double-click drag grab select move control

Mouse actions

A mouse allows you to (1) _____ the cursor and move around the screen very quickly. Making the same movements with the arrow keys 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 and release) on the mouse button, and the option is chosen.

items on the screen. You can highlight text to be deleted, copied or edited in some way.

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

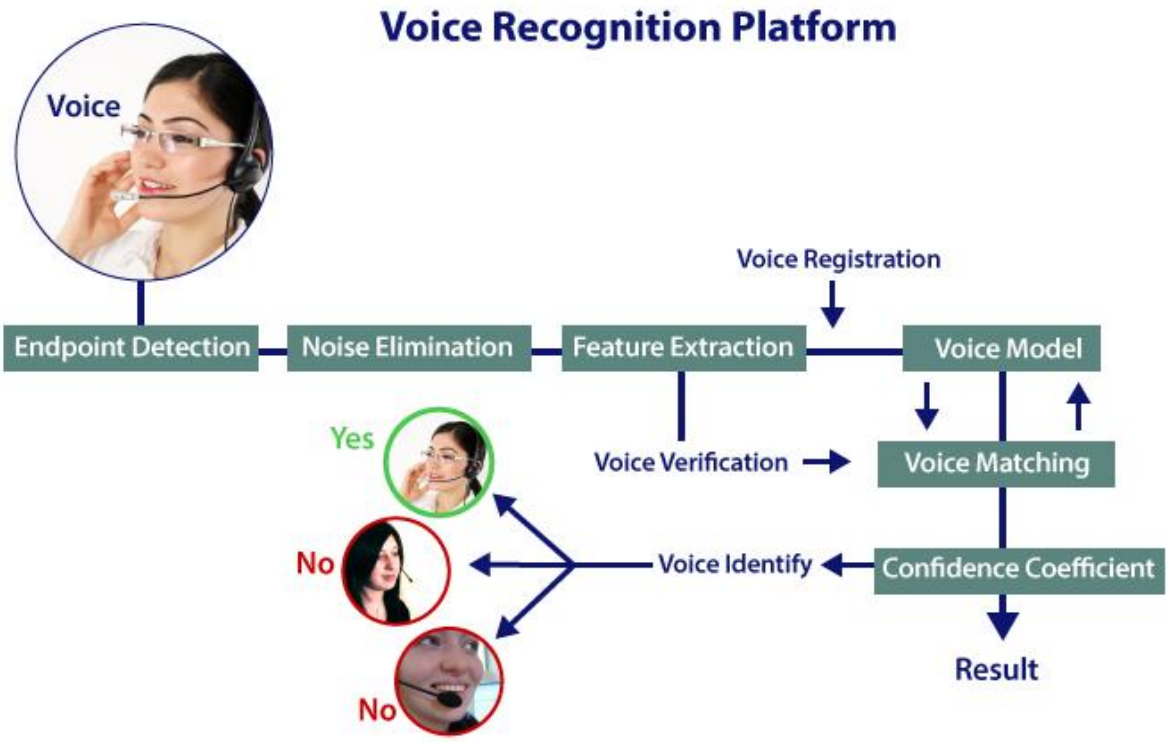
Ex. 8. Speech recognition system: listen to an interview with Anne Simpson, an expert in voice input technologies and tick the features she mentions.

Speech recognition systems:

- ☐ need a good sound card and a microphone.
- ☐ can take dictation with accuracy.
- ☐ allow you to create and compile a computer program.
- ☐ allow you to execute programs and navigate around menus using voice commands.
- ☐ allow you to surf the Web by speaking.
- ☐ allow you to design graphics.

Ex. 9. Listen again and answer these questions.

1. What do people usually use to communicate with a computer?
2. How do you get the best results from speech recognition software?
3. What rate of accuracy is possible with the software?
4. How can you train the software to be more accurate?
5. What kinds of words aren't in the software's dictionary?



Ex. 10. Read the following text and answer these questions.

1. Which device is used to input text and graphic images from a printed page?
2. How does a scanner send information to the computer?
3. How do digital cameras store photographs?
4. What feature allows mobile phone users to take pictures?
5. Which device would you use to take digital video?
6. What kind of software is used to manipulate video clips on the computer?

The eyes of your computer

What does a scanner do?

A scanner 'sees' images and converts the printed text or pictures into electronic codes that can be understood by the computer. With a flatbed colour scanner, the paper with the image is placed face down on a glass screen, as with 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.

The 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.

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 traditional camera; instead it has a special light-sensitive silicon chip.

Photographs are stored in the camera's memory card before being sent to the computer. Some cameras can also be connected to a printer or a TV set to make viewing images easier. This is usually the case with camera phones – mobile phones with a built-in 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 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. In this case they are called web cameras, or webcams.

Ex. 11. Complete the press release with words from the box.

colour	megapixels	shot	video	optical	brighter	reduction

Kodak has introduced the EasyShare M753 digital camera, with 7.0 (1) _____ resolution, a huge 2.5-inch LCD screen, and a professional 3x (2) _____ zoom lens. It is the first camera to incorporate proprietary Kodak Perfect Touch Technology. At the touch of a button, this innovative feature creates better, (3) _____ pictures by bringing out detail in shadows without affecting lighter areas. It's ideal for underexposed pictures caused by shooting beyond the flash range or in adverse lighting conditions.

The M753 uses the exclusive Kodak Colour Science chip for phenomenal image quality with rich (4) _____ and accurate skin tones. Seventeen programmed scene modes (e.g. party, fireworks, children) and five colour modes (high, low, natural, sepia, and black and white) help capture the best (5) _____ with the least effort.

Other features include cropping, auto picture rotation, digital red-eye (6) _____, and blurry picture alert. For capturing more than just still pictures, the camera also features high-quality (VGA) (7) _____ capture and playback.

UNIT 4. OUTPUT DEVICES

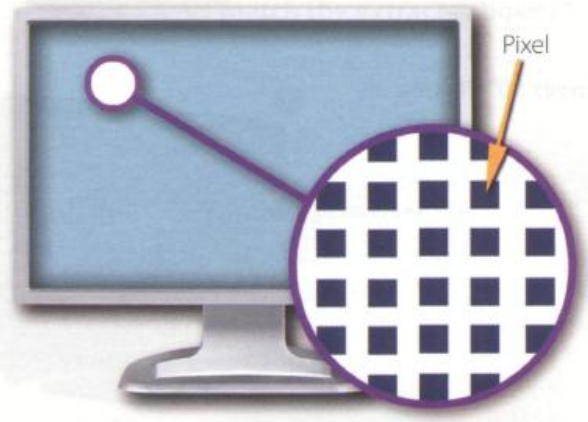
Ex. 1. Translate the following text into your native language.

Displays, often called **monitors** or **screens**, are the most-used output device on a computer. They provide instant feedback by showing you text and graphic images as you work or play.

Most desktop displays use **Liquid Crystal Display** (**LCD**) or **Cathode Ray Tube** (**CRT**) technology, while nearly all portable computing devices, such as laptops, incorporate LCDs. Because of their slimmer design and lower energy consumption, LCD monitors (also called **flat panel** or **flat screen** displays) are replacing CRTs.

Basic features

Resolution refers to the number of dots of colour, known as **pixels** (picture elements), contained in a display. It is expressed by identifying the number of pixels on the horizontal and vertical axes. A typical resolution is 1024x768.



A pixel is a combination of red, green and blue subpixels

Two measurements describe the size of your display: the **aspect ratio** and the **screen size**. Historically, computer displays, like most televisions, have had an aspect ratio of 4:3 – the width of the screen to the height is four to three. For widescreen LCD displays, the aspect ratio is 16:9, very useful for viewing DVD movies, playing games and displaying multiple windows side by side. High-definition TV also uses this format. The viewable screen size is measured diagonally, so a 19" screen measures 19" from the top left to the bottom right.

Inside the computer there is a **video adapter**, or graphics card, which processes images and sends signals to the monitor. CRT monitors use a **VGA** (**video graphics adapter**) cable, which converts digital signals into analogue signals. LCD monitors use a **DVI** (**digital video interface**) connection.

Colour depth refers to the number of colours a monitor can display. This depends on the number of bits used to describe the colour of a single pixel. For example, an old VGA monitor with an 8-bit depth can generate 256 colours and a SuperVGA with a 24-bit depth can generate 16.7 million colours. Monitors with a 32-bit depth are used in digital video, animation and video games to get certain effects.

Display technologies

An **LCD** is made of two glass plates with a liquid crystal material between them. The crystals block the light in different quantities to create the image. **Active-matrix LCDs** use **TFT** (**thin film transistor**) technology, in which each pixel has its own switch. The amount of light the LCD monitor produces is called brightness or luminance, measured in cd/m^2 (candela per square metre).

A **CRT** monitor is similar to a traditional TV set. It contains millions of tiny red, green and blue phosphor dots that glow when struck by an electron beam that travels across the screen and create a visible image.

PCs can be connected to **video projectors**, which project the image onto a large screen. They are used for presentations and home theatre applications.

In a **plasma screen**, images are created by a plasma discharge which contains noble (non-harmful) gases. Plasma TVs allow for larger screens and wide viewing angles, making them ideal for movies.

Organic Light-Emitting Diodes (**OLEDs**) are thin-film LED displays that don't require a backlight to function. The material emits light when stimulated by an electrical current, which is known as electroluminescence. They consume less energy, produce brighter colours and are flexible – i.e. they can be bent and rolled up when they're not being used.

Ex. 2. Listen to the five customers in a computer shop describing their display device needs. Which device (a-e) would you recommend to each person?

Speaker 1 …… Speaker 4 ……

Speaker 2 …… Speaker 5 ……

Speaker 3 ……

NEC MultiSyn LCD Monitor

Screen size: 17"

Resolution: 1280x1024 (SXGA)

Aspect ratio: 5:4

Brightness: 400 cd/m²

a

Dell UltraSharp LCD monitor

Widescreen 24" flat panel

Resolution: 1920x1200

Colour support: 16.7 million

Multiple video inputs, flash-card slots and USB ports

b

Cambridge-Hitachi interactive whiteboard

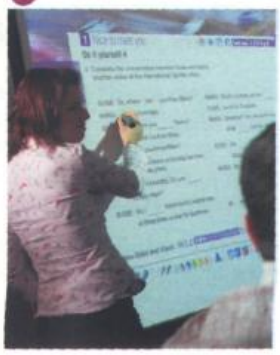
Allows interaction with a projected computer image

Board size: 78"

Connected to the PC via USB

Pointing device: cordless pen

c



Pioneer 50" Plasma TV

Resolution: 1280x768 (XGA)

Blu-ray Disc recorder

5.1 surround sound system (Five audio channels plus one subwoofer)

d

Portable projector

DLP (Digital Light Processing) technology

Resolution: 1024x768

Projection screen

e

Ex. 3. Translate the following text into your native language.

WHICH TYPE OF PRINTER SHOULD I BUY?

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

To begin with, you should take into account that printers vary in cost, speed, print quality, and other factors *such as* noise or printing method. Technology is evolving so quickly that there is always a printer for every application or need.

Dot-matrix printers use pins to print the dots required to shape a character. They can print text and graphics; however, they produce relatively low resolution output – 72 to 180 dots per inch (dpi). They are used to print multi-part forms, self-copying paper and continuous-form labels. They are slower than laser printers (see below) but much cheaper.

Inkjet printers operate by projecting small ink droplets onto paper to form the required image. Colour and hues are created by the precise mixing of cyan, magenta, yellow and black inks. Inkjets are fairly fast, quiet, and not as expensive as laser printers. Nevertheless, you can still expect high quality results *because* there are some inkjet printers on the market with a resolution of 2,400 dpi.

Laser printers produce output at great speed and with a very high resolution of 1,200–2,400 dpi. They scan the image with a laser beam and transfer it to paper with a special ink powder called toner. They are constantly being improved. In terms of speed and image quality, laser printers are preferred by experts for various reasons; *for instance*, they have a wider range of scalable fonts than inkjets, can emulate different language systems, and can produce high-quality graphics; however, they are still expensive for home users.

Thermal transfer printers are used to produce colour images by transferring a wax-based ink onto the paper. They are popular for printing bar codes, labels and medium-resolution graphics.

Imagesetters produce very high-resolution output (up to 3,540 dpi) on paper or on the actual film for making the printing plates. In addition, they are extremely fast. Imagesetters are most often used in desktop publishing (DTP). Although they produce the highest quality output, they have one important disadvantage: they are too expensive for homes or small offices.

In modern lithographic printing, images are created on a DTP computer and *then* output directly to the printing plates, without requiring film as an intermediate step. This technology is called **computer to plate**, or **CTP**, and the machine used is called a **platesetter**.

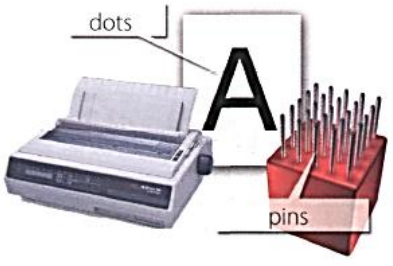
Finally, we have **plotters**. Plotters use ink and fine pens held in a carriage to draw very detailed designs on paper. They are used for construction plans, engineering drawings and other technical illustrations. Nowadays, traditional plotters are being replaced with wide-format inkjets.

Ex. 4. Label the types of printer (1-5). Which types of printer aren't pictured?

The quality (resolution) of the images goes up to 2,400 dots per inch (dpi)

1 .....

Provides high quality output: a resolution



The resolution depends on the number of pins

Ex. 5. Find words in the ex. 3 with the following meanings.

1. Design and images used in magazines, books, etc.
2. Output quality, measured in dots per inch.
3. A particular colour within the colour spectrum.
4. An ink powder used in laser printers and copiers.
5. Set of characters that can be resized (enlarged or reduced) without introducing distortion.
6. A rectangular pattern of black lines of magnetic ink printed on an object so that its details can be read by a computer system.
7. Surface that carries a reproduction of the image, from which the pages are printed.
8. In-between, middle.

Ex. 6. Listen to an extract from a consumer technology podcast about multi-function printers. What two disadvantages of multi-function printers are mentioned? Listen again and answer the following questions.

1. What is a multi-function printer?
2. Why are multi-function printers so popular?
3. What is the main advantage of PictBridge technology?
4. Apart from sheets of paper, what other things can multi-function printers print?
5. What software do you usually get when you buy a multi-function printer?
6. What advice does Mr Kelly give on ink cartridges?
7. What type of device does he recommend for home users?
8. What type of device does he recommend for businesses?

Ex. 7. Read the adverts and then answer these questions. Translate the adverts.

1. How many inkjet printers are advertised?

2. Which printer would you recommend to someone who wants to print advertising graphics?
3. If you have the wide-format printer from Vutek, what kinds of material can you print on?
4. Which technology lets you print directly from your digital camera without needing a computer in between?
5. A page description language, or PDL, describes how to print the text and pictures on the page. Can you find two laser printer languages?
6. What is the resolution of the Brother HL Network Colour Laser Printer?
7. How fast is the Brother HL Network Colour Laser Printer?

Canon Compact Photo Printer SELPHY CP750 Photo Printer

An inkjet photo printer with a 2.4" colour LCD for easy viewing, editing and printing of perfect borderless photos. With PictBridge, you can print directly from digital cameras, memory cards or camera phones (via IrDA or optional Bluetooth unit) without connecting to a PC.

Resolution: 300x300 dpi

Software: Easy-PhotoPrint

Dimensions: 179x127.1x63 mm

Weight: 960g

The Vutek UltraVu II 5330 provides the ultimate combination of highest print speed and best print quality in a five-metre printer.

- Wide-format professional inkjet printer
- Prints on a wide variety of substrates, including vinyl, and pressure-sensitive paper, mesh and textiles
- VUTEK Low Friction Kit allows for difficult materials to be run more easily
- Prints up to 16.4 feet (5 metres) wide
- Up to 330 dpi resolution produces images that are sharp, crisp and consistent
- Prints up to 2,230 square feet (207 square metres) per hour
- Applications: banners, exhibition graphics, bus shelters, etc.

Brother HL Network Colour Laser Printer

The HL-4040CN delivers the perfect balance of quality, workgroup, colour A4 laser printing.

It boasts outstanding colour output: 2,400 dpi class colour printing with exceptionally crisp, high-resolution text and graphics driven by Brother's exclusive printing enhancement technologies.

Print Speed: up to 31 ppm (pages per minute) mono, 8 ppm colour (A4)

Compatibility: PCL and PostScript languages

Paper tray capacity: 250 sheets

Memory size: 64MB

High-speed USB

Ex. 8. Translate the following text into your native language and determine the functions of the computer.

THE FIRST CALCULATING DEVICES

Let us take a look at the history of computers that we know today. The very first calculating device used was the ten fingers of a man's hands. This, in fact, is why today we still count in tens and multiples of tens.

Then the abacus was invented. People went on using some form of abacus well into the 16th century, and it is still being used in some parts of the world because it can be understood without knowing how to read.

During the 17th and I8lh centuries many people tried to find easy ways of calculating. J. Napier, a Scotsman, invented a mechanical way of multiplying and dividing, which is now the modern slide rale works. Henry Briggs used Napier's ideas to produce logarithm tables which all mathematicians use today.

Calculus, another branch of mathematics, was independently invented by both Sir Isaak Newton, an Englishman, and Leibnitz, a German mathematician. The first real calculating machine appeared in 1820 as the result of several people's experiments.

In 1830 Charles Babbage, a gifted English mathematician, proposed to build a general-purpose problem-solving machine that he called "the analytical engine". This machine, which Babbage showed at the Paris Exhibition in 1855, was an attempt to cut out the human being altogether, except for providing the machine with the necessary facts about the problem to be solved. He never finished this work, but many of his ideas were the basis for building today's computers.

By the early part of the twentieth century electromechanical machines had been developed and were used for business data processing. Dr. Herman Hollerith, a young statistician from the US Census Bureau successfully tabulated the 1890 census. Hollerith invented a means of coding the data by punching holes into cards. He built one machine to punch the holes and others — to tabulate the collected data. Later Hollerith left the Census Bureau and established his own tabulating machine company. Through a series of merges the company eventually became the IBM Corporation.

Until the middle of the twentieth century machines designed to manipulate punched card data were widely used for business data processing. These early electromechanical data processors were called unit record machines because each punched card contained a unit of data.

In the mid—1940s electronic computers were developed to perform calculations for military and scientific purposes. By the end of the 1960s commercial models of these computers were widely used for both scientific

computation and business data processing. Initially these computers accepted their input data from punched cards. By the late 1970s punched cards had been almost universally replaced by keyboard terminals. Since that time advances in science have led to the proliferation of computers throughout our society, and the past is but the prologue that gives us a glimpse of the nature.

Ex. 9. Answer the following questions in writing.

1. What was the very first calculating device? 2. What is the abacus? 3. What is the modern slide rule? 4. Who gave the ideas for producing logarithm tables? 5. How did Newton and Leibnitz contribute to the problem of calculation? 6. When did the first calculating machine appear? 7. What was the main idea of . Ch.Babbage's machine? 8. How did electromechanical machines appear and what were they used for? 9. What means of coding the data did Hollerith devise? 10. How were those electromechanical machines called and why? 11. What kind of computers appeared later? 12. What new had the computers of 1970s?

Ex. 10. Find the equivalents for the following expressions in the text.

Вычислительное устройство; легкий способ вычисления; поэтому (вот почему); кратное десяти; изобрести механический способ умножения и деления; логарифмическая линейка; составить таблицы логарифмов; математический анализ; изобрести независимо (друг от друга); в результате; полностью исключить человека; кроме (за исключением); обработка деловой информации; средство кодирования информации; перфокарты; пробивать отверстия; оформить собранные данные в таблицу; работать с данными на перфокарте; устройство, записывающее информацию блоками; единица информации; выполнять вычисления; для научных целей; клавишный терминал

UNIT 5. STORAGE DEVICES

Ex. 1. Read and translate the following text. Look at the pictures and descriptions below and find the following.

- The name of the hard drive on a PC platform;
- The type of hard drive that plugs into a socket at the back of a computer;
- The system that works in a sequential format;
- The size and storage capacity of a floppy disk.

A 3.5" floppy drive and diskette

A floppy disk drive uses 3.5" disks, which can store 1.44MB of data; it is usually assigned to the A: drive. Floppy drives are becoming increasingly rare.

The inside of a hard drive

Most PCs have one internal hard drive, usually called C: drive. It is used to store the operating system, the programs and the user's files in a convenient way. A hard drive can hold hundreds of gigabytes of data.

A portable external hard drive

External hard drives are connected to the USB or FireWire port of the computer. They can be as small as a wallet but can have as much capacity as internal drives; they are typically used for backup or as secondary storage.

Magnetic tapes and drive

A tape drive reads and writes data on tapes. It is sequential-access – i.e. to get to a particular point on the tape, it must go through all the preceding points. Tapes can hold hundreds of gigabytes of data and are used for data collection, backup and archiving.

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

capacity	storage	archiving	hold	secondary

1. There are basically three types of magnetic …… device available to the computer user – hard drives, diskettes and tapes.
2. The ……. Of a 3.5" floppy disk is only 1,44 MB.
3. Hard drives can …… hundreds of times more than floppy disks.
4. A portable hard drive is a good choice for …… storage.
5. Magnetic tapes are used for …… information that you no longer need to use regularly.

Ex. 3. Sue wants to buy a new drive. Listen to her conversation with the sales assistant. Does she buy

The Iomega eGo portable hard drive.

anything? Listen again and answer the following questions.

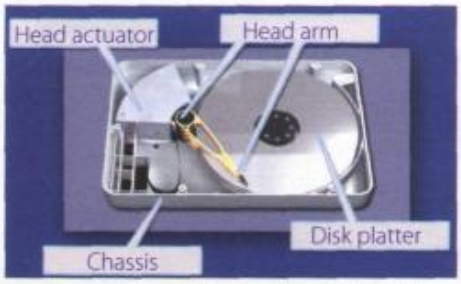
1. What is the storage capacity of the lomega eGo portable hard drive?
2. How much information can be stored on the Edge DiskGo model?
3. Which hard drive is good for mobile professionals?
4. How much does the lomega eGo drive cost?
5. How much does the Edge DiskGo cost?

Ex. 4. Translate the following text into your native language.

Magnetic storage

Magnetic storage devices store data by magnetizing **particles** on a disk or tape.

A **floppy disk** is so called because it consists of a flexible sheet of plastic, coated with iron oxide – a magnetizable material. A floppy disk drive spins at 360 revolutions per minute (rpm), so it's relatively slow. However, a **hard drive** spins at over 7,200 rpm and stores data on a stack of metal rotating disks called **platters**. This means you can store much more data and retrieve information much faster.



The inside of a hard drive

New disks need to be **formatted** before you can use them, unless they come preformatted from the manufacturer. When the disk is formatted, the operating system (OS) organizes the disk surface into circular **tracks** and divides each track into **sectors**. The OS creates a **directory** which will record the specific location of files. When you save a file, the OS moves the **read/write head** of the drive 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 sector, and reads the file in the RAM area. However, formatting erases any existing files on a disk, so do not format disks on which data that you don't want to lose is stored.


Fig. 1

The OS allows you to create one or more **partitions** on your hard drive, in effect dividing it into several logical parts. Partitions let you install more than one operating system (e.g. Windows and Linux) on your computer. You may also decide to split your hard drive because you want to store the OS and programs on one partition and your data files on another; this allows you to reinstall the OS when a problem occurs, without affecting the data partition.

The average time required for the read/write heads to move and find data is called **seek time** (or **access time**) and it is measured in milliseconds (ms); most hard drives have a seek time of 7 to 14 ms. Don't confuse this with **transfer rate** – the average speed required to transmit data from the disk to the CPU, measured in megabytes per second.


Toshiba's 1.8" hard drive; mini hard drives are used in small gadgets, such as PDAs and wristwatches

How to protect your hard drive

- Don't hit or move the computer while the hard drive is spinning. Hard drives are very sensitive to vibration and shocks, especially when they are operating; when the read/write head touches the rotating disk, it can scratch and damage the disk surface. This is known as **head crash**.
- You shouldn't turn your computer off and on quickly. Wait at least ten seconds to ensure that the drive has stopped spinning.
- Check your hard drive regularly for logical and physical errors. To check and repair a drive, you can use a disk diagnosis utility like Windows ScanDisk.
- To minimize the risk of data loss or corruption, you should install an up-to-date virus scanner. You should also **back up** your hard drive regularly.

Ex. 5. Match these words (1-5) with the definitions (a-e).

C Match these words (1–5) with the definitions (a–e).

1	formatted	**a**	a file system that defines the structure for keeping track of the files
2	directory	**b**	the part of a drive that reads and records data on a disk
3	read/write head	**c**	to make a copy of data or software in case the original disk is damaged
4	head crash	**d**	initialized; when the tracks and sectors on magnetic disks are set
5	back up	**e**	a serious disk malfunction; when the read/write head touches the rotating disk

Ex. 6. Paul wants to buy some blank discs. Listen to his conversation with the sales assistant and decide whether these sentences are true or false. Correct the false ones.

1. A DVD is an optical digital disc that can be used for a video, audio and data storage.
2. The dimensions of a CD and a DVD are the same: 1.3 mm thick and 13 cm in diameter.
3. The data on a DVD is read with a laser beam.
4. A basic DVD can hold 3.7 gigabytes.
5. You need a hard drive to read DVDs.
6. DVD-Video discs can hold full-length movies.
7. A DVD Writer is not compatible with old CD-ROMs.

A DVD drive with disc

*! Note: dis**c** is optical media; dis**k** is magnetic storage media.*

Ex. 7. Read and translate the following text into your native language and find the following.

1. The advantages and disadvantages of optical discs over magnetic disks.

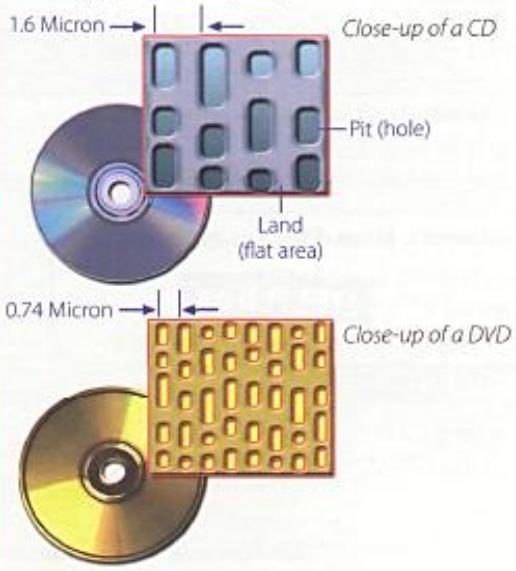
2. The storage capacity of a double-sided, dual layer DVD.
3. The difference between a DVD burner and a DVD recorder.
4. The feature of a portable DVD player which allows the user to play different formats.
5. Two possible successors to DVDs.
6. Where the blu-ray format gets its name from.

Optical discs and drives

Optical discs can store data at much higher densities than magnetic disks. They are therefore ideal for multimedia applications where images, animation and sound occupy a lot of disc space. Furthermore, optical discs are not affected by magnetic fields, meaning that they are secure and stable, and can be transported through airport metal detectors without damaging the data. However, optical drives are slower than hard drives.

CDs and DVDs

At first sight, a **DVD** is similar to a **CD**. Both discs are 120 mm in diameter and 1.2 mm thick. They also both use a **laser beam** to read data. However, they are very different in internal structure and data capacity. In a DVD, the **tracks** are very close together, thus allowing more tracks. The **pits** in which data is stored are also smaller, so there are more pits per track. As a result, a CD can hold 650-700MB, whereas a basic DVD can hold 4.7GB. In addition, a DVD can be **double-sided** and **dual layer**, with a capacity of 17GB.



CDs come in three different formats:

- CD-ROMs (**r**ead-**o**nly **m**emory) are read-only units, meaning you cannot change the data stored on them (for example, a dictionary or a game).
- CD-R (**r**ecordable) discs are write-once devices which let you duplicate music CDs and other data CDs.
- CD-RW (**rew**ritable) discs enable you to write onto them many times, just like a hard disk.

DVDs also come in several formats:

- DVD-ROMs are used in DVD computer drives. They allow for data archiving as well as interactive content (for example, an encyclopedia or a movie).
- DVD-R or DVD+R can only be recorded on once.
- DVD-RW or DVD+RW discs can be erased and re-used many times. They are used to back up data files and to record audio and video.

The DVD drive used in computers is also called a **DVD burner** because it records information by burning via a laser to a blank DVD disc. However, a **DVD recorder** typically refers to a standalone unit which resembles a video cassette recorder. New DVD recorders can play all CD and DVD formats. There are also **portable DVD players** – handheld devices which let you watch movies or TV, play games and listen to music, wherever you are. They come with a built-in DVD drive and widescreen (rectangular 16:9 format) LCD display. They usually support **multi-format playback** – that is, they can play many file formats, including DVD-video, DivX, CD audio discs, MP3 music and JPEG images.

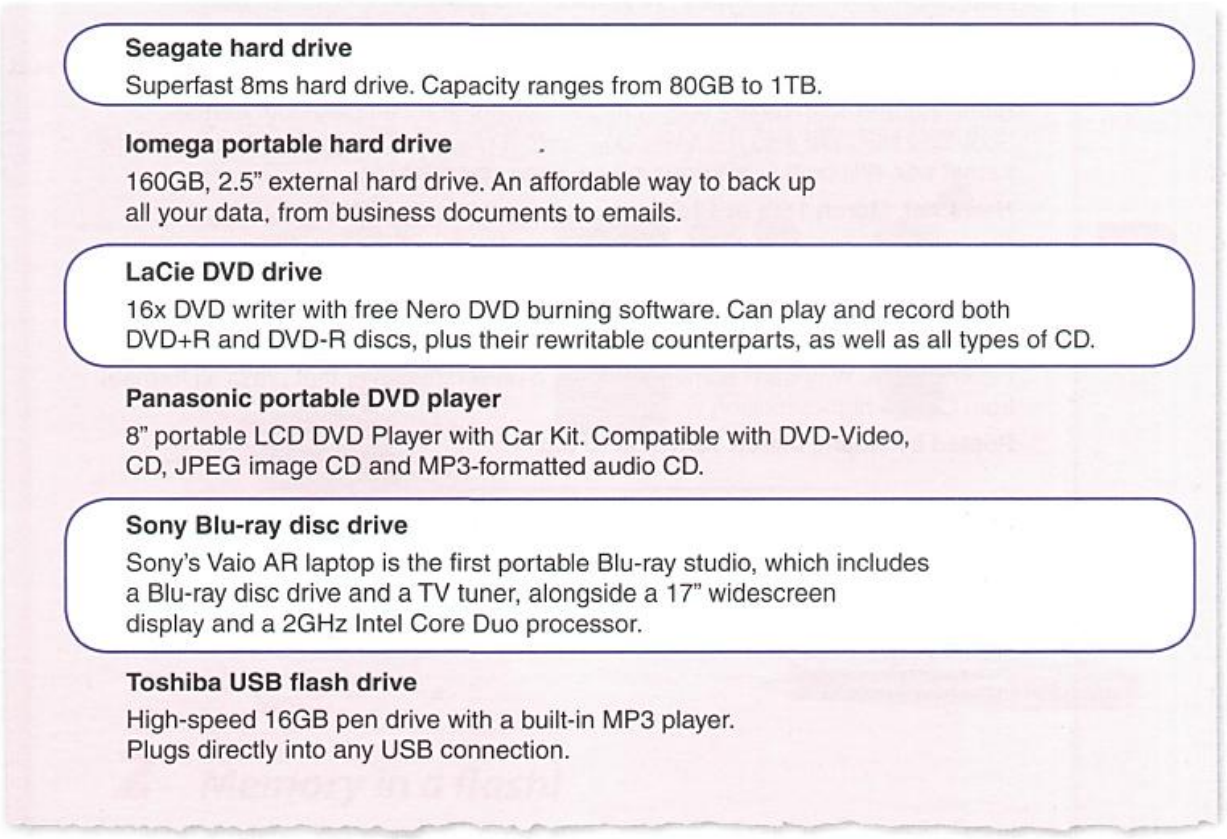
HD-DVD and Blu-ray discs

These two competing formats are expected to replace current DVD as the standard for watching movies at home. On one side are Toshiba, Microsoft and the DVD Forum, who support the **High Definition-DVD** (**HD-DVD**). Sony, Panasonic, Samsung, JVC and many movie studios are behind the **Blu-ray** format.

A Sony Blu-ray disc

A Blu-ray disc has a capacity of 25GB (single layer), 50GB (dual layer) and 100GB (four layer). Unlike DVDs, which use a red laser to read and write data, Blu-ray uses a blue-violet laser, hence its name. Blu-ray discs can record and play back high-definition television and digital audio, as well as computer data.

Ex. 8. Look at the products in the computer catalogue and choose the most suitable device for the purposes (1-6). Give reasons for your choices.



Seagate hard drive
Superfast 8ms hard drive. Capacity ranges from 80GB to 1TB.

Iomega portable hard drive
160GB, 2.5" external hard drive. An affordable way to back up all your data, from business documents to emails.

LaCie DVD drive
16x DVD writer with free Nero DVD burning software. Can play and record both DVD+R and DVD-R discs, plus their rewritable counterparts, as well as all types of CD.

Panasonic portable DVD player
8" portable LCD DVD Player with Car Kit. Compatible with DVD-Video, CD, JPEG image CD and MP3-formatted audio CD.

Sony Blu-ray disc drive
Sony's Vaio AR laptop is the first portable Blu-ray studio, which includes a Blu-ray disc drive and a TV tuner, alongside a 17" widescreen display and a 2GHz Intel Core Duo processor.

Toshiba USB flash drive
High-speed 16GB pen drive with a built-in MP3 player. Plugs directly into any USB connection.

Ex. 9. Flash memory is used in many handheld devices. Match the descriptions (1-6) with the pictures (a-f).

1. This handheld console lets you play games stored on ROM game cards, which have a small amount of flash memory to save user data, for example, high scores.
2. This flash memory card is used as "digital film" to store images on a digital camera.
3. This wireless LAN card allows laptop and PDA users to access the Internet from any Wi-Fi access point.
4. This USB flash pen drive is the latest mobile drive for your computer.
5. It looks like an ordinary watch but this USB drive from Edge Tech can store up to 1 GV of flash memory. It will let you save and transfer your photos, songs and data files easily.

6. This flash-based player provides everything you need to play music and store data on the go. It also comes with a built-in FM radio and voice recorder.

Ex. 10. Translate the following text into your native language. Find words or phrases in the text with the following meanings.

1. Permanent; able to hold data without power (lines 1-5)
2. Able to be rewritten many times (lines 10-15)
3. Different sections of a disk drive or storage area (lines 40-45)
4. To make a copy of a file so that the originals is not lost (lines 45-50)
5. Transferred to another device (lines 60-65)
6. A peripheral device that reads and writes flash memory cards (lines 60-65)
7. A product that integrates two different technologies (lines 65-70)

Memory in a flash!

Flash memory is a type of **non-volatile** memory that can be electronically erased and reprogrammed. Its name was invented by Toshiba to express how much faster it could be erased – 'in a flash', which means 'very quickly'.

Unlike RAM, which is **volatile**, flash memory retains the information stored in the chip when the power is turned off. This makes it ideal for use in digital cameras, laptops, network switches, video game cards, mobile phones and portable multimedia players. In addition, it offers fast read access times (although not as fast as RAM), with transfer rates of 12MB per second. Unlike ROM chips, flash memory chips are rewritable, so you can update programs via software.

- New **U3 smart drives** allow users to store both applications and data. They have two drive partitions and can carry applications that run on the host computer without requiring installation.
- **Flash memory cards** are used to store images on cameras, to back up data on PDAs, to transfer games in video consoles, to record voice and music on MP3 players or to store movies on MP4 players. They are as small as a stamp, and capacity can range from 8MB to several gigabytes. The only limitation is that flash cards are often not interchangeable between devices. Some formats include: CompactFlash, Secure Digital, MultiMedia Card,

Inside the chip, data is stored in several floating gate transistors, called **cells**. Each cell traditionally stores one bit of data (1 = erased and 0 = programmed). New devices have a multi-level cell structure so they can store more that one bit per cell. The chips are constructed with either **NOR** or **NAND** gates. NOR chips function like a computer's main memory, while NAND works like a hard drive. For example, in a camera, NOR flash contains the camera's internal software, while NAND flash is used to store the images.

Flash memory is used in several ways:

- Many PCs have their BIOS (basic input/output system) stored on a flash memory chip so it can be updated if necessary.
- Modems use flash memory because it allows the manufacturer to support new protocols.
- **USB flash drives** are used to save and move MP3s and other data files between computers. They are more easily transported than external hard drives because they use **solid-state** technology, meaning that they don't have fragile moving parts that can break if dropped. However, USB flash drives have less storage capacity than hard drives.

miniSD card, and xD-Picture Card. Sony has its own product called the Memory Stick, used in its digital still cameras, video camcorders and the PlayStation Portable. The photos stored in a digital camera can be offloaded to a computer via cable or wirelessly. Another option is to have a **flash card reader** permanently connected to your PC; you simply eject the card from the camera and put it into the reader instead of having to plug the camera in.

The future of hard drives may be **hybrid** hard drives. Hybrid hard drives combine a magnetic hard disk *and* flash memory into one device. This allows computers to boot, or start, more quickly, and also reduces power consumption.

SanDisk's card readers read and write to just about every flash memory card

Ex. 11. Listen to a salesperson at his stand at a consumer electronics show describing two flash products to a potential customer. Which product (a or b) is the visitor most interested in?

A – *The Dragon flash drive*

B – *The Dragon MP4 Player*

Listen again and tick which features the salesperson mentions for each device.

Features	Dragon flash drive	Dragon MP4 player
Back up computer data	☑	☐
Transport files between PCs	☐	☐
Audio and video playback	☐	☐
FM radio tuner	☐	☐
Voice recorder	☐	☐
Games	☐	☐

An MP4 player

USB drives are typically designed to attach to a key ring, such as the Cruzer Freedom USB flash drive

Ex. 12. Solve the clues and complete the puzzle.

Across

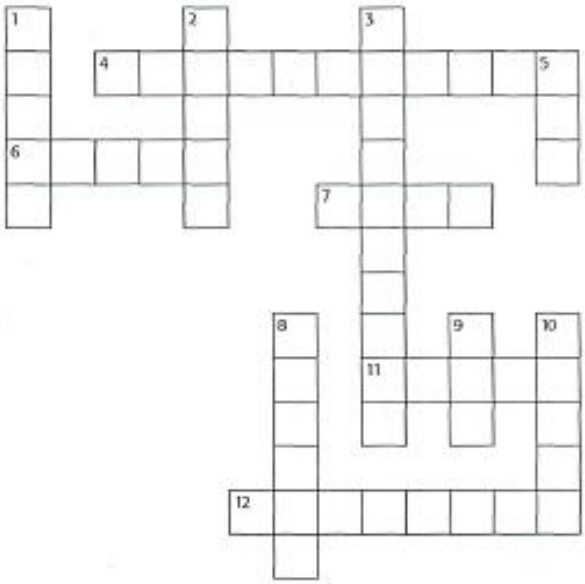
4 Thousandth of a second, abbreviated to *ms*, used to measure the access time of hard drives.

6 Floating gate transistors are called _____ in flash memory technology.

7 Prefix meaning *very large* or *one thousand million*.

11 Acronym for *light amplification by stimulated emission of radiation*.

12 Capable of being deleted.



Down

1 Concentric ring on the surface of a disc when the disc is formatted.

2 _____ memory retains its data when the power is switched off.

3 CD-RW means Compact Disc _____.

5 Abbreviation of *digital versatile disc*.

8 To write information on a disk or storage area.

9 Type of external bus or connector that plugs into the computer.

10 The physical mechanism that accepts, reads and writes data on a disk.

Ex. 13. Translate the following text into your native language.

COMPUTER SYSTEM ARCHITECTURE

As we know all computer systems perform the functions of inputting, storing, processing, controlling, and outputting. Now we'll get acquainted with the computer system units that perform these functions. But to begin with let's examine computer systems from the perspective of the system designer, or architect.

It should be noted that computers and their accessory equipment are designed by a computer system architect, who usually has a strong engineering background. As contrasted with the analyst, who uses a computer to solve specific problems, the computer system architect usually designs computer that can be used for many different applications in many different business. For example, the product lines of major computer manufacturers such as IBM, Digital Equipment Corporation and many others are the result of the efforts of teams of computer system architects.

Unless you are studying engineering, you don't need to become a computer system architect. However, it is important that as a potential user, applications programmer or systems analyst you understand the functions of the major units of a computer system and how they work together.

Types of computers

The two basic types of computers are analog and digital. Analog computers simulate physical systems. They operate on the basis of an analogy to the process that is being studied. For example, a voltage may be used to represent other physical quantities such as speed, temperature, or pressure. The response of an analog computer is based upon the measurement of signals that vary continuously with time. Hence, analog computers are used in applications that require continuous measurement and control.

Digital computers, as contrasted with analog computers, deal with discrete rather than continuous quantities. They count rather than measure. They use numbers instead of analogous physical quantities to simulate on-going, or real-time processes. Because they are discrete events, commercial transactions are in a natural form for digital computation. This is one reason that digital computers are so widely used in business data processing.

Machines that combine both analog and digital capabilities are called hybrid computers. Many business, scientific, and industrial computer applications rely on

the combination of analog and digital devices. The use of combination analog devices will continue to increase with the growth in applications of microprocessors and microcomputers. An example of this growth is the trend toward installing control systems in household appliances such as microwave ovens and sewing machines. In the future we will have complete indoor climate control systems and robots to do our housecleaning. Analog sensors will provide inputs to the control centres of these systems, which will be small digital computers.

Ex. 14. Answer the following questions in writing.

1. Who designs computers and their accessory equipment? 2. What is the role of an analyst? 3. Is it necessary for a user to become a computer system architect? 4. What functions do computer systems perform? 5. What types of computers do you know? 6. What is the principle of operation of analog computers? 7. How do digital computers differ from analog computers? 8. Where are digital and analog computers used? 9. What are hybrid computers? 10. Where do they find application?

Ex. 15. Find the equivalents for the following expressions in the text.

Функции ввода, хранения, обработки, управления и вывода информации; познакомиться; системные блоки; для начала; вспомогательные устройства; разработчик компьютерной системы; хорошая компьютерная подготовка; различные сферы применения; корпорация цифрового оборудования; прикладной программист; системный разработчик; главные устройства компьютерной системы; моделировать физические величины; измерение сигналов; в отличие от; иметь дело скорее с дискретными, чем непрерывными величинами; в режиме реального времени; коммерческие операции; цифровое вычисление; аналого-цифровые компьютеры; тенденция к установке систем управления; домашние приборы.

UNIT 6. OPERATING SYSTEMS

Ex. 1. Read and translate the following text.

GUI operating systems

The term **user interface** refers to the standard procedures that the user follows in order to interact with a computer. In the late 1970s and early 80s, the way users accessed computer systems was very complex. They had to memorize and type a lot of commands just to see the contents of a disk, to copy files or to respond to a single prompt. In fact, it was only experts who used computers, so there was no need for a user-friendly interface.

In 1984, Apple produced the Macintosh, the first computer with a mouse and a **graphical user interface (GUI)**. Macs were designed with one clear aim: to facilitate interaction with the computer. A few years later, Microsoft launched Windows, another operating system based on graphics and intuitive tools. Nowadays, computers are used by all kinds of people, and as a result there is a growing emphasis on accessibility and user-friendly systems.

A **GUI** makes use of a **WIMP** environment: **w**indows, **i**cons, **m**enus and **p**ointer. The background of the screen is called the **desktop**, which contains labelled pictures called **icons**. These icons represent **files** or **folders**. Double-clicking a folder opens a window which contains **programs**, **documents**, or more nested folders. When you are in a folder, you can launch a program or document by double-clicking the icon, or you can drag it to another location. When you run a program, your PC opens a window that lets you work with different tools. All the programs have a high level of consistency, with similar toolbars, menu bars, buttons and dialog boxes. A modern OS also provides access to networks and allows multitasking, which means you can run several programs – and do various tasks – at the same time.

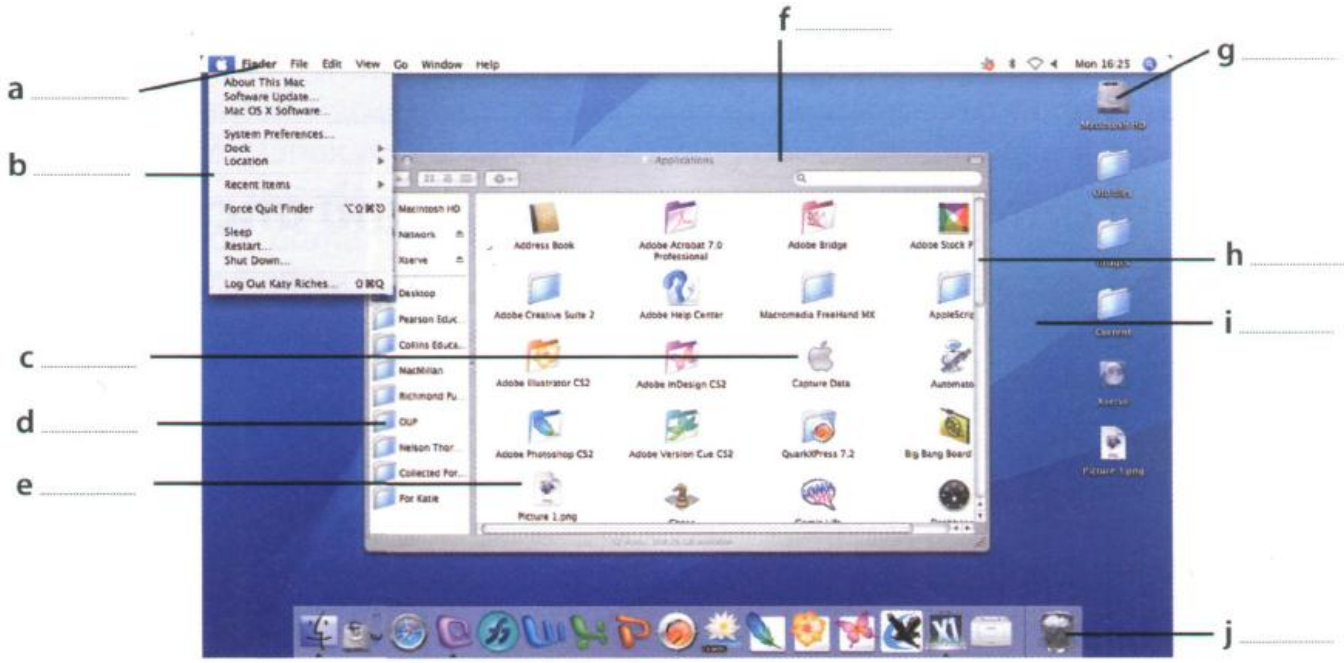
The most popular operating systems are:

- The **Windows** family – designed by Microsoft and used on most PCs. The most recent version is Windows Vista.
- **Mac OS** – created by Apple and used on Macintosh computers.
- **Unix** – a multi-user system, found on mainframes and workstations in corporate installations.
- **Linux** – open-source software developed under the GNU General Public License. This means anybody can copy its source code, change it and distribute it. It is used in computers, appliances and small devices.
- **Windows Mobile** – used on most PDAs and smartphones (PDAs incorporating mobile phones).
- **Palm OS** – used on Palm handheld devices.
- **RIM** – used on BlackBerry communication devices. Developed by Research In Motion.
- The **Symbian OS** – used by some phone makers, including Nokia and Siemens.

These computer platforms differ in areas such as device installation, network connectivity or compatibility with application software.

Ex.2. Label the interface features (a-j) on the screenshot of Apple's Mac OS X operating system with words in bold from this list.

- **desktop:** the background screen that displays icons and folders
- **window:** a scrollable viewing area on screen; it can contain files or folders
- **icon:** a picture representing an object; for example, a **document**, **program**, **folder** or **hard drive icon**
- **folder:** a directory that holds data, programs and other folders
- **menu bar:** a row of words that open up menus when selected
- **drop-down (pull-down) menu:** a list of options that appears below a menu item when selected
- **scroll bar:** a horizontal or vertical bar that is clicked and dragged in the desired direction
- **dock:** set of icons at the bottom of the screen that give you access to the things you use most



Ex. 3. Listen to a podcast interview with Bill Thompson, a program developer, and answer these questions. Listen again and complete this fact file.

1. Why is Windows so popular? Give two reasons.
2. Which Windows Vista edition is aimed at high-end PC users, gamers and multimedia professionals?

Windows Vista editions	Other features	Internet and security	Windows programs
(1) _____ is designed for users with basic needs, such as email and internet access. Home Premium is for advanced home computing and (2) _____. The Business edition is ideal for (3) _____. The Ultimate edition is the most complete.	The user interface has been redesigned with new icons and a new (4) _____. It offers support for the latest technologies, from DVD creation to (5) _____.	Internet Explorer is more reliable and secure. The Security Centre includes an (6) _____ program called Windows Defender, and a firewall that protects your computer from (7) _____.	The most popular is still (8) _____, a suite that includes the (9) _____, Word; an email program; the Excel spreadsheet program; and the (10) _____ program, PowerPoint.

Ex. 4. Read and translate the following text.

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: both a textbook example of the principles of operating system design, and sufficiently robust to be the standard OS in engineering and scientific computing.

Annoyed by the shortcomings of Minix, 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. 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 fx 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 than if they make it available it will destroy their revenue stream.

Programmers 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.

There's a term for this model of software development; it's called Open Source. Anyone can contribute to it. If you use it heavily you may want to extend or develop or fix bugs in it - and it is so easy to give your fixes back to the community that most people do so.

An operating system on it's own isn't a lot of use; but Linux was purposefully designed as a near-clon of Unix, and there is a lot of software out there than is free and was designed to compile on Linux. By about 1992, the first 'distributions' appeared.

A distribution is the Linux-user term for a complete operating

system kit, complete with the utilities and applications you need to make it do useful things - command

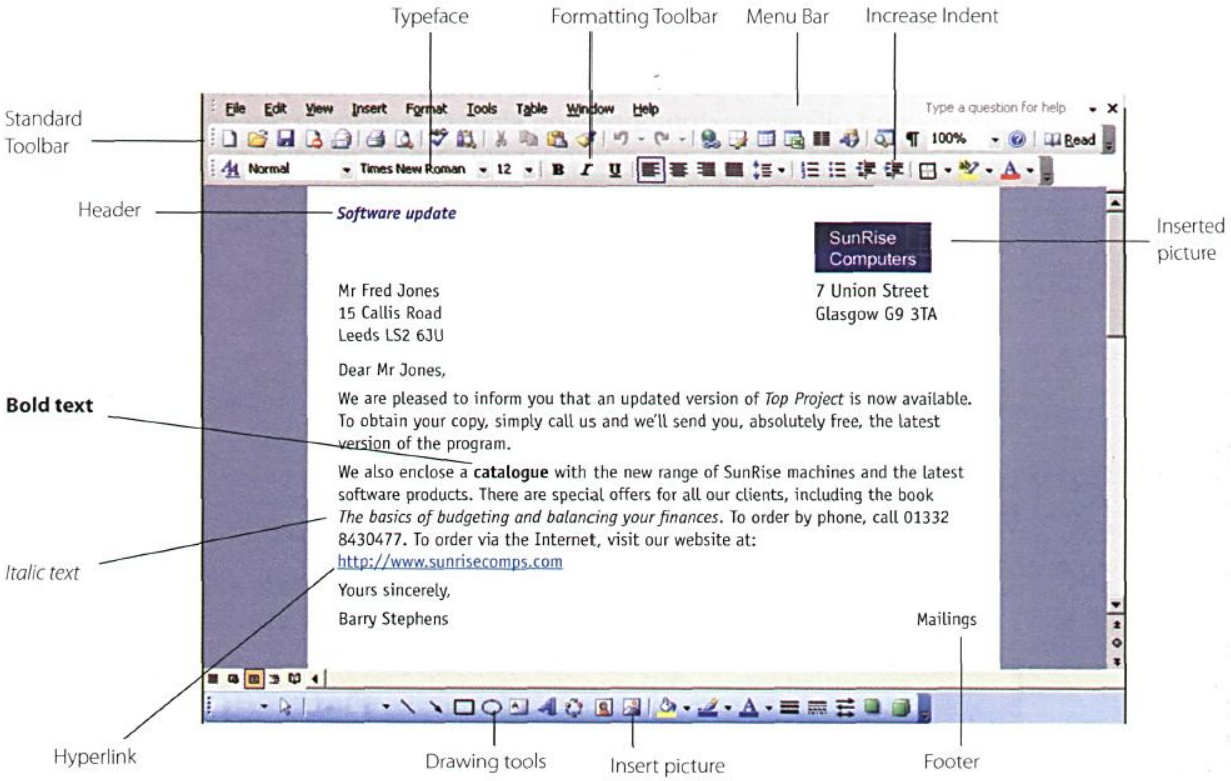
interpreters, programming tools, text editors, typesetting tools, and graphical user interfaces based on the X windowing system. X is a standard in academic and scientific computing. It's a complex distributed windowing system on which people implement graphical interfaces like KDE and Gnome.

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 now the widely ported operating system there is.

Ex. 5. Find the corresponding definitions (1-6) for each term (a-f).

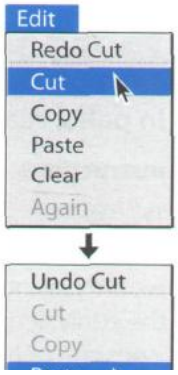
a) kernel	1 a type of software development where any programmer can develop or fix bugs in the software
b) Free Software Foundation	2 The original system’s program from which complied programs are generated
c) Source code	3 A complete operating system kit with the utilities and applications you need to make it do useful things
d) Open Source	4 A standard distributed windowing system on which people implement graphical interfaces
e) A distribution	5 An organization of volunteers dedicated to making good software that anyone could use without paying
f) X	6 The core of an operating system that handles memory allocation, talks to hardware devices, and makes sure everything keeps running

Ex. 6. Look at this screenshot from Microsoft Word and translate the labeled features and functions into your own language.

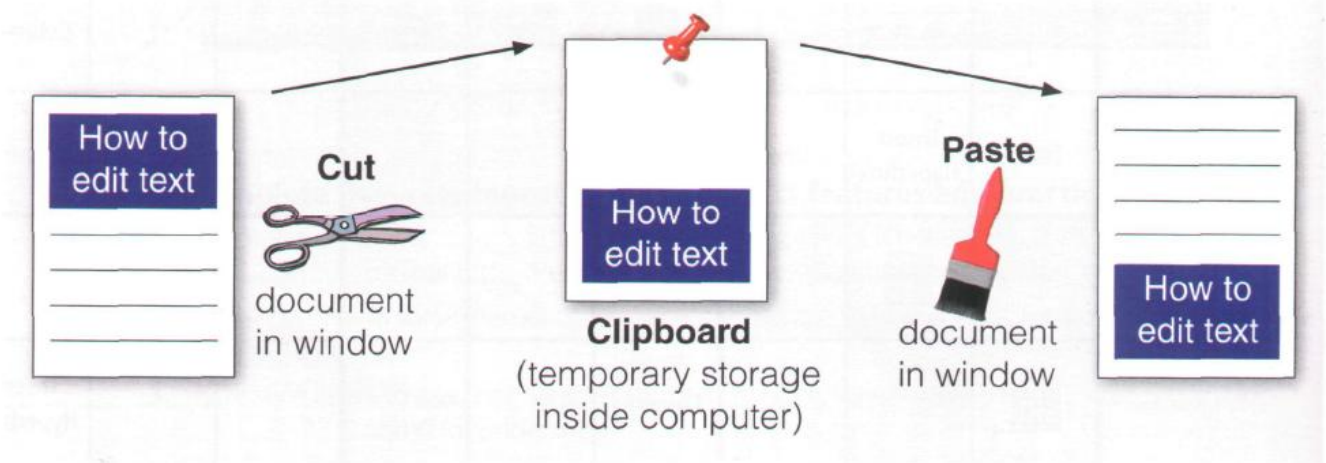


E

Ex. 7. Listen to two friends, Anna and Ben, talking about how to move text in Word. How many steps are involved in carrying out the *Cut and Paste* task? Listen again and complete the dialogues lines.



Moving text is a process of cutting and pasting, as if you were using scissors and glue



Anna: Ben, do you know how I can move this paragraph? I want to put it at the end of this page.

Ben: Er … I think so. (1) _____, use the mouse to select the text you want to move. (2) _____ choose the *Cut* command from the Edit menu.

Anna: (3) _____?

Ben: Yes. The selected text disappears and goes onto the clipboard. (4) _____ you find where you want the text to appear and you click to position the insertion point there.

Anna: Mm, OK. Is that (5) _____?

Ben: Yes, if that's where you want it. (6) _____, choose *Paste* from the Edit menu, or hold down *Ctrl* and press *V*. (7) _____, check that the text has appeared in the right place.

Anna: OK, I've (8) _____. Is that (9) _____?

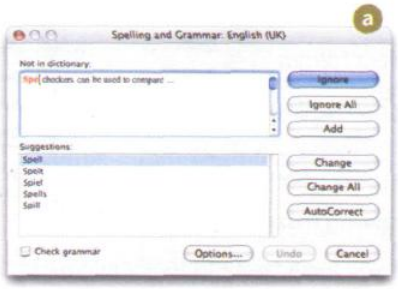
Ben: Yes, that's it. If you make a mistake, you can choose *Undo* from the Edit menu, which will reverse your last editing command.

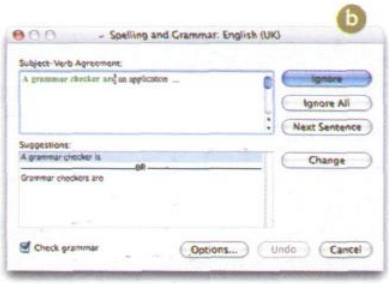
Anna: Brilliant! Thanks a lot.

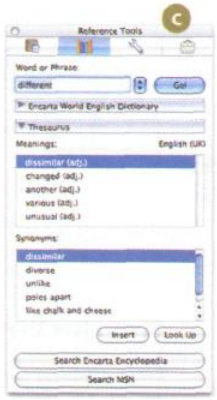
Ben: That's OK, it's my pleasure.

Ex. 8. Fulfill the two following parts of the task.

A Scan the descriptions of three WP tools (1–3) – a spell checker, an online thesaurus and a grammar checker – and match them with the dialog boxes (a–c).







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 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 the history of a word.

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 the words in the document are spelled correctly. They give 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.

Ex. 9. Translate the following text into your native language.

DATA PROCESSING AND DATA PROCESSING SYSTEMS

The necessary data are processed by a computer to become useful information. In fact this is the definition of data processing. Data are a collection of facts — unorganized but able to be-organized into useful information. Processing is a series of actions or operations that convert inputs into outputs. When we*1 speak of data processing, the input is data, and the output is useful information. So, we can define data processing as a series of actions or operations that converts data into useful in-formation.

We use the term data processing system to include the resources that are used to accomplish the processing of data. There are four types of resources: people, materials, facilities, and equipment. People provide input to computers, operate them, and use their output. Materials, such as boxes of paper and printer ribbons, are consumed in great quantity. Facilities are required to house the computer equipment, people and materials.

The need for converting facts into useful information is not a phenomenon of modern life. Throughout history, and even prehistory, people have found it necessary to sort data into forms that were easier to understand. For example, the ancient Egyptians recorded the ebb and flow of the Nile River and used this information to predict yearly crop yields. Today computers convert data about land and water into recommendations to farmers on crop planting. Mechanical aids to computation were developed and improved upon in Europe, Asia, and America throughout the seventeenth, eighteenth, and nineteenth centuries. Modern computers are marvels of an electronics technology that continues to produce smaller, cheaper, and more powerful components.

Basic data processing operations

Five basic operations are characteristic of all data processing systems: inputting, storing, processing, outputting, and controlling. They are defined as follows.

Inputting is the process of entering data, which are collected facts, into a data processing system. Storing is saving data or information so that they are available for initial or for additional processing. Processing represents performing arithmetic or logical operations on data in order to convert them into useful information. Outputting is the process of producing useful information, such as a printed report or visual display.

Controlling is directing the manner and sequence in which all of the above operations are performed.

Data storage hierarchy

It is known that data, once entered, are organized and stored in successively more comprehensive groupings. Generally, these groupings are called a data storage hierarchy. The general groupings of any data storage hierarchy are as follows.

1)Characters, which are all written language symbols: letters, numbers, and special symbols. 2) Data elements, which are meaningful collections of related characters. Data elements are also called data items or fields. 3) Records, which are collections of related data elements. 4) Files, which are collections of related records. A set of related files is called a data base or a data bank.

Ex. 10. Answer the following questions in writing.

1. What is processing? 2. What is data processing? 3. What does the term of data processing system mean? 4. What basic operations does a data processing system include? 5. What is inputting / storing / outputting information? 6. What do you understand by resources? 7. How did ancient Egyptians convert facts into useful information? 8. When were mechanical aids for computation developed? 9. What does data storage hierarchy mean? 10. What are the general groupings of any data storage hierarchy?

Ex. 11. Find the equivalents for the following expressions in the text.

Системы обработки информации; определение (термина) обработки данных; совокупность фактов; последовательность действий; преобразование входных данных в полезную информацию; включать ресурсы; завершить обработку данных; обеспечивать ввод информации в компьютер; ленты принтера; расходовать в большом количестве; размещать компьютерное оборудование; нуждаться (требовать) в приспособлениях; явление современной жизни; на протяжении доисторического периода; превращать ин-формацию в выражения; регистрировать отливы и приливы; прогнозировать урожай зерновых культур; механические средства вычисления; ввод данных; хранение данных; первоначальная обработка данных; дополнительная обработка; выдача полезной информации; напечатанное сообщение; зрительное отображение; последовательность запоминания информации; записанные символы языка; элементы информации; база данных; набор взаимосвязанных файлов.

UNIT 7. FACES OF THE INTERNET

Ex. 1. Discuss how would you define *the Internet*.

Ex. 2. Make a list of all things you can use the Internet for.

Ex. 3. Listen to a conversation between a customer buying a PC and a sales assistant. Why do you think the sales assistant has to explain so much about the Internet? Listen again and complete the customer's notes.

To connect to the Internet from home, I need:

(1) a _____ and (2) a _____.

Also need an account with an (3) _____ (a company that offers connection for a monthly fee).

If you want to connect lots of computers without using cables, you can use a (4) _____ router.

Wi-Fi uses (5) _____ waves to send data over medium-range distances.

Things you can do on the Internet:

(6) _____

_____

'Web' or 'Internet'? The Web: huge collection of (7) _____ stored on computers all over the world. The Internet: the network which connects all the computers.

Ex. 4. Read Part 1 of the Internet FAQs and choose the correct answers.

1 The Internet was
a invented in the mid-90s. **b** popular in the 1960s. **c** probably created in the USA.

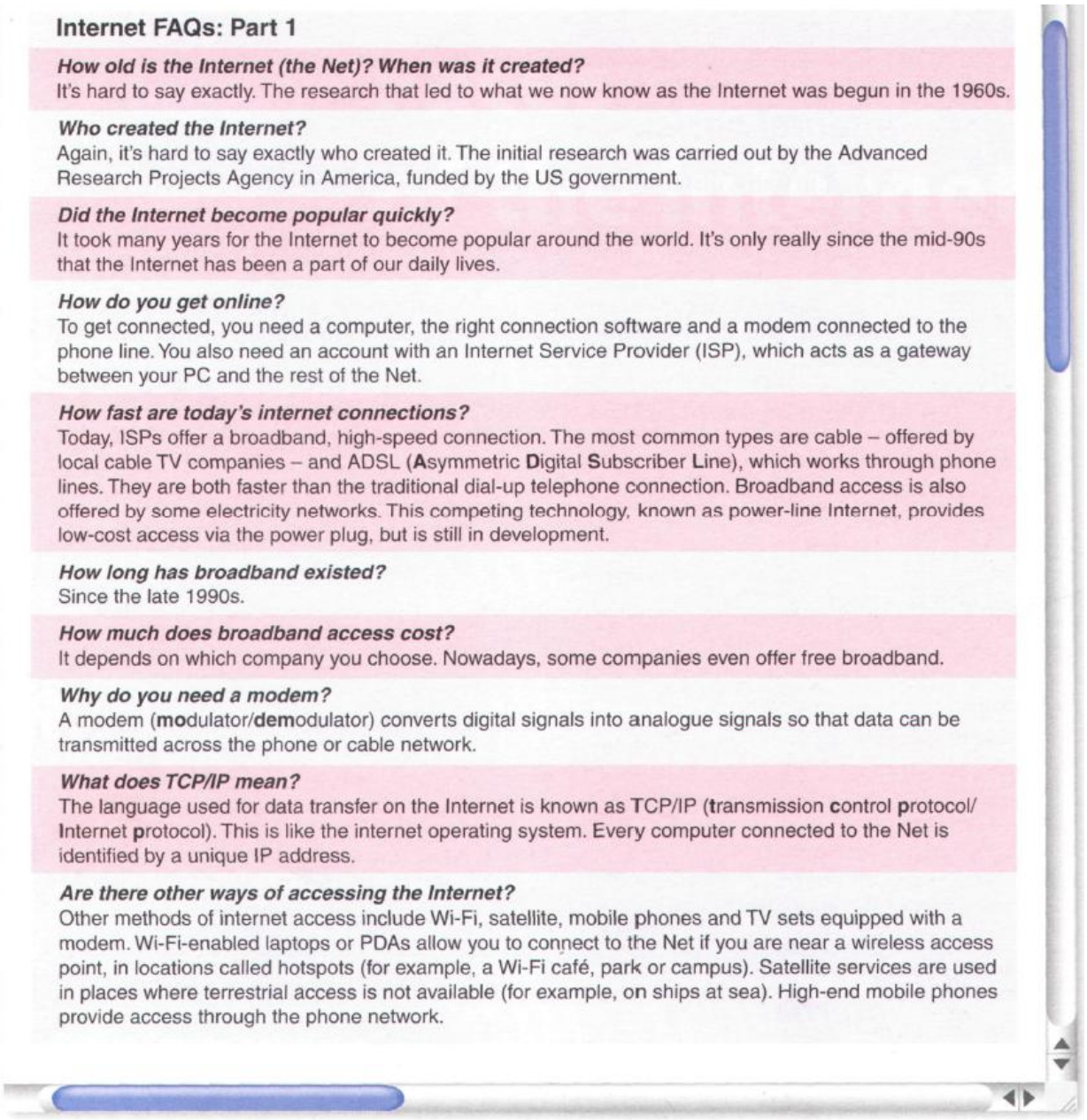
2 Which term describes any fast, high-bandwidth connection?
a broadband **b** dial-up connection **c** Wi-Fi connection

3 The power-line Internet provides broadband access through
a telephone lines. **b** satellites. **c** electrical power lines.

4 Which device converts computer data into a form that can be transmitted over phone lines?
a ADSL **b** a mobile phone **c** a modem

5 The standard protocol that allows computers to communicate over the Internet is called
a an IP address. **b** TCP/IP. **c** HTTP.

6 The geographical region covered by one or several access points is called a
a wireless access point. **b** hotspot. **c** wireless network device.



Internet FAQs: Part 1

How old is the Internet (the Net)? When was it created?
It's hard to say exactly. The research that led to what we now know as the Internet was begun in the 1960s.

Who created the Internet?
Again, it's hard to say exactly who created it. The initial research was carried out by the Advanced Research Projects Agency in America, funded by the US government.

Did the Internet become popular quickly?
It took many years for the Internet to become popular around the world. It's only really since the mid-90s that the Internet has been a part of our daily lives.

How do you get online?
To get connected, you need a computer, the right connection software and a modem connected to the phone line. You also need an account with an Internet Service Provider (ISP), which acts as a gateway between your PC and the rest of the Net.

How fast are today's internet connections?
Today, ISPs offer a broadband, high-speed connection. The most common types are cable – offered by local cable TV companies – and ADSL (**A**symmetric **D**igital **S**ubscriber **L**ine), which works through phone lines. They are both faster than the traditional dial-up telephone connection. Broadband access is also offered by some electricity networks. This competing technology, known as power-line Internet, provides low-cost access via the power plug, but is still in development.

How long has broadband existed?
Since the late 1990s.

How much does broadband access cost?
It depends on which company you choose. Nowadays, some companies even offer free broadband.

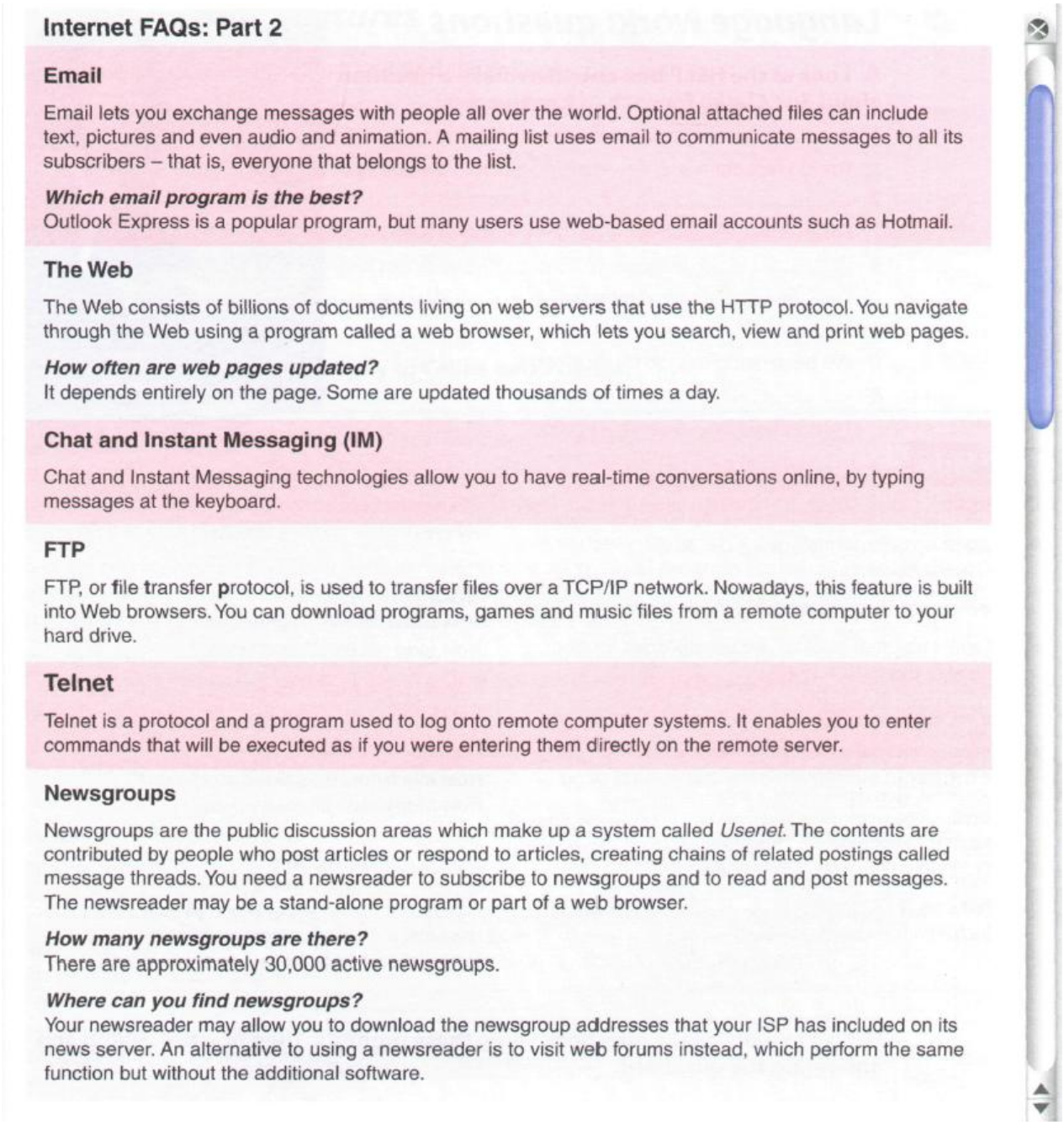
Why do you need a modem?
A modem (**mo**dulator/**dem**odulator) converts digital signals into analogue signals so that data can be transmitted across the phone or cable network.

What does TCP/IP mean?
The language used for data transfer on the Internet is known as TCP/IP (**t**ransmission **c**ontrol **p**rotocol/ **I**nternet **p**rotocol). This is like the internet operating system. Every computer connected to the Net is identified by a unique IP address.

Are there other ways of accessing the Internet?
Other methods of internet access include Wi-Fi, satellite, mobile phones and TV sets equipped with a modem. Wi-Fi-enabled laptops or PDAs allow you to connect to the Net if you are near a wireless access point, in locations called hotspots (for example, a Wi-Fi café, park or campus). Satellite services are used in places where terrestrial access is not available (for example, on ships at sea). High-end mobile phones provide access through the phone network.

Ex. 5. Discuss the internet systems (1-6) you would use to do the tasks (a-f). Then read Part 2 of the FAQs and check your answers.

1	Email	a	transfer files from the Internet to your hard drive
2	The Web	b	send a message to another person via the Internet
3	Newsgroups	c	have a live conversation (usually typed) online
4	Chat and IM	d	connect to a remote computer by entering instructions, and run a program on it
5	FTP	e	take part in public discussion areas devoted to specific topics
6	Telnet	f	download and view documents published on the Internet



Internet FAQs: Part 2

Email

Email lets you exchange messages with people all over the world. Optional attached files can include text, pictures and even audio and animation. A mailing list uses email to communicate messages to all its subscribers – that is, everyone that belongs to the list.

Which email program is the best?
Outlook Express is a popular program, but many users use web-based email accounts such as Hotmail.

The Web

The Web consists of billions of documents living on web servers that use the HTTP protocol. You navigate through the Web using a program called a web browser, which lets you search, view and print web pages.

How often are web pages updated?
It depends entirely on the page. Some are updated thousands of times a day.

Chat and Instant Messaging (IM)

Chat and Instant Messaging technologies allow you to have real-time conversations online, by typing messages at the keyboard.

FTP

FTP, or file transfer protocol, is used to transfer files over a TCP/IP network. Nowadays, this feature is built into Web browsers. You can download programs, games and music files from a remote computer to your hard drive.

Telnet

Telnet is a protocol and a program used to log onto remote computer systems. It enables you to enter commands that will be executed as if you were entering them directly on the remote server.

Newsgroups

Newsgroups are the public discussion areas which make up a system called *Usenet*. The contents are contributed by people who post articles or respond to articles, creating chains of related postings called message threads. You need a newsreader to subscribe to newsgroups and to read and post messages. The newsreader may be a stand-alone program or part of a web browser.

How many newsgroups are there?
There are approximately 30,000 active newsgroups.

Where can you find newsgroups?
Your newsreader may allow you to download the newsgroup addresses that your ISP has included on its news server. An alternative to using a newsreader is to visit web forums instead, which perform the same function but without the additional software.

Ex. 6. Find words and phrases in Part 2 with the following meanings.

1. A system used to distribute email to many different subscribes at once (in **E-mail** paragraph).

2. A program used for displaying web pages (in **The Web** paragraph).

3. To connect to a computer by typing your username and password (in **Telnet** paragraph).

4. A series of interrelated messages on a given topic (in **Newsgroups** parapraph).

5. A program for reading Usenet newgroups (in **Newsgroups** parapraph).

Ex. 7. Read the text and find the following.

1. The place where you SIP stores your emails.
2. The type of program used to read and send email from a computer.
3. The part of an email address that identifies the user of the service.
4. The line that describes the content of an email.
5. The computer file which is sent along with an email message.
6. Facial symbols used to indicate an emotion or attitude.
7. The name given to junk mail.

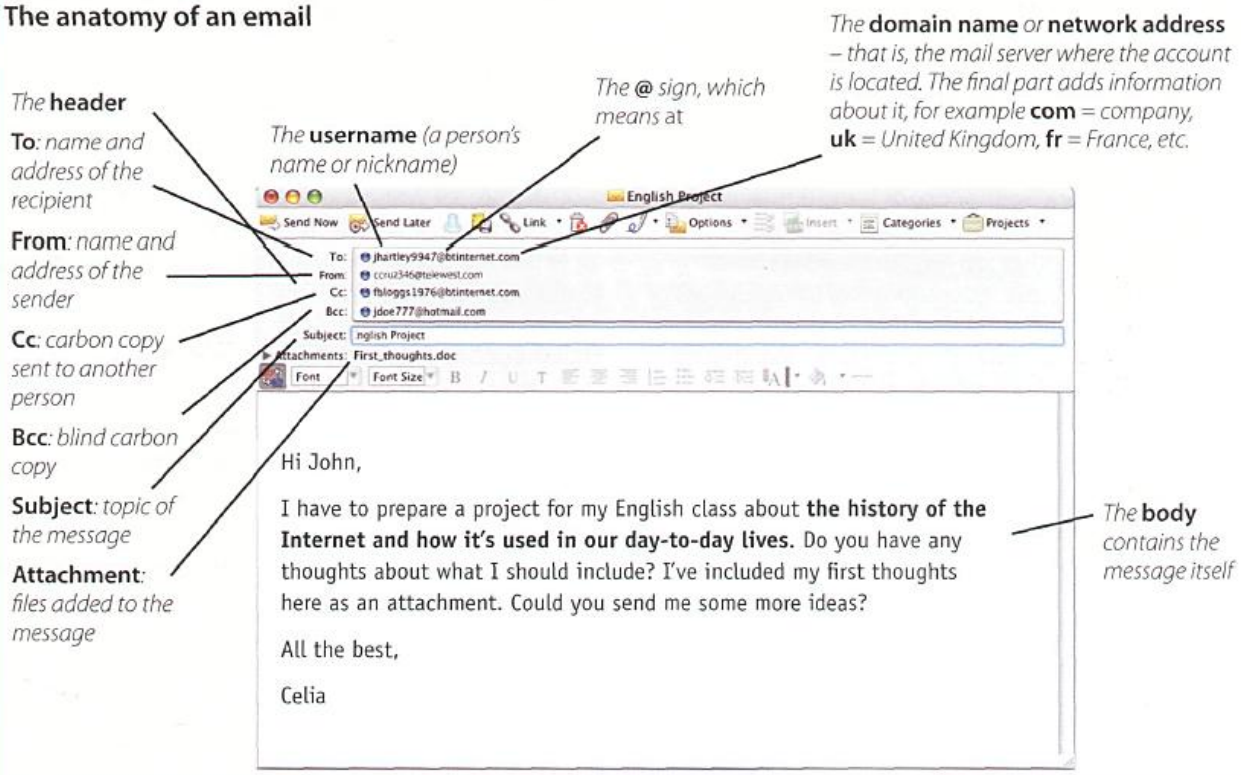
Email features

When you set up an account with an Internet Service Provider, you are given an **email address** and a **password**. The mail you receive is stored on the **mail server** of your ISP – in a simulated mailbox – until you next connect and download it to your hard drive.

There are two ways to get email over the Internet. One is by using a **mail program** (known as an **email client**) installed on your computer, for example Eudora or Outlook Express. The other way is to use **web-based email**, accessible from any web browser. Hotmail and Gmail are good examples.

You can make the message more expressive by including **emoticons**, also called **smileys**. For example, ;-) for wink, :-) for happy, :-o for surprised, :-D for laughing, etc. You may also like to add a **signature file**, a pre-written text file appended to the end of the message. The name given to unsolicited email messages is **spam**.

The anatomy of an email



Ex. 8. Translate the following text into your native language and determine the functions of the computer.

HARDWARE, SOFTWARE, AND FIRMWARE

The units that are visible in any computer are the physical components of a data processing system, or hardware. Thus, the input, storage, processing and control devices are hardware. Not visible is the software — the set of computer programs, procedures, and associated documentation that make possible the effective operation of the computer system. Software programs are of two types: systems software and applications software.

Systems software is the programs designed to control the operation of a computer system. They do not solve specific problems. They are written to assist people in the use of the computer system by performing tasks, such as controlling all of the operations required, to move data into and out of a computer and all of the steps in executing an application program. The person who prepares systems software is referred to as a systems programmer. Systems programmers are highly trained specialists and important members of the architectural team.

Applications software is the programs written to solve specific problems (applications), such as payroll, inventory control, and investment analysis. The word program usually refers to an application program, and the word programmer is usually a person who prepares applications software.

Often programs, particularly systems software, are stored in an area of memory not used for applications software. These protected programs are stored in an area of memory called read-only memory (ROM), which can be read from but not written on.

Firmware is a term that is commonly used to describe certain programs that are stored in ROM. Firmware often refers to a sequence of instructions (software) that is substituted for hardware. For example, in an instance where cost is more important than performance, the computer system architect might decide not to use special electronic circuits (hardware) to multiply two numbers, but instead write instructions (software) to cause the machine to accomplish the same function by repeated use of circuits already designed to perform addition.

Ex. 9. Answer the following questions in writing.

1. What is hardware? 2. Give the definition of software. 3. What are the types of software? 4. What is systems software? 5. What kind of tasks does systems software perform? 6. Who prepares systems software? 7. What is applications software? 8. What problems does applications software solve? 9. What is firmware? 10. How can a computer system architect use firmware?

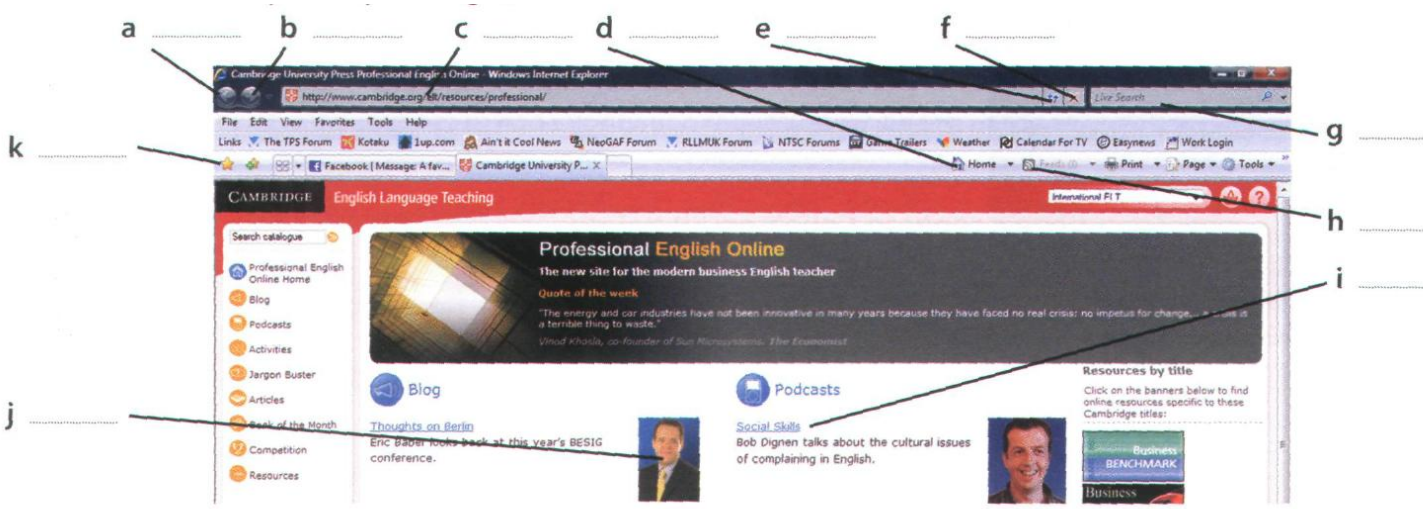
Ex. 10. Find the equivalents for the following expressions in the text.

Видимые устройства; система обработки данных; аппаратное обеспечение; набор компьютерных программ; соответствующая документация; эффективная работа; системное программное обеспечение; прикладное программное обеспечение; системный программист; платежная ведомость; переучет; анализ инвестиций; прикладная программа; работающий только в режиме чтения; постоянное запоминающее устройство;

последовательность команд; в случае; производительность; электронная цепь; умножать числа; заставить машину выполнять ту же функцию; выполнять сложение.

UNIT 8. THE WEB

Ex. 1. Look at the screenshot of a typical web-page. How many of the features (a-k) can you say in English?



A screenshot from Internet Explorer 7, a leading web browser.

Ex. 2. Read the text and label the features on the screenshot with the terms in bold.

A typical web page

At the top of the page is the **URL address**. URL means **U**niform **R**esource **L**ocator – the address of a file on the Internet. A typical URL looks like this: http://www.bbc.co.uk/radio/.

In this URL, *http://* means **H**yper**t**ext **T**ransfer **P**rotocol and tells the program to look for a web page. *www* means **w**orld **w**ide **w**eb. *bbc.co.uk* is the domain name of the server that hosts the website – a company based in the UK; other top-level domains are *.com* (commercial site), *.edu* (education), *.org* (organization) or *.net* (network); *radio* is the directory path where the web page is located. The parts of the URL are separated by *. (dot)*, */ (slash)* and *: (colon)*. Some sites begin *ftp://*, a **f**ile **t**ransfer **p**rotocol used to copy files from one computer to another.

The toolbar shows all the navigation icons, which let you **go back one page** or **go forward one page**. You can also **go to the home page** or **stop the current transfer** when the circuits are busy.

Tab buttons let you view different sites at the same time, and the built-in **search box** helps you look for information. If the **feed button** lights up, it means the site offers RSS feeds, so you can automatically receive updates. When a web page won't load, you can **refresh the current page**, meaning the page reloads (downloads again). If you want to mark a website address so that you can easily revisit the page at a later time, you can add it to your *favourites* (*favorites* in American English), or bookmark it. When you want to visit it again you simply click **show favourites**.

On the web page itself, most sites feature **clickable image links** and **clickable hypertext links**. Together, these are known as *hyperlinks* and take you to other web pages when clicked.

Ex. 3. Read the article and find websites for the following tasks.

1. To search for information on the Web
2. To buy books and DVDs
3. To participate in political campaigns
4. To view and exchange video clips
5. To manage and share personal photos using tags
6. To buy and sell personal items in online auctions
7. To download music and movies, sometimes illegally

Tour the Collectives of Cyberspace

The Internet isn't just about email or the Web anymore. Increasingly, people online are taking the power of the Internet back into their own hands. They're posting opinions on online journals – weblogs, or blogs; they're organizing political rallies on **MoveOn.org**; they're trading songs on illegal file-sharing networks; they're volunteering articles for the online encyclopedia **Wikipedia**; and they're collaborating with other programmers around the world. It's the emergence of the 'Power of Us'. Thanks to new technologies such as blog software, peer-to-peer networks, open-source software, and wikis, people are getting together to take collective action like never before.

eBay, for instance, wouldn't exist without the 61 million active members who list, sell, and buy millions of items a week. But less obvious is that the whole marketplace runs on the trust created by eBay's unique feedback system, by which buyers and sellers rate each other on how well they carried out their half of each transaction. Pioneer e-tailer **Amazon** encourages all kinds of customer participation in the site – including the ability to sell items alongside its own books, CDs, DVDs and electronic goods. **MySpace** and **Facebook** are the latest phenomena in social networking, attracting millions of unique visitors a month. Many are music fans, who can blog, email friends, upload photos, and generally socialize. There's even a 3-D virtual world entirely built and owned by its residents, called **Second Life**, where real companies have opened shops, and pop stars such as U2 have performed concerts.

Some sites are much more specialized, such as the photo-sharing site **Flickr**. There, people not only share photos but also take the time to attach *tags* to their pictures, which help everyone else find photos of, for example, Florence, Italy. Another successful example of a site based on user-generated content is **YouTube**, which allows users to upload, view and share movie clips and music videos, as well as amateur videoblogs. Another example of the collective power of the Internet is the **Google** search engine. Its mathematical formulas surf the combined judgements of millions of people whose websites link to other sites. When you type *Justin Timberlake* into Google's search box and go to the star's official website, the site is listed first because more people are telling you it's the most relevant Justin Timberlake site – which it probably is.

Skype on the surface looks like software that lets you make free phone calls over the Internet – which it does. But the way it works is extremely clever. By using Skype, you're automatically contributing some of your PC's computing power and Internet connection to route other people's calls. It's an extension of the peer-to-peer network software such as **BitTorrent** that allow you to swap songs – at your own risk if those songs are under copyright. BitTorrent is a protocol for transferring music, films, games and podcasts. A podcast is an audio recording posted online. *Podcasting* derives from the words *iPod* and *broadcasting*. You can find podcasts about almost any topic – sports, music, politics, etc. They are distributed through RSS (Really Simple Syndication) feeds which allow you to receive up-to-date information without having to check the site for updates. BitTorrent breaks the files into small pieces, known as chunks, and distributes them among a large number of users; when you download a *torrent*, you are also uploading it to another user.

Adapted from BusinessWeek online

Ex. 4. Read the article again and match the sentence beginnings (1-5) with the correct endings (a-e).

1	A weblog , or blog, is an electronic journal	**a**	web pages on a particular subject.
2	A peer-to-peer system allows	**b**	for downloading files over the Internet.
3	You can use a search engine to find	**c**	users to share files on their computers.
4	BitTorrent is a peer-to-peer protocol used	**d**	about fresh, new content on your favourite websites.
5	RSS keeps you constantly informed	**e**	that displays in chronological order the postings of one or more people.

Ex. 5. Find words in the article with the following meanings.

1 open-source, editable web pages (lines 5–10) .....

2 the same as *electronic retailer*, or online store (lines 10–15) .....

3 a blog that includes video (lines 25–30) .....

4 a program that allows you to make voice and video calls from a computer (lines 30–35).....

5 an audio broadcast distributed over the Internet (lines 35–40) .....

Ex. 6. Write a short article (80-120 words) about the latest internet phenomena (MySpace, eBay, etc.). Talk about any other sites you think are important or will be in the future.

Ex. 7. Listen to two extracts from a monthly podcast called *Money Matters*. What is each speaker talking about?

Speaker 1 ..... Speaker 2 .....

Listen again and make notes under these headings.

Speaker 1	Speaker 2
Things people buy online	Things you can do with online banking
Steps for buying online	Biggest issue with online banking
Precautions	Precautions

Complete the extracts with the words from the box.

authorization	fake	internet auction	shopping cart	browse	log in	steal

1 Occasionally I also buy things on _____ sites such as eBay, where people offer and sell things to the highest bidder.
2 First you enter a site dedicated to e-commerce and _____ their products.
3 Then you put the items you want to buy into a virtual _____ – a program that lets you select the products and buy with a credit card.
4 You may have to _____ with a username and a password …
5 … for some transactions, you will be required to use a TAN, a transaction _____ number.
6 Be aware of *phishing* – you may receive _____ emails claiming to be from your bank and asking for personal information or account details in an attempt to _____ your identity.

Ex. 8. In pairs discuss these questions. Give reasons for your answers.

1 What is your favourite search engine to find information on the Web? Why?
2 Do you download music or video clips from the Web? Do you pay for them?
3 Do you buy things online? Is it better to buy online or go to a shop?
4 Have you ever listened to the radio or watched TV online?
5 Do you use the Web to do school/university assignments or projects? How?

Ex. 9. Translate the following text into your native language and determine the functions of the computer.

FUNCTIONAL UNITS OF DIGITAL COMPUTERS

As we know, all computer operations can be grouped into five functional categories. The method in which these five functional categories are related to one another represents the functional organization of a digital computer. By studying the functional organization, a broad view of the computer is received.

The five major functional units of a digital computer are:

1) Input— to insert outside information into the machine; 2) Storage or memory — to store information and make it available at the appropriate time; 3) Arithmetic-logical unit — to perform the calculations; 4) Output — to remove data from the machine to the outside world and 5) Control unit — to cause all parts of a computer to act as a team.

A complete set of instructions and data are usually fed through the input equipment to the memory where they are stored. Each instruction is then fed to the control unit. The control unit interprets the instructions and issues commands to the other functional units to cause operations to be performed on the data. Arithmetic operations are performed in the arithmetic-logical unit, and the results are then fed back to the memory. Information may be fed from either the arithmetic unit or the memory through the output equipment to the outside world. The five units of the computer must communicate with each other. They can do this by means of a machine language which uses a code composed of combinations of electric pulses. These pulse combinations are usually represented by zeros and ones, where the one may be a pulse and the zero — a no-pulse. Numbers are communicated between one unit and another by means of these one-zero or pulse — no-pulse combinations. The input has the additional job of converting the information fed in by the operator into machine language. In other words, it translates from our language into the pulse — no-pulse combinations understandable to the computer. The output's additional job is converting the pulse — no-pulse combinations into a form understandable to us, such as a printed report.

Ex. 10. Answer the following questions in writing.

1. What represents the functional organization of a computer? 2. What can we get by studying the functional organization? 3. What is the function of the input

device? 4. What does memory serve for? 5. What is the task of the arithmetic-logical unit? 6. What is the function of the output? 7. What is the main purpose of the control unit? 8. How do all units of the computer communicate with each other? 9. What is the additional job of the input? 10. What is the additional function of the output?

Ex. 11. Find the equivalents for the following expressions in the text. Функциональная организация; действия компьютера; связывать друг с другом; вводить информацию извне; делать информацию доступной; выполнять вычисления; выводить информацию; блок управления; выдавать команды; заставлять выполнять команды; выходное устройство; внешний мир; связываться друг с другом; комбинация электрических импульсов; холостой импульс; импульсы, распознаваемые компьютером.

UNIT 9. CONFERENCING. INTERNET SECURITY

Ex. 1. In pairs discuss these questions.

1. What is your favourite way to chat on the Internet?

2. How much time do you spend chatting?

3. Do you give out personal details in chat rooms? Why should you be careful about this?

Ex. 2. Read the text and match the headings (1-5) with the gaps at the start of each paragraph (a-e).

1. Cheap calls over the Internet

2. Virtual worlds and online communities

3. Chat rooms on the Web: join the crowd!

4. Real-time videoconferencing

5. Private chats with IM services

Virtual meetings

a _____

Imagine you want to assemble a group of people from around the world for a brainstorming session. **Conferencing** programs such as NetMeeting or CU-SeeMe allow virtual workgroups to communicate via the Internet. To **videoconference**, you'll need a webcam. Participants see each other's faces in small windows on their monitors and hear each other's voices on the computer speakers. You can use just audio, video and audio simultaneously, or the screen-sharing capability to collaborate on documents without audio or video.

b _____

Internet telephony, also known as **VoIP** (**V**oice **o**ver **I**nternet **P**rotocol), almost eliminates long-distance phone charges, allowing you to call nearly anywhere in the world for the price of a local call. If you have flat-rate internet access, you can't beat the price – it's practically free.

With internet telephony, you can make a voice call from your computer to another person's computer, landline, or mobile phone. You can download telephony software such as Skype or Net2Phone from the Net, and it's even free!

c _____

People also use more traditional **chat conferencing** or **bulletin board systems** (**BBS**s) to communicate online. Note that during chat sessions, participants type messages to each other rather than communicate by voice. Chat software can be used on the Web with your browser to conduct online chat sessions with other users and can accommodate between 50 and 1,000 users simultaneously. Some companies even use chat conferencing on their websites to facilitate communication with customers.

d _____

Chat rooms can be good venues to meet people and discuss topics of mutual interest. But what if you want to chat privately with a friend, family member or business colleague? Then **Instant Messaging**, or **IM**, is the way to go. Many IM services now offer audio and video capabilities, so if you have a microphone and a webcam, you can chat and see who you're talking to. The four most popular IM services are ICQ and AIM (from AOL), Windows Live Messenger, and Yahoo! Messenger. They all work similarly. First, you enrol in the service by creating a username – which is also your screen name – and a password. Next, you build what is known as a buddy list – a list of people that you want to communicate with. When any of the contacts on your list is online, you can start a private chat with that person.

How do you know who's online? When you launch your IM software, it connects with the service's IM server and logs you on. The server checks your buddy list to see if any of your contacts are also logged on. Your list updates to show who is currently online. By clicking on a name you can send text-based messages to that person. After you type your note and click on the *Send* button, the message travels to the IM server, then immediately forwards to your buddy's computer. This all happens in realtime – instantly.

e _____

You can also chat in incredible **3-D worlds** that are built by other users, for example *Second Life*. In these **virtual reality environments** you can play 3-D games and interact with other users via avatar identities. Avatars are 3-D graphical representations of the participants.

Avatars can run, jump, fly, dance and even enable you to express emotions

Paragraphs a–d adapted from www.learnthenet.com

Ex. 3. Read the text again and answer these questions.

1 Why is videoconferencing so useful for virtual workgroups?
2 What special hardware and software do you need to videoconference?
3 Which technology enables people to make phone calls over the Internet?
4 What is the difference between web chat rooms and Instant Messaging?
5 How do you log on to an IM server?

Ex. 4. Find the terms in the text with the following meanings.

1 at a fixed price (lines 15–20) _____
2 a central system that provides information about whether users are online and passes instant messages between them (lines 35–40) _____
3 a friend list or contact list (lines 45–50) _____
4 happening immediately and without delay (lines 55–60) _____
5 artificial reality; a 3-D space generated by the computer (lines 60–65) _____
6 characters used when interacting with people online (lines 60–65) _____

Ex. 5. Listen to an interview with Daniel Sturdy, the manager of a cybercafé in London. Does Daniel like where he works? Listen again and decide whether these sentences are true or false. Correct the false ones.

1 A cybercafé is a café where you can have access to the Internet and related services.
2 You can talk to people over the Internet using internet telephony at Daniel's café.
3 They don't help people who have problems while using the Internet.
4 Using a computer with internet access costs £2 per hour or £80 for a week.
5 At the moment they've got a lot of international customers.
6 You have to pay long-distance phone rates on the Internet.
7 In the café area you can sit, drink coffee and chat to people.

A cybercafé

Ex. 6. In pairs discuss these questions.

1. What is a hacker?

2. How easy do you think it is to infiltrate the Internet and steal sensitive information?

3. How can you protect your computer from viruses and spyware?

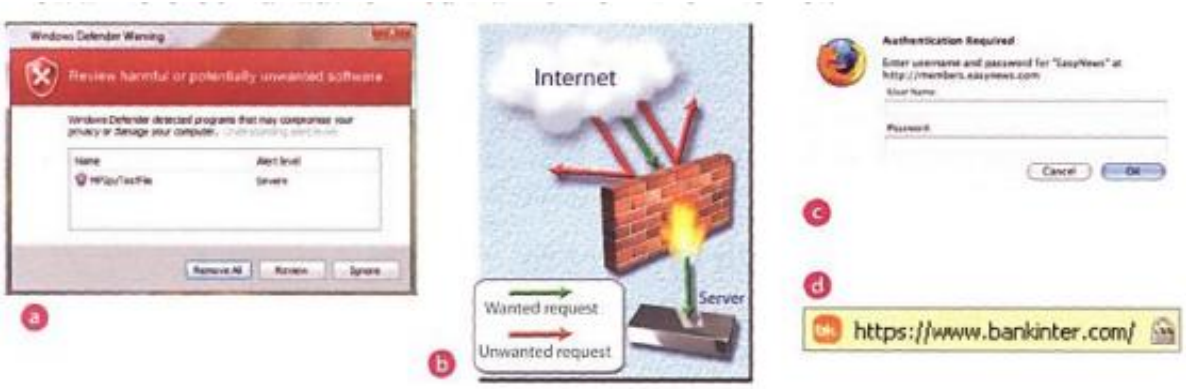
Ex. 7. Match the captions (1-4) with the pictures (a-d).

1. A secure website can be recognized in two ways: the address bar shows the letters http and a closed padlock or key is displayed at the bottom of the screen.

2. You have to type your username and password to access a locked computer system.

3. This program displays a message when it detects spyware and other unwanted software that may compromise your privacy or damage your computer.

4. Private networks use a software and/or hardware mechanism called a firewall to block unauthorized traffic from the Internet.



Ex. 8. Read the text and answer these questions.

1 Why is security so important on the Internet?
2 What security features are offered by Mozilla Firefox?
3 What security protocol is used by banks to make online transactions secure?
4 How can we protect our email and keep it private?
5 What methods are used by companies to make internal networks secure?
6 In what ways can a virus enter a computer system?
7 How does a worm spread itself?

Security and privacy on the Internet

There are many benefits from an open system like the Internet, but one of the risks is that we are often exposed to **hackers**, who break into computer systems just for fun, to steal information, or to spread viruses (see note below). So how do we go about making our online transactions secure?

Security on the Web

Security is crucial when you send confidential information online. Consider, for example, 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.

To avoid risks, you should set all security alerts to high on your web browser. Mozilla Firefox displays a lock when the website is secure and allows you to disable or delete **cookies** – small files placed on your hard drive by web servers so that they can recognize your PC when you return to their site.

If you use online banking services, make sure they use **digital certificates** – files that are like digital identification cards and that identify users and web servers. Also be sure to use a browser that is compliant with **SSL** (**S**ecure **S**ockets **L**ayer), a protocol which provides secure transactions.

Email privacy

Similarly, as your email travels across the Net, it is copied temporarily onto many computers in between. This means that it can be read by people who illegally enter computer systems.

The only way to protect a message is to put it in a sort of virtual envelope – that is, to encode it with some form of **encryption.** A system designed to send email privately is Pretty Good Privacy, a **freeware** program written by Phil Zimmerman.

Network security

Private networks can be attacked by intruders who attempt to obtain 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 solutions. The most common methods of protection are **passwords** for access control, **firewalls**, and **encryption** and **decryption** systems. Encryption changes data into a secret code so that only someone with a key can read it. Decryption converts encrypted data back into its original form.

Malware protection

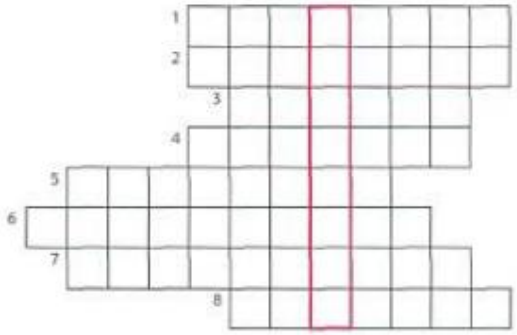
Malware (malicious software) are programs designed to infiltrate or damage your computer, for example **viruses**, **worms**, **Trojans** and **spyware**. A virus can enter a PC via a disc drive – if you insert an infected disc – or via the Internet. A worm is a self-copying program that spreads through email attachments; it replicates itself and sends a copy to everyone in an address book. A Trojan horse is disguised as a useful program; it may affect data security. Spyware collects information from your PC without your consent. Most spyware and adware (software that allows pop-ups – that is, advertisements that suddenly appear on your screen) is included with 'free' downloads.

If you want to protect your PC, don't open email attachments from strangers and take care when downloading files from the Web. Remember to update your **anti-virus software** as often as possible, since new viruses are being created all the time.

Note: Originally, all computer enthusiasts and skilled programmers were known as **hackers**, but during the 1990s, the term hacker became synonymous with **cracker** – a person who uses technology for criminal aims. Nowadays, people often use the word hacker to mean both things. In the computer industry, hackers are known as *white hats* and crackers are called *black hats* or *darkside hackers*.

Ex. 9. Solve the clues sand complete the puzzle.

zzle.



1 Users have to enter a _____ to gain access to a network.
2 A _____ protects a company intranet from outside attacks.
3 A _____ is a person who uses their computer skills to enter computers and networks illegally.
4 _____ can infect your files and corrupt your hard drive.
5 You can download _____ from the Net; this type of software is available free of charge but protected by copyright.
6 Encoding data so that unauthorized users can't read it is known as _____.
7 This company uses _____ techniques to decode (or decipher) secret data.
8 Most _____ is designed to obtain personal information without the user's permission.

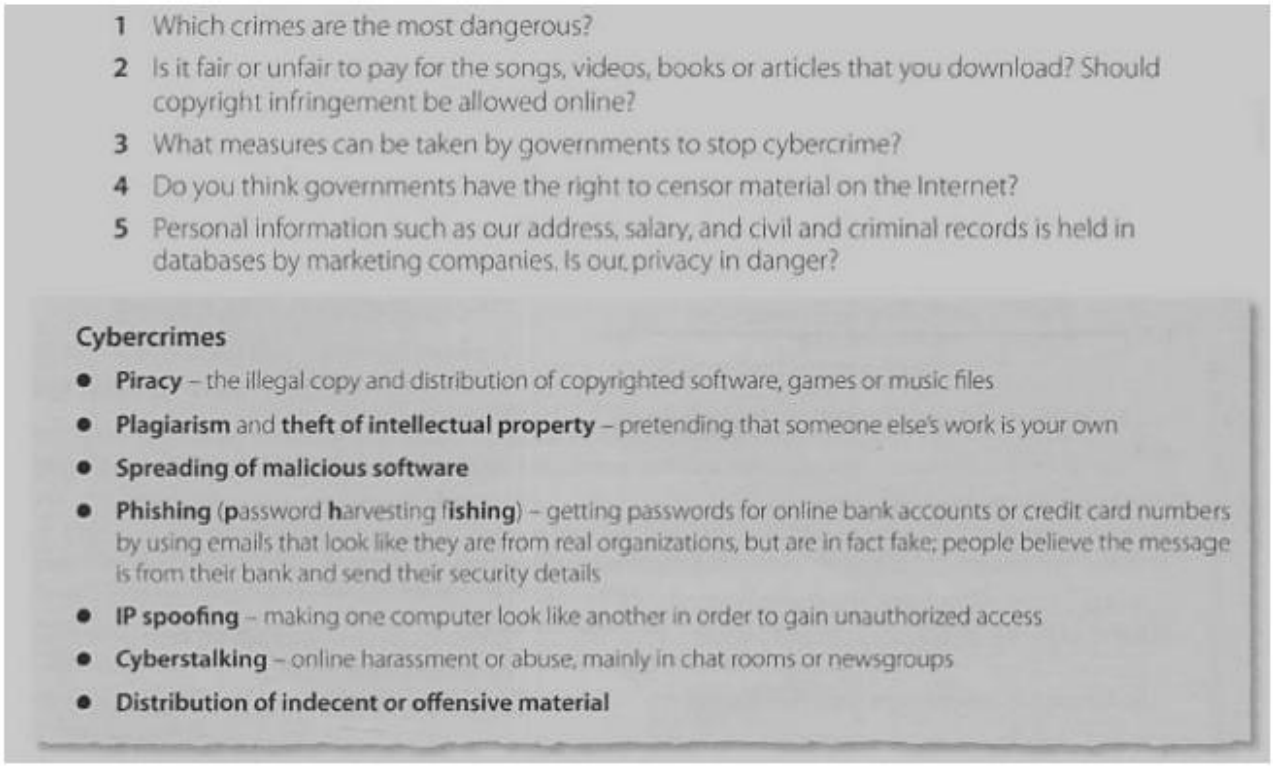
Ex. 10. Listen to an interview with Diana Wilson, a member of the Internet Safety Foundation. Which answers (a or b) best describe what she says?

1 Parents should make children aware of
a the benefits and risks of the Internet. **b** the risks of the Internet.
2 A web filter program can be used to
a prevent access to sites with inappropriate content.
b rate web content with labels (similar to the way movies are rated).
3 If kids spend too much time online or suffer from internet addiction, parents should
a stop them using the Internet. **b** look for help from specialists.

Listen again and complete the interviewer's notes.

Risks	Solutions
Manipulation of children	*There are websites (4) _____ at children.*
Invasions of (1) _____	*Internet (5) _____ programs let parents block objectionable websites.*
Distribution of indecent or (2) _____ material	*Websites should (6) _____ their content with a label, from child-friendly to over18 only.*
Violence and racist (3) _____	

Ex. 11. In small groups, look at the list of cybercrimes and discuss these questions.



1 Which crimes are the most dangerous?
2 Is it fair or unfair to pay for the songs, videos, books or articles that you download? Should copyright infringement be allowed online?
3 What measures can be taken by governments to stop cybercrime?
4 Do you think governments have the right to censor material on the Internet?
5 Personal information such as our address, salary, and civil and criminal records is held in databases by marketing companies. Is our privacy in danger?

Cybercrimes

- **Piracy** – the illegal copy and distribution of copyrighted software, games or music files
- **Plagiarism** and **theft of intellectual property** – pretending that someone else's work is your own
- **Spreading of malicious software**
- **Phishing** (**p**assword **h**arvesting f**ishing**) – getting passwords for online bank accounts or credit card numbers by using emails that look like they are from real organizations, but are in fact fake; people believe the message is from their bank and send their security details
- **IP spoofing** – making one computer look like another in order to gain unauthorized access
- **Cyberstalking** – online harassment or abuse, mainly in chat rooms or newsgroups
- **Distribution of indecent or offensive material**

Ex. 12. Translate the following text into your native language and determine the functions of the computer.

STORAGE DEVICES

Storage media are classified as primary storage or secondary storage on the basis of combinations*of cost, capacity, and access time. The cost of storage devices is expressed as the cost per bit of data stored. The most common units of cost are cents, millicents (0.001 cents) and microcents (0.000001 cents). The time required for the computer to locate and transfer data to and from a storage medium is calle d the access time for that medium. Capacities range from a few hundred bytes of primary storage for very small computers to many billions of bytes of archival storage for very large computer systems.

Memories may be classified as electronic or electromechanical. Electronic memories have no moving mechanical parts, and data can be transferred into and out of them at very high speeds. Electromechanical memories depend upon moving mechanical parts for their operation, such as mechanisms for rotating magnetic

tapes and disks. Their data access time is longer than is that of electronic memories; however they cost less per bit stored and have larger capacities for data storage. For these reasons most computer systems use electronic memory for primary storage and electromechanical memory for secondary storage.

Primary storage has the least capacity and is the most expensive; however, it has the fastest access time. The principal primary storage circuit elements are solid-state devices: magnetic cores and semiconductors. For many years magnetic cores were the principal elements used in digital computers for primary storage. The two principal types of semiconductors used for memory are bipolar and metal-oxide semiconductors (MOS). The former is faster, the latter is more commonly used at present. Because data can be accessed randomly, semiconductor memories are referred to as random-access memory, or RAM.

There is a wide range of secondary storage devices. Typical hardware devices are rotating electromechanical devices. Magnetic tapes, disks, and drums are the secondary storage hardware most often used in computer systems for sequential processing. Magnetic tape, which was invented by the Germans during World War II for sound recording, is the oldest secondary storage medium in common use. Data are recorded in the form of small magnetized "dots" that can be arranged to represent coded patterns of bits.

Tape devices range from large-capacity, high-data-rate units used with large data processing systems to cassettes and cartridges used with small systems. Magnetic disk storage, introduced in the early 1960s, has replaced magnetic tape as the main method of secondary storage. As contrasted with magnetic tapes, magnetic discs can perform both sequential and random processing. They are classified as moving-head, fixed-head, or combination moving-head and fixed-head devices. Magnetic discs are the predominant secondary storage media. They include flexible, or floppy discs, called diskettes. The "floppies" were introduced by IBM in 1972 and are still a popular storage medium to meet the demands of the microcomputer market.

Ex. 13. Answer the following questions in writing.

1. How are storage media classified? 2. How is the cost of storage devices expressed? 3. What is the access time for storage media? 4. How does the

storage capacity range? 5. What are the two main types of storage devices? 6. What are electronic storage devices? 7. What are the principal primary storage circuit elements? 8. What are the main secondary storage devices? 9. What is the oldest secondary medium and when was it invented? 10. What is a floppy?

Ex. 14. Find the equivalents for the following expressions in the text.

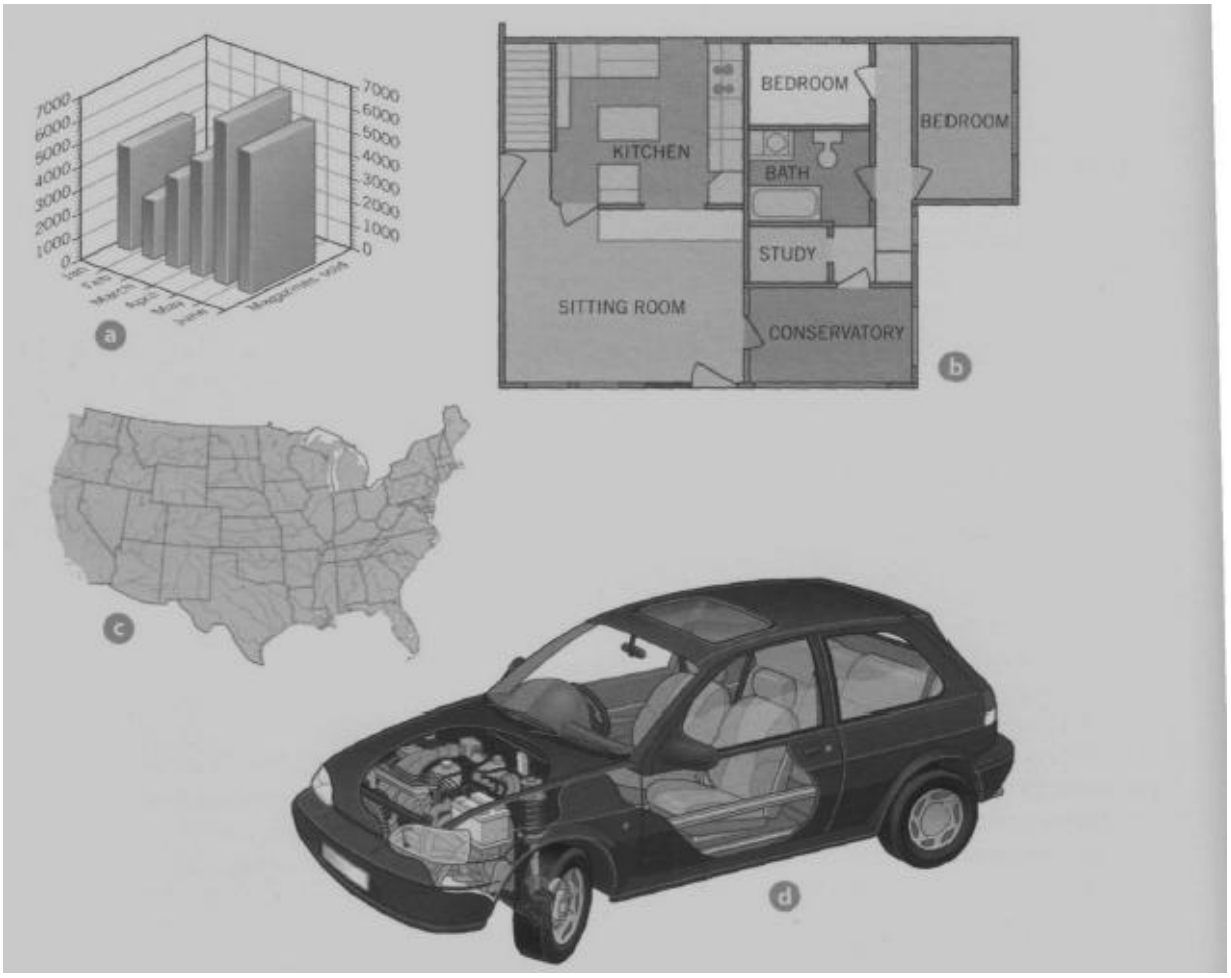
Запоминающие устройства; носители памяти; первичные ЗУ; вторичные ЗУ; время доступа; стоимость ЗУ; диапазон емкости памяти; архивная память; движущиеся механические части; вращающиеся магнитные ленты и диски; по этим причинам; твердотельные устройства; магнитные сердечники; полупроводники; оперативное ЗУ; аппаратное обеспечение вторичной памяти; звукозапись; намагниченные точки; представлять зашифрованную комбинацию единиц информации; в отличие от магнитных лент; последовательная и произвольная обработка; устройства с движущейся и фиксированной головкой; удовлетворять потребности; гибкий диск.

UNIT 10

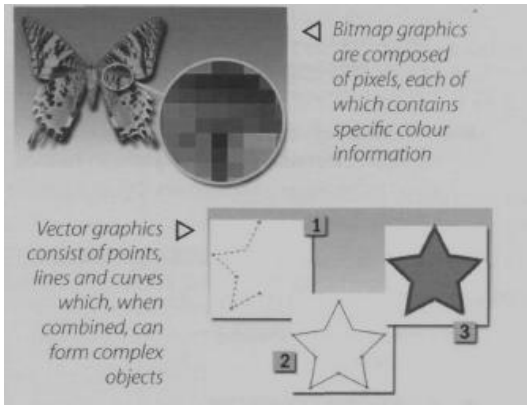
CREATIVE SOFTWARE. GRAPHICS AND DESIGN. MULTIMEDIA

Ex. 1. Look at the computer graphics (a-d) and discuss these questions.

1. Which of these computer graphics are three-dimensional (3-D)?
2. What are the advantages of creating 3-D images?
3. Which types of professional might use the computer graphics (a-d)?
4. Who else uses computer graphics in their job? How do they use them?



Ex. 2. Read the text and answer these questions.

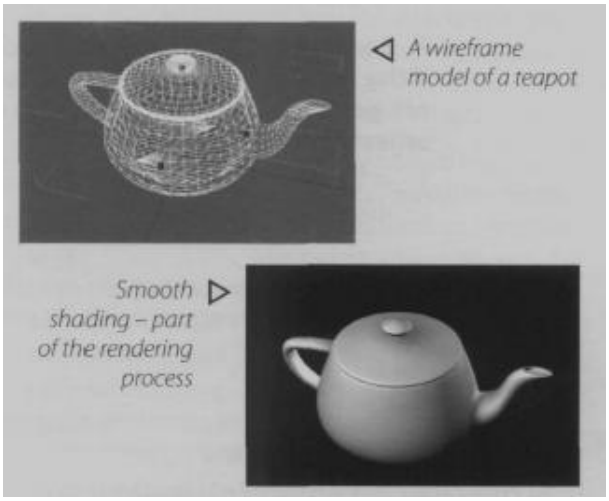


Computer graphics are pictures and drawing produced by computer. There are two main categories:

Raster graphics, or bitmaps, are stored as a collection of pixels. The sharpness of an image

depends on the density of pixels, or resolution. For example, text or pictures that are scaled up- that is, made bigger – may show jagged edges. Paint and photo – editing programs like Adobe Photoshop focus on the manipulation of bitmaps. Popular raster formats are JPEG, GIF, and TIFF Vector graphics represent images through the use of geometric objects, such as lines, curves and polygons, based on mathematical equation. They can be changed or scaled without losing quality. Vector data can be handled by drawing programs like Adobe Illustrator, Corel Draw or Macromedia Freehand. EPS is the most popular file format for exchanging vector drawings.

Almost all computer users use some form of graphics. Home users and professional artist use image-editing programs to manipulate images. For example, you can add filters (special effects) to your favourite photos, or you can composite images. Compositing is combining parts of different images to create a single image. CAD is also used in the aerospace, architecture and industrial sectors to design everything from aeroplanes and building to consumer products. Designers start a project by making a wireframe, a representation showing the outlines of all edges in a transparent drawing. They then specify and fill the surfaces to give the appearance of 3-D solid object with volume. This is known as solid modelling. Next, they add paint, colour and filters to achieve the desired 'look and feel': this is called texturing the object. Finally, they render the object to make it look real. Rendering includes lighting and shading as well as effects that simulate shadows and reflections. Computer art, or digital art, is used in adverts and TV program. Artists and scientists use special graphic applets to create amazing fractals. Fractals are geometrical patterns that are repeated at small scales to generate irregular shapes, some of which describe object from nature. Government agencies use GIS (Geographic Information System) to understand geographic data and then plan the use of land or predict nature disasters. Cartographers use GIS to make detailed maps. Animators use computer animation software to create animated cartoons or add effects in movies and video games.



Ex. 3. Match the words (1-6) with the definitions (a-f).

Resolution	a. special effects that can be applied to pictures
Jagged	b. a technique that generates realistic reflections, shadows and highlights
Filters	c. geometrical figures with special properties
Wireframe	d. irregular or uneven
Rendering	e. the number of pixels in an image
Fractals	f. the drawing of a model by using features like edges or contour lines

Ex. 4. Listen to an extract from an online tutorial about graphics programs and answer these questions.

1. What is a *toolbox* in graphics software?
2. What are graphics *primitives*?
3. What sort of *attributes*, or characteristics, can be used in graphical objects?
4. What does *translation* mean?

Listen again and complete this extract from the web version of the tutorial.

Graphics programs usually have a *toolbox* – a collection of drawing and (1) …….. tools that enable you to type, (2) ……., draw, paint, edit, move and view images on the computer.

The basic shapes which are used to (3) …….. graphical objects are called *primitives*. These are usually geometric, such as lines between two points, arcs, circles, polygons, ellipses and even text. Furthermore, you can specify the *attributes* of each primitive, such as its colour, line type, fill area, interior style and so on.

The various tools in a toolbox usually appear together as pop-up icons in a menu or palette. To use one, you activate it by (4) …….. on it. For example, if you want to (5) …….. a rectangle, you activate the rectangle tool, and the pop-up options give you the possibility of (6) …….. rectangles with square or rounded corners.

You can transform an object by translating, (7) …….. or scaling it. *Translation* means moving an object to a different location. *Rotation* is (8) …….. the object around an axis. For example, you may need to rotate an object 90 or 180 degrees to fit the drawing. (9) …….. is making the object larger or smaller.

Ex. 5. Match the tools from the Photoshop toolbox (1-10) with the functions (a-j).

1	 Marquee select tools	a	cut down the dimensions of a picture
2	 Move tool	b	select a particular part of an image (you can choose different shapes for selection)
3	 Crop tool	c	fill in an area with a colour
4	 Paintbrush, pencil	d	control the foreground and background colour
5	 Eraser	e	select a specific colour in a photo
6	 Paint bucket	f	magnify areas of an image when you are doing close, detailed work
7	 Type tool	g	delete the part of the picture you drag it over
8	 Colour picker (Eyedropper)	h	insert text into your document
9	 Zoom	i	draw and paint in different shapes and patterns
10	 Colour tools and palette	j	move a selection or entire layer by dragging it with your mouse

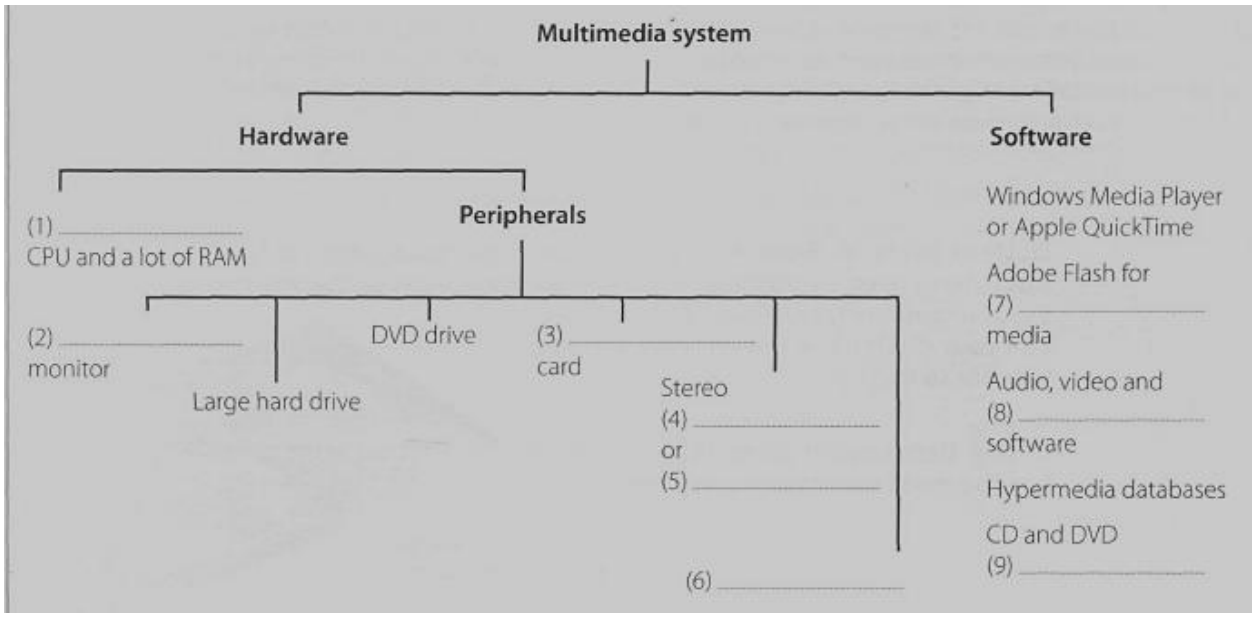
Ex. 6. Discuss the following questions.

1. What different types of content are combined in multimedia applications?
2. How many products can you think of that incorporate multimedia? Make a list.

Ex. 7. Listen to a sales assistant in a computer shop explaining to a customer the system requirements needed to run multimedia software. Which answers (a or b) best describe what she says?

1. Multimedia is defined as
a. the integration of video and telecommunications with traditional computing.
b. the integration of text, graphics, audio, video and animation in a single application.
2. With multimedia encyclopedias,
a. you have more fun but you learn more slowly.
b. you get much more involved than with print encyclopedias.
3. Interactive games
a. use multimedia and virtual features.
b. do not require much RAM memory.

Listen again and complete this diagram of a multimedia system.



Ex. 8. Read the text and match the headings (1-4) with the gaps at the start of each paragraph (a-d).

1. Sound, Music, MIDI
2. Products full of pictures, action and sound
3. Creating and editing movies
4. The potential of multimedia

a ……

Multimedia applications are used in all sorts of fields. For example, museums, banks and estate agents often have information kiosks that use multimedia; companies produce training programs on optical discs; businesspeople use Microsoft PowerPoint to create slideshows; and teachers use multimedia to make video projects or to teach subjects like art and music. They have all found that moving images and sound can involve viewers emotionally as well as inform then, helping make their message more memorable.

The power of multimedia software resides in **hypertext**, **hypermedia** and **interactivity** (meaning the user is involved in the programme). If you click on a hypertext link, you can jump to another screen with more information about a particular subject. Hypermedia is similar, but also uses graphics, audio and video as hypertext elements.

b ……

As long as your computer has a sound card, you can use it to capture sounds in digital format and play them back. Sound cards offer two important capabilities: a built-in stereo synthesizer and a system called **MIDI**, or **M**usical **I**nstrument **D**igital **I**nterface, which allows electronical musical instruments to communicate with computers. A **Digital Audio Workstation** (**DAW**) lets you mix and record several tracks of digital audio.

MIDI allows your computer to communicate with electronic keyboards and other devices

You can also listen to music on your PC, of transfer it to a portable **MP3** player. MP3 is short for **MPEG audio layer 3**, a standard format that compresses audio files. If you want to create your own MP3 files from CDs, you must have a **CD ripper**, a program that extracts music tracks and saves them on a disk as MP3s.

Audio is becoming a key element of the Web. Many radio stations broadcast live over the Internet using **streaming audio technology**, which lets you listen to audio in a continuous stream while it is being transmitted. The broadcast of an event over the Web, for example, a concert, is called a **webcast**. Be aware that you won't be able to play audio and video on the Web unless you have a **plug-in** like RealPlayer or QuickTime.

c ……

Video is another important part of multimedia. **Video computing** refers to recording, manipulating and storing video in **digital format**. If you wanted to make a movie on your computer, first you would need to capture images with a **digital video camera** and then transfer them to your computer. Next, you would need **video editing program** like iMovie to cut your favourite segments, re-sequence the clips and add transitions and other effects. Finally, you could save your movie on a DVD or post it on websites like YouTube and Google Video.

d ……

Multimedia is used to produce dictionaries and encyclopedias. They often come on DVDs, but some are also available on the Web. A good example is the Groiler Online Encyclopedia, which contains thousands of articles, animations, sounds, dynamic maps and hyperlinks. Similarly, the Encyclopedia Britannica is now available online, and a concise version is available for iPods, PDAs and mobile

phones. Educational courses on history, science and foreign languages are also available on DVD. Finally, if you like entertainment, you'll love the latest multimedia video games with surround sound, music soundtracks, and even film extracts.

Ex. 9. Correct the technical mistakes in these sentences.

1. Multimedia training software is distributed on magnetic disks.
2. You need to have MIDI in your computer to hear speech and music.
3. A stereo synthesizer allows your computer to communicate with electronic musical instruments.
4. A CD ripper converts CDs to live streams.
5. The Encyclopedia Britannica is only available on DVD.

Ex. 10. Match the words (1-5) with the definitions (a-e).

Hypertext	a. the process of manipulating video images
Hypermedia	b. text with links which take you to other pages
Streaming	c. a technique for playing sound and video files while they're downloading
Webcast	d. a live event broadcast over the Internet
Video editing	e. a form of enriched multimedia which allows an interactive and dynamic linking of visual and audio elements

Ex. 11. Translate the following text into your native language and determine the functions of the computer.

INPUT-OUTPUT ENVIRONMENT

Data and instructions must enter the data processing system, and information must leave it. These operations are performed by input and output (I/O) units that link the computer to its external environment.

The I/O environment may be human-related or human-independent. A remote banking terminal is an example of a human-related input environment, and a printer is an example of a device that produces output in a human-readable format. An example of a human-independent input environment is a device that

measures traffic flow. A reel of magnetic tape upon which the collected data are stored in binary format is an example of a human-independent output.

Input-Output Interfaces, Data enter input units in forms that depend upon the particular device used. For example, data are entered from a keyboard in a manner similar to typing, and this differs from the way that data are entered by a bar-code scanner. However, regardless of the forms in which they receive their inputs, all input devices must provide a computer with data that are transformed into the binary codes that the primary memory of the computer is designed to accept. This transformation is accomplished by units called I/O interfaces. Input interfaces are designed to match the unique physical or electrical characteristics of input devices to the requirements of the computer system. Similarly, when output is available, output interfaces must be designed to reverse the process and to adapt the output to the external environment. These I/O interfaces are also called channels or input-output processors*(IOP).

The major differences between devices are the media that they use and the speed with which they are able to transfer data to or from primary storage.

Input-Output Device Speed. Input-output devices can be classified as high-speed, medium-speed, and low-speed. The devices are grouped according to their speed. It should be noted that the high-speed devices are entirely electronic in their operation or magnetic media that can be moved at high speed. Those highspeed devices are both input and output devices and are used as secondary storage. The low-speed devices are those with complex mechanical motion or operate at the speed of a human operator. The medium-speed devices are those that fall between — they tend to have mechanical moving parts which are more complex than the high-speed devices but not as complex as the low-speed.

High-speed devices: magnetic disk; magnetic tape.

Medium-speed devices: card readers; line printers; page printers; computer output microfilms; magnetic diskette; optical character readers; optical mark readers; visual displays.

Low-speed devices: bar-code readers; character printers; digitizers; keyboard input devices; plotters; voice recognition and response units.

Ex. 12. Answer the following questions in writing.

1. What is the purpose of input and output devices? 2. What types of input-output devices do you know? 3. Why are data transformed into a binary code while entering the input device? 4.Give an example of a human independent output. 5. What is an I/O interface? 6. What are the major differences between the various I/O devices? 7. What types of I/O devices tend to be high-speed devices? 8. What types of devices tend to be low-speed devices?

Ex. 13. Find the equivalents for the following expressions in the text.

Среда устройств ввода-вывода; система обработки информации; внешняя среда; связан с человеком; независим от человека; удаленный банковский терминал; измерять поток данных; бобина с магнитной лентой; хранить собранную информацию; двоичный формат; интерфейс ввода-вывода; вводить с клавиатуры; устройство считывания штрих-кода; не смотря на; преобразовать в двоичный код; сопоставлять параметры; подобным образом; интерфейс вывода; изменить процесс в обратном направлении; настроить устройство ввода-вывода к внешней среде; главное отличие; основная память; вторичная память; низко-скоростные устройства; в соответствии.

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