

## Unit 2

# ANATOMY OF COMPUTERS

### 1.1. Read and translate the following words and word – combinations.

Aboard the space shuttle, a close cousin, adapt, any other way, a permanent set of instructions, appropriate program, computational power, diagnostic equipment, embedded, in appearance, in effect, low on gas, outpace, sophisticated military aircraft, technical application, traffic signal.

### 1.2. Learn key words and word-combinations.

general-purpose computer – універсальна ЕОМ, універсальний комп'ютер

mainframe (n) – універсальний комп'ютер

minicomputer (n) – міні-комп'ютер

preprogram (v) – запрограмувати

programmable (adj) – програмований

scramble(v) – змішувати, шифрувати

share a computer – спільно користуватися комп'ютером

special-purpose computer – комп'ютер спеціального призначення

supercomputer (n) – суперкомп'ютер

unscramble (v) – розшифрувати

workstation (n) – робоча станція

### 1.3. Read the text and discuss the types of computers.

## Types of Computers

The broadest categories of computers are **special purpose and general purpose**.

Special-purpose computers are dedicated to only one function: control-ling the machines in which they are embedded. **They have been given a permanent** set of instructions. In effect, they have been preprogrammed to perform their specific purpose.

For example, tiny, hidden special-purpose computers tell you what time it is on your digital watch, control traffic signals, and inject fuel into your car's engine as you drive. Some even speak to you, telling you that your car door is open or that your car is low on gas. In your telephone, they remember numbers and dial them for you at the press of a button.

Not all special-purpose computers are small. The navigational computers aboard the space shuttle, the computers found in sophisticated military aircraft, and those found in medical diagnostic equipment are typical examples of medium- to large-scale special-purpose computers.

General-purpose computers differ from their special-purpose cousins by being **programmable; that is, their** operation can be changed by altering the instructions or programs they are given. They can be adapted to many situations if given appropriate programs. For example, there are programs that can help store and organize data, sort data alphabetically (or any other way you choose), write letters and reports, and generate charts and graphics. Like special-purpose computers, general-purpose computers also come in a wide range of sizes and capabilities.

Some general-purpose computers, known as **personal computers**, are designed for use by individuals, such as students, office workers, and executives. Some are even small enough to carry around in your pocket or purse. A close cousin of the personal computer is called a **workstation**. **Although** it resembles a personal computer in appearance, it is used by scientists and engineers for technical applications that require more computational power. Much larger and far more expensive computers, called **mainframes**, are designed to process large amounts of data and to be shared by many different people in businesses, government agencies, and scientific and educational institutions. The fastest computers made are called **supercomputers**. **They are used for** weather prediction, computer animation, and scientific research. Their performance far outpaces that of even the largest and most powerful mainframe computers. **Minicomputers are suitable** for use in departments, branch offices, factories, and scientific laboratories.

#### 1.4. Give English equivalents.

Вбудований, перепрограмувати, постійний набір команд, розкодувати програми, медичне діагностичне обладнання, відповідна програма, робоча станція, комп'ютер загального призначення, технічне застосування, опрацьовувати велику кількість даних, швидкодія комп'ютера, обчислювальна потужність.

**1.5. Give the definition of the following terms in English.**

General-purpose computer, mainframe, personal computer, special-purpose computer, supercomputer, workstation.

**1.6. Translate into English the following word-combinations so that you could form compound nouns.**

Космічний корабель, військові літаки, назва торгової марки, конторські службовці, державні агенції (заклади), прогнозування погоди, комп'ютерна анімація, робоча станція.

**1.7. Translate into English.**

1. Офісні ПК орієнтовані на автоматизацію конторської праці: редагування листів, ведення бази даних, ділове листування, робота з графічною інформацією та інше.
2. Комп'ютери спеціального призначення виконують тільки одну функцію.
3. Комп'ютери спеціального призначення бувають малого, середнього та великого розміру.
4. Комп'ютери загального призначення відрізняються від комп'ютерів спеціального призначення тим, що їх можна перепрограмувати.
5. Універсальні ЕОМ використовуються для виконання складних розрахунків.

**1.8. Answer the questions.**

1. What are the broadest categories of computers?
2. What functions can special-purpose computers perform?
3. What is the main difference between special-purpose and general-purpose computers?
4. What types of general-purpose computers do you know?
5. What are general-purpose computers designed for?
6. In what spheres are general-purpose computers applied?

**2.1. Supplementary reading.**

**Read and translate the text. Write out computer terms.**

**Use Computers and Write Computer Programs**

Although reading about computers may raise your knowledge level and understanding of computers, there is no substitute for sitting down in front of a

computer and experiencing what it can do. In the beginning, it does not matter where you start. In fact, many low-cost commercial software packages are designed to help you get started with computers. For example, use one of the game packages to play an adventure game. Try an educational package for drill and practice in spelling or arithmetic. Use a word processor to write a letter to a friend. These experiments will show you that the computer is not intimidating.

Doing this will give you some of the basic skills necessary to use computers and computer programs. Remember that many computers are general-purpose tools, and the fact that you can use one type of computer or computer program usually means that you can generalize that skill and learn more easily how to use other types of computers and computer programs.

The vast majority of today's computer users buy ready-made programs. One such program, a spreadsheet program, enables you to organize numbers and formulas into rows and columns of cells, similar to the paper spreadsheets that have been used in businesses for years. For example, if you are having a problem balancing your household budget, you can use a spreadsheet to type in the numbers and formulas for a monthly budget. Then, you can change the numbers or formulas to see how different budgets might affect your personal finances. All the calculating is accomplished by the spreadsheet. You can concentrate on exploring solutions to the problem.

After you read about computers and become more familiar with them by using them, your interest in computers may rise to new levels. If so, you are probably ready for the next level of computer literacy – writing a program. Writing a program means creating a set of instructions that the computer can follow. For the computer to understand you, the instructions must be written in a programming language. A programming language is a formally constructed artificial language in which the vocabulary and grammar rules are stated so precisely that a computer can analyze, interpret, and understand the meaning of that language. All programming languages include a **vocabulary** – the set of words used to make instructions – and a grammar or **syntax** – a precise set of rules that determines the set of possible instructions in the language. Writing a program can be an intellectually demanding task. You must first map out exactly what you want the program to do, apply some commonsense rules of logic, be willing to follow a problem from its conception to completion, and pay attention to many details.

**2.2. Give English equivalents of the following words and word-combinations.**

Рівень знань, текстовий редактор, система опрацювання текстів, готова програма, електронна таблиця, комп'ютерна грамотність, розуміння комп'ютерів, пересічний користувач, принципи і поняття, комірка (чарунка), набір команд, приділяти увагу, програміст, пакет програмних засобів, мова програмування, штучна мова, писати (розробляти) програми.

**2.3. Answer the questions.**

1. How did you start on the computer?
2. How did you get the basic skills to use computers and computer programs?
3. Did you use a tutorial while learning to use the computer?
4. What programming language did you use while mastering a computer?
5. How does the computer understand a user?
6. What parts does a programming language include?
7. What programming languages are being used now?
8. What does writing a program mean?

**3.1. Translate the following word and phrases into Ukrainian.**

A series of letters, binary system, coded information, convey information, expand the potential of computer capability, information processing, integrated circuits, in the form of a code, key concept, level of voltage, long and short switch closings, power source, pulses of electric current, stem from, via.

**3.2. Learn keywords and word-combinations.**

acquire (v) – збирати (дані)  
binary signal – двійковий сигнал  
binary system – двійкова система  
direct current – постійний струм  
carrier of information – носій інформації  
convert (v) – перетворювати  
dots and dashes – крапки і тире  
electric current (n) – електричний струм  
electric signal (n) – електричний сигнал  
information processing – обробка інформації  
integrated circuit – інтегральна схема

manipulate information (v) – керувати інформацією  
power source – джерело енергії  
processor (n) – процесор  
pulse (n) – імпульс  
raw data – необроблені дані  
set of symbols – набір символів  
storage – пам'ять; запам'ятовуючий пристрій; накопичувач  
subfunction (n) – підфункція  
switch (n) – перемикач  
subsystem (n) – підсистема  
transform (v) – перетворювати  
transmit (v) – передавати  
voltage (n) – напруга  
wire (n) – дріт, провід

### 3.3. Read and translate the text.

## Computing Concepts. Systems and Information

A computer is a system. It is a set of parts or subsystems. The main subsystems are input, output, processor, and storage. Each subsystem performs a specific subfunction, and the subsystems work together to perform information processing – acquiring, storing, and manipulating information and communicating the results.

In the broadest sense, **information** is data that has a context. This concept is useful because the context helps us to make decisions and solve problems using data and information. **Data** are simply facts, numbers, letters, or symbols, whereas information always has a context. A simple example illustrates this. If I were to hand you a piece of paper with the letter A **written** on it, what have I given you? A piece of data – and rather raw data at that. If I hand you the same piece of paper and tell you that it is your grade for this course, that is information.

As a practical matter, the speed, reliability, and usefulness of computers partially stem from the fact that data and information can easily be represented as electrical signals. This was first demonstrated by the early telegraph. At the transmitter end, a telegrapher would transform a series of letters in the alphabet into pulses of electric current by a pattern of long and short switch closings. At the receiving end, the pulses of electric current were converted into a series of clicks that a human receiver could translate back into letters of the alphabet.

One of the key concepts in this process is the idea of a code. Samuel F.B. Morse, the inventor of the telegraph, had to invent a code to make his technology workable and practical. A **code** is a set of symbols, such as the dots and dashes of the Morse code, that represents another set of symbols, such as the letters of the alphabet. After the telegraph, the idea of using electricity for transmitting coded information quickly caught on.

A circuit is required for electricity to work as a carrier of information.

A **circuit** is an interconnected set of electronic components that performs a function. A circuit can be as simple as a switch, a light bulb, and some wire, but computers need far more complex circuits. The circuits used in computers are called **integrated circuits** – combinations of thousands or more circuits built on tiny pieces of silicon that are called **chips**.

The porch light as a signal can demonstrate the idea of a binary signal. Either there is current flowing and the light is on, or there is no current flowing and the light is off. In a computer circuit, the on-and-off combinations are represented by two different levels of voltage. The first (usually the higher) level of voltage is said to be on, whereas the second level of voltage is said to be off.

This on-and-off pattern is the basic building block for the coding of all patterns of information used in computer and communication systems. The pattern is often referred to as the binary system. By combining **binary** and **digit** (for the digits 0 and 1 used in the binary system), we derive the term **bit**. A bit is the smallest possible unit of information because one bit is enough to tell the difference between two alternatives, such as on or off. Bits are the means by which the data that flow through the circuits of a computer are represented. Groups of bits can be arranged to represent numbers, letters, and special symbols in the form of a code.

#### 3.4. Find antonyms.

Input, transmitter, useful, receiver, early, coded, familiar, different, together, difficult, more, late, output, separately, similar, simple, unfamiliar, complex, useless, less, give, encoded, take, easy.

#### 3.5. Find synonyms.

Enhance, main, speak, convey, demonstrate, transform, chief, sender, send, use, perform, tell, do, complex, convert, remember, unite, show, recollect, sophisticated, combine, transmitter, expand, apply.

**3.6. Give the definition of the following terms.**

Bit, data, code, circuit, integrated circuit, information.

**3.7. Find the equivalents of the following words and phrases in the text.**

Мовою даних, вирішувати проблеми, виходити з (факту), ключове поняття, набір символів, носій інформації, складна схема, двійкова система, закодована інформація, в ширшому розумінні, імпульси електричного струму, представляти набір символів, набір електронних складових, незалежно від, прискорити спілкування, фізичний розмір, розширювати можливості (потенціал), електричний сигнал, рівень напруги, передавати, приймач, можливості комп'ютера.

**3.8. Answer the questions.**

1. What is the difference between data and information?
2. What do the speed, reliability and usefulness of computers stem from?
3. Why did Samuel F.B. Morse have to invent a code?
4. What is a code?
5. What is a circuit?
6. What do we call the circuits used in computers?
7. What is a chip?
8. Explain the idea of a binary signal.

**4.1. Supplementary reading.**

**Read the text and translate it. Write out the computer terms and learn them. Summarize the text in 50 – 60 words.**

### Information and Communication Systems

An **information system** is a system that takes data, stores and processes it, and provides information as output. No study of computers would be complete without including communication systems. Information systems and communication systems are closely related. **Communication** is the transfer of meaningful information. If no information is present, the communication becomes noise. And, if information can't be communicated, it can't be used.

In its simplest form, a **communication system** consists of a sender (the technical term for sender is transmitter), a channel over which to send the information, and a receiver.

Communication is most important in the study of computers because information (like people) is widely distributed in the world. It would be impractical as well as highly undesirable to collect all the information in the world and store it in one place.

**Network** is the term that is used to describe at least two but usually more communication devices connected to each other. There are two common categories of networks with which everyone is familiar. The first category is a network that broadcasts information from a single source. Radio and television networks are an example: a group of stations are linked together so that the same programs can be carried to a wider audience.

The second category is a network that transfers information among many sources. A telephone system is the prime example: the focus is input oriented – that is – switching messages from one location to another. In a computer example, the manager of a department is preparing a pay raise report using the personal computer on her desk. The manager needs to know the start date and current salary of all employees in the department. Using a decentralized network, she communicates to a mainframe computer in which payroll records are kept and incorporates those data into the report. Then, she sends electronic messages to each employee in the department, asking for updated job descriptions to incorporate into the report. By using a network of computers, the manager is able to produce and distribute a more effective and accurate report, and do it much faster than if it had been done manually.

**Hardware** is the physical equipment in a computer system. Software tells the hardware what to do. **Software** is the term used to describe the programs that control the operation of the computer system. The words "software" and "program" are used interchangeably.

A lot of confusion arises in using computers because people do not always make the distinction between hardware and software. For example, many people confuse a program, which is software, with the computer on which it resides, which is hardware. This is because hardware and software are necessarily complementary. You usually don't find one without the other. The reason that hardware is still better accepted and understood than software is that hardware has a tangible form you can see and touch. Software does have a form, but it is intangible in the sense that it is really just information or a program that is loaded into the memory of a computer system.

**Applications** are the things computers can be used to do. The computer was originally designed to solve mathematical problems; therefore, the first applied use

of computers involved number processing. It soon became apparent that the computer was capable of manipulating and processing any kind of symbol, not just numbers, so the applied uses of computers branched into information processing.

Computer applications are moving far beyond their early round of uses, such as payroll processing, inventory, and record keeping. The following list of applications shows the rapid evolution of computer use today.

- Dispatchers for shipping firms pin-point trucks on electronic maps and determine exactly where each truck is located.
- Chess players play in tournaments featuring a mixed field of human players and computer programs. The programs routinely play chess at the grandmaster level.
- Graphic designers design, lay out, and produce advertising, magazines, brochures, and books.
- Teachers create interactive simulations that integrate pictures, animation, and sound, which enrich understanding of the subject matter.
- Sports teams score events, collect information for scouting, organize ticket sales, and control the environment of domed stadiums.
- Consumer product brand managers analyze shopping data by individual product and package size, store location, and time of day when the product was purchased.

**4.2. Give the definition of the following terms.**

Information system, communication system, hardware, software, application.

**4.3. Answer the questions.**

1. Why is hardware better understood than software?
2. What is software designed for?
3. Give the example of a communication system.
4. Explain the meaning of the following sentence: "If no information is present, the communication becomes noise."

**5.1. Read and translate the following words and phrases.**

Electronically, enter commands, general-purpose keys, portable computers, number intensive data entry, a set of function keys, technological breakthroughs, a pattern of dots, high resolution pattern, graphic images, choose options, alternative input device, depending on, give feedback, the computer's output, a physical connector, electrically charged drum, an external device.

### 5.2. Key words and word-combinations:

arrow key – клавіша керування курсором  
CRT (cathode ray tube) – електронно-променева трубка  
cursor (n) – курсор  
display/monitor (n) – монітор  
dot-matrix printer – матричний принтер  
drum (n) – барабан  
expansion slot – гніздо розширення  
feedback (n) – зворотний зв'язок  
flat screen – плоский екран  
function key – функціональна клавіша  
high resolution – висока роздільна здатність  
in lieu – замість  
keyboard (n) – клавіатура  
keystroke(n) – натискання на клавішу  
layout (n) – розміщення  
LCD (liquid crystal display) – дисплей на рідких кристалах  
nozzle (n) – сопло  
numeric keypad – цифрова клавіатура  
pointing device – пристрій керування позицією  
port (n) – порт  
ribbon (n) – стрічка  
spray ink – розбризкувати чорнило  
trackball – кульовий маніпулятор – вказівник; трекбол

### 5.3. Read and translate the text.

#### Personal Computer Systems. Keyboard, Display and Printers

A **keyboard** is a device that converts keystrokes into codes that can be electronically manipulated by the computer. With it, you can enter commands or data into the computer. A personal computer keyboard includes a typewriter layout and a set of keys marked with arrows that control the movement of a visual aid – a **cursor** – on the display screen. Some keyboards include a numeric keypad for number-intensive data entry and calculations as well as a set of function

keys. These are general-purpose keys that perform special functions, depending on the application.

Keyboards are not the only way to communicate with a computer. Touching the screen with your finger, talking to a computer, writing with an electronic pen, and rolling a mouse or trackball are all alternative input devices.

A **mouse** is a pointing device that combines the traditional cursor movements – accomplished by pressing arrow keys – with the means to select an object on the display screen. One or more buttons located on the top of the mouse enable you to choose options. Small portable computers sometimes use a built-in or attachable trackball in lieu of a mouse. Rolling the trackball with your fingertips produces the same results as moving the mouse.

A display, often called a **monitor**, is one of the output parts of the system. A **display** is a device that is used (1) to give you feedback while you operate the computer and (2) to view the computer's output. For example, when you type on the keyboard, the letters are immediately displayed along with the cursor that indicates where the next letter you type will appear.

The display is often a CRT (cathode ray tube). Flat screens, such as LCDs (liquid crystal displays), are commonly used in portable computers. LCDs are larger versions of the displays found in digital watches and calculators.

A **printer** is a device that produces paper-copy output from a computer system. One way to classify printers is by the method used to form the printed images.

**Dot-matrix printers** form characters with a pattern of dots. This method can include striking a ribbon with a hammer, spraying ink with a nozzle, or transferring the pattern with heat or a laser. The quality of the output from such printers ranges from a very rough and highly visible grainy pattern of dots to an extremely fine high-resolution pattern. The former is quite adequate for printing drafts of documents; the latter is more desirable for printing graphic images.

**Laser printers** create images with a laser beam scanning across an electrically charged drum. As in a copier, toner or ink with an opposite charge sticks to the drum and is then transferred to paper by pressure and heat to create the finished image. Laser printers offer higher speed and quality than conventional printers. They can mix type styles and sizes as well as graphic images on the same page.

Printers for personal computers are connected to the computer by a cable through a **port** – the location through which the computer exchanges information with an external device. A port has a physical connector and an address, so

that programs know where to send information. The two basic types of ports are **serial and parallel**.

#### **5.4. Give synonyms.**

Convert, command, private, instruction, choose, form, generally, mark, perform, wide, traditional, situate, general, common, in lieu, display, define, send, do, view, see, indicate, create, locate, monitor, conventional, instead, commonly, broad, select, breakthrough, achievement, personal, link, connect, determine, convey.

#### **5.5. Give antonyms.**

Include, narrow, combine, fine, create, separate, lose, small, break, receive, large, input, find, wide, feasible, exclude, impossible, destroy, send, difference, rough, undesirable, similarity, output, link, desirable.

#### **5.6. Give English equivalents of the following words and word-combinations.**

Вводити команду, традиційний, функціональна клавіша, цифровий годинник, протилежний заряд, досягнення (прорив), введення числових даних, спілкуватися з комп'ютером, вибирати режим (варіант), екран дисплея, працювати на комп'ютері, давати зворотний зв'язок, альтернативний пристрій, реальна альтернатива, барвник, грубий, якісний, створювати зображення, зовнішній пристрій, обмінюватися інформацією, системна плата, сопло, з'єднувач, електронна плата, висока роздільна здатність, традиційний принтер, портативний комп'ютер, графічне зображення.

#### **5.7. Translate the following sentences into English.**

1. Клавіатура – це пристрій, призначений для введення в комп'ютер інформації та команд керування.
2. Група цифрових клавіш призначена для введення чисел.
3. Клавіші зі стрілками керують пересуванням курсора по екрану монітора.
4. Миша і трекбол використовуються для керування курсором і подачі деяких команд.
5. Принтер – це пристрій, призначений для виведення на папір результатів роботи програм.
6. Принтери під'єднуються до комп'ютера за допомогою кабеля через порт.

**5.8. Answer the questions.**

1. What is a keyboard designed for?
2. When do you use a numeric keypad?
3. Can you explain the difference between CRT and LCD?
4. What is a printer?
5. In what way are printers classified?
6. What type of printers is the best? Why?
7. How are printers connected to the computer?

**6.1. Read and translate the following words and word-combinations.**

Make up, contribute to, link together, integrated circuit chips, the micro-processor chip, systems and subsystems, compatible with, in close conjunctions with, erase, start up the computer, be fed with, low-voltage direct current, magnetic method, retrieve information, large-capacity storage device, provide fast access to, flexible plastic, a track, mount, house, empty, load a program.

**6.2. Learn key words and word combinations:**

backup (n) – резервна копія  
byte(n) – байт  
capacity(n) – ємність  
compatible (adj) – сумісний  
CPU (central processing unit) – центральний процесор  
DIMM (double in-line memory module) – модуль з дворядним розміщенням мікросхем пам'яті  
disk drive – дисковод  
erase (v) – стирати; вилучати  
execute instructions – виконувати команди  
fiberglass (adj) – оптично волоконний  
floppy disk – дискета  
floppy disk drive – дисковод для гнучких дисків  
hard disk – жорсткий диск  
house (v) – містити  
load a program – завантажувати програму  
low-voltage direct current – постійний струм низької напруги  
memory (n) – пам'ять  
optical disk – оптичний диск  
permanent memory – постійна пам'ять

power supply – джерело енергії  
RAM (random-access memory) – оперативна пам'ять  
ROM (read-only memory) – постійна пам'ять  
rotate (v) – обертати  
swap (v) – перевантажувати, обмінювати  
set of tracks – набір доріжок  
socket (n) – гніздо; панель  
spin (v) – обертати  
system unit – системний блок  
temporary memory – тимчасова пам'ять (оперативна)

### 6.3. Read and translate the text.

## The System Unit

A system unit houses the processor and memory of a personal computer system. If you were to remove the cover of the system unit and look inside, you would see the parts that make up a system unit. Although it is not necessary to know how each of these parts works, it is useful, from a system's point of view, to know something about how each part contributes to making up the whole system.

If you ignore for the moment all the wires and connections that link the various parts together, you will see the fundamental building blocks of all computer systems and subsystems – the integrated circuit chips. All the functional hardware parts of the computer – input, processor, storage, and output – can be made from integrated circuits.

Working in close conjunction with the microprocessor is a form of storage called the computer's **memory**. This is where the programs, along with the data to be input and the results to be output, are stored.

**ROM** (read-only memory) is permanent memory from which the microprocessor can read information, but whose contents can be neither erased nor written over – thus the name, read-only memory. ROM stores the instructions that start up the computer when the power is turned on as well as some additional programs that need never be changed.

**RAM** (random-access memory) is temporary memory that is empty until the microprocessor needs to use it, that is, until it loads programs and data into it. RAM is often called read/write memory, meaning that the microprocessor can

read its contents and write programs or data into it. Most RAM is temporary because it loses its contents when the computer's power is turned off. For longterm storage of information or programs, disk drives are connected to the system.

Memories for personal computers are rated according to their capacity, which is measured in thousands or millions of bytes. A **byte** consists of eight consecutive bits and is the equivalent of one character, such as a letter, a number, or a punctuation mark.

By themselves, the chips cannot do much – they have to be connected and fed with electricity. The chips are usually mounted on a **system board** or **mother board** – a fibreglass circuit board that contains sockets into which the chips are plugged and a set of tracks (printed on the circuit board) that connects the various chips. Because these tiny integrated circuit chips require so little electricity to operate, a power supply is also housed in the system unit. This converts ordinary household current into the low-voltage direct current that the integrated circuits require.

Many personal computers also contain a series of sockets, called **expansion slots**, into which additional circuit boards can be plugged. These additional circuit boards expand the capabilities of the computer. Some can contain additional memory chips, whereas others can provide the ability to connect additional external devices: for example, a modem, a printer, extra disk drives, or other input/output devices, such as a colour display screen.

In contrast to memory, **storage** provides a place to store data and programs before and after processing.

Disks have become the most widely used medium for the storage part of the system. A **disk** is a circular platter on which a recording surface has been applied. The most common type of disk is **magnetic**. It is coated with the same material found on audiotape, and it can be erased and used over and over. Another type, the **optical disk**, uses laser beams of light instead of the magnetic method to record and retrieve information. There are two types of magnetic disks: **floppy disks** and **hard disks**. Floppy disks are made from thin sheets of flexible plastic; hard disks are made from rigid platters of metallic or ceramic material. The device that plays the disk is called a **disk drive**. It contains the mechanical equipment needed to spin or rotate the disk and the **read/write head** needed to record and retrieve information to and from the disk.

Hard disk drives are large-capacity storage devices. They operate by the same principles as floppy disk drives, but at much faster speeds. Their capacities are measured in megabytes. The hard disk is used for storing large quantities

of information and provides fast **access** to that information. The floppy disk drive is convenient for making **backup** copies of the data on the hard disk, making copies of files that can be mailed to friends or co-workers, and, of course, for putting new programs and information into the computer.

**6.4. Give Ukrainian equivalents of the following word-combinations.**

Permanent memory, temporary memory, ordinary household current, system board, disk drive, expansion slot, DIMM, hard disk drive, floppy disk drive, colour display screen, record and retrieve information, hard disk capacity, external device, retrieve information, record information, read/write head, erase, delete, rotate a disk.

**6.5. Give synonyms.**

Make up, private, link, various, important, significant, carry out, quantity, command, perform, interpret, spin, translate, execute, personal, additional, provide, give, apply, use, join, in lieu, convenient, compose, low, instruction, comfortable, different, amount, rotate, rigid, hard, require, supplementary, demand, instead of, high.

**6.6. Fill in the blanks with the words from the text.**

1. Additional circuit board can be plugged into \_\_\_\_\_.
2. A system board contains sockets into which \_\_\_\_\_ are plugged.
3. \_\_\_\_\_ carries out the processing tasks by interpreting and executing the commands in a program.
4. \_\_\_\_\_ is used for storing large quantities of information and provides fast access to that information.
5. The capacity of hard disk drives is measured in \_\_\_\_\_.
6. Additional circuit boards expand the \_\_\_\_\_ of a computer.

**6.7. Translate the following words and phrases into English.**

Системний блок, розділовий знак, змінний струм, постійний струм низької напруги, дисковод, резервна копія, запам'ятовувальний пристрій великої ємності, головка читання/запису, лазерний промінь, інтегральна схема, мікросхема, центральний процесор, оперативна пам'ять, тимчасова пам'ять, гніздо розширення, джерело електроживлення, роз-

міщувати, зовнішній пристрій, забезпечувати доступ, вилучати, ємність, з'єднувати з системою, записувати інформацію, завантажувати програму.

**6.8. Translate the sentences into English using the necessary terms from the text.**

1. Блок електроживлення перетворює змінний струм стандартної мережі на постійний струм низької напруги.
2. На системному блоці розміщено всі основні вузли комп'ютера.
3. Тверді диски – це запам'ятовувальні пристрої великої ємності.
4. Дисковод містить механічне обладнання, необхідне для обертання диску, та голівку читання/запису.
5. Ємність пам'яті вимірюється у байтах.

**6.9. Your ideal computer system.**

**a) Make notes about features of the computer that you would like to have.**

CPU \_\_\_\_\_  
SPEED \_\_\_\_\_  
Floppy disk drive \_\_\_\_\_  
Minimum/Maximum RAM \_\_\_\_\_  
Monitor \_\_\_\_\_  
Hard Disk \_\_\_\_\_  
Software \_\_\_\_\_

**b) Now describe it to your partner:**

**Useful expressions:**

It has got....  
It's very fast. It runs at.....  
The standard RAM memory is ..... and it is expandable....  
The hard disk can hold....  
As for the disk drive.....  
I need a Super VGA monitor because...

**6.10. As we have seen there are three types of memory used by computers: RAM, ROM and storage memory. Look through this list of features and decide which type of memory they refer to.**

1. Any section of the main memory can be read with equal speed and ease.
2. It is available in magnetic, optical, and video disks.

3. It stores basic operating instructions, needed by the CPU to function correctly.
4. Memory which can be expanded by adding DIMMs (DDR).
5. Information is permanent and cannot be deleted.
6. You can store your documents and applications.

#### **6.11. Answer the questions.**

1. What does a system unit house?
2. What functions does a CPU perform?
3. What is a difference between ROM and RAM?
4. What is a typical unit to measure RAM memory and storage memory?
5. What type of electrical current is required for feeding chips?
6. In what way can you expand the capabilities of the computer?
7. What is the meaning of the acronym DIMM?
8. What is the abbreviation for “binary digit”?
9. How can we store data and programs permanently?

### **Test Yourself**

**Match the following key terms to the appropriate definition:**

**A.**

1. Special-purpose computer
  2. General-purpose computer
  3. Computer literacy
  4. Documentation
  5. Tutorial
  6. Spreadsheet
  7. Programming language
  8. System
  9. Code
  10. Circuit
  11. Integrated circuit
- a. The books and manuals that accompany a computer-related product.
  - b. A computer whose operation can be changed by altering its programs.
  - c. An interconnected set of electronic components that performs a function.
  - d. A formally constructed artificial language in which the syntax and grammar are stated so precisely that a computer can analyze, interpret, and understand the meaning of that language.

- e. A computer that is dedicated to a single purpose.
- f. The knowledge and skills required to use a computer as a problem-solving tool.
- g. A ready-made program that enables you to organize numbers and formulas into a rectangular array of cells.
- h. A computer program that contains step-by-step directions for learning how to use a computer or a computer program.
- i. A set or arrangement of parts acting together to perform a function.
- j. Combinations of millions of circuits built on tiny pieces of silicon, which are called chips.
- k. A set of symbols that represents another set of symbols.

**B.**

- 12. Bit
  - 13. Information system
  - 14. Communication system
  - 15. Network
  - 16. Hardware
  - 17. Software
  - 18. Applications
  - 19. Keyboard
  - 20. Mouse
  - 21. Microprocessor
- a. A pointing device that combines the traditional cursor movements with the means to select an object on the display.
  - b. The smallest unit of information used in computer and communication systems.
  - c. The things computers can do.
  - d. Two or more communicating devices that are connected to each other.
  - e. A device that converts keystrokes into special codes that can be electronically manipulated by the computer.
  - f. The physical components of a computer or other system.
  - g. The central processing unit of a microcomputer.
  - h. A system that consists of a sender, a physical channel, and a receiver.
  - i. A system that takes input, processes it, and produces information as output.
  - j. Programs that control the operation of a computer system.

**C.**

22. Display
  23. Memory
  24. ROM (read-only memory)
  25. RAM (random-access memory)
  26. Byte
  27. System board
  28. Expansion slot
  29. Disk
  30. Printer
  31. Port
- a. A form of storage where programs, data to be input, and results to be output are stored.
  - b. The location through which the computer exchanges information with an external device.
  - c. A device that produces output from a computer system by transferring an image onto paper.
  - d. Eight consecutive bits that are the equivalent of one character.
  - e. A device that is used to give you feedback and to view the computer's output.
  - f. A circular platter on which a recording surface has been applied.
  - g. A socket into which additional circuit boards can be plugged.
  - h. Temporary memory that is empty until the microprocessor needs to use it, that is, until it loads programs and data into it.
  - i. A fibreglass circuit board that contains sockets into which chips are plugged and tracks that connect the various chips.
  - j. Permanent memory from which the microprocessor can read information, but whose contents can be neither erased nor written over.

**True/False:**

32. The fastest computers made are called supercomputers.
33. The broadest categories of computers are personal computers, mini-computers, and mainframes.
34. Special-purpose computers can be adapted to many situations by giving them an appropriate program.
35. A minicomputer is the smallest and least expensive type of computer.
36. Learning how to program is a requirement for using a computer as a problem-solving tool.
37. A programming language is a formally constructed artificial language.

38. Writing a program is an intellectually simple task.
39. One of the problems with computers is that information cannot be represented as electrical signals.
40. A binary signal combines the three possibilities of yes, no, and maybe.
41. When no information is present, communication becomes noise.
42. A telephone system is an example of a network that processes centralized output.
43. The first step in getting started with computers involves finding a computer or hardware.
44. The two types of disks are magnetic and optical.
45. A microprocessor can read and write information to and from RAM.

**Multiple Choice:**

46. The broadest categories of computers are called
  - a. Special and general purpose.
  - b. Mainframes, minicomputers, and personal computers.
  - c. Supercomputers and minicomputers.
  - d. None of the above.
47. Large-scale general-purpose computers are called
  - a. Supercomputers.
  - b. Mainframes.
  - c. Minicomputers.
  - d. Personal computers.
48. Ready-made programs such as spreadsheets
  - a. Help you to learn programming.
  - b. Help your reading about computers.
  - c. Are tutorials that help you to learn about computers.
  - d. Help you to concentrate on solving problems.
  - e. Translate a highly specialized and complex computer terminology into an easy-to-learn language.
49. A bit is the smallest possible unit of information because a bit
  - a. Can be represented by two different levels of voltage in a computer circuit.
  - b. Is enough to tell the difference between two opposites, such as on and off.
  - c. Can be grouped with other bits to represent numbers, letters, or special symbols.
  - d. Is any pattern that has a commonly understood meaning.

- 
- 
50. The difference between data and information is that
- Data always contain information.
  - Data have a context; information may not.
  - Information has a context; data may not.
  - Information and data are the same thing.
51. An example of a network that processes decentralized input is
- A television network.
  - An airline reservation system.
  - A telephone system.
  - An electronic encyclopaedia.
  - In a personal computer, the CPU is called the
  - RAM.
  - Microcomputer.
  - Microprocessor.
  - Motherboard.