

MODERN COMPUTERS

Originally computers were meant to perform mathematical calculations. This accounts for the origin of the word itself coming from the Latin word *computo* which means *to count*. The development of electronic computation, however, has resulted in the fact that modern computers are used extensively in various fields of human activities, not for calculations only; and these fields are becoming more and more diverse. Now you can hardly imagine an accountant's desk without a computer, to say nothing of a research laboratory. Modern computers can solve a great variety of tasks: to perform mathematical calculations, to help researchers in their investigations, to help doctors in making diagnoses, to store large volumes of information, etc. And who has not heard about computer-aided design, or computer-assisted industrial process control and fault diagnosis, or computer-based learning, or, lastly, computer games which are extremely captivating not for children only but for adults as well? Thus, at its simplest, the computer can be defined as a programmable electronic device that can store, retrieve and process information (data). The word *programmable* here means that computer's operation is based on a program — a specially arranged list of instructions. Every computer incorporates hardware and software. The former includes machinery and devices, the latter — all computer systems and programs.

According to the purpose the following classification of computers may be suggested.

Special-purpose, or dedicated, computers. They are designed to perform special tasks; their operations are limited to the programs built into their microchips. The smallest are embedded within the circuitry of appliances, such as TV-sets and wristwatches. These computers are preprogrammed for a specific task, such as tuning to a particular television frequency or keeping accurate time. Among special-purpose computers there are also so called personal digital assistants (PDAs). These computers can be held in one hand and are used as notepads, scheduling systems, and address books; if equipped with a cellular phone, they can connect to worldwide computer networks to exchange information regardless of location.

General-purpose computers, such as personal computers (PC) and laptop computers. They are much more versatile because they can accept new sets of instructions. Each new set of instructions (program) enables the same computer to perform a different type of operation. Laptop computers and PCs are typically used in businesses and at home for word processing, to track finances, to play games, and to communicate on computer networks. They have large amounts of internal memory to store hundreds of programs and documents. They are equipped with a keyboard, a mouse, a trackball or other pointing devices and a video display monitor or liquid crystal display (LCD) to display information. Laptop computers usually have similar hardware and software as PCs, but they are more compact and have flat, lightweight LCDs instead of video display monitors.

Minicomputers are fast computers that have greater manipulating capabilities than personal computers and can be used simultaneously by many people. These machines are primarily used by larger businesses to handle extensive accounting and inventory records.

Workstations are similar to personal computers but have greater memory and more extensive mathematical abilities, and they are connected to other workstations or PCs to exchange data. They are typically found in scientific, industrial, and business environments that require high levels of computational abilities.

Mainframe computers have more memory, speed, and capabilities than workstations and are usually shared by multiple users through a series of interconnected computers. They are large, extremely fast, multi-user computers that often contain complex arrays of processors, each designed to perform a specific function. Mainframes control businesses and industrial facilities and are used for scientific research.

The most powerful mainframe computers also called *supercomputers* are the fastest class of computers. Their speed and power are almost beyond human comprehension. Supercomputers process complex and time-consuming calculations, such as those used to create weather predictions. They attain these speeds through the use of several advanced engineering

techniques. Because these computers can cost millions of dollars, they are used mostly by government, large businesses, scientific institutions and the military.

Exercise 1. Find in text the English for: виконувати обчислення, дослідницька лабораторія, найрізноманітніші завдання, встановити діагноз, діагностика несправностей, автоматизоване проектування, програмований пристрій, здійснювати обмін інформацією, внутрішня пам'ять, широкі можливості, одночасно, наукові дослідження, за межами людської уяви, прогноз погоди, передові технології.

Exercise 2. Say whether the following statements are true or false. Correct the false ones.

1. One can hardly imagine a computer that helps doctors in making a diagnosis.
2. Personal digital assistants are equipped with a cellular phone to connect them to worldwide computer networks.
3. Only one type of computers can accept new sets of instructions.
4. Laptop computers are as compact as PCs, but have different hardware and software.
5. Workstations are typically found in schools and universities.
6. Minicomputers are usually used by large businesses.
7. Mainframes often contain complex arrays of processors and cannot be used by many people.
8. Only government and the military use supercomputers.

Exercise 3. Answer the questions.

1. What was the original purpose of computers?
2. What has the development of electronic computation resulted in?
3. What kind of tasks can modern computers solve?
4. How can the computer be defined?
5. What does the word programmable mean?
6. What are dedicated computers designed for?
7. How are personal digital assistants usually used?
8. Why are general-purpose computers versatile?
9. Where are laptop computers and personal computers typically used?
10. What are the advantages of computers?
11. Where are workstations typically found?
12. What is the fastest class of computers?
13. Owing to what do supercomputers attain their high speeds?
14. What accounts for the limited applications of supercomputers?
15. Why do we say that computers made our life easier?

Exercise 4. Give the opposites of the following words taken from text.

Originally, extensively, various, modern, captivating, include, specific, regardless of, versatile, enable, different, internal, similar, compact, lightweight, instead of, simultaneously, usually, multiple, complex, beyond, advanced.

Exercise 5. Find in text the equivalents for:

at first (in the beginning, initially); carry out (execute); explain; stem from (originate from); bring about (lead to); up-to-date (present-day); widely, sphere (area, domain); varied; not to mention (let alone); exciting (absorbing); command; contain; depending on (in accordance with, in relation to); paying no attention to (without regard to); mainly (essentially, basically, chiefly, largely, predominantly, in the main).