

English for the Students of **Computer Science**



In the Name of God

English For the Students of Computer Science

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Lesson 1

What is a Computer?



Learning Outcomes

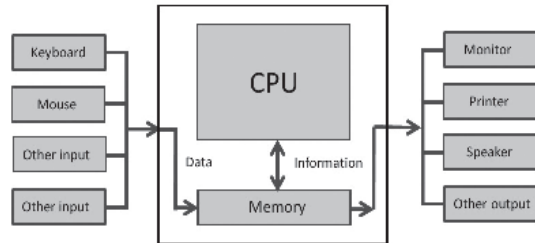
The students should be able to:

- define a computer
- state the principal characteristics of a computer
- identify and list the hardware components
- explain the functions of hardware components
- state a brief history of the first electronic digital computers

What is a Computer?

① A computer is a machine that can be programmed to **manipulate**¹ large amounts of information and work with amazing speed. A computer is built to do these four jobs:

- **Accept information:** You can put raw data into it. The information might be a collection of facts and figures or possibly a set of instructions to the computer telling it what to do.



- **Store the information:** It has a device called memory that holds the information as long as you want it to. Memory is measured in bytes.

- **Process the information:** This means it does something with the information. It might do an addition problem or compare and sort the information.

- **Give out the processed information:** It gives you the results of the processing which are the results of the instructions to the computer.

② Computers can perform complex and repetitive procedures quickly, **precisely**² and **reliably**³. Modern computers are electronic and digital. The actual machinery (wires, transistors, and circuits) is called hardware; the instructions and data are called software. All general-purpose computers require the following hardware **components**⁴:

- **Central processing unit (CPU):** This is the heart of the computer that actually executes instructions organized in programs (software) which tell the computer what to do.

- **Memory (short-term memory):** Enables a computer to store, at least **temporarily**⁵, data, programs, and intermediate results.

- **Mass storage device (long-term memory):** Allows a computer to permanently **retain**⁶ large amounts of data and programs between jobs. Common mass

1 **manipulate** /mə'nɪpjuleɪt/ **v** control or use something in a skillful way

2 **precisely** /prɪ'saɪsli / **adv** accurately; carefully

3 **reliably** /rɪ'laɪəbli / **adv** dependably

4 **component** /kəm'pounənt / **n** part

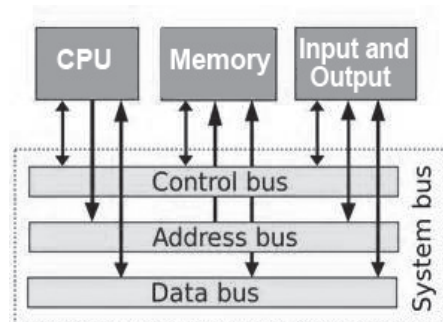
5 **temporarily** /tempə'reɪli / **adv** for the time being; for the short term

6 **retain** /rɪ'teɪn / **v** keep; store; hold

storage devices include hard drives and flash drives.

- **Input device:** The input device is the **conduit**⁷ through which data and instructions enter a computer. The keyboard and the mouse are the two most common computer input devices.
- **Output device:** A display screen, printer, or other devices that let you see what the computer has **accomplished**⁸.

③ In addition to these components, many others make it possible for the basic components to work together efficiently. For example, every computer requires a **bus**⁹ that **transmits**¹⁰ data from one part of the computer to another.



④ The first electronic digital computers were developed between 1940 and 1945. Originally they were the size of a large room, consuming as much power as several hundred modern personal computers (PCs). In this era, mechanical analog computers were used for military applications.

⑤ Modern computers based on **integrated**¹¹ circuits are millions to billions of times more capable than the early machines, and **occupy**¹² a fraction of the space. Simple computers are small enough to fit into mobile devices, and mobile computers can be powered by small batteries. Personal computers in their various forms are icons of the Information Age and are what most people think of as “computers.” However, the **embedded**¹³ computers found in many devices from MP3 players to fighter aircraft and from toys to industrial robots are the most numerous.

7 **conduit** /kɑːnduɪt/ **n** means; medium

8 **accomplish** /əˈkɑːmplɪʃ/ **v** do; carry out

9 **bus** /bʌs/ **n** a set of wires carrying data from one part of a computer to another

10 **transmit** /trænsˈmɪt & trænʒˈmɪt/ **v** send out

11 **integrated circuit** /ˈɪntɪɡreɪtɪd ˈsɜːrkiːt/ **n** a small microchip that contains a large number of electrical connections

12 **occupy** /ˈɑːkjʊpaɪ/ **v** to fill or use a space, an area or an amount of time

13 **embed** /ɪmˈbed/ **v** to fix something firmly and deeply into something else

Comprehension Exercises

1 Decide whether the following statements are true or false (T/F) by referring to the information in the text. If they are not mentioned in the text, write (N).

- 1. A computer can store and retrieve large amounts of data.
- 2. The CPU is the main component of a computer which tells it what to do.
- 3. CDs and DVDs are common mass storage devices.
- 4. The first electronic digital computers were hundred times bigger than the modern personal ones.
- 5. Mechanical analog computers are used for military applications.
- 6. You can see the processed information through the output device.
- 7. Storing the information is the most important task of a computer.
- 8. Tablets and robots are two examples of embedded computers.

2 Find the paragraph and line(s) in the text where the following ideas are expressed.

- P----, L---- 1. Computer is a programmable machine.
- P----, L---- 2. Computers can perform complex and repetitive procedures quickly and precisely.
- P----, L---- 3. CPU is the heart of the computer.
- P----, L---- 4. Simple computers are small enough to fit into mobile devices.
- P----, L---- 5. Modern computers are much more capable than the early machines.
- P----, L---- 6. The first computers consumed as much power as several hundred modern personal computers.

3 Using the information in the text, complete these statements.

- 1. Four jobs that a computer does are -----.
- 2. CPU stands for -----.
- 3. The two most common computer input devices are -----, and -----.
- 4. Bus is an important component of a computer which -----.
- 5. Embedded computers are found in many devices such as -----.

4 Look back at the text and find out what the underlined words refer to.

1. telling it what to do (P1/L8)-----
2. which tell the computer (P2/L7)-----
3. through which data and instructions (P2/L14)-----
4. In addition to these components (P3/L1)-----
5. of the computer to another (P3/L5)-----
6. Originally they were the size (P4/L3)-----
7. In this era, mechanical (P4/L4)-----
8. in their various forms (P5/L5)-----

Vocabulary Exercises

1 Match the words in column A with their collocations in column B.

A		B
1. execute	--e--	a. components
2. manipulate	-----	b. effects
3. emergency	-----	c. robots
4. hardware	-----	d. information
5. industrial	-----	e. a program
6. long-term	-----	f. procedures

2 Refer to the passage and find the meaning of the following words.

1. program: -----
2. hardware: -----
3. software: -----
4. CPU: -----
5. bus: -----

3 Refer back to the text and find words for the following definitions.

1. to make a plan (P1) -----
2. a basic unit of operation, equal to eight bits (P1) -----
3. not simple (P2) -----
4. to carry out; do; accomplish (P2) -----
5. a part or very small part of a whole (P5) -----

- 6. to have the appropriate shape and size for (P5) -----
- 7. to supply with energy or force (P5) -----

4 Complete the sentences with the words below. There's one extra word.

retrieve *executed* *transmitted*
develops *measured* *manipulating*
program *requires* *accomplished*

- 1. Computers are very efficient at ----- information.
- 2. Check that the computer has ----- your commands.
- 3. The program allows you to ----- items quickly by searching under a keyword.
- 4. The first part of the plan has been safely -----
- 5. The data will be automatically ----- from one part of the system to another.
- 6. The company ----- and markets new software.
- 7. This ----- requires at least 24Mb of RAM.
- 8. A computer's memory is ----- in bytes.

Translation Activity

Translate the following passage into Persian.

Computers are the most creative inventions that have changed society in many ways. They have brought numerous and countless advances to many different fields of studies as well as in the lives of many people.

Today, computers have changed how people work and have opened new methods and means of acquiring new knowledge and skills. Computers are now being used in various fields, from education to medicine, businesses, government, science, publishing and industry. Through the computer and the Internet, you'll be able to discover new ways in getting hold of informative and useful information in almost any fields of studies including Information Technology, Physics, Medical sciences, Artificial intelligence, Robotics, Information Systems, Economics, Statistics, etc.