

## UNIT 5

### A. Reading text

#### CENTRAL PROCESS UNIT

It is common practice in computer science for the words "computer" and "processor" to be used interchangeably. More precisely, "computer" refers to the central processing unit (*CPU*) together with an internal memory. The internal memory or main storage, control and processing components make up the heart of the computer system. Manufacturers design the CPU to control and carry out basic instructions for their particular computer.

The CPU coordinates all the activities of the various components of the computer. It determines which operations should be carried out and in what order. The CPU can also retrieve information from memory and can store the results of manipulations back into the memory unit for later reference.

In digital computers the CPU can be divided into two functional units called the control unit (CU) and the arithmetic - logical unit (ALU).

These two units are made up of electronic circuits with millions of switches that can be in one of two states, either on or off. The function of the control unit within the central processor is to transmit coordinating control signals and commands. The control unit is that portion of the computer that directs the sequence or step-by-step operations of the system, selects instructions and data from memory, interprets the program instructions, and controls the flow between main storage and the arithmetic- logical unit.

The arithmetic - logical unit, on the other hand, is that portion of the computer in which the actual arithmetic operations, namely, addition, subtraction, multiplication, division and exponentiation, called for in the ' instructions are performed. It also performs some kinds of logical operations such as comparing or selecting information. All the operations of the ALU are under the direction of the control unit.

Programs and the data on which the control unit and the ALU operate, must be in internal memory in order to be processed. Thus, if located on : secondary memory devices such as disks or tapes, programs and data and first loaded into internal memory.

Main storage and the CPU are connected to a console, where manual control operations can be performed by an operator. The console is an important, but special purpose, piece of equipment. It is used mainly when the computer is being started up, or during maintenance and repair. Many mini and micro systems do not have a console.

### B. Comprehension

**Task 1: Answer the following questions**

1. What is the CPU designed for?
2. What does the CPU coordinate?
3. What are the two functional units of the CPU in digital computers?
4. What is the function of the control unit?
5. What is the arithmetic - logical unit?
6. What are the main storage and the CPU connected to?

**Task 2: Decide whether the following statements are true or false (T/F) by referring to the information in the text. Then make the necessary changes so that the false statements become true.**

1. The central processing unit is made up of three components.
2. The CPU is responsible for all the activities taking place within a computer.
3. The processor itself has three components.
4. The control unit directs the flow of information within the processor.
5. The arithmetic-logical unit of the processor is responsible for the interpretation of program instructions.
6. The arithmetic-logical unit is also responsible for choosing and comparing the appropriate information within a program.
7. The processor cannot operate on any information if that information is not in main storage.
8. Secondary memory and internal memory are located in the same place in the computer system.
9. Only after the data has been processed by the CPU can results be transmitted to an output device.
10. Computers can solve problems more quickly if they operate on new information.

**Task 3: Choose the best answer**

**1. What does the term "computer" commonly refer to in computer science?**

- A. The monitor and keyboard
- B. The CPU and internal memory
- C. The printer and scanner
- D. The motherboard and software

**2. What is the main function of the CPU in a computer system?**

- A. To store external data
- B. To display visual information
- C. To coordinate and execute instructions
- D. To connect to the internet

**3. Which two units make up the CPU in digital computers?**

- A. Storage unit and display unit
- B. Arithmetic-logical unit and memory unit
- C. Control unit and arithmetic-logical unit
- D. Control unit and secondary storage

**4. What is the primary function of the control unit (CU)?**

- A. Performing arithmetic calculations
- B. Storing large files
- C. Transmitting control signals and interpreting instructions
- D. Generating graphical output

**5. Which unit of the CPU performs addition, subtraction, and logical comparisons?**

- A. Storage unit
- B. Control unit
- C. Arithmetic-logical unit (ALU)
- D. Console

**6. Where must programs and data be located in order to be processed by the CPU?**

- A. On a USB device
- B. In the external hard drive
- C. In the internal memory
- D. In the console

**7. What is the role of the console in a computer system?**

- A. To increase CPU speed
- B. To display videos and images
- C. To perform manual control during startup and maintenance
- D. To run user applications

**8. What kind of operations can the ALU perform besides arithmetic operations?**

- A. Storing multimedia data
- B. Connecting to networks
- C. Logical operations like comparing or selecting
- D. Rendering graphics

**9. How does the control unit direct the operation of the system?**

- A. By adjusting screen brightness
- B. By controlling network access
- C. By selecting and interpreting instructions
- D. By managing sound output

**10. What happens if a program is stored on a secondary memory device?**

- A. It can be executed directly
- B. It must be converted into binary
- C. It must first be loaded into internal memory
- D. It cannot be used