Computer science

Central processing unit (CPU)

- **Arithmetic Logic Unit (ALU)**
- **Control unit**
- **Memory unit**

Computer science

❖ Central processing unit (CPU)

- CPU is considered as the brain of the computer
- It is responsible for interpreting information, performing logical calculations, controlling all commands and instructions, and communicating them between parts of the computer.
- It stores data, intermediate results and instructions.
- It is also known as a processor or microprocessor.

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- **CPU** determines the speed of computer and is measured in units MHz
- **CPU** has following three components:

1. Arithmetic Logic Unit (ALU)
2. Control unit
3. Memory unit

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1. Arithmetic Logic Unit (ALU)

This unit consists of two subsections namely:

a. Arithmetic section : is to perform arithmetic operations like addition, subtraction, multiplication and division

b. Logic section : is to perform logic operations such as comparing, selecting, matching and merging of data.

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2. Control unit

This unit controls the operations of all parts of computer but does not carry out any actual data processing operations. Functions of this unit are:

a. responsible for controlling the transfer of data and instructions among other units of a computer.

b. It manages and coordinates all the units of the computer.

c. It obtains the instructions from the memory, interprets them, and directs the operation of the computer.

d. It does not process or store data

e. It communicates with Input/output devices for transfer of data or results from storage.

3. Memory unit

- This unit can store instructions, data and intermediate results.
- This unit supplies information to the other units of the computer when needed.
- It is also known as internal storage unit or main memory or primary storage.
- Its size affects on the speed and performance of the computer.

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- **Functions of memory unit are:**
- It stores all the data and the instructions required for processing.
- It stores intermediate results of processing.
- It stores final results of processing before these results are released to an output device.
- All inputs and outputs are transmitted through main memory.

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- **Characteristics of (Main Memory) :**
  - These are semiconductor memories.
  - Usually volatile memory.
  - Data is lost in case power is switched off.
  - It is working memory of the computer.
  - It is working memory of the computer.
  - A computer cannot run without primary memory.

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- **Memory unit consist of two main type :**

a) Random Access Memory(RAM)

- is the internal memory of the CPU for storing data, program and program result.
- It is read/write memory which stores data until the machine is working. As soon as the machine is switched off, data is erased. RAM is of two types

i. Static RAM (SRAM)

ii. Dynamic RAM(DRAM)

b) Read Only Memory (ROM) :

- A ROM, stores such instructions that are required to start a computer.
- The memory from which we can only read but cannot write on it.
- This type of memory is non-volatile.
- The information is stored permanently in such memories during manufacture

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❑ Advantages of ROM

1. Cheaper than RAMs
2. More reliable than RAMs
3. These cannot be changed
4. Its contents are always known and can be verified
5. These are static and do not require refreshing

❑ Types of ROM

i. Masked ROM (MROM)

ii. Programmable ROM (PROM)

iii. Erasable and Programmable ROM (EPROM)