

Computer

- The computer is an electronic device that takes input from the user and processes these data under the control of a set of instructions (called program) and gives the result (output).
- Computer is a data processor because it can receive, store, process and produce any kind of result. It can process both numerical and non-numerical (arithmetic and logical) calculations.
- A computer is a combination of hardware and software resources. **Hardware** are the physical components of a computer like the processor, memory devices, monitor, keyboard etc. while **software** is the set of programs or instructions that are required by the hardware resources to function properly.

Digital Computer: A digital computer can be defined as a programmable machine which reads the binary data passed as instructions, processes this binary data, and displays a calculated digital output. The basic components of a modern digital computer are: Input Device, Output Device, Central Processor Unit (CPU), memory.

Functional Components of a Computer

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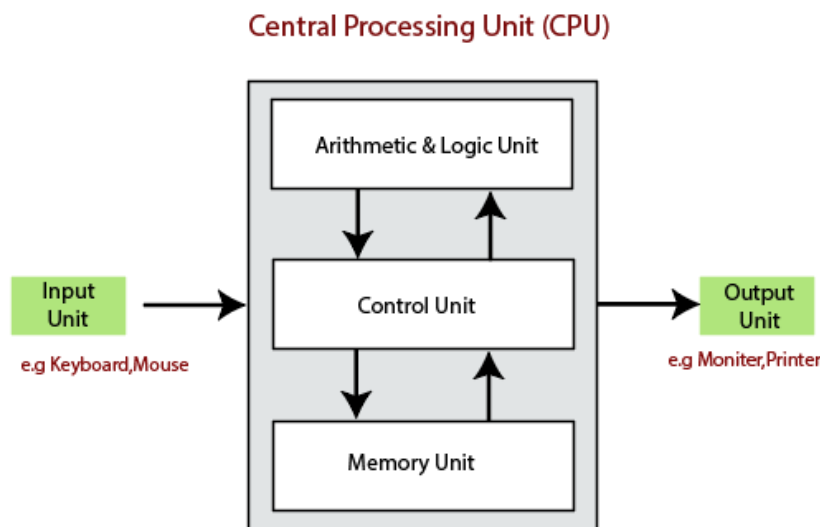
Block Diagram of Computer

There are functional units of computer are:

Input Unit

Central Processing Unit (CPU)

Output Unit



Input Unit:

- Input Unit is used to input data and instruction to the Computer. Data is entered into the Computer with the help of any input device.
- The input unit consists of input devices that are attached to the computer. These devices take input and convert it into binary language that the computer understands. Some of the common input devices are keyboard, mouse, Joystick scanner etc.

Central Processing Unit (CPU):

- Once the information is entered into the computer by the input device, the processor processes it. The **CPU is called the brain of the computer** because it is the control center of the computer.
- The CPU does all the processing, calculations, and controls all other functions of all the parts of the Computer.
- CPU has three main Components:
 1. Arithmetic Logic Unit(ALU)
 2. Control Unit
 3. Memory Unit

1.Arithmetic Logic Unit (ALU):

The ALU, as its name suggests performs Arithmetic and Logical Operations. Arithmetic calculations include addition, subtraction, multiplication and division. Logical decisions involve comparison of two data items to see which one is larger or smaller or equal. Logical Operations such as AND, OR, Equal, greater than, less than etc.

2. Control Unit:

- It coordinates all the activates of each and every element of computer.
- The Control unit coordinates and controls the data flow in and out of the CPU and also controls all the operations of ALU, memory registers and also input/output units.
- It is also responsible for carrying out all the instructions stored in the program.
- It transfers the data between memory and Input/output devices.

Memory Register: A register is a temporary unit of memory in the CPU. These are used to store the data which is directly used by the processor.

Registers can be of different sizes(16 bit, 32 bit, 64 bit and so on) and each register inside the CPU has a specific function like storing data, storing an instruction, storing address of a location in memory etc. Accumulator (ACC) is the main register in the ALU and contains one of the operands of an operation to be performed in the ALU.

3. Memory Unit

This is the unit where the data and results are stored. This unit remembers instructions and data. The memory unit is also called primary memory/storage or main memory.

The cell in memory unit is used to store the information.

Output Unit:

- The output unit consists of output devices that are used to display the output of processing.
- The output unit consists of output devices that are attached with the computer. It converts the binary data coming from CPU to human understandable form.
- The common output devices are monitor, printer, plotter etc.