# Meaning, Components and Units of Computer System:

A computer system is considered as a combination of hardware components, such as a processing unit, memory, input/output devices, and storage, along with software components like operating systems and applications, working together to attain a specific result in the field of Computer Science. It comes in various forms and sizes. It may include high-end server to a personal desktop, laptop, tablet computer, or smartphone.

## Components of Computer system:

There are three basic components of computer system.

1. Input Unit
2. Central Processing Unit
3. Output Unit

Although there are other components too of computer system but the above-mentioned units are termed as the building block of it.

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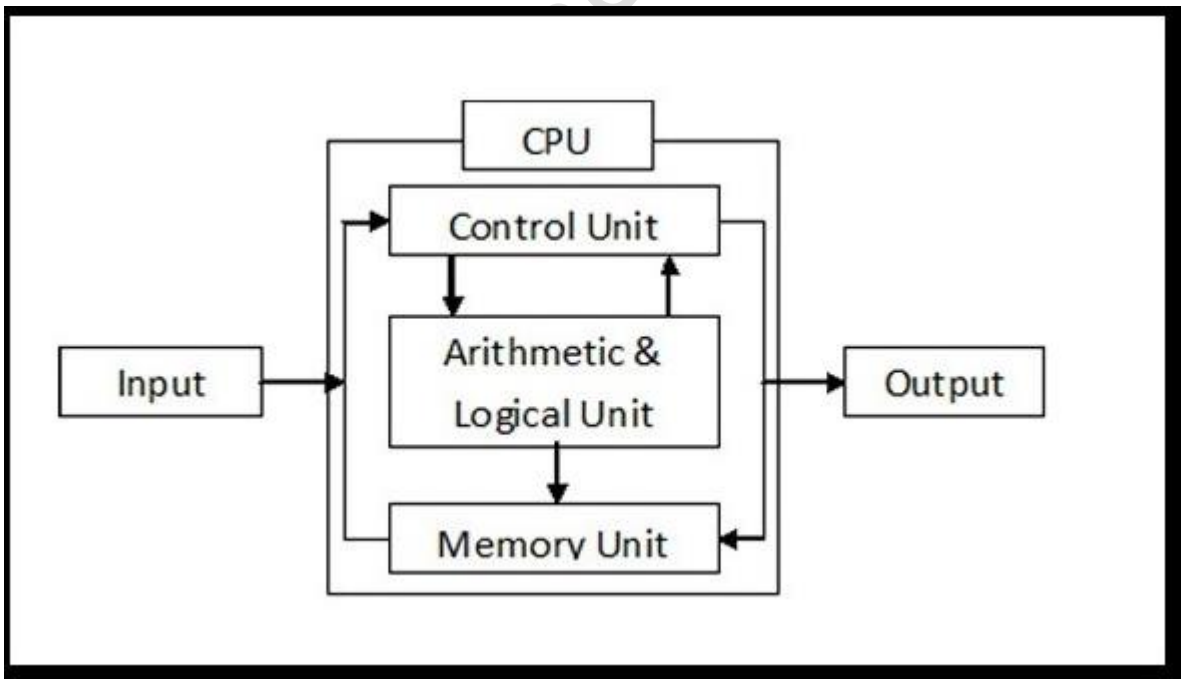


*Figure 1 Components of Computer System*

## 1. Input Unit:

It refers to that part of a computer system that accepts data from external sources, like keyboard, mouse, scanner etc. and allow users to provide information to the computer for processing it. Instructions or data given to a computer machine is done through certain hardware devices. During this process, the data given is termed as the input to a computer machine while the devices or hardware used is referred as the input device or input unit.

The input devices can be divided into different categories, such as

- Pointing Input devices e.g. Mouse
- Keyboard Input devices e.g. Qwerty Keyboard
- speech or voice input devices e.g. Mic
- Draw Input devices e.g. Graphic Tablets
- Recognition Input devices e.g. OMR
- Game Controller e.g. Joystick
- Visual Devices e.g. Touch Screen
- Composite Input devices e.g. Game paddle, Wii remote

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## 2. Central Processing Unit

The Central Processing Unit (CPU), often referred to as the brain of the computer. The CPU is the invisible executer inside the computer where input data is transformed into desired results. Through its vast circuits It stores and executes program instructions. It is Consist of three main units: the Control Unit (CU), the Arithmetic Logic Unit (ALU), and the Memory or Storage Unit.

### ➢ Control Unit (CU)

The Control Unit controls and integrates the operations of the computer. It selects and retrieves instructions from the main memory in proper sequence and interprets these instructions and activate other functional elements of the system. It helps in managing the flow of data between the CPU and other devices. Although its name, the control unit itself, but it doesn't control individual apps or program, instead, it allocates those tasks as a human manager who assigns particular work to different workforces.

- **Arithmetic Logic Unit (ALU)**

  It performs all the arithmetic and logical operations. Its arithmetic functionality is based on four types of operations as addition, subtraction, multiplication and division. Logical operations involve some sort of comparison such as of letters, numbers or special characters that's related to a particular computer action.

- **Memory or Storage Unit**

  It is the storage house of instructions, data, and intermediate results. It allocates data to other units of the computer when needed and is also known as the main memory or Random Access Memory (RAM). The memory unit handles several key functions such as memory usage, managing the data flow that occurs between RAM and the CPU. The size of the memory unit affects the speed, power, and performance of the CPU.

- **CPU Operation Cycle:** The CPU operates in a cycle of Fetch, Decode, Execute, and Store:
  - Fetch: The CPU retrieves an instruction from the main memory.
  - Decode: The instruction is decoded to determine what action is required.
  - Execute: The decoded instruction is executed by the ALU.
  - Store: The result of the execution is stored back in the memory.

- **Types of CPUs:** There are different types of CPUs based on the number of cores
  - **Single Core CPU:** It Performs one operation at a time, suitable for simple tasks. **Intel 4004** is the first single core processor, which was commercially released on November 15, 1971 by Intel.
  - **Dual-Core CPU:** Contains two cores, allowing for better multitasking. some of the examples of CPUs that use dual-core technologies are the **Intel Core Duo, the AMD X2, and the dual-core PowerPC G5**.

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- **Quad-Core CPU**: Contains four cores, significantly improving performance for complex tasks. **Intel Core 2 Quad, Intel Nehalem, and AMD Phenom X4 processors** are few of the examples.

- **Hexa-Core CPU:** It has six cores, contributes in even better performance and efficiency for tasks like video editing, scientific simulations, and gaming.Best example of a hexa-core CPU is the **Intel Core i3.**

- **Octa-Core CPU:** It consists of eight cores, often implemented as two sets of quad cores. This type of CPU is capable of handling advanced tasks and multi-threaded jobs efficiently. **Qualcomm Snapdragon 855** is one of the examples of Octa-Core CPU.

- **Deca-Core CPU:** It has ten cores, creating it the most powerful form of CPU for multitasking and parallel computing. It is perfect for advanced video editing, gaming, and other high-performance computer related tasks. **MediaTek Helio X20** is the example of such type of processor

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➢ **Importance of CPU**

The CPU play an important role in overall functioning of a computer. It handles everything from simple calculations to complex tasks to ensure that programs run smoothly and efficiently. Without CPU there is no work to be performed by computer own.

## 3. Output Unit

An output Unit is the piece of computer hardware equipment that are used to communicate the results of data processed by an information processing system such as computer that has converted the electronically generated information into human-readable form. Output devices include like monitors, screens, printers and speakers etc. Output units basically replicate the data formatted by the computer for users' benefit.

The Output devices can be divided into different categories, such as

- Visual Output Devices e.g. Monitor

- Data Output Devices e.g. Projector
- Print Output Devices e.g. Printer
- Sound Output Devices e.g. Speaker

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