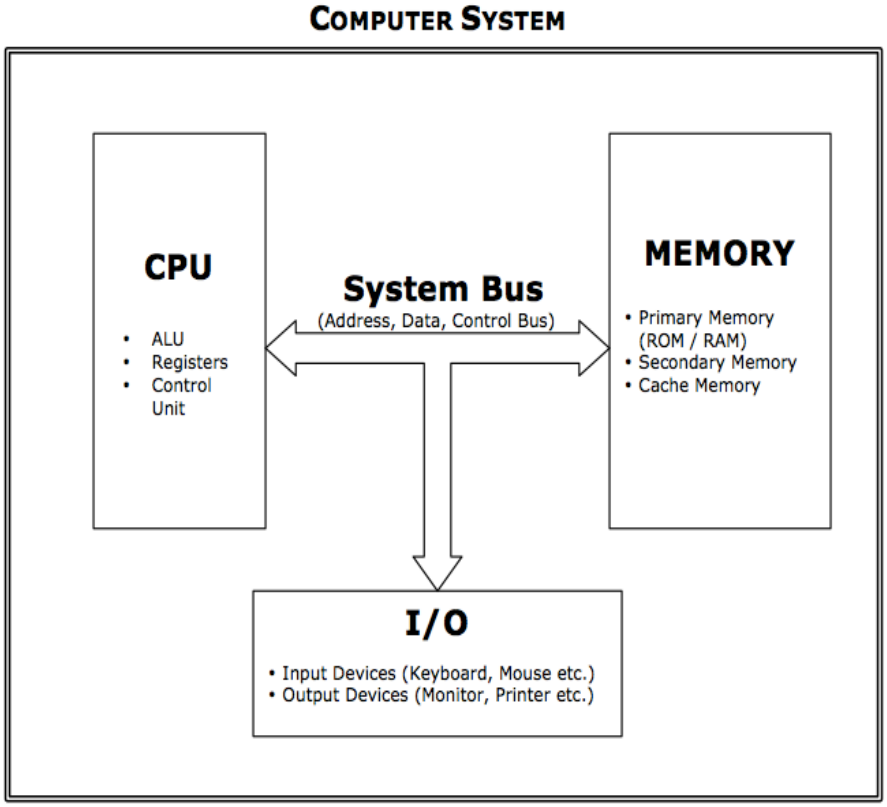
BASIC ORGANIZATION OF A COMPUTER



A computer system mainly consists of The CPU, Memory, I/O devices and the System bus used for interconnections

CPU

1) The Central Processing Unit is the **most important part** of the Computer.
2) It is also called the **microprocessor** or simply the **processor**.
3) It consists of the ALU, Registers, Control Unit etc.
4) All **programs are executed** in the CPU.
5) A program is a **set of instructions** stored in the memory.
6) The main function of the CPU is to **fetch, decode and execute** these instructions.
7) Instructions are **fetched from the memory** using the various **buses**.
8) Thereafter they are **decoded by the Control Unit** to analyze the Opcode.
9) Finally the instruction is **executed** to perform the **desired operation**.
10) This **execution** mainly involves the **ALU** and the **internal registers** of the processor.

MEMORY

1) The memory is used to **store information**.
2) It mainly stores **programs and data**.
3) Memory has various **locations**.
4) Each location is identified by its own **unique address and contains some data**.
5) The most basic form of memory is called **Primary Memory**, which consists of **RAM and ROM**.
6) Then there are **secondary** storage devices such as **hard disk**.
7) There are **portable** storage devices like **CD, DVD, Pen drives** etc.
8) Finally, there is a **high-speed memory called Cache** memory implemented using **SRAM**.
9) **RAM is "Volatile"**, that means contents of RAM are **lost** after power supply is withdrawn.
10) All **other** memories are **Non-Volatile** memories.

I/O

1) I/O devices are used for the **flow of information in and out** of the computer system.
2) **Input** devices such as **keyboard, mouse**, etc. are used to provide inputs into the computer.
3) They are used to **enter programs and data**.
4) **Output** devices such as **monitor and printer** are used to **generate results**.
5) Some devices such as a **touch-screen** can be used for **both input and output**.

System Bus

1) A bus is a set of **interconnecting lines used to carry information**.
2) **Size** of a bus means its **number of lines**.
3) An 8-bit bus has eight lines carrying **one bit each**.
4) There are three types of buses.
5) **Address Bus: It carries the address for the operation.**
   During any operation, the address bus identifies the location where the operation is performed.
   The size of the address bus determines the amount of Primary Memory that can be connected.
   Example: If address bus is 16-bit, we can connect 2^{16} = 64 KB Memory.
   Bigger the address bus, bigger is the memory.
6) **Data Bus: It carries data to and from the processor.**
   The size of data bus determines how much data can be transferred in one operation (cycle).
   Bigger the data bus, faster the processor, as it can transfer more data in one cycle.
7) **Control Bus: It Carries control signals like RD, WR etc.**
   These signals determine the kind of operation that will be performed on the system bus.