

## 1. Introductions to computers

- Computer is an electrical device that receives input stores or processes the input as per user instruction and provides output desired format.
- Computer input is called data.
- Output obtained after processing data based on user instruction is called information.
- Raw facts and figures which be processed using arithmetic and logic operations to obtain information are called data
- Process that can be applied to data are two types:
  - Arithmetic operation
  - Logic operation

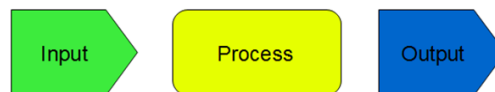


FIGURE (1)

## 2. Data processing

The activity of processing data using a computer is called data processing

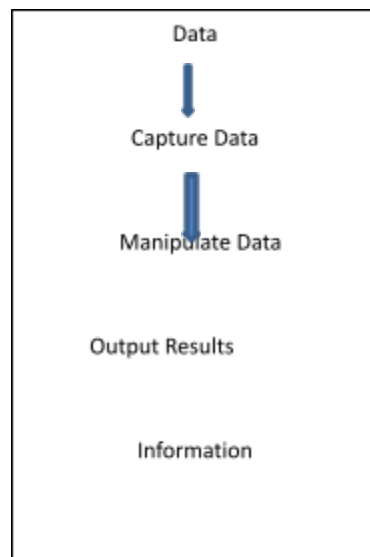


FIGURE (2)

**Data** is raw material used as input and information is processed data obtained as output of data processing

### 3. Characteristics of Computers

1. **Automatic:** Given a job, computer can work on it automatically without human interventions
2. **Speed:** Computer can perform data processing jobs very fast, usually measured in microseconds (10<sup>-6</sup>), nanoseconds (10<sup>-9</sup>), and picoseconds (10<sup>-12</sup>)
3. **Accuracy:** Accuracy of a computer is consistently high and the degree of its accuracy depends upon its design. Computer errors caused due to incorrect input data or unreliable programs are often referred to as GarbageIn-Garbage-Out (GIGO).
4. **Diligence:** Computer is free from monotony, tiredness, and lack of concentration. It can continuously work for hours without creating any error and without grumbling
5. **Versatility:** Computer is capable of performing almost any task, if the task can be reduced to a finite series of logical steps
6. **Power of Remembering:** Computer can store and recall any amount of information because of its secondary storage capability. It forgets or loses certain information only when it is asked to do so
7. **No I.Q.:** A computer does only what it is programmed to do. It cannot take its own decision in this regard
8. **No Feelings:** Computers are devoid of emotions. Their judgement is based on the instructions given to them in the form of programs that are written by us (human beings)

### 4. Booting

Starting a computer or computer-embedded device is called booting.

Booting steps:

- Power on the power supply.
- Loading operating system into computer main memory.
- Keep all applications in a state of readiness in case needed by the user.

The first program or set of instructions running when the computer is switched on is called **Bios** or a basic input-output system.

There are two types of Booting:

- A. Hard Booting: System is started by switching on the power supply.
- B. Soft Booting: The system is already running and needs to be restarted or rebooted. (Already Operating System (OS) has loaded).

## **What is the Master Boot Record (MBR)?**

The Master Boot Record (MBR) is the information in the first sector of a hard disk or a removable drive. It identifies how and where the system's operating system (OS) is located in order to be booted (loaded) into the computer's main storage or random access memory (RAM).

### **5. Main computer part and computer type:**

1. Motherboard
2. CPU
3. RAM
4. Hard-drive
5. Other memory (CD, DVD, Floppy)
6. Expansion cards (video, audio, NIC, etc)

### **1. Motherboard:**

A motherboard is the central or primary circuit board making up a complex electronic system, such as a computer. The motherboard contains the connectors for attaching additional boards.

- The motherboard = your spine.
- The motherboard acts as a connecting point between all other parts of your computer.
- Expansion cards plug into the motherboard.

- Hard drive and other drives connect to the motherboard.
- Power supply connects to the motherboard.
- CPU and RAM connect to the motherboard.

## 2. CPU:

The CPU or simply processor is the component in a computer that interprets instructions and processes data

- Central Processing Unit (CPU)
- CPU = your brain
- This is the component that is responsible for making decisions (processing) in your computer.
- It makes calculations
- Tells other components (ie: RAM) what to do.

## 3. RAM:

The area of the computer's memory that can be read from and written to (changed). All RAM locations are equally accessible at any time in any order. The components of RAM are erased when the computer is turned off.

- Random Access Memory (RAM)
- RAM = nervous system?

- RAM temporarily stores information
- Electronic memory, so it is very fast.
- Allows for multiple applications to be open at once.
- Memory is lost when power is shut off.

#### 4. Hard drive:

The hard drive is the primary storage unit of the computer. It is where the operating system, applications, and files are kept. Hard drive space is typically measured in Gigabytes (GB); the larger the number, the more programs, etc. you can hold on your computer.

- Permanent storage device for your computer
- Hard drive = brain (the storage centre, not decision- making)
- Data is stored on a magnetic disk that spins (much like a CD) to access the information.
- Most hard drives spin at about 7200 rpm, so is relatively slow compared to RAM.

#### 5. Expansion Cards:

- **Audio** – card that allows you to use audio devices (earphones, speakers)

- **Video** – card that allows you to use video on a computer (now, usually, built into the motherboard). The better the video card, the better the graphics on your computer.
- **NIC** – Network Interface Card. This allows you to connect to a network. It allows you to communicate with other computers.

## 6. BIOS:

The Basic Input/output System is installed on the computer's motherboard. It controls the most basic operations and is responsible for starting your computer up and initializing the hardware.

- Checks hardware on startup
- Loads operating system