

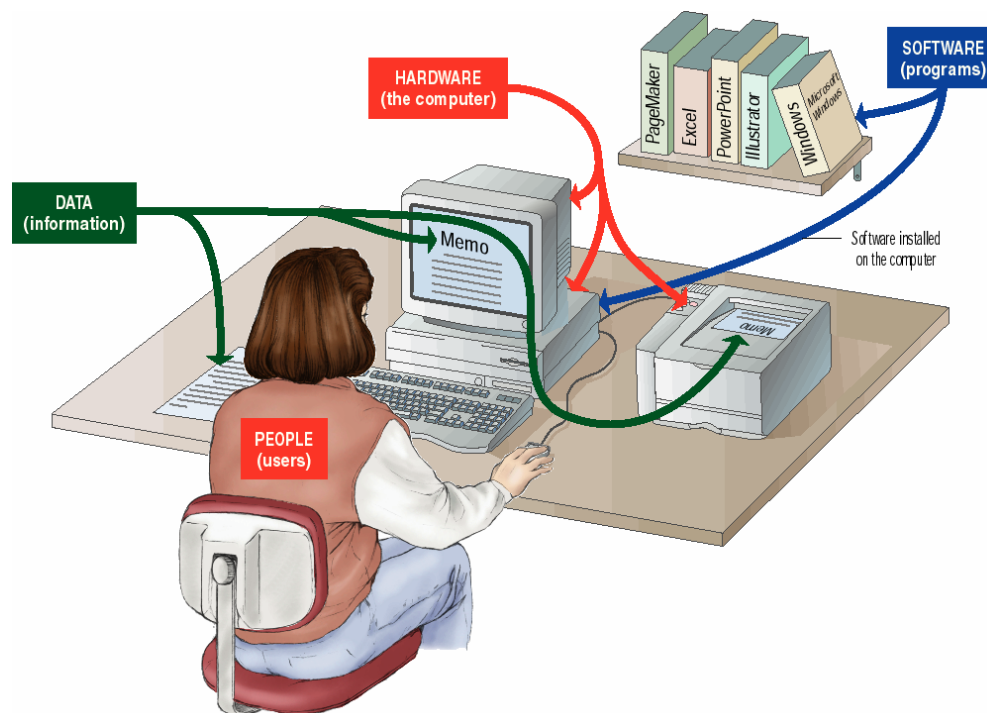
Introduction

Computer is derived from the Latin word 'Computare' which means 'calculate'. So according to this definition, computer is a machine which can perform calculations at very high speed.

- Basically, computer is defined as programmable machine which computes.
- Computer can be defined as a digital and automatic machine which takes input from the user, process it, stores it if necessary and gives output in the desired form.
- A computer is an electronic device used to process data, converting the data into information that is useful to the people.
- Computer is an electronic machine that can accept data: process it according to a set of predefined instructions and then gives the results.

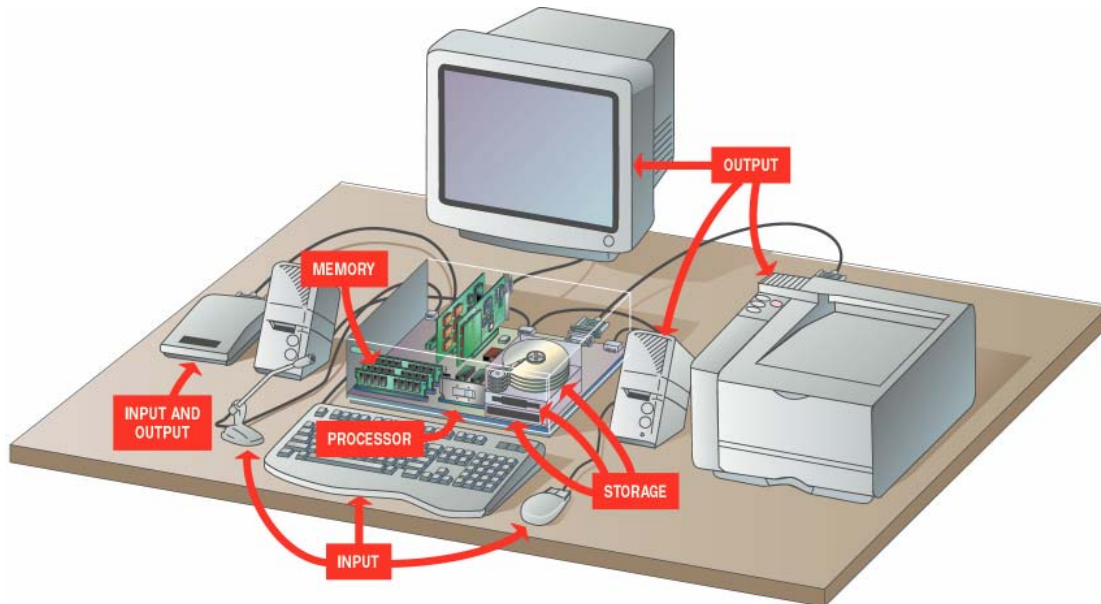
The main characteristics of a computer are:

- It responds to a specific set of instructions in a well-defined manner.
- It can execute a prerecorded list of instructions (called program).

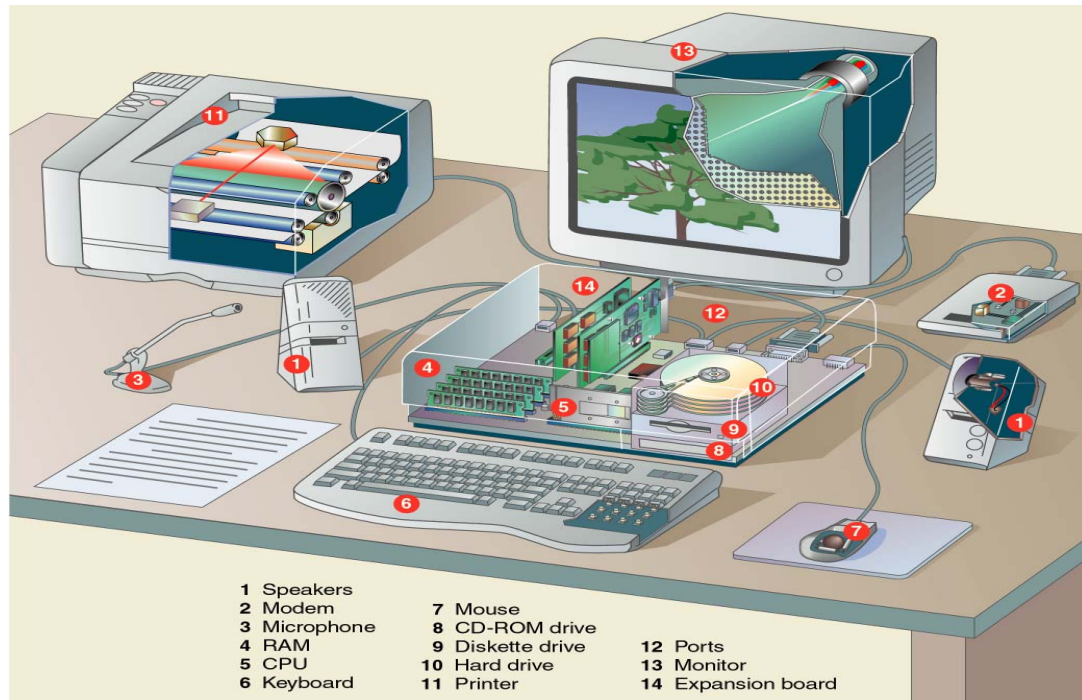


- Computer is a device, which is capable of doing almost all the works which can be programmed by the user.
- Computer can do jobs with 100% accuracy and in a very fast speed in comparison to any other devices or man.
- It is possible to show and do things, which are impossible for a man.
- Computer provides faster and cheaper communication with the use of internet.
- It can perform almost all the works but for that purpose man must provide program and hardware.

Computer System



- The computer system consists of the following five components
 - Processor
 - Memory
 - Input Device
 - Output Device
 - Storage
- The procedure that transforms raw data into useful information is called processing. To perform this transformation, the computer uses two components: the processor and memory
- **Processor** – is the brain of the computer. It organizes and carries out instructions that come from either the user or the software. Microprocessor (chips) which are made up of silicon chips. CPU refers to a computer's processor.
- **Memory** – is like an electronic scratch pad inside the computer. When you launch a program it is loaded into and run from memory. Data used by the program is also loaded into memory for fast access. Common types of memory are RAM(Random Access Memory) and ROM (Read Only Memory)
- Computer would be useless if they did not provide interaction with users.
- **Input devices** – are those devices that accept data and instruction from the user or from another computer system (such as a computer on the internet). Examples are keyboard, mouse, joysticks, touch pads, scanners, digital camera, microphones etc.
- **Output devices** – are those devices that return processed data, back to the user or to another computer system. Examples are monitor, printers, speakers etc.
- **Storage** – is used to hold data. Allows a computer to permanently store large amounts of data. Common mass storage devices are disk drives, CD- drives and tape drives.



Terms used in Computer system

- **Hardware** – The mechanical devices that make up the computer are called hardware. Hardware is any part of the computer that you can touch. Hardware consists of interconnected electronic devices that you can use to control the computer's operation, input and output.
- **Software** – is a set of electronic instructions consisting of complex codes (also known as programs) that make the computer perform tasks. In other word, software tells the computer what to do. Some programs exist primarily for the computer's use and help the computer perform and manage its own tasks. Other types of programs exist primarily for the user and enable the computer to perform tasks.
- **Human ware** – people who operates the computer is known as human ware or users.
- **Firmware** – is a program or information written in ROM permanently by the manufacturer during the manufacturing of computers.
- **Data** – consists of raw facts, which the computer stores and reads in the form of numbers. The computer manipulates data according to the instructions contained in the software and then forwards it for use by people or another computer. Data can consists of letters, numbers, sounds or images however the computer converts it to numbers within the computer, data is organized into files.
- **A computer file** is simply a set of data or program instructions that has been given a name. A file that the user can open and use is often called a documents.
- **Program** – programs are the collection of many commands or instructions together in sequence and in logical way. A program is written for some specific purpose.
- **Information (Solutions)** – it is the collection of data in systematic way, so that it carries specific meaning when presented.

Type Of Computers

Computers can be generally classified by size and power as follows, though there is considerable overlap:

- **Personal computer:** A small, single-user computer based on a microprocessor.
- **Workstation:** A powerful, single-user computer. A workstation is like a personal computer, but it has a more powerful microprocessor and, in general, a higher-quality monitor.
- **Minicomputer:** A multi-user computer capable of supporting up to hundreds of users simultaneously.
- **Mainframe:** A powerful multi-user computer capable of supporting many hundreds or thousands of users simultaneously.
- **Supercomputer:** An extremely fast computer that can perform hundreds of millions of instructions per second.

Characteristics of Computer (Features)

1. Speed, size and cost

- The speed of a computer is directly linked with the technology used to build it.
 - ENIAC → uses vacuum tubes
 - Speeds in milliseconds
 - 150 squares meters
 - Costs millions of dollars
 - Transistor
 - Speeds in microseconds
 - Size and Price are reduced
 - IC (Integrated Circuit)
 - Tens of millions of operations per seconds
 - Size 0.25 square cm
 - The cost was also reduced because of the enhancement in the technology
- With the development in the computer technology the speed is going on increasing, the size and cost are decreasing.

2. Accuracy and Reliability

- Computer can do a lot of work without any mistake and tiredness
- The output of the computer is only as reliable as the instructions (the program) used and the data supplied
- Almost all the computer errors are because of errors in programming or because of invalid data fed to the computer.

3. Vast Storage Capacity

- A computer system can store and retrieve massive amounts of data.
- Computer's storage can be divided as primary storage and secondary storage.

4. Automatic

- Computer is an automatic machine.
- Everything that is given to computer are processed and done by computer automatically to the instruction provided.

5. Diligent

- The ability of computer to perform a work repeatedly again and again without getting tired and bored is called diligence.

6. Versatile

- A computer can perform more than one work having different characteristics.

7. Electronic

- Computer totally depends on electricity. All its parts especially memory, processor are electrical devices and most of the computer parts are made up of electronic circuits therefore, computer is a electronic device.

8. Non – Intelligent

- Computer can't do simple of the simple work, if it is not given input in terms of data, instruction or program by the user.

9. Word Length

- A digital computer operates on binary digits – 0 and 1. It can understand information only in binary digits (bits). The number of bits that a computer can process at a time in parallel is called word length. Commonly used word lengths are 8, 16, 32 or 64 bits. Word length is the measure of the computing power of a computer.

Computer Uses:

- Computer are used almost in every field that you can think
- Computer or IT is finding wide applications in industries, hospitals, research labs, offices, domestic gadgets and for personal use.
- Today, computer – based information and control system are performing a variety of important functions in several areas. Such as Business, customer services, education, research, entertainment, government, home, medical, industries, engineering, office automation system, transportation system, etc.

Limitations of computer

The computer can outperform human beings in speed, memory and accuracy but still the computer has limitations. There are following limitations of a computer.

Programmed by human:

Though computer is programmed to work efficiently, fast and accurately but it is programmed by human beings to do so. Without a program, computer is nothing. A program is a set of instructions. Computer only follows these instructions. If the instructions are not accurate the working of computer will not accurate.

Thinking:

The computer can not think itself. The concept of artificial intelligence shows that the computer can think. But still this concept is dependent on set of instructions provided by the human beings.

Self Care:

A Computer can not care itself like a human. A computer is dependent still to human beings for this purpose.

Retrieval of memory:

A computer can retrieve data very fast but this technique is linear. A human being's mind does not follow this rule. A human mind can think randomly which a computer machine can not.

Feelings:

One of the main limits in the computer is of feeling. A computer can not feel about some like a human. A computer can not meet human in respect of relations.

Human can feel, think and caring but a computer machine itself can not.