Computer

What is a computer ?

The word computer comes from the word **" compute"** ; the word computer means to **" calculate"** or to **"count"** .

Computer is an electronic device that manipulates information or "data" it has the ability **to store** , **retrieve** , and **process data.**

Computer is an advanced electronic device that takes input raw data from the user and processes these data under the control of set of instructions (set of instruction called program) and gives the desired result as output and may saves output for the future use and print the result in desired format.

A computer has four functions:

1. Accepts data (Input)
2. Processes data (Processing)
3. Produces rsult (Output)
4. stores results (Storage)

A computer System:

All of the components of a computer system can be summarized as-
COMPUTER SYSTEM = HARDWARE + SOFTWARE+ USER

 • Hardware = Internal Devices + Peripheral Devices (All physical parts of the computer.)
 • Software = Programs (Software gives "intelligence" to the computer.)
 • User = Person (who operates computer.)

Block diagram of computer
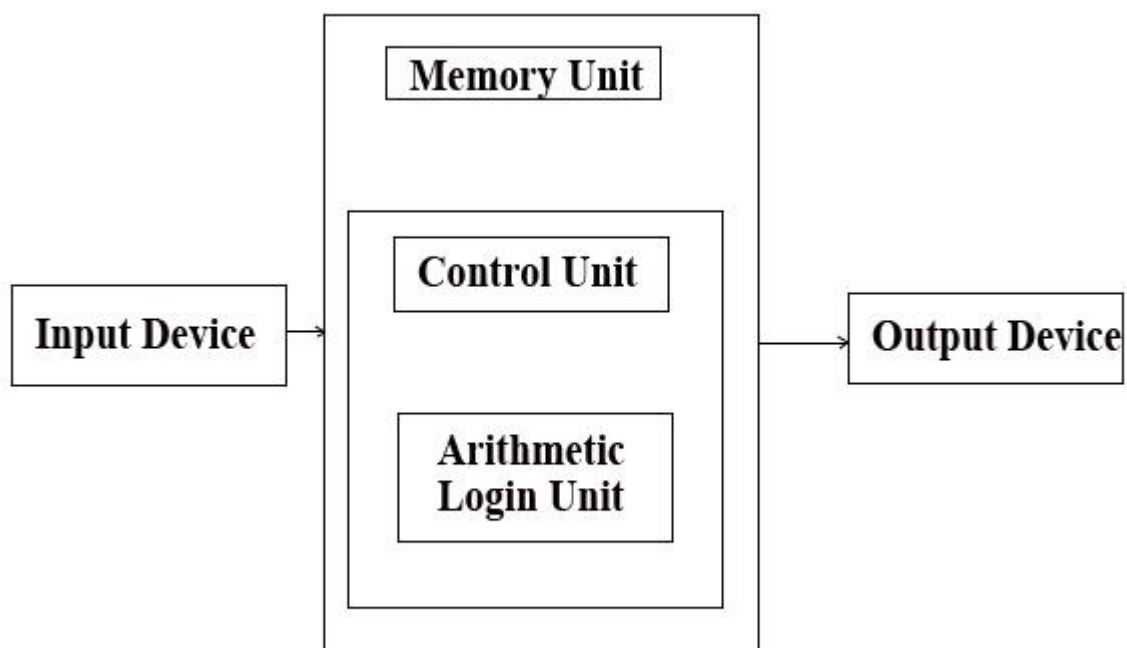
1- **Data**: are raw facts or elementary descriptions of things, events, activities, and transactions that are captured, recorded, stored, and classified but not organized to convey any specific meaning.

Examples of data would include grade point averages, bank balances, or the number of hours employees worked in a pay period.

2- **Information**: is collection of facts (data) organized in some manner so that they are meaningful to a recipient, for example, if we include student name with grade point averages, customer names with bank balances, and employees' wages with hours worked, we would have useful information.

3- **Knowledge**: consists of information that has been organized and processed to convey understanding experiences, accumulated learning, and expertise as it applies to a current business problem or process.

A computer goes through four operations when it process data into information. 1- Input, 2- processing, 3- output and 4- storage.

4- **Wisdom** : evaluated understanding .

1- Input operation: data is entered or otherwise captured electronically and is converted to a form that can be processed by the computer. The means for capturing data (raw, unsorted facts) is input hardware, such as keyboard.

2- Processing operation: the data is manipulated to process or transform it into information for example numbers may be added or subtracted.

3- Output operation: the information which has been processed from the data is produced in form usable by people. Examples of output are printed text, sound, and charts and graphs displayed on computer screen.

4- Secondary storage operation: the information and programs are stored in computer -process able form.

To be useful to managers and the organization, information should exhibit a variety of characters; it should be accurate, complete, flexible, reliable,

Information that is not of high quality can led to poor decision ,costing the organization a great deal of money.

1- <u>Advantages of computer</u>

Computer is a versatile device. It can be designed to do any kind of activity provided all data and instructions are made available to it in digital form. The important advantage of computer are:

1. High Speed
2. Accuracy

3. Storage Capability
4. Diligence
5. Versatile
6. Reliable
7. Automatic

› High Speed

Modern computers have incredible speed of processing. It takes only few seconds for calculations that we take hours to complete. Computers makes it possible to receive, supply and process large volumes of data at very high speed.

Computer speed is measured in units of millisecond (one thousandth of a second), microsecond (one millionth of a second), nanosecond (one billionth of a second) , and picoseconds (one trillionth of a second).

› Accuracy

Computer can ensure consistently very high degree of accuracy in computations. It processes data according to the sequence of instructions. Hence, if input data and procedures are correct, the output will be consistently accurate.

› Storage Capability

The Computer has an in-built memory where it can store a large amount of data. You can also store data in secondary storage devices such as floppies, which can be kept outside your computer and can be carried to other computers.

› Diligence

A computer is free from tiredness, lack of concentration, fatigue, etc. It can work for hours without creating any error. If millions of calculations are to be performed, a computer will perform every calculation with the same accuracy. Due to this capability it overpowers human being in routine type of work.

› Versatile

It means the capacity to perform completely different type of work. You may use your computer to prepare payroll slips. Next moment you may use it for inventory management or to prepare electric bills.

› Reliable

A computer is a reliable machine. Every Modern electronic computer's components have long lives. Now Computers are designed to make maintenance easy.

› **Automatic**

Computer is an automatic machine. It can ability to perform the given task automatically. Once a program is given to computer i.e. stored in computer memory, the program and instruction can control the program execution without human interaction.

2- Application of computer

The various applications of computers in today's arena :
1. Business
2. Education
3. Marketing
4. Banking
5. Insurance
6. Communication
7. Health Care
8. Military
9. Engineering Design

Computer Types

    1- Purpose of use
    2- By size
    3- The type of data entered
    4- Based on the operating system

1- Types of Computer- On the basic of purpose of use

On the basis of purpose of use the computer can be classified into:

1. Special Purpose Computer
2. General Purpose Computer

» Special Purpose Computer

Special purpose computer is tailor-made solely to cater to the requirements of a particular task or application, for example, weather forecasting. It incorporates the instructions needed into the design of internal storage so that it can perform the given task on a simple command. It, therefore, does not possess unnecessary options, and costs less.

» General Purpose Computer

The general-purpose computer is designed to meet the needs of many different applications. The instructions needed to perform a particular task are not wired permanently into the internal memory. When one job is over, instructions for another job can be loaded into the internal memory for processing. Thus, a general-purpose machine can be used to prepare paybills, manage inventories, print sales reports, do scientific calculations and so on.

2- Types of Computer- On the basic of size

On the basis of size the computer can be classified into:

1. Micro Computer
2. Mini Computer
3. Mainframe Computer
4. Super computer
5. Workstations

» Micro Computer

Microcomputer is at the lowest end of the computer range in terms of speed and storage capacity. Its CPU is a microprocessor. The first microcomputers were built of 8-bit microprocessor chips. The most common application of personal computers (PC) is in this category. The PC supports a number of input and output devices.

Microcomputers include (a) portable computers and (b) desktop computers (c) .

 (a) Portable Computer

Portable computer is a very small, easy to use microcomputer. The users can carry it wherever they go. This group includes personal digital

assistant, **pen-based computer, hand-held computer, notebook computer and laptop computer.**

 (b) Personal Computer or Desktop Computer Personal computer is a microprocessor based, single user computer. The peripherals for personal computer include a keyboard and a mouse as input devices, monitor to display information and a hard disk for storage.
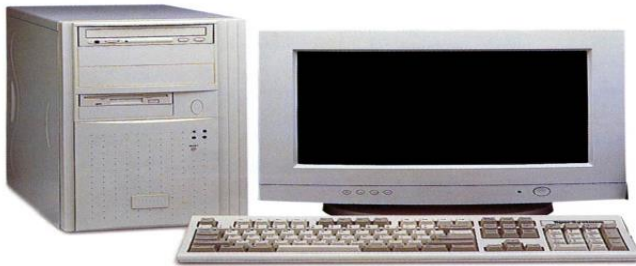
» Mini Computer

the Minicomputer has become less popular since the PC (personal Computer) has become more powerful on its own. In fact, your own PC is much more powerful than an old minicomputer.

Mainframe Computer

The main from computer is the heart of a network of computers which allows hundreds of people to work on the same data at the same time.

» Super computer

A supercomputer is at the top of the heap in power and expense. These are used for jobs that take very big amounts of calculating, like weather forecasting, engineering design and testing,

serious decryption economic forecasting etc..

» Workstations

Workstation is a powerful computer which in terms of power is between personal computer and minicomputer. It has high resolution graphics monitor, large RAM and secondary storage. Although it is a standalone system, usually it forms part of a network and it uses Unix or Windows NT as operating system. Workstations are used for specialised applications such as desktop publishing, software development and engineering designs.

3- Type of Based on Quality of input Data
1- Analog Computer :

Addresses the data that are constantly changing and which do not have a fixed value such as temperature and pressure in other words, the physical read data, where data is represented effort electric variable inside the computer analog and is used for automatic control of factories it is used to design model airplanes, rockets and spacecraft.

2- **Digital computer:** Using the computers digital data intermittent or quantities that can be represented by numerical values such as data used in the business, scientific, and others this type common use in the present era, where it fits all commercial and scientific applications and engineering.

3- **Hybrid Computer**: combines both the properties of digital and analog computer.

4- **Computer classification based on the Operating System**

Operating system known as the most important basic software needed by the computer in order to it works, sometimes called the system software, a set of basic software manage the computer and control all acts and functions performed by computer,