

Computer Fundamentals

Chapter -1

About Computer:

The word "Computer" comes from the Latin word "**compute**" which means to calculate. Most of the people usually think it is an arithmetic calculating device but now a days many of the works done by computers which are non-arithmetic.

COMPUTER stands for Common Operating Machine Purposely Used for Technological and Educational Research.

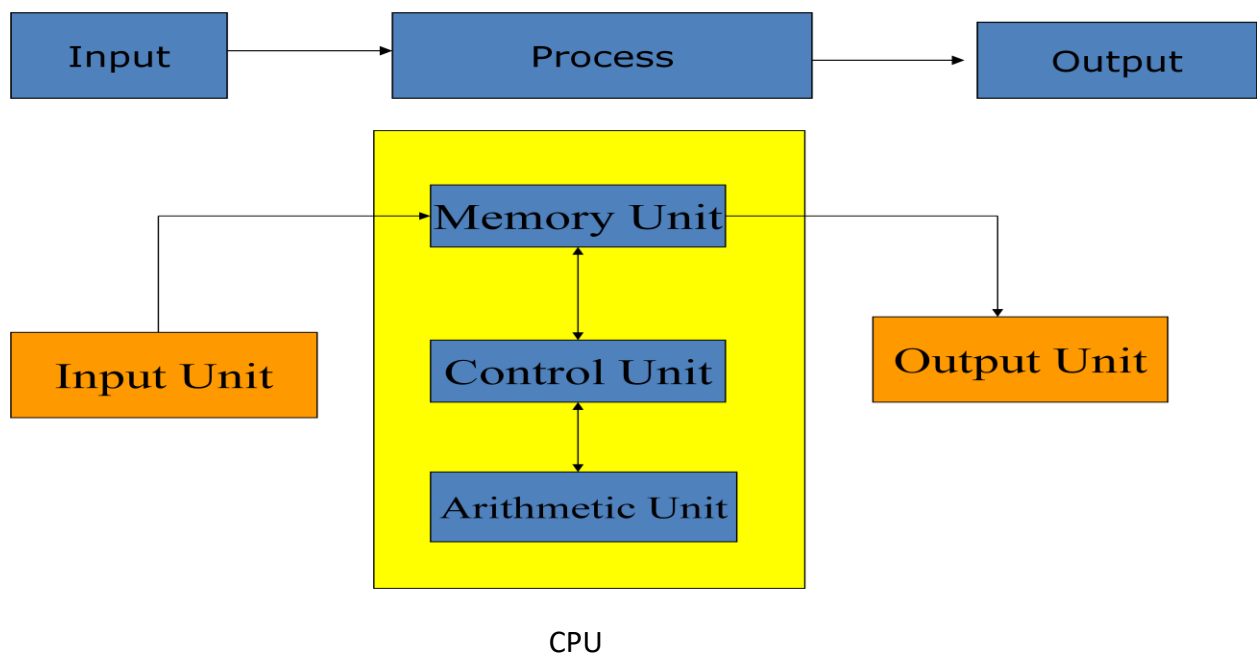
Charles Babbage is the father of modern digital computer.

Definition of a Computer:

- A **computer** is an electronic device that operates under the control of a set of instructions that is stored in its memory unit.
- A computer is a collection of hardware and software components that help you complete many different tasks.
- A computer can be more accurately defined as an electronic device that takes data as input, stores and processes it and displays the output according to the given instructions.

Data processing Concept

I-P-O Cycle



- The cycle of activities performed by a computer is referred to as the *Input-Process-Output* cycle or the I-P-O cycle
- A computer consists of several components.
- Each component participates in either one of the input, process, or Output phases

Data – A computer usually accepts input in the form of data. Data is the raw material for information. Data refers to numerical (1,2,3,4,5,6,7,8,9,0), alphabetical (A,B,C,DZ) and special characters (e.g., @,#,\$,%^,&!). A set of numbers could be examples of data. OR

Data is a word of Latin used to describe a collection of natural phenomena like numbers, characters, images or symbols, in a very broad sense.

Information – Information is the finished product (manipulation of raw facts). Information refers to data in particular context, which helps us understand facts. Example- +91(011) 2555-1212 is a telephone no. of a directory. It includes country code 91, an area code 011, a telephone exchange 2555 and a number within the exchange 1212.

A computer is a digital system that store and processes data in the form of binary digits i.e. 0s & 1s. Computer use both **decimal** & **binary** systems. Decimal system uses 10 as a base to represent different values, representing digits (0-9). In binary system uses 2 as a base to represent different values, representing digits (0 and 1) . 0 and 1 known as bits. A **bit** is a smallest unit of information that is use in computer system.

Characteristics of computer

Computers of all sizes have common characteristics:-

- Speed
- Reliability
- Multitasking
- Diligence
- Accuracy
- Memory capacity

Speed

- It works in very high speeds and can much faster than human.
- It equivalent to one million mathematicians working 24 hours in a day.

Reliability

- Computers are extremely reliable as well. Most errors are caused by humans, not computers.
- Computers are capable of storing enormous amounts of data that must be located and retrieved very quickly.

Multitasking

- Modern computers can perform multiple task at once. i.e. they can perform a set of works simultaneously .
- Example – at a same time it can play a game & printing your document.

Diligence

- Unlike human, computer simply does not get bored or tired.
- Repetitive work does not affect computer.

Accuracy

- Computers rarely make mistakes.
- Most computer errors are caused by human faults

Storage capacity

- It stores huge amount of data / information

Limitations of Computer

- ◆ Computer cannot take over all activities simply because they are less flexible than humans.
- ◆ It does not hold intelligence of its own. Its IQ level is zero, till date.
- ◆ They have to be told what to do. It has to be instructed on what it must do and in what sequence.
- ◆ A Computer cannot take decisions on its own.
- ◆ Human beings can make certain judgments in our day to day life based on our feelings, taste, knowledge and experience. It also lack of emotions, so it will not make certain judgments like human.
- ◆ They cannot perform anything outside the defined scope.
- ◆ If any unexpected situation arise, computer will either produce erroneous result or discard the task altogether.

EXERCISES

Long Question :

1. What is a Computer? List & explain some important characteristics of a computer.
2. Draw a block diagram to illustrate the basic organization of a computer system and explain the function of the various units.
3. What is a Computer? Briefly explain the functionality wise classification of computer.
4. What do the terms “data”, “information” and “data processing” mean?

Short Question:

- a) CPU stands for?
- b) _____ Computer process millions of instructions per second.
- c) The brain of a computer system is _____. (Ans. CPU)
- d) _____ Computer process trillions of instructions per second.
- e) Computer divided in to how many units?
- f) Central Processing Unit divided in to how many units?
- g) Who is the father of modern digital Computer?
- h) Single user can interact with Micro Computer at a time. (True / False)
- i) Multiple users can interact with Mini Computer at a time. (True / False)
- j) _____ is a smallest unit of information that is use in computer system.