

INTRODUCTION TO COMPUTERS

Definition of a Computer:

A computer is an electronic device that accepts data as input, and transforms it under the influence of a set of special instructions called Programs, to produce the desired output (referred to as Information).

A computer automatically accepts data & instructions as input from an Input device, stores them temporarily in its memory, then processes that data according to the instructions given, and finally transfers the processed data (Information) to an Output device.

A computer is described as an electronic device because; it is made up of electronic components and uses electric energy (such as electricity) to operate.

A computer has an internal memory, which stores data & instructions temporarily awaiting processing, and even holds the intermediate result (information) before it is communicated to the recipients through the Output devices.

It works on the data using the instructions issued, means that, the computer cannot do any useful job on its own. It can only work as per the set of instructions issued.

A computer will accept data in one form and produce it in another form. The data is normally held within the computer as it is being processed.

Definition of terms

Program:

A computer Program is a set of related instructions written in the language of the computer & is used to make the computer perform a specific task (or, to direct the computer on what to do).

Data:

Data is a collection of raw facts, figures or instructions that do not have much meaning to the user.

Data may be in form of numbers, alphabets/letters or symbols, and can be processed to produce information.

Processing

This is the art of manipulating data into information

Information:

Information is the data which has been refined, summarized & manipulated in the way you want it, or into a more meaningful form for decision-making.

The information must be accurate, timely, complete and relevant.

Comparison between Data and Information

Data	Information
<ol style="list-style-type: none"> 1. Unprocessed (raw) facts or figures. 2. Not arranged. 3. Does not have much meaning to the user. 4. Cannot be used for decision-making. 	<ol style="list-style-type: none"> 1. It is the end-product of data processing (processed data) 2. Arranged into a meaningful format. 3. More meaningful to the user. 4. Can be used to make decisions.

Characteristics / Features of a Computer.

Before 20th century, most information was processed manually or by use of simple machines. Today, millions of people are using computers in offices and at home to produce and store all types of information

The following are some of the attributes that make computers widely accepted & used in the day-to-day activities in our society:

Speed.

Computers operate at very high speeds, and can perform very many functions within a very short time.

They can perform a much complicated task much faster than a human being.

Accuracy:

Unlike human beings, computers are very accurate, i.e., they never make mistakes.

A computer can work for very long periods without going wrong. However, when an error occurs the computer has a number of in-built, self-checking features in their electronic components that can detect & correct such errors.

Usually errors are committed by the users entering the data to the computer, thus the saying **Garbage in Garbage out (GIGO)**.

This means that, if you enter incorrect data into the computer and have it processed, the computer will give you misleading information.

Reliability

The computer can be relied upon to produce the correct answer if it is given the correct instructions & supplied with the correct data.

Therefore, if you want to add two numbers, but by mistake, give the computer a “Multiply” instruction, the computer will not know that you intended to “ADD”; it will multiply the numbers supplied.

Similarly, if you give it the ADD instruction, but make a mistake and enter an incorrect data; let say, 14 & 83 instead of 14 & 38; then the computer will produce the “wrong” answer 97 instead of 52. However, note that, 97 is ‘correct’ based on the data supplied.

Consistency:

Computers are usually consistent. This means that, given the same data & the same instructions, they will produce the same answer every time that particular process is repeated.

Storage:

A computer is capable of storing large amounts of data or instructions in a very small space.

A computer can store data & instructions for later use, and it can produce/ retrieve this data when required so that the user can make use of it.

Data stored in a computer can be protected from unauthorized individuals through the use of passwords.

Diligence:

Unlike human beings, a computer can work continuously without getting tired or bored. Even if it has to do a million calculations, it will do the last one with the same speed and accuracy as the first one.

Automation:

A computer is an automatic device. This is because, once given the instructions, it is guided by these instructions and can carry on its job automatically until it is complete.

It can also perform a variety of jobs as long as there is a well-defined procedure.

Versatile:

A computer can be used in different places to perform a large number of different jobs depending on the instructions fed to it.

Review Questions.

1. What is a Computer?
2. Why is a computer referred to as an electronic device?
3. Define the following terms as used in computer science.
 - a). Data.
 - b). Programs.
 - c). Data processing.
 - d). Information.
4. (a) Briefly explain the two forms of data.
(b) Give THREE differences between Data and Information.
5. The speed of a computer is measured in _____.
6. What does the term GIGO stands for?
7. List and explain 4 salient features/ properties of a computer.
8. List FIVE advantages of a computerized system over a manual system.