**Data communication** refers to the exchange of data between a source and a receiver via form of transmission media such as a wire cable. Data communication is said to be local if communicating devices are in the same building or a similarly restricted geographical area.

The meanings of source and receiver are very simple. The device that transmits the data is known as source and the device that receives the transmitted data is known as receiver. Data communication aims at the transfer of data and maintenance of the data during the process but not the actual generation of the information at the source and receiver.

Datum mean the facts information statistics or the like derived by calculation or experimentation. The facts and information so gathered are processed in accordance with defined systems of procedure. Data can exist in a variety of forms such as numbers, text, bits and bytes. The Figure is an illustration of a simple data communication system.

Simple Data Communication System
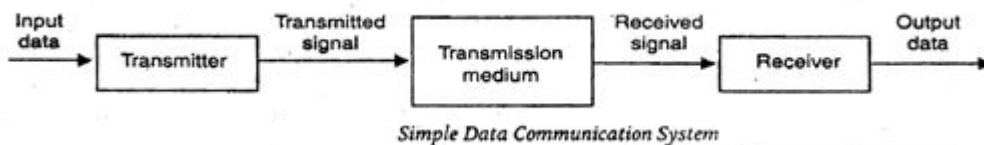
The term data used to describe information, under whatever form of words you will be using.

A data communication system may collect data from remote locations through data transmission circuits, and then outputs processed results to remote locations. Figure provides a broader view of data communication networks. The different data communication techniques which are presently in widespread use evolved gradually either to improve the data communication techniques already existing or to replace the same with better options and features. Then, there are data communication jargons to contend with such as baud rate, modems, routers, LAN, WAN, TCP/IP, ISDN, during the selection of communication systems. Hence, it becomes necessary to review and understand these terms and gradual development of data communication methods.

A Data Communication System using Remote Locations
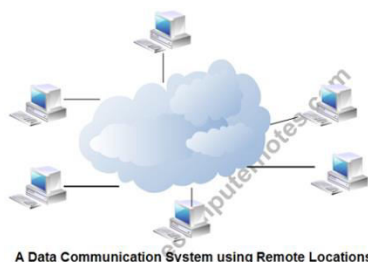
Components of data communication system

A Communication system has following components:

1. **Message**: It is the information or data to be communicated. It can consist of text, numbers, pictures, sound or video or any combination of these.

2. **Sender**: It is the device/computer that generates and sends that message.

3. **Receiver**: It is the device or computer that receives the message. The location of receiver computer is generally different from the sender computer. The distance between sender and receiver depends upon the types of network used in between.

4. **Medium**: It is the channel or physical path through which the message is carried from sender to the receiver. The medium can be wired like twisted pair wire, coaxial cable, fiber-optic cable or wireless like laser, radio waves, and microwaves.

5. **Protocol**: It is a set of rules that govern the communication between the devices. Both sender and receiver follow same protocols to communicate with each other.

A protocol performs the following functions:

1. **Data sequencing**. It refers to breaking a long message into smaller packets of fixed size. Data sequencing rules define the method of numbering packets to detect loss or duplication of packets, and to correctly identify packets, which belong to same message.

2. **Data routing**. Data routing defines the most efficient path between the source and destination.

3. **Data formatting**. Data formatting rules define which group of bits or characters within packet constitute data, control, addressing, or other information.

4. **Flow control**. A communication protocol also prevents a fast sender from overwhelming a slow receiver. It ensures resource sharing and protection against traffic congestion by regulating the flow of data on communication lines.

5. **Error control**. These rules are designed to detect errors in messages and to ensure transmission of correct messages. The most common method is to retransmit erroneous message block. In such a case, a block having error is discarded by the receiver and is retransmitted by the sender.

6. **Precedence and order of transmission**. These rules ensure that all the nodes get a chance to use the communication lines and other resources of the network based on the priorities assigned to them.

7. **Connection establishment and termination**. These rules define how connections are established, maintained and terminated when two nodes of a network want to communicate with each other.
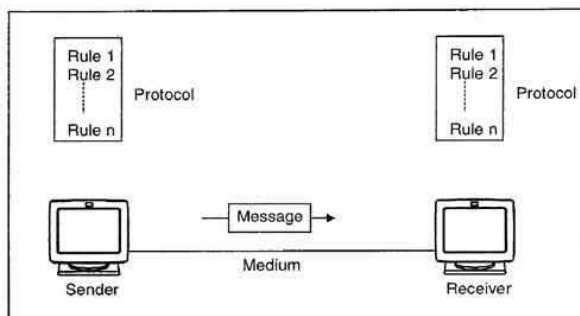
8. **Data security**. Providing data security and privacy is also built into most communication software packages. It prevents access of data by unauthorized users.

9. Log information. Several communication software are designed to develop log information, which consists of all jobs and data communications tasks that have taken place. Such information may be used for charging the users of the network based on their usage of the network resources.

The effectiveness depends on four fundamental characteristics of data communications

1. Delivery: The data must be deliver in correct order with correct destination.
2. Accuracy: The data must be deliver accurately.
3. Timeliness: The data must be deliver in a timely manner.late delivered Data useless.
4. Jitter: It is the uneven delay in the packet arrival time that cause uneven quality.