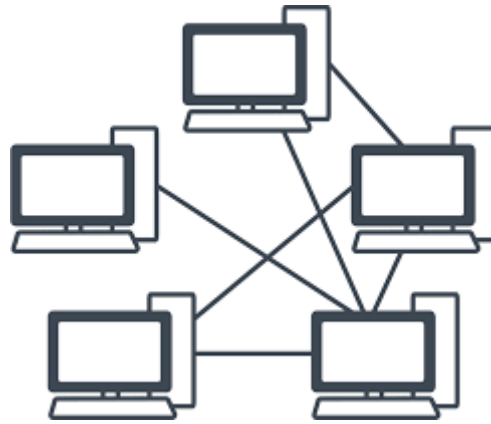A computer network is a set of interconnected devices that communicate and share resources seamlessly.

The primary purpose of a network is to enable communication and resource-sharing among its interconnected components. **The aim of the computer network is the sharing of resources among various devices.**

Components of Data Communication

A communication system is made up of the following components:

1. **Message:** A message is a piece of information that is to be transmitted from one person to another. It could be a text file, an audio file, a video file, etc.
2. **Sender:** It is simply a device that sends data messages. It can be a computer, mobile, telephone, laptop, video camera, or workstation, etc.
3. **Receiver:** It is a device that receives messages. It can be a computer, telephone mobile, workstation, etc.
4. **Transmission Medium / Communication Channels:** Communication channels are the medium that connect two or more workstations. Workstations can be connected by either wired media or wireless media.
5. **Set of rules (Protocol):** When someone sends the data (The sender), it should be understandable to the receiver also otherwise it is meaningless. For example, Sonali sends a message to Chetan. If Sonali writes in Hindi and Chetan cannot understand Hindi, it is a meaningless conversation.
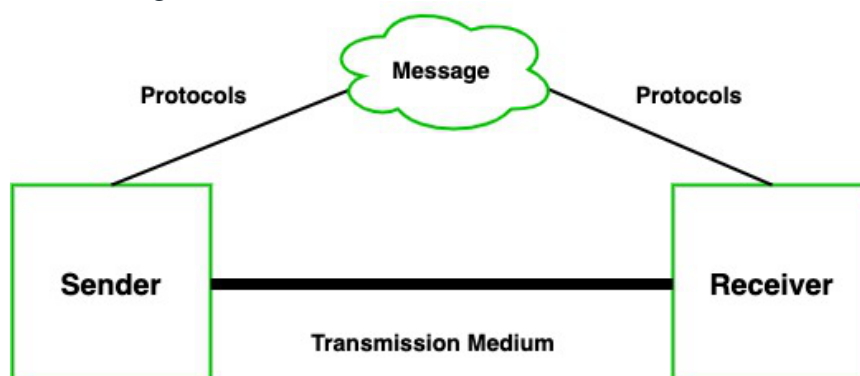
Therefore, there are some set of rules (protocols) that is followed by every computer connected to the internet and they are:

TCP(Transmission Control Protocol): It is responsible for dividing messages into packets on the source computer and reassembling the received packet at the destination or recipient computer.

IP(Internet Protocol): computer determine which packet belongs to which device

Type of data communication

The data communication is divided into three types:

1. **Simplex Communication:** It is one-way communication or we can say that unidirectional communication in which one device only receives and another device only sends data and devices uses their entire capacity in transmission. For example, IoT, entering data using a keyboard, listing music using a speaker, etc.

A   Direction of Data   B

Sender   Receiver

2. **Half Duplex communication:** It is a two-way communication or we can say that it is a bidirectional communication in which both the devices can send and receive data but not at the same time. When one device is sending data then another device is only receiving and vice-versa. For example, walkie-talkie.
3. **Full-duplex communication:** It is a two-way communication or we can say that it is a bidirectional communication in which both the devices can send and receive data at the same time. For example, mobile phones, landlines, etc.

send   receive

(a) simplex

send   receive

receive   send

(b) full-duplex

send   receive

receive   send

(c) half-duplex