# NIELIT GORAKHPUR

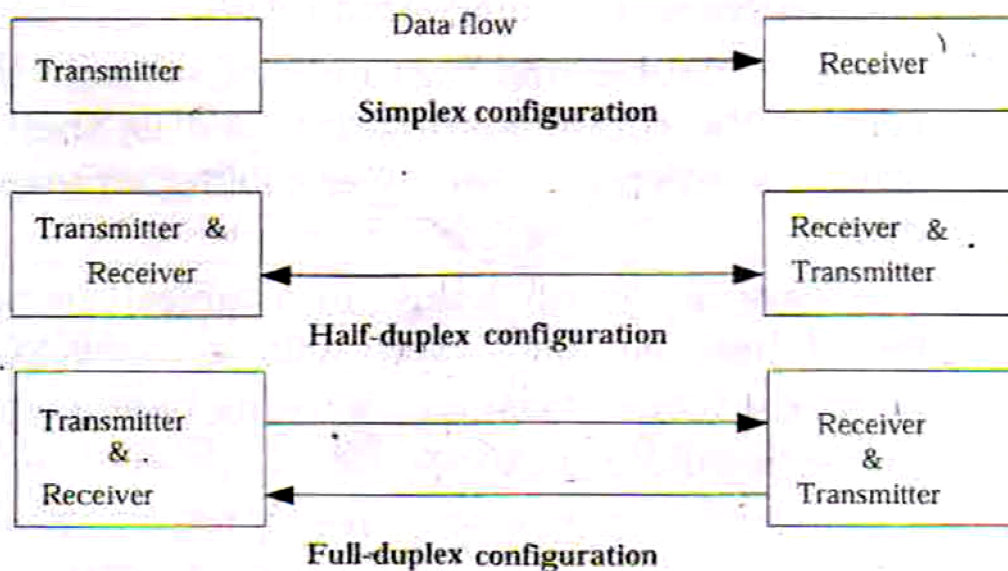## Computer Network

# Transmission Modes

There are three modes of data transmission that correspond to the three types of circuits available. These modes are:

(a)     Simplex
(b)     Half-duplex
(c)     Full-duplex



**Different modes of data transmission**

- **Simplex**

    Simplex communications imply a simple method of communication. In simplex communications mode, there is a one-way communication transmission. Television transmission is a good example of simplex communication. The main transmitter sends out a signal (broadcast), but it does not expect a reply as the receiving units cannot issue a reply back to the transmitter. Examples include a data collection terminal on a factory floor (send only) or a line printer (receive only). Another example of simplex communication is a keyboard attached to a computer because the keyboard can only send data to the computer.

    At first thought, it might appear adequate for many types of application in which flow of information is unidirectional. However, in almost all data processing applications, communication in both directions is required. Even for a 'one-way' flow of ' information from a terminal to a computer, the system will be designed to allow the computer to signal the terminal that data has been received. Without this capability, the remote user might enter data and never know that it was not received by the other terminal.

    Simplex circuits are seldom used because a return path is generally needed to send acknowledgement, control or error signals.

- **Half-duplex**

    In half-duplex mode, both units communicate over the same medium, but only one unit can send at a time. While one is in the send mode, the other unit is in the receive mode. It is like two polite people talking to each other one talks, the other listens, but both of them could not talk at the same time. Thus, a half-duplex line can alternately send and receive data. It requires two wires. This is the most common type of transmission for voice communication because only one person is supposed to speak at a time. It is also used to connect a terminal with a computer. The terminal might transmit data and then the computer responds with an acknowledgement. The transmission of data to and from a hard disk is also done in half-duplex mode.

- **Full-duplex**

    In a half-duplex system, the line must be turned around each time the direction is reversed. This involves a special switching circuit and requires a small amount of time (approximately 150 milliseconds, with high-speed capabilities of the computer, this turn-around time is unacceptable in many instances. Also, some applications require simultaneous transmission in both directions. In such cases, a full-duplex system is used that allows information to flow simultaneously in both directions on the transmission path. Use of a full-duplex line improves efficiency as the line turnaround time required in a half-duplex arrangement is eliminated. It also requires four wires for full-duplex systems.

## Exercise:
**1: Write short notes on –**
    (a)      **Simplex**
    (b)      **Half-duplex**
    (c)      **Full-duplex**
**2: Compare Simplex and Full-duplex?**