C.C.S. University, Meerut.
Bachelors of Computer Application
Semester - wise

Course Code	Course Name
BCA-503	Computer Network

UNIT-I

Basic Concepts: Components of data communication, distributed processing, standards and organizations. Line configuration, topology, Transmission mode, and categories of networks. **OSI and TCP/IP Models:** Layers and their functions, comparison of models.

Digital Transmission: Interfaces and Modems: DTE-DCE Interface, Modems, Cable modems.

UNIT-II

Transmission Media: Guided and unguided, Attenuation, distortion, noise, throughput, propagation speed and time, wavelength, Shannon capacity, comparison of media

UNIT-III

Telephony: Multiplexing, error detection and correction: Many to one, One to many, WDM, TDM, FDM, Circuit switching, packet switching and message switching.

Data link control protocols: Line discipline, flow control, error control, synchronous and asynchronous protocols, character and bit oriented protocols, Link access procedures.

Point to point controls: Transmission states, PPP layers, LCP, Authentication, NCP. **ISDN:** Services, Historical outline, subscriber's access, ISDN Layers and broadcast ISDN. **UNIT-IV**

Devices: Repeaters, bridges, gateways, routers, The Network Layer; Design issues, Routing algorithms, Congestion control Algorithms, Quality of service, Internetworking, Network-Layer in the internet.

UNIT-V

Transport and upper layers in OSI Model: Transport layer functions, connection management, functions of session layers, presentation layer and application layer.

UNIT-Ist MCA Deptt.
LALIT CHAUDHARY

Network:- A network is a set of devices (nodes/client) connected by media link. A node can be computer, printer or any other devices which is capable of sending and/OR receiving data, which is generated by other nodes.

Computer Network: The term "Computer network" to mean an interconnected collection of autonomous Computer. Two computers are said to be interconnected if they interchange information. (exchange information) The connection between the separate computers can be done via a copper wire, fiber optics and communication satellite.

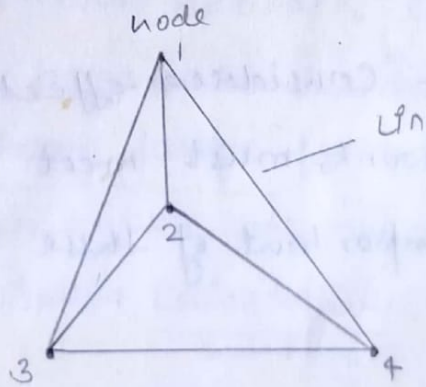


fig: A Simple Communication Network

Key terms:

* The inter connection of one station to many stations is called as networking.

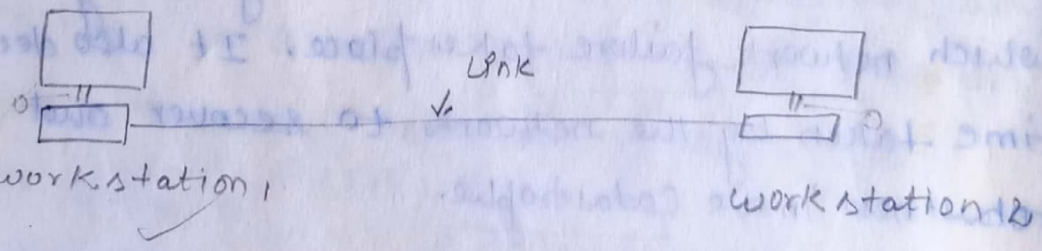
Types of Connection :- A Network is two or more devices connected to each other through Connecting links. A link is a communications pathway that transfers data from one device to another. There are two possible type of Connections:

(1) Point to point Connection

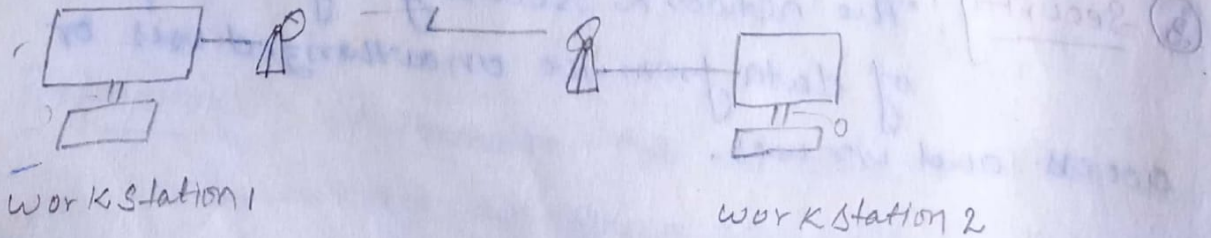
(2) Multipoint Connection

(1) Point to Point Connection: (A point to point connection provides a dedicated link between two devices. Entire capacity of the link is reserved for transmission between these two devices only.) It is possible to connect the two devices by means of a pair of wires or using a microwave or satellite link.

(For example: when you change television channels by infrared remote control. you are establishing a point-to-point connection between the remote control and the television's control system.)



(a) Wire link (wired connection)



(b) Satellite link (wireless connection)

fig: Point to Point Connection

(2) Multipoint Connection: A multipoint connection is also called as a multidrop connection. In such a connection more than two devices share a single link.

In a multipoint environment, the capacity of the channel is shared, either spatially (In a spacious manner) or temporally.)

If several devices can use the link, simultaneously, it is a spatially shared connection.

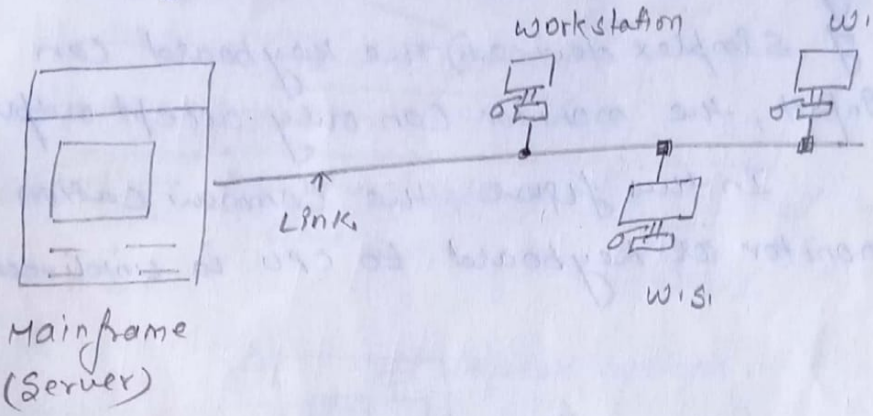


fig: Multipoint connection

Transmission Mode (Direction of data flow): The term transmission mode is used to define the direction of signal flow between two linked devices. There are three types of transmission mode:

1. Simplex
2. Half duplex
3. full duplex

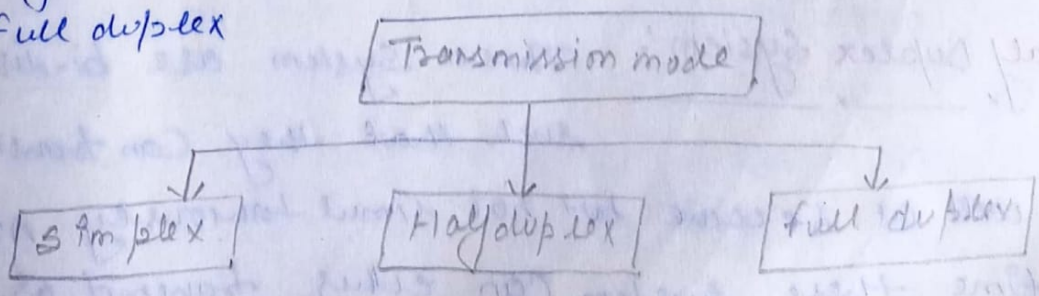


fig Transmission mode

(1) Simplex: (In these System the information is communica in only one direction. For example: the radio and T.V. broadcasting system can only transmit. They cannot receive.)

(In simplex mode, the communication is unidirectional, as on a one way street. only one of the two stations on a link can transmit, the other can only receive.) keyboard and traditional monitors are both examples of simplex devices.) The keyboard can only introduce input, the monitor can only accept output.

In this figure, the communication from CPU to monitor or keyboard to CPU is unidirectional.

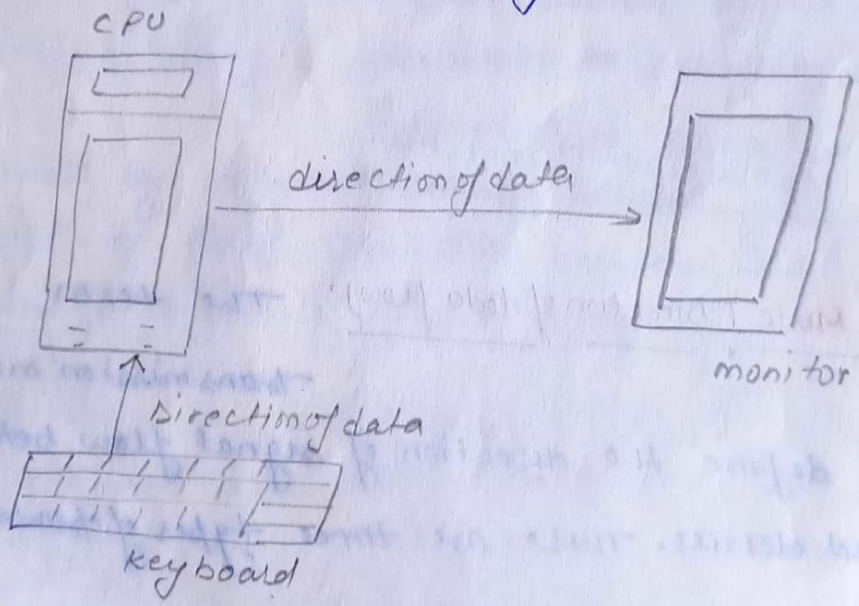


fig: simplex mode of data transmission

(2) Half Duplex System:- These System are bi-directional such that they can transmit as well as receive but not simultaneously. At a time these system can either transmit or

receive. for example walky talky. Each station can transmit and receive but not at the same time. when one device is sending the other one is receiving and vice-versa.)

for example: The Haly-duplex mode is like a one-lane road with two-directional traffic. while cars are traveling one direction, cars going the other way must wait.

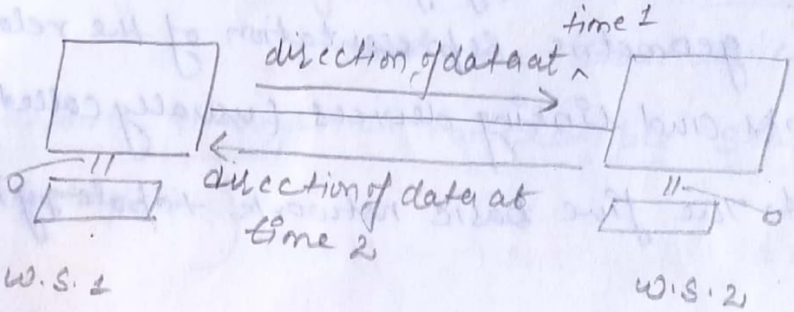


fig: Haly duplex system

(2) Full duplex System: These are truely bi-directional system as they allow the communication to take place in both the directions simultaniously. These System can transmit as well as receive simultaniously. for example the Telephone Systems.)

The full duplex mode is like a two-way street with traffic flowing in both directions at the same time.