19BCE245

DC tut-1

1. Explain different transmission modes with example.

→ There are three modes of transmission namely: simplex, half duplex, and full duplex. The transmission mode defines the direction of signal flow between two connected devices.

2. Why are protocols needed?

→ Network protocols are needed because it includes mechanisms for devices to identify and make connections with each other, as well as formatting rules that specify how data is packaged into messages sent and received
Protocols are very important in allowing computers to communicate with one another. They allow two computers on a network to understand one another. Without protocols, network would be just the string between tin cans.

3. What are protocols the two types of line configuration?

→ Line configurations are:
1.) point to point
2.) Multipoint.

4.) What are the three criteria necessary for an effective and efficiency?

→ Criteria necessary for effective and efficient networks:
a. Performance:
It can be measured in many ways, including transmit time and response time.
b. Reliability:
It can be is measured by frequency of failure, the time it takes a link to recover from a failure, and the network's robustness.
c. Security:
Security issues includes protecting data from un-authorized access and viruses.

5) What are the advantages of distributed processing?

→ Distributed processing is more reliable, since multiple control data centers are spread across different machines. A glitch in any one machine doesn't impact the network, since another machine takes over its processing capability.

6) List different network topology and give advantages and disadvantages.

→ 1. Mesh topology:

- Advantages → Each connection can carry its own data load.
  → It is robust
  → A fault is diagnosed easily
  → Provides security and privacy.
- Disadvantages: → Installation and configurations are difficult
  → If the connectivity gets more cabling cost
  → Cabling cost is more and the most in case of a fully connected mesh topology
  → Bulk wiring is required.

2. Star topology:

- Advantages → Due to Hub device network control and management is much easier.
  → Fault identification and removing nodes in network is easy
  → It provides very high speed of data transfer
- Disadvantages → Entire performance of the network depends on the single device hub.
  → If the hub net device goes down, the entire network will be dead.
  → Star topology requires more wires compared to the ring and bus topology.

3. Bus topology:
- Advantages: → No hubs or switches are required
  → It is easy to connect a device to the network
  → Extensions can be made to the network
- Disadvantages → If the main cable fails or gets damaged, the whole network will fail. As more work stations are connected the performance of the network will become slower because of data collisions.

7) What are some of the factors that determine whether a communication system is a LAN or WAN?

→ Geographical area spanned by a network determines whether it is a LAN or a WAN. A WAN, or Wide Area Network, covers a much larger area, whereas A LAN or Local Area Network spans a relatively smaller area.

8) For n devices in a network, what is the number of cable links required for a mesh, ring, bus and star topology?

→ n(n-1)/2 cable links are required for mesh,
n for ring
n-1 # cable for bus,
and n cable link for star topology.

9) For each of the following four networks, discuss the consequences if a connection fails.
a. Five devices arranged in a mesh topology
b. Five devices arranged in a star topology
c. Five devices arranged in a bus topology
d. Five devices arranged in a ring topology.

→ For each of the following four networks,

a.) No major setback to the complete network, if one connection fails, other will continue to work.

b.) Connection to that particular device is lost, other can communicate.

c.) If the backbone connection fails, than all communication is over.

d.) One failed connection will disable the entire network.