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CN mid sem

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Q.1) (C) Star Topology

Q.2) (C) Session Layer

Q.3) (a) Application

Q.4) (d) Frame

Q.5) (B) IP address

Q.6) (D) Gateway

Q.7) (B) Application

Q.8) (A) FTP

Q.9) (A) Physical

Q.10) (C) Star

Q.11 Message Switching

-> It is a connectionless network switching technique where the entire message is routed from the source node to the destination node, one hop at a time.
-> It was a precursor of packet switching
-> It is also known as store and forward technique.
-> Here the sarce computer sends the data to the switching office first which stores the data in its buffer
-> It then looks for a free link to another switching office and then send the data to the office.
- Process is continued till the data is delivered to the destination computer.

-:- Advantages

-> Message of unlimited sizes can be sent.
-> sharing of communication channel ensures better bandwidth usage.
-> Broadcasting messages requires much less bandwidth than circuit switching.
-> It does not have to deal with out of order packets or lost packets as in packet switching
-> It reduces network congestion due to store and forward method.
-> Any switching node can store the

message till the network is available.

:- Disadvantages

→ Store and forward method introduces delay at each switching node.
→ This renders it unsuitable for real time applications.
→ In order to store many messages of unlimited sizes, each intermediate switching node requires large storage capacity.

Q.12) STAR TOPOLOGY

→ A star topology is a topology for a Local Area Network (LAN) in which all nodes are individually connected to a central connection point, like a hub or a switch.
→ It is designed with each node (File servers, workstation) connected directly to a central network hub or concentrator.
→ Data on a star network passes through the hub or concentrator before continuing to its destination.
→ The hub or concentrator manages and controls all functions of the network.
~~→ It acts as rep.~~
→ It also works as a repeater for the data flow.
→ It takes more cable than e.g. a bus, but the benefit is that if a cable fails, one one node will be brought down.

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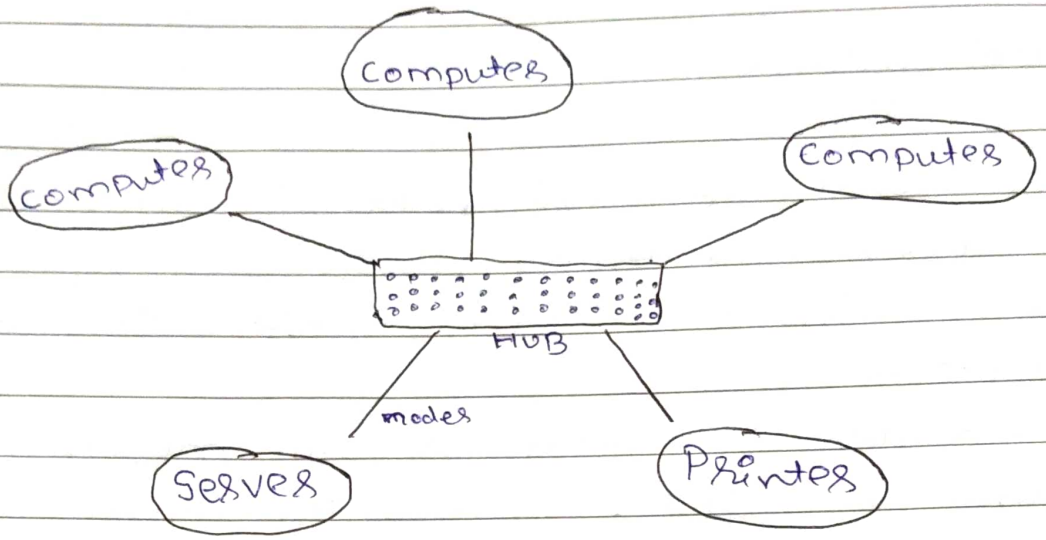
-:- Figure: →



-:- Advantages

-> Easy to detect faults and to remove parts
-> Easy to install and wise
-> No disruptions to the network when connecting or removing devices.

-:- Disadvantages

-> Requires more cable length than a lineal topology.
-> If the hub or concentrator fails, nodes attached are disabled.
-> More expesive than lineal bus topologies because of the cost of the concentrators.

Q.13) Multiplexing and DeMultiplexing

→ Multiplexing and Demultiplexing services are provided in almost every protocol architecture ever designed.

→ UDP and TCP perform the multiplexing and demultiplexing jobs by introducing two special fields in the segment headers :

- The source port number field.
- The destination port number field.

• Multiplexing :

→ Gathering data from the multiple application process of sender, enveloping the data with header and sending them as a whole to the intended services is called as multiplexing

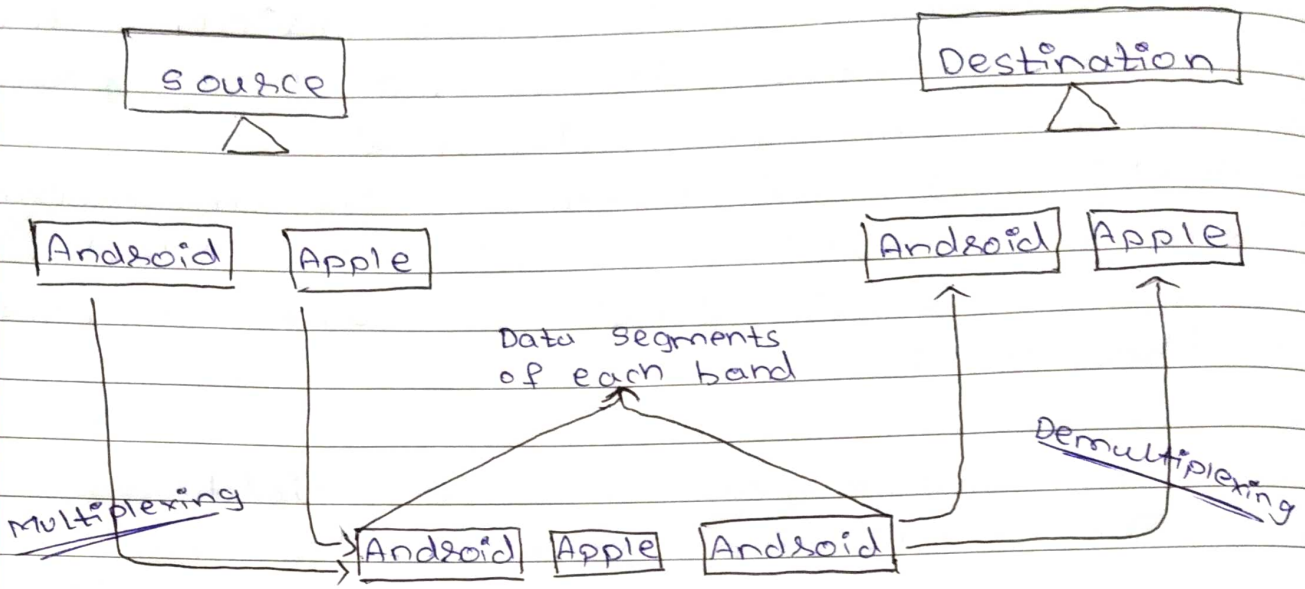
• Demultiplexing :

→ Delivering received segments at receiver side to the correct app layer processes is called as demultiplexing.

→ There are two types of multiplexing and Demultiplexing :

1) Connectionless mux and demux
2) connection-oriented mux and demux

→ Figure:



Q.16) Socket Programming with TCP

→ Firstly, socket means a door between application process and end-to-end transport protocol (UDP or TCP)

→ Socket programing with TCP:

→ The two ways are explained below:

* Client must contact server:

- Server process must first be running.
- Server must have created socket (door) that welcomes clients contact.

* Client contact servers by :

- creating client-local TCP socket
- specifying IP address, port number of server process
- When client creates socket - client TCP establishes connection to server.
- When contacted by client, server TCP creates new socket for server process to communicate with client

=> Now, the proper Algorithm.

• TCP server :

1. Using create(), create TCP socket
2. Using bind(), Bind the socket to server address
3. Using listen(), put the server socket in passive mode, where it waits for the client to approach the server to make a connection
4. Using accept(), At this point, connection is established between client and server, and they are ready to transfer data.
5. Go back to step 3.

• TCP client :

1. Create TCP socket
2. connect newly created client socket to server.

Q. 15 Switch and Routes

→ Let's Explain one by one:

- Switch:

- A switch (switching hub) in the context of networking refers to a device which filters and foswasd data packets across a network.

- Unlike a standard hub which simply replicate what it receives on one port onto all the othes ports.

- A switching hub keeps a secosd of the MAC addsess of the devices attached to it.

- When the switch receives a data packet, it foswards the packet disectly to the secipient device by looking up the MAC addsess.

- Switch facilitate the sharing of sesources by connecting togethes all the devices, including computess, psintess, and sesvess, in a small buisness netwosk.

- Building a small buisness netwosk is not possible without switches to tie device togethes.

- **Routes:**

- Routes is a specialized network device used to interconnect different types of computer network that uses different protocols e.g., Ethernet to a mainframe.

- Just as a switch connects multiple devices to create a network, a routes connects multiple switches, and their respective networks, to form an even larger network.

- When building a small business network, you will need one or more routers

- In addition to connecting multiple networks together, the routes also allows networked devices and multiple users to access the Internet

- Ultimately, a routes works as a dispatcher, directing traffic and choosing the most efficient route for information, in the form of data packets to travel across a network.

- A routes connects your business to world, protects information from security threats, and even decides which devices have priority over others.