ASHOKA

Assignment ⇒ 2

⇐ Data Communications ⇒

Q1 What are the different types of networks?

Ans ⇒ A network is a set of devices often referred to as nodes connected by communication links to share the computing resources

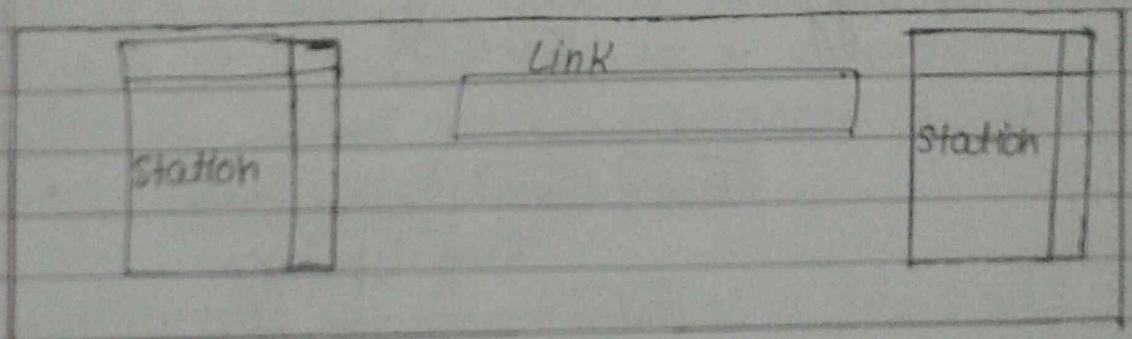
A node can be a computer, printer, smart phone refrigerator, car or any other device capable of sending and/or receiving data generated by other nodes on the network.

Types of Connection:

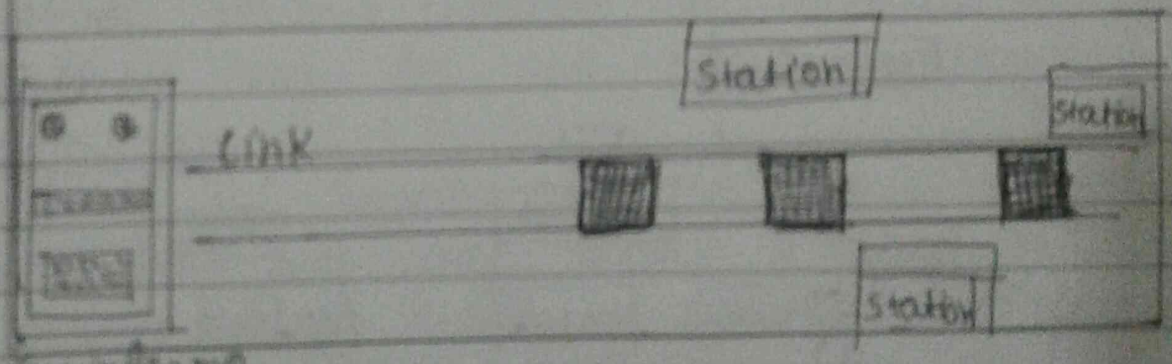
Point to point

Point-to-multipoint

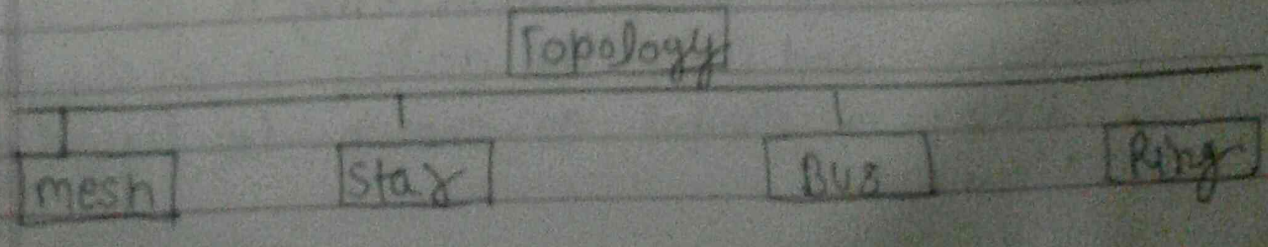
Point-to-point vs point to-multipoint



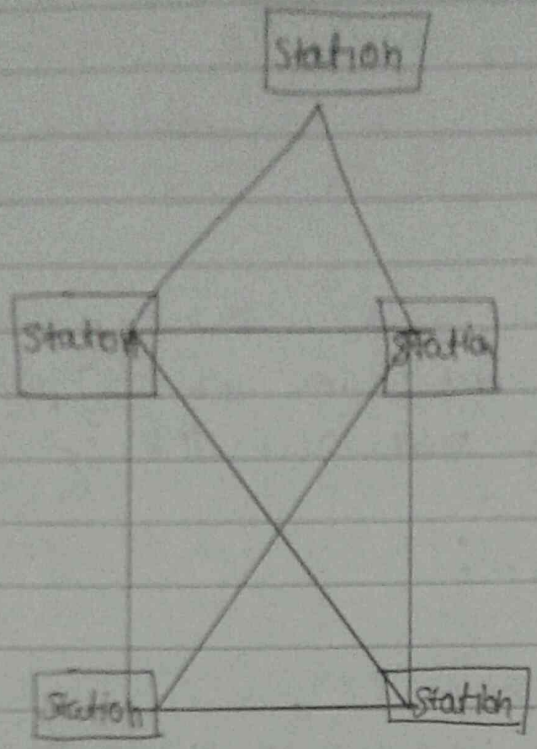
a Point to-Point



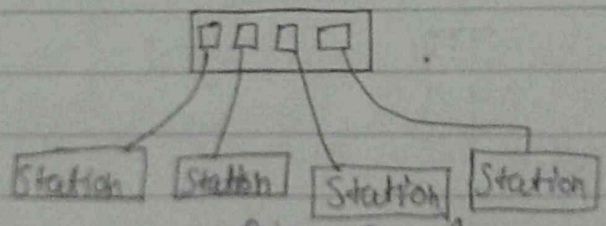
Types of topologies



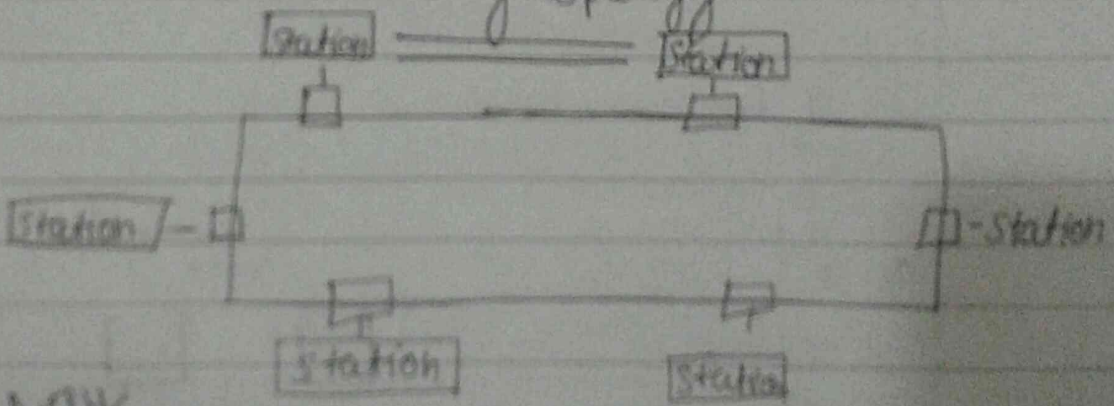
mesh



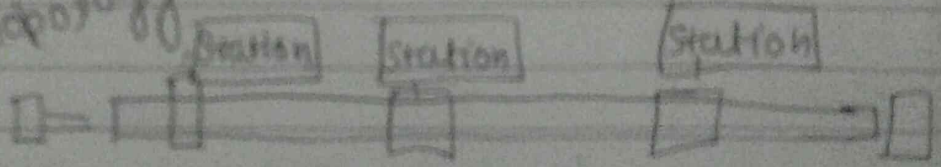
Star Topology



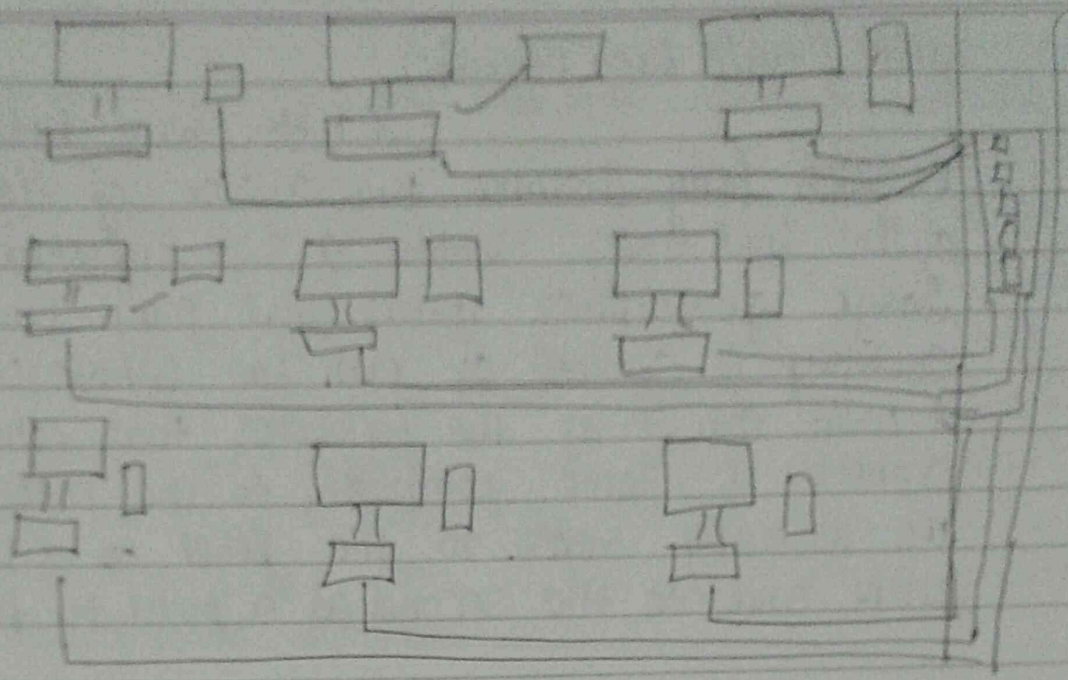
Ring Topology



Bus topology



Lan ⇒ A Local area network (LAN) is usually privately owned and links the devices in a single office building or campus as shown in figure given blow:



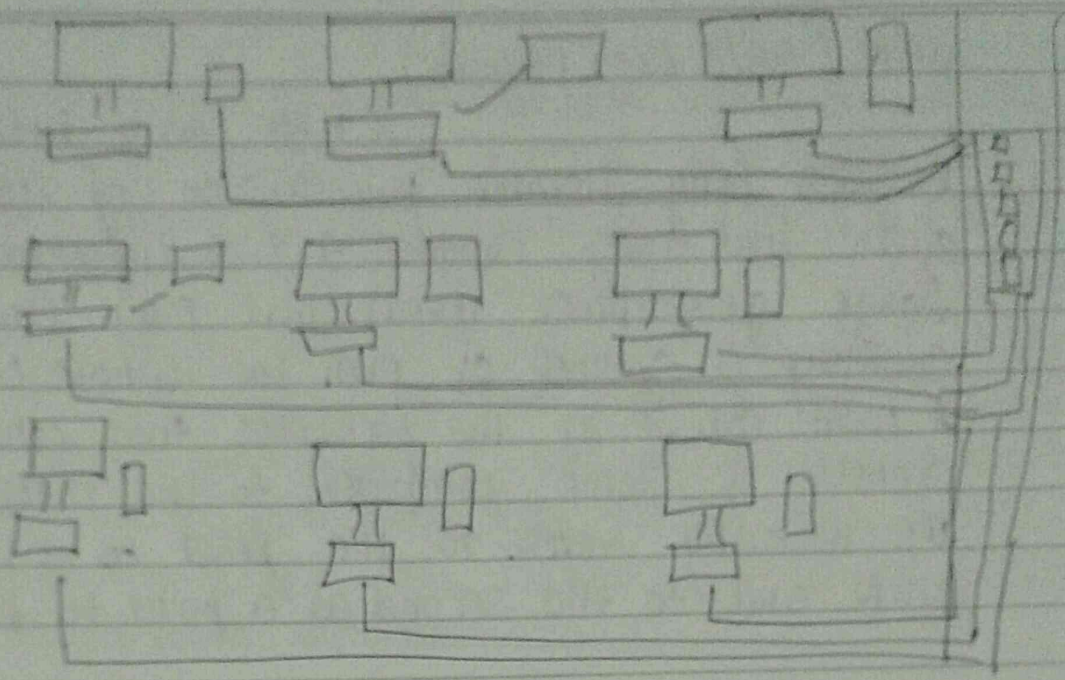
Lan Cont

Depending on the needs of an organization and the type of technology used a Lan can be as simple as two PCs and a printer in someone's home office or it can extend throughout a company and include audio video peripherals

Currently Lan size is limited to a few kms

Lans are designed to allow resources to be shared between personal computers or workware e.g. printer-software, (cpg, leg, and application program or data

one of the computers may be given a large capacity disk drive and may become a server to clients software can be stored on this central server and used as needed by the whole group. In addition to the lans are distinguished from other types of networks their transmission media and topology.



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shielded pair of wires wrapped again for double protection Unshielded twisted pair cable (UTP) has each pair of wires twisted together. Those wires are then pair wrapped in tubing without any other protection UTP cables are less expensive and a more popular type of cabling knowing which cable to use for a specific application depends on the protection needed from power frequency (EMI) This is where shielded vs unshielded cable becomes important.

Preventing Electromagnetic Interference (EMI)
Electromagnetic Interference (EMI) or radio frequency interference (RFI) as it is also referred to is an electronic disturbance generated by external electronic or electrical sources such as electrical circuit noise The truth is EMI / RFI is all around us Just like the static you may hear during a phone call the same is true for networking. If the EMI noise is strong enough it may interfere with the actual data traffic and prevent computers from hearing each other when this happens, data is lost and the network has to resend the information a second time The more often the network slows down Thus EMI disturbances can lower performance of a circuit can be interrupted loss ranging from an increase in errors rate to a complete loss of information

Q3 What are difference between baseband and broad-band transmission?

Ans. In a baseband transmission the bandwidth of the cable is consumed by a single signal In broad band transmission signals are sent on multiple frequencies allowing multiple signals in the sent simultaneously Also

i) uses digital signaling
ii) no frequency division multiplexing
iii) bi - directions transmission
iv) signal travels over short distance

ID Broadband signalling ⇒
i) uses an along signaling
ii) unidirectional transmission
iii) frequency division multiplexing is possible
iv) signal can travel over long distance before given rated.

Q4 What are the difference a hub, modem, router and a switch?

Ans. In an ethernet network there are some networking devices that play their roles at various levels such as hubs switches and routers the function of the three devices are all quite different from one another even if. Sometimes They are all integrated in to a single device due to that many people feel confused about the difference between the hub switch and router the following part will focus on the topic hub vs switch router, comming to clarify difference among them.

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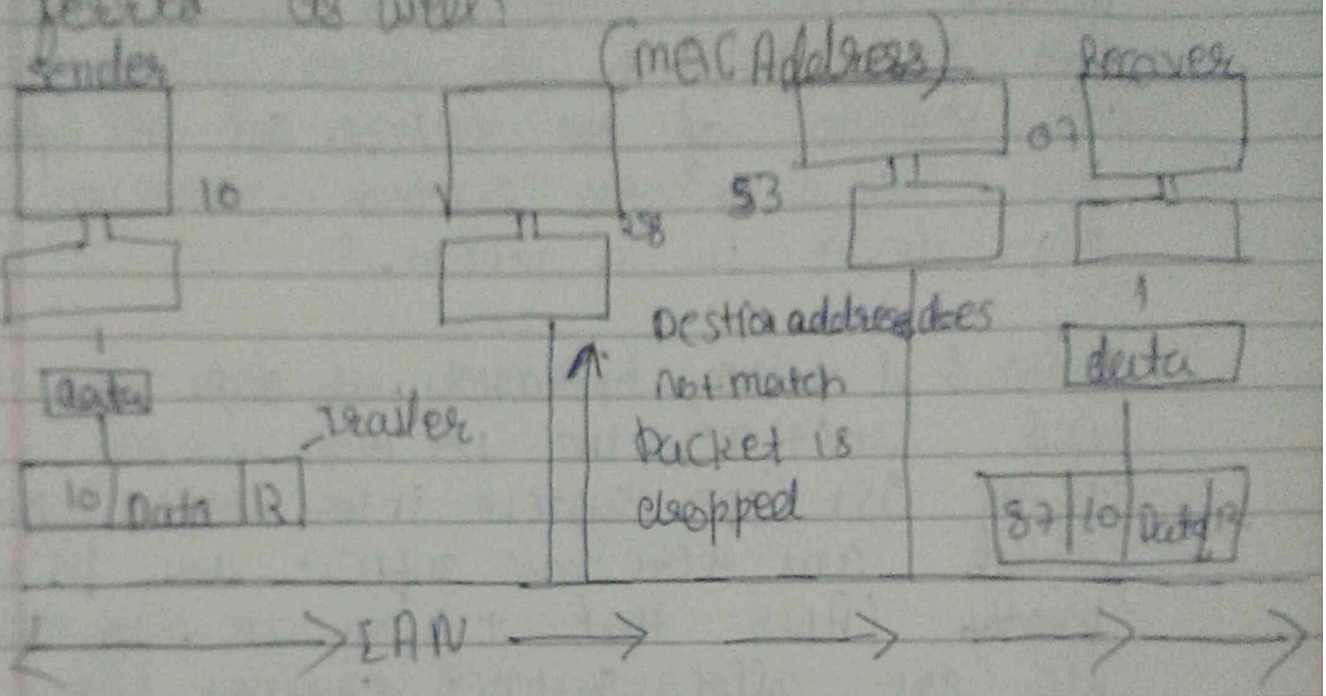
Hub ⇒ Hub is commonly used to connect segments of a LAN (Local Area Network) A hub contain multiple ports when a packet arrives at one port it is copied to the other ports so that all segments of the LAN can see all packets Hub acts as the common connection point for device in a network.

Switch ⇒ A switch operates at data link layer (layer 2) and sometimes the network layer (layer 3) of the OSI (open system interconnection) Reference model and therefore support any packet protocol LANS that use switches to join segments are called switched ethernet LANS in network, switched ethernet LANS in network the switch is the devices that filtrates and forwards packets between LAN segments

Router ⇒ A router is connected to at least two networks commonly two LAN and WANS (wide area networking) or LAN and its VSIS (internet service provider) network the places where two or more networks connect using headers and for routing tables routers never mines the best path to forward the packets in addition router used protocol) to communicate with each other and configure the best route between any two nodes in a work, router forwards data packets among networks

Q5 When you move the NIC cards from one PC to another PC does the MAC address transferred as well?



Q6 When troubleshooting computer network problems, what common hardware-related problems can occur?

Ans: A large percentage of a network is made up of hardware problems in these areas can range from malfunctioning hard drives, broken NICs and even hard drive startup Incorrectly hardware configuration is also one of these culprits to look into.

Q7 In a network that contains two servers and twenty workstations, where is the best to install an anti-virus program?

Ans: The best solution is to install anti-virus on all the computer in the network. This will protect each device from the other in case some malicious user tries to insert a virus into

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Q10 What is a web Browser (Browser)? Give some example of browser?

Ans A web browser or simply browser is an application used to access and view websites Common web browser include microsoft Edge Internet explorer, Google Chrome mozile fire fox and apple safari. The primary function of a web browser is to render HTML the code used to design or markup web pages.

Q11 What is search engine? Give example?

Ans A search engine is a web-based tool that enables users to locate information on the word wide web popular example of search. search engines are google yahoo! and msn search search engine utilize automated software application (referred to as robots, bots or spiders) that travel along the web following links from page to page side to site. The information gathered by the spiders is used to create a searchable index of the web.

Q12 What is the internet & www? What are the uses of internet in our daily life?

Ans The internet is a global network of networks connecting millions of users worldwide via many computer network using a simple standard common addressing system and basic communication protocol called TCP/IP. It this allows messages sent over the internet to

the servers are legitimate users

Q8 Define static IP and Dynamic IP? Discuss the difference between IPV4 and IPV6

Ans:- When a device is assigned a static IP address the address does not change most devices use dynamic IP addresses which are assigned by the network when they connect and change over time.

Static IPs address ⇒ most users or websites matter don't need static IP addresses static. Static IP addresses devices or websites need to remember your IP address. One example is VPN or other remote access solutions that trust (whitelists) certain IPs for security purpose A static IP address is not required if you are hosting a server although it can simplify the setup process google fiber provides two options.

Dynamic IP address ⇒ use advanced settings for your network to configure dynamic DNS when your IP address changes the DNS entry for your server is automatically updated with its new IP address so outside users can use the same domain name you can choose the dynamic DNS provider and don't have to install additional software on your computer.

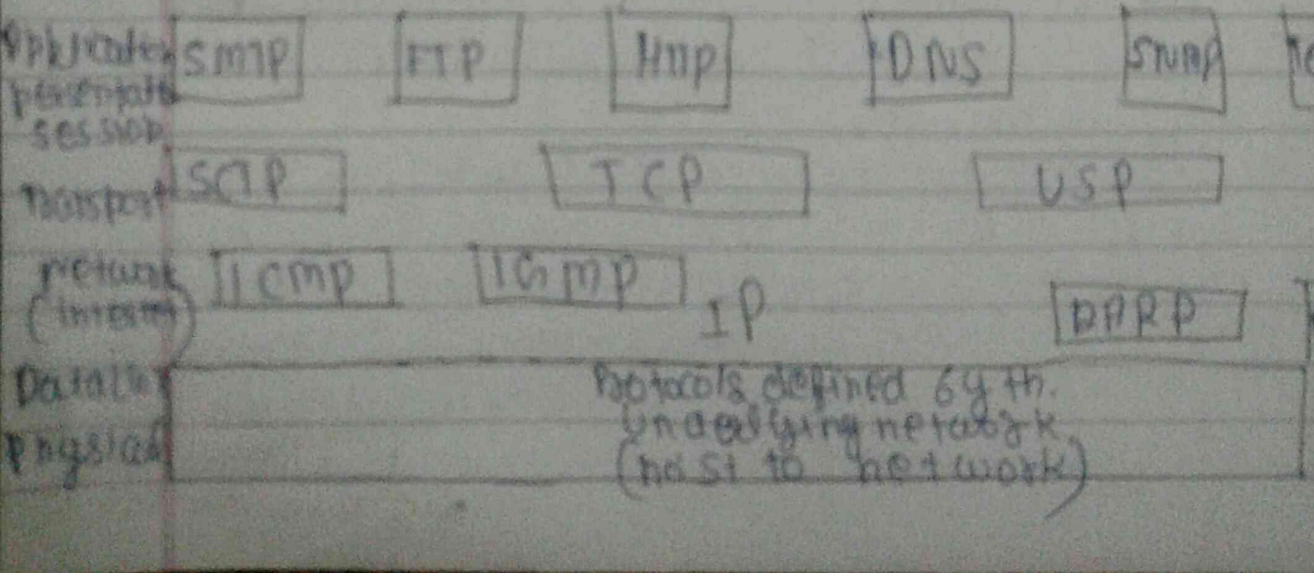
Discuss the between IPV4 and IPV6

Difference	IPV4	IPV6
1 Security	Security is deependent on applications. IPV4 was not designed with security in mind	IPsec internet Protocol security is built into the IPv6 Protocols usable with a proper key infrastructure.

2	Packet header	Does not identifies packet flow for QoS handling which includes checksum option	packet header contains flow label field that specifies packet flow for QoS handling.
3	DNS records	Address (A) records maps hostnames	Address (AAAA) records maps hostnames
4	Compability with mobile device	IPV4 address uses the dot-decimal notation. That's why it is not suitable for mobile network.	IPV6 addresses represented in colon hexadecimal notation. IPV6 is better suited in mobile network
5	Mapping	(Uses ARP (Address Resolution Protocol) to map to MAC address	uses NDP (Neighbour Discovery Protocol) to map to MAC address.

Q9 Discuss TCP/IP model in detail →

Ans The figure given below shows the comparison of TCP/IP



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broken in to small pieces called packets which travel over many different routes between source and destination computer.
WWW (world wide web) ⇒ www stand for (world wide web)