ASSIGNMENT

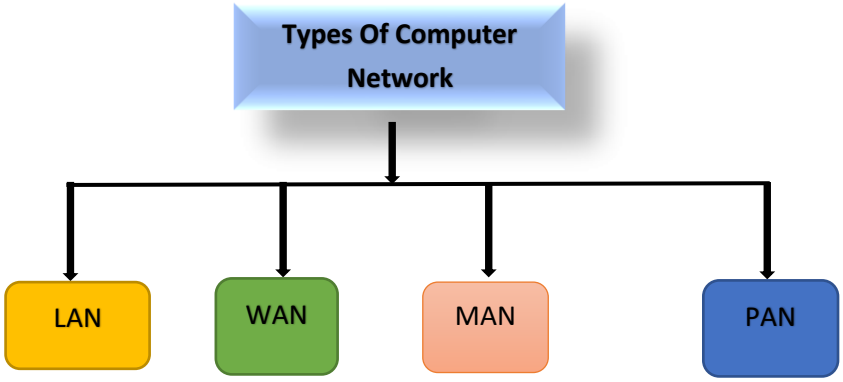
1. What are the different types of networks?

Ans: COMPUTER NETWORK TYPES:

A computer network is a group of computers linked to each other that enables the computer to communicate with another computer and share their resources, Data, and applications.

A computer network can be categorized by their size. A computer network is mainly of **four types:**

.



- LAN (Local Area Network)
- PAN (Personal Area Network)
- MAN (Metropolitan Area Network)
- WAN (Wide Area Network)

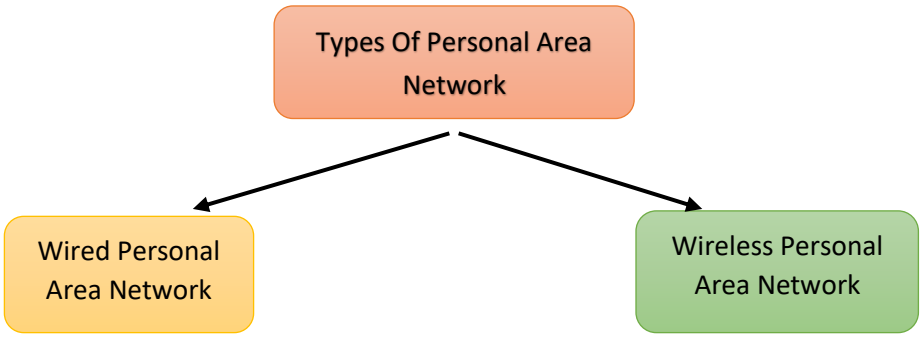
LAN (Local Area Network)

- Local Area Network is a group of computers connected to each other in a small area such as building, office.
- LAN is used for connecting two or more personal computers through a communication medium such as twisted pair, coaxial cable, etc.
- It is less costly as it built with inexpensive hardware such as hubs, network adapters, and ethernet cables.
- The data is transferred at an extremely faster rate in Local Area Network.
- Local Area Network provides higher security.

PAN (Personal Area Network)

- Personal Area Network is a network arranged within an individual person, typically within a range of 10 meters.
- Personal Area Network is used for connecting the computer devices of personal use is known as Personal Area Network.
- **Thomas Zimmerman** was the first research scientist to bring the idea of the Personal Area Network
- Personal Area Network covers an area of 30feet.

- Personal computer devices that are used to develop the Personal Area Network are the Laptop, Mobile Phones, media player and Play stations.
  There are two types of Personal Area Network:



- **Wired Personal Area Network**
- **Wireless Personal Area Network**

Wired Personal Area Network: Wired Personal Area Network is created by using the USB.

Wireless Personal Area Network: Wireless Personal Area Network is developed by simply using wireless technology such as WIFI, Bluetooth**.** It is Low range network.

MAN (Metropolitan Area Network)

- A metropolitan area network is a network that covers a larger geographic area by interconnecting a different LAN to from a larger network.
- Government agencies use Man to connect to the citizens and private industries.
- In MAN, various LANs are connected to each other through a telephone exchange lie
- The most widely used protocols in MAN are RS-232, Frame Relay, ATM, ISDM, OC-3, ADSL, etc.
- It has a higher range than Local Area Network (LAN).

WAN (Wide Area Network)

- A Wide Area Network is a network that extends over a larger geographical area such as states or countries.
- A Wide Area Network is quote bigger network than the LAN.
- A Wide Area Network is not limited to a single location, but it spans over a large geographical area through a telephone line, Fiber optic cable or satellite links.
- The internet is one of the biggest WAN in the world.
- A Wide Area Network is widely used in the field of Business, Government, and education.
  Examples of Wide Area Network:
- **Mobile Broadband:** A 4G network is widely used across a region or country.
- **Last mile:** A telecom company is used to provide the internet services to the customers in hundreds of cities by connecting their home with fiber
- **Private Area Network:** A Bank provides private network that connects the 44 offices. This network is made by using the telephone leased line provided by telecom company.

2. Explain the shielded twisted pair (STP) and Unshielded twisted pair (UTP).

Ans: - A twisted pair cable is a widely used cable for transmitting data and information over certain distances.

Unshielded twisted pair (UTP): Unshielded twisted pair (UTP) is an unshielded twisted pair cable used in computer and telecommunications mediums. Its frequency range is suitable for transmitting both date and voice via a UTP cable. Therefore, it is widely used in the telephone, computers, ate. It is pair of insulated copper wires twisted together to reduce noise generated by external interference. It is a wire with no additional shielding, like aluminum foil to protect its data from exterior.

Advantages of the UTP:

1. It is a less costly and less expensive unshielded wire form another network medium.
2. It is designed to reduce crosstalk, RFI, and EMI.
3. Its size is small, and hence the installation of UTP is easier.
4. It is mostly useful for short-distance network connections like home and small organizations.
5. It is the most commonly used networking cable in the market. It is considered as faster coper-based data transmission cable.
6. It is suitable for transmitting both data and voice via UTP.

Disadvantage of the UTP:

1. It can be used in length segment up to 100 meters.
2. It has limited bandwidth for transmitting the data.
3. It does not provide a secure connection for data transmitting over the network.

Shielded Twisted Pair (STP): A shielded twisted pair (STP) is a type of twisted pair cable that contains an extra wrapping foil or copper braid jacket to protect the cable from defects like cuts losing bandwidth, noise and signal to the interference. It is a cable that is usually used underground, and therefore it is costly than UTP. It supports higher data transmission rates across the long distance. We can also say it is a cable with metal sheath or coating that surround each pair of the insulated conductor to protect the wire from external users and prevent electromagnetic noise from penetrating.

Features of shielded twisted pair cable:

1. **Frequency:** It has frequency data transmission as compared to the UTP.
2. **Thickness:** It is a thick shielded twisted pair cable as it contains the wrapping of plastic material to the copper conductor.
3. **Grounding practices:** The uses of shielded twisted pair cable are underground for a longer distance**.**
4. **Installation** of the shielded wire is more difficult than the UTP (Unshielded twisted Pair) cable.

3. What is difference between baseband and broadband transmission?

Ans: -

Baseband transmission	**Broadband transmission**
1. Digital signaling. **2.** Frequency division multiplexing is not possible. **3.** Baseband is bi-directional signal transmission. **4.** Short distance signal travelling. **5.** Entire bandwidth is for single signal transmission. **6.** Example: Ethernet is using Basebands for LAN.	**1.** Analog signaling. **2.** Transmission of data is unidirectional. **3.** Signal travel travelling distance is long. **4.** Frequency division multiplexing is possible. **5.** Simultaneous transmission of multiple signals over different frequencies. **6.** Example: Used to transmit cable TA to premises.

4. What is the difference between a hub, modem, router and switch?

Ans: -

A Hub: A hub is a device that allows several network devices to connect together to exchange data on a single network however, they have no management component. Network hubs are also known as repeaters. They are less 'intelligent' than switches. Unlike switches, which forward data to the intended device, hubs merely sent the data packets to all its port to all the other devices; this leads to frequent collisions between packets.

A Modem: A modem is short for a modulator-demodulator. Its function is to facilitate the transmission of data, by converting an analogue signal to code and decoding digital information.

A switch: A switch is a network that connect network segments on a signal network. It connects many devices together on the same network, sending data to a device that needs or requests it. A switch is able to improve the performance of a network by increasing network by increasing network capacity.

A Router: A network routers directs the data packets along networks. A router has a minimum of two networks, usually LANs or WANs or a LAN and its ISP. However, unlike a modem, it cannot work single standing, however is able to connect to multiple nodes.

Switch	Router	Modem	Hubs
Join several computers together within one local area network. They cannot join multiple networks and are incapable of sharing internet connection.	Joins multiple area networks (LAN& WAN). Serving as "middle man" or intermediate destinations for network traffic. Using the IP, they forward data to specific destination.	Modems, like router connect home PCs to the internet.	Connects a network of personal computers together so they can be joined through a central hub.

5. When you move the NIC cards from one PC to another, does the MAC address gets transferred as well?

Ans: - Yes, that is because MAC address are hardwires into NIC circuity, not the PC. This also means that a PC can have a different MAC address when another one replaced the Nic card.

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

Ans: - A large percentage of a network is made up of hardware. Problem is these areas ca range from malfunctioning hard drives, broken NICs and even hardware startups.

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

Ans: - The best solution is to install anti-virus on all the computers in the network.

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

Ans: -

Static IP: A computer on the internet can have static IP address, which meant stays the same overtime, or a Dynamic IP address, which mean the address can change over time.

Dynamic IP: A Dynamic IP is a temporary address for devices connected to a network that continually changes over time.

Different between IPV4 and IPV6:

IPV4 and IPV6 are internet protocol version 6. IP version 6 is the new version of internet protocol, which is way better than IP version 4 in term of complexity and efficiency

9. Discuss TCP/IP model in detail.

Ans: -

TCP\ IP Reference Model is a four- Layered suite of communication protocols. It was developed by the DoD (Development of Defense) in the 1990s. It is named after the two main protocol that are used in the model namely, TCP and IP. TCP stand Transmission Control Protocol and IP stand for Internet Protocols.

10. What is a Web Browser (Browser)? Give some examples of browsers.

Ans: -

A web browser is an application used to access and view websites.

Some example of browsers includes Microsoft Edge, Internet Explorer, Google Chrome, Mozilla Firefox and Apple Safari.

11. What is a search engine? Give one example.

Ans: - A search engine is a web based, tool that enables users to locate information on the World Wide Web (WWW).

12. What is the Internet & WWW? What are the uses of Internet in our daily life?

Ans: -

Internet is a vast network that connects computers all over the world. Through the internet, people can share information and communicate from anywhere with an internet connection.

World Wide Web (WWW) is an interconnected system of public webpages accessible through the internet.

Uses of internet in our daily life. They are very much useful in our daily routine task. For example, it helps us to see our notification and emails. A part from this, people can use the internet for money transfer, shopping, order online food, etc.

13. What is an Internet Service Provider? Give some examples of ISP in India.

Ans: -

An internet Service Provider is an organization that provide services for accessing using or participation in the internet.

Examples of ISP in India are: Airtel, BSNL, etc.

14. Discuss the difference between Mac address, IP address and port address.

Ans: -

A MAC address is assigned to the internet interface card by the manufacture and in used for communication within the Local Area Network. It is globally unique address.

An IP address is used for communication within the Local Area Network and the communication between internet. It uniquely identifies the connection of the internet with that device takes part in a network.

Port address of the service within the system. A port number uniquely identifies a network based application on the computer.

15. How do we View my Internet browser's history?

Ans: -

In the lower- left corner of the browser window, tab and hold the back arrow. The page that opens contain your browser history.