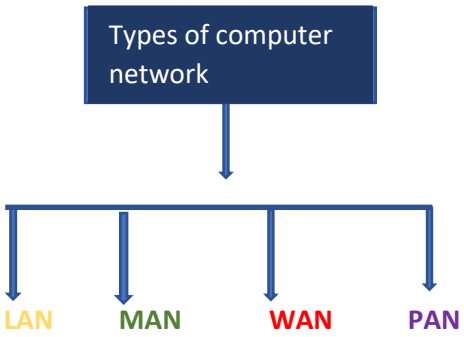
**CCA-102: Data Communication**

**ASSIGNMENT**

1: What are the different types of network?

Ans: 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)

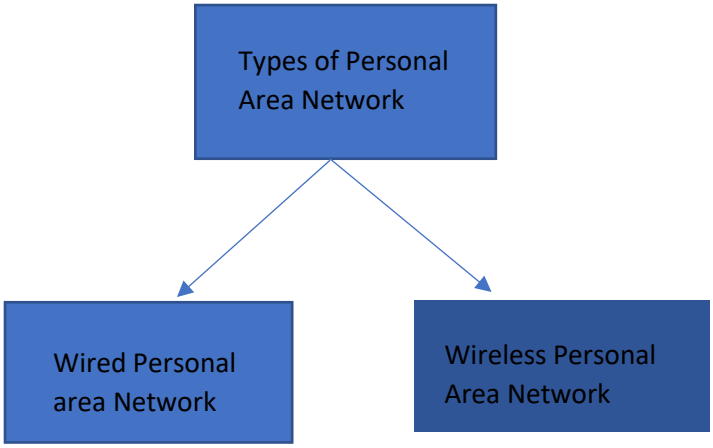
LAN ( Local Area Network)

- 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 is 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 30 feet.

- Personal computer devices that are used to develop the personal area network are the laptop, mobile phones, media player and play stations.




- Wired Personal Area Network
- Wireless Personal Area Network

Wireless Personal Area Network : Wireless Personal Area Network is developed by simply using wireless technologies such as WiFi, Bluetooth. It is a low range network.

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

Examples of Personal Area Network:

- Body Area Network : Body Area Network is a network that moves with a person. For example, a mobile network moves with a person. Suppose a person establishes a network connection with another device to share the information.
- Offline Network: An offline network can be created inside the home, so it is also known as a home network. A home network is designed to integrate the device such as printers
- Small Home Office: It is used to connect a variety of devices to the internet and to a corporate network using a VPN

MAN ( Metropolitan Area Network)

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

Uses Of Metropolitan Area Network:

- MAN is used in communication between the banks in a city.
- It can be used in an Airline Reservation.
- It can be used in a college within a city.
- It can also be used for communication in the military.

WAN( Wide Area Network)

- A wide area network is a network that extends over a large geographical area such as states or countries.
- A wide area network is quite 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.
- The internet is one of the biggest WAN in the world.
- A Wide Area Network is widely used in the field of Bussiness, 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 service to the customers in hundreds of cities by connecting their home with fiber.
- Private network: A bank provides a private network that connects the 44 offices. This network is made by using the telephone leased line provide by the telecom company.

Advantages of Wide Area Network: Geographical area, Centralized data, Get updated files, Exchange messages, Sharing of software and resources, Global business, High bandwidth

Disadvantages of wide Area Network: Security issue, Needs Firewall & antivirus software, High Setup cost, Troubleshooting problems.

Q2: Explain the Shielded twisted pair (STP) and Unshielded twisted pair (UTP)

Ans: Difference between UTP and STP

| UTP | STP |
|---|---|
| It is an unshielded twisted pair. | It is a shielded twisted pair. |
| The price of UTP is lower as compared to the STP . | The price of STP is much costlier than UTP. |
| It does not require a grounding cable. | It requires a grounding cable. |
| Transferring speed of the data signal is slow as compared to the sTP. | Transferring speed of the data signal is high as compared to the UTP. |
| Installation of the UTP cables is easy as they are lighter<br>, small in size, and flexible. | Installation of STP cable is quite difficult as compared to the UTP , Its size is heavy, bigger, and stiffer. |

Q3: What is the difference between baseband and broadband transmission?

Ans:

| Baseband | Broadband |
|---|---|
| It refers to a communication channel in which information is carried in digital form. | The signals are modulated as radiofrequency analog waves that use different frequency ranges. |
| Communication is bi- directional which means the same channel is used to transmit and receive signals. | Communication is unidirectional meaning two different channels are needed in order to send and receive signals. |
| Every device on a baseband system shares the same channel. | Multiple independent channels can carry analog or digital information through FDM. |
| Baseband LANs are inexpensive and easier to | Broadband systems are generally more |

| | |
|---|---|
| install and maintain. | expensive because of the additional hardware involved. |
| Baseband LANs have a limited distance reach which no more than a couple miles. | Broadband LANs span much longer distances than baseband ( up to tens of kilometers) |

Q4: What is the difference between a hub, modem, router and a switch?

Ans:

| Switch | Router | Modem | Hub |
|---|---|---|---|
| Joins several computers together within one local area network. They cannot join multiple networks and are incapable of sharing an internet connection. | Joins multiple area networks (LANs& 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 PC s to the internet | Connects a network of personal computers together so they can be joined through a central hub. |

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

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

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. Problem is these areas can range from malfunctioning hard drives , broken NICs and even hardware startups.

Q7: 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.

Q8: Define Static IP and Dynamic IP ? Discuss the difference between IPV4 and IPV6 .

Ans: Static IP : A computer on the internet can have a 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 terms of complexity and efficiency.

Q9: 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 1960s. 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.

Q10: 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 examples of browsers includes Microsoft Edge, internet explorer, Google Chrome, Mozilla firefox and apple safari.

Q11: What is a search engine ? Give example.

Ans: A search engine is a web based tool that enables users to locate information on the world wide web (WWW).

Q12: 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. The 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.

Q13: What is an Internet Service Provider ? Give some example of ISP in India?

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

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

Q14: Discuss the difference between MAC address, IP address and Port address.

Ans: A MAC address is assigned to the network 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 is uniquely identifies the connection of the network 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.

Q15: How do we view my internet browser’s history?

Ans: In the lower – left corner of the browser window, tap and hold the back arrow. The page opens contain your browser history.