Assingment 2 Data communication

Submitted by Leishangthem Jinita Devi

Q.1. Ans. The different types of networks are:

   1) LAN:

      * Local Area Network is a group of computers connected to each other in small area such as building.

      * 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, adaptors, and Ethernet cables.

      * The data is transferred at an extremely faster rate in local Area Network.

      * Local Area Network provides higher security.

   2) PAN:

      * 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 used is known as Person Area Network.

      * Thomas Zimmerman was the first research scientist to bring the idea of the personal Area Network.

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

   3) MAN:

      * A metropolitan area network is a network that covers a larger geographic area by interconnecting a different LAN to form a larger network.

      * In MAN, various LANS are 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).

   4) WAN:

      * A Wide Area Network is a network that extends over a large geographical area such as state or countries.

      * A Wide Area Network is quite bigger network than LAN.

      * A Wide Area Network is not limited to a single location, but it spans over a large geographical area through a telephone line, fibre 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.

Q.2. Ans. Shielded Twisted Pair (STP):

Shielded Twisted Pair (STP) is a special kind of cooper telephone and local area network (LAN) wiring used in some business installations. It adds an outer covering or shield that functions as a ground to ordinary twisted pair wiring.

Twisted pair is the ordinary cooper wire that connects many computer networks to the telephone company. To reduce cross- talk or electromagnetic induction between pairs of wires, two insulated copper wires are twisted around each other. Each signal on twisted pairs requires both wires. Unlike unshielded Twisted pair (UTP), shielded twisted pair also enclosed this wire in a shield and grounds them to further reduce electromagnetic and radio frequency interference. STP cable are more expensive and harder to install than UTP wiring.

Shielded twisted pairs come in a variety of cable categories. The most popular in used today are Cat5e, Cat6, Cat6a and Cat7. In electrically noisy business environment, Shielded twisted pair uses RS-499, RJ-45, RS-232 and RJ-11 connectors to maximise the induction of interference.

Unshielded Twisted Pair (UTP):

Unshielded Twisted Pair cable is a 100ohm copper that consist of 2 to 1800 UTP surrounded by an outer jacket. They have no metallic shield. This makes the cable more small diameter but unprotected against electrical interference. The twist helps to improve its immunity to electrical noise and EMI.

Unshielded Twisted Pair (UTP) Cables are found in many Ethernet networks and telephone systems. For indoor telephone applications, UTP is often group into sets of 25 pairs according to a standard 25-pair colour code originally developed by AT&T corporation. A typical subset of these colours (white/blue, blue/white, white/orange, orange/white) shows up in the most UTP cables. The cables are typically made with copper wires measured at 22 or 24 American Wire Gauge (AWG), with the coloured insulation typically made from an insulator such as polyethylene or FEP and the total package covered in a polyethylene jacket.

UTP is also the most common cable used in computer networking standard, can used UTP cable. CAT3, CAT4, CAT5, CAT5e, cat6, etc. are some examples of Unshielded Twisted Pair cables.

Q.3. Ans. Difference between-

Baseband	Broadband
It refers to a communications channel in which information is carried in digital form.	The signals are modulated as radiofrequency analog waves that used 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 install and maintain.	Broadband systems are generally more expensive because of the additional hardware involved.

Baseband LANs have a limited distance reach is no more than a couple miles.	Broadband LANs span much longer distance than baseband (up to tens of kilometres).

Q.4. Ans.

1. 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 sends the data packets to all its ports. So as the name repeaters suggests, it only repeats the data from an incoming port to all the other devices; this leads to frequent collisions between packets.

2. 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.

3. 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.

4. 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 capacity.

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 (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.

Q5 Ans ;

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

Q6 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 ANS;

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

Q8 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 qns;

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 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.

Q11 ans;

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

Q12 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 wed (WWW) is an interconnected system of public webpages accessible through the internet.

Uses of internet in our daily life. The is 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 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.

Q14 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 ANS;

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