6. UNDERSTAND FEATURES OF INTERNET

6.1 Explain meaning of a computer network:-

- ✓ A computer network is a **number of computers interconnected** by one or more **transmission Paths** .The transmission path often is the telephone line.
- ✓ Computer network used for transfer and exchange of data between the computers and terminal.

Major goals of computer networking are:

1. **Sharing information**:-

    Networks allow people to easily share data and programs. you can exchange documents, spreadsheets, pictures and e-mail between computers.

2. Sharing equipments:-

    Computers connected to a network can share equipment, such as a printer, plotter etc. to reduce coasts. For example, rather than buying a printer for each person on a network, everyone can share one central printer.

- ✓ Different nettwork types are distinguished from following characteristices.
    1)size of the network.
    2)transmission technology.
   3)networking topology

Classification of networks:-

1. Local area network(LAN).

2. Metropolitan network (MAN).

3. Wide area network(WAN).

6.2 Describe the concept of local area network(LAN):-

- ✓ A local area network is a digital communication system capable of **interconnection all computers and terminals with in a limited area**, such as office building or factory or a campus and share memory of the central computers.
- ✓ Computers in a LAN can **communicate over twisted pairs** (telephone lines),**coaxial or fiber optical cables.twistedpairs** provide the lowest rate of data transmission but have the advantages that they are already installed in many office buildings.
- ✓ The main purposes of the LAN are to **link computers within an organization or campus,** so we can share expensive peripheral devices.

    For Example high speed printers or magnetic disks holding the database and the allow these computers to communication with each other.

Workstations / Printer / File Server
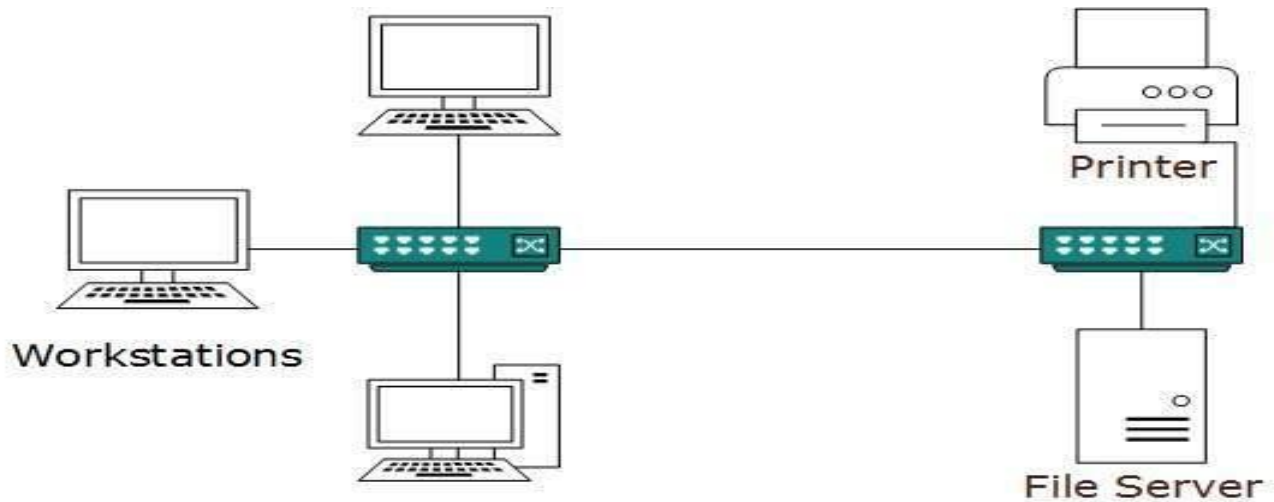
- ✓ Early **LAN's** had data rates in the 4 to 16 Mbps **range**. Today, speeds are normally 100 or 1000 Mbps.
- ✓ a typical LAN consists of a powerful microcomputers having a large hard disks know as network serve that controls and communicates all other network resources.

Characteristics of a LAN are:-

1. limited geographic operation.

2. High speed data transfer rates.

3. Full time connectivity to local services

4. Generally lower in cost than a wan.

5. Cabling is primary transmission medium

6. No need of leased lines.

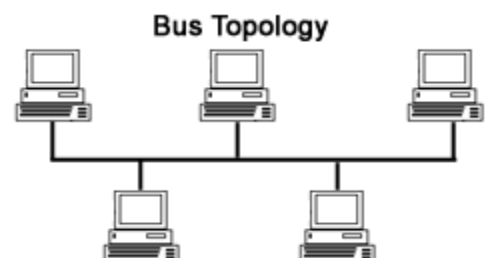- ✓ Star,bus,ring and mesh are common LAN topologies.

Star Topology

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.
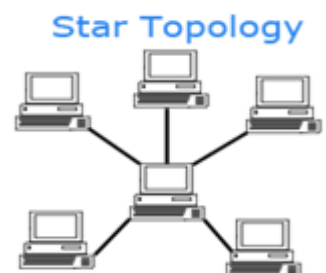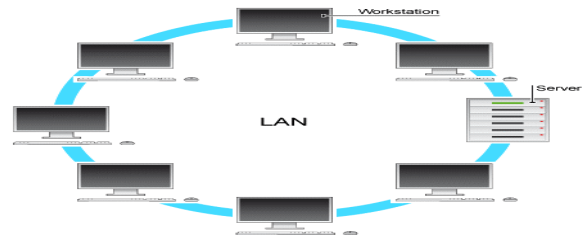
Bus topology
- ✓ a **bus topology** is a network setup in which each computer and network device are connected to a single cable.

Bus Topology

Ring topology

- ✓ A **ring network** is a network topology in which each node connects to exactly two other nodes.

Mesh topology
- ✓ **mesh network** is a local network topology in which the infrastructure nodes (i.e. bridges, switches and other infrastructure devices) connect directly, dynamically and non-hierarchically to as many other nodes as possible and cooperate with one another to efficiently route data from/to clients.
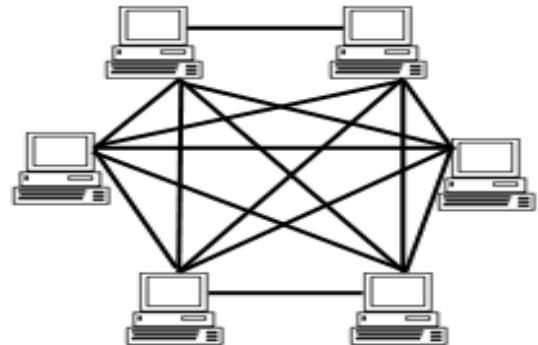
Advantages of LAN:-

1. Sharing of equipments will reduce the costs.
2. Data loss may not occur.
3. Users can access their files from any where.

Disadvantages:-

1. It is restricted to a limited geographical area.
2. It is owned by single organization.

6.3 Explain the concept of wide area network (WAN):-

- ✓ In a wide area network, the computer may be widely separated they may be in different cities, states or even countries it is a network of networks.
- ✓ In wan, the transmission medium used is normally public systems such as telephone lines or leased lines and satellite links.
- ✓ Wide area communications frequently take place over the ordinary telephone system with the aid of a modem (modulator- demodulator), which serves as the computers telephone set.
- ✓ The modem converts data from the computers into signals and can be sent over telephone lines and converts signals received over the lines into a from the computer can process
- ✓ Since the computer and other devices are physically distributed over a large geographic area.

Characteristics of wan:-

1. Large capacity and adapt to sudden communication

2. The data rates of wan are low as compared to data transfer rate of local area network.

3. The signals propagation delay is much greater than the local area network.

4. The typical data rates for wan are 56kbps to 155mbps, 622mbps, 2.4gbps or high speed wan.
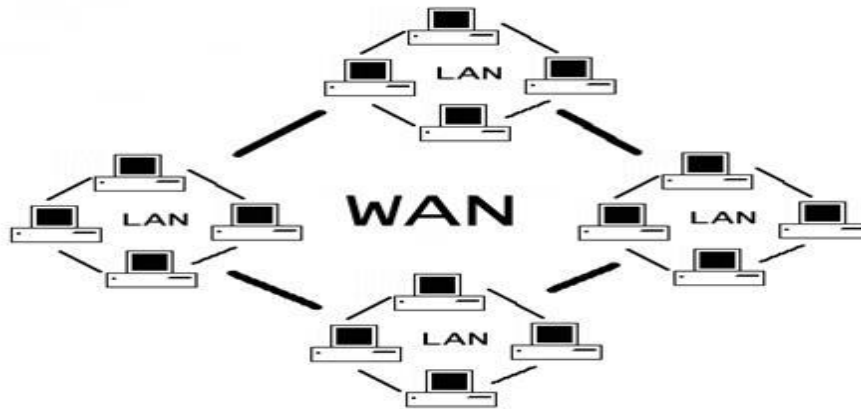
Advantages :-

1. Large network covers.
2. Share information/files over a large area.
3. Message can be sent very quickly to anyone else on the network.
4. Everyone on the network can use the some data.

Disadvantages:-

1. Data transfer rate is slow.
2. Security is a real issue when different people have the ability to use information from computers.
3. It is more expensive.

Compare LAN vs WAN

LAN	WAN
1. It stands for local area network.	1. It stands for wide area network.
2. It is restricted to a limited. geographical area from 100 meters to 10 km.	2. It spans greater distance and may operate country wide even world wide.
3. Cost of data transmission is very low.	3. Cost of data transmission is very high.
4. In a LAN computers and perhipheral devices are physically connected.	4. In a WAN terminals and perhipheral devices may not be physically connected.
5. Data transmission is very high.	5. Data transmission is very low.
6. Data loss may not occur.	6. Data loss may be occur.
7. LAN's are owned by single organization.	7. WAN's are owned by multiple organization.

6.4 Compare internet and intranet:-

- ✓ The **Internet** is the global system of interconnected computer network that use the internet protocal suite (TCP/IP) to link devices worldwide.
- ✓ An **intranet** is a private network accessible only to an organisation's staff. an intranet is established with the technologies for local area network (LANs) and wide area network (WANs).

Internet	Intranet
1. It is a network of computers which is open to the entire world.	1.Network of computers belongs to the users of a specific organization
2. Accessible to all.	2.Acessable to only a few people
3. Unlimited number of users can access internet.	3. Only the employs of an organization or authorized users can access internet.
4. Supports unlimited traffic.	4. Supports limited traffic.
5. Can be accessed by internet such as lans and wans.	5. Only members can access intranet hosted sites.
6. Less secured.	6. More secured.
7.Contains many intranets such as lans and wans.	7.It is single LAN, MAN or WAN
8.Contains unlimited amount of information.	8.Contains information intended for a specific group of purpose

6.5 Describe the relevance of an internet service provider:-

- ✓ An internet services provider is a company that provides internet access to customers by changing a monthly fee in order to use internet.
- ✓ In addition to basic internet connectivity, many ISPs also offer related internet services like email, web hosting and access to software tools.

Some of the ISP providers in India are

1. Bharat sanchar nigam ltd (BSNL).
2. Mahan agar Telephone nigam ltd(MTNL).
3. Reliance communications ltd(RCL).
4. Tata Teleservices ltd.(TTL).
5. Bharti airtal ltd(BAL).

Three types of ISPs are available, they are:-

1. Dial-up Modem services

2. Cable modem.

3. Digital lines subscribers (dsl) offered by phone companies.

4.Fiber optices

- ✓ Modem connection to one of the ISPs routers, which routes you to the internet. you can access information from anywhere around the world.

- ✓ More recently, Wireless Internet services provide or WISPs have emerged that offer internet access.

Dial-up Modem services:-

- ✓ It is a method of connecting to the internet using an existing telephone line. When your computer is connected to the internet you cannot receive voice telephone calls on this telephone line during that time
- ✓ In Dialup you are assigned an account on the save of IPS along with some storage space on the disk of save. You are also assigned a user-id and password.
- ✓ The client enters the user-id and password and gets connected to the internet via the ISP

Cable modem:-

- ✓ The user can connected to the internet via cable modem through cable television. The cable modem provides two connections- one for television and other for computer.
- ✓ The cable modem sends and receives data through the coaxial cable which connects the cable modem to the cable service provider.
- ✓ Like DSL cable modem provides high-speed internet connection. However while using cable modem. The bandwidth is shared by many users.

Digital Subscriber Line(DSL):-

- ✓ DSL is a broad band connection that allows connecting to internet over the existing telephone lines. It does not affect your telephone voice services. DSL uses the modem provided by ISP.
- ✓ DSL is almost ten times faster then dial-up access and is an always – on connection.

Fiber Internet:

- ✓ The Fastest internet speeds available today.
- ✓ Downloads and upload speed of 1000mbps.
- ✓ Use light to send data.
- ✓ More expensive then dsl,cable modems.

6.6 Explain the role of a modem in accessing the internet:-

- ✓ A Modem stands for modulator-demodulator. It is a device used to send and receive digital data.
- ✓ A modem serves to translate data sent to internet and takes internet data into from that a computer can understand. Without modem a computer can never connect to the internet.

Function of a MODEM:-

- ✓ A modem can transmit information over a phone line, coaxial cable, fiber-optic cable or through wireless radio signals from a computer after converting the digital data in to analog from.
- ✓ It also receives analog signals from the phone line and converts into digital data before sending into a personal computer or other device.

Dial-up Modems:-

- ✓ Olden MODEMS with less speeds used to connect users to small localized networks and from there to internet.

Modern Modems:-

- ✓ These are high-speed MODEMS. Examples are DSL modems, or fiber-optic modems. The modem's role of sending and receiving data has not changed.

6.7 Explain the installation procedure of a MODEM using control panel:-

- ✓ Modem stands for modulator/demodulator.
- ✓ A modem converts digital signal to analog signal from the computer at the sending end that pass over the telephone lines. at the receiving end, another modem converts analog signal to digital.
- ✓ digital to analog conversion is called modulation and analog to digital conversion is called demodulation.

IF you have no modem on the computer and want to install one, follow these steps.

→ Shutdown windows then turn he computer off connect the modem to the computer.

(i)If it's an external modem, you need to plug it into a serials port on the back of the computer box. You will also need to plug the modem's electrical cord into an outlet, connect a phone line from the modem to a phone jack, then sure to turn the modem on before proceeding.

(ii) For an internal modem you will open the computer box. The instruction that come with the modem should help.

Installing a modem

- ✓ Click on start and select and select control panel then the control panel window will be appear.
- ✓ Double click on phone and modems options then the phones and modems window will display .
- ✓ Select modems tab
- ✓ If you want add modem click on add button.
  Add hardware wizard will appear .

7
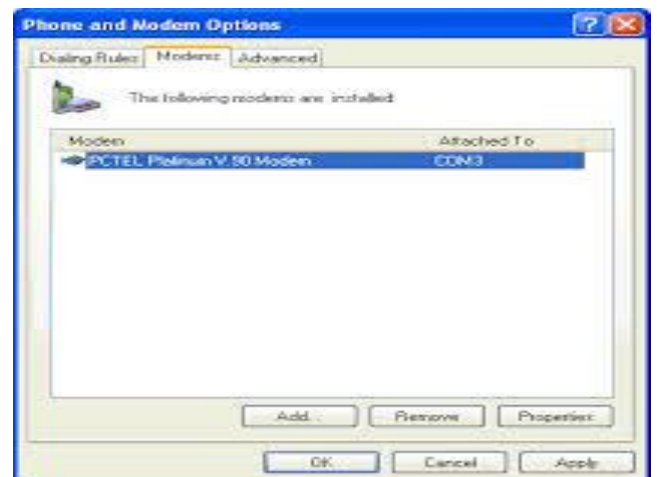
✓ Window will now try to detect your modem. Don't detect my modem. You will select it from list.
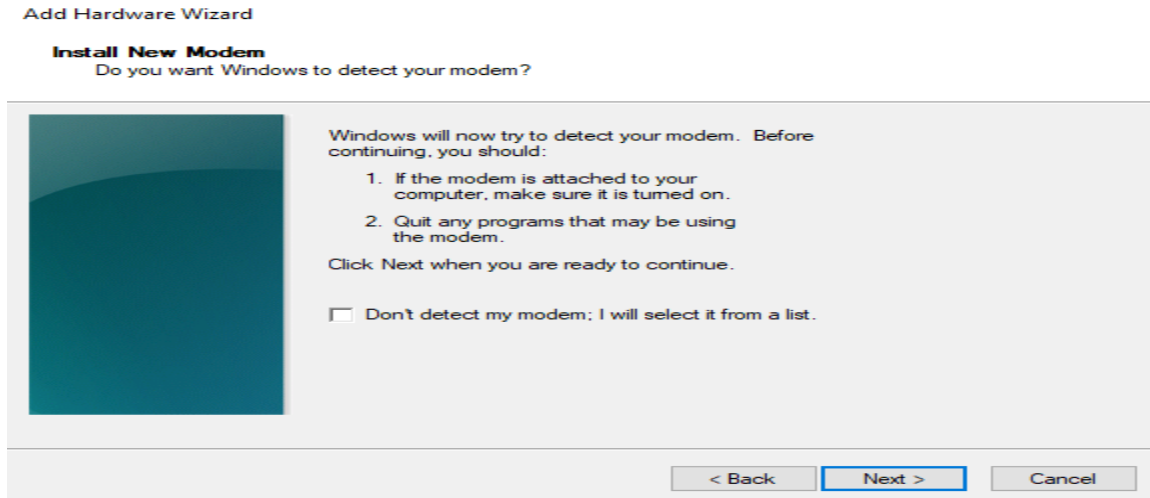
✓ Click on next. After a few seconds, windows displays the next screen.
✓ To select your modem from a list, name of the modem's manufactures.The model list displays the model produced by the selected manufactures. Click on next button.
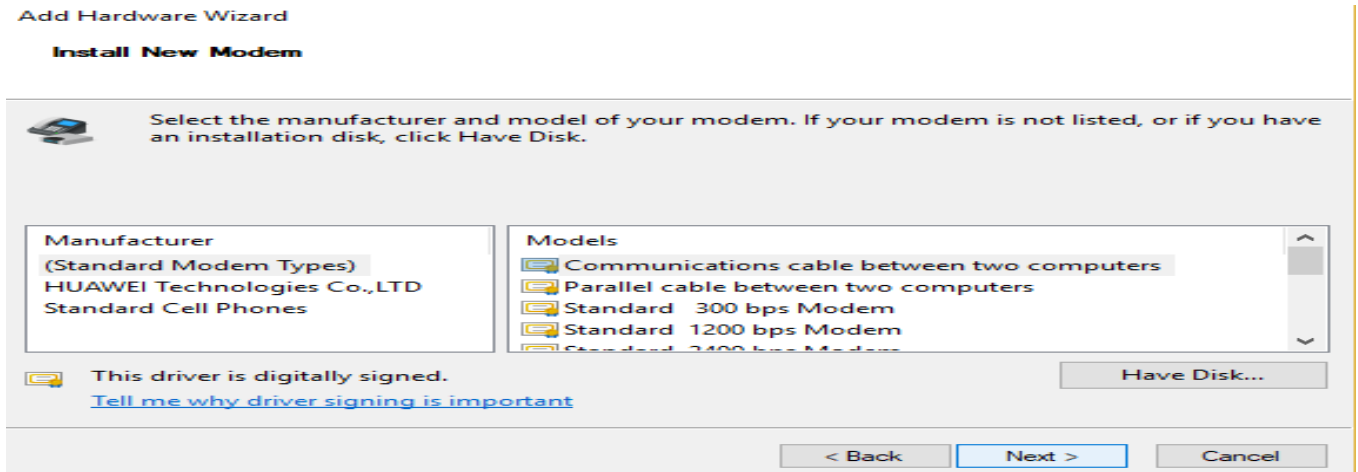
On which ports do you want to install
- All ports
- Selected ports
  → Select any one option. And click on next. Your modem has been set up successfully.click on finish button.
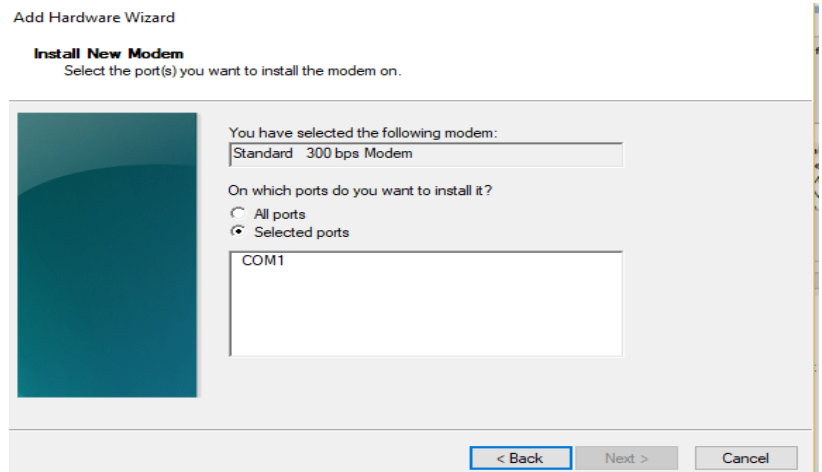
6.8 Explain the purpose of web browser software:-

- ✓ Web browser is a computer program which enables internet users to travel in web by accessing web pages using web addresses and hyper links.
- ✓ The information required may be anywhere in the web.The browser program picks up the computer on internet which contains desired information and makes it available to user.
- ✓ The first web browser was invented in 1990 by Sir tim berners lee. His browser was called world wide web and later renamed Nexus.
  - ✓ The first commonly available web browser with a graphical user interface was Erwise web browser.

Browsers are of two types:-

1. Graphical browser.
2. Text based web browser.

Graphical browser:- It provide a graphical user interface like graphices, videos,images.

Text based web browser:- A **text-based web browser** is a web browser that renders only the text of web pages and ignores graphices content.
Eaxmples WEB browsers are LYNX,line mode web browser,links web browsers.

The function of web browser is:-
- ✓ Rendering Required web pages.
- ✓ Its queries the web server when a pages is requested and displays the results inside the browser.
- ✓ Reads HTML documents and display them as a web pages.
- ✓ The web browser displays videos, music and other things that are stored in your computer or websites.
- ✓ Navigating to other web pages THROUGH HYPER LINKS.

Examples of popular browser are:-
1. Google Chrome, 2. Internet Explorer, 3. Mozilla Fire Fox,4. Safari,5. Opermini, 6. Netscape Navigator 7.UC browser.

6.9 Explain the structure of a uniform resource locator:-

- ✓ URL stands for uniform resource locator.Each web pages has a unique address, called URL.that means,URL is the address of a location on the internet. Sometimes URL is called the internet address or web address.
- ✓ You can display any web pages if you know its URL.must web pages URLs start with http (hyper text transfer protocol).Normally, the URL has three parts. the format of a url is a follows:

  Protocol://address/path
  How://where/what.
  an example of url is https://apsbtet.net/studentportal/Screens/MainHome.aspx
  - → The first part of a URL specifies the protocol, the methods that a computer uses to access this file.

→ The next part of the address denotes the name of the computer where the pages reside. just as a waiter serves food, a web server "serves" web pages.

→ The last part provides the local name uniquely identifying the specific pages. if no name uniquely identifying the specific pages. if no name is specified, the web server where the pages is located may supply a file.

✓ A URL includes a protocol identifier, a computer name, and a pages name. Both the protocol identifier and pages name are optional. Your browser flits in the protocol identifier http:// if the omit it; than the connection should uses the Hyper text transfer protocol, which is the standard language for delivering the web pages across the internet.

✓ Every URL requires a computer name. Most web server computer names are www followed by the site name(such as EENADU.NET)the complete name of the web server for EENADU daily newspaper is therefore www.eenadu.net.the dots in the computer names of the web server name separate parts of a naming hierarchy in which the last part of the name identifies the location or type of web site.

✓ For Example, .com indicates a commercial site, .gov an government site, and .org an organization site.

6.10 Describe the purpose of World Wide Web, FTP, TELNET and E-mail:-

FTP:-

✓ it stands for file transfer protocol. It is an internet tool used for copying files from one computer to another.

✓ It gives access to directories or folders on remote computers, and allows software, data and text files to be transformed between different kinds of computers.

✓ Using a FTP program or a web browser the user can log onto an FTP host computer over internet and copy files onto their own computer.

✓ Ftp uses a cilent-server system,in which files are stored at a central computer and transferred between that computer and other widely distributed computers.

✓ The central computer runs software called ftp server and the software at other widely Distributed computers runs ftp cilent.

✓ Ftp communication is always between cilent and server never between cilents.

✓ Ftp is designed for distributing files to a number of users it is not designed for communicating files between individuals.

The goals of FTP are as follows

• FTP promotes sharing of files, and other types of data.
• FTP encourages indirect use of remote computers.
• Universities and software companies use FTP host computers to provide visitors with access to data

World wide web:-
The World Wide Web ("WWW" or the "Web") is a global information medium which users can access via computers connected to the Internet. Web is a service that operates over the Internet.

1. world wide web is a server in the internet simply it is defined as a universal database of knowledge .

2. The world wide web is an application that uses the internet as a platform. Since the internet already provides a means for any computer to communicate with any other, world wide web is a global application.
3. The web uses a specific internet protocol called HTTP to support hypertext documents

Purpose of www:-

- You can download the desired files available on other computers in the internet. Also you can upload for the interesting documents.
- You can do shopping from your home
- You can listen audio files, view movie files etc.

The world web is based on these technologies
   1)Html-hypertext markup language used to build web pages.
   2)http-hyper text transfer protocal provide a standard for web browsers and communicate.
   3)webservers and web browsers:to store and access web pages.

Telnet:-

- ✓ Telnet stands for terminal network . It is another important facility on the internet. It allows user to access the remote systems   and make use of it.
- ✓ To access with remote systems the user much have an account on the remote system.
- ✓ The computer which initiates (or) call for connection is called local computer.
- ✓ The computer which accepts the connection is referred to as remote computer.
- ✓ Telnet is different from FTP. While FTP allows transfer of files from the host computer, Telnet allows access to the computing facility of the host computer but does not allow transfer files.
- ✓ When you type a command, TELNET , the displays the results from the remote computer on your computer.

E-mail:-

- ✓ E-mail stands for electronic mail is an electronic message transmitted over a network from one user to another.
- ✓ E-mail is a text-based mail consisting of lines of text, and can include attachments such as audio messages, pictures and documents.

The features of e-mail are as follows

- E-mail can be sent to one person or more than one person at the same time.
- E-mail provides a fast economical and convenient way to exchange message.
- E-mail messages can be sent at any time of the day.
- E-mail messages are passed through the internet by using a protocol called Simple Mail Transfer Protocol(SMTP).
- E-mail has features of the regular postal service. All the way through computers.
- An e-mail address consists of two parts separated by @ symbol(spelled as at)-The first part is user- name and the second part is host computer name. The e-mail address may look like
             AANM@ gmail.com
           Where AANM is the user-name, Gmail.com is the domain name.

Advantages of e-mail:-

1. Convenience. 2. Speed 3.Inexpensive   4.Printable 5.Global

6.11 Explain the process of sending and receiving E-mails:-

To send an e-mail message follows these steps .

1. First sign in to your e-mail
2. Then click on compose button. The compose page will be displayed as show below.

3. Then it will show the 'TO' and CC boxes. In that box you will type full e-mail name of each recipient. Separating name with comma (or) semicolon.

4. In the subject box, you should type a message title.

5. you can also attach files in that mail

6. Then click on the send button. Then e-mail will be sent to your destination.
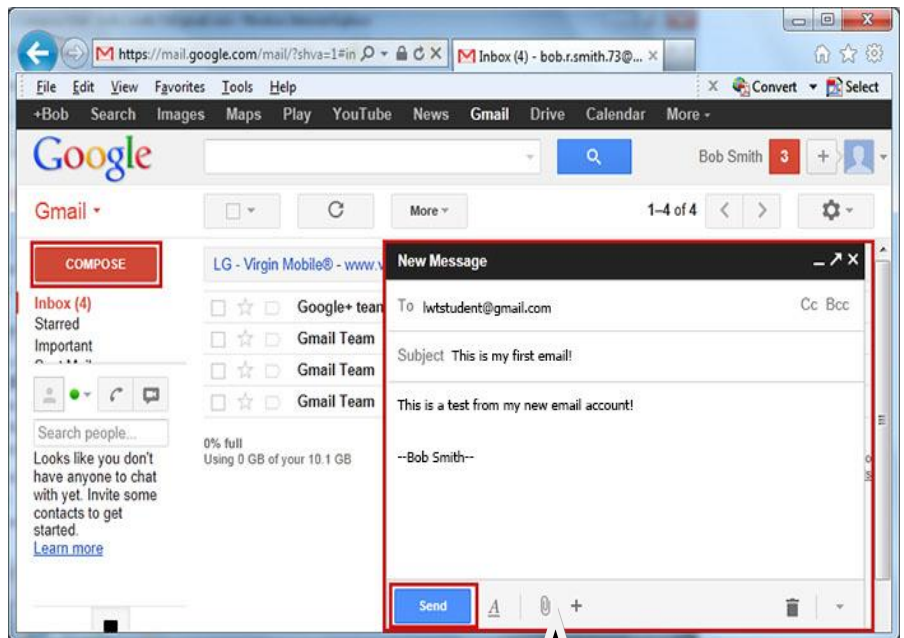

Attach file

Receiving an e-Mail Message

1. If you want to see receiving message click on the Inbox button.
2. Then Inbox will be shown list of Messages .
3. Then we select particular Message to view and double click on the particular Message.
4. Particular content of Mail will be open.

6.12 Describe address format and IP address: -

Address format

- Internet addressing system is used to keep the track of the millions of its users.
- Each computer on the network is called a 'HOST' and has a name and a number.
- Computers are identified with IP address and domain names.
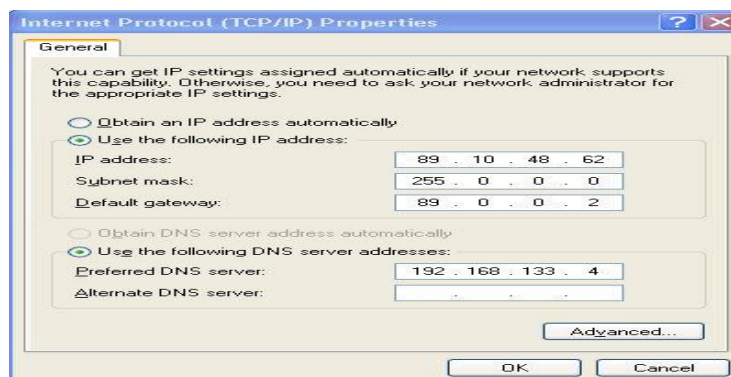
IP address: -

- Each host computer on the internet has a unique number called its IP address.
- **IP address are divided into IPV4 and IPV6.**
- the format of an IPV4 address is a 32-bit address written as four numbers separated by periods. Each number can be 0 to 255.
- For example 192.168.59.1 could be an IP address.
- IP address identify the host computer. So that packets of information reach the correct computer.
- The name of each host computer consist of a series of words separated by dots. Most computers on the internet have a unique domain name.

There are five classes of available IP ranges class A, class B, class C, class D, class E, while only A, B, C are commonly used.
Each class allows for a range of valid IP addresses as shown below

| class	Address Range	
Class A	1.0.0.0 to 126.255.255.255	Supports 16 million hosts an each of 127 networks.
Class B	128.0.0.0 to 191.255.255.255	Supports 65,000 hosts on each of 16,000 n/w
Class C	192.0.0.0 to 223.255.254.255	Supports 254 hosts on each of 2 million n/w
Class D	224.0.0.0 to 239.255.255.255	Resaved for multicast groups
Class E	240.0.0.0 to 254.255.255.255	Resaved for future use or research and development purpose

6.13 Describe DNS: -

- DNS stands for Domain Name Service (or) Domain Name System. IP addresses are numeric , it is difficult to remember everyone's IP address, so, instead of numeric IP address, domain name is usd.
- DNS translates internet domain and host names to IP address.
- Dns server is a computer having a database that stores the ip address and domain name.
- DNS automatically converts the websitename in to the IP addresses of web servers .

- DNS implements a distributed data base to store domain names and respective IP addresses information for all public hosts on the Internet.
- When the domain name is typed in address bar of a web browser. A piece of software called the DNS resolver. First contacts a DNS saver to determine the server's IP address .

- ✓
- ✓
- ✓
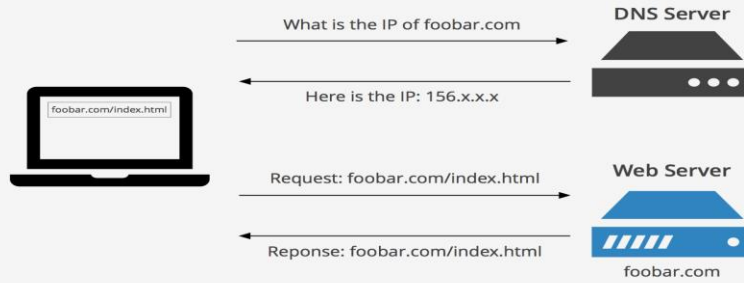
What Is a DNS Server?

- ✓ In this example a cilent computer queries a dns server asking for the ip address of foobor.com.then dns gives the ip address to cilent.
- ✓ If dns sever has no domain name stored in dns,then dns calls the root server.
- ✓ If root server has no domain available then it redirect to TLD Server and name server.
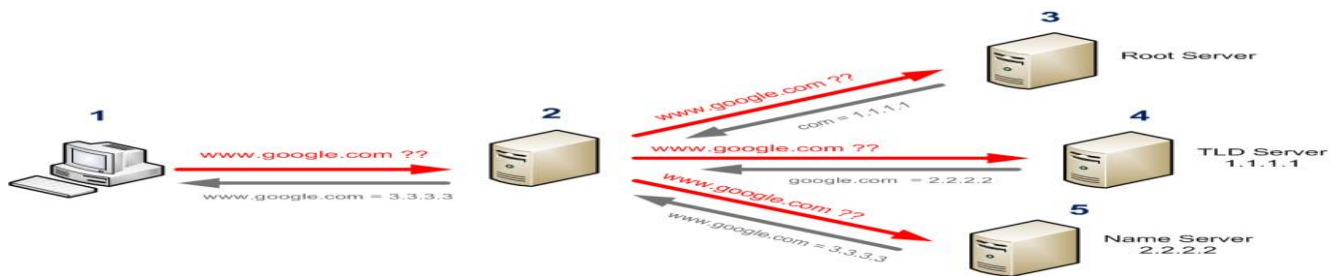
6.14 Explain the role of search engines with example

- ✓ Web search engines are used to fetch many document (or) websites that available on the internet.
- ✓ A search engine searches a database of internet files by using a computer program called crawler (or) spider.
- ✓ It allows the use to enter keywords relating to particular topics and retrieve information about the internet sites containing those keywords.
- ✓ A search engine consists of four components they are

  Spider:- program that traverses web form link to link identifying and reading pages.

  Indexing software:- program that analysis web pages that are downloaded by spiders.

  Database:- warehouse of web pages downloaded and processed.

  Search engine mechanism:- software that enables users to query the index and that usually return results in term relevance ranked order.

  - A search engine does not really search the web directly to find information on the millions web pages, a search engine employs special software called spiders.
  - After spiders find pages, they pass then on to another computer programming for indexing.This program identifies the text, links and other content in the page and stores it in the search engine database.

  Various search engines are:1)GOOGLE 2)YAHOO 3)BING 4)ASKME 5)DUCKDUCKGO 6) MSN

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6.15 Describe DHCP:-

DHCP means Dynamic Host Configuration Protocol.
- ✓ When a computer uses a static IP adderss, it means that the computer is manully configurative to use a specific IP address.
- ✓ Static IP address must be entered manually at each in an organization and new IP address must be entered each time a computer moves to a new location on the network.
- ✓ DHCP is a client/server network protocol that address to a computer from a defined range of computer.
- ✓ Using to dynamically assign IP address minizes these conflicts.
- ✓ DHCP uses the concept of a lees (or) amount of time that a given.IP address will be valid for a computer.
- ✓ To make use of DHCP facility these must be two types of computers on the network.
   - ▪ They are:

DHCP server:-

✓A computer running the DHCP server services that holds information about available IP address and related configuration information as defined by the DHCP administrator and responds to requests from the DHCP clients.

DHCP client:-

A computer that gets its IP configuration information by using DHCP.DHCP assign an IP address when a system is started in the following order.

1. User turns on a computer with DHCP client.
2. Client computer sends server a board coast request for locking for a DHCP server to answer.
3. The router directs the discover packets to the DHCP server
4. The server receives the discover packets based on available and usage policies set on the server.

6.16   Explain Social network sites:-

Social network are used to make the people to connect to other directly by using special sites such   as face book, twitter.

1. **Purely personal reasons:-**

To keep in touch with friends hundreds of million a way through text discussions by uploading/watching family photo and videos. Ex:hangouts,gmail,facebook

2. **Business with connecting network:-**

Companies directly speak to their customers, to give them better services. Ex www.hp.com

3. **Business network:-**

Used to find best business partness(or)new jobs by connecting and knowing about many people. Ex: www.naukri.com

4. **Marketing:-**

Marketing agencies post the details and features on newer products,their discounts, special offer to their followers and thus by markets their products. Ex:flipkart,snapdeal,amazon.

5. Entertainment:-

This network act as a mass storage of libraries for audio, videos, games, news etc.

Ex:southmp3.com

6.View/News sharing:-

Many people like our president,our movie heroes then we share their news.you can also have social network account and can post news to the world.ex: twitter,dailyhunt.

6.17 Describe Internet security:-

Networking was used, it was limited to military and universities for research and development purpose.

All security threats are international. They occur only if internationally triggered. security threads can be divided into below categories.

Interruption:-Attacking the resources for example a user is unable to access it web server(or) the web server is hijacked.

Privacy breach: Stealing the privacy of a user. For example someone who is the authorized person is accessing(or)received by the original authenticated user.

Integrity: Alteration (or) modification of some once data. The attacker receives the data sender and modifier it (or) generates a false data and sends to the receiver

Authenticity:-Steals security credentials like username/password/pin no. etc.

→ We can't provide 100% security in network. But steps can be taken to secure data. most widely used technique is cryptography
→ Cryptography is a technique to encrypt the plain-text data which makes it difficult to understand and interpret.

cryptographic algorithm are: 1)secret key 2)public key 3)message digest

1. **Secret key encryption:** - both sender and receiver have one secret key. this secret key is used to encrypt the data at senders end. after encrypting data then sent to receiver knows the secret key. Encrypted data packets can easily be decrypted.
2. **public key encryption:-** each user has its own secret key and it share in domain. Along with the secret key, every user has its own but public key is always made for public and is used by senders to encrypt the data. When users receives the encrypted data. He can easily decrypt it by using its own secret key.
   3.message digest:- in this method the actual data is not sent instead a hash value is calculated and sent. at other end user computes its own hash value and compares with the one just received.

ASSIGNMENT QUESTIONS
1)Explain Meaning Of Compuetr Network.2)Compare Internet And Intranet.
3)Installation Of Modem.4)Various Types Of Web Browsers.5)Explain Url.