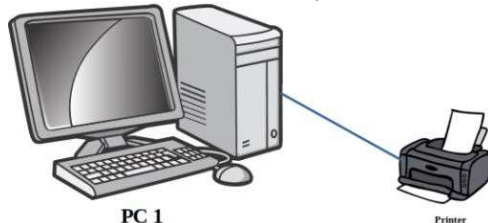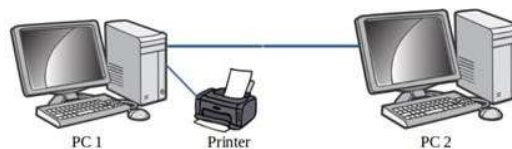# Unit 3

Introduction to Computer Networks

Consider a standalone computer connected to a printer.

PC 1

This computer is useful for a particular person at a time. Every time we need to access the files from this PC the user needs to personally sit by it and work.

Concept of networking – Interconnection of Computers

Now we have connected PC 1 with PC 2. This is the most simple form of a computer network. The data/information in PC 1 can be accessed from PC 2 and vice-versa. Also printer can be used from both PC 1 and PC 2.

Two or more autonomous computing device connected to one another in order to exchange information or resources form a computer network.
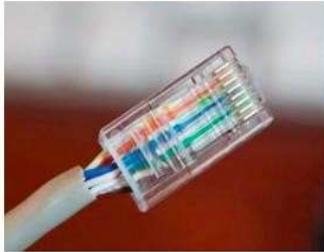
Advantages of using computer networks

- **Resource sharing**:-Resource sharing makes it possible to use resources economically, for example, to manage peripheral devices, such as laser printers, from all connected systems.
- **Data separation** :-Data separation provides the ability to access and manage databases fromperipheral workstations that need information
- **Separation of software tools**:- The separation of software tools provides the possibility of simultaneous use of centralized, previously installed software tools.
- **CPU resource sharing**:- With the separation of processor resources, it is possible to usecomputing power for data processing by other systems that are part of the network.
- **Multiuser mode**:-The multi-user properties of the system facilitate the simultaneous use of centralized application software tools previously installed and managed, for example, if the user of the system is working with another task, then the current work performed is pushed into the background.
-

Where to connect the network cable while networking and form of cabling

The network cable is connected to a RJ-45 connector(RJ – Registered Jack

RJ 45 with network cable attached   Network port   Network cable connected to port

Evolution of Computer Network - Types of computer network:

There is no single system that satisfies all computer networks. For classification, specific characteristics aredistinguished that allow the networks to be divided into separate types.

The following is the different types of network based on size of computer networks:
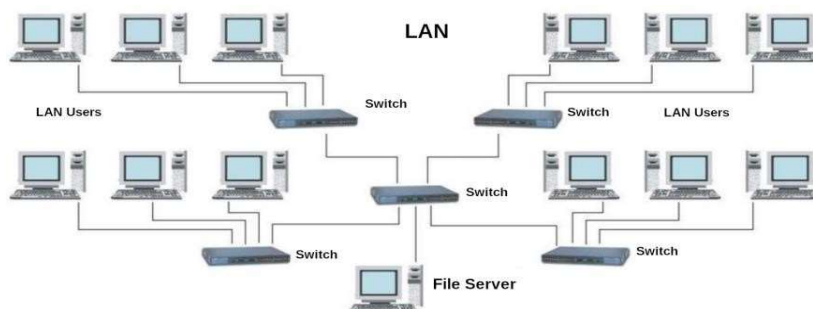
PAN

A Personal Area Network (PAN) allows devices to exchange data over short distances. PAN combines devices such as mice, keyboards, printers, smartphones, tablets, etc. The most common connection technology is Bluetooth. Bluetooth can give a range of upto 10metres.

LAN

A Local Area Network (LAN) is a computer network that, as a rule, covers a small area, located in one or morebuildings

The term "local" in this context refers to joint local management (does not mean the mandatory physical proximity of components to each other). A local network can be a home network, a combination of computers and other devices of a small office or a large enterprise

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Wired connections are widely used in LAN, most of which are made using copper wires, and some are fiber—optic. Usually, wired networks operate at speeds from 100 Mbit/s to 1 Gbit/s. More modern LAN can operate at a speed of 10 Gbit/s. The most common wired connection standard is the IEEE 802.3 standard, commonly referred to asEthernet.

In local area networks, along with wired technologies, wireless connections according to the IEEE 802.11 standard,better known as **Wi-Fi**, are widely used.

Wireless Wi-Fi networks operate at speeds from several to hundreds of megabits per second.

The size of LAN networks ranges from 10metres to 1

Km MAN

Metropolitan area network(MAN) unite computers within a city. As an example, we can consider a cable television

system in which it became possible to transmit digital data and, over time, the system turned into a computernetwork.

The size of MAN networks range from 1 Km to

10Km. WAN

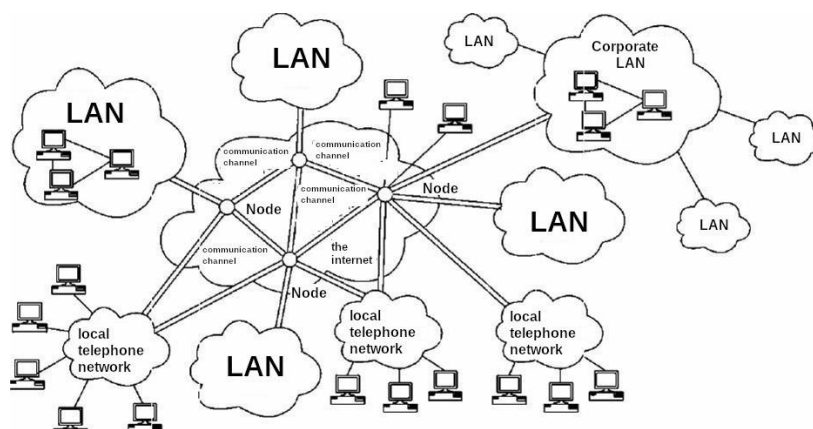The Wide Area Network(WAN) covers significant territories, connects local networks that can be located in

geographically remote areas. A global network is similar to a large wired local area network, but there are importantdifferences:

management of local networks and provision of access to the inter-network data transmission environment is carried out by various organizations;

networks using different types of network technologies can be connected;

with the help of communication channels, individual computers can communicate with local networks, or entire networks.

The Internet can be considered as a WAN. **A WAN ranges from 100km to 10000km.**

Network devices

We cannot always make sure that there is a dedicated connection from one computer to another one in a computer network. Further the data travels over the telephone network. Hence there arises the

need for different types of devices in computer networks. **Network devices provide transportation of data that needs to be transferred between end-user devices.** They extend and combine cable connections, convert data from one format to another, and control data transmission. Examples of devices that perform these functions are repeaters, hubs, switches, and routers.

Network card (NIC/NIU/TAP)

The devices that connect the end user to the network are also called terminal nodes. An example of such devices is an ordinary personal computer. To work on the network, each host is equipped with a **network Interface card** (NIC), also called a network adapter. As a rule, such devices can function without a computer network.

A network adapter is a printed circuit board that is inserted into a slot on the motherboard of a computer, or an external device. Each NIC adapter has a unique code called a **MAC address**. This address is used to organize the operation of these devices on the network.

Repeater

Repeaters are network devices operating at the first (physical) level of the OSI reference model. As the data leaves the sender's device and enters the network, they are converted into electrical or light pulses, which are then transmitted over the network transmission medium. Such pulses are called signals. When the signals leave the transmitting station, they are clear and easily recognizable. However, the longer the cable length, the weaker and less distinguishable the signal becomes as it passes through the network transmission medium. The purpose of using a repeater is to regenerate and resynchronize network signals, which allows them to be transmitted over a longer distance through the medium.
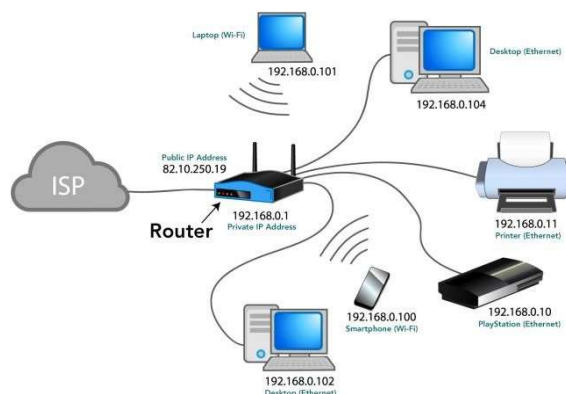
Hub

Hub is a network device used to combine devices. The hub can have from 8 to 32 ports for connecting computers. All the information that comes to the connector of one port will be copied automatically and sent to ALL other ports. The simplest hub is a multiport repeater.

Router

A router is a network device that facilitates and establishes a connection between a local network and the Internet by transmitting information to and from packet-switched networks. It performs this function by analyzing the data packet header, which contains the IP address of the packet destination. Based on the data packet, the router determines the most efficient route to the destination address. Simply put, a router routes information between connected networks.

The router is physically connected to the modem and other devices. The router creates a private network by receiving data from the Internet from the modem, which is connected via cable, DSL or other wired connection from an Internet service provider. Routers have several ports from which you can connect to devices to distribute Internet connectivity. By means of communication between modems and devices in the local network, the router facilitates communication with the Internet and within the network. The router provides connectivity at the network level of the system and thus functions at the third level of the OSI model.
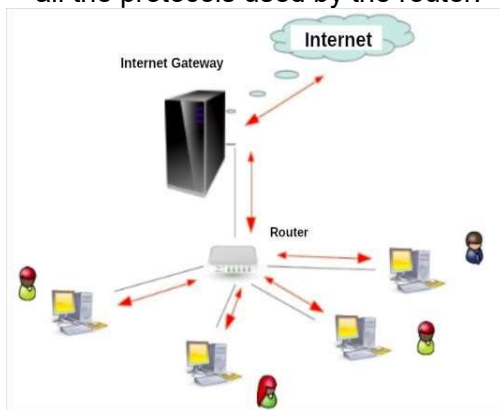
Working of a Router

This device also performs the functions of the Dynamic Host Configuration Protocol (DHCP), distributing private IP addresses between devices connected to the network. Routers for home or office have a privateor local address obtained from a reserved range of IP addresses. Devices on the network can have the same private IP address as devices in the neighbouring house. This is not a problem, since the devices are separately connected to different routers with a specific public IP address. Thus, the private IP address functions only so that the router can identify the device.

Gateway

A gateway is considered as a network device that acts as an entry point from one network to another. Themain task of a network gateway is to convert protocol(rules for communicaiton over the data network) between networks. A network gateway can accept a packet formatted for one protocol (for example, Apple Talk) and convert it into a packet of another protocol (for example, TCP/IP) before sending it to another network segment. Network gateways can be a hardware solution, software, or both, but usually itis software installed on a router or computer. The network gateway must understand all the protocols used by the router.

aptops and other devices to a shared local network. For example, take a large company with dozens and hundreds of employees. There is a marketing department, a sales department, financiers, a director. They need to exchange information, use common tables and programs.Doing this via the Internet is inconvenient and dangerous (if we talk about observing trade secrets). It is better to combine working computers into a common closed network, where there is no access tooutsiders. For large video surveillance systems, switches are also needed. Switches are also used at home.
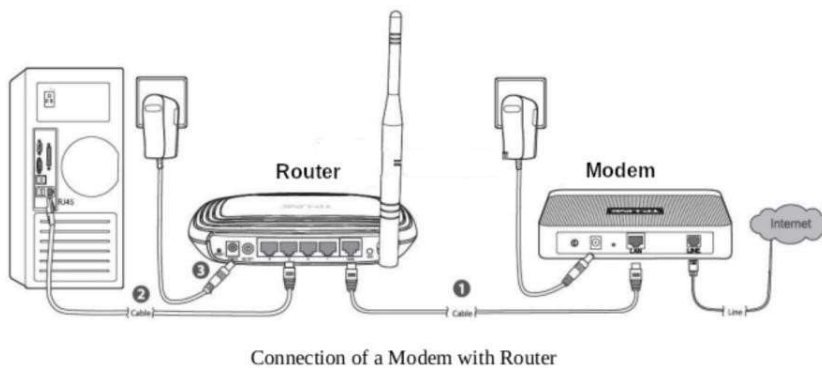

Switch at home

Switch is also a network device used to connect multiple devices together like Hub. But the difference between the hub and switch is that hub forward the received messages to all the connecting devices and switch forward the message to the intended device only. So switch is known as the intelligent device.

Modem modulator / demodulator

A modem is a device that converts a digital signal into an analog signal and vice versa. The modem connects the user's computer or laptop to the Internet. It works in two directionsat once:

- Receives a digital signal from a PC, converts it to analog (in the form of a wave)and transmits the request to the servers storing the necessary information;
- Receives the response to the sent request in analog form, converts it to digital andtransmits it to the PC

Connection of a Modem with Router

Nowadays the router and modem are combined together in a single device. The device is called a router.

Supplementary notes on Network Model and Addressing methods
Network model

The OSI model, is the core on which any modern network and devices connected to it are managed and interact. There are 7 levels in the OSI model.

Level	Name of layer	Devices working in the layer
Level 7	Application	-
Level 6	Presentation	-
Level 5	Session	-
Level 4	Transport	-
Level 3	Network	Router, Gateway
Level 2	Data link.	Network Switch, Modem

Addressing of Devices in Computer Networks:

Each network computer has as many as three addresses: physical (MAC address), network (IP address) andsymbolic (regular computer name or full domain name)

To transmit data in local and global networks, the sending device must know the address of the receiving device. Therefore, each network computer has a unique address, and not one, but as many as three addresses: physical or hardware (MAC address); network (IP address); symbolic (regular computer nameor full domain name).

Physical address of the computer

The physical (hardware) address of the computer depends on the technology with which the network is built. In Ethernet networks, this is the MAC address of the network adapter. The MAC address is hard-wired into the network card by its manufacturer and is usually written as 12 hexadecimal digits (for example, 00-03-BC-12-5D-4E).

This is guaranteed to be a unique address: the first six characters identify the manufacturer, which ensuresthat the remaining six characters are not repeated on the production line. The MAC address is selected by the network equipment manufacturer from the address space allocated for it under the license. When a machine's network adapter is replaced, its MAC address also changes.

You can find out the MAC address of your computer's network card as follows:
1. Go to "Start" – "Run" - enter the command cmd – "OK" from the keyboard.
2. Enter the ipconfig /all command and press Enter.
This command allows you to get complete information about all PC network cards. Therefore, find thePhysical address line in this window – it will indicate the MAC address of your network card.

The network address of the computer

The network address or IP address is used in TCP/IP networks when exchanging data at the network level. IP stands for Internet Protocol . The computer's IP address is 32 bits long and consists of four parts called octets. Each octet can take values from 0 to 255 (for example, 90.188.125.200). Octets are separated fromeach other by dots.

The IP address of a computer, for example 192.168.1.10, consists of two parts – the network number(sometimes called the network identifier) and the network computer number (host identifier). The network number must be the same for all computers on the network and in our example the network number will be 192.168.1. The computer number must be unique in this network, and the computer in our example has the number 10.

The IP addresses of computers on different networks may have the same numbers. For example, computers with IP addresses 192.168.1.10 and 192.168.15.10, although they have the same numbers (10),but belong to different networks (1 and 15). Since the network addresses are different, computers cannot be confused with each other.
The IP addresses of computers on the same network should not be repeated. For example, it is unacceptable to use the same addresses 192.168.1.20 and 192.168.1.20 for two computers on your local network. This will lead to their conflict. If you turn on one of these computers earlier, when you turn on the second computer, you will see a message about an erroneous IP **address:conflict** of IP addresses with another system on the net in this case, just change the address on one of the computers.

To separate the network number from the computer number, a subnet mask is used. Outwardly, the subnet mask is the same set of four octets separated by dots. But, as a rule, most of the digits in it are 255and 0.

If your computer is connected to a local network or the Internet, you can find out its IP address and subnetmask in a way that is already familiar to us:
1. Go to "Start" – "Run" - type cmd and click OK.

2. In the window that opens, enter the ipconfig /all command and press Enter.
You will see the computer's IP address and subnet mask in the corresponding lines:

Internal IP addresses are reserved for local networks (they cannot be accessed via the Internet withoutspecial software) from the ranges:

192.168.0.1 – 192.168.254.254
10.0.0.1 – 10.254.254.254
172.16.0.1 – 172.31.254.254

From these ranges, you, as a system administrator, will assign addresses to computers in your local network. If you "rigidly" fix the IP address in the computer settings, then such an address will be called static – it is a permanent, unchangeable IP address of the PC.
There is another type of IP addresses – dynamic, which change every time a computer enters the network.The DHCP service is responsible for managing the dynamic address allocation process.

Name of the network computer

In addition to physical and network addresses, a computer can also have a symbolic address – the name ofthe computer. The computer name is a more convenient and understandable designation for a computer on the network.

Questions:

1. The length of a network segment in a LAN network is more than 100meteres. Select the device to beconnected to maintain the strength of signal:
      a. Switch
      b. Router
      c. Gateway
      d. Repeater
2. Select the device that helps to transfer the digital signals to be transferred over telephone lines:
      a. Switch
      b. Modem
      c. Gateway
      d. Repeater

3. Which of the following devices causes congestion if conneced in a Computer Network?
      a. Switch
      b. Modem
      c. Gateway
      d. Hub

4. The System Administrator at Gyan international school wants to connect the LAN network at the schoolto the internet. Help him to choose the correct device for the job:

    a. Switch

    b. Repeater

    c. Router

    d. Hub

5. The Gyan international school has installed 40 computers in its Computer lab. Choose the correct deviceto form a LAN network involving the 40 computers.

    a. Switch

    b. Repeater

    c. Gateway

    d. Hub

6. The device used to connect two networks using different protocols is:

    a. Router

    b. Repeater

    c. Gateway

    d. HUB

7. The connector used for networking is:

    a. RJ - 11

    b. RI – 11

    c. RJ - 45

    d. RI- 45

8. What is the difference between a Hub and a Switch?

9. What is the difference between a Router and a Gateway ?

10. Why switch is called an intelligent device"

Solutions:

1. d. Repeater – The repeater amplifies the input signal to make up the loss in strength.
2. b. Modem – Modulator-Demodulator converts digital signal to anlog and vice-versa.
3. d. Hub -
4. c. Router
5. a. Switch
6. c. Gateway
7. c. RJ – 45 . RJ stands for Registered Jack.
8. The hub receives network data on one port and simply send information to all devicesConnected to it. Such data transmission has disadvantages:

    a. Heavy load on the network (data is sent to all computers on the networkat once);

    b. A large number of errors, especially when new computers appear;

    c. It is impossible to separate the flows of information, to send it in a targeted manner.

9.A gateway is a network device that allows a network to communicate with another network with other protocols (rules for communication). Gateways act as a network point that acts as an entrance to another network. A router connects two or more data lines, so when a packet arrives through one line, the router

reads the packet address information and determines the correct
  destination. These days, routers are mostly available with built-in gateway systems, making it easier for
           users who don't need to buyseparate systems.
10.Switch forward the message to the intended user only. It does not use the broadcast technology

Networking Topologies:

Topologies: The arrangement of computers and other peripherals in a network is called its topology.
Common network topologies are **bus, star mesh, and tree**

Bus Topology

In bus topology all the nodes are connected to a main cable called backbone. If any node has to send some
information to any other node, it sends the signal to the backbone. The signal travels through the entire length of
the backbone and is received by the node for which it is intended. A small device called terminator is attached at
each end of the backbone. When the signal reaches the end of backbone, it is absorbed by the terminator and the
backbone gets free to carry another signal.

Characteristics of Bus topology:

- ✓ It is easy to install.
- ✓ It requires less cable length
- ✓ It is cost effective.
- ✓ Failure of a node does not affect the network.
- ✓ Fault diagnosis is difficult.
- ✓ At a time only one node can transmit data.

Star Topology:

 In star topology each node is directly connected to a hub/switch. Star topology generally requires more
cable than bus topology.

Characteristics of Star topology:

- It is more efficient topology
- It is easy to install
- It is easy to diagnose the fault
- It is easy to expand
- Failure of hub/switch leads to failure of entire network
- It requires more cable length
-

Tree Topology:
   Tree topology is a combination of bus and star topologies. It is used to combine multiple star topology

networks. All the stars are connected together like a bus.
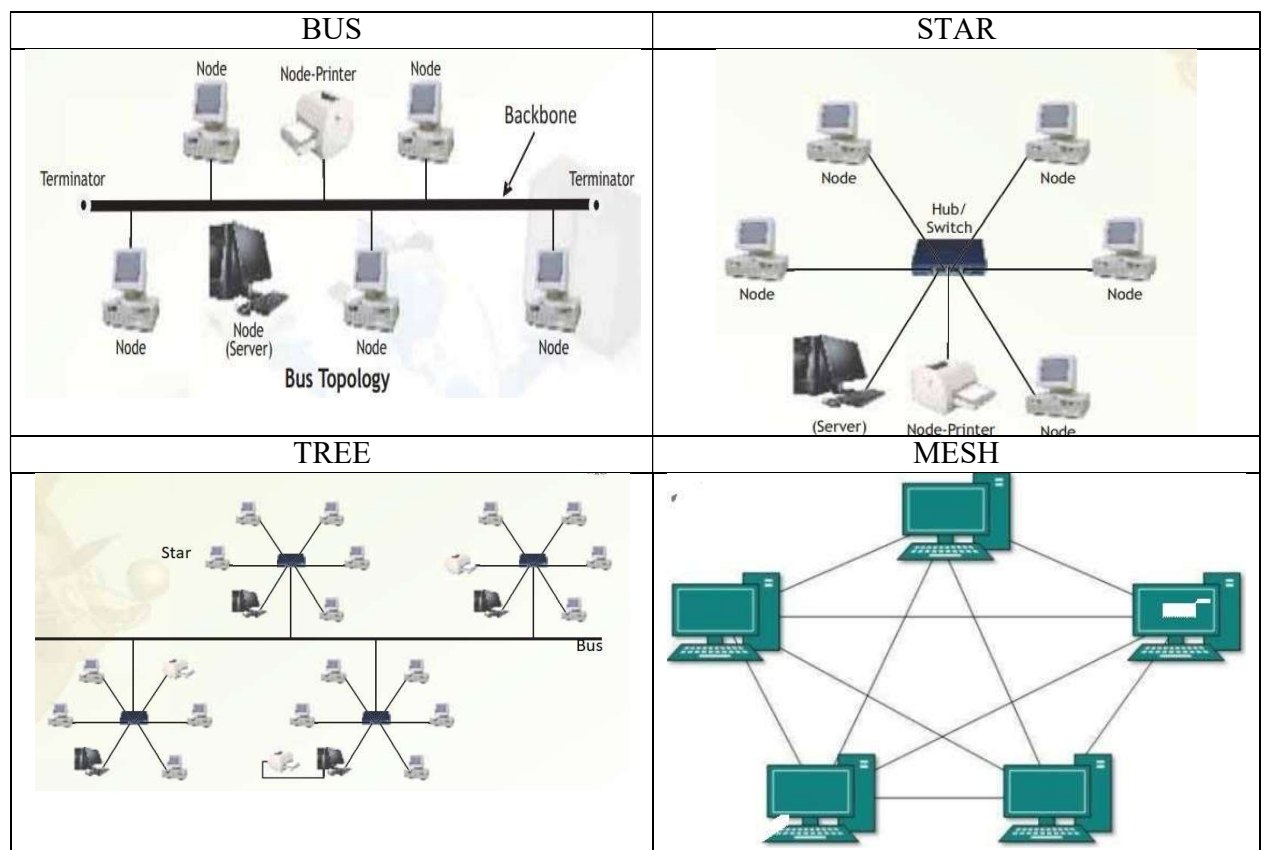
Characteristics of Tree topology:
- It offers easy way of network expansion.
- If one network (star) fails, the other networks remain connected and working.

Mesh Topology :
In this networking topology, each communicating device is connected with every other device in the network. To build a fully connected mesh topology of n nodes, requires n(n-1)/2 wires.

Characteristics of Mesh topology:
- Failure during a single device won't break the network.
- There is no traffic problem.
- It provides high privacy and security.
- A mesh doesn't have a centralized authority.
- It's costly.
- Installation is difficult

BUS	STAR
TREE	MESH

Introduction to Internet:

The Internet is the global network of computing devices including desktop, laptop, servers, tablets, mobile phones, other handheld devices as well as peripheral devices such as printers, scanners, etc. In addition, it consists of networking devices such as routers, switches, gateways, etc. Today, smart electronic applianceslike TV, AC, refrigerator, fan, light, etc., can also communicate through the Internet.

Applications of Internet
- The World Wide Web (WWW)
- Electronic mail (Email)
- Chat
- Voice Over Internet Protocol (VoIP)

The World Wide Web (WWW): The World Wide Web (WWW) or web in is information stored in interlinked web pages and web resources. The resources on the web can be shared or accessed through the Internet.Three fundamental technologies HTML,URL and HTTP leads to creation of web.

URL : A Uniform Resource Locator (URL) is a standard naming convention used for accessing resources over the Internet. URL is sometimes also called a web address. In below URL, http is the protocol name, it can be https, http,FTP, Telnet, etc. www is a sub domain. ncert.nic.in is the domain name

Electronic mail (Email) : Electronic mail is a means of sending and receiving message(s) through the Internet. The message can be either text entered directly onto the email application or an attached file (text, image audio, video, etc.) stored on a secondary storage. To use email service, one needs to register with an email serviceprovider by creating a mail account.

Chat : Chatting or Instant Messaging (IM) is communicating in real time using text message(s).

Voice Over Internet Protocol (VoIP): Voice over Internet Protocol (VoIP) allows you to have voicecalls over digital networks.

Points To Rember :

★ In Bus topology Nodes connected using single wire, cost effective, easy to install and fault diagnoseis difficult.
★ In star topology each Nodes is directly connected to hub/switch easy to install, expensive and easyto diagnose faults.
★ Tree is combination of star and bus.

★ Mesh topology each device is connected to every other device. No centralized device, andexpensive
★ WWW (World Wide Web)where documents and other web resources are identified by UniformResource Locator.
★ URL is a reference to a web resource that specifies its location on a computer network and amechanism for retrieving it.
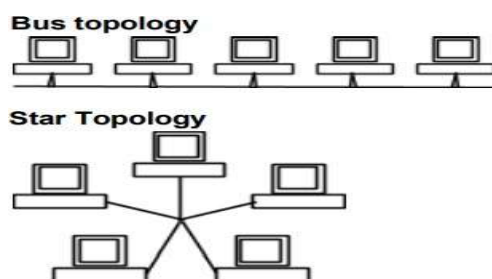★ Chat is real time texting.
★ VoIP allows voice calls.

Questions:
1. Physical arrangement of computers in a network is called network is called____.
2. In_____topology all the nodes are connected to a single cable.
3. Network topology in which you connect each node to the network along a single piece of cable iscalled _____
4. In_____Topology, a dedicated link connects device to central controller
5. In Star topology if central hub fails, it effects
   a. No effects b. Entire system c. Particular Node
6. Which of the following topologies is a combination of more than one topologies?
    a. Bus b. Tree c. Star d. None of these
7. Identify the type of topology from the following:
   a) Each node is connected with the help of a single cable.
    b) Each node is connected with central switching through independent cables.
8. Illustrate the layout for connecting 5 computers in a Bus and a Star topology of Networks.
9. Identify valid URL from the following
   a. http://www.cbse.nic.in/welcome.htm, b . www.cbse.nic.in/ http://welcome.htmc . http:// welcome.htm
10. Identify the protocol from the following .http://www.cbse.nic.in/welcome.htm
11. Guru wants to send a report on his trip to the North East to his mentor. The report contains images and videos. How can he accomplish his task through the Internet?
12. URL stands for
13. VoIP stands for
14. Name the protocol allows to have the voice call over the Internet
15. Which of the following will you suggest to establish the real-time textual communication between thepeople.
    a. E-mail
    b. Video Conferencing
    c. Chatting
    d. Real time communication is not possible

Answers:

1. Topology
2. Bus.
3. Bus
4. Star
5. Entire system

6. Tree
7. (a). BUS (b). Star
8. **Bus topology**

   Star Topology

9. http://www.cbse.nic.in/welcome.htm
10. http
11. E-mail
12. Uniform Resource locator
13. Voice over Internet Protocol
14. VoIP
15. Chatting

Website:-

Website is a group of web pages, containing text, images and all types of multi-mediafiles

Difference between Website and Webpage

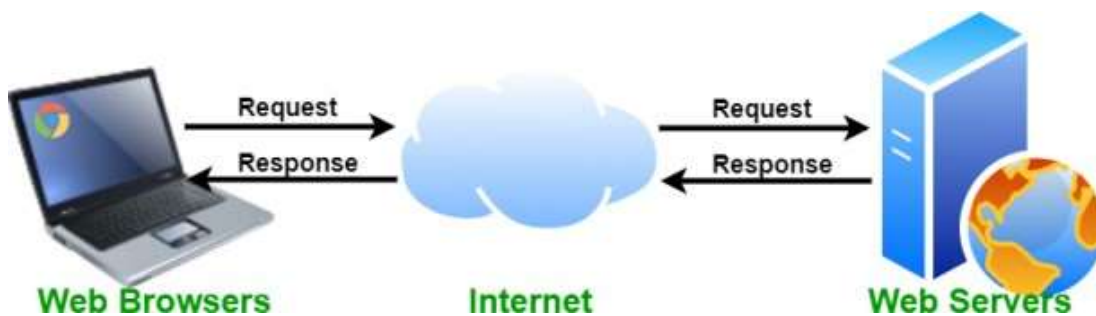| Website	WebPage
A collection of web pages which aregrouped together and usually connected together in various ways,Often called a "web site" or simply a"site. Eg: CBSE website	A document which can be displayed ina web browser such as Firefox, GoogleChrome, Opera, Microsoft Internet Explorer etc Result web page of CBSE
Contains information about varioustopics	Contents information about single topic
Web Site address doesn't depend upon webpage address	Depends upon web page address
Development time is more	Less Development time required

Difference between Static and Dynamic webpage

Static webpage content is constant inall time	The page content changes accordingto the user.
Loading time is less	Loading time is more
No database is used	A database is used in the server side

Content changes rarely	Content changes constantly

Web Server :-

A web server is a computer that stores web server software and a website's component files (e.g. HTML documents, images, CSS style sheets, and JavaScript files).When client sends request for a web page, the web server search for the requested page if requested page is found then it will send it to client with an HTTP response. If the requested web page is not found, web server will the send an HTTP response :Error 404 Not found.

Web Hosting :-

Web hosting is an online service that enables you to publish your website or web application on the internet. When you sign up for a hosting service, you basically rent some space on a server on which you can store all the files and data necessary for your website to work properly. A server is a physical computer that runs without anyinterruption so that your website is available all the time for anyone who wants to see it

Web Browser :- A web browser, or simply "browser," is an application used to access and view websites. Common web browsers include Microsoft Internet Explorer, Google Chrome, Mozilla Firefox, and Apple Safari.

Add-ons(in terms of Hardware): An Add-on is either a hardware unit that can be added to a computer to increase the capabilities or a program unit that enhances primary program. Some manufacturers and software developers use the term add-on. Examples of add-ons for a computer include card for sound, graphic acceleration, modem capability and memory. Software add- on are common for games, wordprocessing and accounting programs

Plug-ins:- a plug-in (or plugin, add-in, add-on) is a software component that adds a specific feature to an existing computer program. When a program supports plug-

ins, it enables customization. Plug-ins are commonly used in Internet browsers but alsocan be utilized in numerous other types of applications

Cookies :- cookies are small files which are stored on a user's computer and contains information like which Web pages visited in the past, logging details Password etc. They are designed to hold a small amount of data specific to a particular client and website and can be accessed by the web server or the client computer

Multiple choice questions:

1. A website is a collection of
    (a) HTML documents (b) Graphic files (c)Audio and video files (d)All of the above

2. The first page that we normally view at a website is called _____ (a)Home page (b)Webpage (c) Webserver (d)Email

3. Which of the following is not a web browser?
    (a) Google Chrome (b) Mozilla Firefox (c)Opera (c)MS word

4. Which of the following is a web browser?
    (a) Adobe Photoshop (b) Coral Draw (c) Apple Safari   (d) MS word

5. Which of the following button allows you to move to the previously visited page onthe browser?
            a) Back (B)Previous (c) Last (d)Reverse

6. Which of the following is peace of information stored in a form of a text file and thathelps in customizing the displayed information, login, showing data based on user'sinterests from the web site?
    (a) Extension (b) Cookies (c)Login (d)Session

7. The space provided by a service provider to store website data is called

    _____ .

    (a) Webspace (b)Cloud Computing (c)Web Hosting (d)Web Store
8. _____ is an online service that enables you to publish your website or webapplication on the internet
    (a) Web server (b) Web Browser (c)Web Hosting   (d) None
9. _____ is a a software component that adds a specific feature to an existingcomputer program

(a)   Addon (b)Plug in (c) Cookies   (d) All of the above

10. The first page on the website that allows you to navigate to other pages by menusor links is known as _____
    (a) front page (b)primary page (c)Home page (d)

NoneFill in the blanks questions:-

1. A_____is a collection of web pages written using HTML.

2. A computer on which the website is hosted and it is connected to the internet alltime is known as____.
3. The_____of a website are linked together with different hyperlinks and share acommon interface and design.
4. An interactive web page is created through _____
5. The space provided by a service provider to store website data is called ____

Answers

Multiple choice questions:

1.a.   2.a   3. c   4 .c   5.a   6.b   7c   8.c   9,b   10.c

Fill in the blanks:

   1.Website   2.Web server   3.Web pages 4.HTML and scripting
   languages   5.WebHosting

Descriptive Questions and answers:
   1.Differentiate between web browser and web
   serverWeb Server :-
          A web server is a computer that stores web server software and a website's component files (e.g. HTML documents, images, CSS style sheets, and JavaScript files).When client sends request for a web page, the web server search for the requested page if requested page is found then it will send it to client with an HTTP response. If the requested web page is not found, web server will the send an HTTP response

:Error 404 Not
found.Web
Browser :-

A web browser, or simply "browser," is an application used to access and view websites. Common web browsers include Microsoft Internet Explorer, Google Chrome,Mozilla Firefox, and Apple Safari

2.Differentiate between eb page and home page?
Web page:- A document using http and resides on a website is called webpageHome page:-It is the page that gets displayed first when we open a webpage.

3.Differentiate between dynamic and static webpages?Ans:

Static webpage content is constant inall time	The page content changes accordingto the user.
Loading time is less	Loading time is more
No database is used	A database is used in the server side
Content changes rarely	Content changes constantly

4.Write the steps to host a website:;Ans:-
Following steps needs to followed to host a website:

1. Go and search for the hosting provider companies online
2. Find a suitable domain name for your website
3. Register your domain name with the Domain Name Registrar
4. Once you get to space, create your login
5. Upload your localhost website files on the allocated space
6. Map you domain name with IP address
7. What are the components of a web site? Explain in detail.

1. Webhosting – A space or computer provided by a service provider to store websitedata
2. Address – A unique URL rendered by the browser when the request sent by the user
3. Homepage – The first page of a website when the website is launched
4. Design – The theme and interface design including the layout of the website
5. Content – The text, images, links, and other media files included in the web page
6. Navigation Structure – A structure that navigates from one page to another
7. Explain the following terms:

(a)Website (b) Webpage (c) Homepage (d)Webserver

Web Site	Web Page	Home Page	Web Server
Group of related web pages hosted on a web server	A document that uses HTTP	The top level page of web site	A web server is a computer that stores web server software and a website's component files (e.g. HTML documents, images, CSS style sheets, and JavaScript files)

Website:-

Website is a group of web pages, containing text, images and all types of multi-media files.

Some examples of websites:

- Google.com
- cbse.nic.in
- Amazon.com
- Wikipedia.org

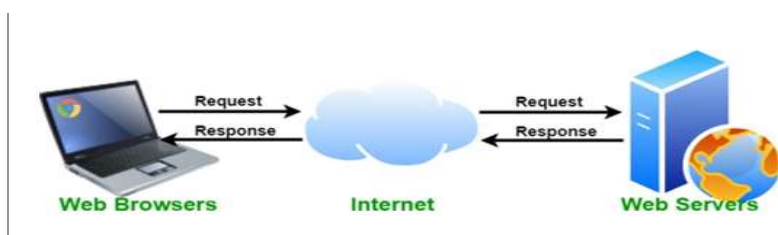## Difference between Website and Webpage

Website	WebPage
A collection of web pages which are grouped together and usually connected together in various ways, Often called a "web site" or simply a "site. Eg: CBSE website	A document which can be displayed in a web browser such as Firefox, Google Chrome, Opera, Microsoft Internet Explorer etc Eg: Result web page of CBSE A webpage is commonly written in HTML
Contains information about various topics	Contents information about single topic
Web Site address doesn't depend upon webpage address	Depends upon web page address
Development time is more	Less Development time required

Difference between Static and Dynamic webpage

Static Web page	Dynamic webpage
Static webpage content is constant all the time	The page content changes according to the user.
Loading time is less	Loading time is more
No database is used	A database is used in the server side
Content changes rarely	Content changes frequently
Less complex	Complex

Web Server :-

A web server is a computer that stores web server software and a website's component files (e.g. HTML documents, images, CSS style sheets, and JavaScript files). When client sends request for a web page, the web server search for the requested page. If requested page is found then it will send it to client with an HTTP response, if the requested web page is not found, web server will the send an HTTP response: Error 404 Not found.

Web Hosting :-

Web hosting is an online service that enables you to publish your website or web application on the internet. When you sign up for a hosting service, you basically rent some space on a server on which you can store all the files and data necessary for your website to work properly. A server is a physical computer that runs without any interruption so that your website is available all the time for anyone who wants to see it.

Web Browser: - A web browser, or simply "browser," is an application used to access and view websites. Common web browsers include Microsoft Internet Explorer, Google Chrome, Mozilla Firefox, Opera and Apple Safari.

Add-ons (in terms of Hardware): An Add-on is either a hardware unit that can be added to a computer to increase the capabilities or a program unit that enhances primary program. Some

manufacturers and software developers use the term add-on. Examples of add-ons for a computer include card for sound, graphic acceleration, modem capability and memory.

Software add- on are common for games, wordprocessing and accounting programs. Software add-ons will integrate to the browser and it only run when the browser runs.

Plug-ins: - a plug-in (or plugin, add-in, add-on) is a software component that adds a specific feature to an existing computer program. When a program supports plug-ins, it enables customization. Plug-ins are commonly used in Internet browsers but also can be utilized in numerous other types of applications. An example of a plugin is the free Macromedia Flash Player, a plugin that allows the web browser to display animations using the Flash format.

Note: Plug-in is a complete program where add-on is not a complete program.

Cookies: - cookies are small text files which are stored on a user's computer and contain information like which Web pages visited in the past, logging details Password etc. They are designed to hold a small amount of data specific to a particular client and website and can be accessed by the web server or the client computer.

Multiple choice questions:

1.   A website is a collection of
(b)   HTML documents (b) Graphic files (c)Audio and video files (d)All of the above

2.   The first page that we normally view at a website is called   (a)Home page
      (b)Webpage (c) Webserver (d)Email

3.   Which of the following is not a web browser?
(b)   Google Chrome (b) Mozilla Firefox (c)Opera (d)MS word

4.   Which of the following is a web browser?
(c)   Adobe Photoshop (b) Coral Draw (c) Apple Safari   (d) MS word

5.   Which of the following button allows you to move to the previously visited page onthe browser?
(d)   Back (B)Previous (c) Last   (d)Reverse

6.   Which of the following is peace of information stored in a form of a text file and thathelps in customizing the displayed information, login, showing data based on user'sinterests from the web site?
(e)   Extension (b) Cookies   (c)Login   (d)Session

7.   The space provided by a service provider to store website data is called

____.
(f)   Webspace (b)Cloud Computing   (c)Web Hosting   (d)Web Store

8.   _____is an online service that enables you to publish your website or web

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application on the internet
(g) Web server (b) Web Browser (c)Web Hosting   (d) None

9. _____is a software component that adds a specific feature to an existing computer program
(h) Add on (b)Plug in (c) Cookies   (d) All of the above

10. The first page on the website that allows you to navigate to other pages by menusor links is known as _____
(i) front page (b)primary page (c)Home page (d) None

Fill in the blanks questions:-

1. A _is a collection of web pages written using HTML_____

2. A computer on which the website is hosted and it is connected to the internet all time is known as _____   .

3. The_____of a website are linked together with different hyperlinks and share a common interface and design.

4. An interactive web page is created through _____

5. The space provided by a service provider to store website data is called _____

6. The _____ is an application program that is used to view the web pages.

Answers
Multiple choice questions:
1.a. 2.a   3. d   4 .c 5.a 6.b   7c   8.c   9.b 10.c
Fill in the blanks:

1. Website   2.Web server   3.Web pages   4.HTML and scripting languages

5.   WebHosting   6. Web browser

Descriptive Questions and answers:-

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