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1. Write short notes on (a) WWW (b) E-mail.

a) **WWW**=World Wide Web (called WW or W3 in short) is the most popular and promising method of accessing the internet.

b) **E-mail**: Electronic mail service (known as e-mail in short) allows an internet user to send a mail (message) for another internet user in any part of the world in a near real time manner.

2. Define computer network. Distinguish between LAN and WAN?

A computer network is a system of interconnected computer. The computer of a network communicates with one another and share application, data, voice and, video, and 5 hardware components. There are three main types of computer network, they are:

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

3. Mention the function of communication software?

Software controls the operations of computer networks. The software that manages the resources of the Network is often called the network operation system. Servers in LAN rely on network operation system such as Novell network. IBM OS/2 warps server or micro soft Windows NT server. A server network operating system must meet stringent set of requirements than a client operating system variety of communication software packages are available for microcomputer, especially for internet web browsing, like soft Explorer. Nest cape navigator, Microsoft outlook etc. Several functions are commonly provided by communication software packages.

4. What is network topology? Explain bus and star topology.

Network topology: Topology of a network describes the way the computers and the nodes of the network are interconnected.

Bus topology: In bus network all computers are connected by a single cable with a inter terminator at each end. The bus is the simplest and the most widely used topology for LANs.

Star topology: In star topology ail computers are connected with a central switch, called hub. A hub is the central controlling device. Two main types of hubs are: active hub and passive hub.

5. What do you mean by protocol?

Protocol: A protocol is a set of formal operating rules, procedures, or conventions that « govern a given process. Protocol is rules that govern the transmission of data.

6. What is network topology and network protocol?

Network Topology: Topology of a network describes the way the computers and the nodes of the network are interconnected. There are a number of possible topologies:

- Bus topology
- Star topology
- Tree topology
- Ring topology
- Mesh topology

Network Protocols: Computers of a network must obey some rules when communicating with each other. This set of rules forms the protocol for a computer network. The structural set of modules that implement the communication function is called protocol architecture. An example of common protocol architecture is the TCP/IP protocol suite.

7. Explain Links and Media.

Links: The physical connection that connects the nodes is known as links. A link may be through a pair of wires, a coaxial cable, an optical fiber or through a satellite. The data transmission rates of the links arc expressed by kbps, mbps or TBps Example is 64 kbps, 2 mbps 2.4 GBps etc.

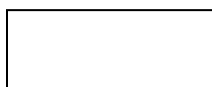
Media: The most commonly used media for computer network are twisted pair, co-axial cable and optical fiber. Wireless techniques include broad-cast waves, microwaves and infrared.

8. Explain the different transmission mode.

The different types of transmission mode: There are three ways, or mode, of transmitting data from one point to another. These are

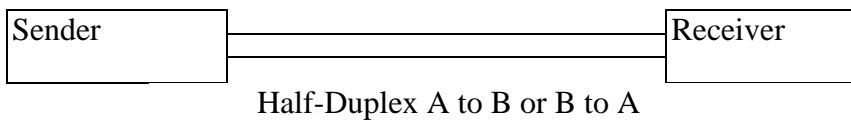
a) **Simplex:** If transmission is simplex. Communication can take place only

one direction. Devices connected to such a circuit are either a send only or receive only device

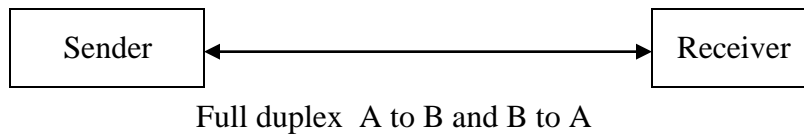




b) Half duplex: A half duplex system can transmit data in both directions, but only in one direction at a time. Hence, a half duplex line can alternately send and receive data. It requires two wires



c) Full duplex: In full duplex the communication channel is used in both directions at the same time.



9. What the transmission media? Describe the different type of transmission media.

Three main transmission media for LANs are: metallic cable (usually copper), optical fiber and wireless. The metallic cable includes twisted pair and coaxial cable. Optical fibers include single-mode (or mono-mode) and multi-mode fibers. Wireless media include microwave and infrared. Names of media with examples of maximum transmission speeds are given below.

Media	Maximum speed
Twisted pair	2Mbps-100Mbps
Coaxial cable	264 Mbps-550 Mbps
Microwave	100Mbps
Infrared	4 Mbps
Wireless Radio'	3.5 Mbps
Wireless Radio'	3GBps

Twisted pair: Two types of twisted pair cables are UTP (unshielded twisted pair) and STP (shielded twisted pair). Twisted pairs having different characteristics have evolved over the years.

LANs: Twisted pair wiring is extensively used in home and office telephone systems and wide and local area networks.

Coaxial Cable: It consists of one copper conductor within and insulated from another conductor of longer diameter. The most commonly used types in computer networking are thick-net and thin-net.

Fiber Optic Cable: This cable consists of one or more hair-thin filament of glass fiber wrapped in a protective jacket. Two types of mostly used fiber optic cable are: multi-mode and single-mode cable,

Wireless: Wireless can be divided into wireless radio and wireless infrared. Wireless radio is extremely useful in situations where running cable is prohibitively expensive or impossible. They are used for indoor LANs.

10. Give some typical uses of an information kiosk.

Some typical uses of an information kiosk are given below:

Captivating displays at trade shows.

Tourism industries.

Museums, galleries, exhibitions.

Health services: hospitals, pharmacies.

Government services.

Community services and training.

Universities: libraries, lecture theaters.

Corporate foyers.

Super markets.

Directory assistance.

Human resource management.

Corporate intranet.

Point of information.

Sporting venues.

Hotels

Internet & intranet.

Smart phones.

Medical instruments.

Process control system.

Retails outlet: photographic & music stores, real estate agents.

11. What is optical fiber? Write down its characteristics.

This cable consists of one or more hair-thin filaments of glass (or plastic) fiber wrapped in a protective jacket.

Characteristics of optical fiber: Two types of mostly used fiber optic cable are multi mode and single mode cable. The multi mode has a core diameter of 62.5 microns (1 micron = 1/1,000,000 meter) and a cladding diameter of 125 microns. The single mode has a core diameter of 8.3 micron and a cladding diameter of 125 microns. Currently available fiber optic cable can carry data at transmission rates of several gigabits or more.

12. Differentiate between relational and multidimensional database structure? Discuss with a diagram.

Relational Structure; This type of model has become the most popular and useful of the database structures. In the relation mode, all data elements within the database are viewed as being stored in the form of simple tables. Figure 10.6 illustrates the relation database mode with two tables representing some of the relationship among departmental and employee records. Other tables, for this organization database might represent the data element relationship among projects, divisions, product lines and so on: Database N management system packages based on the relation model can link data elements from various tables to provide information to users.

Multidimensional database structure: Multidimensional database structure can be visualized as cubes of data cubes within cubes of data. Each side of the cube is considered a dimension of data. Each dimension can represent a different category, such as product type, region sales channel and time. Each cell within a multidimensional structure contains aggregated data related to elements along each of its dimensions.

13. What are the object oriented database structure?

The object oriented database model is one of the key technologies of current software market. An object consists of data values describing the attributes of an entity, plus the operation that can be performed upon the data. This encapsulation capability allows the object-oriented model to better handle more complex types of data than other database structures.

The object-oriented model also supports inheritance; that is new object can be automatically created by replicating some or all of the characteristics of one or more parent objects. Thus, in figure 10.7, the checking and savings account objects can both inherit the common attributes and operations of the parent bank account object. Such capabilities have made object-oriented database management systems popular in computer-aided design and in a growing number of applications.

14. List common services available through on Internet?

The most popular Internet applications are e-mail, browsing the sites on the World Wide Web and participating special internet newsgroups.

- HTTP (Hyper Text Transport Protocol): The WWW organizes internet related resources for multimedia information, education, entertainment, etc.
- SMTP (Simple Mail Transfer Protocol): E-mail is the process of exchanging message and files among millions of internet users. SMTP is used for e-mail in the internet.
- FTP (File Transfer Protocol) : FTP is an internet tool for transferring data files, programs, reports, articles magazines, books,

picture, sound, and other types of files from thousands of sources. The program of transferring a file from a network computer to the user's computer is called downloading and the reverse process is known as uploading.

- TELNET: It provides remote terminal access to internet hosts. By this software tool one can log on to and use thousands of internet computers around the world.
- POP (Post Office Protocol): It enables PC users to access mail from a mail server.
- SNMP (Simple Network Management): It provides the exchange of information for the management of a network itself.

15. Briefly explain the use of IP and TCP?

Internet Protocol (IP): The first step in getting data to the place is to get the address right and in a form that can be read by everyone that handles the message along the line. On the Internet the IP governs the way data are addressed and routed along the internet. To get a message from one user to another, the message is put into an internet / protocol "envelope" and addressed to the recipient. Routers then move it through the system to the user with that address.

Transmission Control Protocol (TCP): If a huge graphic file is sent to someone else on the network, it could tie up others work as they need to wait for the transfer to be finished. To eliminate this problem, another protocol, called TCP, breaks message up into packets each containing up to 1500 characters. It numbers each of the units, puts each into an IP packet and sends them. Each packet may travel a different route and take a different time to arrive at its destination. Some may even get lost or damaged in transit.

16. Briefly explain the terms: Repeater, hub, bridges, gateways and fire well?

Repeaters: Repeaters also known as relays connect segments of a network, and since signal get weaker and less distinct with distance, these small devices refresh and enhance them before sending them along. Their job is to extend the network as far as possible, perhaps to another building.

Hub: A hub is a switching processor. Hubs Provide automatic switching among connections called ports for shared access to networks resources such as Workstation, servers, printer, and other resources.

Bridges: Bridges are also known as data link relays, which connect segments of local area networks.

Gateways: Gateways are used to connect different types of networks. Since two networks may not share a common protocol these translate each networks protocol so the other network can understand the data.

Firewall: The metal between an automobiles passenger area and engine compartment is called a firewall because it is designed to prevent an engine fire from spreading into the passenger compartment. A firewall is to prevent unauthorized users on the internet from reaching the files and programs on the local area network. When a computer connected to the outside internet is also connected to an inside local area network a firewall is installed between the internet and the local network.

17. What is virus and antivirus? How a computer can be protected from virus attack?

Computer Virus: A computer virus is a piece of software which infects data or disks and has multiplication capability of it. They affect computers by

1. Delete file

2. Corrupting screen displays
3. Corrupting data
4. Slowing down operation of a system

A sophisticated virus can spread undetected for a long time, A boot virus attacks boot sector of a disk. Virus affect file with extensions EXE, COM, SYS, DRY, OVR, OVL, and BIN. Some common viruses are Jerusalem, stone, Dhaka virus, Vienna, CIH Virus, April first etc.

There are many antivirus programs which detect clean and prevent viruses. Some antivirus programs are Norton Anti-virus, central Point Anti-virus Toolkit, and MacAfee etc. For virus prevention, antivirus programs are used to detect and disinfect viruses. Backups of data should be maintained against virus attacks.

18. What is operating system? Write down the function of an operating system,

An operating system is a program that manages the computer hardware. It also provides a basis for application programs and act as intermediary between the computer users and the computer hardware.

The main function performed y most operating system today is as follows:

Process Management: The process module of an operating system takes care of the creation and the deletion of process.

Memory Management: The memory module of an operating system takes care of allocation and the deal location of memory space to the various program in need of resource.

File management: The file management module of an operating system takes care of file related activities.

Security: The security module of an operating system protect the resources from unauthorized access. ,

Command Interpretation: The command interpretation of an operating system takes care of interpreting users command.

19. What arc the difference between graphical and text based operating system?

The difference between graphical and text based operating system are given bellow:

Graphical based operating system	Text based operating system
A graphical operating system which user can select with a mouse for telling the computer what they want to do for them.	A text based operating system is operating system that uses commands that are typed in instead of using of a mouse or graphics.
It cannot use memory more efficiently.	It uses memory more efficiently.
Graphical based software can offer powerful features.	Text based software can offer powerful features than graphical based software.

20 . Write down about real time and multiprocessing operating system.

Real time operating system: A real time operating system (RTOS) is an operating system intended to serve real time application request. A real time operating system has wei! defined and fixed constraints. Processing must be done within the defined constraints, or the system will fail.

Multiprocessing operating system: An operating system capable of supporting and utilizing more than one computer processor. Multiprocessing system also known as parallel system or tightly couple systems. Bellow are some example of multiprocessing operating system. Linux, UNIX. Windows XP, Mac OS etc.

