Assignment 1

Computer networks and HTML

Q1. What are the four characteristics on which the effectiveness of data communication depends.

Ans. The four characteristics are:-

1. Delivery- The system must deliver data to the correct destination. Data must be received by the intended devices or user and only by that device or user.
2. Accuracy- The system must deliver the data accurately. Data that have been altered in transmission and left uncorrected are unusable.
3. Timeline- The system must deliver data in a timely manner. Data delivered late are useless. In the case of video and audio, timely delivery means delivering data as they are produced, in the same order that they are produced, and without significant delay. This kind of delivery is called real-time transmission.
4. Jitter- jitter refers to the variation in the packet arrival time. It is the uneven delay in the delivery of audio or video packets arrive with 30-ms delay and others with 40-ms delay, an uneven quality in the video is the result.

Q2. List the advantages and disadvantages of Star topology.

Ans. Advantages:-

1. A star topology is less expensive than a mesh topology.
2. In a star, each device needs only one link and one I/O port to connect it to any number of others. This factor also makes it easy to install and reconfigure.
3. Far less cabling needs ti be housed, and additions, moves, and deletions involve only one connection: between that device and the hub.
4. Other advantages include robustness. If one fails, only that link is affected. All other remains active.

Disadvantages:-

1. One big disadvantages of a star topology is the dependency of the whole topology on one single point, the hub. If the hub goes down, the whole system is dead .
2. Although a star requires far less cable than a mesh, each node must be linked to a central hub. For this reason, often more cabling is required in a star than in some other topologies.

Q3. Difference between Connection oriented and connectionless transmission. Which protocols are used in each type of transmission?

Ans. Connection oriented services:-

1. Connection oriented services are related to the telephone system.
2. It is preferred by long and steady communication.
3. Connection oriented services requires a bandwidth of high range.
4. In this congestion is not possible
5. It is feasible

Connection less services:-

1. Connection less services are related to the postal system.
2. It is preferred by bursty communication.
3. Connection less services requires a bandwidth of low range
4. In this congestion is possible.
5. It is not feasible.

Q4. Explain any two application areas of computer networks.

Ans. Some of the most important uses of the Internet for home users are as follows:

**School**

1. **Access to remote information:** Internet access provides home users with **connectivity** to remote computers. The main benefit now comes from connecting outside of the home.
2. **Person-to-person communication:** In this form, individuals who form a loose group can communicate with others in the group. Every person can, in principle, communicate with one or more other people; there is no fixed division into clients and servers.
3. **Interactive entertainment:** With the distribution of music, radio and television programs, and movies over the Internet beginning to rival that of traditional mechanisms. Users can find, buy, and download MP3 songs and DVD-quality movies and add them to their personal collection.
4. **Electronic commerce:** As with companies, home users can access information, communicate with other people, and buy products and services with e-commerce.

**Business applications**

1. **Resource Sharing:** The goal is to make all programs, equipments (like printers etc.), and especially data, available to anyone on the network without regard to the physical location of the resource and the user.
2. **Server-Client model:** In this model, the data is stored on powerful computers called Servers. Often these are centrally housed and maintained by a system administrator. In contrast, the employees have simple machines, called Clients, on their desks, using which they access remote data.
3. **Communication Medium:** A computer network can provide a powerful communication medium among employees. Virtually every company that has two or more computers now has e-mail (electronic mail), which employees generally use for a great deal of daily communication
4. **eCommerce:** A goal that is starting to become more important in businesses is doing business with consumers over the Internet. Airlines, bookstores and music vendors have discovered that many customers like the convenience of shopping from home. This sector is expected to grow quickly in the future.

Q5. write short note on:

1. point-to-point transmission:-

A point-to-point connection provides a dedicated link between two devices. The entire capacity of the link is reserved for transmission between those two devices. Most point-to-point connections use an actual length of wire or cable to connect the two ends, but other options, such as microwave or satellite links, are also possible. When we change television channels by infrared remote control, we are establishing a point-to-point connection between the remote control and the television’s control system.

1. Role of network layer in OSI reference model:-

The network layer controls the operation of the subnet. A key design issue is determining how packets are routed from source to destination. Routes can be based on static tables that are wired into the network and rarely changed, or more often they can be updated automatically to avoid failed components. They can also be determined at the start of each conversation. Finally, they can be highly dynamic, being determined anew for each packet to reflect the current network load. If too many packets are present in the subnet at the same time, they will get in one another’s way, forming bottlenecks. Handling congestion is also a responsibility of the network layer, in conjunction with higher layers that adapt the load they place on the network. More generally, the quality of service provided is also a network layer issue. It is up to the network layer to overcome all problems to allow heterogeneous networks to be interconnected. In broadcast networks, the routing problem is simple, so the network layer is often thin or even non-existent.

1. WAN:-

A wide area network (WAN)is an interconnection of devices capable of communication. It has a wider geographical span, spanning a town, a state, a country, or even the world. A WAN interconnects connecting devices such as switches, routers, or modems. It is normally created and run by communication companies and leased by an organization that uses it. We see two distinct examples of WANs today: point-to-point WANs and switched WANs.

**Point-to-Point WAN:** A point-to-point WAN is a network that connects two communicating devices through a transmission media (cable or air).

**Switched WAN:** A switched WAN is a network with more than two ends. It is used in the backbone of global communication today. We can say that a switched WAN is a combination of several point-to-point WANs that are connected by switches.