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2778

COMPUTER NETWORK

Define computer network ,discuss their advantage and disadvantage ?



- A collection of computer devices that are connected in various way using physical wires or cables to communicate and share resources
- Any device connected to the network called node
- Logical address : IP Address is a logical address of the computer and is used to uniquely locate computer connected via a network
- Physical address :MAC address :Media access control address





Advantages :

- Sharing devices such as printers saves money.
- Sharing information
- Application sharing
- centralize data management
- Connecting people

Disadvantages :

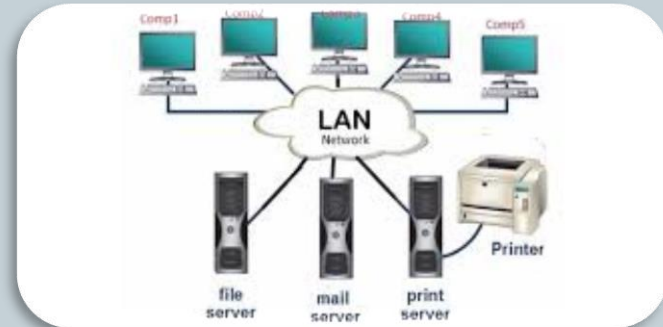
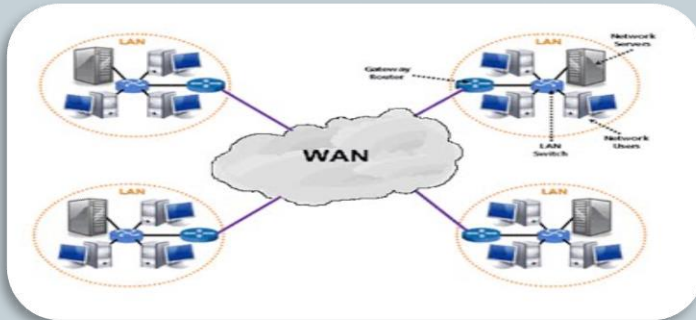
- Giving your personal information
- The institution responsible can view your personal information
- **Viruses** can spread to other computers throughout a computer network , Productivity decreases

Describe types of network ?



❖ A local area network (LAN) :

uses cables, radio waves, or to link computers or peripherals, such as printers, within a small geographic area, such as school , home , etc , LANs are typically owned and managed by a single person or organization



❖ A wide area network (WAN) :

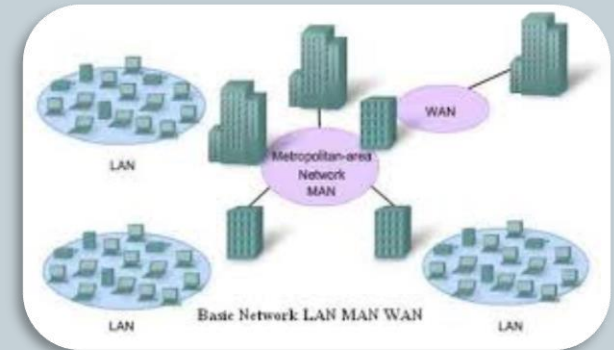
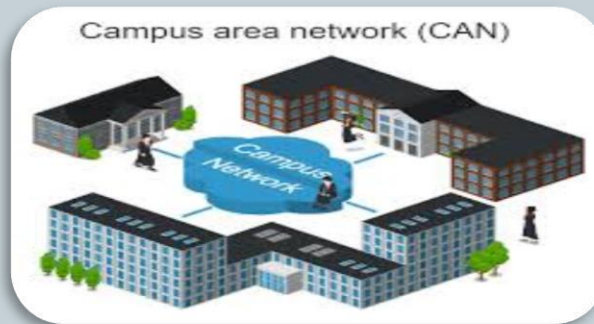
uses long-distance transmission media to link computers separated by a few miles or even thousands of miles.

A WAN is a geographically dispersed collection of LANs.

The Internet is the largest WAN; it connects millions of LANs all over the globe.



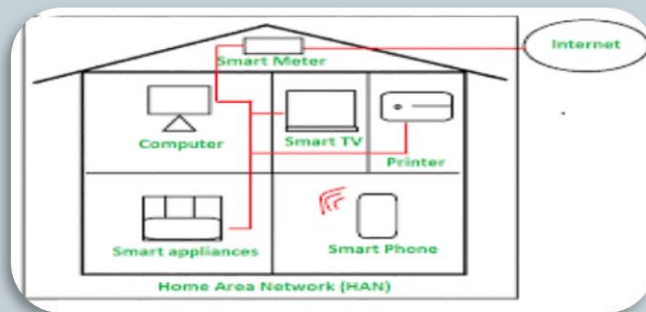
- ❖ **A metropolitan area network (MAN) :** is a network designed for a city or town. It is usually larger than a LAN but smaller than a WAN. Typically, a MAN is owned by a single government



- ❖ **A campus area network (CAN) :**
includes several LANs that are housed in various locations on a college or business campus.
Usually smaller than a WAN, CANs use devices such as switches, and routers



- ❖ **personal area network (PAN)** : This is a network created among an individual's own personal devices, usually within a range of 32 feet. Such networks involve wireless technology



- ❖ **A home area network (HAN)** : is a network contained within a user's home that connects a person's digital devices, from multiple computers and their peripheral devices to telephones, televisions, and other digital devices that are wired into the network.

Distinguish between peer to peer , client / server ,virtual private LAN ?

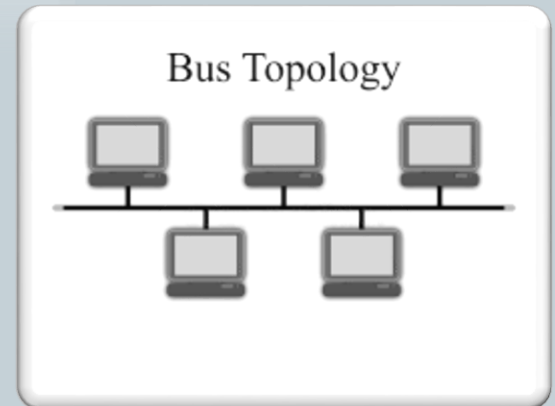
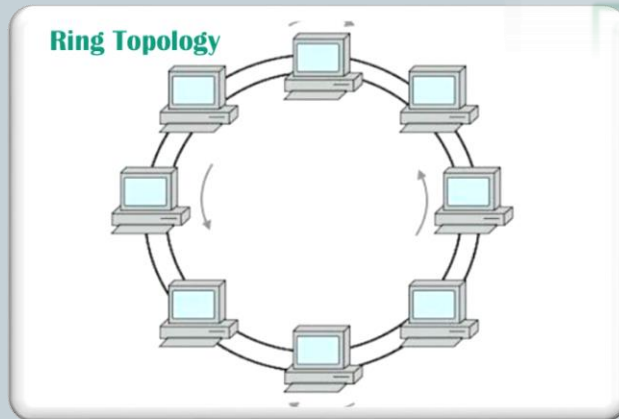
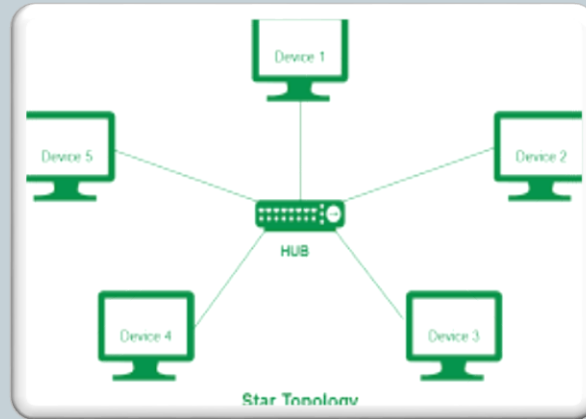


- **P2P network:** There is no file server, is the process of exchanging files and data between two personal computers on the Internet
- **Client/server :** client/server is a network, which includes one or more servers as well as clients
- **Virtual private LAN :**Using public or private networks to create a group of users separated from the rest of the network users, and members of this group are able to communicate with each other as if they were in a private network

Define computer network topologies , differences between three LAN topologies ?



- The physical layout of a LAN is called its network topology.
 - A topology isn't just the arrangement of computers in a particular space; a topology provides a solution to the problem of contention, which occurs when two computers try to access the LAN at the same time
1. **bus topology** is a **topology** for a Local Area **Network** (LAN) in which all the nodes are connected to a single cable
 2. **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
 3. **ring topology** is a **network** configuration where device connections create a circular data path. Each networked device is connected to two others, like points on a circle



Differences between LAN and WAN components ?



- WANs and LANs have all the same basic components cabling, protocols, and routing devices. But a WAN is different in that it has a
- **backbone:** refers to the main network lines that connect several local area networks (LANs) together
- **points of presence** A point of presence is an artificial demarcation point or interface point between connected entities.

Difference between circuit switching and packet switching and their strengths and weaknesses ?



- **circuit switching:** the method used in the public switched telephone system, there is a direct connection between the communicating devices. Data is sent over a physical end-to-end circuit between the sending and receiving computer
- **packet switching :** the method used for computer communication, no effort is made to create a single direct connection between the two communicating devices. The sending computer's outgoing message is divided into packets

Compared with **circuit switching** ,**Packet switching** It's more efficient and less expensive , more reliable than circuit switching and can function even if portions of the network aren't working

When a router examines a packet, it delays the packet's progress by a tiny fraction of a second

Define network protocols ,Its important ?



- Network Protocols are a set of rules governing exchange of information in an easy, reliable and secure way.
- They determine what happens when an error occurs, and which part of the network is supposed to handle the error and how

References :



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