ASSIGNMENT : 1

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1. Identification of devices

1. Router : connects different network and directs data to the right destination.

2. Switch : connects multiple devices in a network and efficiently manages data traffic within a local network.

3. Hub : similar to a switch but less efficient.

4. Modem : converts internet signals from your Internet service provider so your devices can use them.

5. Network Interface Card (NIC) - A hardware component inside a computer that enables it to connects to a networks.

Difference b/w Switch and Hub

Switch

- Sends data only to the intended device
- Faster and more efficient
- Used in modern network

Hub

- Broadcasts data to all devices
- Slower due to unnecessary traffic
- Mostly outdated and replaced by switches.

2. Practical Understanding
   Router Vs Modem

∴ Router :
- Connects multiple devices and manages network traffic
- Router data between your devices and the internet
- Wifi router at home

Modem :
- Convert ISP signals for internet access
- Provides internet connection but does not manage devices
- ISP provided modem for internet access

* Role of a Network Interface Card (NIC)
- A NIC is a component insides a computer that allows it to connects to a network either via ethernet or Wifi (wireless)
- It assign a MAC address, which helps in identifying the device on the network.

3. Hands ON Connection
   How to connect a computer to a network using Ethernet and a Switch.
1. Plug one end of the ethernet cable into the computer Nic port
2. Plug the other end into a network switch
3. connects the switch to a router
4. Ensure all devices are powered on.

How to Manually configure an IP Address on a Computer.

1. Open control Panel
2. Click Network and sharing center
3. Right click on ethernet/wifi
4. Choose Internet Protocol version 4 (TCP/IPv4)
5. select Use the following IP address,
   - IP address (eg 192.168.1.100)
   - Subnet Mask (255.255.255.0)
   - Defult Gate Way (192.168.1.1)
6. click Ok

4) Types of Networking Devices

Managed Vs. Un Managed Switch.

Managed:
- allow configuration and Monitoring
- Provides advanced security feature
- used in business network.

Un Managed switch:
- Plug-and-play with no setting
- Basic security, if any
- Used in small offices or homes.

Function of a Access-Point in a wireless Network
- An access point (AP) extends a wifi network, allowing wireless devices to connet to a wired network.
- It act as bridge b/w wired and unwired network
- eg: A wifi extender in a large office

5. Real - World application

Devices for a secure office Network

for an office Network, use:

- Router - direct Internet traffic
- Switch - connects multiple computers
- Firewall - Protects against cyber threats
- Access points - Provides wifi coverage
- Modem - Connects to the ISP for internet access

Importants of firewalls in Network Security

- A firewalls is like a security guard for your network
- It blocks unauthorized access while allowing safe connection
- eg: It prevent hackers from entering a companys privates network.