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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 connect to a network.

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- Mostly outdated and replaced by switches.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
- Routes 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 inside a computer that allows it to connect 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's 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 Wi-Fi
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)
 - Default Gateway (192.168.1.1)
6. click Ok

4) Types of Networking Devices

Managed Vs. UnManaged Switch.

Managed :

- allow configuration and Monitoring
- Provides advanced security feature
- Used in business network.

UnManaged 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 Wi-Fi network, allowing wireless devices to connect to a wired network.
- It act as bridge b/w wired and wireless network
- eg: A Wi-Fi 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 Wi-Fi coverage
- Modem - connects to the ISP for internet access

Importance of firewalls in Network Security

- A firewall is like a security guard for your network.
- It blocks unauthorized access while allowing safe connection.
- eg: It prevents hackers from sneaking into a company's private network.