Assignment 1- Write the network terminologies with examples

Network:

- A collection of interconnected devices, such as computers, printers, and servers, that can communicate with each other.
- Example- LAN, WAN, MAN, PAN

Node:

- Any device connected to a network, such as a computer, printer, or router.
- Example: Your personal computer connected to your home Wi-Fi network.

IP Address:

- A unique numerical identifier assigned to each device on a network, used to identify and communicate with other devices.
- Example: 192.168.1.1 (IPv4) or 2001:0db8:85a3:0000:0000:8a2e:0370:7334 (IPv6)

Protocol:

- A set of rules and standards that define how devices on a network communicate with each other.
- Example- http, https, ftp, smtp

Router:

- A networking device that connects multiple networks together and forwards data packets between them.
- Example: A home router that connects your home network to your ISP.

Switch:

- A networking device that connects devices on a network and forwards data packets between them.
- Example: An Ethernet switch connecting several PCs and printers in an office.

Firewall:

- A security device or software that monitors and controls incoming and outgoing network traffic, based on a set of predefined security rules.
- Example: A software or hardware device that blocks unauthorized access to your computer while permitting outward communication.

DNS (Domain Name System):

- A system that translates domain names (such as www.example.com) into IP addresses, allowing devices to locate and connect to websites and other network resources.
- Example: 8.8.8.8 (Google's public DNS server)

VPN (Virtual Private Network):

- A VPN allows for information to be securely sent across a public or unsecured network, such as the Internet. Common uses of a VPN are to connect branch offices or remote users to the main office.
- Example: Using a VPN to securely connect to a company's network while working remotely.

Subnet Mask:

- A 32-bit number that divides an IP address into network and host parts. It determines which portion of an IP address is the network address and which part is the host address.
- Example: 255.255.255.0

Default Gateway:

- A router that connects a local network to other networks, typically the internet. It routes traffic from a local network to destinations outside the local network.
- Example: 192.168.1.254

MAC Address:

- A unique identifier assigned to a network interface card (NIC) for communications on the physical network segment.
- It operates at the data link layer (Layer 2) of the OSI model and is used primarily for addressing devices within a local area network (LAN).
- Example: 00:1A:2B:3C:4D:5E

Bandwidth:

- The maximum rate of data transfer across a given path. It is measured in bits per second (bps).
- Example: A home internet connection with 100 Mbps bandwidth.

Packet:

- A small segment of data that is transmitted over a network. Packets contain both data and control information.
- Example: An email is broken down into packets before it is sent over the network.

Port:

- A logical access point for communication in networking. Ports help identify specific processes or types of network services.
- Example: HTTP typically uses port 80 and HTTPS uses port 443.

LAN (Local Area Network):

- A network that connects devices within a limited area such as a home, school, or office building.
- Example: The network within a small office.

WAN (Wide Area Network):

- A telecommunications network that extends over a large geographic area for the purpose of computer networking.
- Example: The Internet.

MAN (Metropolitan Area Network):

- A MAN is a network that covers a larger geographic area than a LAN but smaller than a WAN, typically serving a city or a metropolitan area.
- Example: A network connecting multiple campuses of a university within the same city.

PAN (Personal Area Network):

- A PAN is the smallest type of network, typically used for communication among devices owned by a single user over a short distance.
- Example: Bluetooth-enabled devices like smartphones, tablets, and wireless headphones forming a network for data exchange.

SSID (Service Set Identifier):

- A unique identifier that names a wireless network. The SSID is used to identify networks and is broadcast by the router.
- Example: ‘`HomeWiFi`’