Assignment -1

1. *Write some network terminologies with examples?*

Router:

A router is a device that forwards data packets between computer networks. For example, a home network router connects a user's devices to the internet.

Firewall:

A firewall is a network security system that monitors and controls incoming and outgoing network traffic based on predetermined security rules. For example, an organization might use a firewall to prevent unauthorized access to its internal network.

IP Address:

An IP address is a unique numerical label assigned to each device connected to a computer network. For example, 192.168.1.1 is an IPv4 address commonly used in home networks.

DNS (Domain Name System):

DNS translates domain names into IP addresses, allowing users to access websites using human-readable addresses. For example, when you type www.google.com into your browser, DNS translates it to an IP address like 172.217.7.196.

LAN (Local Area Network):

LAN is a network that connects devices within a limited area, such as a home, office, or school. For example, all devices connected to a Wi-Fi router in a house form a LAN.

WAN (Wide Area Network):

WAN is a network that connects devices over a wide geographical area, often using public or private networks. For example, the internet is a vast WAN connecting devices across the globe.

VPN (Virtual Private Network):

VPN creates a secure, encrypted connection over a less secure network, such as the internet. For example, employees may use a VPN to connect securely to their company's internal network while working remotely.

Bandwidth:

Bandwidth refers to the maximum amount of data that can be transmitted in a fixed amount of time. For example, an internet service provider may offer a broadband connection with a bandwidth of 100 Mbps.

Switch:

A switch is a networking device that connects devices within a LAN and forwards data only to the intended recipient. For example, in an office network, a switch ensures that data from one computer is only sent to the intended printer.

MAC Address (Media Access Control Address):

A MAC address is a unique identifier assigned to network interfaces for communications on a network segment. For example, a MAC address looks like 01:23:45:67:89:ab and is used for device identification on a network.

Subnet:

A subnet is a logical subdivision of an IP network. It helps to divide a large network into smaller, more manageable sections. For example, a company may have different subnets for each department to improve network performance and security.

Gateway:

A gateway is a device that connects two different networks using different protocols. For example, a router can act as a gateway to connect a local network to the internet.

TCP (Transmission Control Protocol):

TCP is a connection-oriented protocol that ensures reliable communication by establishing a connection between the sender and receiver. For example, most web traffic uses TCP to guarantee that data is transmitted accurately.

NAT (Network Address Translation):

NAT is a process where private IP addresses are translated into public IP addresses to enable devices on a local network to communicate with the internet. For example, a home router uses NAT to allow multiple devices to share a single public IP address.

Ethernet:

Ethernet is a popular networking technology for wired connections. It specifies how data is transmitted over a network using cables. For example, most office networks use Ethernet cables to connect computers to the local network.

VLAN (Virtual Local Area Network):

VLAN allows network administrators to segment a single physical network into multiple logical networks. For example, a VLAN can separate voice traffic from data traffic on a corporate network.