day 1:

Assignment 1: explain network terminology.

**Network Terminology**

**1. Network**

A network is a group of two or more computers (or other electronic devices) connected together to share resources, like files and printers, or to communicate with each other.

**2. Internet**

The internet is a global network of networks. It's a massive system connecting millions of private, public, academic, business, and government networks.

**3. IP Address**

An IP address is a unique string of numbers separated by periods (IPv4) or colons (IPv6) that identifies each computer using the Internet Protocol to communicate over a network. Think of it like a home address for your computer.

* **IPv4 Example:** 192.168.1.1
* **IPv6 Example:** 2001:0db8:85a3:0000:0000:8a2e: 0370:7334

**4. Router**

A router is a device that forwards data packets between computer networks. It directs traffic on the internet, ensuring that data sent from one network reaches the correct destination.

**5. Modem**

A modem is a device that modulates and demodulates signals for communication over telephone lines, cable systems, or satellite links. It connects your home network to your Internet Service Provider (ISP).

**6. LAN (Local Area Network)**

A LAN is a network that connects computers within a limited area, such as a home, school, or office building. It’s typically used for sharing resources like files and printers.

**7. WAN (Wide Area Network)**

A WAN is a network that covers a broad area (e.g., any network whose communications links cross metropolitan, regional, or national boundaries). The internet is the largest WAN.

**8. Wi-Fi**

Wi-Fi is a technology that allows devices like computers, smartphones, and tablets to connect to the internet or communicate wirelessly within a particular area. It uses radio waves to transmit data.

**9. Ethernet**

Ethernet is a common method of networking computers in a LAN using wired connections. It typically uses cables like CAT5 or CAT6 to connect devices.

**10. Firewall**

A firewall is a security system that monitors and controls incoming and outgoing network traffic based on predetermined security rules. It acts as a barrier between a trusted network and an untrusted network.

**11. Bandwidth**

Bandwidth is the maximum rate of data transfer across a given path. It’s usually measured in bits per second (bps). Higher bandwidth means more data can be transmitted in a given amount of time.

**12. Latency**

Latency is the time it takes for a data packet to travel from its source to its destination. It’s often measured in milliseconds (MS). Lower latency means less delay.

**13. DNS (Domain Name System)**

DNS is like the phonebook of the internet. It translates human-friendly domain names (like [www.example.com](http://www.example.com)) into IP addresses that computers use to identify each other on the network.

**14. HTTP/HTTPS**

* **HTTP (Hypertext Transfer Protocol):** The foundation of any data exchange on the web and it’s a protocol used for transmitting hypertext requests and information between servers and browsers.
* **HTTPS (HTTP Secure):** It’s the secure version of HTTP, where communications are encrypted using SSL/TLS.

**15. VPN (Virtual Private Network)**

A VPN extends a private network across a public network and enables users to send and receive data as if their devices were directly connected to the private network. It provides security and privacy.

**16. Server**

A server is a computer or software program that provides services to other computers (clients) over a network. Examples include web servers, email servers, and file servers.

**17. Client**

A client is a computer or software program that requests services from a server. For example, your web browser is a client that requests web pages from web servers.

**18. Packet**

A packet is a small segment of data that is sent over a network. Packets contain both the data being transmitted and information about the data (like its destination).

**19. Switch**

A switch is a device that connects devices in a network and uses packet switching to forward data to the destination device. It operates at the data link layer (Layer 2) of the OSI model.

**20. Gateway**

A gateway is a network point that acts as an entrance to another network. It often involves translating between different protocols and making sure data gets routed to the correct destination.