NETWROKING

- **Network** – Computer Connected Together

- **Internet** – Collection of this Computer Networks

- **Protocol** – Set of Rules for Communication, Example – TCP, FTP, UDP, HTTP, IP

- **Internet Society** – These are Responsible for Creating this Rules.

- **TCP (Transmission Control Protocol)** – Ensure that 100% data will reach its destination, without Corrupted on the way **Example** – Email, Web Browsing

- **UDP (User Datagram Protocol)** – Don't know that 100% data will reach its destination or not, **Example** – Video Games and Video Conferencing

- **HTTP (Hyper Text Transfer Protocol)** – Protocols used to access Web Pages (PORT – 80/443)

- **Modem** – Converts Digital to Analog Signals vice versa, Connect your home to Internet

- **Router** – Sends data Packets between your home network and the internet

- **DHCP (Dynamic Host Configuration Protocol)** – Assign IP Address Automatically to Devices.

- **PORT** - IP Address Tells us which Device we are working with while PORT Connects you to Specific Device

- **LAN (Local Area Network)** – Small Area Networks (Office, Home)

- **MAN (Metropolian Area Network)** – City-Wide

- **WAN (Wide Area Network)** – Country or Globe-Wide (like Internet)

  A lot of Local Area Network that are Connected to each other using Metropolian Area Network and that are connected to each other using Wide Area Network is a internet

- **BUS Topology** – All Device Share a single Communication line like a bus route

- **STAR Topology** – All Device Connected to a Central HUB like Spokes on Wheel

- **STAR Topology** – Device Form a Closed Loop where data travels in a Circle

- **MESH Topology** – Every Device Connect to every other Devices like a Spider Web

- **TREE Topology** – A Hybrid of STAR and BUS, like branches of a tree from a main trunk

- **SMTP (Simple Mail Transfer Protocol)** – Sends Mail

- **POP3 (Post Office Protocol)** – Downloads email and delete from Server

- **IMAP (Internet Message Access Protocol)** – Allows to View emails on multiple Devices

- **DNS (Domain Name System)** – Converts Domain Names (google.com) into IPs (Like a Phonebook)

- **IPv4** – 32-bit, Limited Address

- **IPv6** – 128-bit, Massive Address Space

- **NAT (Network Address Translator)** – Converts Private IPs to Public IPs for Internet Access

- **OSI MODEL** -

Layer	Name	Pizza Example
7	**Application**	You (user) place the pizza order using the app (e.g., WhatsApp, browser).
6	**Presentation**	The app formats your order, translates your language, or encrypts it (e.g., "Large Pizza" → code).
5	**Session**	Keeps the connection open while you're chatting or ordering (session = live conversation).
4	**Transport**	The kitchen splits the order into items, adds delivery instructions (uses **TCP/UDP**).
3	**Network**	Decides the best route to deliver your order (IP address, routing, **ping**, **traceroute**).
2	**Data Link**	Gives the delivery guy the exact apartment number (MAC address, switching).
1	**Physical**	The road, bike, or cables used to physically deliver your pizza (Wi-Fi, cable, fiber, signals).

- **OSI FOR DEVOPS** -

Layer	What It Handles	Example in DevOps
7. Application	What the user interacts with	curl, browser, Postman
6. Presentation	Formats & encrypts data	SSL/TLS, base64
5. Session	Maintains connections	SSH, API sessions
4. Transport	Reliable delivery	TCP (with acknowledgment), UDP
3. Network	Routing & IP	ping, traceroute, IP address
2. Data Link	MAC & Switch	MAC address, ARP
1. Physical	Wires & signals	Ethernet, Wi-Fi, cables