What is a Network?

A network is **2 or more computers linked together**, sharing data and resources.

Types of Networks

Type	Description
LAN (Local Area Network)	Restricted to a single building.
WAN (Wide Area Network)	Covers a large area, includes multiple buildings.
WLAN (Wireless Local Area Network)	A home Wi-Fi network.
VPN (Virtual Private Network)	Allows secure connections over the internet using encryption.

Devices Found on Networks

Device	Purpose
Hubs & Switches	Connect nodes (computers) on the same network.
Routers	Route traffic between different networks.
Firewalls	Filter traffic between networks for security.
Servers	Provide specific services (e.g., print server, mail server).
Endpoints	End-user devices like phones, laptops, and computers.

What is the OSI Model?

The **OSI (Open Systems Interconnection) Model** is a universal standard for communication in computer networks. It describes how network communication occurs and applies to any network.

Data Encapsulation & De-encapsulation

When data is sent (e.g., typing a message), it travels through the OSI layers, getting encapsulated (packaged) and de-encapsulated (unpacked) as it moves.

The OSI Model: 7 Layers

Layer	Name	Function
7	Application Layer	Interface for human interaction (e.g., APIs).
6	Presentation Layer	Formats, translates, and encrypts data.

Layer	Name	Function
5	Session Layer	Manages authentication and authorization.
4	Transport Layer	Ensures reliable data delivery to applications.
3	Network Layer	Handles addressing and routing of data.
2	Data Link Layer	Moves data between nodes and provides error checking.
1	Physical Layer	Transmits raw data (e.g., cables, circuits).