Introduction

Computer Network

- **Computer Network** is a group of computers connected with each other through wires, optical fibers or optical links so that various devices can interact with each other through a network.

- The aim of the computer network is the sharing of resources among various devices.

Networking Elements

- At least two computers
- Transmission medium either wired or wireless
- Protocols or rules that govern the communication
- Network software such as Network Operating System

Components of Computer Network

- Hub
- Repeater
- Switch
- Router
- Cables

Architecture

- Peer-To-Peer network
- Client/Server network

Network Types

- LAN(Local Area Network)
- PAN(Personal Area Network)
- MAN(Metropolitan Area Network)
- WAN(Wide Area Network)

Internetworking

- Intranet
- Internet

Transmission Mode

The way in which data is transmitted from one device to another device is known as **transmission mode**.

- Simplex mode
- Half-duplex mode
- Full-duplex mode

Topology

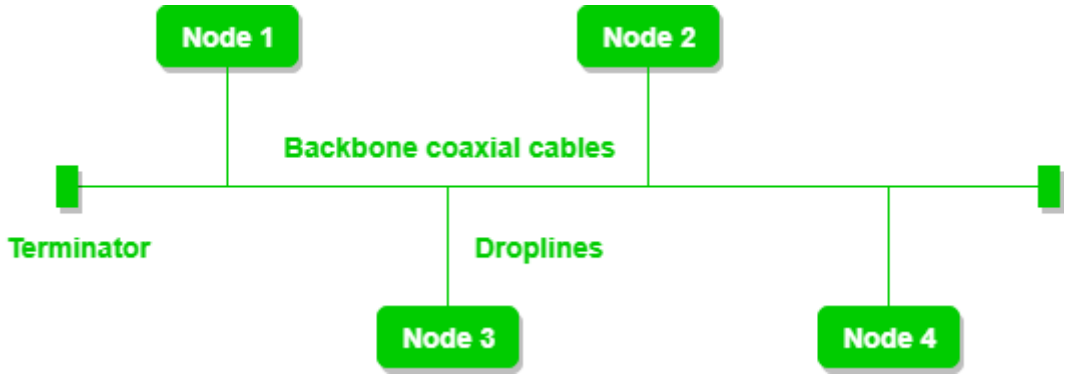
Topology defines the structure of the network of how all the components are interconnected to each other.

Types of Topology

- Bus
- Ring
- Star
- Mesh

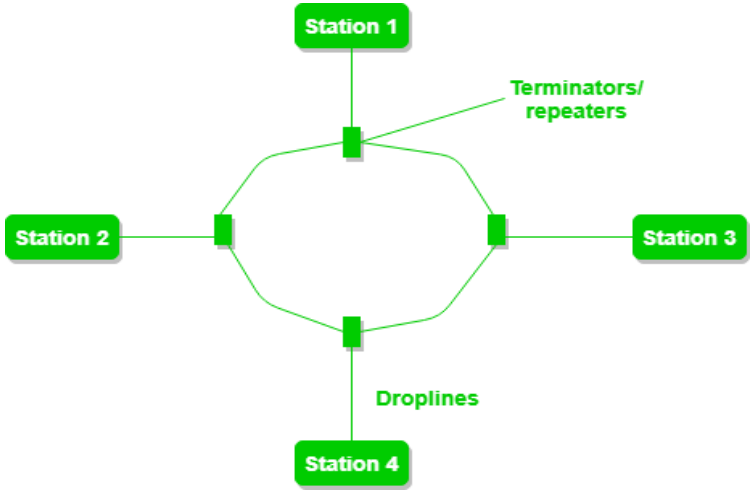
Bus Topology

- The bus topology is designed in such a way that all the stations are connected through a single cable known as a backbone cable.
- Each node is either connected to the backbone cable by drop cable or directly connected to the backbone cable



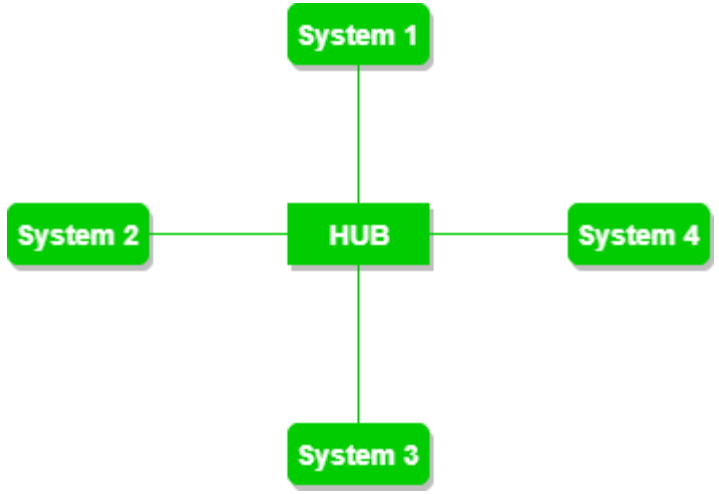
Ring Topology

- Ring topology is like a bus topology, but with connected ends.
- The node that receives the message from the previous computer will retransmit to the next node.
- The data flows in one direction, i.e., it is unidirectional.
- It has no terminated ends, i.e., each node is connected to other node and having no termination point.



Star Topology

- Star topology is an arrangement of the network in which every node is connected to the central hub, switch or a central computer.
- The central computer is known as a **server**, and the peripheral devices attached to the server are known as **clients**.



Mesh Topology

- In a mesh topology, every device is connected to another device via a particular channel.
- There are multiple paths from one computer to another computer.
- It does not contain the switch, hub or any central computer which acts as a central point of communication.
- The Internet is an example of the mesh topology.