

Let's Be Interview Ready With Core CS Concepts

OPERATING SYSTEM

DBMS

OOPS

SYSTEM DESIGN

NETWORKING

PART 1



Let's Revisit :

- Network
- Network Topology
- Its Different Types



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Network

A network is a set of devices that are connected with a physical media link. In a network, two or more nodes are connected by a physical link or two or more networks are connected by one or more nodes. A network is a collection of devices connected to each other to allow the sharing of data.



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Network Topology

Network topology specifies the layout of a computer network. It shows how devices and cables are connected to each other.

Let's Discuss Different Types of Network Topology in Next Slides

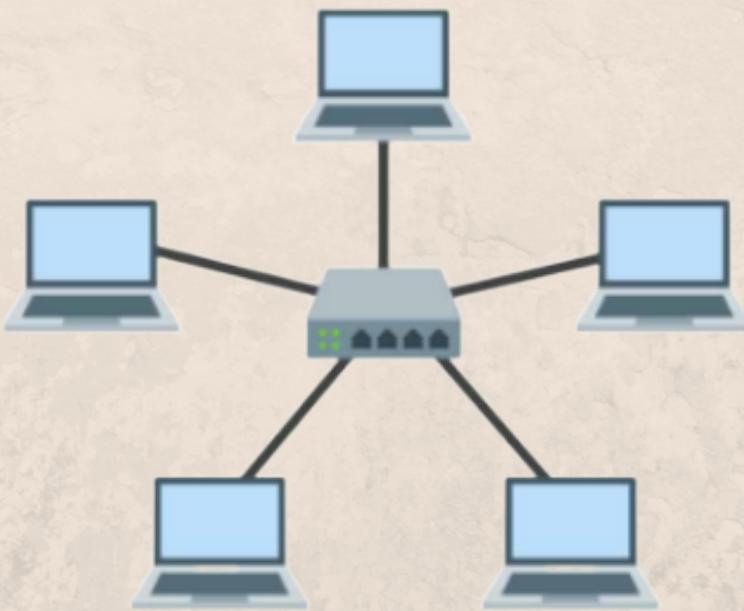


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Star Topology



- Star topology is a network topology in which all the nodes are connected to a single device known as a central device.



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Star Topology

- Star topology is very easy to install, manage and troubleshoot. It is commonly used in office and home networks.
- Star topology requires more cable compared to other topologies. Therefore, it is more robust as a failure in one cable will only disconnect a specific computer connected to this cable.
- If the central device is damaged, then the whole network fails.

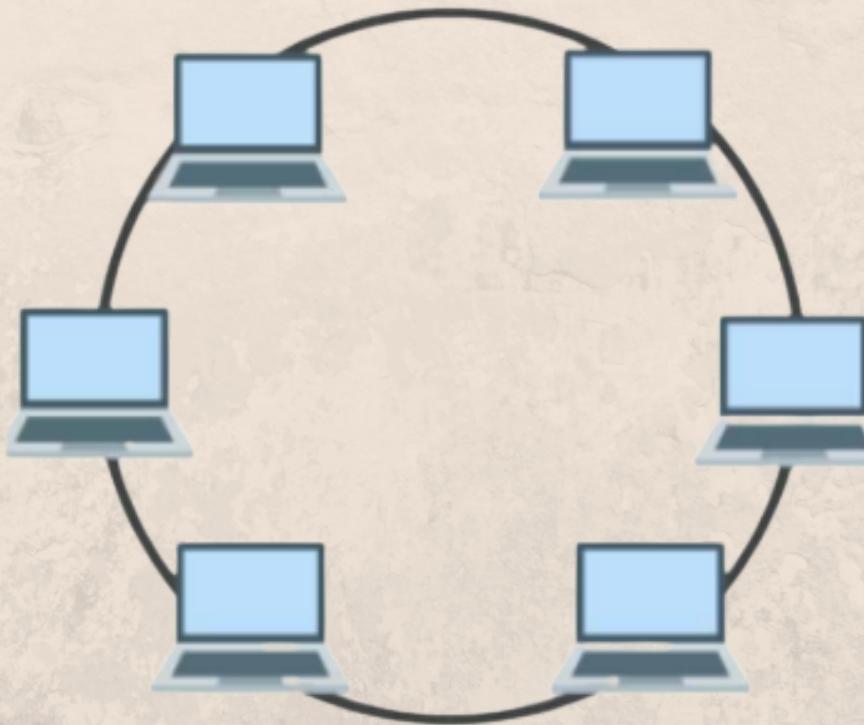


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Ring Topology



- Ring topology is a network topology in which nodes are exactly connected to two or more nodes and thus, forming a single continuous path for the transmission.



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Ring Topology

- It does not need any central server to control the connectivity among the nodes.
- If the single node is damaged, then the whole network fails.
- Ring topology is very rarely used as it is expensive, difficult to install and manage.
- Examples of Ring topology are SONET network, SDH network, etc

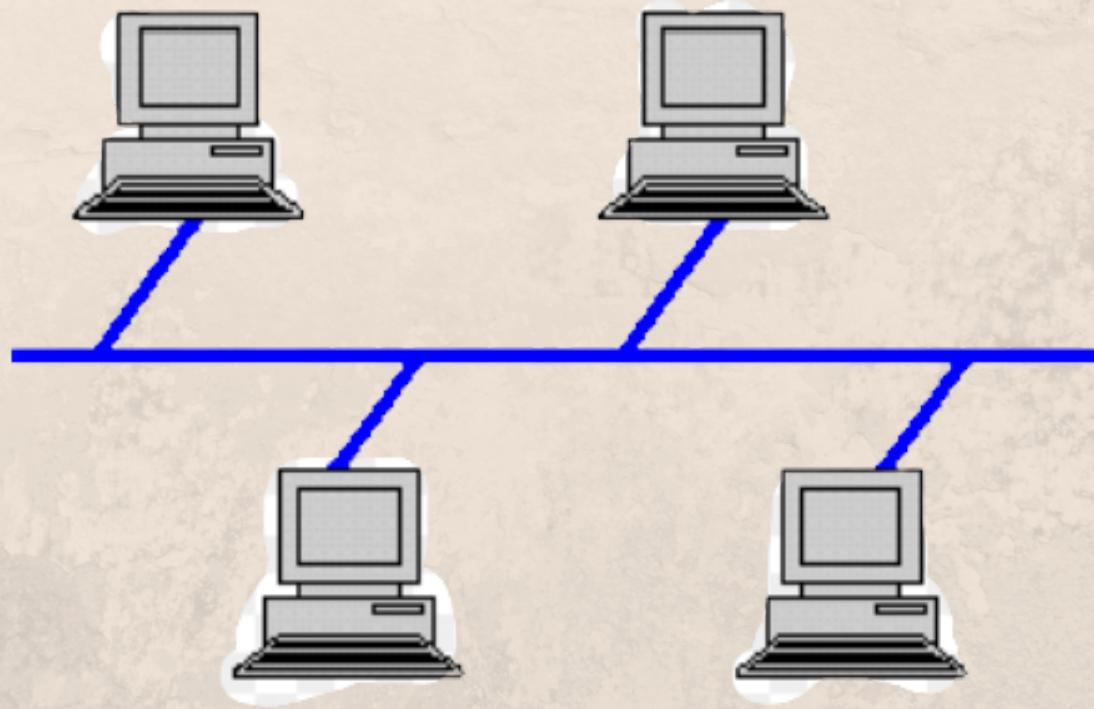


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Bus Topology



- Bus topology is a network topology in which all the nodes are connected to a single cable known as a central cable or bus.



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Bus Topology

- It acts as a shared communication medium, i.e., if any device wants to send the data to other devices, then it will send the data over the bus which in turn sends the data to all the attached devices.
- Bus topology is useful for a small number of devices.
- As if the bus is damaged then the whole network fails.

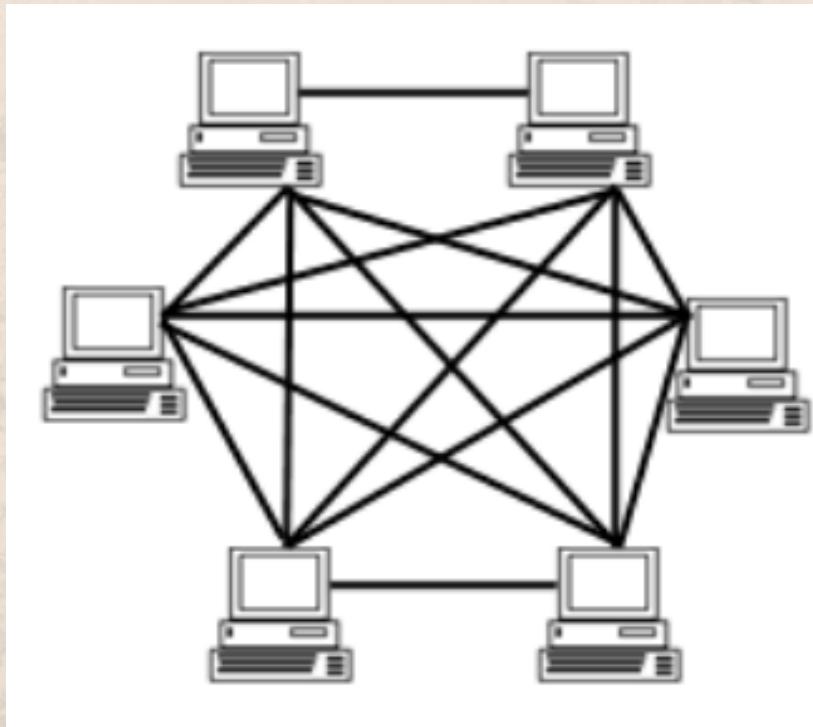


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Mesh Topology



- Mesh topology is a network topology in which all the nodes are individually connected to other nodes.
- It does not need any central switch or hub to control the connectivity among the nodes.



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Mesh Topology

- Mesh topology is categorized into two parts:
 - a. **Fully connected mesh topology:** In this topology, all the nodes are connected to each other.
 - b. **Partially connected mesh topology:** In this topology, all the nodes are not connected to each other.
- It is robust as a failure in one cable will only disconnect the specified computer connected to this cable.
- Cabling cost is high as it requires bulk wiring.

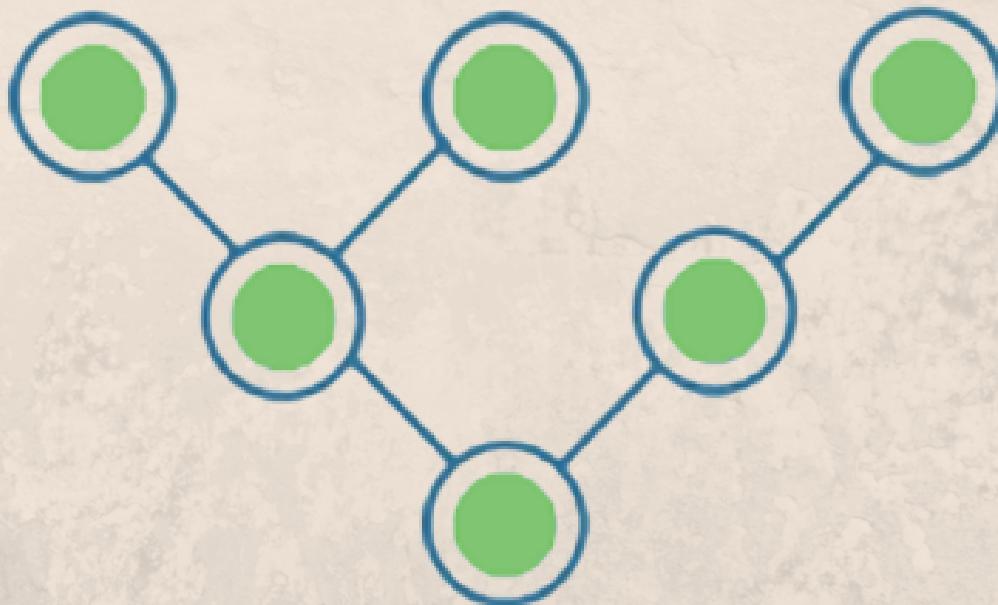


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Tree Topology



- Tree topology is a combination of star and bus topology. It is also known as the expanded star topology.



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Tree Topology

- In tree topology, all the star networks are connected to a single bus.
- Ethernet protocol is used in this topology.
- In this, the whole network is divided into segments known as star networks which can be easily maintained. If one segment is damaged, there is no effect on other segments.
- Tree topology depends on the "main bus," and if it breaks, then the whole network gets damaged



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Hybrid Topology

- A hybrid topology is a combination of different topologies to form a resulting topology.
- If star topology is connected with another star topology, then it remains a star topology. If star topology is connected with different topology, then it becomes a Hybrid topology.
- It provides flexibility as it can be implemented in a different network environment.



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