



Mount Abu Public School

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CHAPTER-9

NETWORKING TOPOLOGIES AND OPERATING SYSTEM

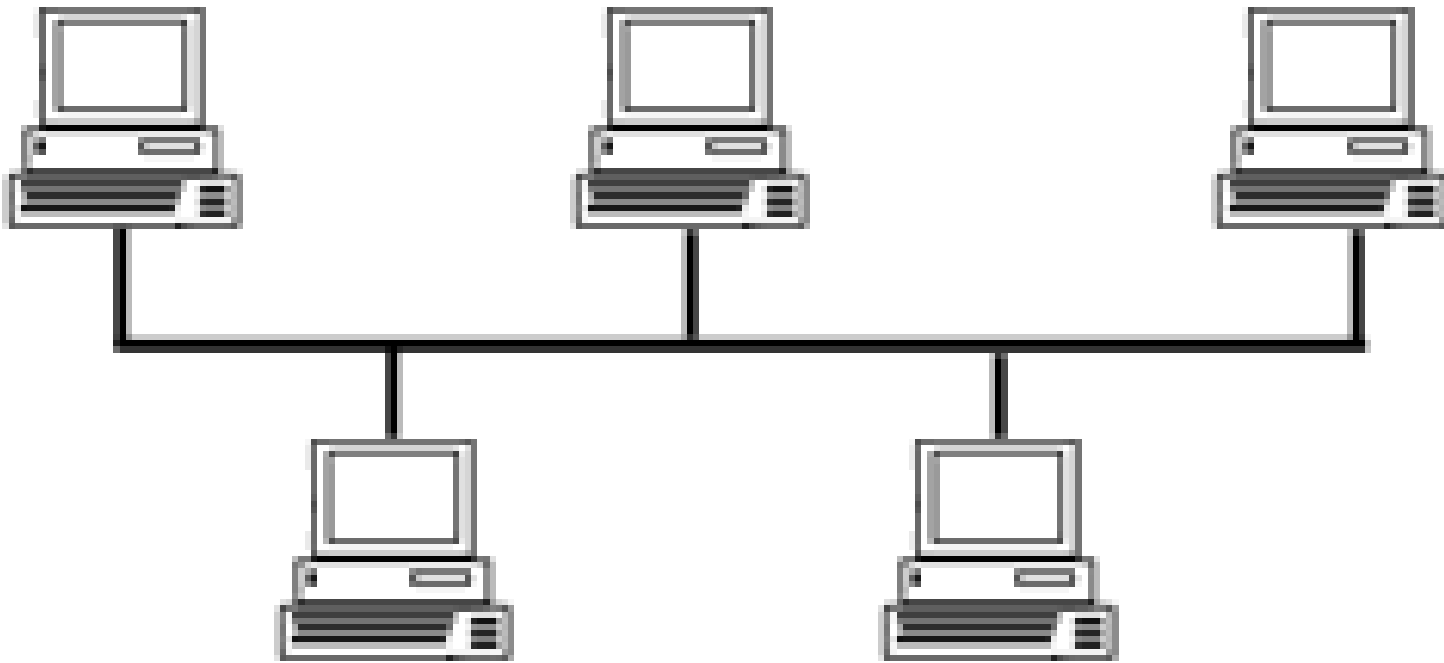
NETWORK TOPOLOGY

- BUS TOPOLOGY
- RING TOPOLOGY
- STAR TOPOLOGY
- MESH TOPOLOGY

BUS TOPOLOGY

- A BUS TOPOLOGY CONSISTS OF A MAIN RUN OF CABLE WITH A TERMINATOR AT EACH END.

Bus Topology



ADVANTAGES OF A BUS TOPOLOGY

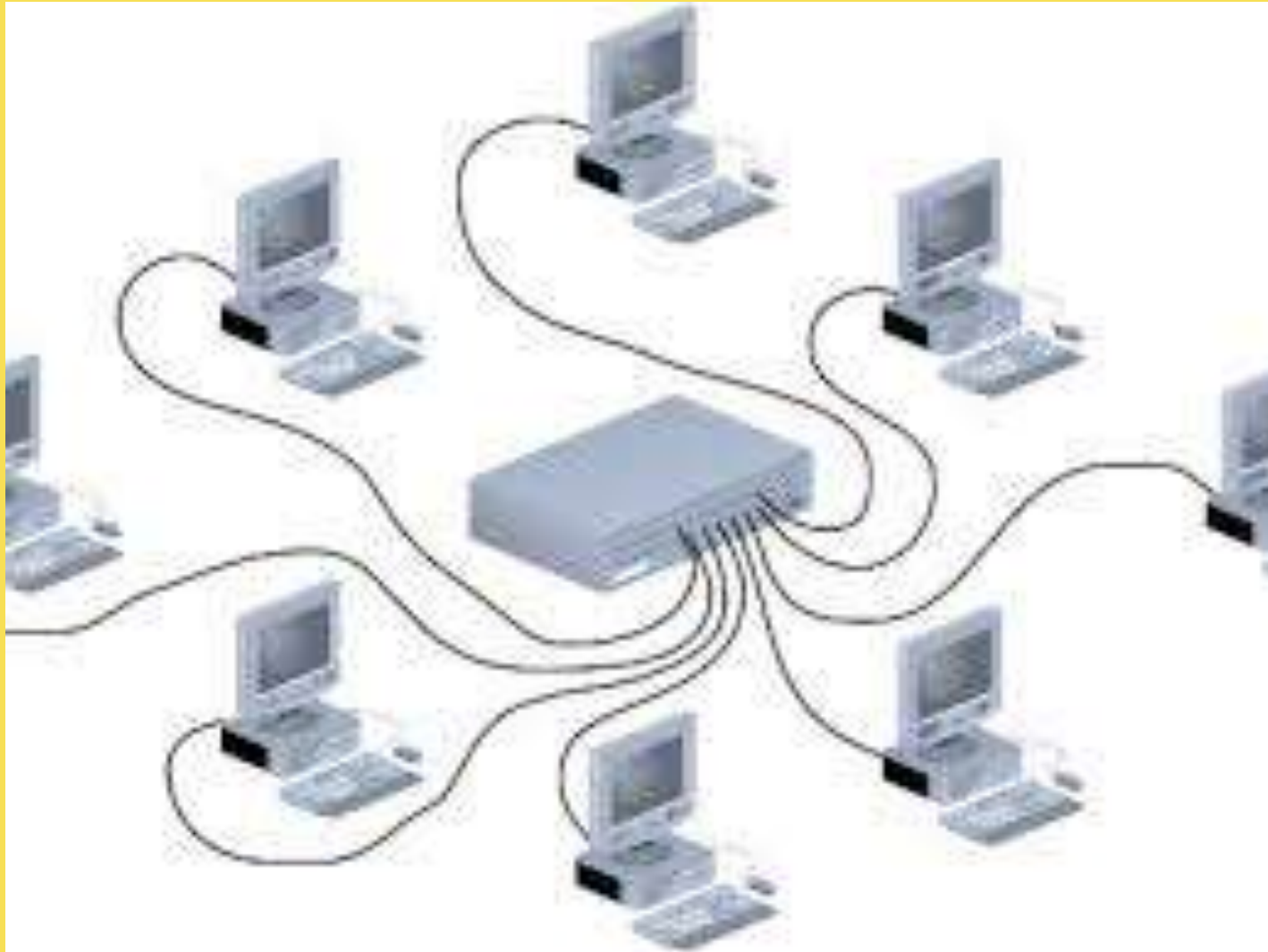
- EASY TO CONNECT A COMPUTER OR PERIPHERAL TO A LINEAR BUS.
- REQUIRES LESS CABLE LENGTH THAN A STAR TOPOLOGY.

DISADVANTAGES OF A BUS TOPOLOGY

- ⦿ ENTIRE NETWORK SHUTS DOWN IF THERE IS A BREAK IN THE MAIN CABLE.
- ⦿ DIFFICULT TO IDENTIFY THE PROBLEM IF THE ENTIRE NETWORK SHUTS DOWN.
- ⦿ NOT MEANT TO BE USED AS A STAND-ALONE SOLUTION IN A LARGE BUILDING.
- ⦿ TERMINATORS ARE REQUIRED AT BOTH THE END OF THE BACKBONE CABLE.

STAR TOPOLOGY

- HERE EACH NODE IS CONNECTED TO THE CENTRAL NETWORK HUB, SWITCH, OR CONCENTRATOR.
- DATA PASSES THROUGH THE NETWORK DEVICES BEFORE REACHING THE DESTINATION.
- THE SWITCH, HUB OR CONCENTRATOR MANAGES OR CONTROLS ALL THE FUNCTIONS OF THE NETWORK.



ADVANTAGES OF STAR TOPOLOGY

- EASY TO INSTALL AND WIRE.
- EASY TO DETECT FAULTS AND REMOVE PARTS.
- NO DISRUPTIONS TO THE NETWORK WHEN CONNECTING OR REMOVING DEVICES.

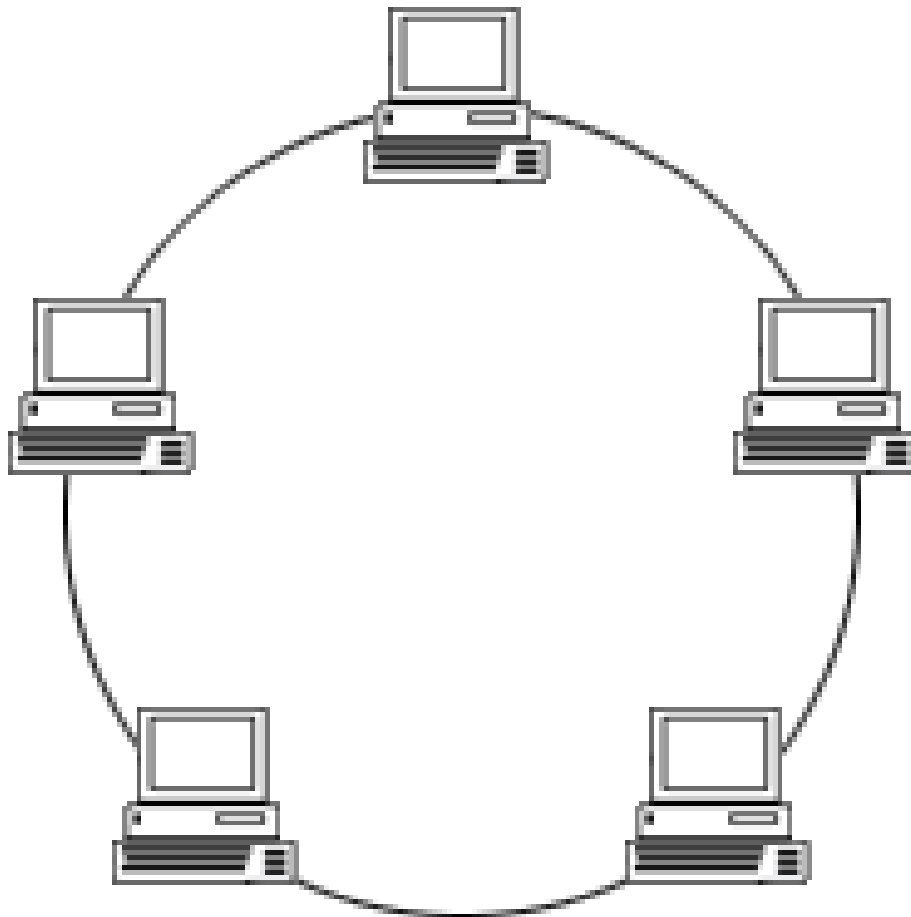
DISADVANTAGES OF STAR TOPOLOGY

- REQUIRES MORE CABLE LENGTH THAN A LINEAR TOPOLOGY.
- MORE EXPENSIVE THAN BUS TOPOLOGY BECAUSE OF HUBS.
- IF THE HUB, SWITCH OR CONCENTRATOR FAILS, NODES ATTACHED ARE DISABLED.

RING TOPOLOGY

- DEVICES HAS TWO NEIGHBOURS FOR COMMUNICATION, PURPOSES.
- ALL THE MESSAGE TRAVEL CLOCKWISE OR ANTI – CLOCKWISE THROUGH THE SYSTEM.
- FAILURE IN ANY CABLE OR DEVICE BREAKS THE LOOP, SOMETIMES BRING THE WHOLE NETWORK DOWN.

Ring Topology



ComputerHope.com

ADVANTAGES OF RING TOPOLOGY

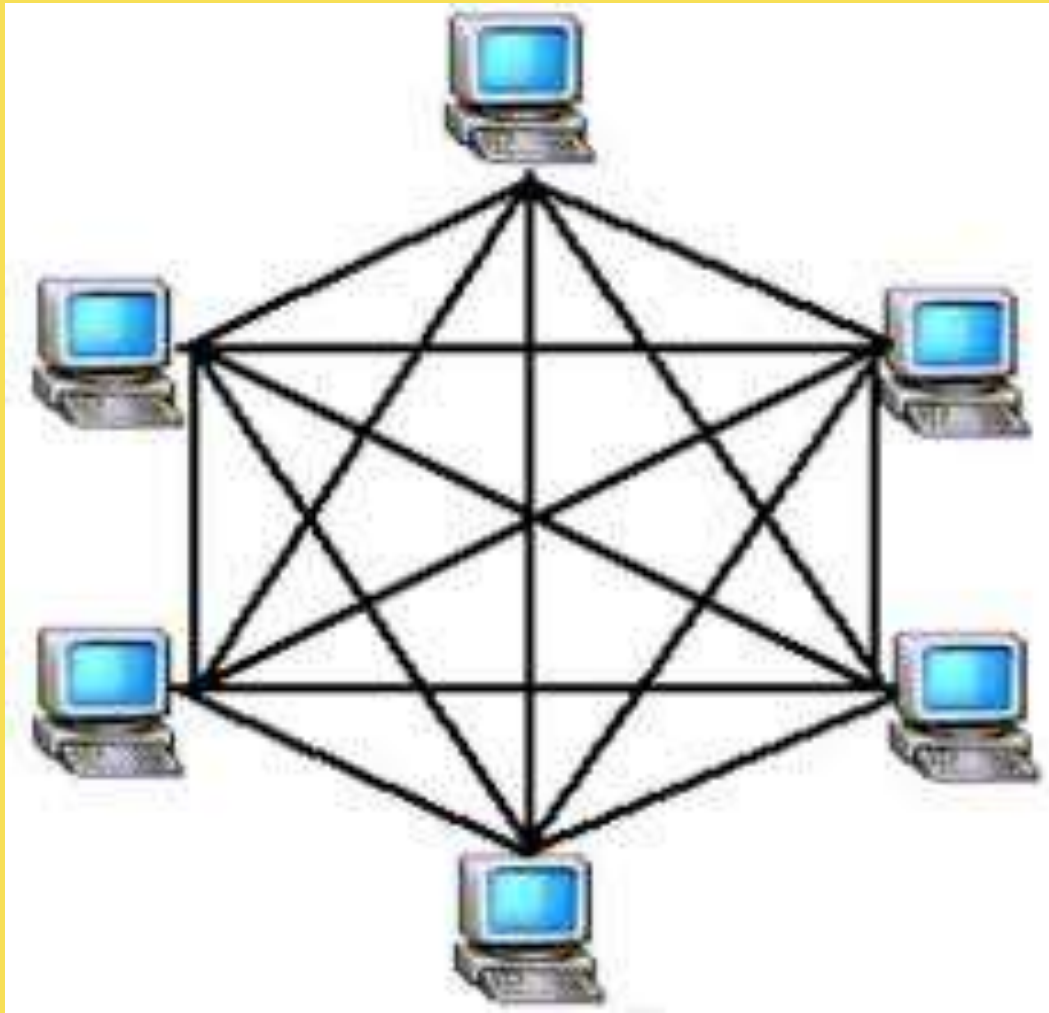
- ① CENTRAL SERVER IS NOT REQUIRED FOR THE MANAGEMENT.
- ① DATA TRANSMITTED BETWEEN TWO NODES PASSES THROUGH ALL THE INTERMEDIATE NODES.

DISADVANTAGE OF RING TOPOLOGY

- FAILURE OF THE SINGLE NODE IN THE NETWORK CAN CAUSE THE FAILURE OF THE WHOLE NETWORK.
- CHANGES MADE IN THE NETWORK EFFECTS THE PERFORMANCE TO THE ENTIRE NETWORK.

MESH TOPOLOGY

- HERE EACH AND EVERY DEVICE IS CONNECTED TO EACH OTHER.
- IT IS NOT MOSTLY USED AS IT IS DIFFICULT AND EXPENSIVE.
- THIS IS MAINLY USED FOR WIRELESS NETWORK.



ADVANTAGES OF MESH TOPOLOGY

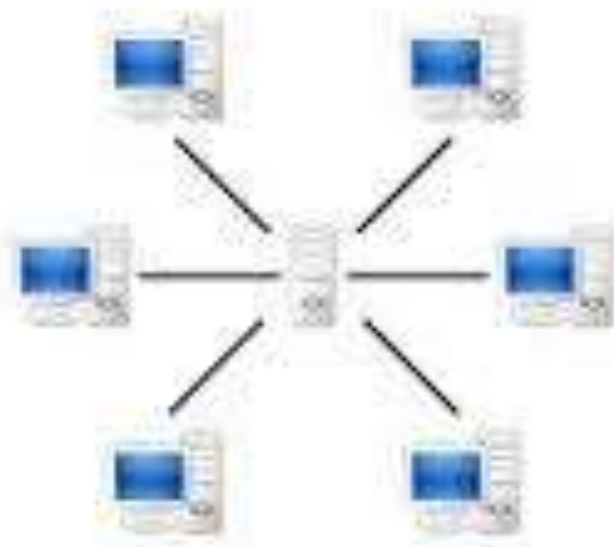
- THE ARRANGEMENT OF THE NETWORK IS SUCH THAT IT IS POSSIBLE TO TRANSMIT DATA FROM ONE NODE TO MANY OTHER NODES AT THE SAME TIME.

DISADVANTAGES OF MESH TOPOLOGY

- LEADS TO REDUNDANCY OF THE NETWORK CONNECTIONS.
- MANY CONNECTIONS BUT DOESNOT SERVE MAJOR PURPOSE.

NETWORK OPERATING SYSTEM

- IT IS THE DIFFERENT WAYS OF COORDINATING BETWEEN THE COMPUTERS IN THE NETWORK.
- THEY ARE OF TWO TYPES:- PEER TO PEER AND CLIENT/SERVER



Server-based



P2P-network

PEER TO PEER NETWORK

- ⦿ THERE IS NO DEDICATED SERVER.
- ⦿ AN OPERATING SYSTEM ALREADY IN PLACE MAY ONLY NEED TO BE RECONFIGURED FOR PEER TO PEER NETWORK.
- ⦿ DOESNOT PROVIDE CENTRAL SECURITY.

Peer to Peer Network "Workgroup"



CLIENT/ SERVER NETWORK

- RESOURCE AND DATA SECURITY IS CONTROLLED THROUGH THE SERVER.
- NEW TECHNOLOGY CAN BE EASILY INTEGRATED.
- ONE OR ALL ELEMENTS CAN BE REPLACED INDIVIDUALLY AS NEEDS INCREASE.
- IF THE SERVER IS DOWN, OPERATION CEASES.
- LARGE NETWORK WILL REQUIRE STAFF TO ENSURE SUFFICIENT OPERATIONS.
- INITIAL INVESTMENT IS HIGH.



Client-Servers Network Model

ASSIGNMENT

1. Difference between Bus topology and Ring topology.
2. Explain all the network topologies.
3. Explain the various network operating systems.
4. What do you mean by peer – peer network operating system.
5. Difference between star topology and mesh topology.

6. Disadvantages of the following topologies:-

- i. Star topology
- ii. Bus topology
- iii. Ring topology
- iv. Mesh topology

7. Advantages of the following topologies:-

- i. Star topology
- ii. Bus topology
- iii. Ring topology
- iv. Mesh topology