23k-2081

Networking - LAB 11

Date: 3/11/2023

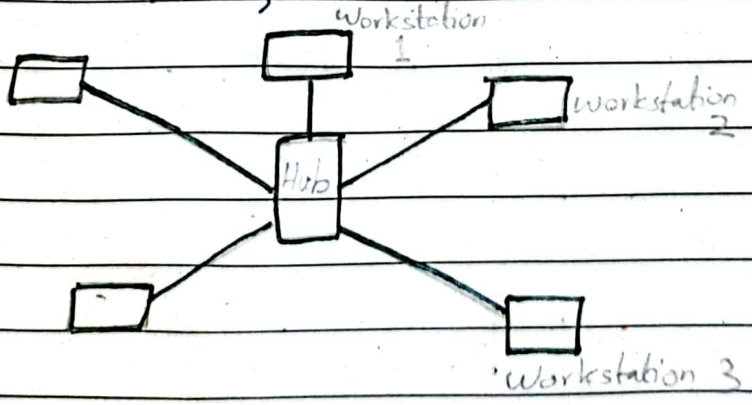
Topologies

Topology is termed as the physical structure of a network. Each component in a topology is called a node. Topology defines how these components are connected among each other.

There are various network topologies such as:

1. Star Topology:

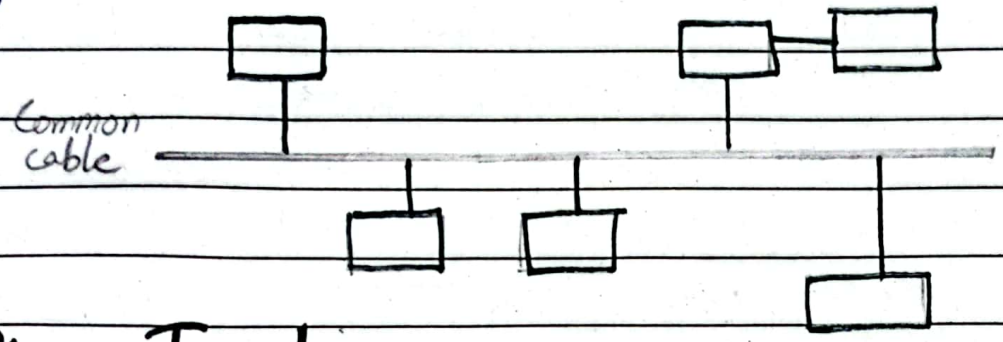
In star topology all computers, workstation or other devices are directly connected to a common central computer that is often referred as hub. New devices can be added to the network easily. But if, central server fails, the entire network will stop.



2. Bus Topology:

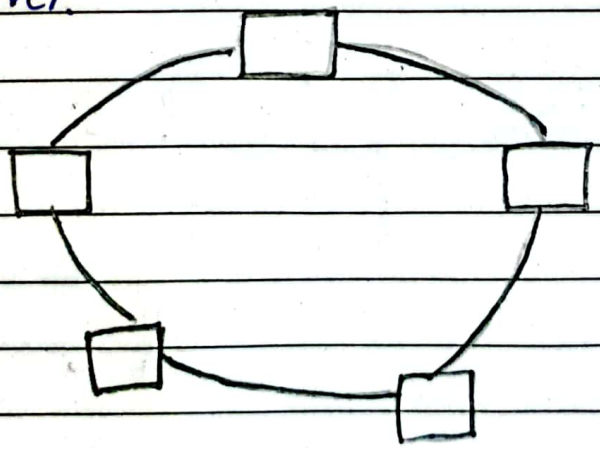
In bus topology all computers are connected to a single cable. Each device must have its own interface technology, that may be a

circuit board or card. All communications takes place on the common cable or bus. There is no central server but if the cable malfunctions the network will crash.



3. Ring Topology:

In ring topology multiple devices are connected into a ring-like structure. All communications in the network follow a clockwise or anticlockwise pattern. Message goes from device to device until the designated device is reached. There is no central server.



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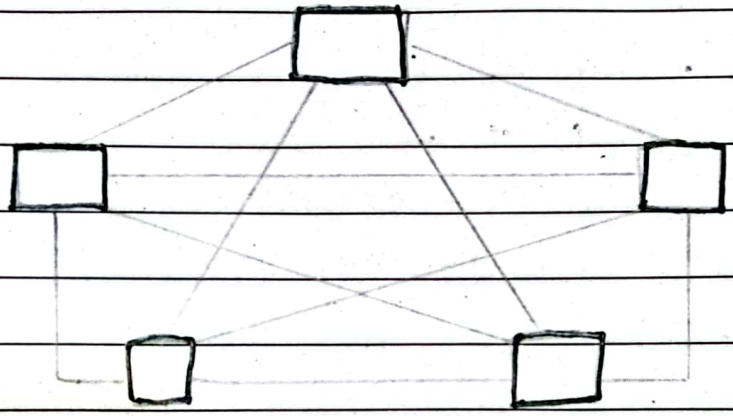
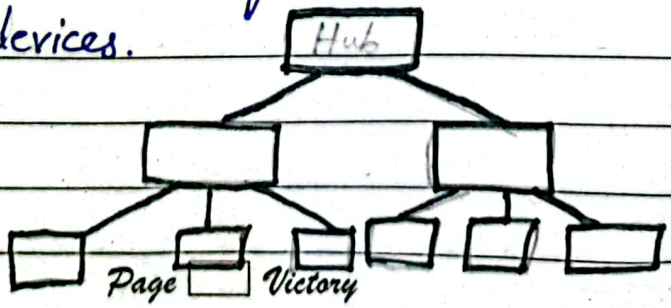
4. Mesh Topology:

In this type of topology each device is connected to every other device through a channel. Mesh Topology provides fast communication and privacy, but installation and maintenance is costly. Total number of links required is found by the formula $n*(n-1)/2$, where n is the number of devices.



5. Tree Topology:

In this topology, the network follows a tree-like structure implementing a hierarchical flow of data. It is a multipoint connection connected with the central hub. If the central hub fails the entire network stops. Also, cabling cost is high and it is difficult to add new devices.



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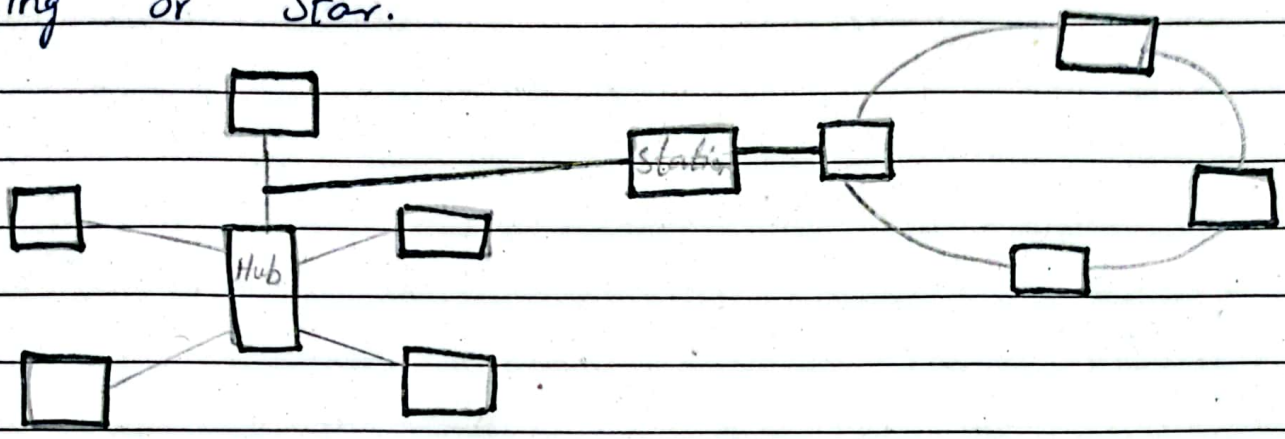
6. Hybrid Topology:

Hybrid Topology is termed as the combination of different types of topologies. Relevant protocols are to be used to link individual topologies such as Ring or Star.



The network can be expanded by the architecture is challenging to develop hence ~~its~~ installation cost is very high.

7. Point-to-Point Topology:

It is the most simple type of topology that implements the concept of sender and receiver. It is installed only with two devices, providing high bandwidth.