Objective: To study different types of network topologies.

Apparatus:
    2 computers
    Ethernet cables
    Switch
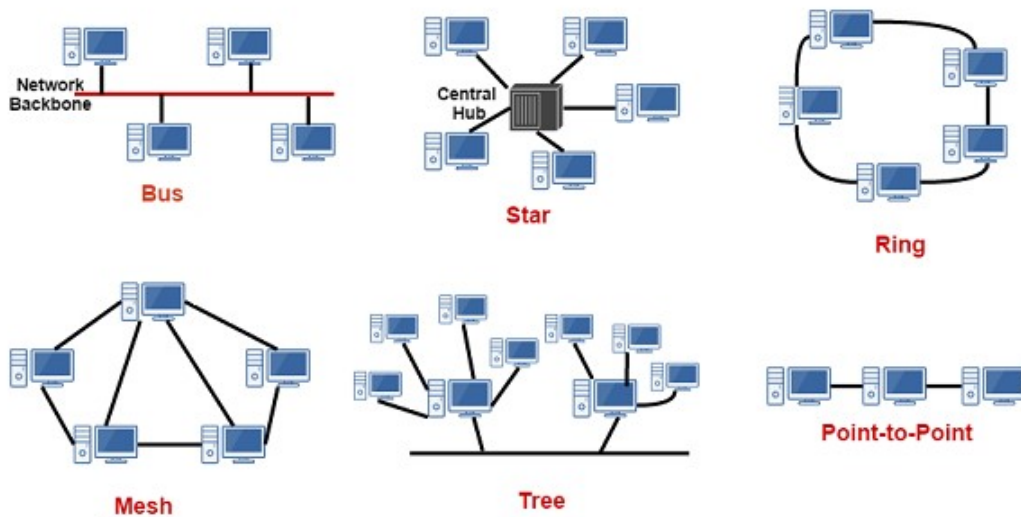
Theory:

Star Topology:
In the star topology, all the computers connect with the help of a hub. This cable is called a central node, and all other nodes are connected using this central node. It is most popular on LAN networks as they are inexpensive and easy to install. Here is a diagram of a star topology:

Mesh Topology:
In a mesh topology, every device is connected to every other device. This topology is used in situations where high reliability is required. Here is a diagram of a mesh topology:

Tree Topology:
A tree topology combines the Star and Bus topology features. It has a host computer like the star topology, and a single cable connects all the devices like a bus topology. This topology divides the network into multiple levels. It is also known as a hierarchy topology. Here is a diagram of a tree topology:

Procedure:
- Connect two computers to the switch using Ethernet cables.
- Turn on the computers and the switch.
- Open the command prompt on both computers.
- Type ipconfig in the command prompt and press enter.

- Note down the IP address of both computers.
- Open the network and sharing center on both computers.
- Click on the "Change adapter settings" option.
- Right-click on the Ethernet connection and select "Properties".
- Select "Internet Protocol Version 4 (TCP/IPv4)" and click on the "Properties" button.
- Select the "Use the following IP address" option.
- Enter the IP address of the first computer in the "IP address" field and enter the IP address of the second computer in the "Default gateway" field.
- Click on the "OK" button.
- Repeat steps 8-12 for the second computer, but swap the IP addresses.
- Open the command prompt on both computers.
- Type ping <IP address of the other computer> and press enter.
- Verify that both computers can communicate with each other.

Conclusion: This experiment helps students understand the concept of network topologies and how they can be implemented in a LAN environment. It also helps students understand the importance of IP addresses and how they are used to identify devices on a network.

Here are some diagrams of different network topologies: