



# DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Discover. Learn. Empower.

## EXPERIMENT:3

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**Branch:** CSE

**Semester:** 5<sup>th</sup>

**Subject Name:** COMPUTER NETWORKS

**UID:** 22BCS12648

**Section/Group:** IOT\_627-B

**Date of Performance:** 30/07/24

**Subject Code:** 22CSH-312

**1. Aim:** Implement Bus, Ring, Mesh, and Hybrid topology. Assign IP address and subnet mask to each computer and run the ping command to check the reachability of the systems. Send message between source and destination and observe the flow of the messages.

### **2. Requirements:**

**S/W Requirement :-** Packet Tracer or NS2

**H/W Requirement :-** Processor , Main Memory (128 MB RAM) ,Hard Disk( minimum 20 GB IDE Hard Disk ), Removable Drives,PS/2 HCL Keyboard and Mouse

### **3. Procedure:**

#### **1.Open Packet Tracer:**

- Launch Cisco Packet Tracer on your system.

#### **2. Set Up the Workspace:**

- Create a new project or open an existing workspace.
- Familiarize yourself with the available devices and tools in Packet Tracer.

#### **3.Add Network Devices:**

- Drag and drop the required number of PCs, switches, routers, and other devices into the workspace.
- Position devices based on the topology you are implementing (Bus, Ring, Mesh, Hybrid).

#### **4.Connect Devices:**

- Use appropriate cables (e.g., Straight-Through, Cross-Over, or Coaxial) to connect the devices according to the chosen topology.
- Ensure connections are correctly made, following the structure of the topology (e.g., linear for Bus, loop for Ring, fully/partially interconnected for Mesh, or a combination for Hybrid).

## 5. Assign IP Addresses and Subnet Masks:

- Click on each PC, navigate to the “Desktop” tab, and select “IP Configuration.”
- Assign unique IP addresses and subnet masks to each device, ensuring they are within the same subnet where applicable.

## 6. Verify Network Connectivity:

- Open the “Command Prompt” on each PC.
- Use the ping command to test connectivity between devices:
  - Ping one PC from another to check if they are reachable.
  - Record the results to ensure proper network setup.

## 7. Simulate Message Transmission:

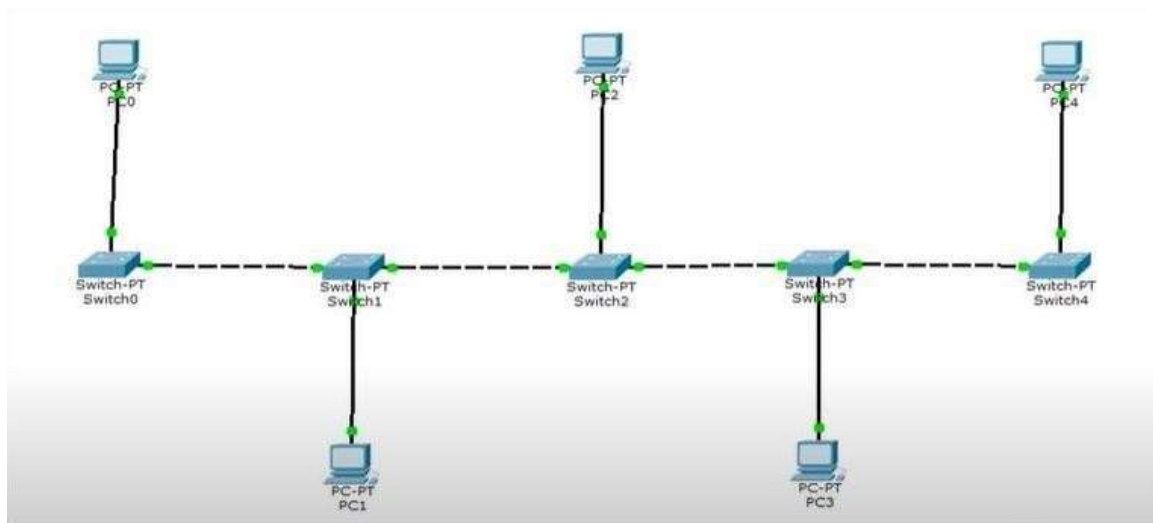
- Use the “Simple PDU” tool to simulate sending a message or packet from a source PC to a destination PC.
- Observe how the message is transmitted across the network and how it reaches the destination.

## 8. Save and Export the Project:

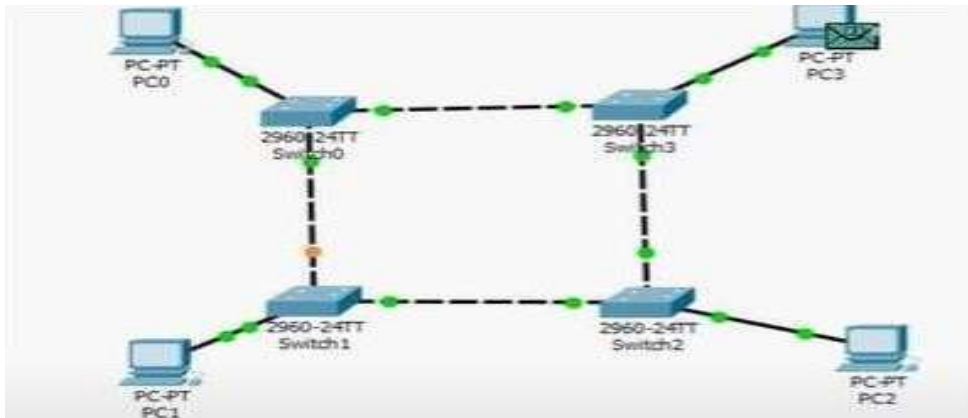
- Save your Packet Tracer project for future reference or submission.
- Export topology diagrams and settings as required.

## 4. Output:

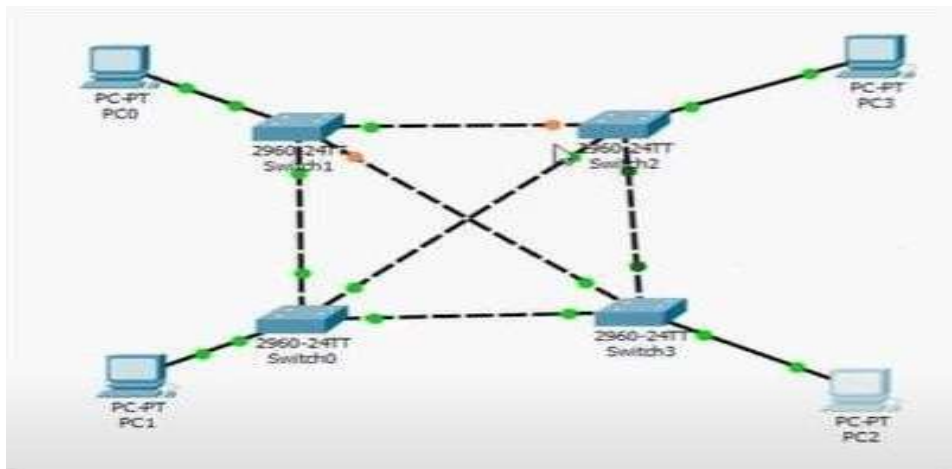
### (i) Bus Topology :



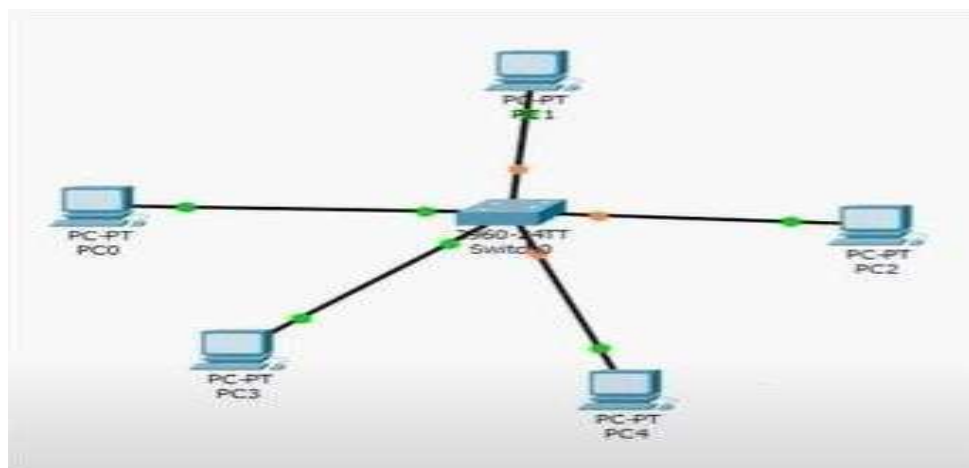
## (ii) Ring Topology :



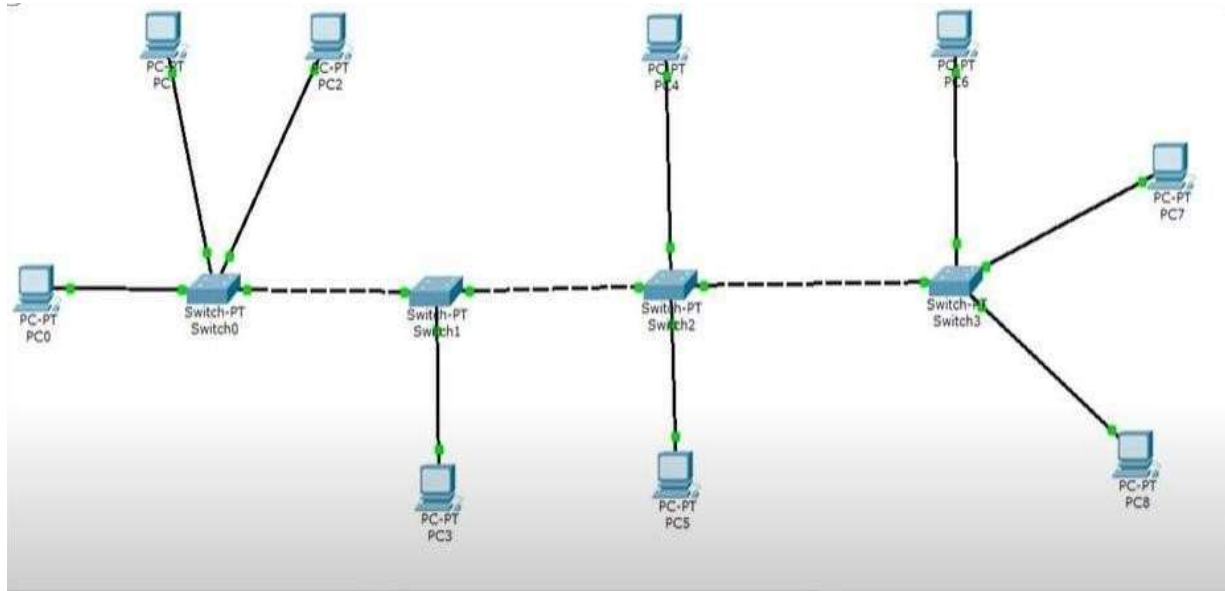
## (iii) Mesh Topology :



## (iv) Star Topology :



## (v) Hybrid Topology:



## 5. Learning Outcomes:

1. Acquired comprehensive knowledge of network topologies (Ring, Bus, Mesh, Star, Hybrid), understanding their structures and functionalities.
2. Gained proficiency in using Cisco Packet Tracer to simulate and analyze various network designs.
3. Developed practical skills in configuring network devices and ensuring their proper connectivity.
4. Successfully implemented network topologies with accurate IP addressing and subnetting for all devices.
5. Gained hands-on experience using the ping command to test network connectivity and resolve reachability issues across different topologies.