Experiment 5

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Semester: 5th **Date of Performance:06/09/24**

Subject Name: Computer Networks **Subject Code: 22CSH-312**

1. **Aim:** Implement Data link Layer Protocols such as CSMA,CSMA/CD etc.
2. **Objective:** The objective is to understand and demonstrate how Data Link Layer protocols, specifically CSMA/CD, manage network traffic and handle collisions in a simulated network environment. By setting up a network in Cisco Packet Tracer, you'll learn to configure devices, observe protocol behavior, and analyze how these protocols ensure efficient and reliable communication on a shared medium.
3. **Requirements:**

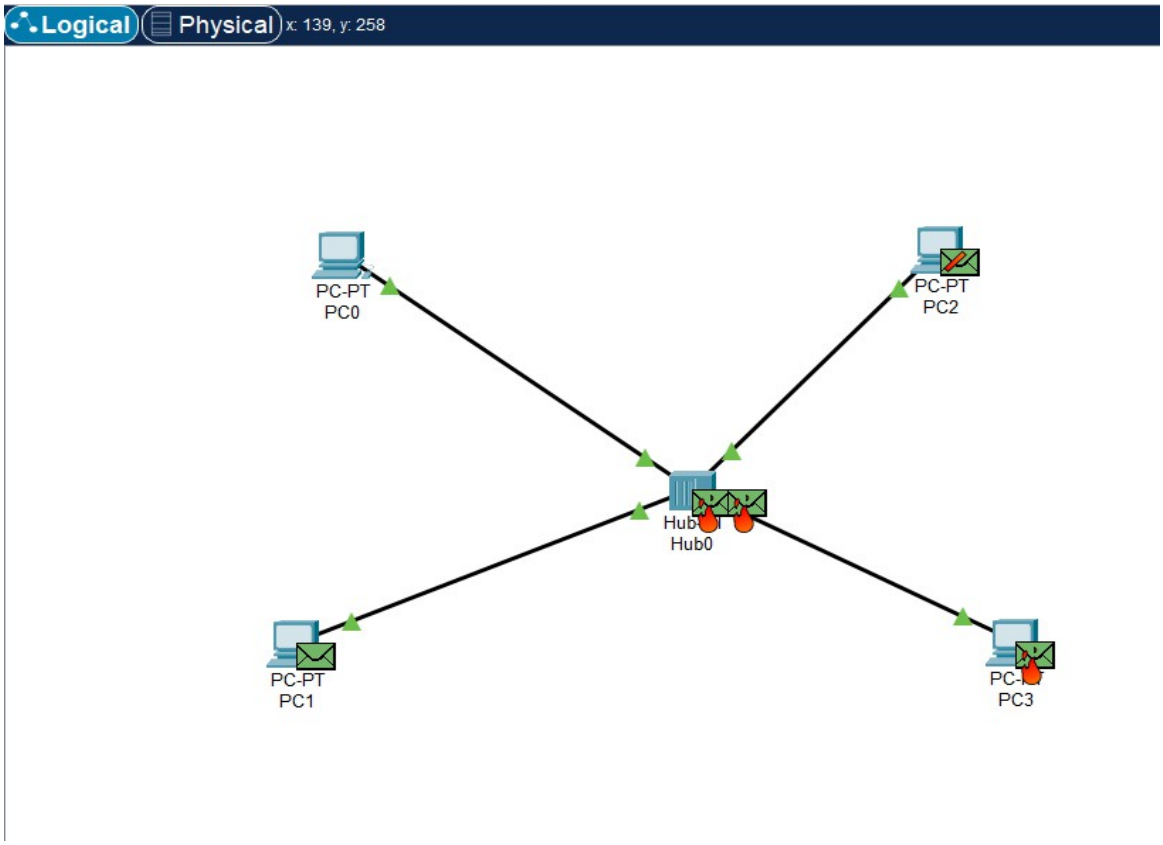
- Cisco Packet Tracer Software
- Switches
- PC
- Ethernet Cables
- Hub

4. **Procedure:**

- Open Cisco Packet Tracer
- Drag and drop several switches and end devices (PCs) onto the workspace.
- Connect the devices using ethernet cables.
- Click on each PC, go to the Desktop tab, and then click on IP Configuration to assign static IP addresses to each PC.
- Connect PCs to the hub.

- Connect some PCs directly to the switch for comparison
- Click Simulation at the bottom of the Packet Tracer window
- In Simulation Mode, watch how data frames are transmitted through the hub. The hub shares the bandwidth among all connected PCs, leading to potential collisions.
- Watch data frames through the switch. The switch creates separate collision domains for each port, reducing collisions compared to the hub.

5. Output



6. Learning Outcome:

- Gain insight into how CSMA/CD operates to manage access to a shared communication medium and handle collisions.
- Learn to set up and configure network devices, including switches and PCs, to demonstrate protocol functionality.
- Develop the ability to use Packet Tracer's simulation features to visualize and analyze network traffic and protocol behavior.
- Improve skills in diagnosing and resolving network issues related to protocol operations and collisions.
- Enhance skills in documenting network setups, configurations, and simulation results for reporting and analysis.