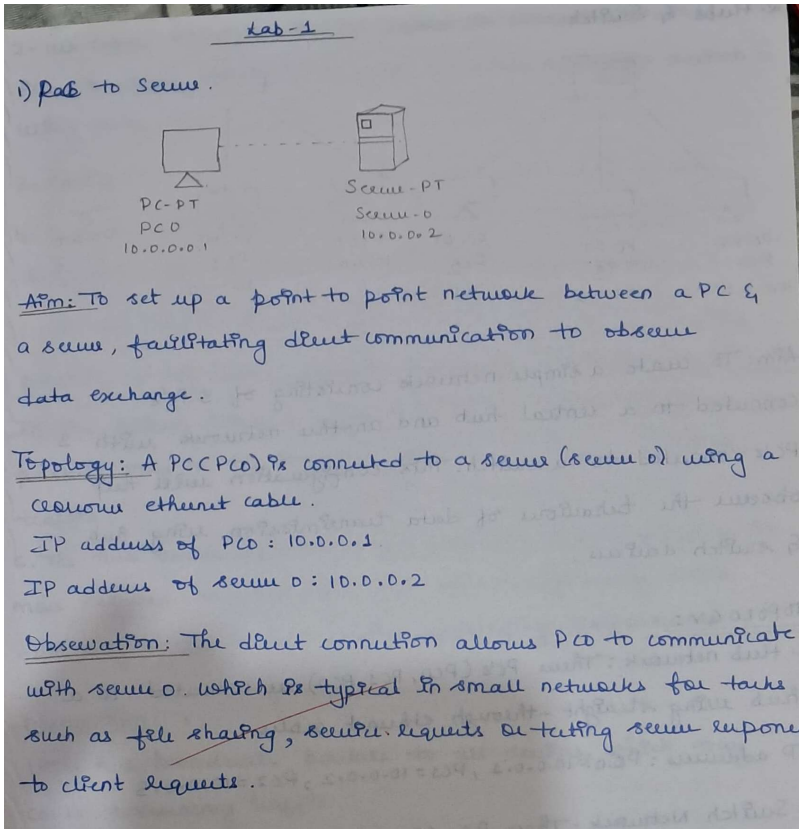
Program-1

Program to create topology and simulate single PDU from source to destination using hub and switch as connecting devices

Topology, Procedure and Observation:



Lab-1

1) PC to Server.

PC-PT
PC 0
10.0.0.0.1

Server-PT
Server-0
10.0.0.2

Aim: To set up a point to point network between a PC & a server, facilitating direct communication to observe data exchange.

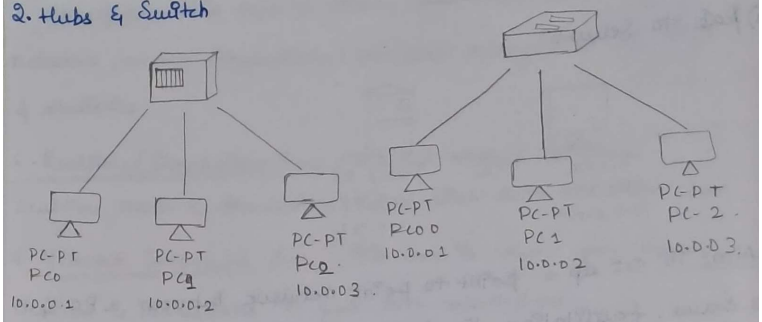
Topology: A PC (PC0) is connected to a server (server 0) using a crossover ethernet cable.

IP address of PC0 : 10.0.0.1

IP address of server 0 : 10.0.0.2

Observation: The direct connection allows PC0 to communicate with server 0. which is typical in small networks for tasks such as file sharing, sending requests & getting server response to client requests.

2. Hubs & Switch



Aim: To create a simple network consisting of 3 PC's connected to a central hub and another network with 3 PC's connected to a switch. This configuration will help observe the behaviour of data transmission using hub & switch devices.

TOPOLOGY:

1. Hub network: Three PC's (PC0, PC1, PC2) are connected to a hub using straight-through ethernet cables.

IP addresses: PC0 = 10.0.0.1, PC1 = 10.0.0.2, PC2 = 10.0.0.3

2. Switch Network: Three PCs (PC3, PC4, PC5) are connected to a switch using straight through ethernet cables.

IP addresses: PC3: 10.0.0.4, PC4 = 10.0.0.5, PC5 = 10.0.0.6.

PROCEDURE:

1. Add 1 hub, 1 switch and 6 PCs (PC0, PC1, PC2 for the hub; PC3, PC4, PC5 for the switch to the CPS10 packet tracer workspace.

2. Use copper straight through cables to connect PC0, PC1, PC2 to hub0. Similarly connect PC3, PC4 & PC5 to switch0 using same type cables.

3. Assign IP addresses to each PC & obtain subnet mask.

4. Switch to simulation mode to observe data traffic behaviour when packets are sent between devices.

5. In the hub network, notice how the hub broadcasts packets to all devices, causing potential traffic overload. In the switch network, observe how the switch forwards packets only to the intended recipient, reducing unnecessary traffic.

6. The hub broadcasts data to all connected devices leading to more network congestion, while the switch efficiently sends data only to the correct devices, optimizing performance.

Observation:

1. The hub broadcasts packets to all devices, which may cause unnecessary traffic.

2. The switch forwards packets only to the appropriate device by learning MAC addresses, making it more efficient in reducing traffic.

Screenshots