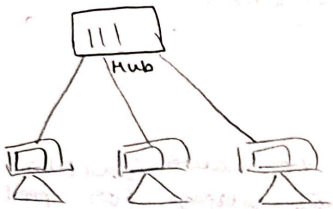
Program 1

Aim: Create a topology and simulate sending a simple PDU from source to destination using hub and switch as connecting devices and demonstrate ping messages.

Topology , Procedure and Observation:

Hub:



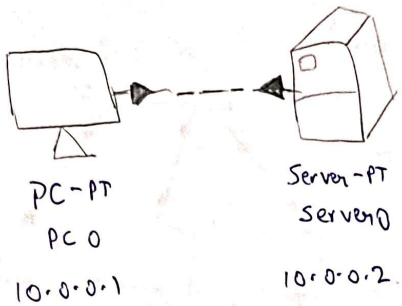
- Layer: operates at layer1 (physical layer) of OSI model.
- It broadcasts data to all connected devices doesn't filter or manage traffic.
- Limited efficiency, more collisions can occur due to simultaneous data transmission.

Switch:

- operates at datalink layer of OSI model.
- It forwards data only to the specific device for which it is intended, based on MAC addresses
- More efficient, reduces collisions.

Experiment 1

1. PC to Server



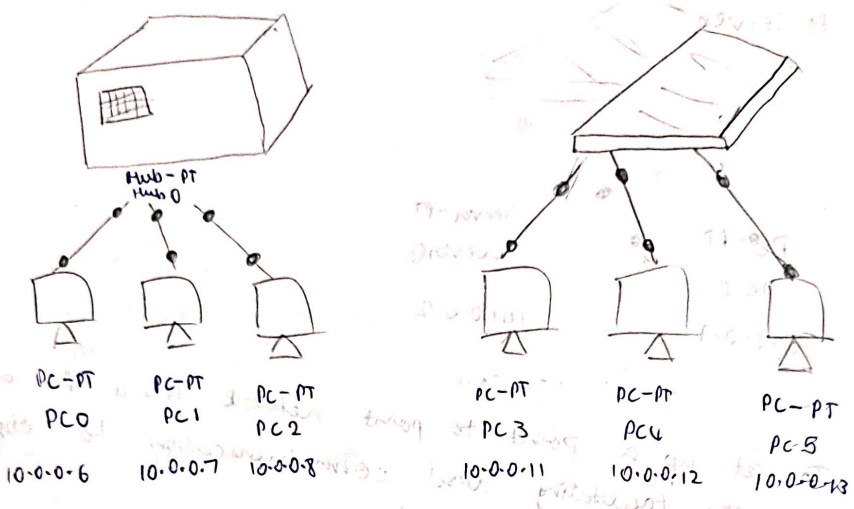
Aim: To set up a point to point network b/w a PC and a server, facilitating direct communication to observe data exchange.

Topology: A PC is connected to server using a crossover ethernet cable

IP address of PC - 10.0.0.1, server - 10.0.0.2.

Observation: Direct communication allows PC to communicate with server, which is typical in small networks for tasks such as file sharing, service request or testing server response to client queries.

2. Hub and Switch



Aim: To create simple network consisting of 3 PCs connected to a central hub and another network with 3 PCs connected to a switch. This connection will help observe the behaviour of data transmission using hub & switch device.

Topology: 3 PC's are connected to a hub & switch using straight through ethernet cables.

Observation: Hub broadcasts packets to all devices which may cause unnecessary traffic.

Switch forwards packets only to appropriate device by learning MAC addresses, making it more efficient in reducing traffic.

Screen Shots: