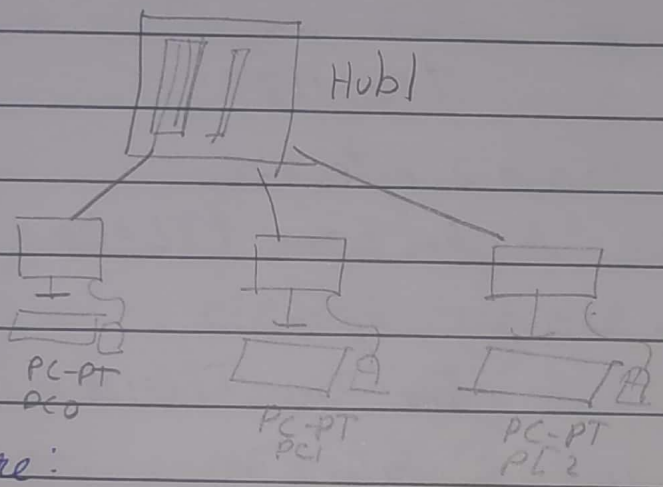
Date : 15/6/23

EXPERIMENT 1

Aim: Create a topology, hence simulate sending a simple PDU from source to destination using a simple hub and virtual as connecting

Topology: Hub to PC



Procedure:

1) Select hub and three PC's
2) Connect the hub to the individual PC using copper straight through wires
3) Assign the IP address to the PC's 10.0.1, 10.0.0.2, 10.0.0.3
4) Select the packet and select the source and destination PC

Observation: In simulation mode

- PC sends packet to hub and hub sends it to both PC1 and PC2.
- PC1 discards the message whereas PC2 accepts it

- PC2 sends the acknowledgement packet to the hub
- Hub again sends it to PC0 and PC1
- PC1 discards and PC0 accepts it

Output

Reply from 10.0.0.2 bytes = 32
time = 2ms
TTL = 128

Reply from 10.0.0.2 bytes = 32
time = 0ms TTL = 128

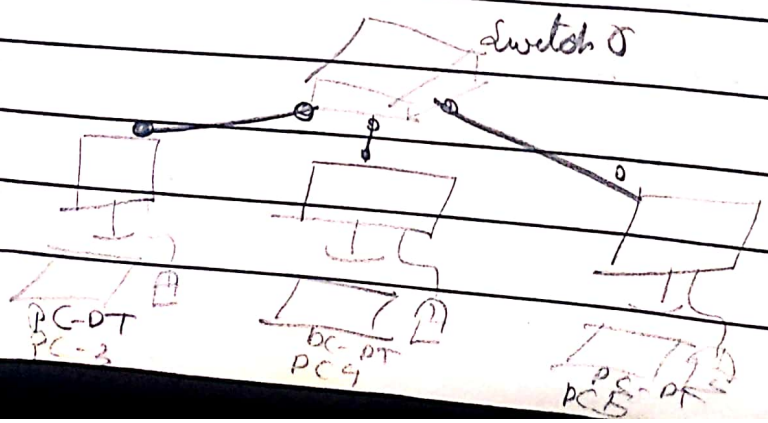
Reply from 10.0.0.2 bytes = 32
time = 3ms TTL = 128

Reply from 10.0.0.2 bytes = 32
time = 0ms TTL = 128

Ping statistics for 10.0.0.2
Packet: Sent = 4, Received = 4, 6
lost = 0 (0% loss)
Approximate round trip time in milli seconds
minimum = 0ms, Maximum = 3ms
Average = 2ms

Topology:

Switch to PC



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Procedure:

1) Select a switch and 3 PC's
2) Connect the switch to the individual PC's using a copper straight through
3) Assign the IP addresses to the PC's - 10.0.0.4, 10.0.0.5, 10.0.0.6 respectively
4) Select the PDU and the source and destination PC.

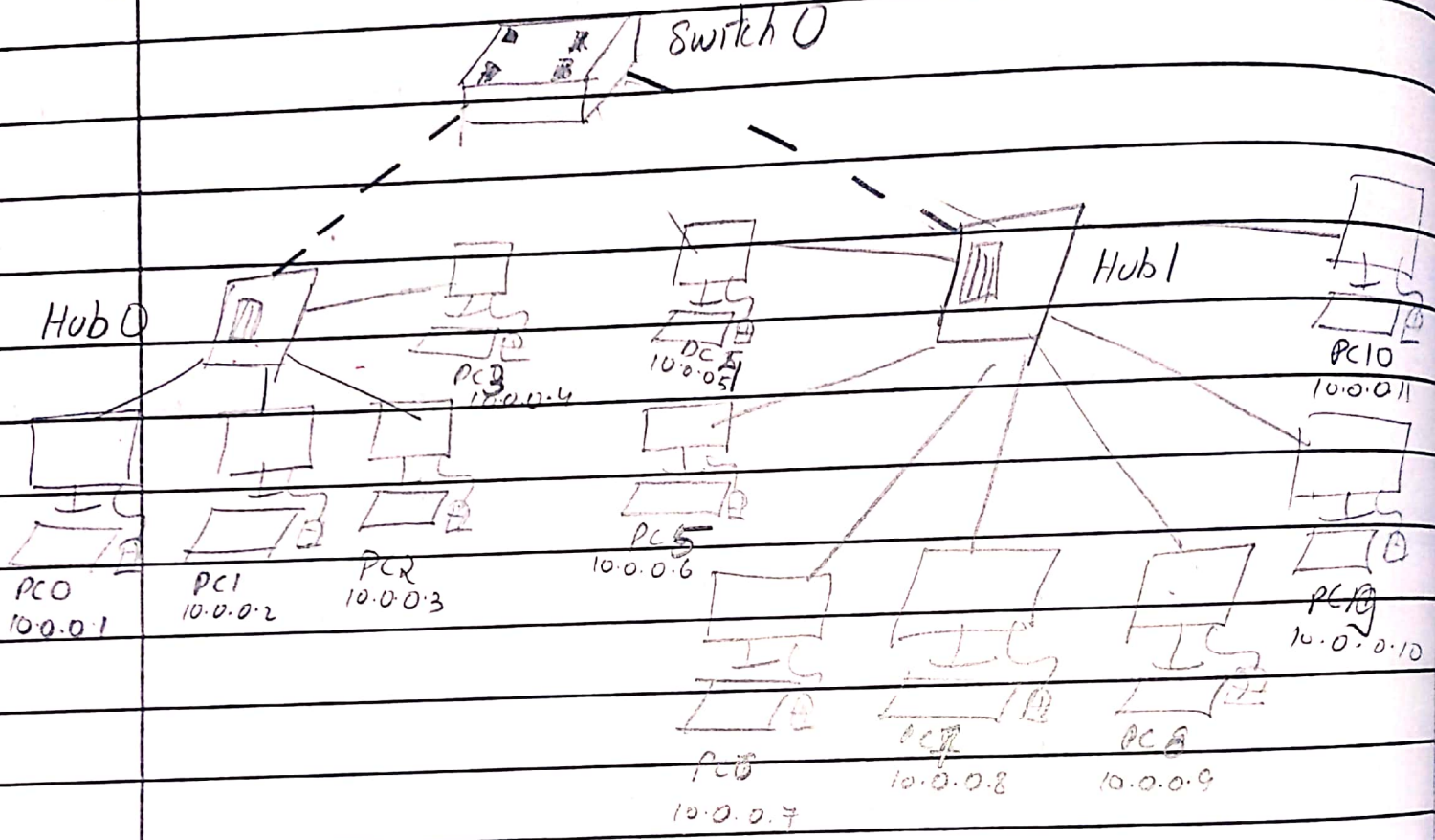
Output

Reply from 10.0.0.5 bytes = 32 time = 0ms TTL = 128
Reply from 10.0.0.5 bytes = 32 time = 0 ms TTL = 128
Reply from 10.0.0.5 bytes = 32 time = 3ms TTL = 128
Reply from 10.0.0.5 bytes = 32 time = 3 ms TTL = 128
Ping Statistics for 10.0.0.5
Packets : Sent = 4, Received = 4 lost = 0 (0% loss)
Approximate round trip times in milli seconds
Minimum = 0ms Maximum = 3ms, Average = 2ms

Observations: In simulation mode
- PC3 sends packets to switch and it sends to both PC4 and PC5 in first round.
- PC4 rejects and PC5 accepts and sends acknowledgement packet to both PC3 and PC5.

PC4 discards it PC3 accepts it.
Now because of switch PC3 sends packets only to PC5.

Topology → Hybrid - Hub and Switch



Procedure

- 11 PC's 2 generic Hub's and 1 switch were placed in the workspace
- 4 PC's were connected to Hub 0 via copper straight through cables. Remaining 7 PC's were connected to hub 1 via copper straight through cable.
- All PC's were assigned IP's (10.0.0.1 to 10.0.0.11)
- The 2 hubs were connected to the switch via copper cross over cables which are used to connect devices on the same end.

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Result

PC1 command line :

PC> ping 10.0.0.8

Pinging 10.0.0.8 with 32 bytes of data :

Reply from 10.0.0.8 bytes=32 time=8ms TTL=128
Reply from 10.0.0.8 bytes=32 time=10ms TTL=128
Reply from 10.0.0.8 bytes=32 time=10ms TTL=128
Reply from 10.0.0.8 bytes=32 time=10ms TTL=128

Ping statistics for 10.0.0.8
Packets : Sent = 4, Received = 4, Lost = 0 (0% loss)
Approximate round trip time in milli seconds
Minimum = 0ms Maximum = 8ms, Average = 2ms

Observations :

Hub : A hub recieves data and broadcasts it to all devices connected to it.

Switch : A switch prevents traffic between 2 devices from being shared with other devices connected to it. It sends messages only to the reciever.

22/6/22

1.Hub and PCs