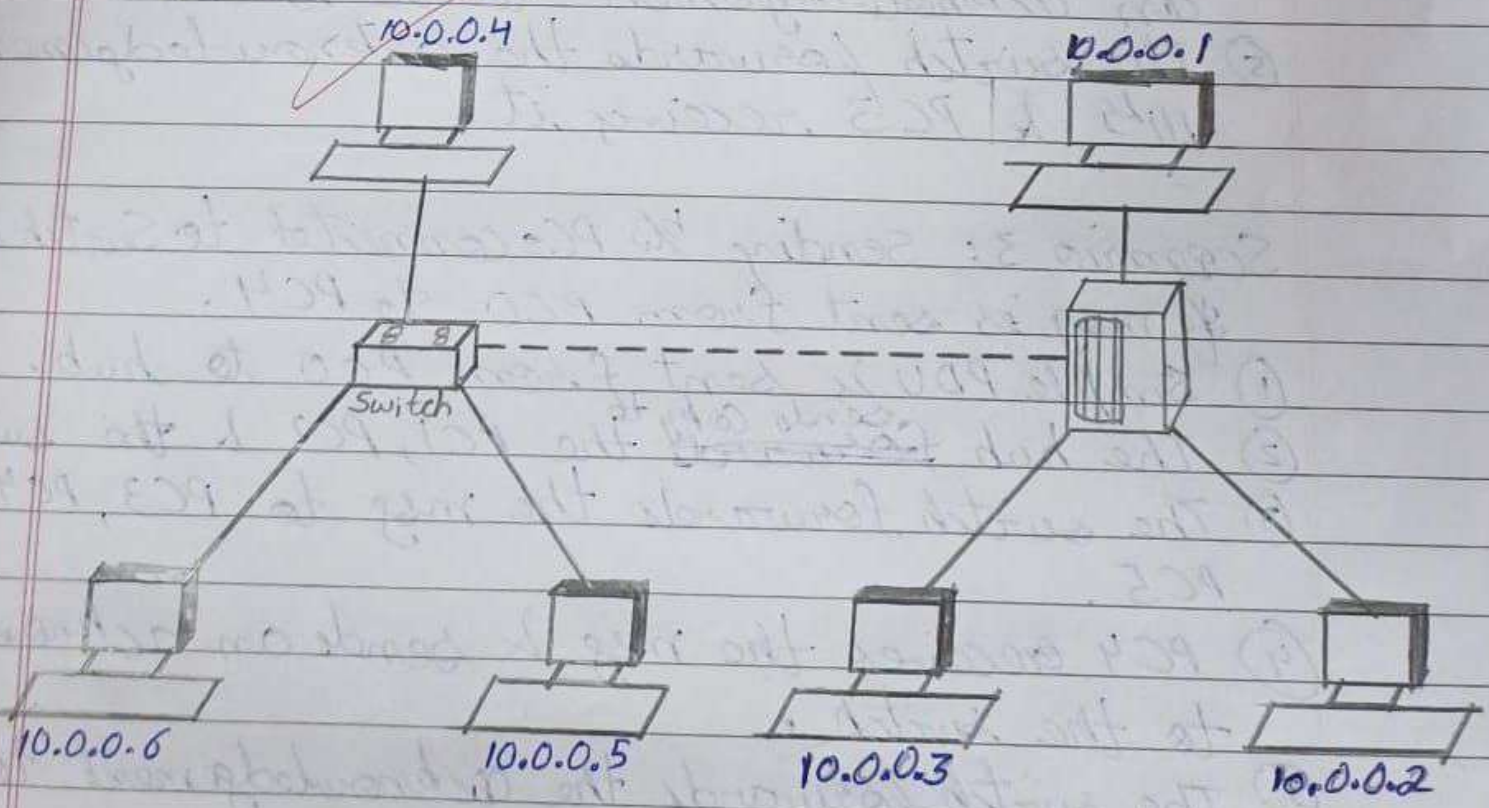
WEEK - 2

Q. Create a topology & simulate sending a simple PDU from source to destination using simple hub & switch as connecting domains.

Sol^n:

STEPS:

1. Add a generic hub & connect 3 PCs to it using Copper Straight-through wire.
2. Add a generic switch & connect 3 PCs to it using Copper Straight-through wire.
3. Wait for the switch-PC connections to be established.
4. Connect the hub & switch using a Copper Cross-over wire.
5. Set the IP Addresses for all the PCs (end-devices) as 10.0.0.1, 10.0.0.2 & so on.
6. Send a simple PDU message from one PC to another & wait for the simulation to run after clicking Auto capture.



Scenario 1 : Sending b/w PCs connected to Hub
If msg is sent from PC1 to PC2
① Simple PDU is sent from PC1 to Hub.
② Hub sends the copies of the msg to PC0, PC2 & switch.
③ The PC2 receives the msg & sends back acknowledgement to the Hub.
④ The Hub further forwards the acknowledgement to PC0, PC1 & switch.
⑤ The PC1 receives it & the transfer is completed

Scenario 2: Sending b/w PCs connected to Switch.
If msg is sent from PC3 to PC4
① Simple PDU is sent from PC3 to switch.
② The switch forwards the msg to PC5, P4 & the hub.
③ The hub forwards it to the PC0, PC1 & PC2.
④ The PC4 accepts the message & sends an acknowledgement to the switch.
⑤ The switch forwards the acknowledgement 111ly & PC3 receives it.

Scenario 3: Sending b/w PCs connected to Switch & Hub
If msg is sent from PC0 to PC4.
① Simple PDU is sent from PC0 to hub.
② The hub ~~forwards~~ Sends copy to the PC1, PC2 & the switch.
③ The switch forwards the msg to PC3, PC4 & PC5.
④ PC4 receives the msg & sends an acknowledgement to the switch.
⑤ The switch forwards the acknowledgement to the PC3, PC5 & the hub.
⑥ Hub sends copy of the acknowledgement to PC0, PC1 etc.

⑨ PC0 receives the acknowledgement thereby completing the transfer of msg.

```
PC>ping 10.0.0.3
   Pinging 10.0.0.3 with 32 bytes of data:

Reply from 10.0.0.3: bytes=32 time=0ms TTL=128
Reply from 10.0.0.3: bytes=32 time=0ms TTL=128
Reply from 10.0.0.3: bytes=32 time=0ms TTL=128
Reply from 10.0.0.3: bytes=32 time=0ms TTL=128

Ping statistics for 10.0.0.3:
   Packets: Sent=4, Received=4, Lost=0 (0% loss).
Approximate round trip time in milli-seconds:
   Minimum=0ms, Maximum=0ms, Average=0ms
```

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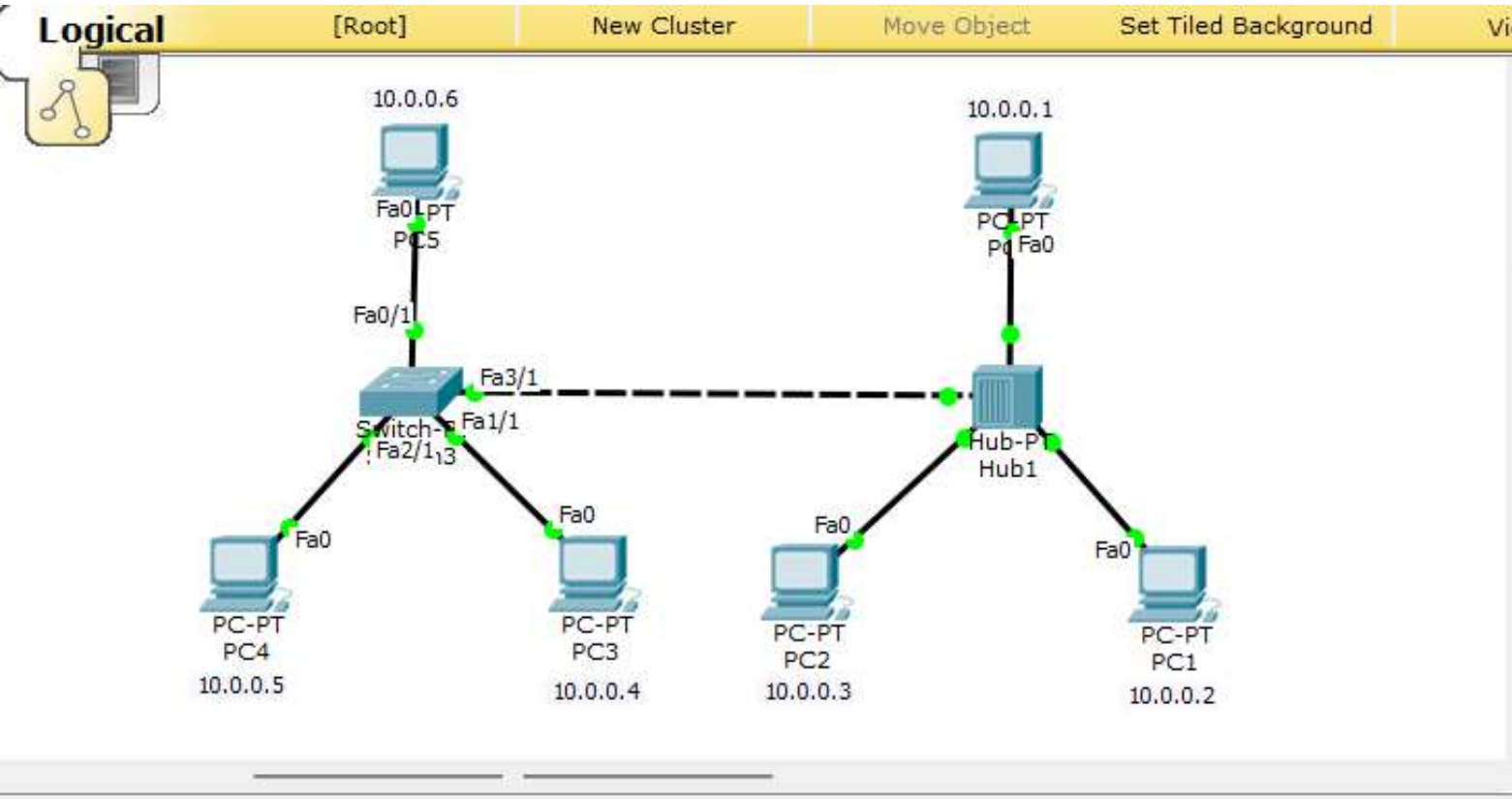
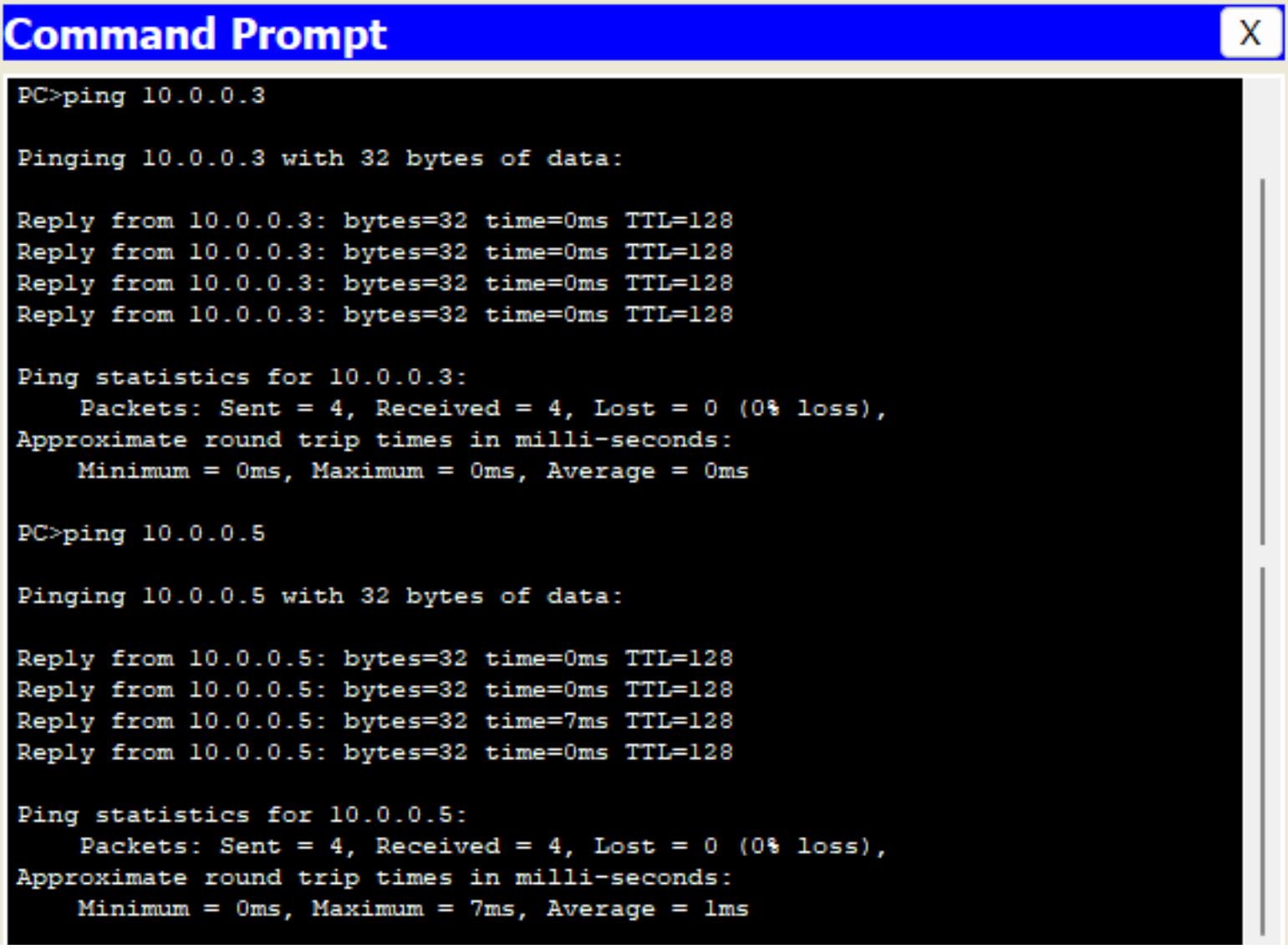


PDU List Window

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC0	PC4	ICMP		0.000	N	0	(edit)	(delete)
	Successful	PC5	PC2	ICMP		0.153	N	1	(edit)	(delete)


Command Prompt
X
PC>ping 10.0.0.3
Pinging 10.0.0.3 with 32 bytes of data:
Reply from 10.0.0.3: bytes=32 time=0ms TTL=128
Reply from 10.0.0.3: bytes=32 time=0ms TTL=128
Reply from 10.0.0.3: bytes=32 time=0ms TTL=128
Reply from 10.0.0.3: bytes=32 time=0ms TTL=128
Ping statistics for 10.0.0.3:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
PC>ping 10.0.0.5
Pinging 10.0.0.5 with 32 bytes of data:
Reply from 10.0.0.5: bytes=32 time=0ms TTL=128
Reply from 10.0.0.5: bytes=32 time=0ms TTL=128
Reply from 10.0.0.5: bytes=32 time=7ms TTL=128
Reply from 10.0.0.5: bytes=32 time=0ms 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 = 7ms, Average = 1ms

```
PC>ping 10.0.0.45

Pinging 10.0.0.45 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 10.0.0.45:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

PC>ping 10.0.0.6

Pinging 10.0.0.6 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 10.0.0.6:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

PC>
```