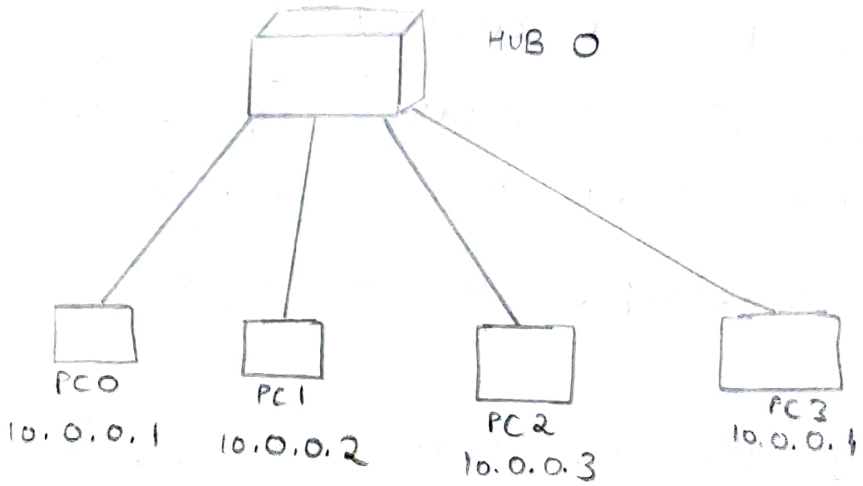
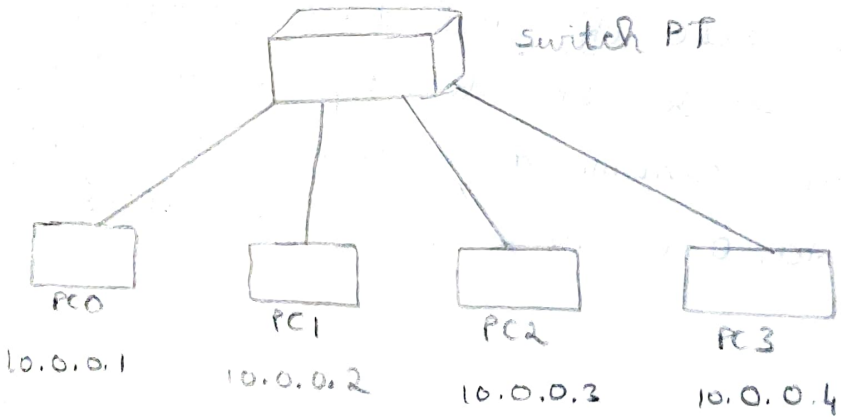
10/11/22

Experiment 1

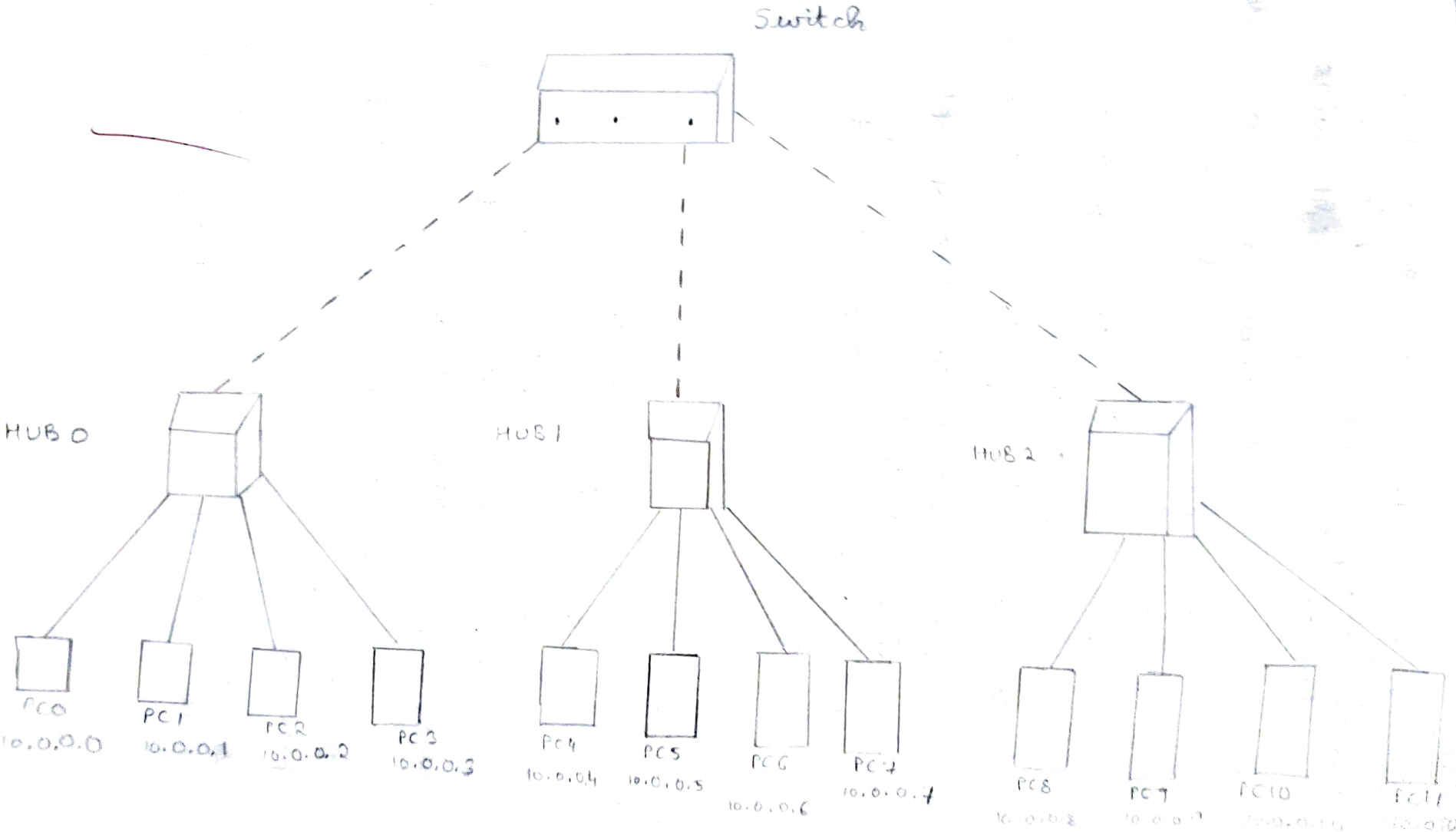
AIM:- Creating a topology and simulate sending a simple PDU from source to destination using hub and switch as connecting devices.

Topology:-





Hybrid :-


Switch
HUB 0
HUB 1
HUB 2
PC0
10.0.0.0
PC1
10.0.0.1
PC2
10.0.0.2
PC3
10.0.0.3
PC4
10.0.0.4
PC5
10.0.0.5
PC6
10.0.0.6
PC7
10.0.0.7
PC8
10.0.0.8
PC9
PC10
PC11

Procedure :-

* HUB

→ Place 7 generic PC's and 1 generic hub in logical workspace and all 7 PC's are connected to hub, by copper straight wire.

→ Set each PC's with IP addresses from 10.0.0.0 to 10.0.0.6 respectively and connect each PC to hub by copper straight wire.

→ A simple PDU is placed on any 2 devices and message / packet passing can be seen in simulation mode, by clicking autocapture.

→ In realtime mode a command prompt is opened for certain PC and following command is given to transfer message PING destination IP - addresses.

* Switch

→ 4 generic PC's and one generic switch is placed on logical workspace.

→ Set IP address for each PC from 10.0.0.7 to 10.0.0.10 and connect each PC to switch using copper straight wire.

→ In simulation mode after placing simple PDU to any 2 PC's click auto - capture and packet transfer can be seen.

→ In real time mode click on any PC and open command prompt and type 'PING dest IP'

Hybrid :-

→ 12 PC's, 3 hubs, 1 switch all generics are placed on to logical workspace.

→ 3 generic hubs are connected to switch using copper cross over wire and 12 PC's are connected to 3 hubs, 4 PC each using copper straight wire after assigning IP address for each PC from 10.0.0.0 to 10.0.0.11 respectively.

→ After selecting 2 PC's from different hubs with simple PDU's and clicking on auto-capture, packets passing simulation can be seen in simulation mode.

→ In real time mode open command prompt by clicking any PC → devices → command prompt

Observations:-

* Hub

Learning outcome :-

→ After source sends message to hub its broadcasted to all end devices but only destination device reads and send response back to hub for source to get response.

→ Hub establishes connection to end-devices quickly and signals by green light.

Result:-

PING 10.0.0.3

PINGING 10.0.0.3 with 32 bytes of data

Reply from 10.0.0.3 with bytes = 32 times 0ms

PING Statistics for 10.0.0.3

Details of how many packets sent and received.

Learning observation :-

→ Unlike hub, switch does not give green signal immediately but takes some amount of time called learning time and the packets can be sent once green signal is generated.

Result :-

```
PING 10.0.0.5
PINGING 10.0.0.5 with 32 bytes of data
  :
PING STATISTICS FOR 10.0.0.3:
```

Hybrid :-

Learning outcomes :-

Message sent by one PC of one hub to switch is sent to destination hub which broadcast to all devices of that hub and only destined end devices sends back response to source of other hub.

Result :-

```
PING 10.0.0.4
PINGING 10.0.0.4 with 32 bytes of data
  Reply from 10.0.0.4 : bytes = 32

  PING statistics for 10.0.0.4
"Details of number of packets sent and received"
```

elabsca6

17/11/22