10/11/22

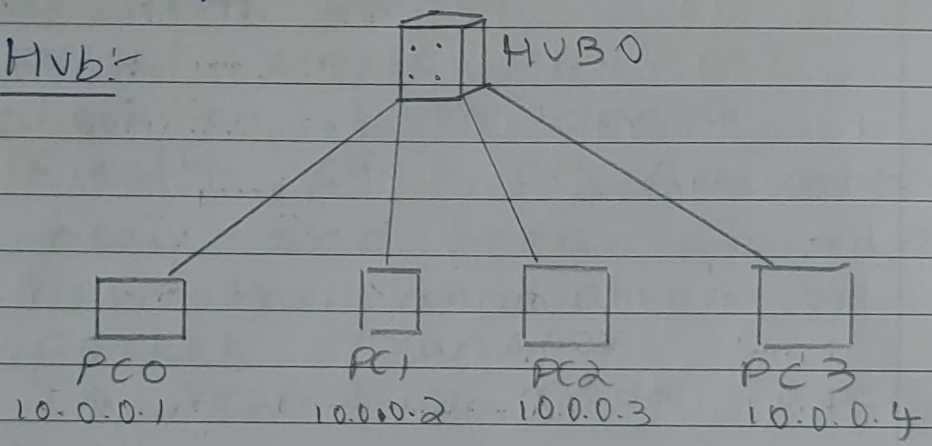
Date / /
Page
SPLASH

EXPERIMENT-1

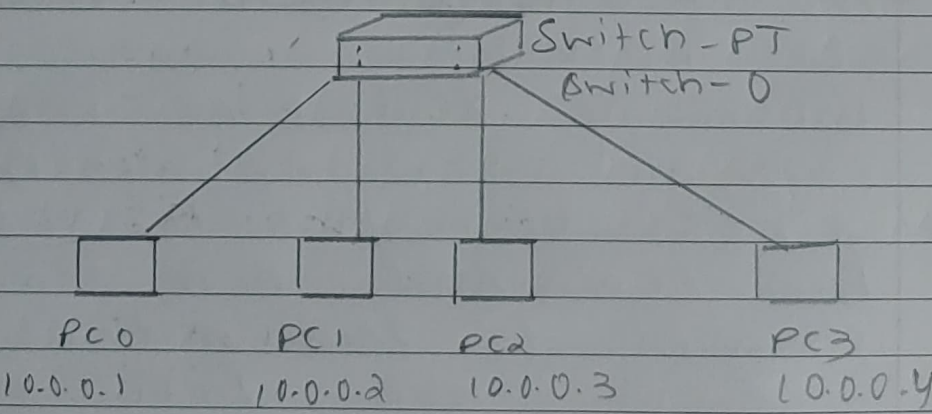
Aim:- Creating a topology and simulate sending a simple PDU from source to destination using hub and switch as connecting devices.

Topology:-

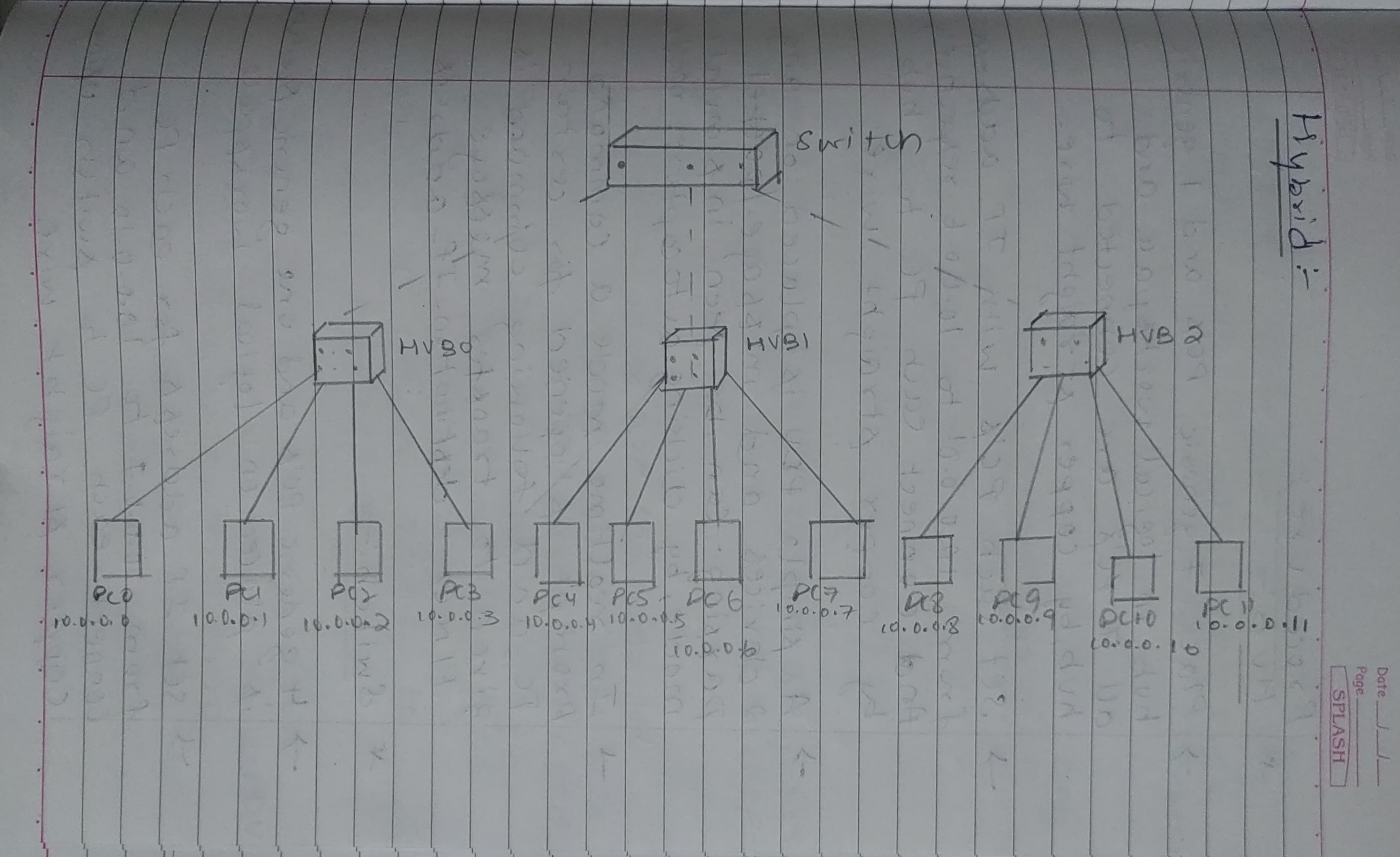
Hub:-



Switch:-



Hybrid :-



Date
Page
SPLASH

Date / /
Page
SPLASH

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 address 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_address

* 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.

Date / /
Page
SPLASH

→ 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' to send message.

* Hybrid :-

→ 12 PC's, 3-hubs, 1-switch all generic are placed onto logical workspace.

→ 3-generic hubs are connected to switch via 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 and clicking on auto-capture, packets passing simulation can be seen in simulation mode.

Date / /
Page
SPLASH

→ In real-time mode open command prompt by clicking any PC → devices → command prompt and type 'PING dest. IP_address' to send packet.

Observations:-

* Hub :-

Learning outcome :-

→ After source sends message to hub it's 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 : bytes=32 time=0ms

:

PING STATISTICS FOR 10.0.0.3 :

"Details of how many packets sent and received."

Date / /
Page
SPLASH

* Switch :-

learning observation :-

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

→ Initially switch also broadcasts for all end-devices and the next time the communication happens and message passing happens only between source and destination devices.

Result :-

PING 10.0.0.5

PINGING 10.0.0.5 with 32 bytes of data

⋮

PING STATISTICS FOR 10.0.0.3:

"Details of how many packets sent and received."

* Hybrid :-

learning outcome :-

→ 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 send 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".