PRACTICAL - 3

EXPERIMENT ON CISCO PACKET TRACER (SIMULATION TOOL)

a) To understand environment of CISCO PACKET TRACER to design simple network.

Introduction :

A simulator, as the name suggests, simulates network devices and its environment. Packet tracer is an exciting network design, simulation and modelling tool.

1) It allows you to model complex systems without the need for dedicated equipment.

2) It helps you to practice your network configuration & troubleshooting skills via computer or an android or ios based mobile device.

3) It is available for both the linux and windows desktop environment.

4) Protocols in transfer are coded to work and behave in the same way as they would on real hardware.

user interface overview:

The layout of Packet tracer is divided into

1. Menu bar — this bar provides shortcut icons to menu options that are commonly entered.
2. Main toolbar — Provide shortcut to menu options common to entering network information.
3. Logical / Physical workspace tabs — These tab allow you to toggle between the logical & physical.
4. Workspace — This is the area where topologies are created and simulations are displayed.
5. Common tools bar — Provide controls for manipulating topologies, such as select, move layout, place note, delete.
6. Real — time / Simulations tabs — Used to toggle between the real and simulation modes.
7. Network component box — Contains all the network and devices available. Two Areas:
   Area 7a : Device type section-box. Area 7b: Revice - specific selection box - when a device category is selected, this selection box displays models within that category.
8. User - created packet box - Users can create highly - customized packets to test their topology.

b) Analyse the behaviour of network devices using cisco packet tracer simulator.

1. From the network component box, click and drag and drop the below components:
   a) 4 Generic PCs and one HUB.
   b) 4 Generic PCs and one switch.

2. Click on connections:
   a) Click on copper straight - through cable
   b) Select one of the PC and connect it to HUB using the cable. The link LED should glow in green, indicating that the link is up, similarly connect remaining 3 pcs to the Hub.
   c) Similarly connect 4 PCs to the switch using copper straight through cable.

3. Click on the pcs connected to the hub. Go to the desktop tab, click on the IP configuration and enter an IP address and subnet mask. Here the default gateway and DNS server information is not needed as there are only two end devices in the netw

Click on the PDU (message icon) from the common toolbar.

    a) Drag and drop it on one of PC (source machine) and then drop it on another PC (destination machine) connected to the HUB.

4. Observe the flow of PDU from source PC to destination PC by selecting the realtime mode of simulator.

5. Repeat step #3 to step #5 for the PCs connected to the switch.

6. Observe how HUB and switch are forwarding the PDU and write your observation and conclusion about the behaviour of switch & HUB.

Observation :

a) From your observation write down the behaviour of switch and HUB in terms of forwarding the packets received by them.
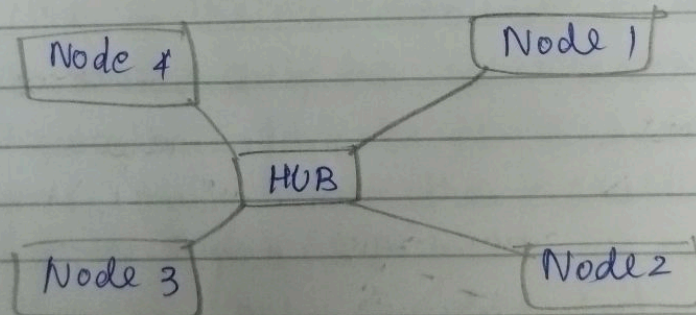
Switch
- Forwards packets based on MAC address.
- xnds packets only to the destination port, reducing network layer.

HUB
- Broadcasts packets to all connected devices
- Sends packets to every port, increasing network congestion.

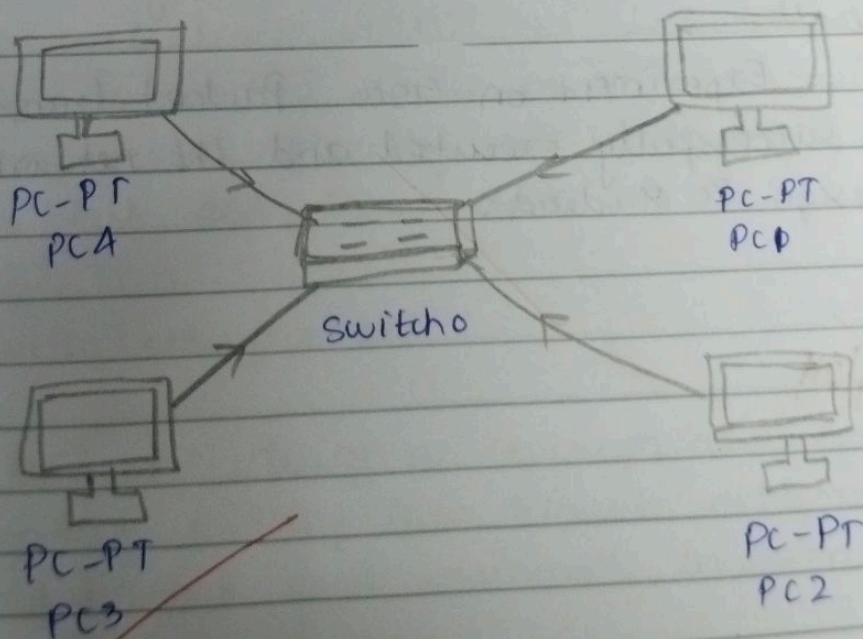b) The topology followed in our lab:
Star topology.

It is network layer where all devices are connected to a central hub or switch and messages are passed to the central core that in turn passes the messages to either all other system or the specific destination system.

Network design :

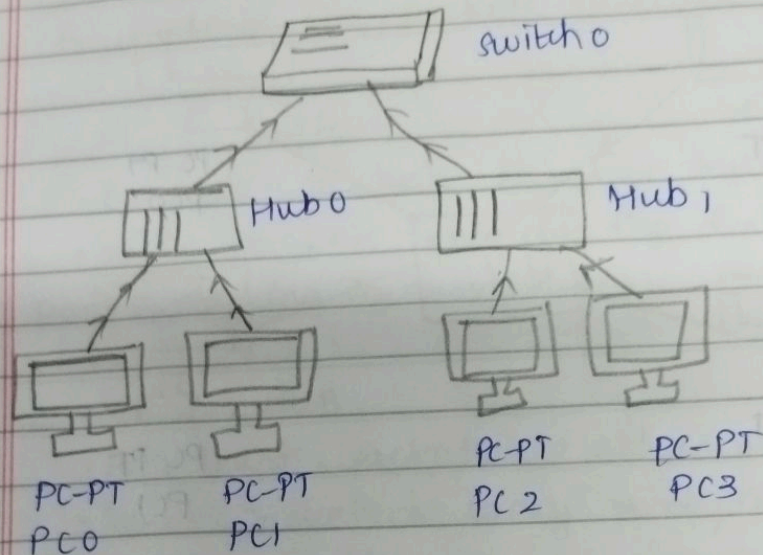1) Use only HUB to design a small network having 4 to 6 host.

PC PT
PC 3

PC PT
PC0

PC PT
PC 2

PC PT
PC1
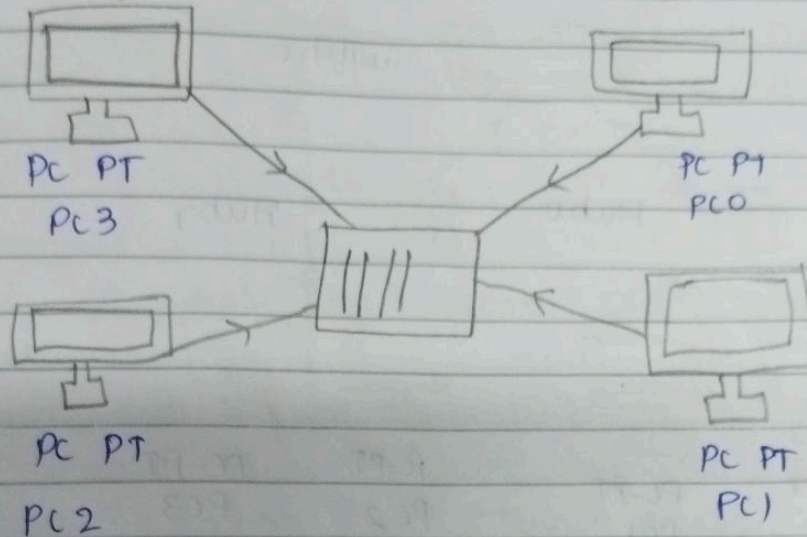
2) Use only switch to design a small network having 4 to 6 host.

PC-PT
PCA

PC-PT
PCD

Switch0

PC-PT
PC3

PC-PT
PC2

3) Use both device (HUB and switch) for a network and find out functioning difference between switch & HUB.

switch 0

Hub 0   Hub 1

PC-PT   PC-PT   PC-PT   PC-PT
PC0   PC1   PC 2   PC3

Result :

    Experiment on Cisco Packet transfer is successfully executed and the network design is studied.

30/7/24