Program 3

To demonstrate configuration of default and static routes through a connection of routers.

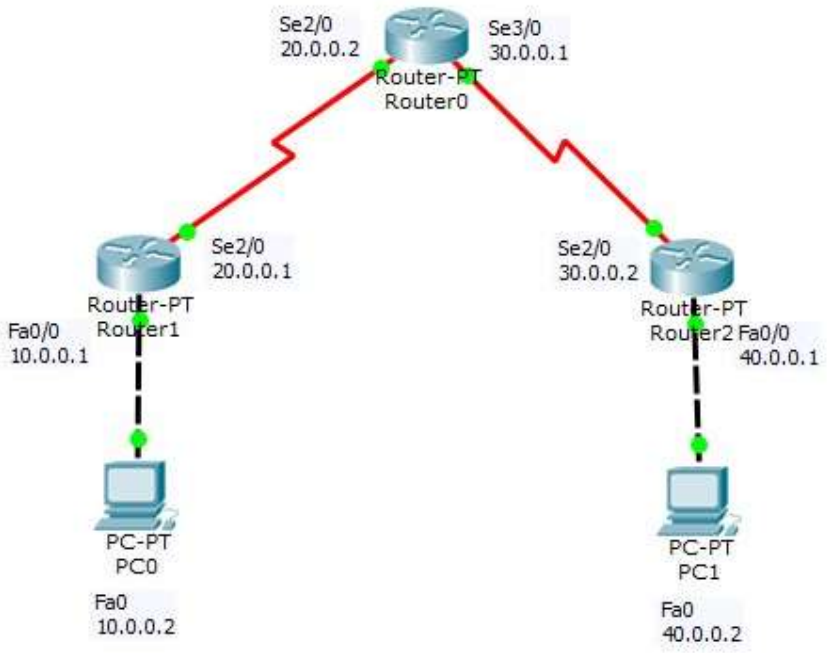


Figure 14: Topology for static route

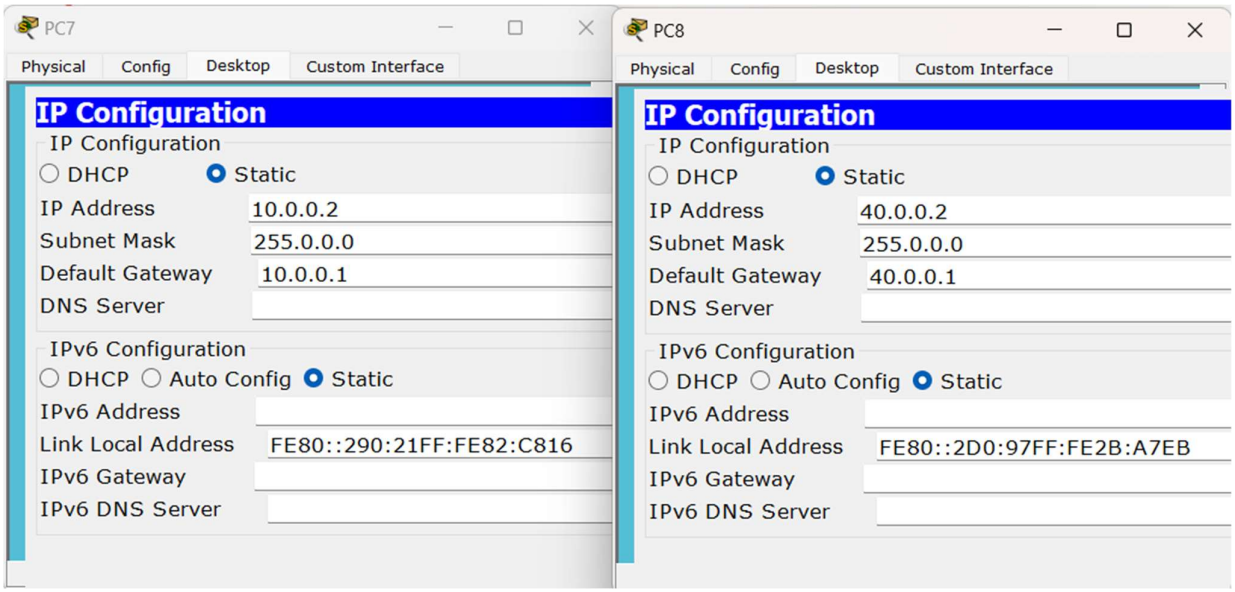


Figure 15: IP addresses

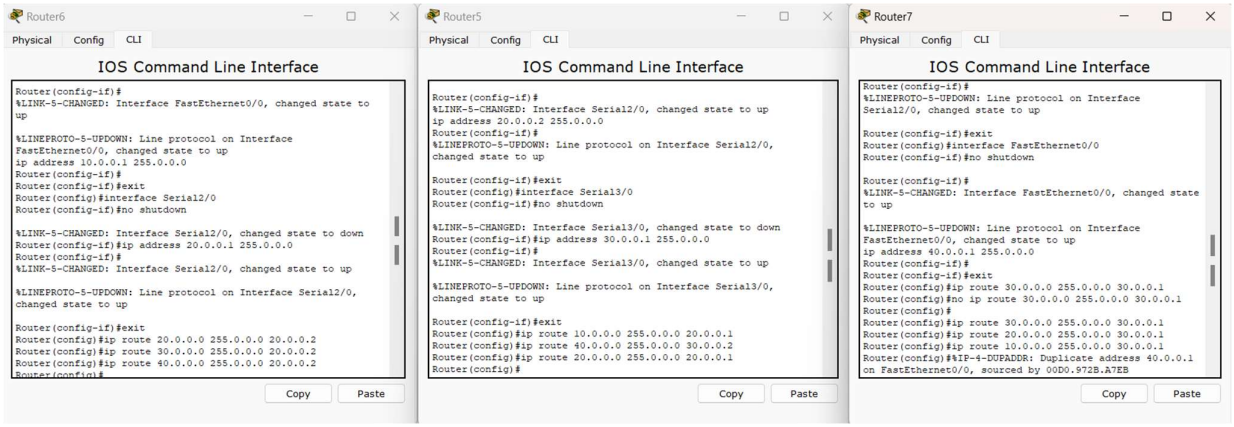


Figure 16: Routers CLI

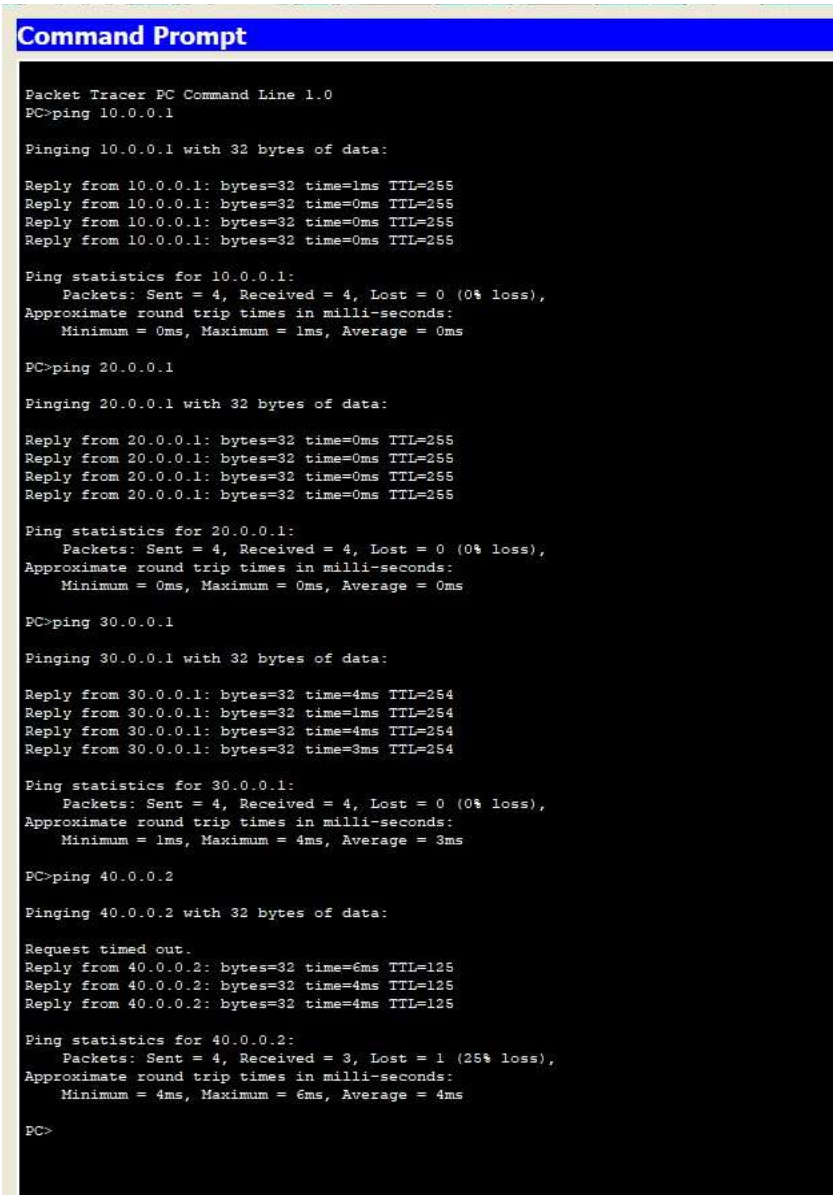
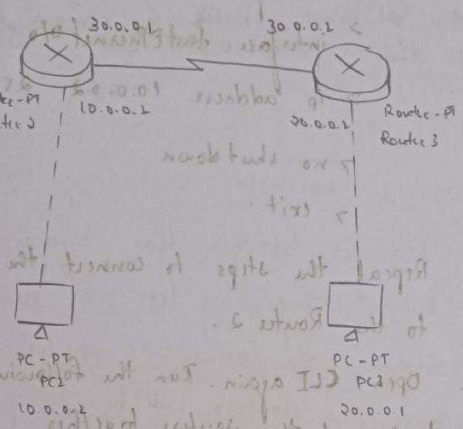


Figure 17: Output

Experiment - 2

1. Connection of two Routers:

Configuration



Aim: (i) Configuration of two routers.

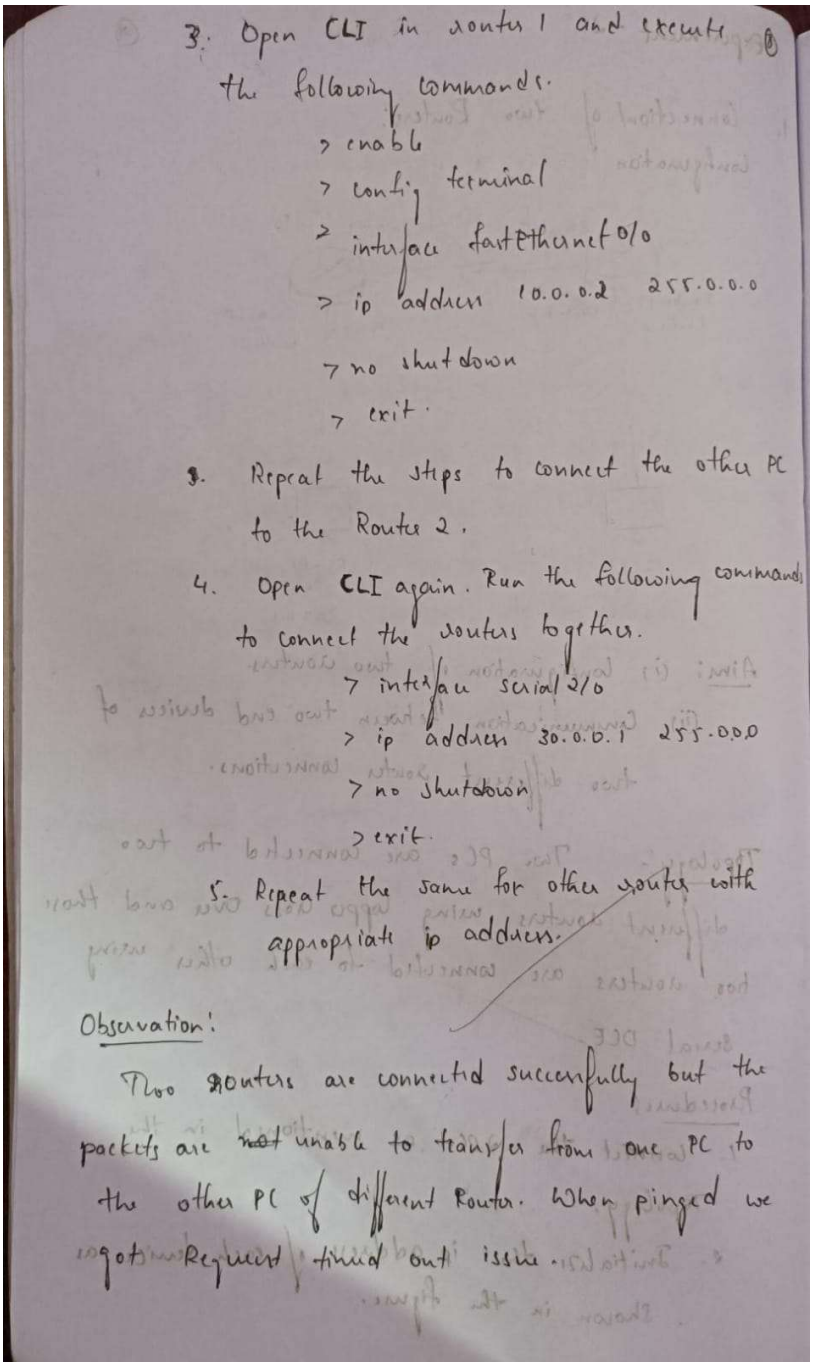
(ii) Communication between two end devices of two different router connections.

Topology: Two PCs are connected to two different routers using Copper Cross Over and those two routers are connected to each other using serial DCE.

Procedure:

1. Connect the 2 PCs as mentioned in the Topology.
2. Initialize the ip address of each devices as shown in the figure.

Figure 18: Observation book 1



3. Open CLI in router 1 and execute the following commands.
   - > enable
   - > config terminal
   - > interface fastethernet 0/0
   - > ip address 10.0.0.2 255.0.0.0
   - > no shutdown
   - > exit.
4. Repeat the steps to connect the other PC to the Router 2.
5. Open CLI again. Run the following commands to connect the routers together.
   - > interface serial 2/0
   - > ip address 30.0.0.1 255.0.0.0
   - > no shutdown
   - > exit.
6. Repeat the same for other routers with appropriate ip addresses.

Observation:

Two routers are connected successfully but the packets are ~~not~~ unable to transfer from one PC to the other PC of different Router. When pinged we got Request timed out issue.

Figure 19: Observation book 2

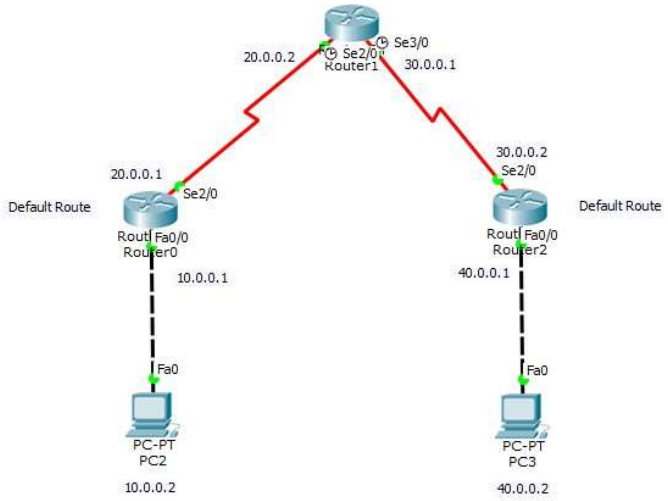


Figure 20: Topology for default route

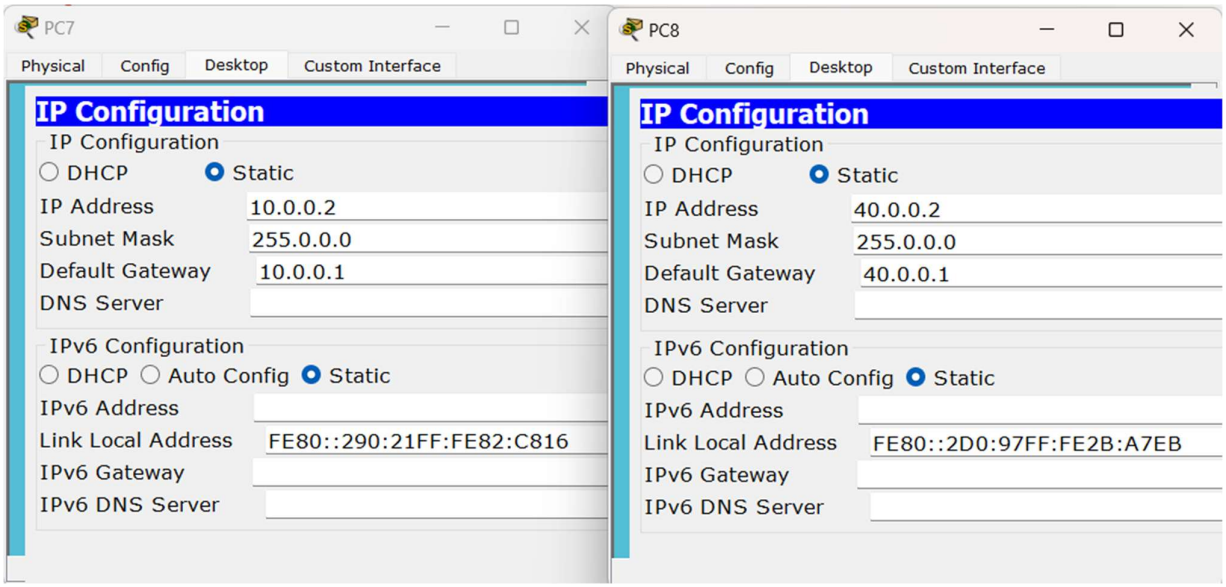


Figure 21: IP addresses

Figure 22: Router CLI Commands

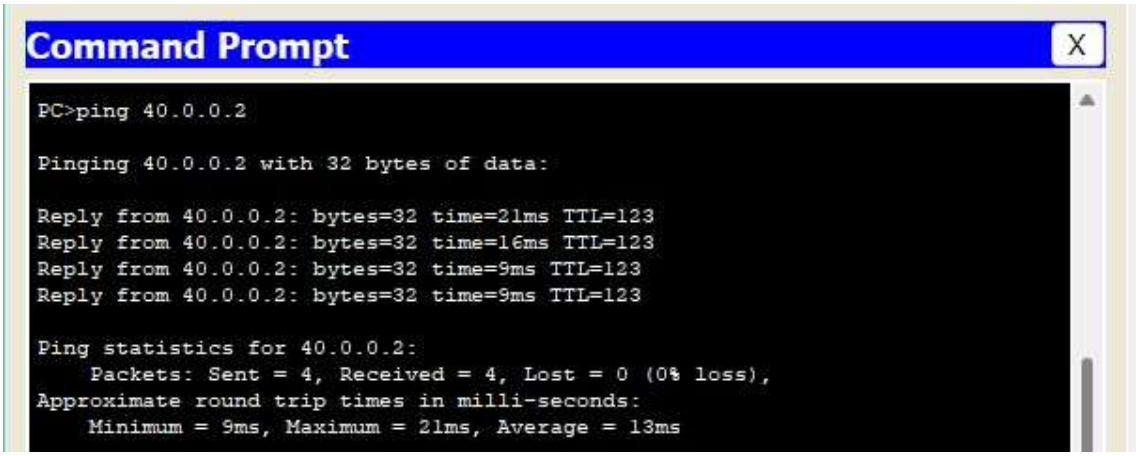


Figure 23: ping command output

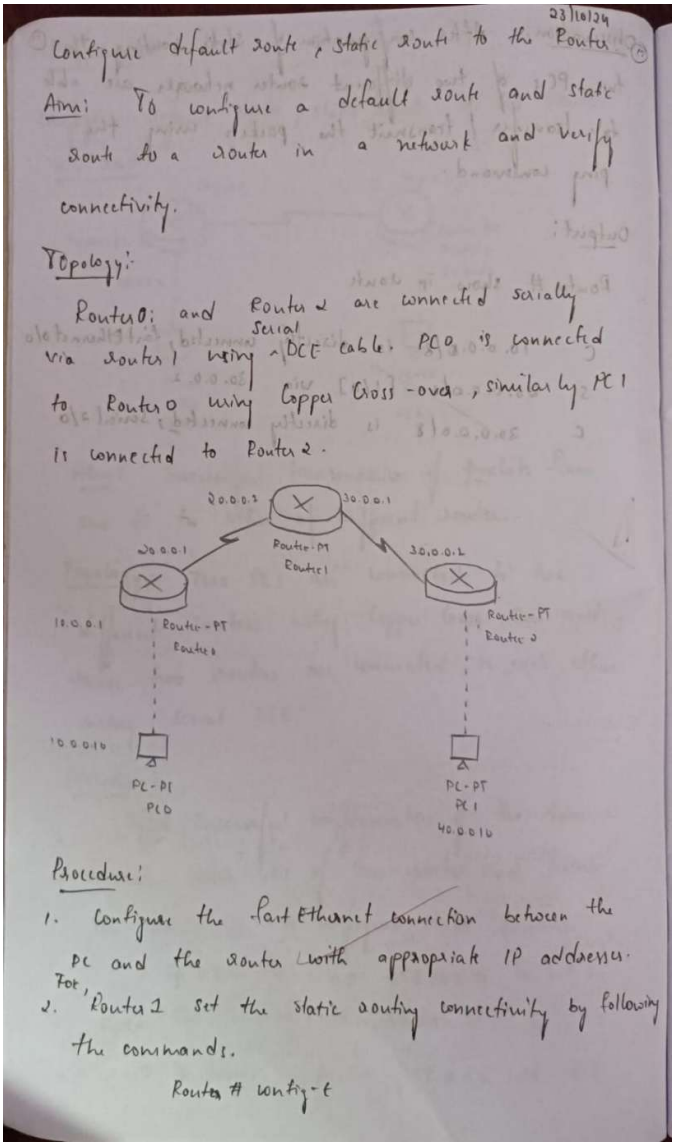
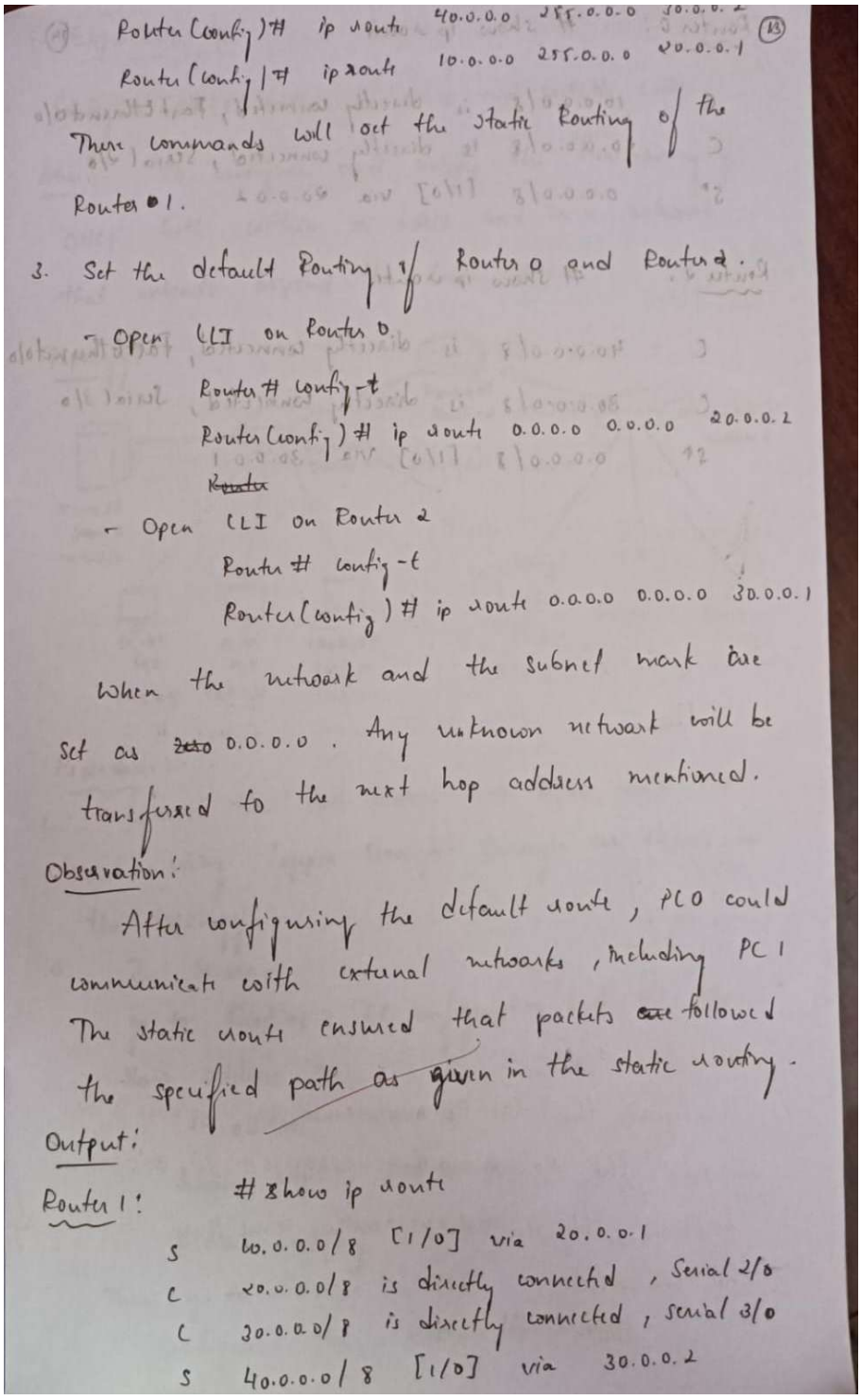


Figure 24: Observation book 1



Router(config)# ip route 40.0.0.0 255.0.0.0 30.0.0.2

Router(config)# ip route 10.0.0.0 255.0.0.0 20.0.0.1

These commands will set the static Routing of the Router 1.

3. Set the default Routing of Router 0 and Router 2.

- Open CLI on Router 0

  Router# config-t

  Router(config)# ip route 0.0.0.0 0.0.0.0 20.0.0.2

  ~~Router~~

- Open CLI on Router 2

  Router# config-t

  Router(config)# ip route 0.0.0.0 0.0.0.0 30.0.0.1

When the network and the subnet mask are set as ~~zero~~ 0.0.0.0. Any unknown network will be transferred to the next hop address mentioned.

Observation:

After configuring the default route, PC0 could communicate with external networks, including PC1. The static route ensured that packets ~~are~~ followed the specified path as given in the static routing.

Output:

Router1: # show ip route

S 10.0.0.0/8 [1/0] via 20.0.0.1

C 20.0.0.0/8 is directly connected, Serial 2/0

C 30.0.0.0/8 is directly connected, Serial 3/0

S 40.0.0.0/8 [1/0] via 30.0.0.2

Figure 25: Observation book 2