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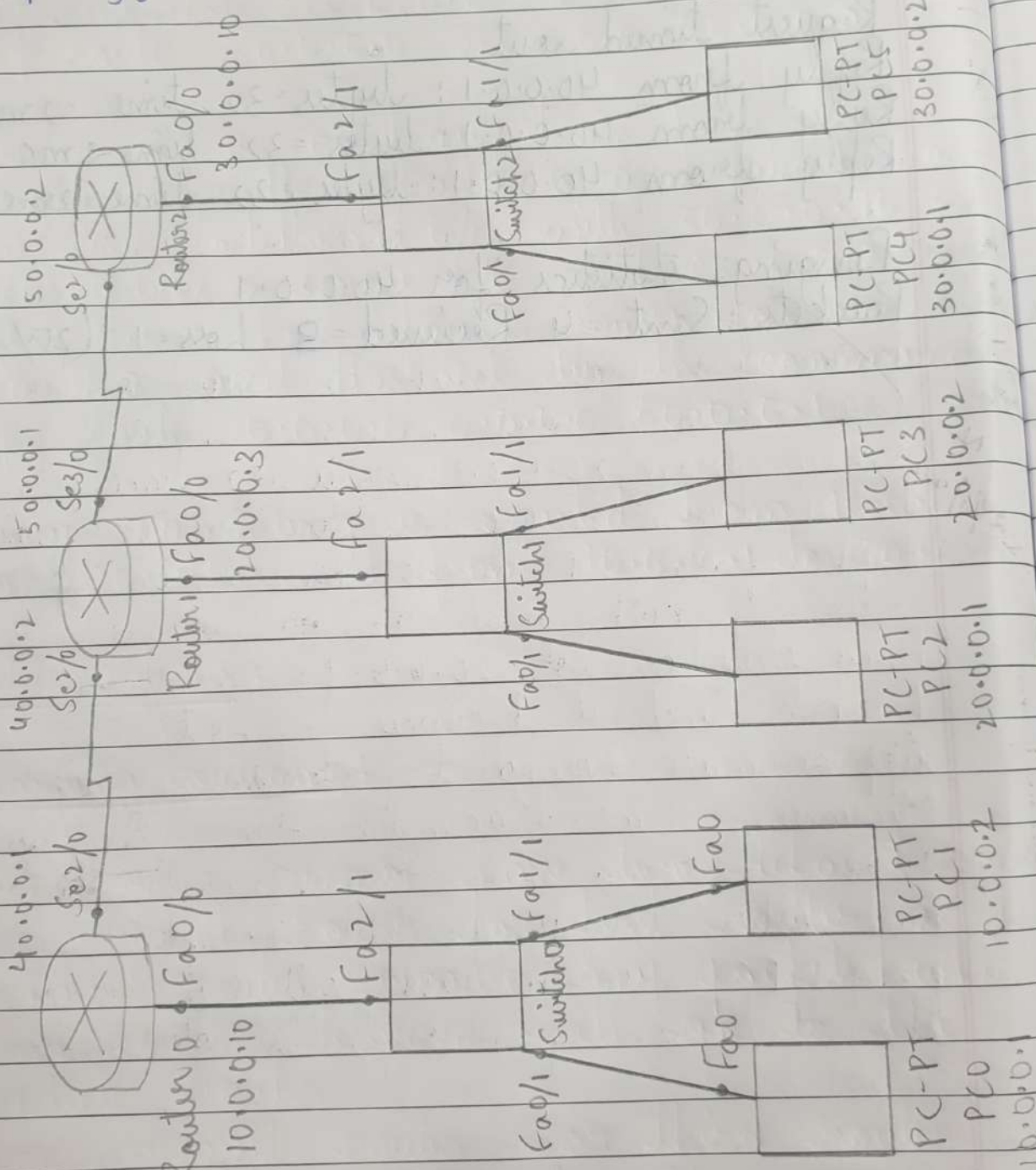
**Aim:** Configuring default route to the router

**Topology:**



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## Procedure :

→ Place 6 generic PC's, 3 switches and 3 routers and connect two PC's to each switch with copper straight through wire and each switch is connected to one router with a copper straight through wire and the three routers are connected among themselves by serial DCE cable and the nodes are placed for all the devices and networks.

→ A PC is clicked to set the attributes for a PC and each PC has three attributes which are the IP address, subnet mask and the gateway and all the three are set according to the nodes placed. This process is done for all the 6 PC's.

→ For Router 1, the configurations are done in the command line interface (CLI). The IP address and subnet mask are set for both the interfaces - fastethernet 0/0 as 10.0.0.10 & 255.0.0.0 and serial 2/0 as 40.0.0.1 and 255.0.0.0. Router 2 is the default router for Router 1 and this done by the command ip route 0.0.0.0 0.0.0.0 40.0.0.2.

→ For Router 2 the IP address and subnet mask are set for all three interfaces - fastethernet 0/0 as 20.0.0.3 & 255.0.0.0 and serial 2/0 as 40.0.0.2 & 255.0.0.0 and serial 3/0 as 50.0.0.1 & 255.0.0.0

Router 2 does not have any default routers and ~~the~~ ~~so~~ static routing is done for the network 10 & 40 by the following command
ip route 10.0.0.0 255.0.0.0 40.0.0.1
ip route 30.0.0.0 255.0.0.0 50.0.0.2

→ Router 3 is configured in both the interfaces with IP address and subnet mask ~~for~~ as - fastethernet 0/0 with 30.0.0.10 & 255.0.0.0 & serial 2/0 with 50.0.0.2 & 255.0.0.0. The default router for router 3 is router 2 and this set by the command ip route 0.0.0.0 0.0.0.0 50.0.0.1

→ Ping commang is executed from 10.0.0.1 to 20.0.0.1 and from 10.0.0.1 to 30.0.0.2.

Observations:

Learning outcome:

→ One router cannot have two default routers
→ The default router for first router is the middle router because any packets which have to be delivered will go to the middle router.
→ The default router for third router is the middle router for the same reason.
→ The middle router does not have any default router because if one of the router is made default then there is a chance

that the packets which are to be sent to the switch are sent to the router.

Result:

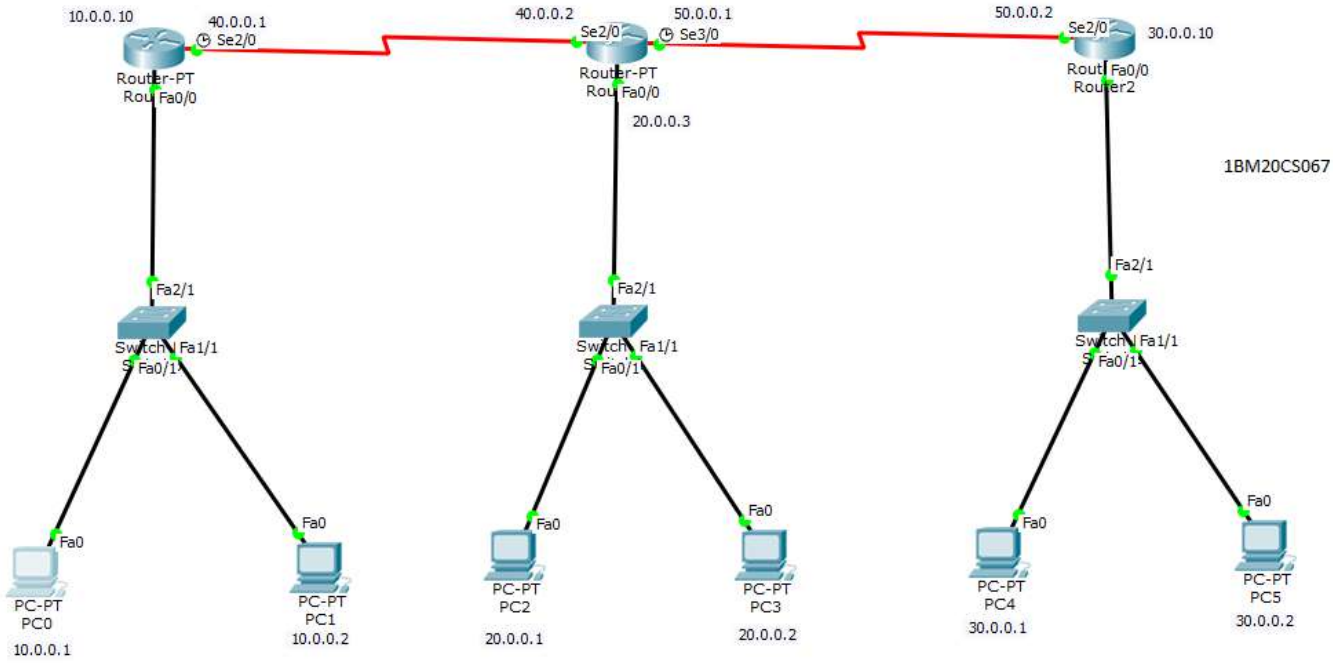
ping 20.0.0.1

Pinging 20.0.0.1 with 32 bytes of data

Request timed out.
Reply from 20.0.0.1: bytes = 32, time = 1ms, TTL=126
Reply from 20.0.0.1: bytes = 32, time = 2ms, TTL=126
Reply from 20.0.0.1: bytes = 32, time = 6ms, TTL=126

ping 30.0.0.2

Pinging 30.0.0.2 with 32 bytes of data
Request timed out
Reply from 30.0.0.2: bytes = 32, time = 4ms, TTL=125
Reply from 30.0.0.2: bytes = 32, time = 4ms, TTL=125
Reply from 30.0.0.2: bytes = 32, time = 4ms, TTL=125


10.0.0.10
40.0.0.1
Se2/0
40.0.0.2
Se2/0
50.0.0.1
Se3/0
50.0.0.2
Se2/0
30.0.0.10
Router-PT
Fa0/0
20.0.0.3
Router2
1BM20CS067
Fa2/1
Fa1/1
Fa0/1
Fa0
PC-PT
PC0
10.0.0.1
PC-PT
PC1
10.0.0.2
PC2
20.0.0.1
PC-PT
PC3
20.0.0.2
PC-PT
PC4
30.0.0.1
PC-PT
PC5
30.0.0.2

```
Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface serial2/0
Router(config-if)#ip address 40.0.0.2 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up
```

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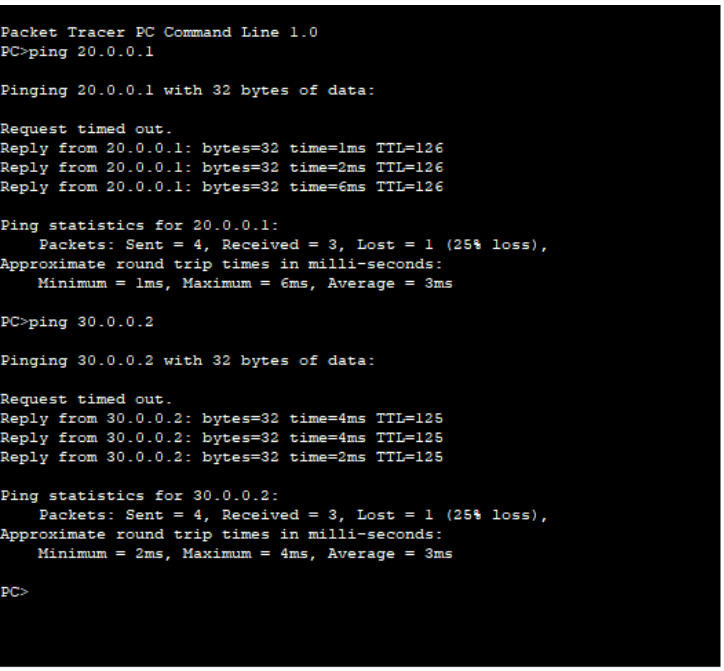
```
Router(config-if)#exit
Router(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
interface
% Incomplete command.
Router(config)#interface fastethernet0/0
Router(config-if)#ip address 20.0.0.3 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#exit
Router(config)#interface serial3/0
Router(config-if)#ip address 50.0.0.1 255.0.0.0
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial3/0, changed state to down
Router(config-if)#
%LINK-5-CHANGED: Interface Serial3/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up

Router(config-if)#exit
Router(config)#ip route 10.0.0.0 255.0.0.0 40.0.0.1
Router(config)#ip route 30.0.0.0 255.0.0.0 50.0.0.2
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

S    10.0.0.0/8 [1/0] via 40.0.0.1
C    20.0.0.0/8 is directly connected, FastEthernet0/0
S    30.0.0.0/8 [1/0] via 50.0.0.2
C    40.0.0.0/8 is directly connected, Serial2/0
C    50.0.0.0/8 is directly connected, Serial3/0
Router#
```


Packet Tracer PC Command Line 1.0
PC>ping 20.0.0.1
Pinging 20.0.0.1 with 32 bytes of data:
Request timed out.
Reply from 20.0.0.1: bytes=32 time=1ms TTL=126
Reply from 20.0.0.1: bytes=32 time=2ms TTL=126
Reply from 20.0.0.1: bytes=32 time=6ms TTL=126
Ping statistics for 20.0.0.1:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 6ms, Average = 3ms
PC>ping 30.0.0.2
Pinging 30.0.0.2 with 32 bytes of data:
Request timed out.
Reply from 30.0.0.2: bytes=32 time=4ms TTL=125
Reply from 30.0.0.2: bytes=32 time=4ms TTL=125
Reply from 30.0.0.2: bytes=32 time=2ms TTL=125
Ping statistics for 30.0.0.2:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 4ms, Average = 3ms
PC>

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