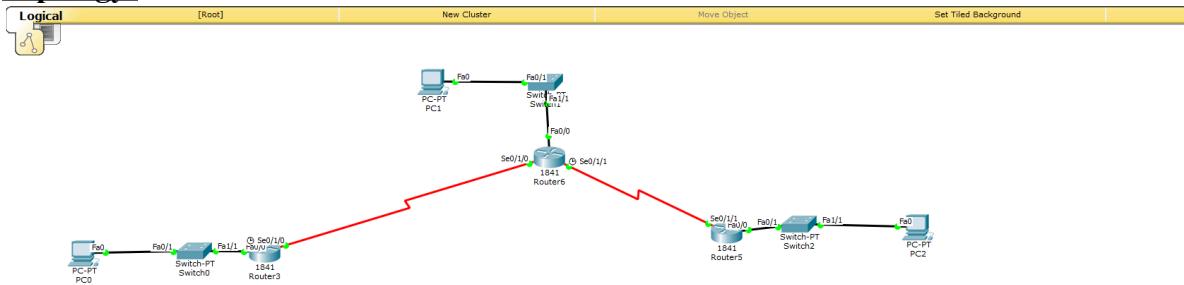


Program – 5:

Aim: Configure default route, static route to the Router

Topology:



Procedure:

1. Create Topology

Create a 3-router topology where each topology contains:

- 1 PC
- 1 Switch
- 1 Router

2. Router Hardware Setup

For all 3 routers:

- Click on **Physical** tab
- Turn **Router OFF**
- Drag & drop **HWIC-2T module**
- Turn **Router ON**

3. Connect the Routers

Use **Serial DCE cable** to interconnect all the 3 routers in serial topology.

Router Configurations:

Router 1

Step 1: Configure Serial Interface

```
Router> enable  
Router# configure terminal  
Router(config)# int Se0/1/0  
Router(config-if)# ip address 172.16.1.1 255.255.255.252  
Router(config-if)# no shutdown  
Router(config-if)# exit
```

Step 2: Configure FastEthernet

```
Router(config)# interface Fa0/0  
Router(config-if)# ip address 192.168.10.1 255.255.255.0  
Router(config-if)# no shutdown  
Router(config-if)# exit
```

Step 3: Save Configuration

```
Router# write memory  
Router# exit
```

Router 2

```
Router> enable  
Router# configure terminal  
Router(config)# hostname R2  
Serial Interface (to Router 1)  
R2(config)# int Se0/1/0  
R2(config-if)# ip address 172.16.1.2 255.255.255.252  
R2(config-if)# no shutdown  
FastEthernet Interface  
R2(config)# int Fa0/0  
R2(config-if)# ip address 192.168.20.1 255.255.255.0  
R2(config-if)# no shutdown  
Serial Interface (to Router 3)  
R2(config)# int Se0/1/1  
R2(config-if)# ip address 172.16.2.1 255.255.255.252  
R2(config-if)# no shutdown  
R2(config-if)# exit  
R2# write memory
```

Router 3

```
Router> enable  
Router# configure terminal  
Router(config)# hostname R3  
Serial Interface (to Router 2)  
R3(config)# int Se0/1/1  
R3(config-if)# ip address 172.16.2.2 255.255.255.252  
R3(config-if)# no shutdown  
FastEthernet Interface  
R3(config)# int Fa0/0  
R3(config-if)# ip address 192.168.30.1 255.255.255.0  
R3(config-if)# no shutdown  
R3(config-if)# exit  
R3# write memory
```

PC IP Configuration

PC0

- IP: 192.168.10.10
- Default Gateway: 192.168.10.1

PC1

- IP: 192.168.20.10
- Default Gateway: 192.168.20.1

PC2

- IP: 192.168.30.10
- Default Gateway: 192.168.30.1

Static Route Configuration

Router 1

```
R1> enable
```

```
R1# configure terminal  
R1(config)# hostname R1  
R1(config)# ip route 192.168.20.0 255.255.255.0 172.16.1.2  
R1(config)# ip route 192.168.30.0 255.255.255.0 172.16.1.2  
R1# write memory
```

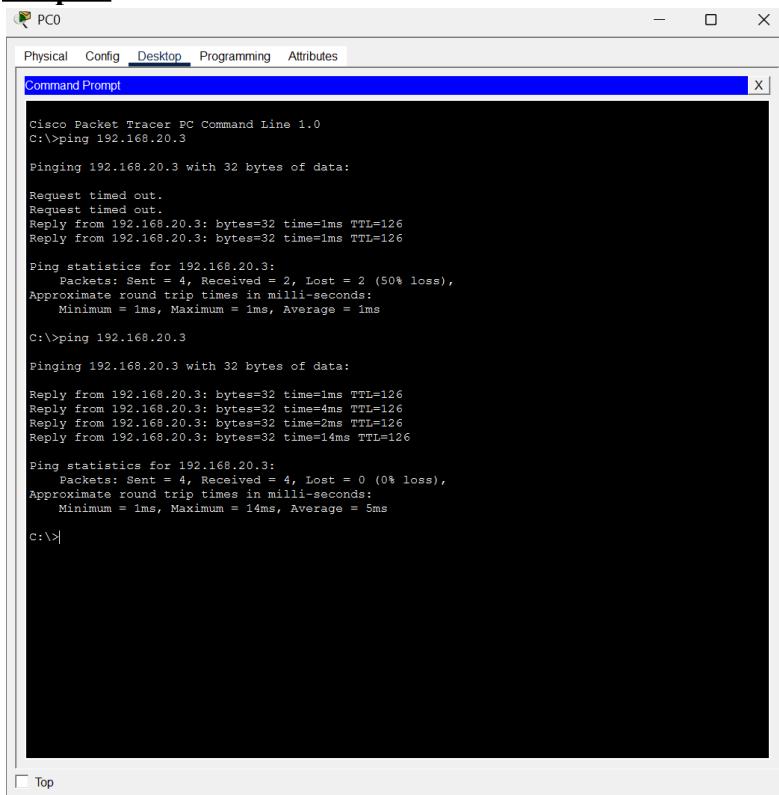
Router 2

```
R2> enable  
R2# configure terminal  
R2(config)# ip route 192.168.10.0 255.255.255.0 172.16.1.1  
R2(config)# ip route 192.168.30.0 255.255.255.0 172.16.2.2  
R2# write memory
```

Router 3 (Default Route)

```
R3> enable  
R3# configure terminal  
R3(config)# ip route 0.0.0.0 0.0.0.0 Se0/1/1  
R3# write memory
```

Output:



The screenshot shows a window titled "Cisco Packet Tracer PC Command Line 1.0". The tab bar at the top has "Physical", "Config", "Desktop" (which is selected), "Programming", and "Attributes". Below the tabs is a "Command Prompt" window with a blue header bar. The command prompt shows the following output:

```
Cisco Packet Tracer PC Command Line 1.0  
C:\>ping 192.168.20.3  
  
Pinging 192.168.20.3 with 32 bytes of data:  
  
Request timed out.  
Request timed out.  
Reply from 192.168.20.3: bytes=32 time=1ms TTL=126  
Reply from 192.168.20.3: bytes=32 time=1ms TTL=126  
  
Ping statistics for 192.168.20.3:  
    Packets: Sent = 4, Received = 2, Lost = 2 (50% loss),  
    Approximate round trip times in milli-seconds:  
        Minimum = 1ms, Maximum = 1ms, Average = 1ms  
  
C:\>ping 192.168.20.3  
  
Pinging 192.168.20.3 with 32 bytes of data:  
  
Reply from 192.168.20.3: bytes=32 time=1ms TTL=126  
Reply from 192.168.20.3: bytes=32 time=4ms TTL=126  
Reply from 192.168.20.3: bytes=32 time=2ms TTL=126  
Reply from 192.168.20.3: bytes=32 time=14ms TTL=126  
  
Ping statistics for 192.168.20.3:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
    Approximate round trip times in milli-seconds:  
        Minimum = 1ms, Maximum = 14ms, Average = 5ms  
  
C:\>
```

Fig 5.1 ping to PC1 from PC0

```

Router2
Physical Config CLI Attributes
IOS Command Line Interface

4 Low-speed serial(sync/async) network interface(s)
1931K bytes of NVRAM.
63488 bytes of ATA CompactFlash (Read/Write)
Cisco IOS Software, 1841 Software (C1841-ADVENTERSESK9-M), Version 12.4(15)T1, RELEASE SOFTWARE
(Fractional)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2007 by Cisco Systems, Inc.
Compiled Wed 18-Jul-07 04:52 by pt_team

Press RETURN to get started!

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up

r2>en
r2#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/z.
r2(config)#show ip route

% Invalid input detected at '^' marker.

r2(config)#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       E1 - EIGRP external, O - 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 0.0.0.0 to network 0.0.0.0

    172.16.0.0/8 is subnetted, 1 subnets
C      172.16.2.0 is directly connected, Serial0/1/0
C      192.168.90.0/24 is directly connected, FastEthernet0/0
S*    0.0.0.0/0 is directly connected, Serial0/1/0

r2(config)#

```

Fig 5.2 ip route information in default router