



Oriental Education Society's

SANPADA COLLEGE OF COMMERCE & TECHNOLOGY
SECTOR-2, PLOT-3/4/5, ADJACENT SANPADA RAILWAY STATION, SANPADA (W),
NAVI MUMBAI- 400 705.
DEPARTMENT OF INFORMATION TECHNOLOGY

CERTIFICATE

This is to certify that **Sadan Acharya** of Class SYCS bearing Roll No 53 of Semester IV has successfully completed the Practical work in the subject of "**COMPUTER NETWORKING**" during the academic year 2025-2026 under the guidance of Prof. **TEJASHREE MA'AM** being the partial requirement for the fulfilment of the curriculum of Degree of Bachelor of Science in Information Technology, University of Mumbai.

Place : **SANPADA**

Date :

Sign Of Subject-In-charge

Sign of External Examiner

Sign Of HOD

Sign Of Principle

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Sr.No	NAME	DATE	SIGN
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Practical-1

Aim: Using, linux-terminal or Windows-cmd, execute following networking commands and note the output: ping, traceroute, netstat, arp, ipconfig, Getmac, hostname, NSLookUp, pathping, SystemInfo

1) Ping:

```
) ping www.google.com
PING www.google.com (142.251.220.4) 56(84) bytes of data.
64 bytes from pnbomb-ay-in-f4.1e100.net (142.251.220.4): icmp_seq=1 ttl=117 time=77.6 ms
64 bytes from pnbomb-ay-in-f4.1e100.net (142.251.220.4): icmp_seq=2 ttl=117 time=10.6 ms
^C
-- www.google.com ping statistics --
2 packets transmitted, 2 received, 0% packet loss, time 1001ms
rtt min/avg/max/mdev = 10.619/44.123/77.627/33.504 ms
```

2) tracert:

```
C:\Users\Matt>tracert 8.8.8.8
Tracing route to google-public-dns-a.google.com [8.8.8.8]
over a maximum of 30 hops:
 1  <1 ms    <1 ms    <1 ms
 2  4 ms     7 ms     1 ms
 3  1 ms     1 ms     1 ms
 4  24 ms    24 ms    25 ms
 5  24 ms    24 ms    24 ms
 6  25 ms    25 ms    25 ms
 7  25 ms    25 ms    25 ms
 8  25 ms    25 ms    25 ms
                                google-public-dns-a.google.com [8.8.8.8]

Trace complete.
```

3) netstat:

```
) netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address          Foreign Address        State
tcp      0      0  120.112.1.7:55700      bom12s03-in-f10.1:https ESTABLISHED
tcp      0      0  192.28.147.68:https      192.28.147.68:https ESTABLISHED
tcp      0      0  93.243.107.34.bc.:https   93.243.107.34.bc.:https ESTABLISHED
tcp      0      0  sm-in-f119.1e100.:https   sm-in-f119.1e100.:https ESTABLISHED
tcp      0      0  172.64.41.4:https       172.64.41.4:https ESTABLISHED
tcp      0      0  sd-in-f119.1e100.:https  sd-in-f119.1e100.:https TIME_WAIT
tcp      0      0  whatsapp-cdn-shv.:https  whatsapp-cdn-shv.:https ESTABLISHED
tcp      0      2963  bom12s07-in-f14.1:https  bom12s07-in-f14.1:https ESTABLISHED
tcp      0      0  sd-in-f119.1e100.:https  sd-in-f119.1e100.:https TIME_WAIT
```

4) arp

```
) arp
Address           HWtype  HWaddress          Flags Mask           Iface
gpon.net          ether    a8:74:84:d0:2f:02  C             wlp0s20f3
```

5) ifconfig:

```
) ifconfig
enp0s31f6: flags=4099<UP,BROADCAST,MULTICAST>  mtu 1500
          ether f4:a8:0d:ef:c6:72  txqueuelen 1000  (Ethernet)
          RX packets 0  bytes 0 (0.0 B)
          RX errors 0  dropped 0  overruns 0  frame 0
          TX packets 0  bytes 0 (0.0 B)
          TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0
          device interrupt 16  memory 0x82200000-82220000

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
      inet 127.0.0.1  netmask 255.0.0.0
          inet6 ::1  prefixlen 128  scopeid 0x10<host>
```

6) getmac:

```
C:>getmac
Physical Address      Transport Name
=====
30-5A-3A-2F-17-A1    \Device\Tcpip_{278F1BFF-B571-444D-B35F-3CF3FBF03B0C}
00-FF-49-B8-4F-89    Media disconnected
N/A                  Hardware not present
Disabled             Disconnected
N/A                  Hardware not present
C:>
```

7) hostname:

```
> hostname
Nova
```

8) nslookup:

```
> nslookup
> hostname
;; Got SERVFAIL reply from 127.0.0.53
Server: [REDACTED]
Address: [REDACTED]

** server can't find hostname: SERVFAIL
> exit
```

9) pathping:

```
PS C:\Users\ashle> pathping -q 255 1.1.1.1
Tracing route to one.one.one.one [1.1.1.1]
over a maximum of 30 hops:
  0  Ashley [192.168.50.144]
  1  RT-AX86U-FBC0 [192.168.50.1]
  2  bb121-7-163-254.singnet.com.sg [121.7.163.254]
  3  165.21.193.18
  4  165.21.193.17
  5  165.21.138.181
  6  SN-SINTP1-80402-ae1.singnet.com.sg [165.21.138.94]
  7  ip-202-147-32-126.asianetcom.net [202.147.32.126]
  8  * i-92.sgcn-core01.telstraglobal.net [202.84.219.174]
  9  i-92.sgcn-core01.telstraglobal.net [202.84.219.174]
  10 i-91.ist04.telstraglobal.net [202.84.224.197]
  11 unknown.telstraglobal.net [210.57.38.181]
  12 162.158.160.55
  13 * one.one.one.one [1.1.1.1]

Computing statistics for 828 seconds...
```

10) systeminfo

```
C:>systeminfo
Host Name: [REDACTED]
OS Name: Microsoft Windows 7 Ultimate
OS Version: 6.1.7601 Service Pack 1 Build 7601
OS Manufacturer: Microsoft Corporation
OS Configuration: Member Workstation
OS Build Type: Multiprocessor Free
Registered Owner: Admin
Registered Organization:
```

Practical-2

Aim: Building Peer-to-Peer Network. Create a Network with two PCs connected using crossover cable using CISCO packet tracer. Assign static IP addresses. And Test Connectivity.

Implementation:



Now we set the ip address of the devices as follows:

The image displays two windows from Cisco Packet Tracer showing the IP configuration for two hosts, PC1 and PC0.

PC1 Configuration:

- Physical tab is selected.
- Config tab is selected.
- Desktop tab is selected.
- Programming tab is selected.
- Attributes tab is selected.
- IP Configuration window is open.
- Interface: FastEthernet0
- IP Configuration section:
 - Radio button: Static (selected)
 - IPv4 Address: 192.168.1.3
 - Subnet Mask: 255.255.255.0
 - Default Gateway: 192.168.1.1
 - DNS Server: 0.0.0.0

PC0 Configuration:

- Physical tab is selected.
- Config tab is selected.
- Desktop tab is selected.
- Programming tab is selected.
- Attributes tab is selected.
- IP Configuration window is open.
- Interface: FastEthernet0
- IP Configuration section:
 - Radio button: Static (selected)
 - IPv4 Address: 192.168.1.2
 - Subnet Mask: 255.255.255.0
 - Default Gateway: 192.168.1.1
 - DNS Server: 0.0.0.0

In order to check the connectivity we send a ping command from PC0 to PC1 as follows:

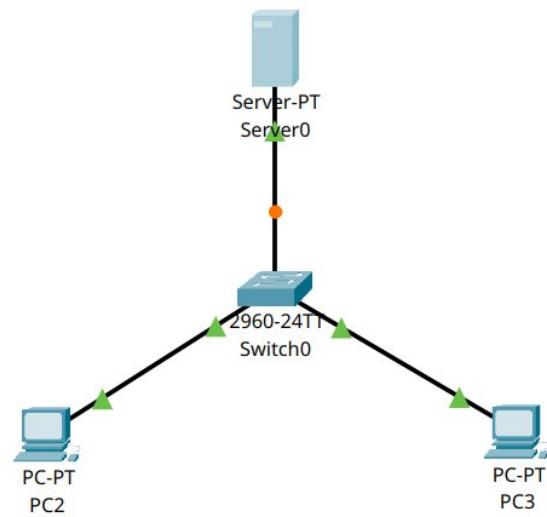
```
C:\>ping 192.168.1.3  
Pinging 192.168.1.3 with 32 bytes of data:  
Reply from 192.168.1.3: bytes=32 time=3ms TTL=128  
Reply from 192.168.1.3: bytes=32 time<1ms TTL=128  
Reply from 192.168.1.3: bytes=32 time<1ms TTL=128  
Reply from 192.168.1.3: bytes=32 time<1ms TTL=128  
  
Ping statistics for 192.168.1.3:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
    Approximate round trip times in milli-seconds:  
        Minimum = 0ms, Maximum = 3ms, Average = 0ms
```

Conclusion: Hence the Connectivity between the PCs has been verified.

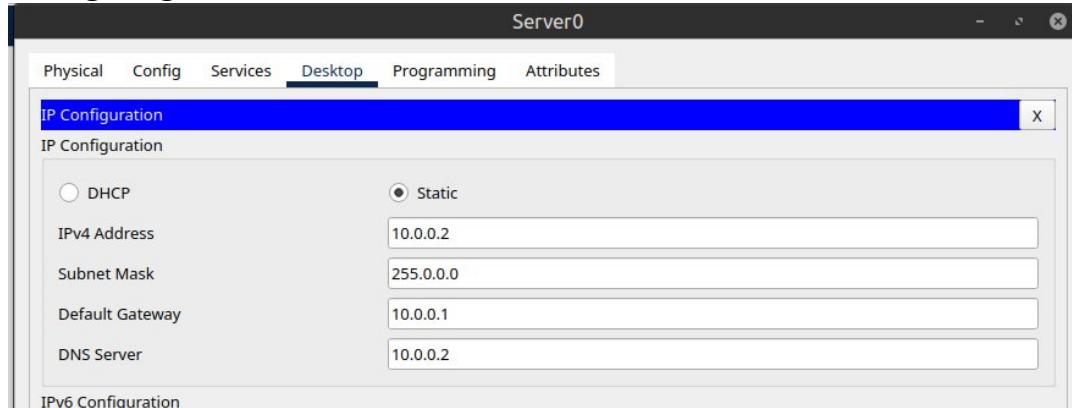
Practical-3

Aim: Using Packet Tracer, create a basic network of one server and two computers using fast Ethernet.

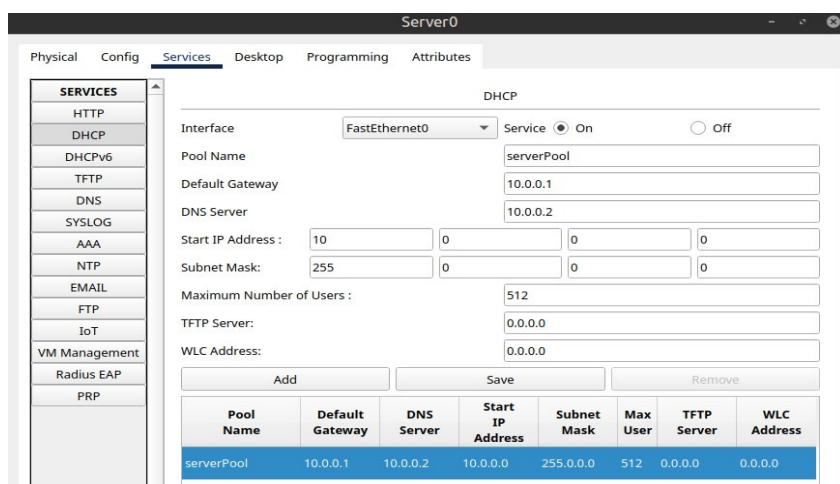
Topology:

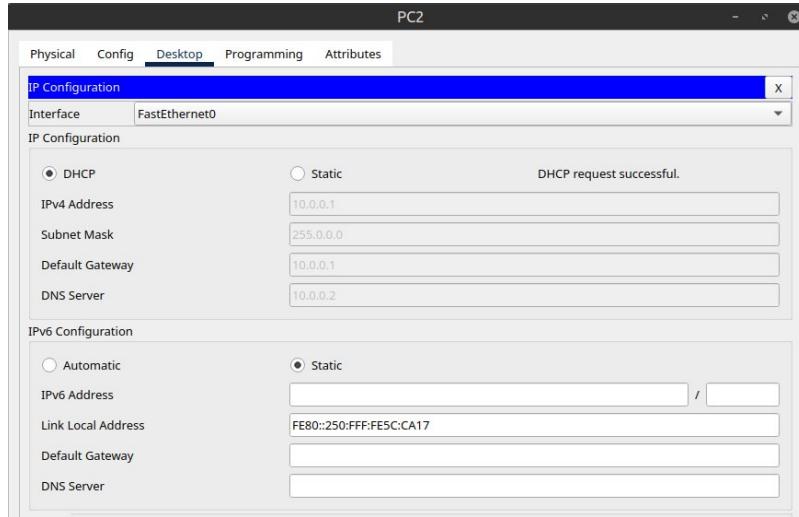
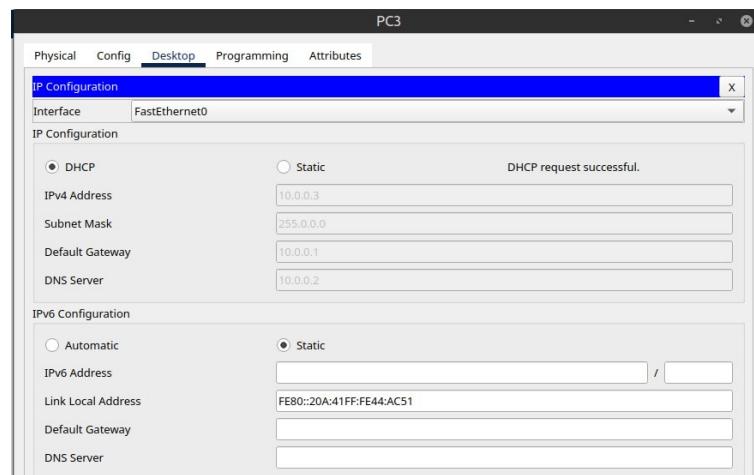


Configuring the Server:



Enabling and setting the DHCP Service on the Server:





Checking for connectivity:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.0.0.3

Pinging 10.0.0.3 with 32 bytes of data:

Reply from 10.0.0.3: bytes=32 time=6ms TTL=128
Reply from 10.0.0.3: bytes=32 time=3ms TTL=128
Reply from 10.0.0.3: bytes=32 time=4ms TTL=128

Ping statistics for 10.0.0.3:
  Packets: Sent = 3, Received = 3, Lost = 0 (0% loss),
  Approximate round trip times in milli-seconds:
    Minimum = 3ms, Maximum = 6ms, Average = 4ms

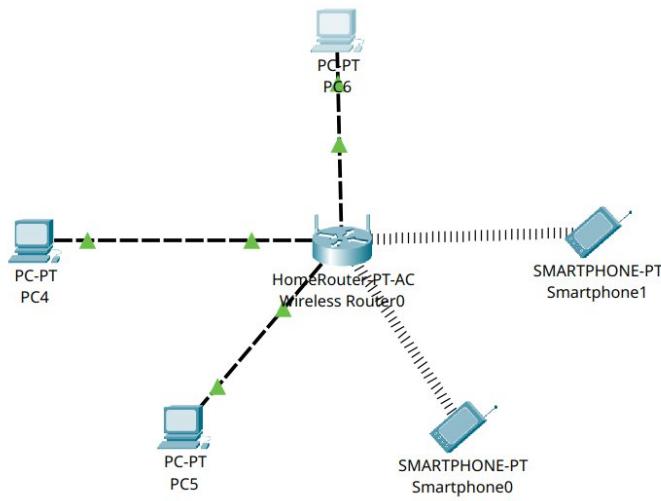
Control-C
^C
C:\>
```

Conclusion: Hence the Connectivity between the PCs has been verified.

Practical-4

Aim: Design and configure Local Area Network(LAN) for inter-connectivity computers within a limited area using star topology.

Topology:



Smartphone Configuration:

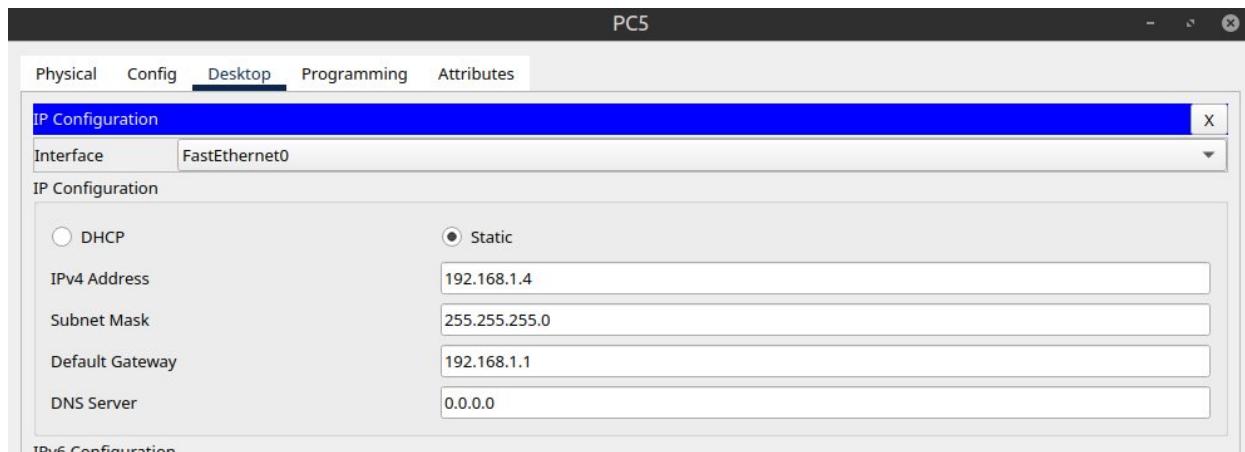
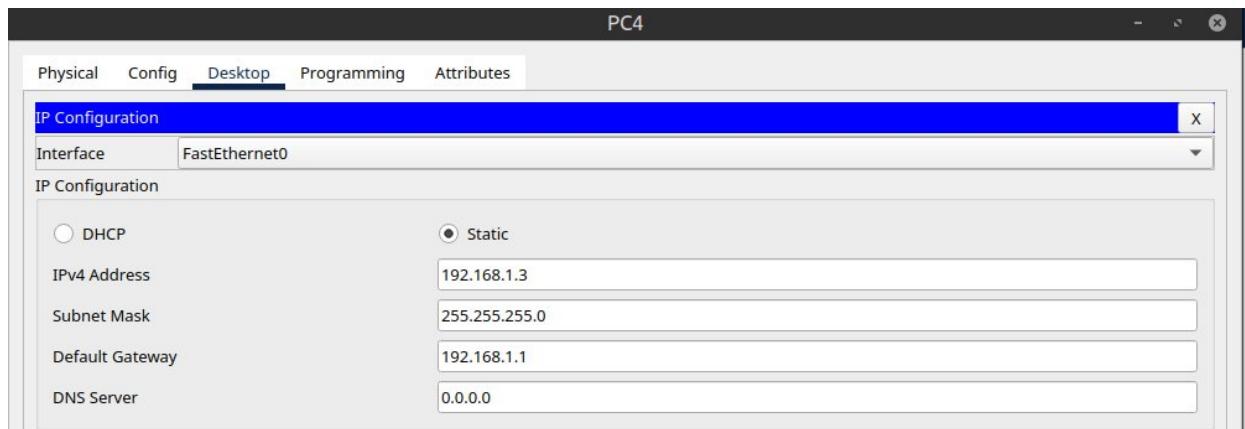
Smartphone0 configuration:

IP Configuration	
Interface	Wireless0
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.168.1.5
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.1
DNS Server	0.0.0.0

Smartphone1 configuration:

IP Configuration	
Interface	Wireless0
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.168.1.6
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.1
DNS Server	0.0.0.0

Computer Configurations:



Checking for Connectivity(From PC4 to Smartphone1)

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.6

Pinging 192.168.1.6 with 32 bytes of data:

Reply from 192.168.1.6: bytes=32 time=25ms TTL=128
Reply from 192.168.1.6: bytes=32 time=8ms TTL=128
Reply from 192.168.1.6: bytes=32 time=10ms TTL=128

Ping statistics for 192.168.1.6:
    Packets: Sent = 3, Received = 3, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 8ms, Maximum = 25ms, Average = 14ms

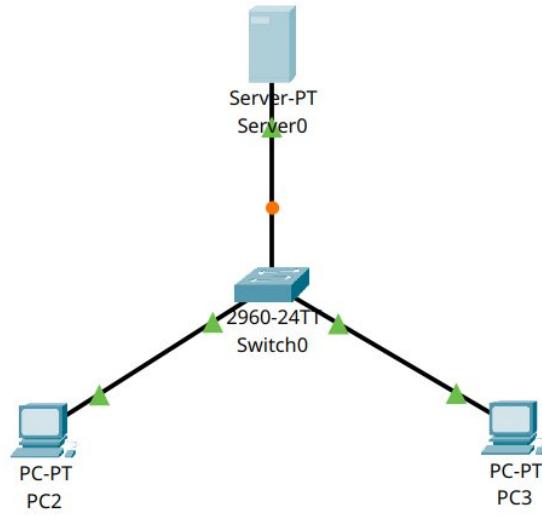
Control-C
^C
C:\>
```

Conclusion: Hence the Connectivity of the network has been verified.

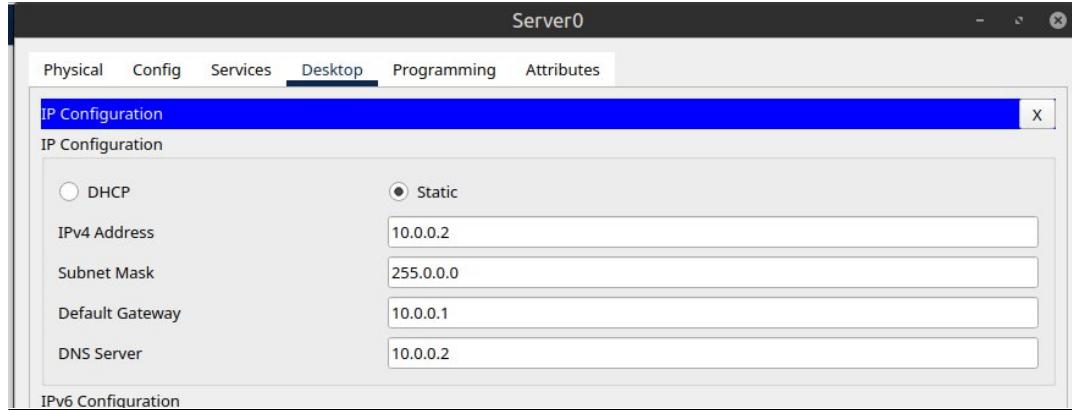
Practical-5

Aim: Dynamic IP allocation with server & clients. Use DHCP services from a server to assign IPs to two PCs. Enable and configure DHCP on the server. Verify IP allocation and connectivity using ipconfig.

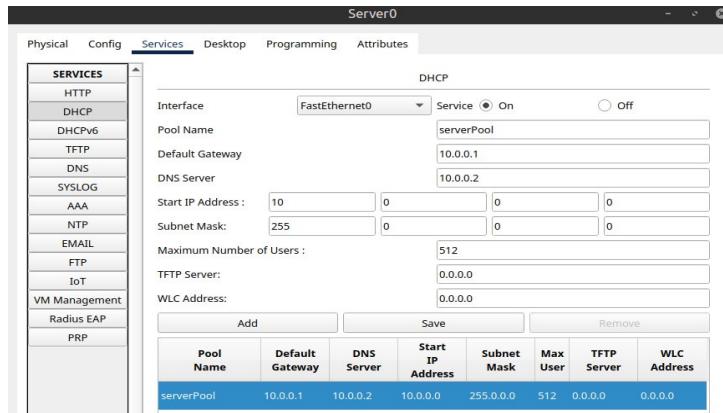
Topology:

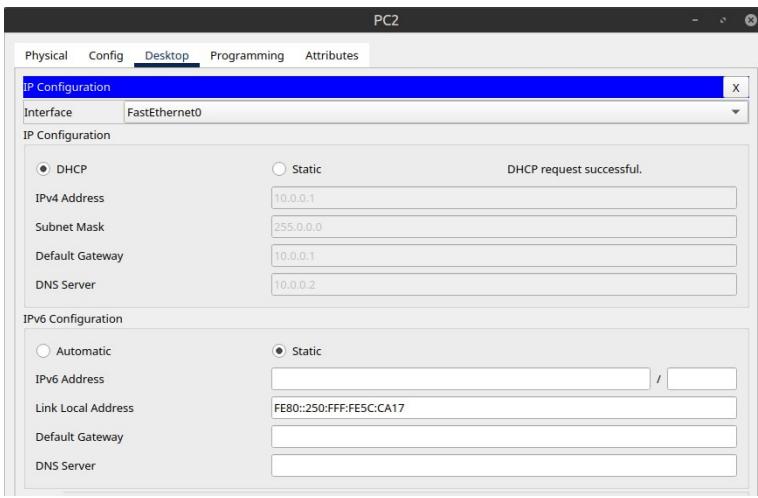
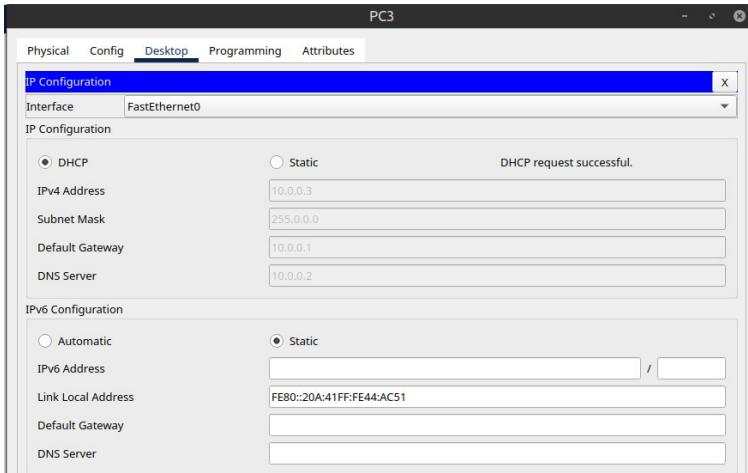


Configuring the Server:



Enabling and setting the DHCP Service on the Server & Checking Clients:





Checking for connectivity:

```

Cisco Packet Tracer PC Command Line 1.0
C:\>ipconfig

FastEthernet0 Connection:(default port)
  Connection-specific DNS Suffix .:
  Link-local IPv6 Address . . . . . FE80::201:43FF:FE00:D491
  IPv6 Address . . . . . ::1
  IPv4 Address . . . . . 10.0.0.1
  Subnet Mask . . . . . 255.0.0.0
  Default Gateway . . . . . 10.0.0.1

Bluetooth Connection:
  Connection-specific DNS Suffix .:
  Link-local IPv6 Address . . . . . ::1
  IPv6 Address . . . . . ::1
  IPv4 Address . . . . . 0.0.0.0
  Subnet Mask . . . . . 0.0.0.0
  Default Gateway . . . . . 0.0.0.0

C:\>

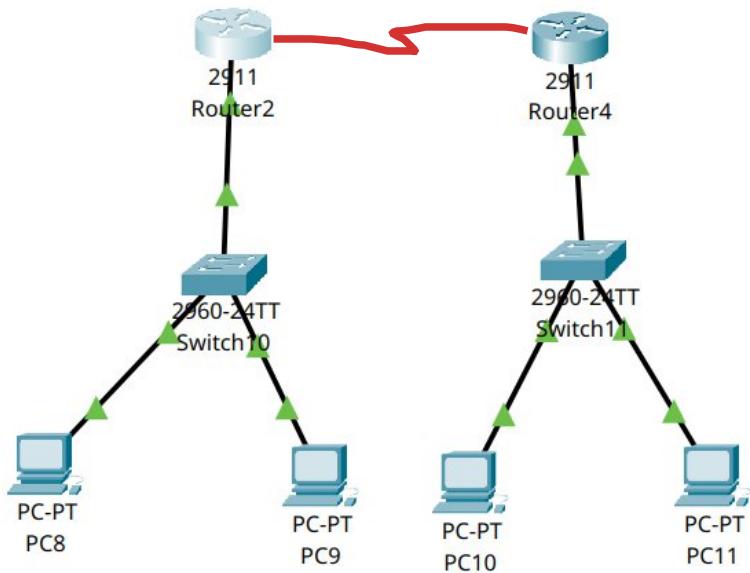
```

Conclusion: Hence the Connectivity between the PCs has been verified Using ipconfig.

Practical-6

Aim: Configure IP routing using RIP. Two routers connected to two switches & four PCs connected to it. Implement RIP routing between routers. Verify inter-network connectivity using ping and route tables.

Topology:



PCs IP Configuration:

Device	IP Address	Subnet Mask	Default Gateway
PC0	192.168.1.2	255.255.255.0	192.168.1.1
PC1	192.168.1.3	255.255.255.0	192.168.1.1
PC2	192.168.2.2	255.255.255.0	192.168.2.1
PC3	192.168.2.3	255.255.255.0	192.168.2.1

Configure Router Interfaces (CLI):

Router2:

```
Router>remen
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int g0/0
Router(config-if)#ip add 192.168.1.1 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
int g0/1
Router(config-if)#ip add 10.0.0.1 255.255.255.252
Router(config-if)#no shutdown
```

```

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int g0/0
Router(config-if)# ip add 192.168.2.1 255.255.255.0
Router(config-if)# no shut

Router(config-if)#int g0/1
Router(config-if)# ip add 10.0.0.2 255.255.255.252
Router(config-if)# no shut
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

```

Implement RIP Routing:

Router2:

```

Router(config-if)#router rip
Router(config-router)# version 2
Router(config-router)# no auto-summary
Router(config-router)# network 192.168.1.0
Router(config-router)# network 10.0.0.0

```

Router4:

```

Router(config-if)#
%LINK-3-UPDOWN: Interface GigabitEthernet0/1, changed state to down
router rip
Router(config-router)# version 2
Router(config-router)# no auto-summary
Router(config-router)# network 192.168.2.0
Router(config-router)# network 10.0.0.0
Router(config-router)#

```

Checking Routing table:

```

Router#      ''
%SYS-5-CONFIG_I: Configured from console by console
show ip route
Codes: L - local, C - connected, S - static, 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

      192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C        192.168.1.0/24 is directly connected, GigabitEthernet0/0
L        192.168.1.1/32 is directly connected, GigabitEthernet0/0

Router#

```

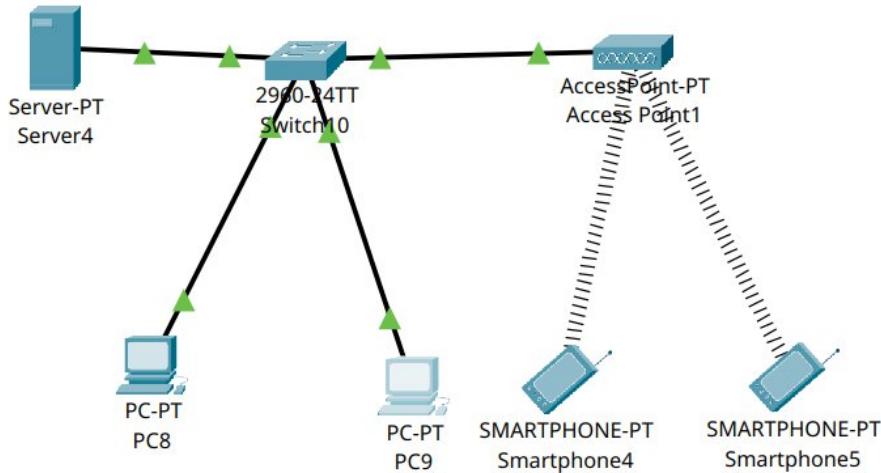
Router con0 is now available

Conclusion: Hence verified the connection of two routers with RIP.

Practical-7

Aim: Creating a mixed network with wired and wireless devices. One server, two wired PCs and two mobiles. Use appropriate cabling and access points, Assign IPs and test cross-devices communication.

Topology:



Addressing Table (Static):

Device	IP Address	Subnet Mask
Server	192.168.1.1	255.255.255.0
PC0	192.168.1.2	255.255.255.0
PC1	192.168.1.3	255.255.255.0
Smartphone0	192.168.1.4	255.255.255.0
Smartphone1	192.168.1.5	255.255.255.0

Configuring Wireless Access point:

Port 1	
Port Status	<input checked="" type="checkbox"/> On
SSID	Mixed-Network
2.4 GHz Channel	6
Coverage Range (meters)	140.00
Authentication	
<input type="radio"/> Disabled	<input type="radio"/> WEP
<input type="radio"/> WPA-PSK	<input checked="" type="radio"/> WPA2-PSK
WEP Key	<input type="text"/>
PSK Pass Phrase	<input type="text"/>
User ID	<input type="text"/>
Password	<input type="text"/>
Encryption Type	AES

Configuring Smartphone To Connect to wireless network (Same for both Smartphones):

Wireless			
Port Status	<input checked="" type="checkbox"/> On		
Bandwidth	54 Mbps		
MAC Address	0090.2174.9CE5		
SSID	Mixed-Network		
Authentication			
<input type="radio"/> Disabled	<input type="radio"/> WEP	WEP Key	<input type="text"/>
<input type="radio"/> WPA-PSK	<input checked="" type="radio"/> WPA2-PSK	PSK Pass Phrase	Cisco123
<input type="radio"/> WPA	<input type="radio"/> WPA2	User ID	<input type="text"/>
<input type="radio"/> 802.1X	Method:	Password	<input type="text"/>
	MD5		
	User Name	<input type="text"/>	
	Password	<input type="text"/>	
Encryption Type	AES		
IP Configuration			
<input type="radio"/> DHCP			
<input checked="" type="radio"/> Static			
IPv4 Address	192.168.1.4		
Subnet Mask	255.255.255.0		
IPv6 Configuration			
<input checked="" type="radio"/> Automatic			
<input type="radio"/> Static			
IPv6 Address	<input type="text"/> / <input type="text"/>		
Link Local Address: FE80::290:21FF:FE74:9CE5			

Verification (Testing Communication):

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.4

Pinging 192.168.1.4 with 32 bytes of data:

Reply from 192.168.1.4: bytes=32 time=32ms TTL=128
Reply from 192.168.1.4: bytes=32 time=14ms TTL=128
Reply from 192.168.1.4: bytes=32 time=16ms TTL=128
Reply from 192.168.1.4: bytes=32 time=17ms TTL=128

Ping statistics for 192.168.1.4:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
  Approximate round trip times in milli-seconds:
    Minimum = 14ms, Maximum = 32ms, Average = 19ms

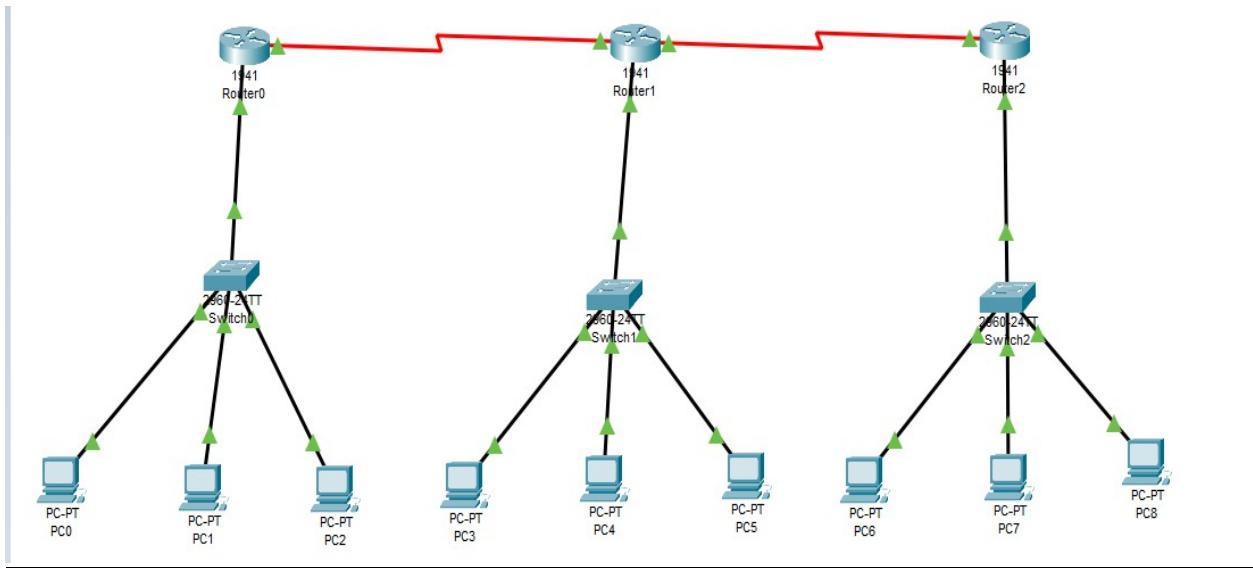
C:\>
```

Conclusion: Hence assigned IPs and tested cross-devices communication.

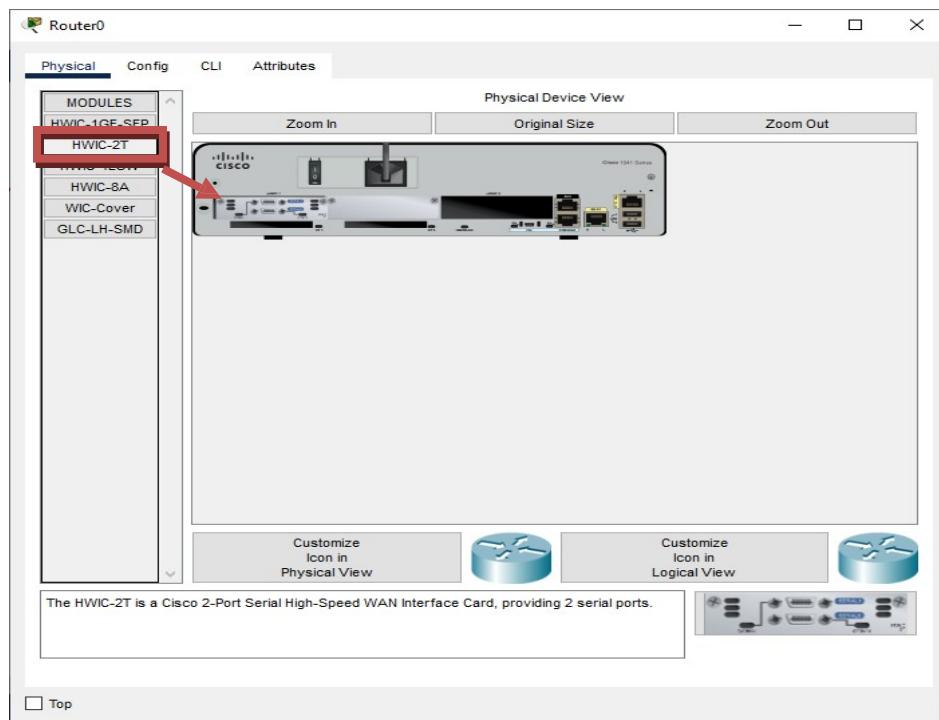
Practical-8

Aim: Three routers and their networks using OSPF. Assign area IDs, router IDs, and enable OSPF. Monitor OSPF neighbor relationships and path selections.

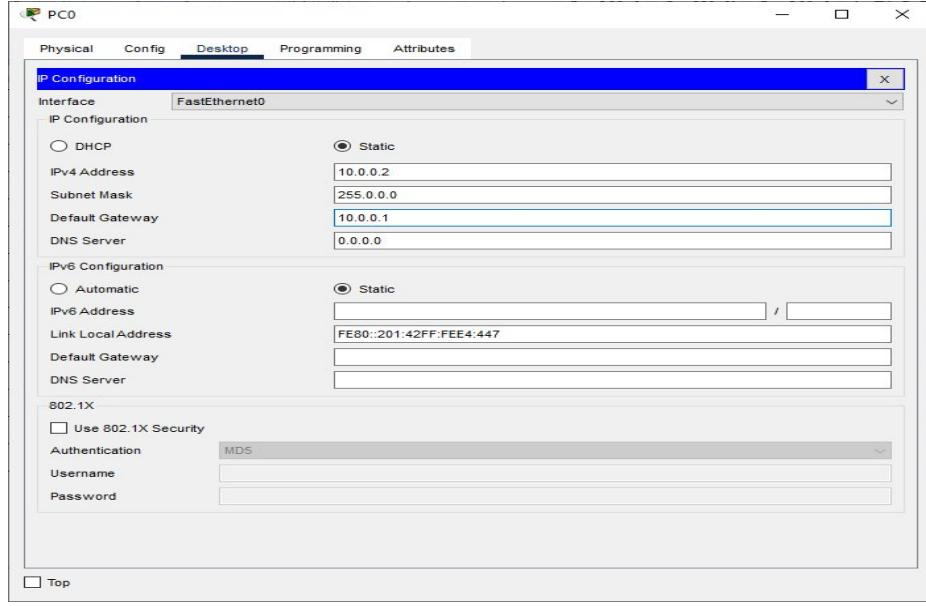
Topology:



Adding Serial Interface in each Router (Same of Others According to the table):

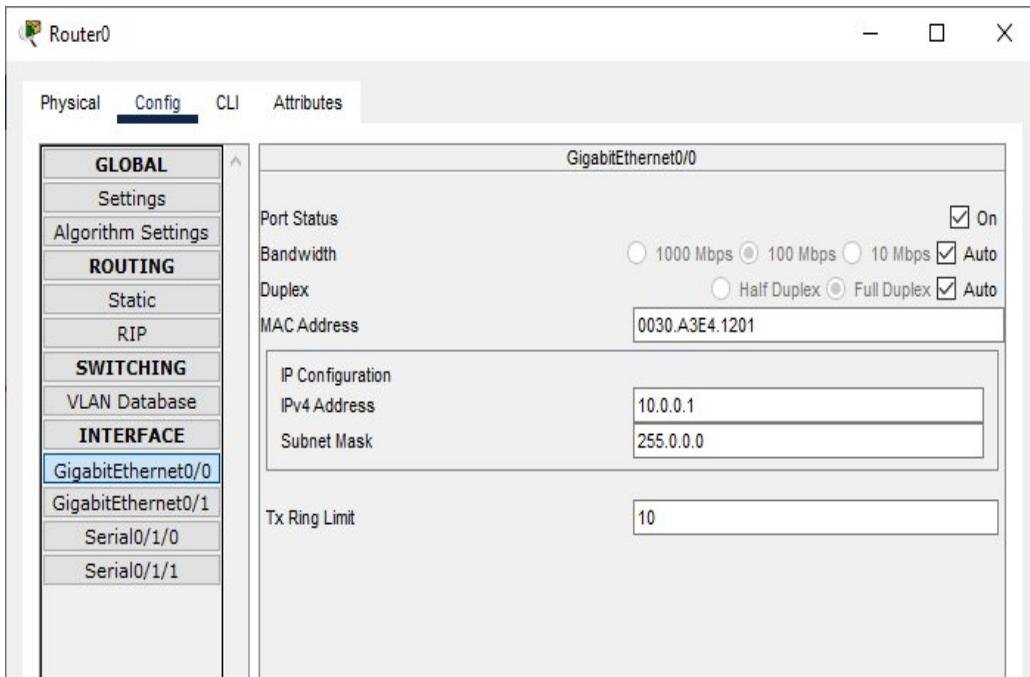


Configuring PCs (Same of Others According to the table):

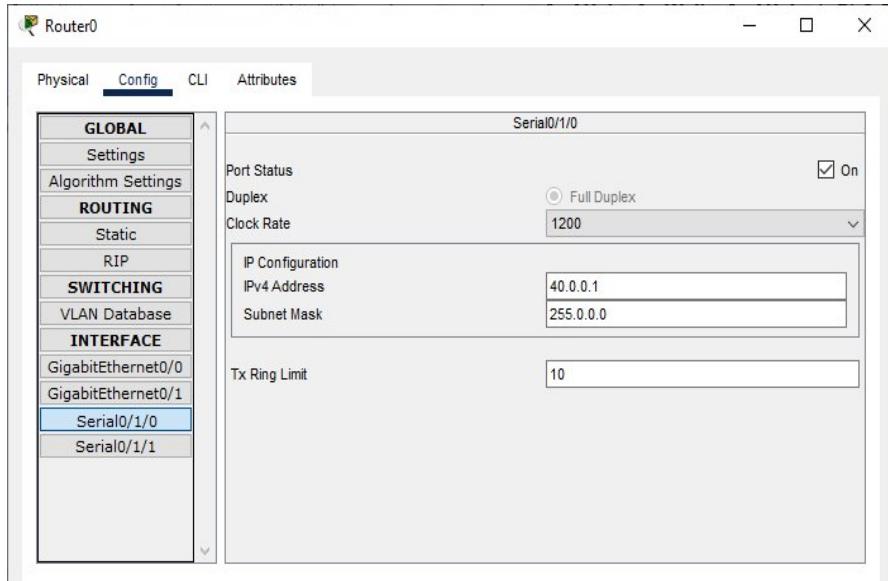


Configuring IP addresses on Router 0(Same of Others According to the table):

I) Interface G0/0



II) Interface S0/1/0



We configure the above network using the following these IP addresses:

	Interface	IP address	Default Gateway	Subnet Mask	Wildcard Mask
Router 0	G0/0	10.0.0.1			
	S0/1/0	40.0.0.1			
Router 1	G0/0	20.0.0.1			
	S0/1/0	40.0.0.2			
	S0/1/1	50.0.0.1			
Router 2	G0/0	30.0.0.1			
	S0/1/1	50.0.0.2			
PC0	FastEthernet0	10.0.0.2	10.0.0.1	255.0.0.0	0.255.255.255
PC1	FastEthernet0	10.0.0.3			
PC2	FastEthernet0	10.0.0.4			
PC3	FastEthernet0	20.0.0.2	20.0.0.1		
PC4	FastEthernet0	20.0.0.3			
PC5	FastEthernet0	20.0.0.4			
PC6	FastEthernet0	30.0.0.2	30.0.0.1		
PC7	FastEthernet0	30.0.0.3			
PC8	FastEthernet0	30.0.0.4			

Configuring Router 0 for OSPF (using the CLI mode)

```
Router(config)#  
Router(config)#router ospf 1  
  
Router(config-router)#network 10.0.0.0 0.0.0.255 area 1  
  
Router(config-router)#network 40.0.0.0 0.0.0.255  
area 1  
  
Router(config-router)#exit  
  
Router(config)#+
```

Configuring Router 1 for OSPF (using the CLI mode)

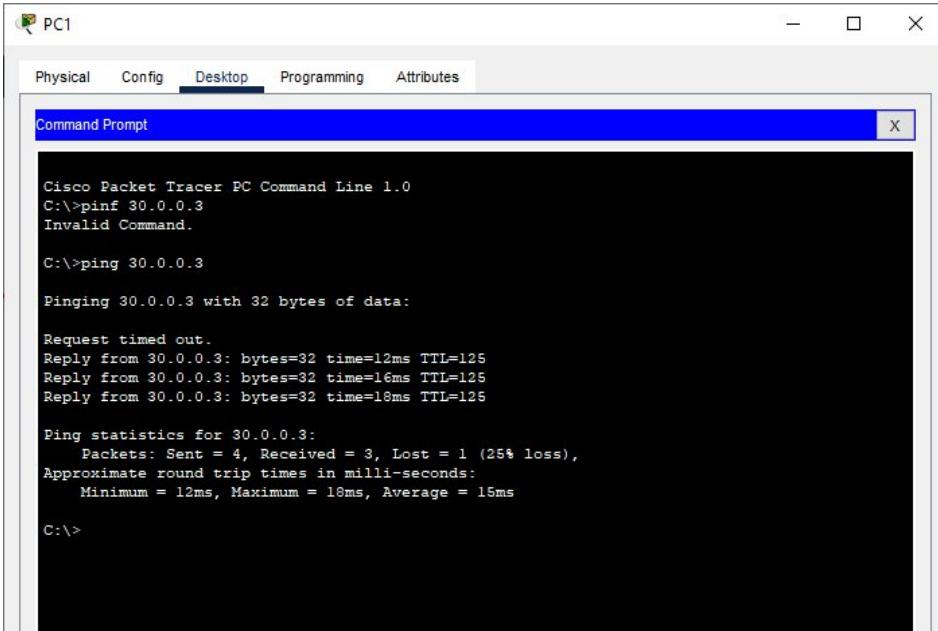
```
Router(config)#  
Router(config)#router  
ospf 1  
  
Router(config-router)#  
  
Router(config-router)#network 20.0.0.0 0.0.0.255 area 1  
  
Router(config-router)#network 40.0.0.0 0.0.0.255 area 1  
  
Router(config-router)#network 50.0.0.0 0.0.0.255  
area 1  
  
Router(config-router)#exit  
  
Router(config)#+
```

Configuring Router 2 for OSPF (using the CLI mode)

```
Router(config)#  
Router(config)#router  
ospf 1  
  
Router(config-router)#  
  
Router(config-router)#network 30.0.0.0 0.0.0.255 area 1  
  
Router(config-router)#network 50.0.0.0 0.0.0.255 area 1  
  
Router(config-router)# exit  
  
Router(config)#+
```

Checking the connectivity by using the ping command:

Pinging PC8 (ip address 10.30.0.4) from PC1



PC1

Physical Config Desktop Programming Attributes

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>pingf 30.0.0.3
Invalid Command.

C:\>ping 30.0.0.3

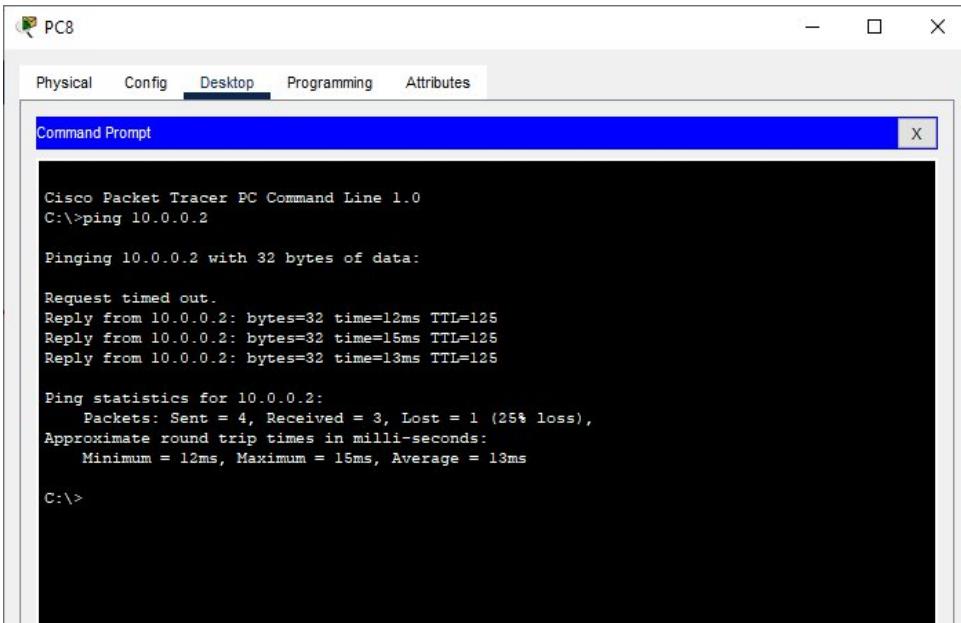
Pinging 30.0.0.3 with 32 bytes of data:

Request timed out.
Reply from 30.0.0.3: bytes=32 time=12ms TTL=125
Reply from 30.0.0.3: bytes=32 time=16ms TTL=125
Reply from 30.0.0.3: bytes=32 time=18ms TTL=125

Ping statistics for 30.0.0.3:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 12ms, Maximum = 18ms, Average = 15ms

C:\>
```

Pinging PC0 (ip address 10.10.0.2) from PC8



PC8

Physical Config Desktop Programming Attributes

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

Request timed out.
Reply from 10.0.0.2: bytes=32 time=12ms TTL=125
Reply from 10.0.0.2: bytes=32 time=15ms TTL=125
Reply from 10.0.0.2: bytes=32 time=13ms TTL=125

Ping statistics for 10.0.0.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 12ms, Maximum = 15ms, Average = 13ms

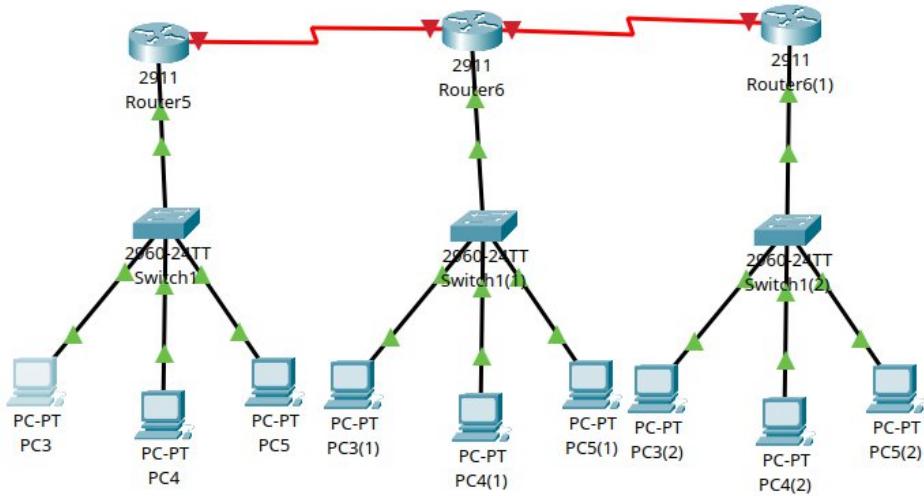
C:\>
```

Conclusion:Hence the OSPF has been studied and verified through the given network

Practical-9

Aim: Three routers, each connected to at least three PCs. Implement RIPv1 routing between routers Verify inter-network connectivity using ping and route tables.

Topology:

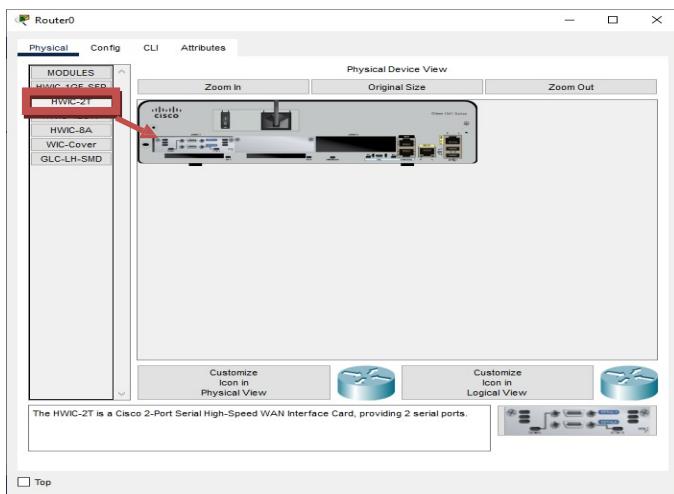


We configure the above network using the following IP addresses

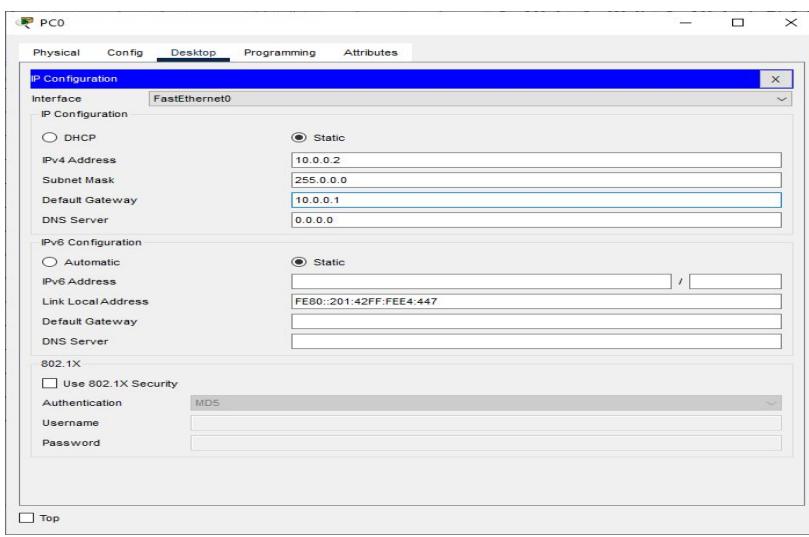
Host	Interface	IP address	Network Address	Default Gateway
Router 0	G0/0	10.0.0.1	10.0.0.0	
	S0/1/0	192.168.0.1	192.168.0.0	
Router 1	G0/0	20.0.0.1	20.0.0.0	
	S0/1/0	192.168.0.2	192.168.0.0	
	S0/1/1	192.168.1.1	192.168.1.0	
Router 2	G0/0	30.0.0.1	30.0.0.0	
	S0/1/1	192.168.1.2	192.168.1.0	
PC0	FastEthernet0	10.0.0.2	10.0.0.0	10.0.0.1
PC1	FastEthernet0	10.0.0.3	10.0.0.0	10.0.0.1
PC2	FastEthernet0	10.0.0.4	10.0.0.0	10.0.0.1

PC3	FastEthernet0	20.0.0.2	20.0.0.0	20.0.0.1
PC4	FastEthernet0	20.0.0.3	20.0.0.0	20.0.0.1
PC5	FastEthernet0	20.0.0.4	20.0.0.0	20.0.0.1
PC6	FastEthernet0	30.0.0.2	30.0.0.0	30.0.0.1
PC7	FastEthernet0	30.0.0.3	30.0.0.0	30.0.0.1
PC8	FastEthernet0	30.0.0.4	30.0.0.0	30.0.0.1

Adding Serial Interface in each Router (**Same of Others According to the table**):



Configuring PCs (Same of Others According to the table):



Configuring Router Via CLI:

Router0:

```
enable
configure terminal
interface GigabitEthernet0/0
 ip address 10.0.0.1 255.0.0.0
 no shutdown
exit
interface Serial0/1/0
 ip address 192.168.0.1 255.255.255.0
 clock rate 64000
 no shutdown
exit
router rip
 network 10.0.0.0
 network 192.168.0.0
Exit
```

Rounter1:

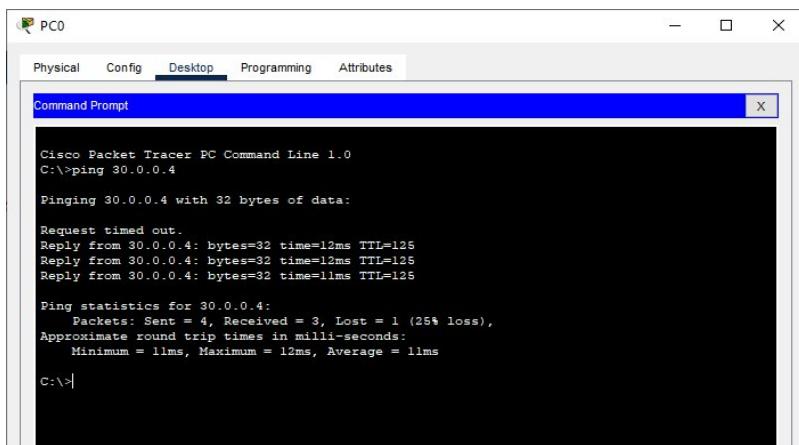
```
enable
configure terminal
interface GigabitEthernet0/0
 ip address 20.0.0.1 255.0.0.0
 no shutdown
exit
interface Serial0/1/0
 ip address 192.168.0.2 255.255.255.0
 no shutdown
exit
interface Serial0/1/1
 ip address 192.168.1.1 255.255.255.0
 clock rate 64000
 no shutdown
exit
router rip
 network 20.0.0.0
 network 192.168.0.0
 network 192.168.1.0
exit
```

Rounter2:

```
enable
configure terminal
```

```
interface GigabitEthernet0/0
ip address 30.0.0.1 255.0.0.0
no shutdown
exit
interface Serial0/1/1
ip address 192.168.1.2 255.255.255.0
no shutdown
exit
router rip
network 30.0.0.0
network 192.168.1.0
Exit
```

Pinging PC8 (ip address 30.0.0.4) from PC0:

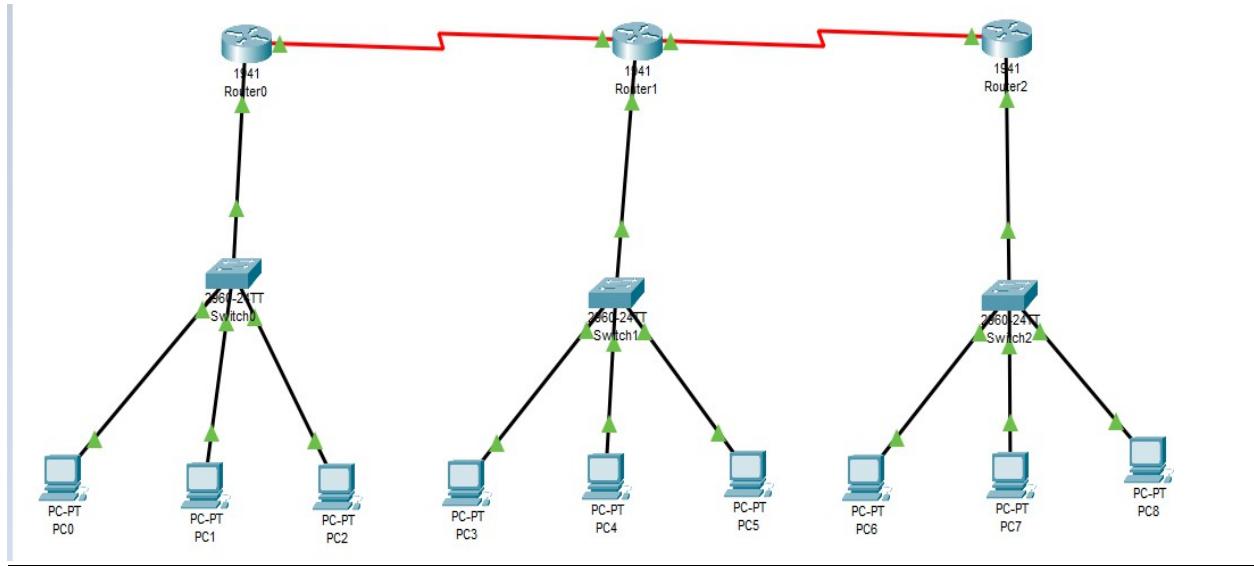


Conclusion: Hence the RIPv1 has been studied and verified through the given network

Practical-10

Aim: Three Routers, each connected to at least 3 PCs. Enable RIPv2 and observe mask handling. Using Packet Tracer's sim to observe routing updates.

Topology:

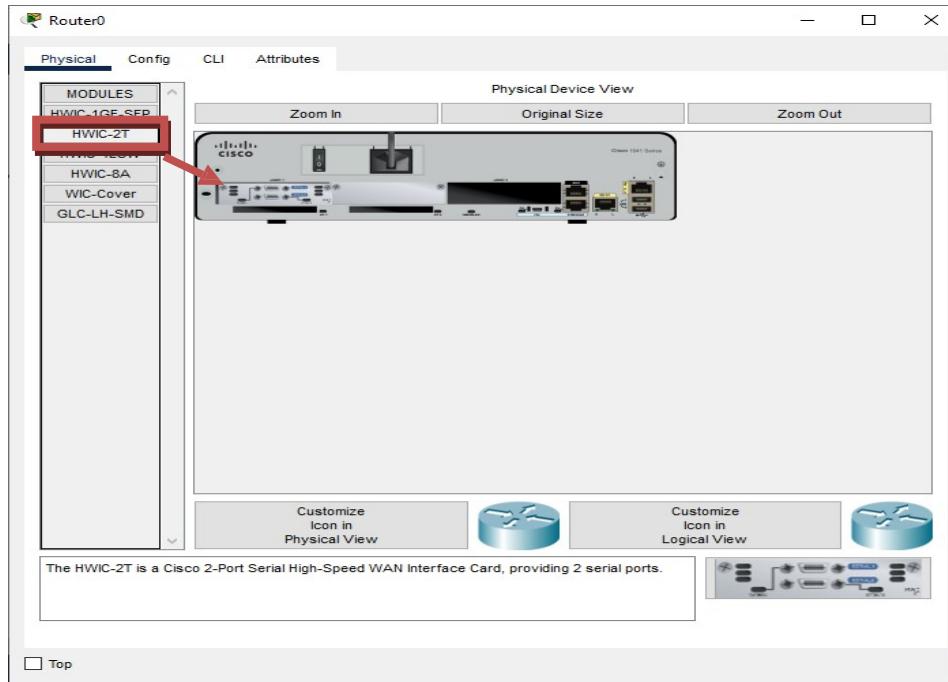


We configure the above network using the following IP addresses

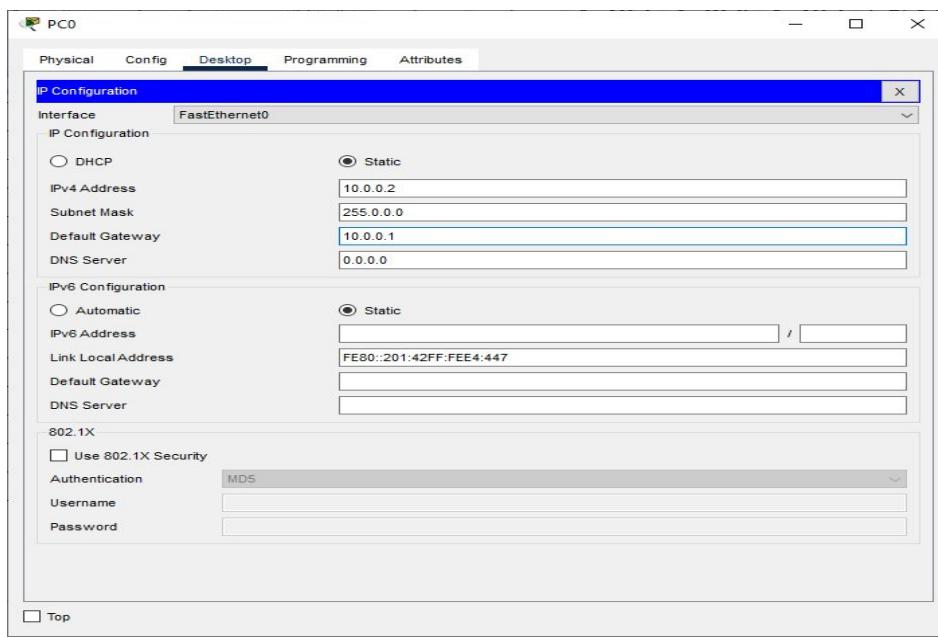
Host	Interface	IP address	Subnet Mask	Network Address	Default Gateway
Router 0	G0/0	10.10.0.1	255.255.255.248	10.10.0.0	
	S0/1/0	192.168.0.1	255.255.255.252	192.168.0.0	
Router 1	G0/0	10.20.0.1	255.255.255.248	10.20.0.0	
	S0/1/0	192.168.0.2	255.255.255.252	192.168.0.0	
	S0/1/1	192.168.1.1	255.255.255.252	192.168.1.0	
Router 2	G0/0	10.30.0.1	255.255.255.248	10.30.0.0	
	S0/1/1	192.168.1.2	255.255.255.252	192.168.1.0	
PC0	FastEthernet0	10.10.0.2	255.255.255.248	10.10.0.0	10.10.0.1
PC1	FastEthernet0	10.10.0.3	255.255.255.248	10.10.0.0	10.10.0.1
PC2	FastEthernet0	10.10.0.4	255.255.255.248	10.10.0.0	10.10.0.1
PC3	FastEthernet0	10.20.0.2	255.255.255.248	10.20.0.0	10.20.0.1
PC4	FastEthernet0	10.20.0.3	255.255.255.248	10.20.0.0	10.20.0.1
PC5	FastEthernet0	10.20.0.4	255.255.255.248	10.20.0.0	10.20.0.1
PC6	FastEthernet0	10.30.0.2	255.255.255.248	10.30.0.0	10.30.0.1

PC7	FastEthernet0	10.30.0.3	255.255.255.248	10.30.0.0	10.30.0.1
PC8	FastEthernet0	10.30.0.4	255.255.255.248	10.30.0.0	10.30.0.1

Adding Serial Interface in each Router (Same of Others According to the table):

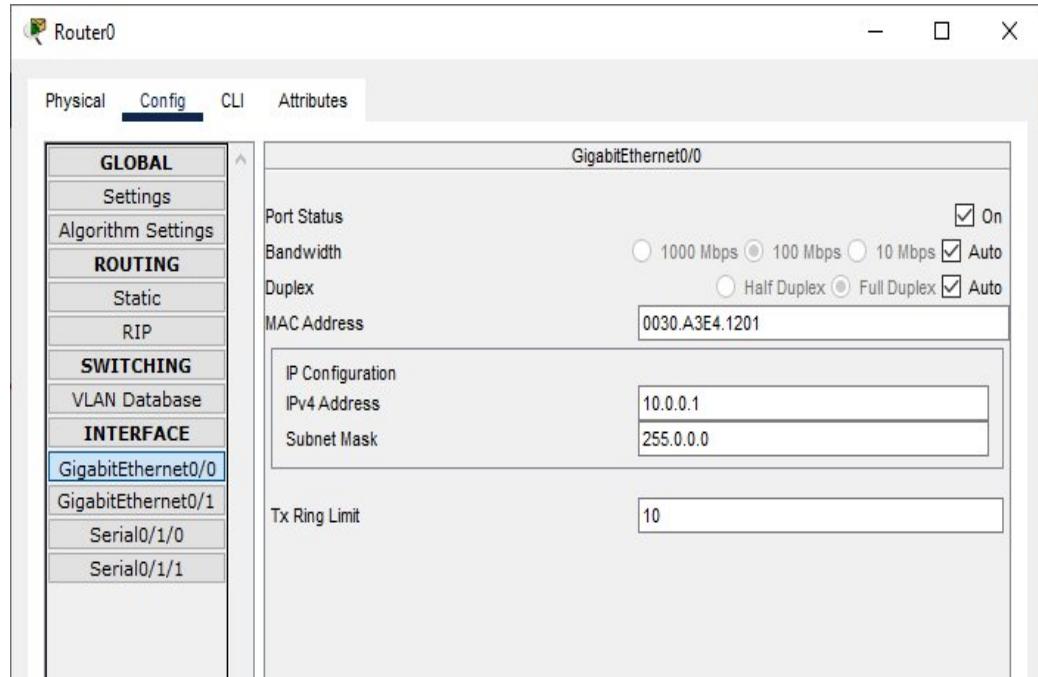


Configuring PCs (Same of Others According to the table):

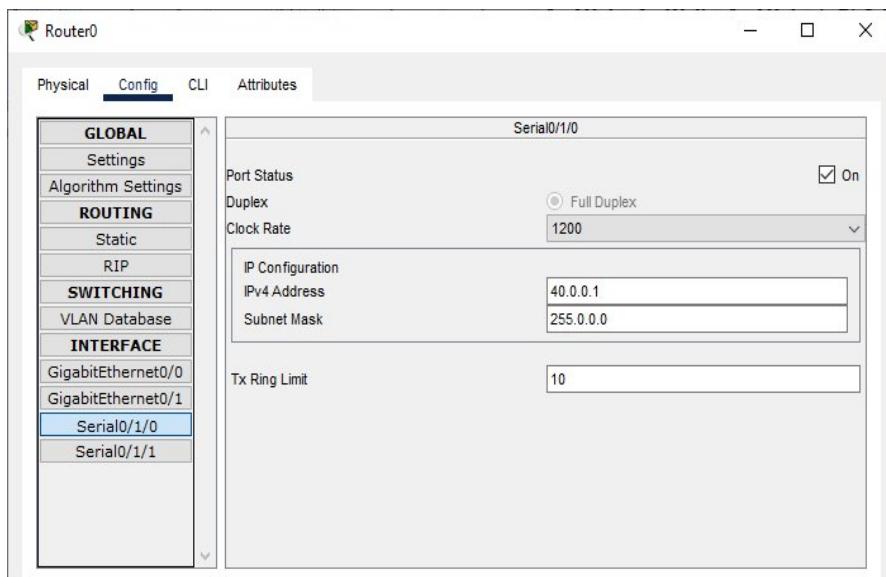


Configuring IP addresses on Router 0(Same of Others According to the table):

I) Interface G0/0



II) Interface S0/1/0



Configuring Router Via CLI:

Router0:

```
Router>enable  
Router#configure terminal  
Router(config)#router rip  
Router(config-router)#version 2  
Router(config-router)#network 10.10.0.0  
Router(config-router)#network 192.168.0.0  
Router(config-router)#exit  
Router(config)#
```

Rounter1:

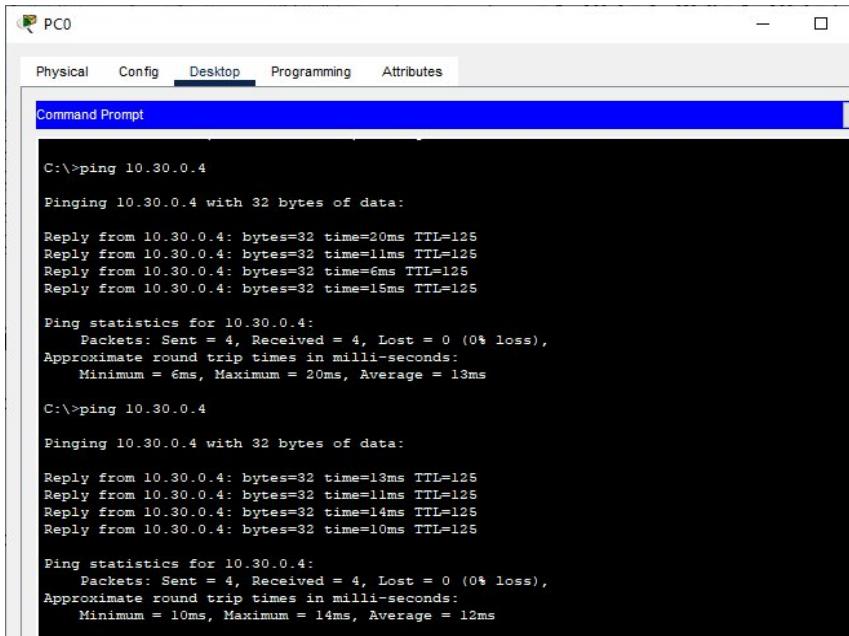
```
Router>enable  
Router#configure terminal  
Router(config)#router rip  
Router(config-router)#version 2  
Router(config-router)#network 10.20.0.0  
Router(config-router)#network 192.168.0.0  
Router(config-router)#network 192.168.1.0  
Router(config-router)#exit  
Router(config)#
```

Rounter2:

```
Router>enable  
Router#configure terminal  
Router(config)#router rip  
Router(config-router)#version 2  
Router(config-router)#network 10.30.0.0  
Router(config-router)#network 192.168.1.0  
Router(config-router)#exit  
Router(config)#
```

Checking connectivity By Using Ping command:

I) Pinging PC8 from PC1:



```
C:\>ping 10.30.0.4

Pinging 10.30.0.4 with 32 bytes of data:

Reply from 10.30.0.4: bytes=32 time=20ms TTL=125
Reply from 10.30.0.4: bytes=32 time=11ms TTL=125
Reply from 10.30.0.4: bytes=32 time=6ms TTL=125
Reply from 10.30.0.4: bytes=32 time=15ms TTL=125

Ping statistics for 10.30.0.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 6ms, Maximum = 20ms, Average = 13ms

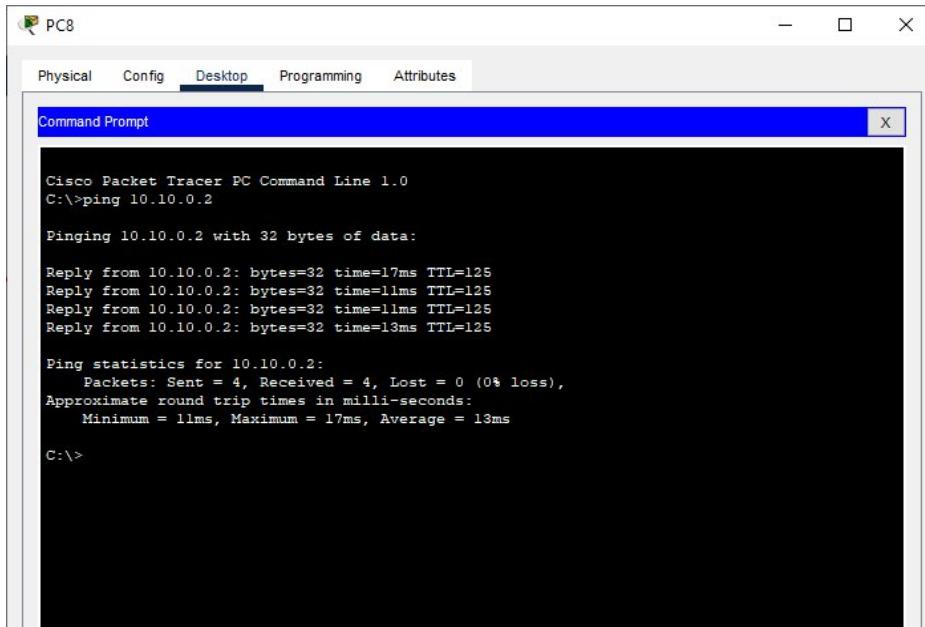
C:\>ping 10.30.0.4

Pinging 10.30.0.4 with 32 bytes of data:

Reply from 10.30.0.4: bytes=32 time=13ms TTL=125
Reply from 10.30.0.4: bytes=32 time=11ms TTL=125
Reply from 10.30.0.4: bytes=32 time=14ms TTL=125
Reply from 10.30.0.4: bytes=32 time=10ms TTL=125

Ping statistics for 10.30.0.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 10ms, Maximum = 14ms, Average = 12ms
```

II) Pinging PC0 from PC8:



```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.10.0.2

Pinging 10.10.0.2 with 32 bytes of data:

Reply from 10.10.0.2: bytes=32 time=17ms TTL=125
Reply from 10.10.0.2: bytes=32 time=11ms TTL=125
Reply from 10.10.0.2: bytes=32 time=11ms TTL=125
Reply from 10.10.0.2: bytes=32 time=13ms TTL=125

Ping statistics for 10.10.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 11ms, Maximum = 17ms, Average = 13ms

C:\>
```

Conclusion: Hence the RIPv2 has been studied and verified through the given network