

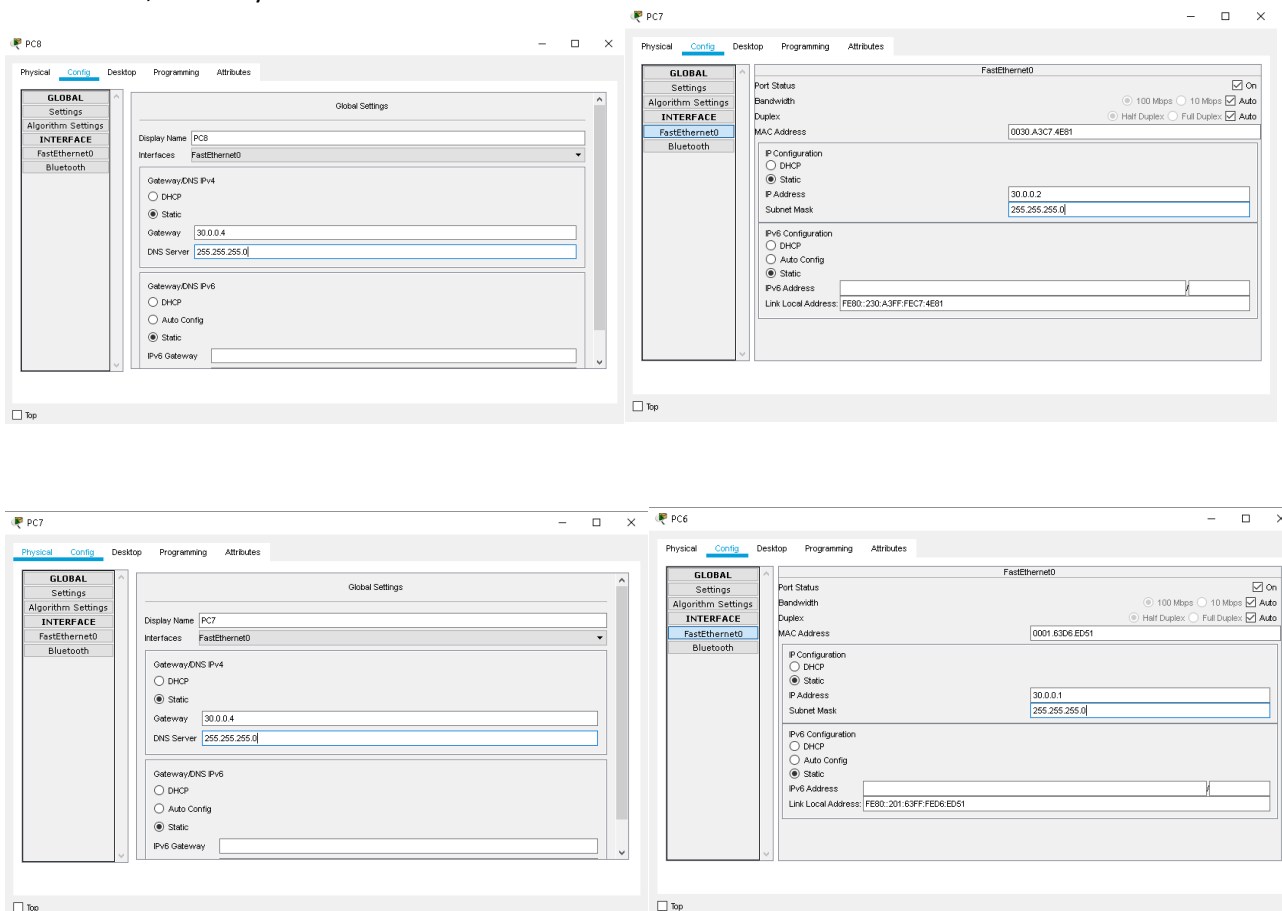
PRACTICAL 1

Aim - Create a network with three routers with RIPv2 and each router associated network will have minimum three PC. Show connectivity.

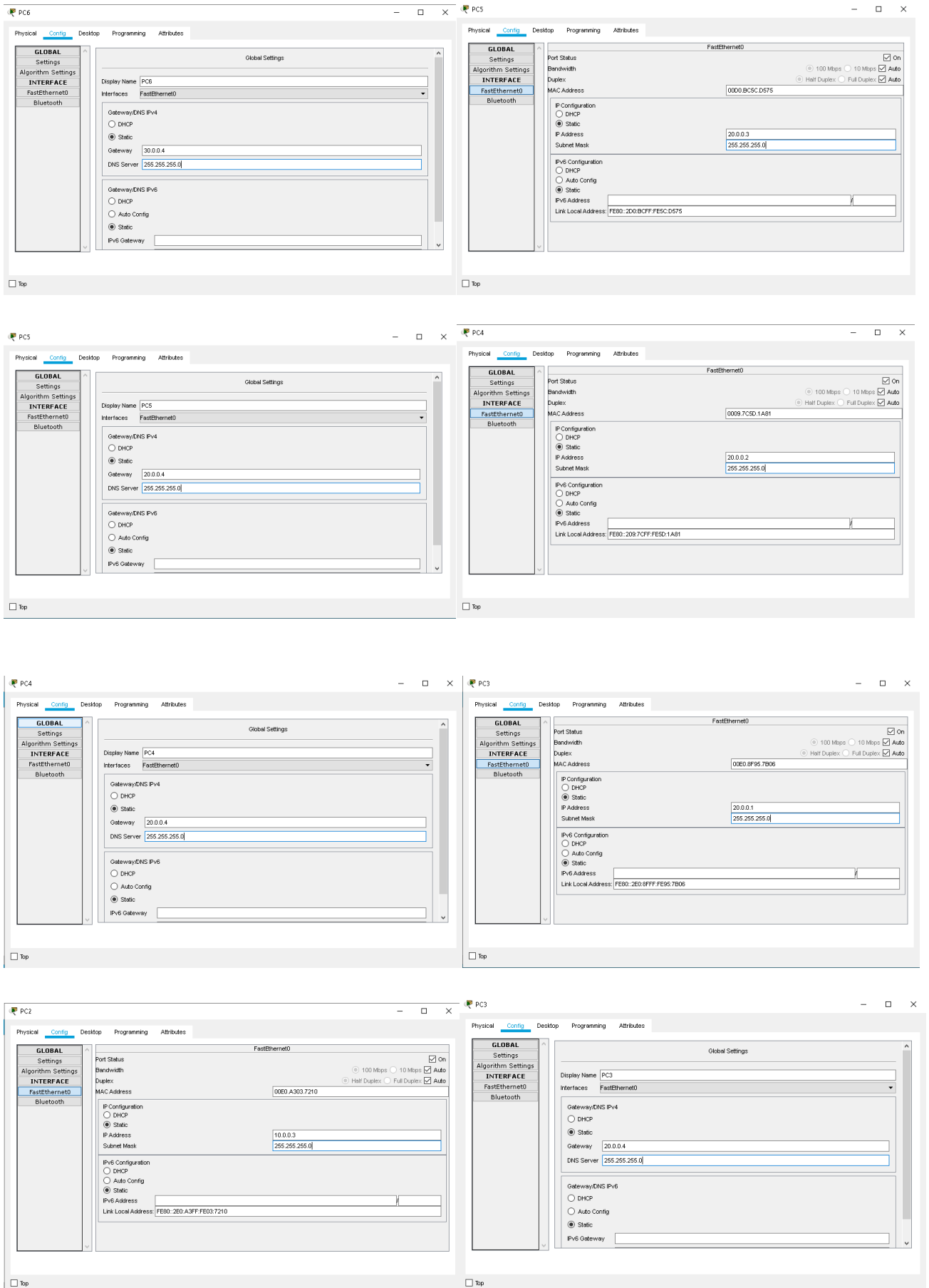
1. Align 9 end-devices as follows:



2. Set the DNS, Gateway and Fast Ethernet connections for all the PCs as follows:



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07 - MSc. CS. Part – 1
Advanced Networking Concepts



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PC2

Physical Config Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Bluetooth

Global Settings

Display Name: PC2

Interfaces: FastEthernet0

Gateway/DNS IPv4

☐ DHCP

☒ Static

Gateway: 10.0.0.4

DNS Server: 255.255.255.0

Gateway/DNS IPv6

☐ DHCP

☐ Auto Config

☒ Static

IPv6 Gateway:

☐ Top

PC1

Physical Config Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Bluetooth

FastEthernet0

Port Status: ☒ On

Bandwidth: 100 Mbps 10 Mbps Auto

Duplex: ☒ Half Duplex ☐ Full Duplex ☒ Auto

MAC Address: 000C.475B.B616

IP Configuration

☐ DHCP

☒ Static

IP Address: 10.0.0.2

Subnet Mask: 255.255.255.0

IPv6 Configuration

☐ DHCP

☐ Auto Config

☒ Static

IPv6 Address:

Link Local Address: FE80:260:47FF:FE5B:B616

☐ Top

PC1

Physical Config Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Bluetooth

Global Settings

Display Name: PC1

Interfaces: FastEthernet0

Gateway/DNS IPv4

☐ DHCP

☒ Static

Gateway: 10.0.0.4

DNS Server: 255.255.255.0

Gateway/DNS IPv6

☐ DHCP

☐ Auto Config

☒ Static

IPv6 Gateway:

☐ Top

PC0

Physical Config Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Bluetooth

FastEthernet0

Port Status: ☒ On

Bandwidth: 100 Mbps 10 Mbps Auto

Duplex: ☒ Half Duplex ☐ Full Duplex ☒ Auto

MAC Address: 000C.85DE.25AC

IP Configuration

☐ DHCP

☒ Static

IP Address: 10.0.0.1

Subnet Mask: 255.255.255.0

IPv6 Configuration

☐ DHCP

☐ Auto Config

☒ Static

IPv6 Address:

Link Local Address: FE80:20C:85FF:FEDE:25AC

☐ Top

PC0

Physical Config Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Bluetooth

Global Settings

Display Name: PC0

Interfaces: FastEthernet0

Gateway/DNS IPv4

☐ DHCP

☒ Static

Gateway: 10.0.0.4

DNS Server: 255.255.255.0

Gateway/DNS IPv6

☐ DHCP

☐ Auto Config

☒ Static

IPv6 Gateway:

☐ Top

PC8

Physical Config Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Bluetooth

FastEthernet0

Port Status: ☒ On

Bandwidth: 100 Mbps 10 Mbps Auto

Duplex: ☒ Half Duplex ☐ Full Duplex ☒ Auto

MAC Address: 0090.0C10.A370

IP Configuration

☐ DHCP

☒ Static

IP Address: 30.0.0.3

Subnet Mask: 255.255.255.0

IPv6 Configuration

☐ DHCP

☐ Auto Config

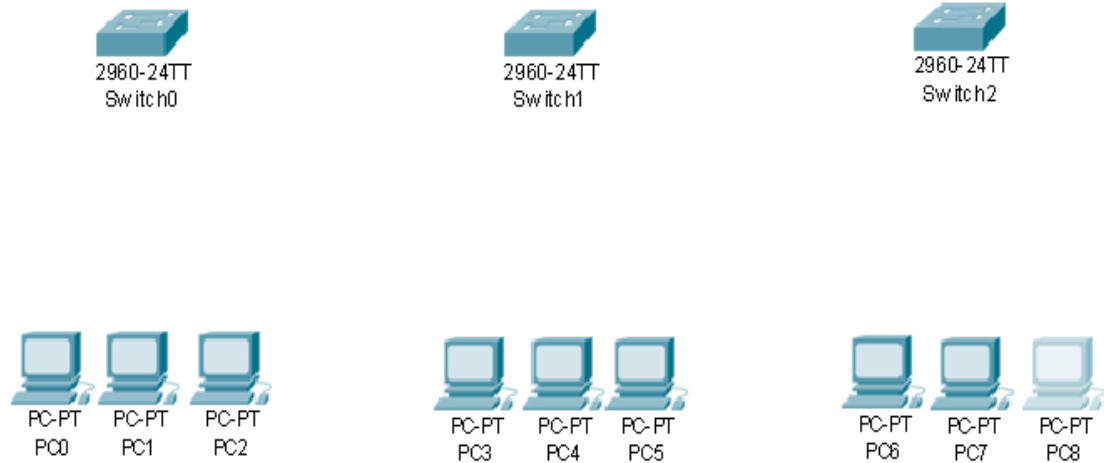
☒ Static

IPv6 Address:

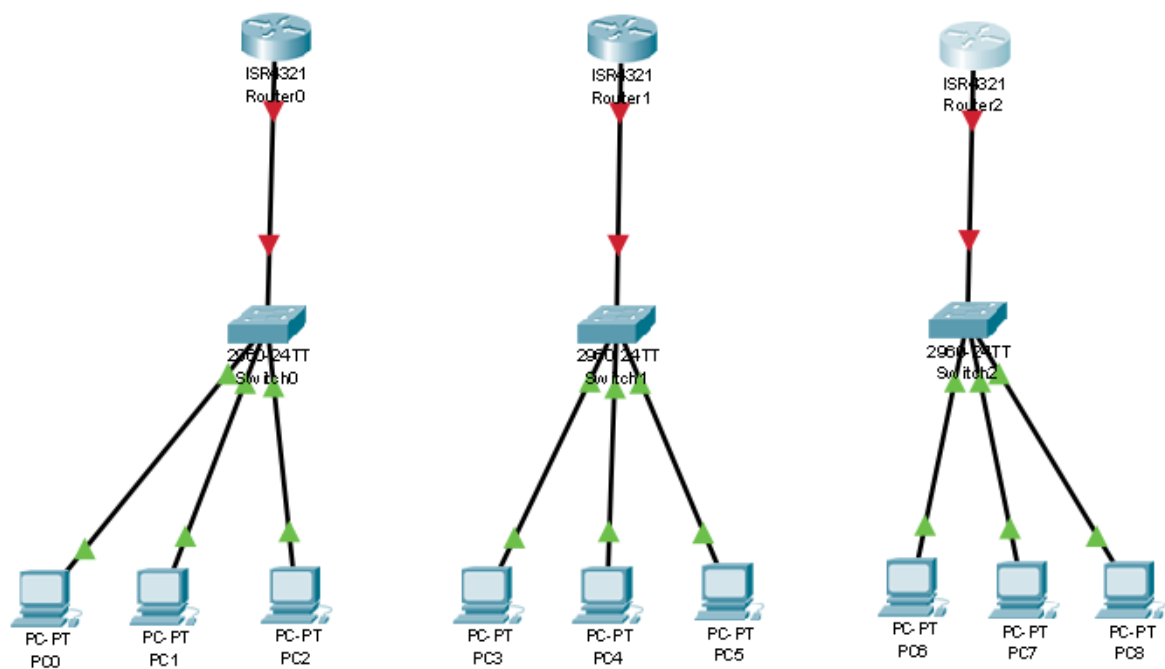
Link Local Address: FE80:290:0FF:FE10:A370

☐ Top

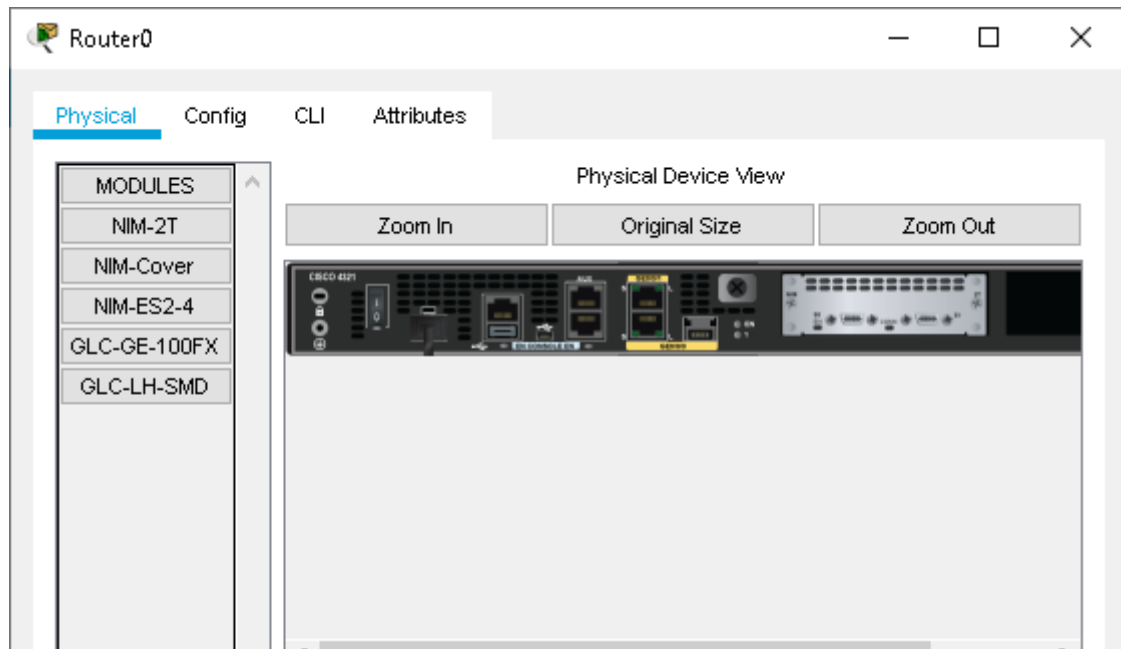
3. Add 3 Switches as follows:



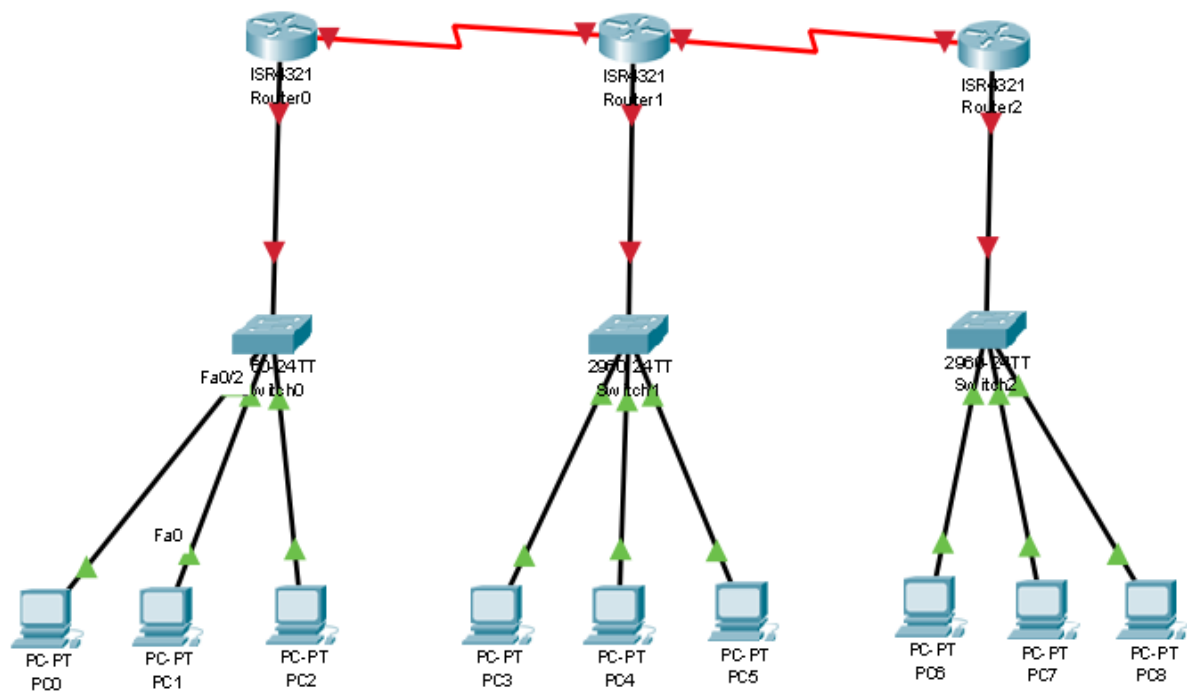
4. Add 3 Routers and connect all the components using Fast Ethernet connection as follows:



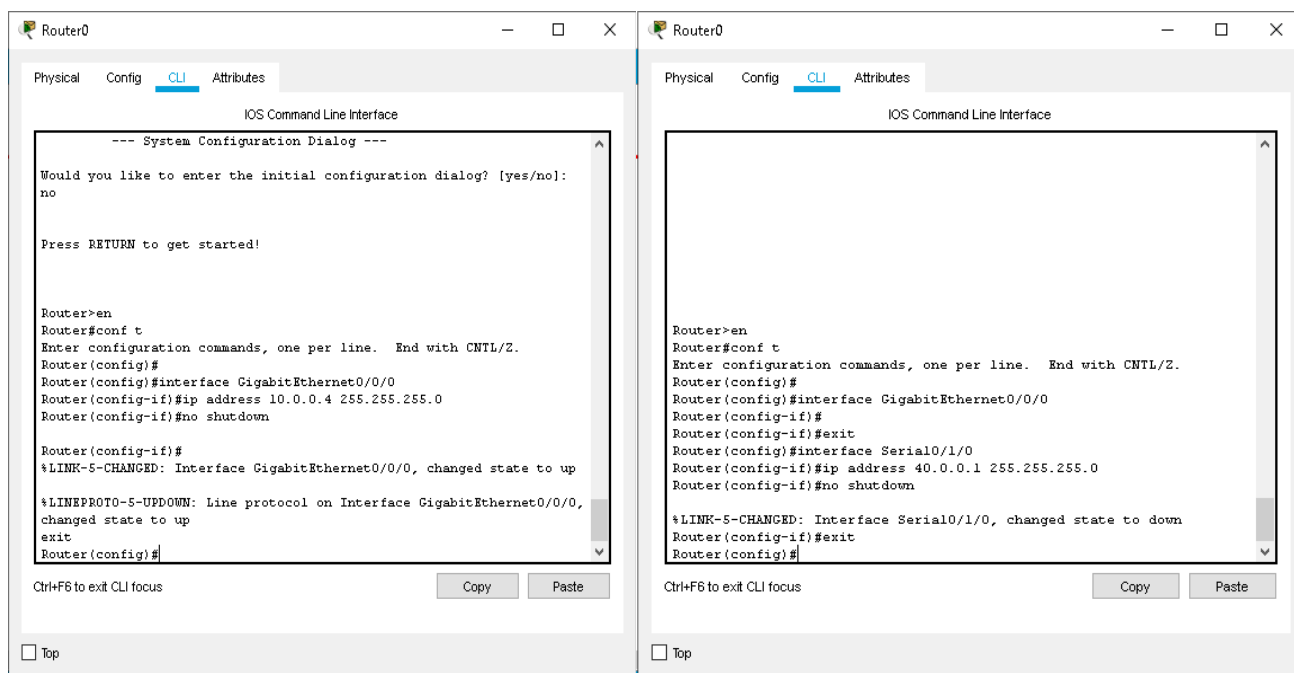
5. Power off each of the Routers and add the NIM-2T Module to all the Routers as follows:



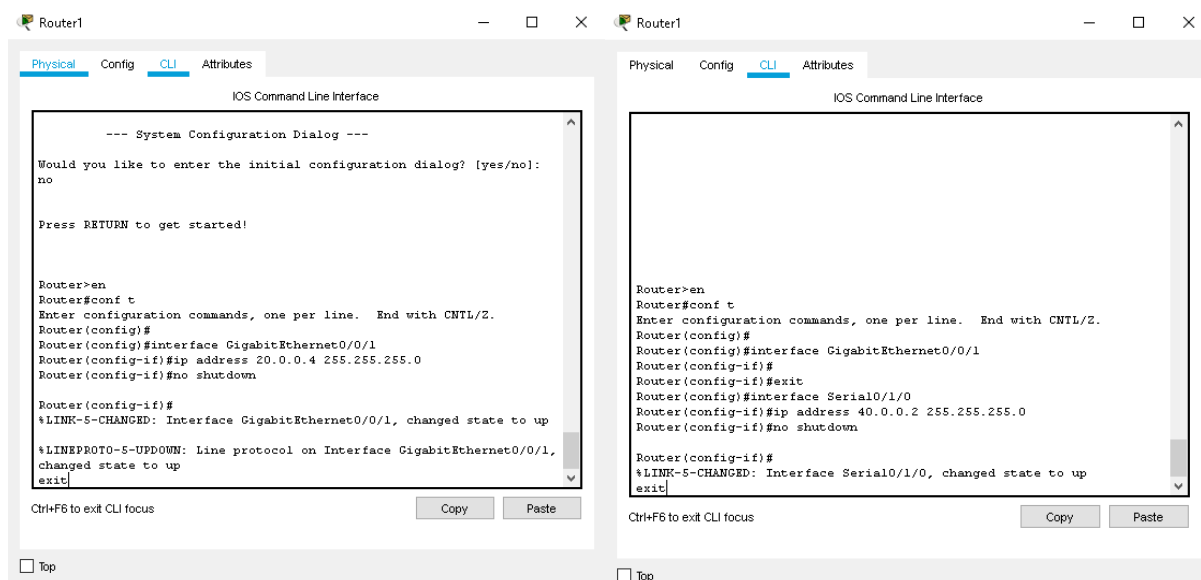
6. Connect the Routers using Serial DTE wires as shown:

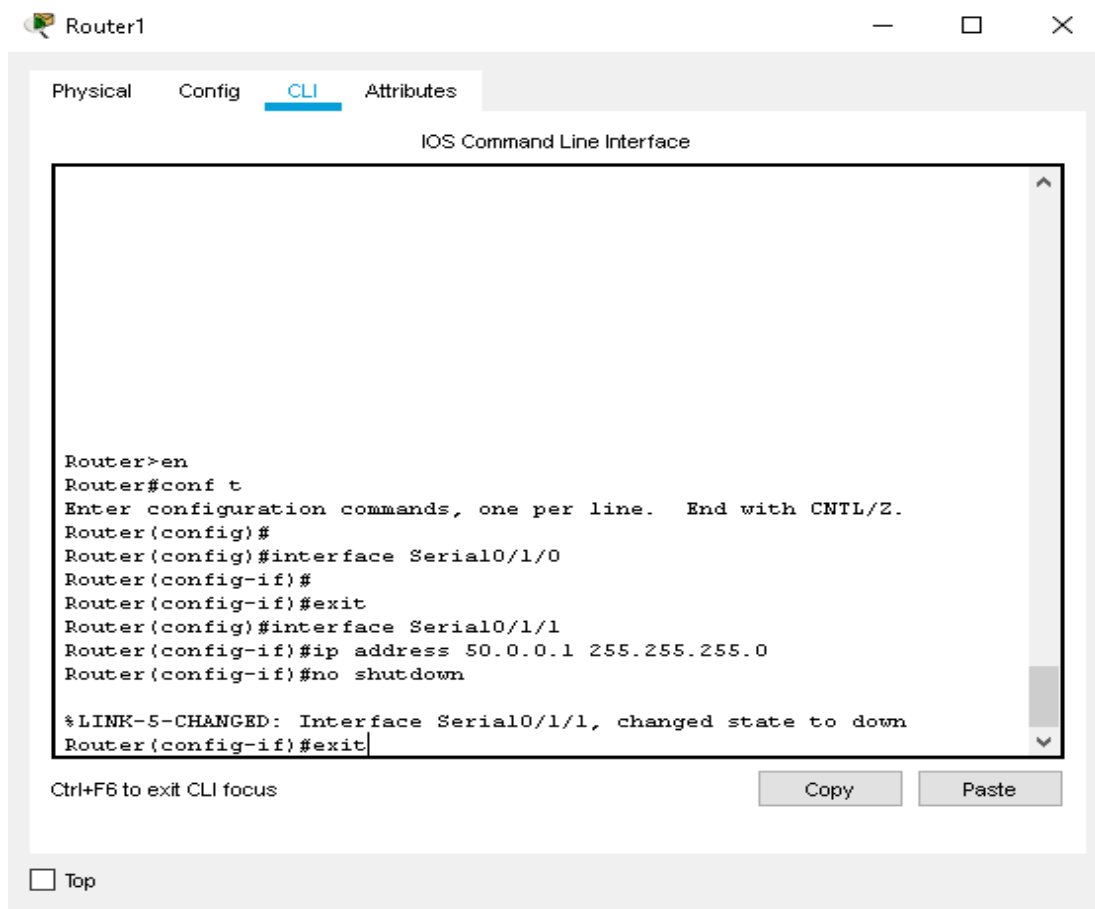


7. Configure Router 0 using the Command Line Interface as follows:

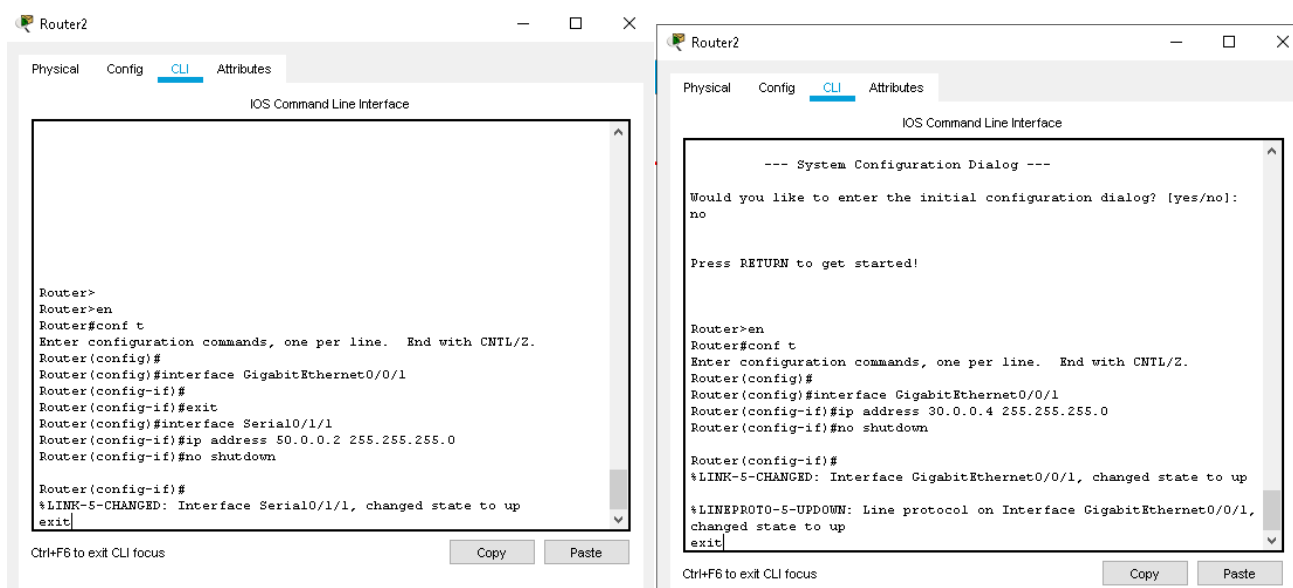


8. Configure Router 0 using the Command Line Interface as follows:

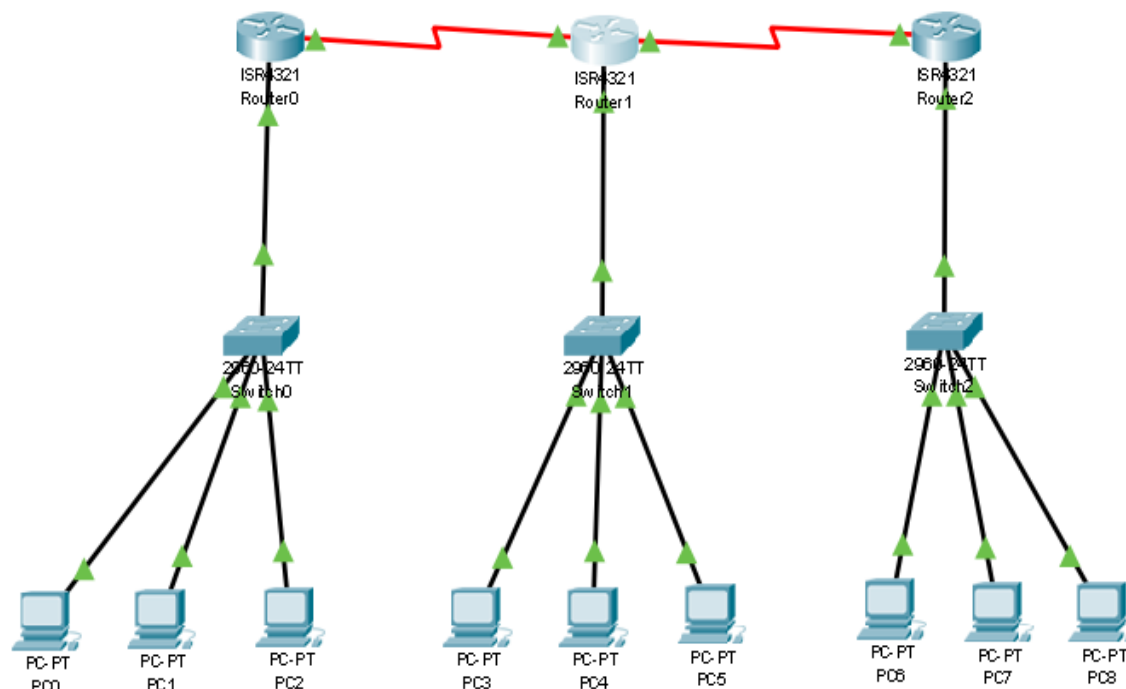




9. Configure Router 0 using the Command Line Interface as follows:



10. The Final connection will look as shown:



11. Note how intra-connection packet sending succeeds and inter-connection fails:

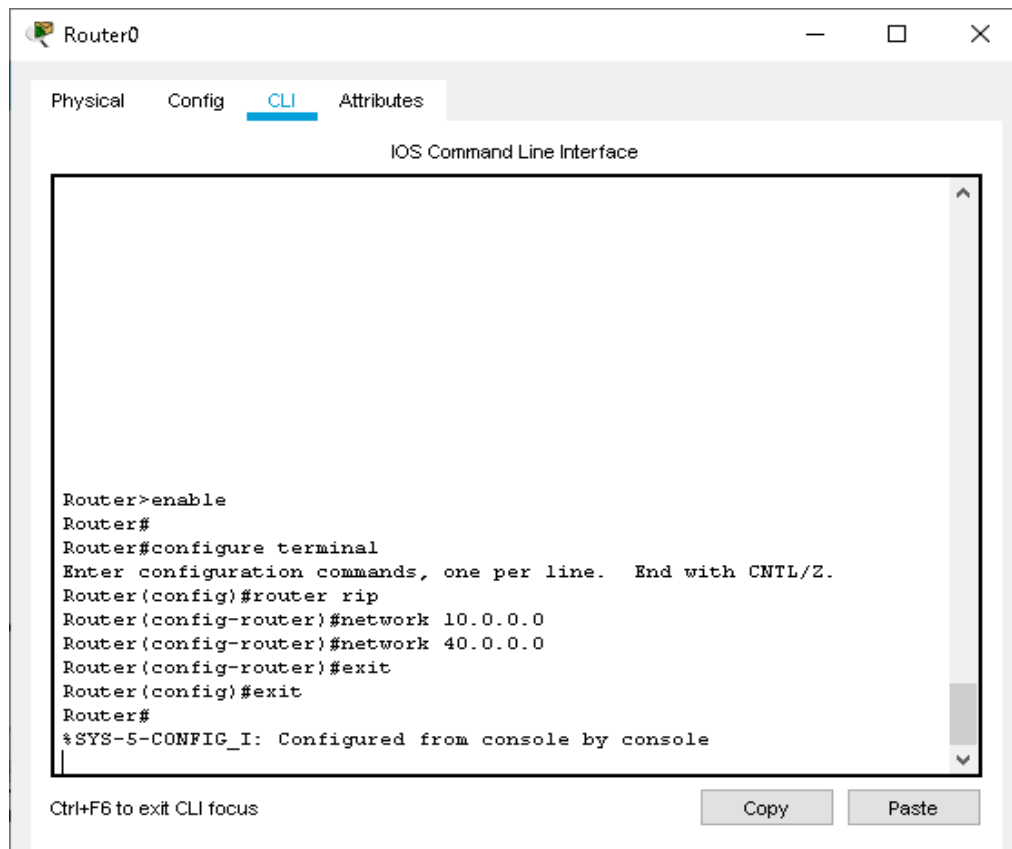
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Successful	PC0	PC1	ICMP	Dark Blue	0.000	N	0	(edit)
	Successful	PC3	PC4	ICMP	Blue	0.000	N	1	(edit)
	Successful	PC6	PC7	ICMP	Orange	0.000	N	2	(edit)

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Successful	Router0	Router1	ICMP	Cyan	0.000	N	0	(edit)
	Successful	Router1	Router2	ICMP	Magenta	0.000	N	1	(edit)

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Failed	PC0	PC3	ICMP	Blue	0.000	N	0	(edit)
	Failed	PC3	PC6	ICMP	Blue	0.000	N	1	(edit)
	Failed	PC8	PC2	ICMP	Magenta	0.000	N	2	(edit)

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Failed	Router0	Router2	ICMP	Green	0.000	N	0	(edit)

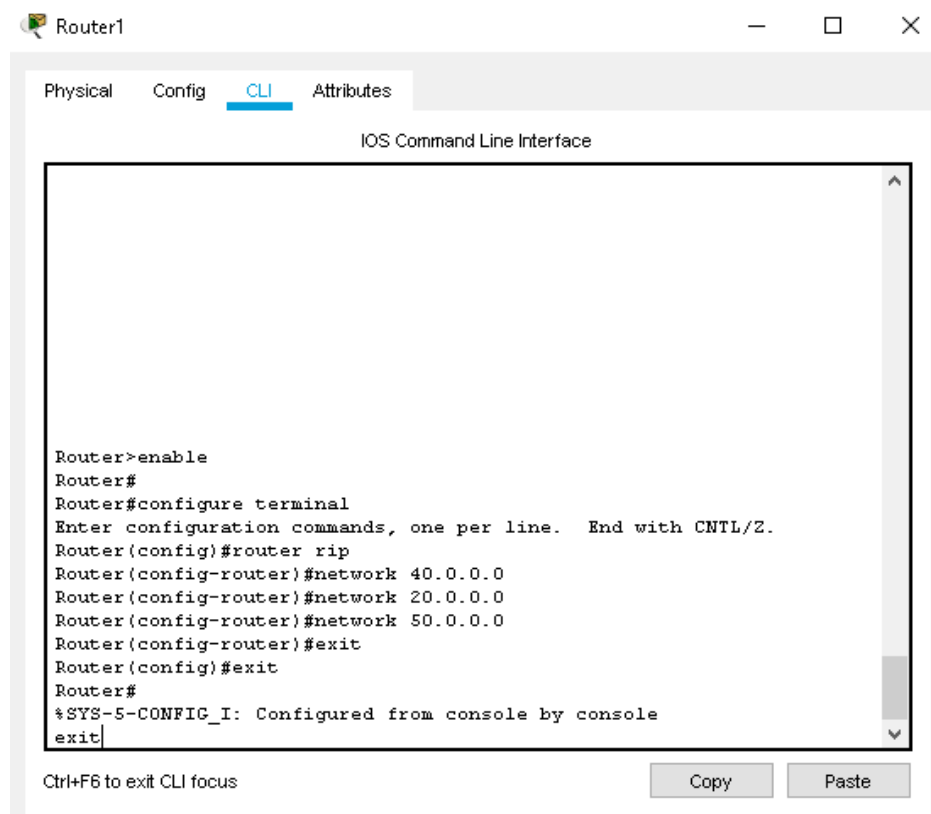
12. Configure RIP Routing in Router 0 as follows:



The screenshot shows a window titled "Router0" with tabs for Physical, Config, CLI, and Attributes. The CLI tab is active, displaying the "IOS Command Line Interface". The terminal text shows the configuration of RIP routing on Router0. The commands entered are: enable, configure terminal, router rip, network 10.0.0.0, network 40.0.0.0, and exit. The output shows the configuration was successful. The window also includes a "Ctrl+F6 to exit CLI focus" message and "Copy" and "Paste" buttons.

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 10.0.0.0
Router(config-router)#network 40.0.0.0
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

13. Configure RIP Routing in Router 3 as follows:



The screenshot shows a window titled "Router1" with tabs for Physical, Config, CLI, and Attributes. The CLI tab is active, displaying the "IOS Command Line Interface". The terminal text shows the configuration of RIP routing on Router1. The commands entered are: enable, configure terminal, router rip, network 40.0.0.0, network 20.0.0.0, network 50.0.0.0, and exit. The output shows the configuration was successful. The window also includes a "Ctrl+F6 to exit CLI focus" message and "Copy" and "Paste" buttons.

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 40.0.0.0
Router(config-router)#network 20.0.0.0
Router(config-router)#network 50.0.0.0
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
exit
```

14. Configure RIP Routing in Router 2 as follows:

The screenshot shows a window titled 'Router2' with tabs for Physical, Config, CLI, and Attributes. The CLI tab is active, displaying the following commands and output:

```
Router>
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 30.0.0.0
Router(config-router)#network 50.0.0.0
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

At the bottom of the window, there is a text prompt 'Ctrl+F6 to exit CLI focus' and two buttons labeled 'Copy' and 'Paste'.

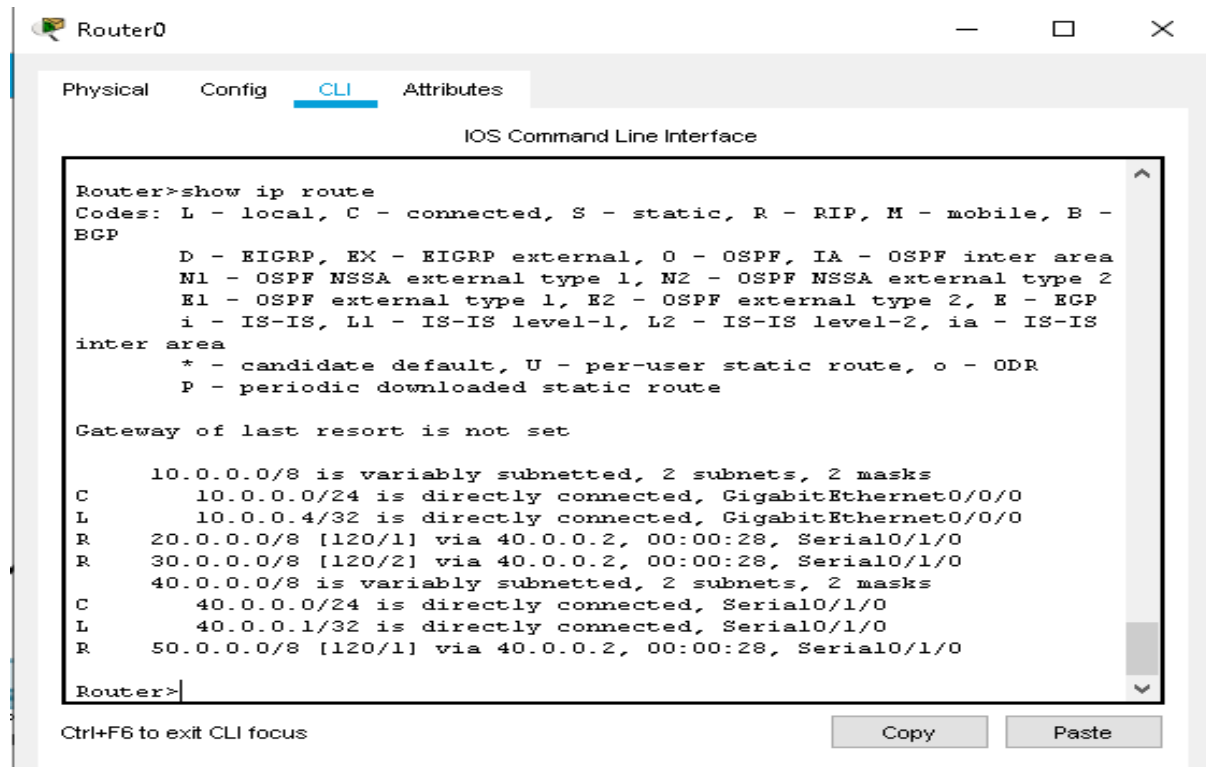
15. Sending packets after RIP routing gives the following result:

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Successful	PC0	PC3	ICMP		0.000	N	0	(edit)
	Failed	PC0	PC6	ICMP		0.000	N	1	(edit)
	Successful	PC0	PC6	ICMP		0.000	N	2	(edit)

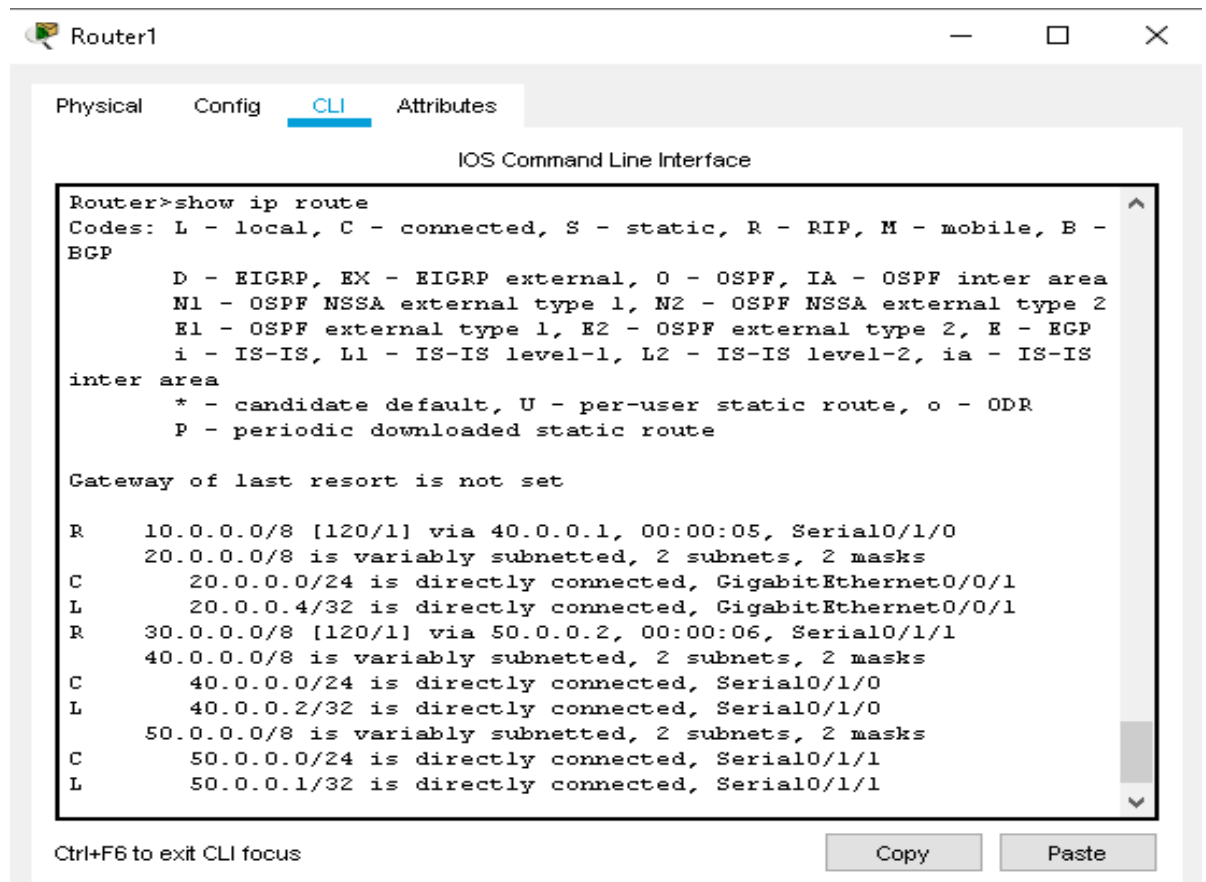
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Successful	Router0	Router2	ICMP		0.000	N	0	(edit)
	Successful	Router1	Router0	ICMP		0.000	N	1	(edit)
	Successful	Router2	Router0	ICMP		0.000	N	2	(edit)

16. Finally, type 'show ip route' in the Router's CLI to obtain the IP route results:

ROUTER 0



ROUTER 1



ROUTER 2

