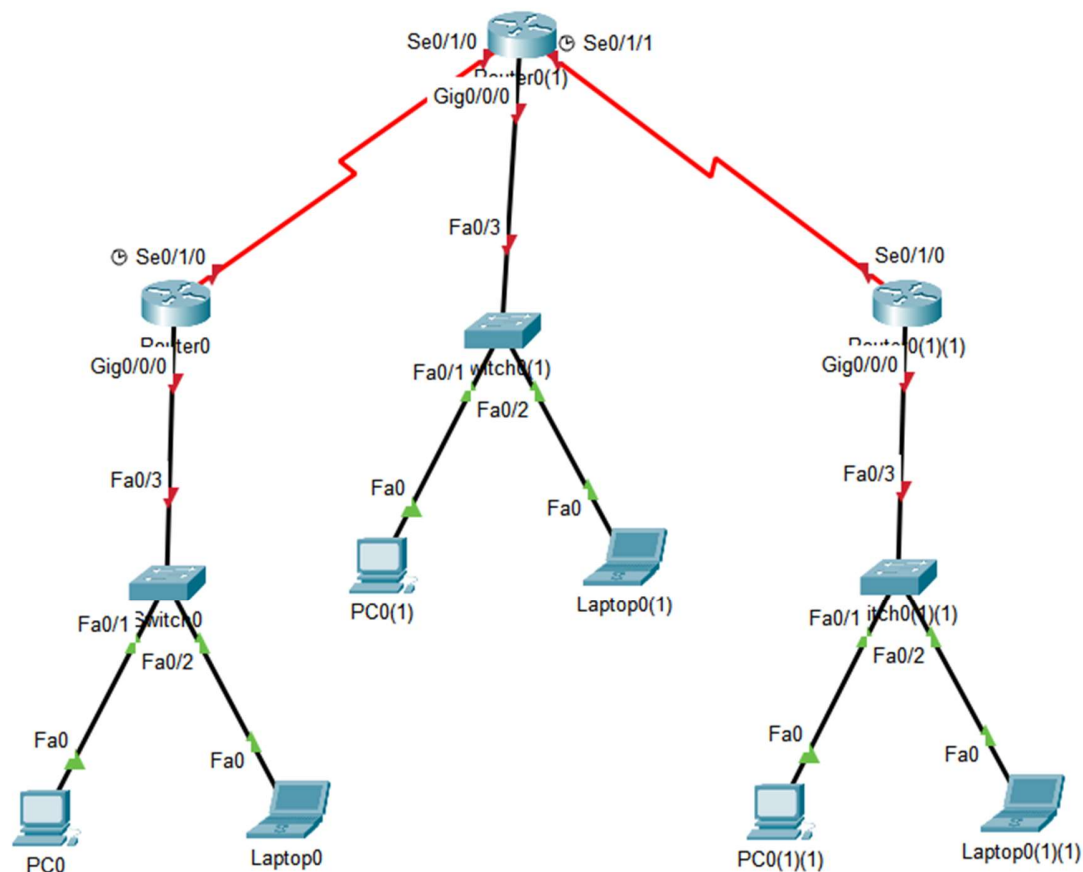
 <b>Marwadi University</b> Marwadi Chandarana Group	<b>Marwadi University</b> <b>Faculty of Engineering and Technology</b> <b>Department of Information and Communication Technology</b>	
<b>Subject: Computer Networks (01CT0503)</b>	<b>Aim:</b> Perform dynamic routing protocol (RIP) and analyze the results.	
<b>Experiment No: 06</b>	<b>Date:</b> 13-09-2023	<b>Enrolment No:</b> 92210133006


**Aim:** Perform dynamic routing protocol (RIP) and analyze the results.

Step 1: Create a 3 small network with 1 router, 1 switch, and 2 devices.


Connect device to switch and switch to router using copper straight through cable and router to router using Serial DTE cable.




Step 2: Give IP address to all devices of different networks with different network address.  
Also add default gateway in device like PC and Laptops.

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<b>Experiment No: 06</b>	<b>Date:</b> 13-09-2023	<b>Enrolment No:</b> 92210133006

- Network 166.1.0.0



PC0



Laptop0

Physical Config **Desktop** Programming Attributes

**IP Configuration**

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 166.1.0.3

Subnet Mask 255.255.0.0

Default Gateway 166.1.0.1

DNS Server 0.0.0.0

Physical Config **Desktop** Programming Attributes

**IP Configuration**

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static


IPv4 Address 166.1.0.2

Subnet Mask 255.255.0.0


Default Gateway 166.1.0.1

DNS Server 0.0.0.0

- Network 166.2.0.0



PC0(1)



Laptop0(1)

Physical Config **Desktop** Programming Attributes

**IP Configuration**

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 166.2.0.3

Subnet Mask 255.255.0.0

Default Gateway 166.2.0.1

DNS Server 0.0.0.0

Physical Config **Desktop** Programming Attributes

**IP Configuration**

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static


IPv4 Address 166.2.0.2

Subnet Mask 255.255.0.0


Default Gateway 166.2.0.1

DNS Server 0.0.0.0

- Network 166.3.0.0



PC0(1)(1)



Laptop0(1)(1)

Physical Config **Desktop** Programming Attributes

**IP Configuration**

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 166.3.0.3

Subnet Mask 255.255.0.0

Default Gateway 166.3.0.1

DNS Server 0.0.0.0

Physical Config **Desktop** Programming Attributes

**IP Configuration**

Interface FastEthernet0

IP Configuration


☐ DHCP ☒ Static

IPv4 Address 166.3.0.2

Subnet Mask 255.255.0.0

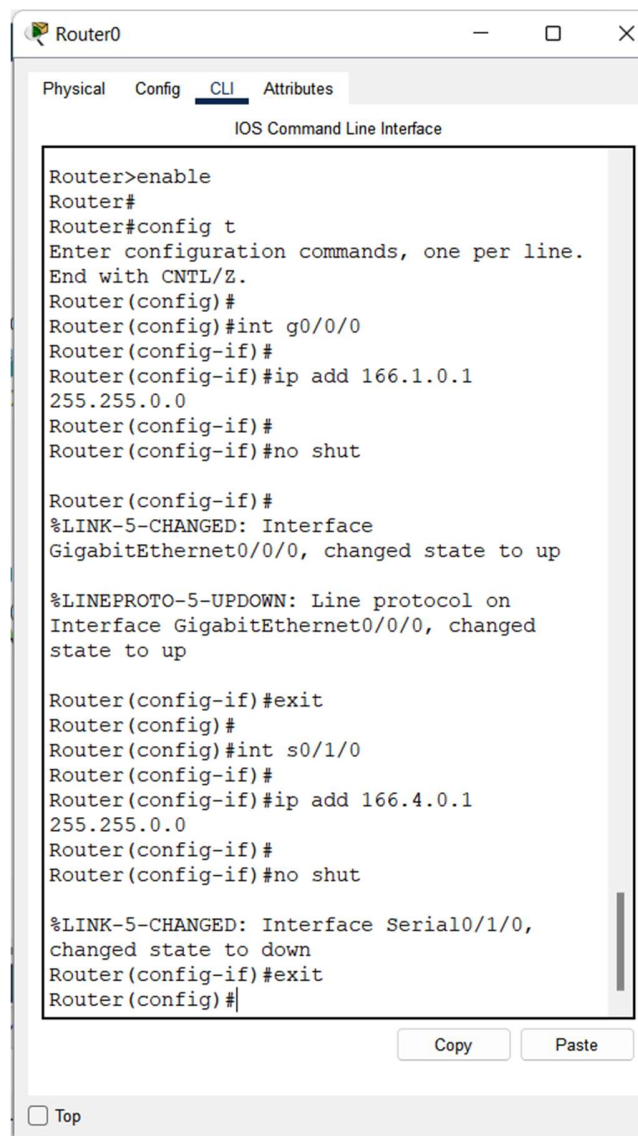
Default Gateway 166.3.0.1

DNS Server 0.0.0.0

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<b>Subject: Computer Networks (01CT0503)</b>	<b>Aim:</b> Perform dynamic routing protocol (RIP) and analyze the results.	
<b>Experiment No: 06</b>	<b>Date:</b> 13-09-2023	<b>Enrolment No:</b> 92210133006

Step 3: Assign Ip addresses to Router.

Commands are "enable", "config t" or "configure terminal", "int interface\_name" or "interface <interface\_name>", "ip add <ipv4\_address> <subnet\_mask>", "no shut", "exit".



```

Router0
Physical Config CLI Attributes
IOS Command Line Interface

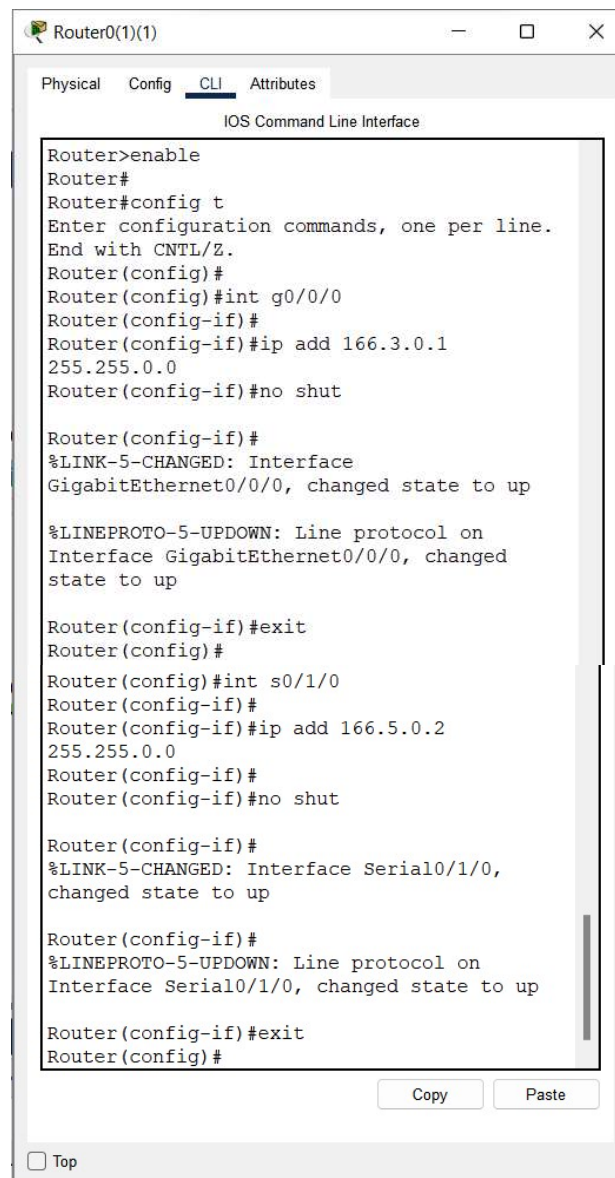
Router>enable
Router#
Router#config t
Enter configuration commands, one per line.
End with CNTL/Z.
Router(config)#
Router(config)#int g0/0/0
Router(config-if)#
Router(config-if)#ip add 166.1.0.1
255.255.0.0
Router(config-if)#
Router(config-if)#no shut

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

%LINEPROTO-5-UPDOWN: Line protocol on
Interface GigabitEthernet0/0/0, changed
state to up

Router(config-if)#exit
Router(config)#
Router(config)#int s0/1/0
Router(config-if)#
Router(config-if)#ip add 166.4.0.1
255.255.0.0
Router(config-if)#
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/1/0,
changed state to down
Router(config-if)#exit
Router(config)#
  
```



```

Router0(1)(1)
Physical Config CLI Attributes
IOS Command Line Interface

Router>enable
Router#
Router#config t
Enter configuration commands, one per line.
End with CNTL/Z.
Router(config)#
Router(config)#int g0/0/0
Router(config-if)#
Router(config-if)#ip add 166.3.0.1
255.255.0.0
Router(config-if)#no shut

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


%LINEPROTO-5-UPDOWN: Line protocol on
Interface GigabitEthernet0/0/0, changed
state to up

Router(config-if)#exit
Router(config)#
Router(config)#int s0/1/0
Router(config-if)#
Router(config-if)#ip add 166.5.0.2
255.255.0.0
Router(config-if)#
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/0,
changed state to up

Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial0/1/0, changed state to up

Router(config-if)#exit
Router(config)#
  
```

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<b>Subject: Computer Networks (01CT0503)</b>	<b>Aim:</b> Perform dynamic routing protocol (RIP) and analyze the results.	
<b>Experiment No: 06</b>	<b>Date:</b> 13-09-2023	<b>Enrolment No:</b> 92210133006

Router0(1)

Physical Config CLI Attributes

IOS Command Line Interface

```

Router>enable
Router#
Router#config t
Enter configuration commands, one per line.
End with CNTL/Z.
Router(config)#
Router(config)#int g0/0/0
Router(config-if)#
Router(config-if)#ip add 166.2.0.1
255.255.0.0
Router(config-if)#
Router(config-if)#no shut

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

%LINEPROTO-5-UPDOWN: Line protocol on
Interface GigabitEthernet0/0/0, changed
state to up

Router(config-if)#exit
Router(config)#
Router(config)#int s0/1/0
Router(config-if)#
Router(config-if)#ip add 166.4.0.2
255.255.0.0
Router(config-if)#

```

```

Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/0,
changed state to up

Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial0/1/0, changed state to up

Router(config-if)#exit
Router(config)#
Router(config)#int s0/1/1
Router(config-if)#
Router(config-if)#ip add 166.5.0.1
255.255.0.0
Router(config-if)#
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/1/1,
changed state to down
Router(config-if)#
Router(config-if)#exit
Router(config)#

```

Copy Paste

☐ Top

**Step 4: Check connection between two network using ping command.**

PC0

Physical Config Desktop Programming Attributes

Command Prompt

```

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 166.2.0.3

Pinging 166.2.0.3 with 32 bytes of data:

Reply from 166.1.0.1: Destination host unreachable.
Reply from 166.1.0.1: Destination host unreachable.
Reply from 166.1.0.1: Destination host unreachable.
Request timed out.

Ping statistics for 166.2.0.3:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 166.3.0.3

Pinging 166.3.0.3 with 32 bytes of data:

Reply from 166.1.0.1: Destination host unreachable.
Reply from 166.1.0.1: Destination host unreachable.
Reply from 166.1.0.1: Destination host unreachable.
Reply from 166.1.0.1: Destination host unreachable.

Ping statistics for 166.3.0.3:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

```

```

C:\>ping 166.1.0.3

Pinging 166.1.0.3 with 32 bytes of data:


Reply from 166.1.0.3: bytes=32 time=3ms TTL=128
Reply from 166.1.0.3: bytes=32 time=7ms TTL=128
Reply from 166.1.0.3: bytes=32 time<1ms TTL=128
Reply from 166.1.0.3: bytes=32 time<1ms TTL=128

Ping statistics for 166.1.0.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 7ms, Average = 2ms

C:\>

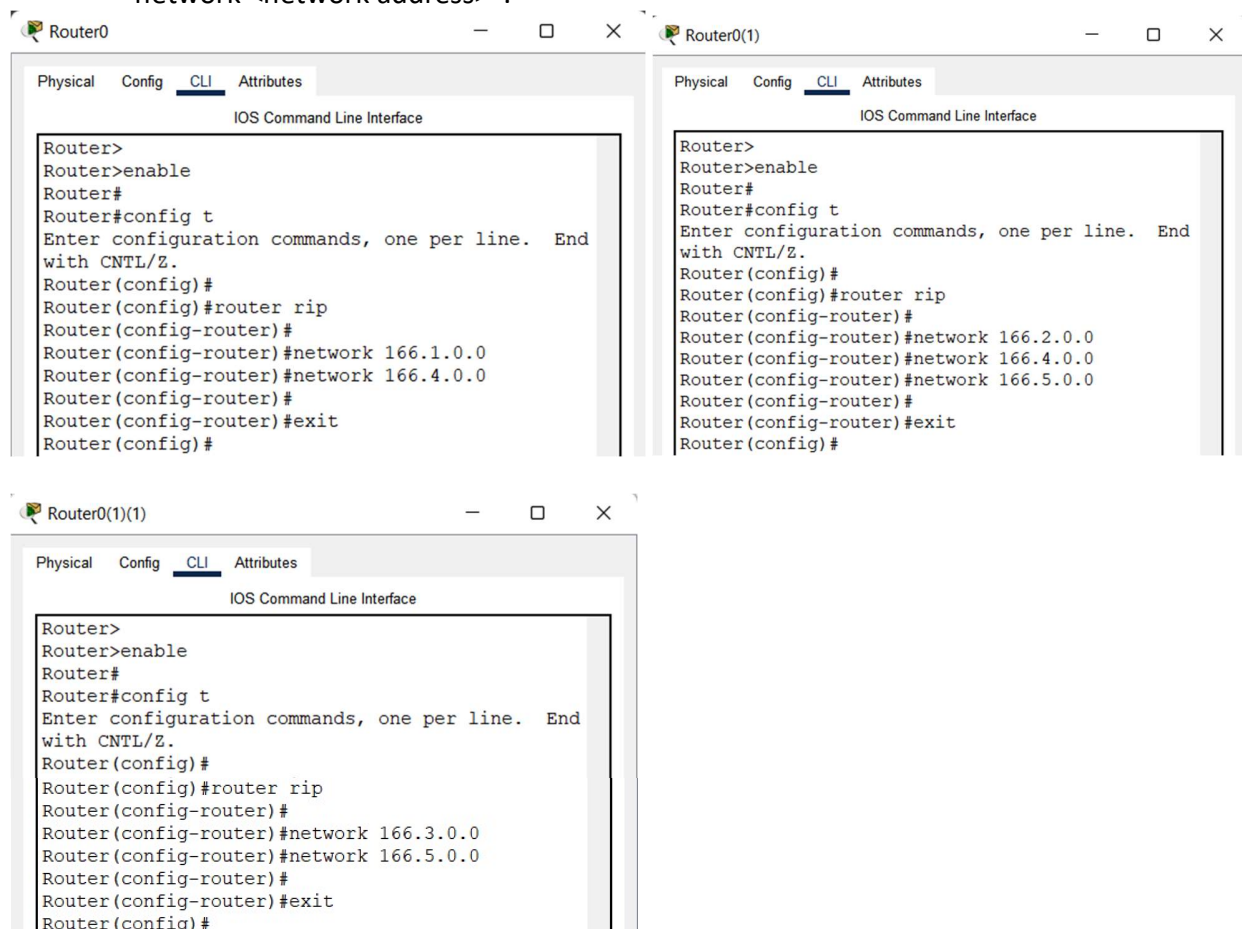
```



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<b>Experiment No: 06</b>	<b>Date:</b> 13-09-2023	<b>Enrolment No:</b> 92210133006

We can see that we only able to communicate with same network for other network destination host is unreachable because it not able to find route.

Step 5: We need to implement routing protocol onto routers so that router can find destination for another network, for that in dynamic routing protocol we have command “router rip” using that we entered in router-rip configuration mode and then we have command “network <network address>”.




```

Router0
Router>enable
Router#
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#router rip
Router(config-router)#
Router(config-router)#network 166.1.0.0
Router(config-router)#network 166.4.0.0
Router(config-router)#
Router(config-router)#exit
Router(config)#

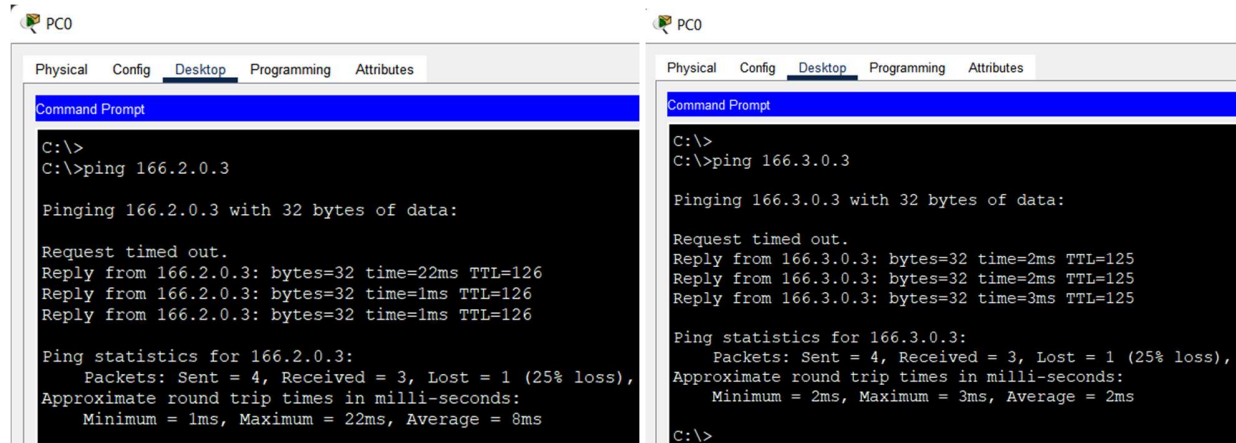
Router0(1)
Router>enable
Router#
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#router rip
Router(config-router)#
Router(config-router)#network 166.2.0.0
Router(config-router)#network 166.4.0.0
Router(config-router)#network 166.5.0.0
Router(config-router)#
Router(config-router)#exit
Router(config)#

Router0(1)(1)
Router>enable
Router#
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#router rip
Router(config-router)#
Router(config-router)#network 166.3.0.0
Router(config-router)#network 166.5.0.0
Router(config-router)#
Router(config-router)#exit
Router(config)#

```

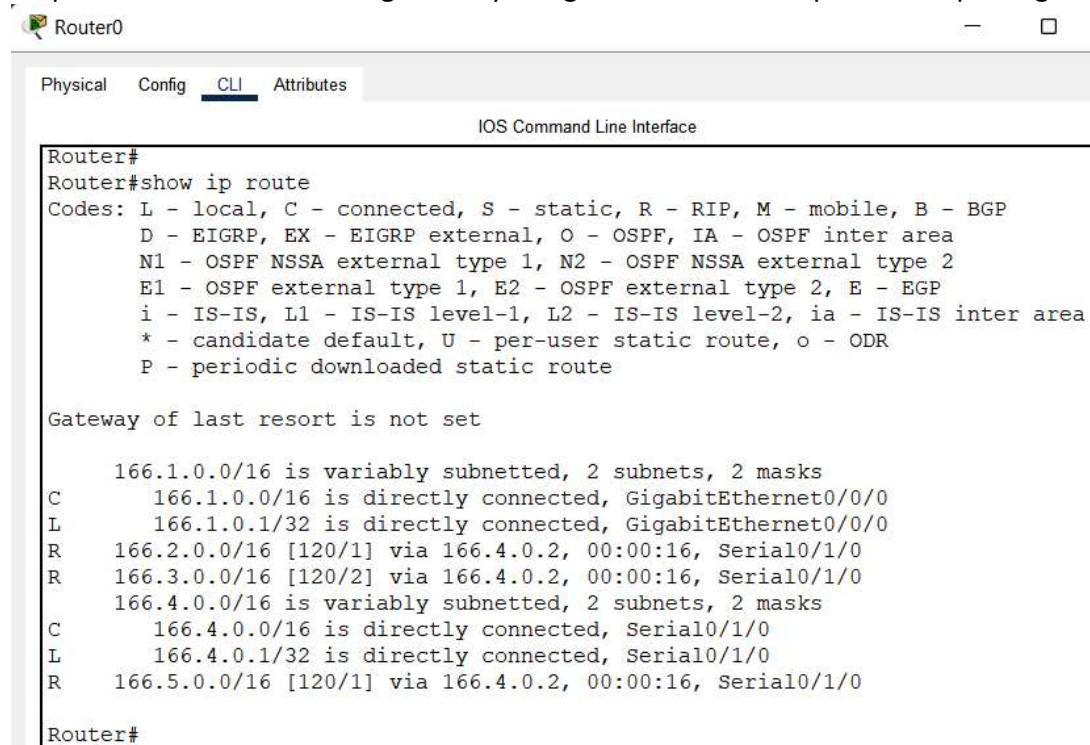
 <b>Marwadi University</b> Marwadi Chandarana Group	<b>Marwadi University</b> <b>Faculty of Engineering and Technology</b> <b>Department of Information and Communication Technology</b>	
<b>Subject: Computer Networks (01CT0503)</b>	<b>Aim:</b> Perform dynamic routing protocol (RIP) and analyze the results.	
<b>Experiment No: 06</b>	<b>Date:</b> 13-09-2023	<b>Enrolment No:</b> 92210133006


Step 6: Now again check that connection between two networks is established or not using ping command.



Now we can see that after giving route we able to communicate between different networks.

Step 7: We can check routing table by using command "show ip route" in privilege mode.



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<b>Experiment No: 06</b>	<b>Date:</b> 13-09-2023	<b>Enrolment No:</b> 92210133006

```

Router0(1)
Physical Config CLI Attributes
IOS Command Line Interface

Router#
Router#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

R    166.1.0.0/16 [120/1] via 166.4.0.1, 00:00:27, Serial0/1/0
    166.2.0.0/16 is variably subnetted, 2 subnets, 2 masks
      C    166.2.0.0/16 is directly connected, GigabitEthernet0/0/0
      L    166.2.0.1/32 is directly connected, GigabitEthernet0/0/0
R    166.3.0.0/16 [120/1] via 166.5.0.2, 00:00:14, Serial0/1/1
    166.4.0.0/16 is variably subnetted, 2 subnets, 2 masks
      C    166.4.0.0/16 is directly connected, Serial0/1/0
      L    166.4.0.2/32 is directly connected, Serial0/1/0
    166.5.0.0/16 is variably subnetted, 2 subnets, 2 masks
      C    166.5.0.0/16 is directly connected, Serial0/1/1
      L    166.5.0.1/32 is directly connected, Serial0/1/1

Router#

```

```

Router0(1)(1)
Physical Config CLI Attributes
IOS Command Line Interface


Router#
Router#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

R    166.1.0.0/16 [120/2] via 166.5.0.1, 00:00:06, Serial0/1/0
R    166.2.0.0/16 [120/1] via 166.5.0.1, 00:00:06, Serial0/1/0
    166.3.0.0/16 is variably subnetted, 2 subnets, 2 masks
      C    166.3.0.0/16 is directly connected, GigabitEthernet0/0/0
      L    166.3.0.1/32 is directly connected, GigabitEthernet0/0/0
R    166.4.0.0/16 [120/1] via 166.5.0.1, 00:00:06, Serial0/1/0
    166.5.0.0/16 is variably subnetted, 2 subnets, 2 masks
      C    166.5.0.0/16 is directly connected, Serial0/1/0
      L    166.5.0.2/32 is directly connected, Serial0/1/0

Router#

```

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### **Conclusion:**

Through this experiment, I learned the importance of routing protocols in facilitating communication between different networks, specifically the Routing Information Protocol (RIP). By examining the output of the "show ip route" command, I analyzed the routing table and identified that:

"R" (RIP) indicates routes learned through the RIP routing protocol.

The routing table displays various network entries, denoting the destination networks and their associated next-hop routers.

"C" (Connected) signifies that the router is directly connected to the mentioned networks and IP addresses (e.g., 166.1.0.0/16, 166.2.0.0/16, 166.3.0.0/16, etc.).

"L" (Local) implies that the router is directly connected to specific IP addresses within those networks (e.g., 166.1.0.1/32, 166.2.0.1/32, 166.3.0.1/32, etc.).

"S" (Static) routes may still exist alongside RIP-learned routes, indicating manually configured routes (e.g., 166.4.0.0/16, 166.5.0.0/16).