EAST WEST UNIVERSITY

Department of CSE

Lab Assignment-

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Implementation of Static and Dynamic Routing using Cisco Packet Tracer

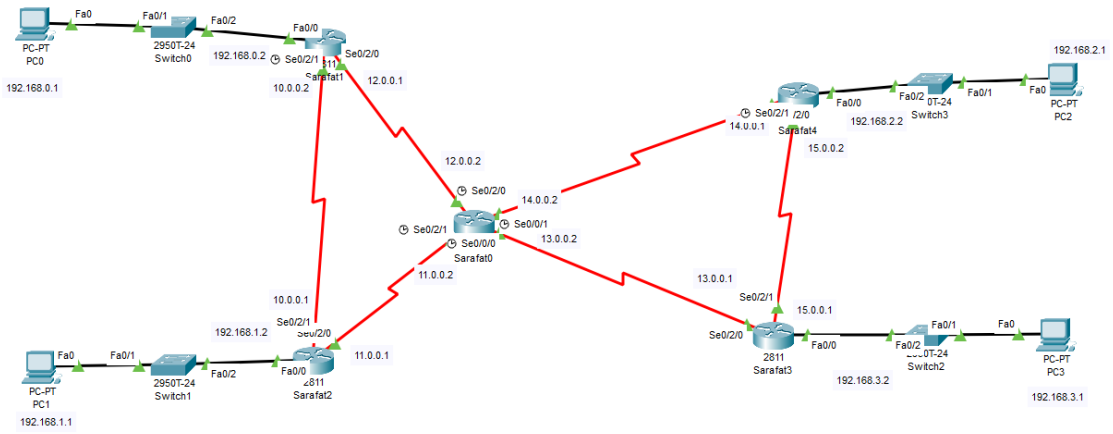
1. Introduction:

The purpose of this assignment is to understand and implement static and dynamic routing in a computer network using Cisco Packet Tracer. We designed a network topology with 5 routers, 4 switches, and 4 PCs. First, we implemented static routing to manually configure the routing tables. Then, we replaced it with RIP (Routing Information Protocol) to automate the routing process. This assignment helped us learn how different routing techniques function in a real-world-like environment.

2. Topology Overview:

We designed a network topology with the following components:

- 5 Routers (renamed: Sarafat0, Sarafat1, Sarafat2, Sarafat3, Sarafat4)
- 4 Switches
- 4 PCs (PC0, PC1, PC2, PC3)



3. IP Addressing Table:

Device	Interface	IP Address	Subnet Mask	Remarks
PC0	Fa0	192.168.0.1	255.255.255.0	Connected to Switch0
PC1	Fa0	192.168.1.1	255.255.255.0	Connected to Switch1
PC2	Fa0	192.168.2.1	255.255.255.0	Connected to Switch3
PC3	Fa0	192.168.3.1	255.255.255.0	Connected to Switch2
Sarafat0	Se0/0/0	13.0.0.2	255.0.0.0	Connected to Sarafat3
Sarafat0	Se0/0/1	14.0.0.2	255.0.0.0	Connected to Sarafat4
Sarafat0	Se0/2/0	12.0.0.2	255.0.0.0	Connected to Sarafat1
Sarafat0	Se0/2/1	11.0.0.2	255.0.0.0	Connected to Sarafat2
Sarafat1	Se0/2/1	10.0.0.2	255.0.0.0	Connected to Switch0
Sarafat1	Se0/2/0	12.0.0.1	255.0.0.0	Connected to Sarafat0
Sarafat1	Fa0/0	192.168.0.2	255.255.255.0	Connected to Switch0
Sarafat2	Fa0/0	192.168.1.2	255.255.255.0	Connected to Switch1
Sarafat2	Se0/2/1	10.0.0.1	255.0.0.0	Connected to Sarafat1
Sarafat2	Se0/2/0	11.0.0.1	255.0.0.0	Connected to Sarafat0
Sarafat3	Fa0/0	192.168.3.2	255.255.255.0	Connected to Switch2
Sarafat3	Se0/2/0	13.0.0.1	255.0.0.0	Connected to Sarafat0
Sarafat3	Se0/2/1	15.0.0.1	255.0.0.0	Connected to Sarafat4
Sarafat4	Se0/2/0	14.0.0.1	255.0.0.0	Connected to Sarafat0
Sarafat4	Fa0/0	192.168.2.2	255.255.255.0	Connected to Switch3
Sarafat4	Se0/2/1	15.0.0.2	255.0.0.0	Connected to Sarafat3

4. Static Routing Configuration:

Sarafat0:

```
Router(config-if)#exit
Router(config)#
Router(config)#ip route 192.168.0.0 255.255.255.0 10.0.0.2
Router(config)#ip route 192.168.0.0 255.255.255.0 12.0.0.1
Router(config)#ip route 192.168.1.0 255.255.255.0 11.0.0.1
Router(config)#ip route 192.168.1.0 255.255.255.0 10.0.0.1
Router(config)#ip route 192.168.2.0 255.255.255.0 14.0.0.1
Router(config)#ip route 192.168.2.0 255.255.255.0 15.0.0.2
Router(config)#ip route 192.168.3.0 255.255.255.0 15.0.0.1
Router(config)#ip route 192.168.3.0 255.255.255.0 13.0.0.1
Router(config)#ip route 10.0.0.0 255.0.0.0 12.0.0.1
Router(config)#ip route 10.0.0.0 255.0.0.0 11.0.0.1
Router(config)#ip route 15.0.0.0 255.0.0.0 14.0.0.1
Router(config)#ip route 15.0.0.0 255.0.0.0 13.0.0.1
Router(config)#
```

```
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

S    10.0.0.0/8 [1/0] via 12.0.0.1
                [1/0] via 11.0.0.1
     11.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       11.0.0.0/8 is directly connected, Serial0/2/1
L       11.0.0.2/32 is directly connected, Serial0/2/1
     12.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       12.0.0.0/8 is directly connected, Serial0/2/0
L       12.0.0.2/32 is directly connected, Serial0/2/0
     13.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       13.0.0.0/8 is directly connected, Serial0/0/0
L       13.0.0.2/32 is directly connected, Serial0/0/0
     14.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       14.0.0.0/8 is directly connected, Serial0/0/1
L       14.0.0.2/32 is directly connected, Serial0/0/1
S    15.0.0.0/8 [1/0] via 13.0.0.1
                [1/0] via 14.0.0.1
S    192.168.0.0/24 [1/0] via 12.0.0.1
                    [1/0] via 10.0.0.2
S    192.168.1.0/24 [1/0] via 10.0.0.1
                    [1/0] via 11.0.0.1
S    192.168.2.0/24 [1/0] via 15.0.0.2
                    [1/0] via 14.0.0.1
S    192.168.3.0/24 [1/0] via 13.0.0.1
                    [1/0] via 15.0.0.1

Router>
```

Sarafat1:

```
Router(config-if)#exit
Router(config)#
Router(config)#ip route 192.168.1.0 255.255.255.0 10.0.0.1
Router(config)#ip route 192.168.1.0 255.255.255.0 11.0.0.1
Router(config)#ip route 192.168.2.0 255.255.255.0 14.0.0.1
Router(config)#ip route 192.168.2.0 255.255.255.0 15.0.0.2
Router(config)#ip route 192.168.3.0 255.255.255.0 15.0.0.1
Router(config)#ip route 192.168.3.0 255.255.255.0 13.0.0.1
Router(config)#ip route 11.0.0.0 255.0.0.0 12.0.0.2
Router(config)#ip route 11.0.0.0 255.0.0.0 10.0.0.1
Router(config)#ip route 14.0.0.0 255.0.0.0 12.0.0.2
Router(config)#ip route 14.0.0.0 255.0.0.0 11.0.0.2
Router(config)#ip route 15.0.0.0 255.0.0.0 14.0.0.1
Router(config)#ip route 15.0.0.0 255.0.0.0 13.0.0.1
Router(config)#
```

```
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

     10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       10.0.0.0/8 is directly connected, Serial0/2/1
L       10.0.0.2/32 is directly connected, Serial0/2/1
S    11.0.0.0/8 [1/0] via 12.0.0.2
                [1/0] via 10.0.0.1
     12.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       12.0.0.0/8 is directly connected, Serial0/2/0
L       12.0.0.1/32 is directly connected, Serial0/2/0
S    14.0.0.0/8 [1/0] via 12.0.0.2
                [1/0] via 11.0.0.2
S    15.0.0.0/8 [1/0] via 14.0.0.1
     192.168.0.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.0.0/24 is directly connected, FastEthernet0/0
L       192.168.0.2/32 is directly connected, FastEthernet0/0
S    192.168.1.0/24 [1/0] via 11.0.0.1
                    [1/0] via 10.0.0.1
S    192.168.2.0/24 [1/0] via 14.0.0.1
                    [1/0] via 15.0.0.2
S    192.168.3.0/24 [1/0] via 15.0.0.1

Router>
```

Sarafat2:

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface Serial0/2/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/2/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#
Router(config)#ip route 192.168.0.0 255.255.255.0 10.0.0.2
Router(config)#ip route 192.168.0.0 255.255.255.0 12.0.0.1
Router(config)#ip route 192.168.2.0 255.255.255.0 14.0.0.1
Router(config)#ip route 192.168.2.0 255.255.255.0 15.0.0.2
Router(config)#ip route 192.168.3.0 255.255.255.0 13.0.0.1
Router(config)#ip route 12.0.0.0 255.0.0.0 10.0.0.2
Router(config)#ip route 12.0.0.0 255.0.0.0 11.0.0.2
Router(config)#ip route 14.0.0.0 255.0.0.0 11.0.0.2
Router(config)#ip route 14.0.0.0 255.0.0.0 12.0.0.2
Router(config)#ip route 13.0.0.0 255.0.0.0 12.0.0.2
Router(config)#ip route 13.0.0.0 255.0.0.0 11.0.0.2
Router(config)#ip route 15.0.0.0 255.0.0.0 13.0.0.1
Router(config)#ip route 15.0.0.0 255.0.0.0 14.0.0.1
Router(config)#
```

```
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

     10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       10.0.0.0/8 is directly connected, Serial0/2/1
L       10.0.0.1/32 is directly connected, Serial0/2/1
     11.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       11.0.0.0/8 is directly connected, Serial0/2/0
L       11.0.0.1/32 is directly connected, Serial0/2/0
S    12.0.0.0/8 [1/0] via 11.0.0.2
                [1/0] via 10.0.0.2
S    13.0.0.0/8 [1/0] via 12.0.0.2
                [1/0] via 11.0.0.2
S    14.0.0.0/8 [1/0] via 11.0.0.2
                [1/0] via 12.0.0.2
S    15.0.0.0/8 [1/0] via 13.0.0.1
                [1/0] via 14.0.0.1
S    192.168.0.0/24 [1/0] via 12.0.0.1
                    [1/0] via 10.0.0.2
     192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.1.0/24 is directly connected, FastEthernet0/0
L       192.168.1.2/32 is directly connected, FastEthernet0/0
S    192.168.2.0/24 [1/0] via 14.0.0.1
                    [1/0] via 15.0.0.2
S    192.168.3.0/24 [1/0] via 13.0.0.1

Router>
Router>
```

Sarafat3:

```
Router(config-if)#exit
Router(config)#interface Serial0/2/0
Router(config-if)#ip address 13.0.0.1 255.0.0.0
Router(config-if)#ip address 13.0.0.1 255.0.0.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/2/1
Router(config-if)#ip address 15.0.0.1 255.0.0.0
Router(config-if)#ip address 15.0.0.1 255.0.0.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/2/1
Router(config-if)#
Router(config-if)#exit
Router(config)#
Router(config)#ip route 192.168.0.0 255.255.255.0 10.0.0.2
Router(config)#ip route 192.168.0.0 255.255.255.0 12.0.0.1
Router(config)#ip route 192.168.1.0 255.255.255.0 11.0.0.1
Router(config)#ip route 192.168.1.0 255.255.255.0 10.0.0.1
Router(config)#ip route 192.168.2.0 255.255.255.0 14.0.0.1
Router(config)#ip route 192.168.2.0 255.255.255.0 15.0.0.2
Router(config)#ip route 10.0.0.0 255.0.0.0 12.0.0.1
Router(config)#ip route 10.0.0.0 255.0.0.0 11.0.0.1
Router(config)#ip route 12.0.0.0 255.0.0.0 13.0.0.2
Router(config)#ip route 12.0.0.0 255.0.0.0 14.0.0.2
Router(config)#ip route 11.0.0.0 255.0.0.0 13.0.0.2
Router(config)#ip route 11.0.0.0 255.0.0.0 14.0.0.2
Router(config)#ip route 14.0.0.0 255.0.0.0 13.0.0.2
Router(config)#ip route 14.0.0.0 255.0.0.0 15.0.0.2
Router(config)#
```

```
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

S    10.0.0.0/8 [1/0] via 12.0.0.1
                [1/0] via 11.0.0.1
S    11.0.0.0/8 [1/0] via 13.0.0.2
                [1/0] via 14.0.0.2
S    12.0.0.0/8 [1/0] via 13.0.0.2
                [1/0] via 14.0.0.2
     13.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       13.0.0.0/8 is directly connected, Serial0/2/0
L       13.0.0.1/32 is directly connected, Serial0/2/0
S    14.0.0.0/8 [1/0] via 13.0.0.2
                [1/0] via 15.0.0.2
     15.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       15.0.0.0/8 is directly connected, Serial0/2/1
L       15.0.0.1/32 is directly connected, Serial0/2/1
S    192.168.0.0/24 [1/0] via 12.0.0.1
                    [1/0] via 10.0.0.2
S    192.168.1.0/24 [1/0] via 11.0.0.1
                    [1/0] via 10.0.0.1
S    192.168.2.0/24 [1/0] via 14.0.0.1
                    [1/0] via 15.0.0.2
     192.168.3.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.3.0/24 is directly connected, FastEthernet0/0
L       192.168.3.2/32 is directly connected, FastEthernet0/0

Router>
```

Sarafat4:

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#
Router(config)#ip route 192.168.0.0 255.255.255.0 12.0.0.1
Router(config)#ip route 192.168.0.0 255.255.255.0 10.0.0.2
Router(config)#ip route 192.168.1.0 255.255.255.0 11.0.0.1
Router(config)#ip route 192.168.1.0 255.255.255.0 10.0.0.1
Router(config)#ip route 192.168.2.0 255.255.255.0 14.0.0.1
%Invalid next hop address (it's this router)
Router(config)#ip route 192.168.2.0 255.255.255.0 15.0.0.2
%Invalid next hop address (it's this router)
Router(config)#ip route 192.168.3.0 255.255.255.0 15.0.0.1
Router(config)#ip route 192.168.3.0 255.255.255.0 13.0.0.1
Router(config)#ip route 13.0.0.0 255.0.0.0 15.0.0.1
Router(config)#ip route 13.0.0.0 255.0.0.0 14.0.0.2
Router(config)#ip route 12.0.0.0 255.0.0.0 14.0.0.2
Router(config)#ip route 12.0.0.0 255.0.0.0 13.0.0.2
Router(config)#ip route 11.0.0.0 255.0.0.0 13.0.0.2
Router(config)#ip route 11.0.0.0 255.0.0.0 14.0.0.2
Router(config)#ip route 10.0.0.0 255.0.0.0 12.0.0.1
Router(config)#ip route 10.0.0.0 255.0.0.0 11.0.0.1
Router(config)#
```

```
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

S    10.0.0.0/8 [1/0] via 12.0.0.1
                [1/0] via 11.0.0.1
S    11.0.0.0/8 [1/0] via 13.0.0.2
                [1/0] via 14.0.0.2
S    12.0.0.0/8 [1/0] via 13.0.0.2
                [1/0] via 14.0.0.2
S    13.0.0.0/8 [1/0] via 15.0.0.1
                [1/0] via 14.0.0.2
     14.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       14.0.0.0/8 is directly connected, Serial0/2/1
L       14.0.0.1/32 is directly connected, Serial0/2/1
     15.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       15.0.0.0/8 is directly connected, Serial0/2/0
L       15.0.0.2/32 is directly connected, Serial0/2/0
S    192.168.0.0/24 [1/0] via 12.0.0.1
                    [1/0] via 10.0.0.2
S    192.168.1.0/24 [1/0] via 11.0.0.1
                    [1/0] via 10.0.0.1
     192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.2.0/24 is directly connected, FastEthernet0/0
L       192.168.2.2/32 is directly connected, FastEthernet0/0
S    192.168.3.0/24 [1/0] via 15.0.0.1
                    [1/0] via 13.0.0.1

Router>
```

5. Dynamic Routing Configuration (RIP):

Sarafat0:

```
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#network 192.168.0.0
Router(config-router)#network 192.168.1.0
Router(config-router)#network 192.168.2.0
Router(config-router)#network 192.168.3.0
Router(config-router)#network 192.168.4.0
Router(config-router)#no network 192.168.4.0
Router(config-router)#network 10.0.0.0
Router(config-router)#network 11.0.0.0
Router(config-router)#network 12.0.0.0
Router(config-router)#network 13.0.0.0
Router(config-router)#network 14.0.0.0
Router(config-router)#network 15.0.0.0
```

```
Router>show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 5 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 1, receive any version
  Interface              Send  Recv  Triggered RIP  Key-chain
  Serial0/0/1            12 1
  Serial0/2/0            12 1
  Serial0/0/0            12 1
  Serial0/2/1            12 1
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
            10.0.0.0
            11.0.0.0
            12.0.0.0
            13.0.0.0
            14.0.0.0
            15.0.0.0
            192.168.0.0
            192.168.1.0
            192.168.2.0
            192.168.3.0
Passive Interface(s):
Routing Information Sources:
            Gateway         Distance      Last Update
            11.0.0.1             120      00:00:24
            12.0.0.1             120      00:00:20
            14.0.0.1             120      00:00:22
            13.0.0.1             120      00:00:21
Distance: (default is 120)
Router>
```

Sarafat1:

```
Router(config)#router rip
Router(config-router)#network 192.168.1.0
Router(config-router)#network 192.168.2.0
Router(config-router)#network 192.168.3.0
Router(config-router)#network 10.0.0.0
Router(config-router)#network 11.0.0.0
Router(config-router)#network 12.0.0.0
Router(config-router)#network 13.0.0.0
Router(config-router)#network 14.0.0.0
Router(config-router)#network 15.0.0.0
Router(config-router)#network 192.168.0.0
Router(config-router)#
```

```
Router>show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 4 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 1, receive any version
  Interface              Send  Recv  Triggered RIP  Key-chain
  FastEthernet0/0        12 1
  Serial0/2/0            12 1
  Serial0/2/1            12 1
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
            10.0.0.0
            11.0.0.0
            12.0.0.0
            13.0.0.0
            14.0.0.0
            15.0.0.0
            192.168.0.0
            192.168.1.0
            192.168.2.0
            192.168.3.0
Passive Interface(s):
Routing Information Sources:
            Gateway         Distance      Last Update
            12.0.0.2             120      00:00:16
            10.0.0.1             120      00:00:15
Distance: (default is 120)
Router>
```

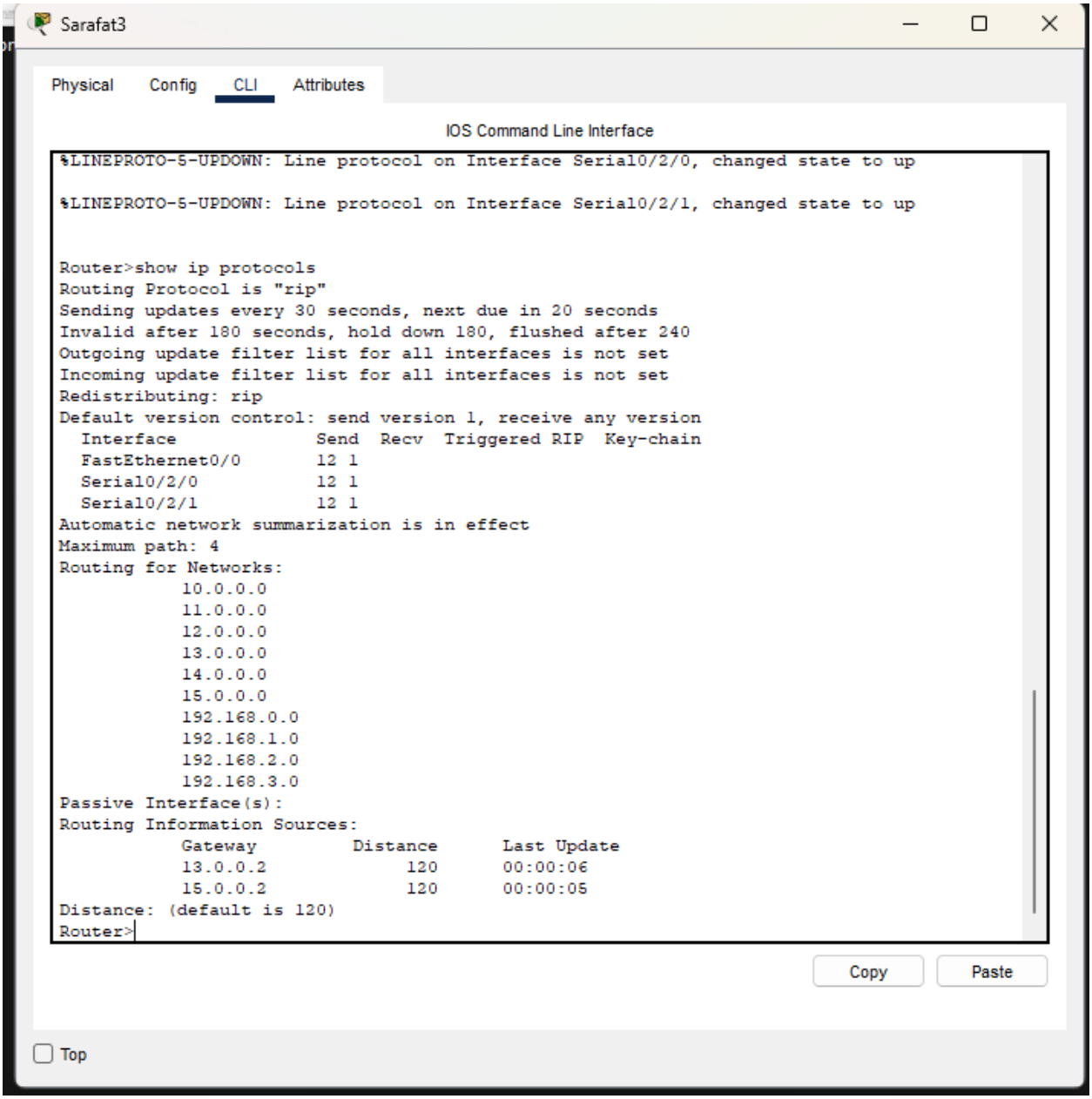
Sarafat2:

```
Router(config)#router rip
Router(config-router)#no network 192.168.1.0
Router(config-router)#network 192.168.1.0
Router(config-router)#network 192.168.0.0
Router(config-router)#network 192.168.2.0
Router(config-router)#network 192.168.3.0
Router(config-router)#network 10.0.0.0
Router(config-router)#network 11.0.0.0
Router(config-router)#network 12.0.0.0
Router(config-router)#network 13.0.0.0
Router(config-router)#network 14.0.0.0
Router(config-router)#network 15.0.0.0
Router(config-router)#
```

```
Router>show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 28 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 1, receive any version
  Interface              Send  Recv  Triggered RIP  Key-chain
  FastEthernet0/0        12 1
  Serial0/2/1            12 1
  Serial0/2/0            12 1
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
            10.0.0.0
            11.0.0.0
            12.0.0.0
            13.0.0.0
            14.0.0.0
            15.0.0.0
            192.168.0.0
            192.168.1.0
            192.168.2.0
            192.168.3.0
Passive Interface(s):
Routing Information Sources:
            Gateway         Distance      Last Update
            11.0.0.2              120      00:00:26
            10.0.0.2              120      00:00:25
Distance: (default is 120)
Router>
```

Sarafat3:

```
Router(config)#router rip
Router(config-router)#networkr 192.168.0.0
                     ^
% Invalid input detected at '^' marker.

Router(config-router)#network 192.168.0.0
Router(config-router)#network 192.168.1.0
Router(config-router)#network 192.168.2.0
Router(config-router)#network 192.168.3.0
Router(config-router)#network 10.0.0.0
Router(config-router)#network 11.0.0.0
Router(config-router)#network 12.0.0.0
Router(config-router)#network 13.0.0.0
Router(config-router)#network 14.0.0.0
Router(config-router)#network 15.0.0.0
Router(config-router)#
```



Sarafat4:

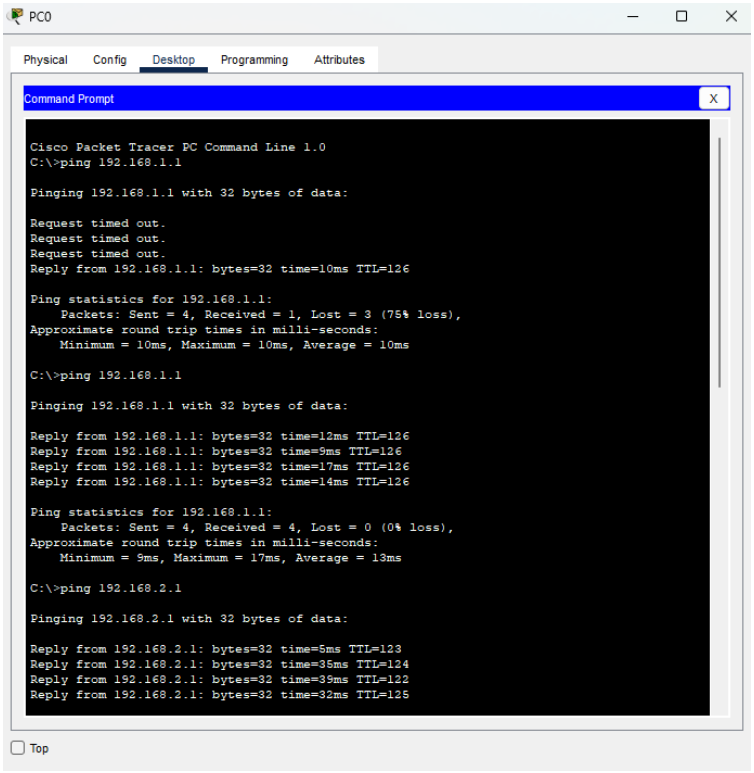
```
Router>enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#rip router
               ^
% Invalid input detected at '^' marker.

Router(config)#router rip
Router(config-router)#network 192.168.0.0
Router(config-router)#network 192.168.1.0
Router(config-router)#network 192.168.2.0
Router(config-router)#network 192.168.3.0
Router(config-router)#network 10.0.0.0
Router(config-router)#network 11.0.0.0
Router(config-router)#network 12.0.0.0
Router(config-router)#network 13.0.0.0
Router(config-router)#network 14.0.0.0
Router(config-router)#network 15.0.0.0
Router(config-router)#
```

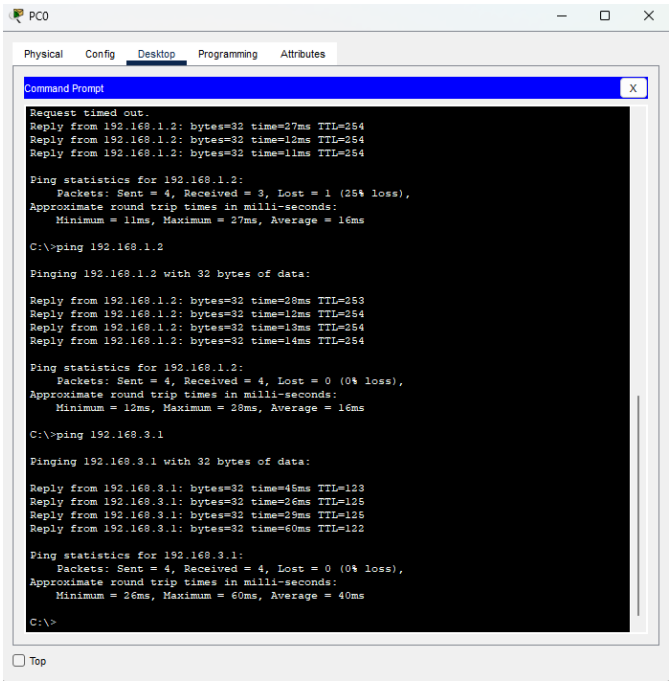
```
Router>show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 9 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 1, receive any version
  Interface              Send  Recv  Triggered RIP  Key-chain
  FastEthernet0/0        12 1
  Serial0/2/1            12 1
  Serial0/2/0            12 1
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
            10.0.0.0
            11.0.0.0
            12.0.0.0
            13.0.0.0
            14.0.0.0
            15.0.0.0
            192.168.0.0
            192.168.1.0
            192.168.2.0
            192.168.3.0
Passive Interface(s):
Routing Information Sources:
            Gateway         Distance      Last Update
            14.0.0.2              120      00:00:22
            15.0.0.1              120      00:00:20
Distance: (default is 120)
Router>
```

6. Result & Output:

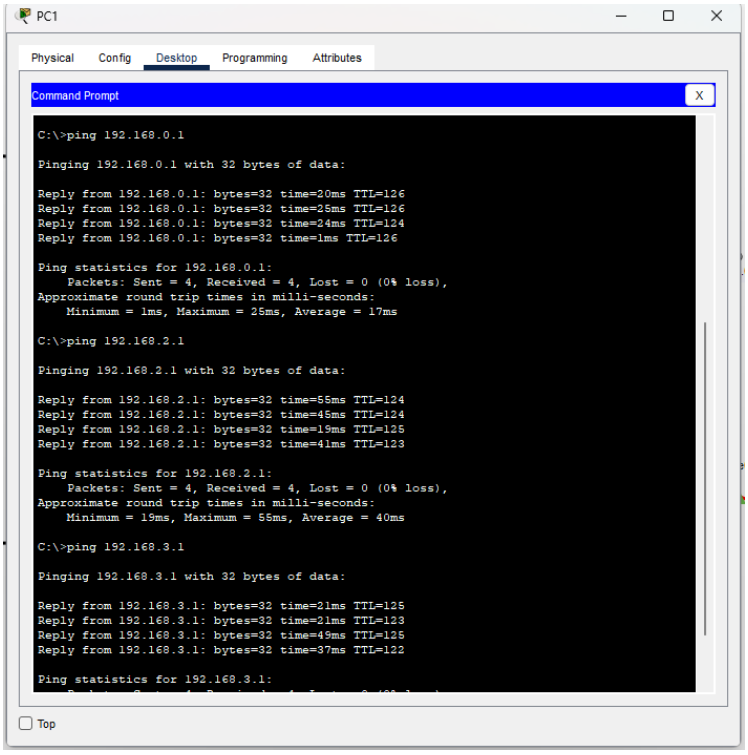
Static Routing Ping:

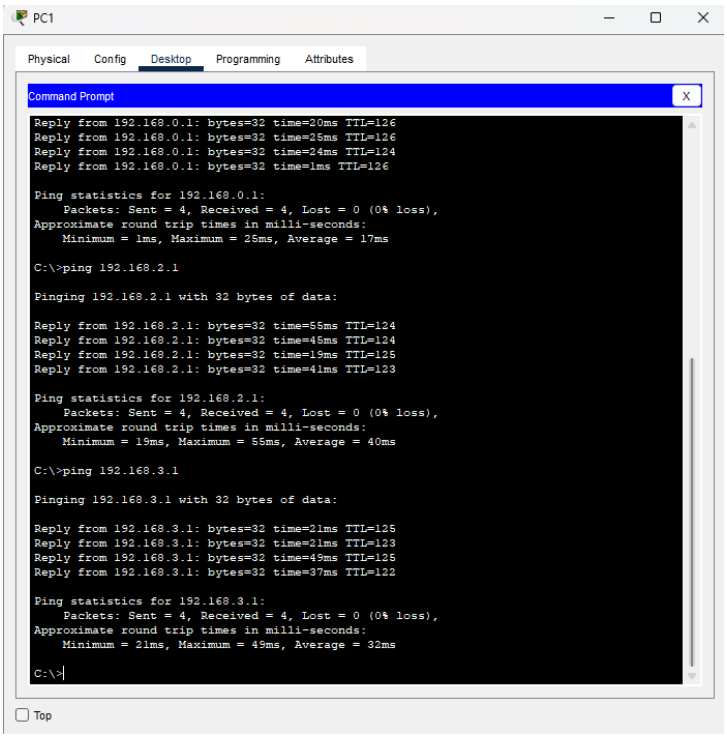
PC0:



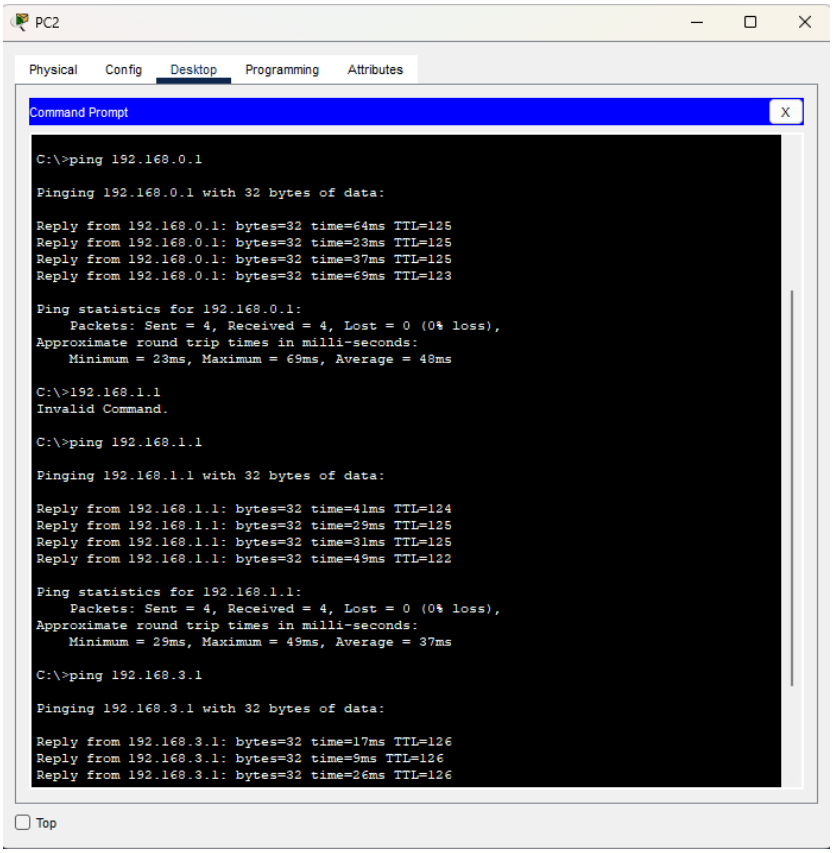


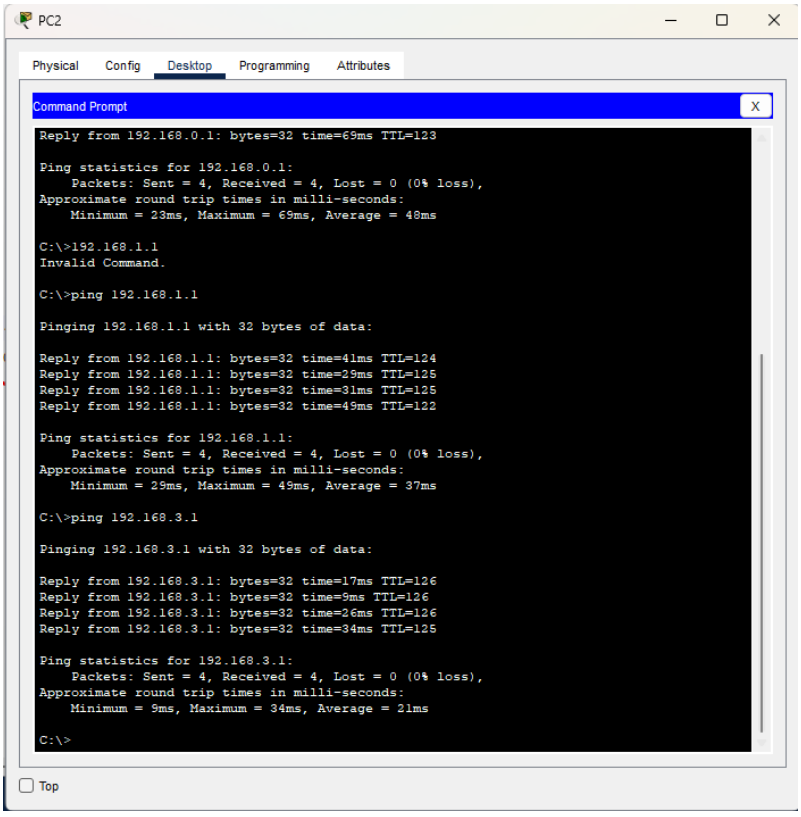
PC1:


PC1
Physical
Config
Desktop
Programming
Attributes
Command Prompt
C:\>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Reply from 192.168.0.1: bytes=32 time=20ms TTL=126
Reply from 192.168.0.1: bytes=32 time=25ms TTL=126
Reply from 192.168.0.1: bytes=32 time=24ms TTL=124
Reply from 192.168.0.1: bytes=32 time=1ms TTL=126
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 25ms, Average = 17ms
C:\>ping 192.168.2.1
Pinging 192.168.2.1 with 32 bytes of data:
Reply from 192.168.2.1: bytes=32 time=55ms TTL=124
Reply from 192.168.2.1: bytes=32 time=45ms TTL=124
Reply from 192.168.2.1: bytes=32 time=19ms TTL=125
Reply from 192.168.2.1: bytes=32 time=41ms TTL=123
Ping statistics for 192.168.2.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 19ms, Maximum = 55ms, Average = 40ms
C:\>ping 192.168.3.1
Pinging 192.168.3.1 with 32 bytes of data:
Reply from 192.168.3.1: bytes=32 time=21ms TTL=125
Reply from 192.168.3.1: bytes=32 time=21ms TTL=123
Reply from 192.168.3.1: bytes=32 time=49ms TTL=125
Reply from 192.168.3.1: bytes=32 time=37ms TTL=122
Ping statistics for 192.168.3.1:
Top

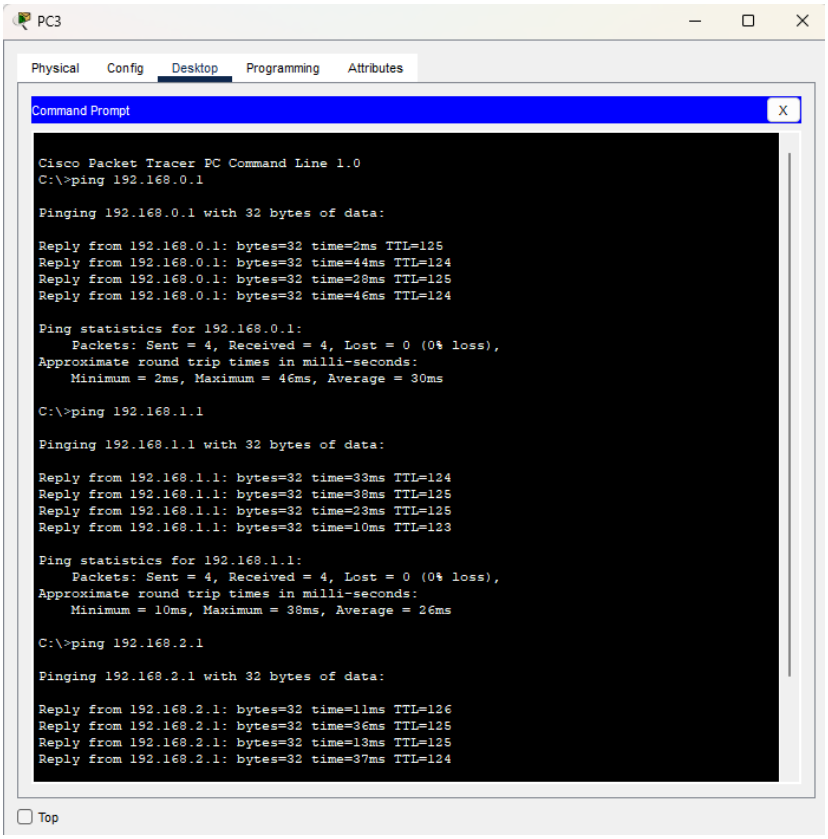

PC1
Physical
Config
Desktop
Programming
Attributes
Command Prompt
Reply from 192.168.0.1: bytes=32 time=20ms TTL=126
Reply from 192.168.0.1: bytes=32 time=25ms TTL=126
Reply from 192.168.0.1: bytes=32 time=24ms TTL=124
Reply from 192.168.0.1: bytes=32 time=1ms TTL=126
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 25ms, Average = 17ms
C:\>ping 192.168.2.1
Pinging 192.168.2.1 with 32 bytes of data:
Reply from 192.168.2.1: bytes=32 time=55ms TTL=124
Reply from 192.168.2.1: bytes=32 time=45ms TTL=124
Reply from 192.168.2.1: bytes=32 time=19ms TTL=125
Reply from 192.168.2.1: bytes=32 time=41ms TTL=123
Ping statistics for 192.168.2.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 19ms, Maximum = 55ms, Average = 40ms
C:\>ping 192.168.3.1
Pinging 192.168.3.1 with 32 bytes of data:
Reply from 192.168.3.1: bytes=32 time=21ms TTL=125
Reply from 192.168.3.1: bytes=32 time=21ms TTL=123
Reply from 192.168.3.1: bytes=32 time=49ms TTL=125
Reply from 192.168.3.1: bytes=32 time=37ms TTL=122
Ping statistics for 192.168.3.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 21ms, Maximum = 49ms, Average = 32ms
C:\>
Top

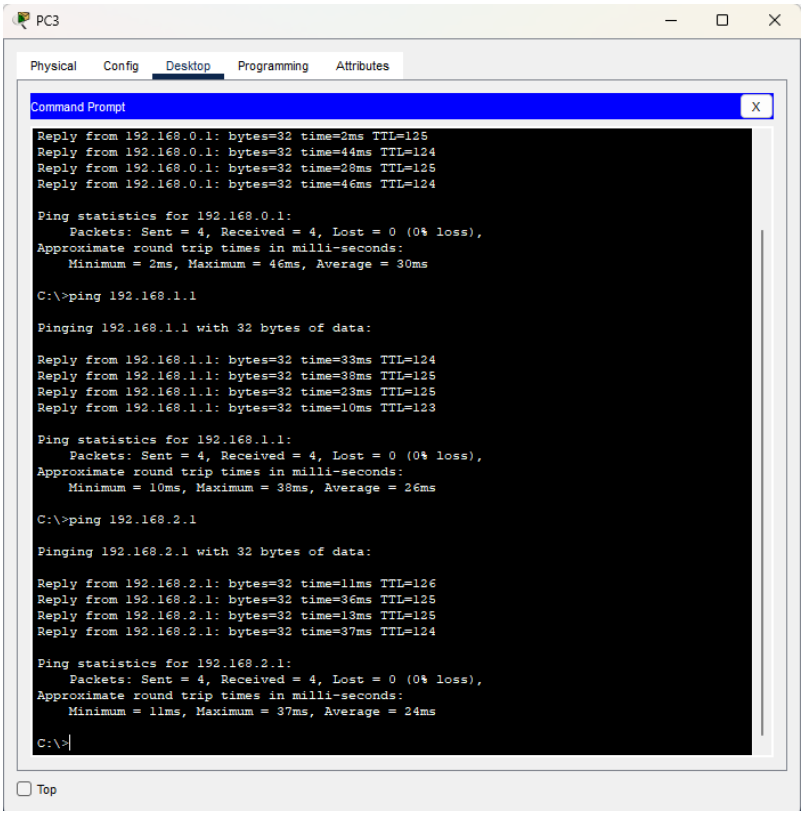
PC2:


PC2
Physical
Config
Desktop
Programming
Attributes
Command Prompt
C:\>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Reply from 192.168.0.1: bytes=32 time=64ms TTL=125
Reply from 192.168.0.1: bytes=32 time=23ms TTL=125
Reply from 192.168.0.1: bytes=32 time=37ms TTL=125
Reply from 192.168.0.1: bytes=32 time=69ms TTL=123
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 23ms, Maximum = 69ms, Average = 48ms
C:\>192.168.1.1
Invalid Command.
C:\>ping 192.168.1.1
Pinging 192.168.1.1 with 32 bytes of data:
Reply from 192.168.1.1: bytes=32 time=41ms TTL=124
Reply from 192.168.1.1: bytes=32 time=29ms TTL=125
Reply from 192.168.1.1: bytes=32 time=31ms TTL=125
Reply from 192.168.1.1: bytes=32 time=49ms TTL=122
Ping statistics for 192.168.1.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 29ms, Maximum = 49ms, Average = 37ms
C:\>ping 192.168.3.1
Pinging 192.168.3.1 with 32 bytes of data:
Reply from 192.168.3.1: bytes=32 time=17ms TTL=126
Reply from 192.168.3.1: bytes=32 time=9ms TTL=126
Reply from 192.168.3.1: bytes=32 time=26ms TTL=126
Top


PC2
Physical
Config
Desktop
Programming
Attributes
Command Prompt
Reply from 192.168.0.1: bytes=32 time=69ms TTL=123
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 23ms, Maximum = 69ms, Average = 48ms
C:\>192.168.1.1
Invalid Command.
C:\>ping 192.168.1.1
Pinging 192.168.1.1 with 32 bytes of data:
Reply from 192.168.1.1: bytes=32 time=41ms TTL=124
Reply from 192.168.1.1: bytes=32 time=29ms TTL=125
Reply from 192.168.1.1: bytes=32 time=31ms TTL=125
Reply from 192.168.1.1: bytes=32 time=49ms TTL=122
Ping statistics for 192.168.1.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 29ms, Maximum = 49ms, Average = 37ms
C:\>ping 192.168.3.1
Pinging 192.168.3.1 with 32 bytes of data:
Reply from 192.168.3.1: bytes=32 time=17ms TTL=126
Reply from 192.168.3.1: bytes=32 time=9ms TTL=126
Reply from 192.168.3.1: bytes=32 time=26ms TTL=126
Reply from 192.168.3.1: bytes=32 time=34ms TTL=125
Ping statistics for 192.168.3.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 9ms, Maximum = 34ms, Average = 21ms
C:\>
Top

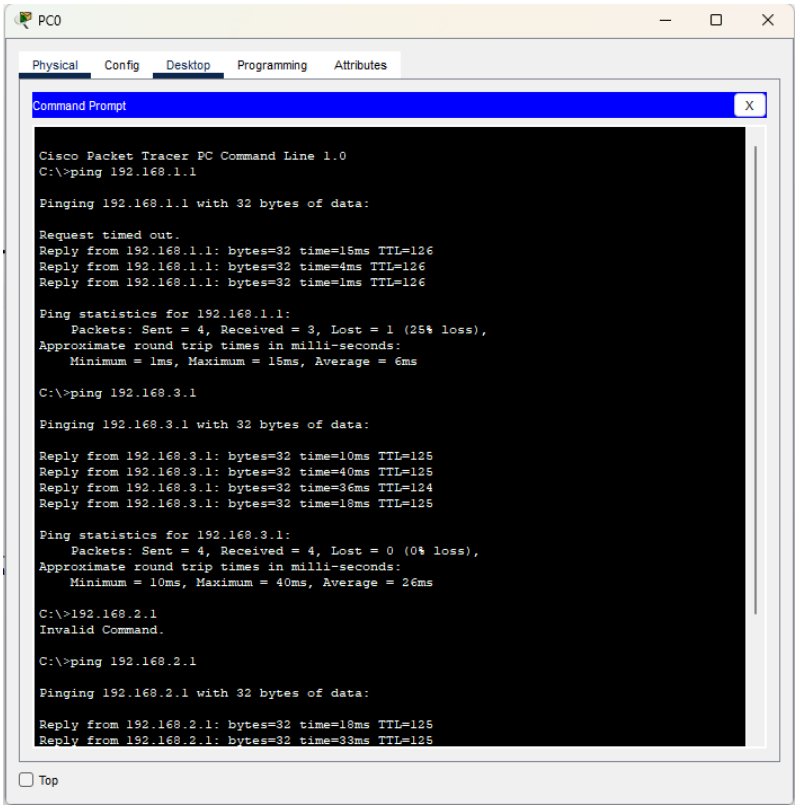
PC3:

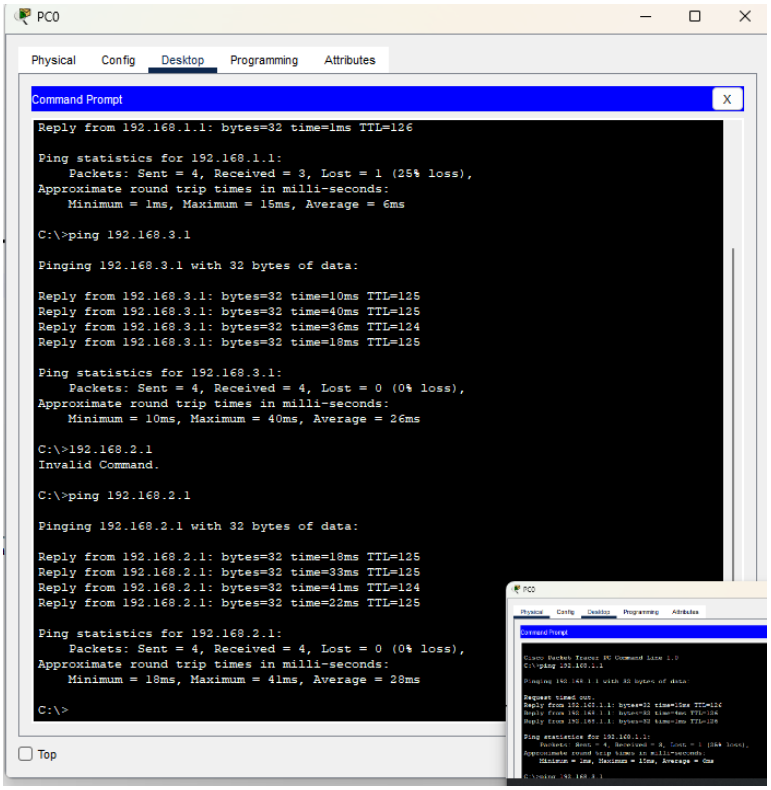

PC3
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Reply from 192.168.0.1: bytes=32 time=2ms TTL=125
Reply from 192.168.0.1: bytes=32 time=44ms TTL=124
Reply from 192.168.0.1: bytes=32 time=28ms TTL=125
Reply from 192.168.0.1: bytes=32 time=46ms TTL=124
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 46ms, Average = 30ms
C:\>ping 192.168.1.1
Pinging 192.168.1.1 with 32 bytes of data:
Reply from 192.168.1.1: bytes=32 time=33ms TTL=124
Reply from 192.168.1.1: bytes=32 time=38ms TTL=125
Reply from 192.168.1.1: bytes=32 time=23ms TTL=125
Reply from 192.168.1.1: bytes=32 time=10ms TTL=123
Ping statistics for 192.168.1.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 10ms, Maximum = 38ms, Average = 26ms
C:\>ping 192.168.2.1
Pinging 192.168.2.1 with 32 bytes of data:
Reply from 192.168.2.1: bytes=32 time=11ms TTL=126
Reply from 192.168.2.1: bytes=32 time=36ms TTL=125
Reply from 192.168.2.1: bytes=32 time=13ms TTL=125
Reply from 192.168.2.1: bytes=32 time=37ms TTL=124
Top


PC3
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Reply from 192.168.0.1: bytes=32 time=2ms TTL=125
Reply from 192.168.0.1: bytes=32 time=44ms TTL=124
Reply from 192.168.0.1: bytes=32 time=28ms TTL=125
Reply from 192.168.0.1: bytes=32 time=46ms TTL=124
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 46ms, Average = 30ms
C:\>ping 192.168.1.1
Pinging 192.168.1.1 with 32 bytes of data:
Reply from 192.168.1.1: bytes=32 time=33ms TTL=124
Reply from 192.168.1.1: bytes=32 time=38ms TTL=125
Reply from 192.168.1.1: bytes=32 time=23ms TTL=125
Reply from 192.168.1.1: bytes=32 time=10ms TTL=123
Ping statistics for 192.168.1.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 10ms, Maximum = 38ms, Average = 26ms
C:\>ping 192.168.2.1
Pinging 192.168.2.1 with 32 bytes of data:
Reply from 192.168.2.1: bytes=32 time=11ms TTL=126
Reply from 192.168.2.1: bytes=32 time=36ms TTL=125
Reply from 192.168.2.1: bytes=32 time=13ms TTL=125
Reply from 192.168.2.1: bytes=32 time=37ms TTL=124
Ping statistics for 192.168.2.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 11ms, Maximum = 37ms, Average = 24ms
C:\>
Top

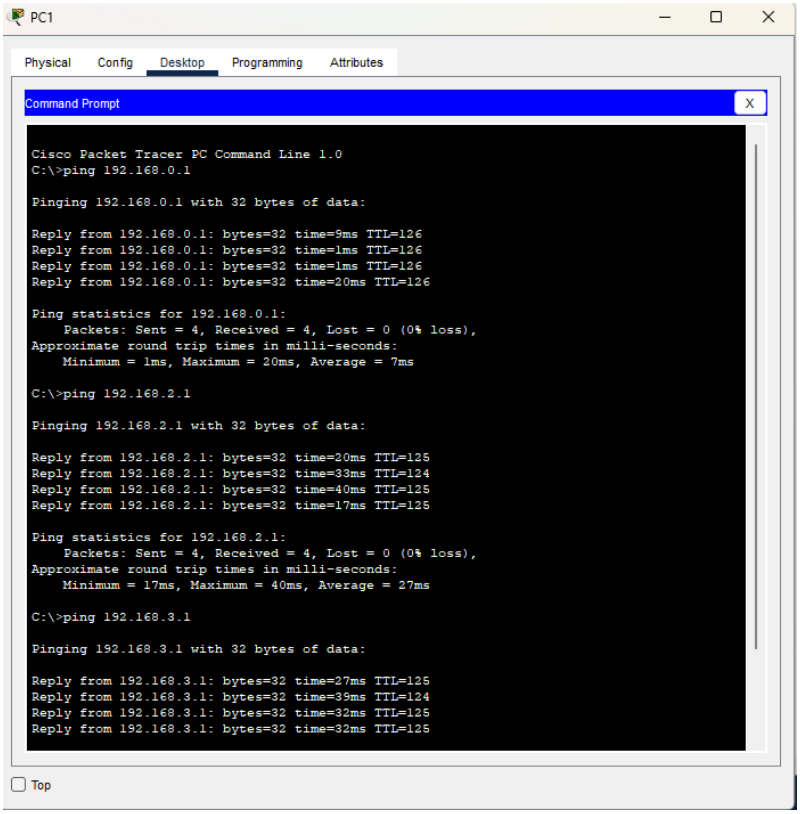
Dynamic Routing Ping:

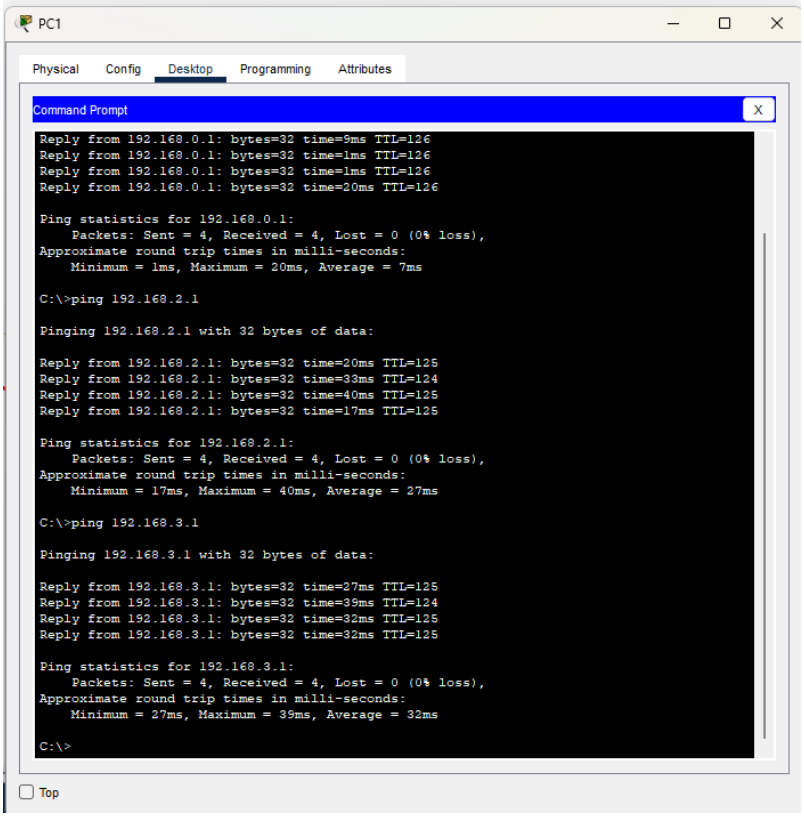
PC0:



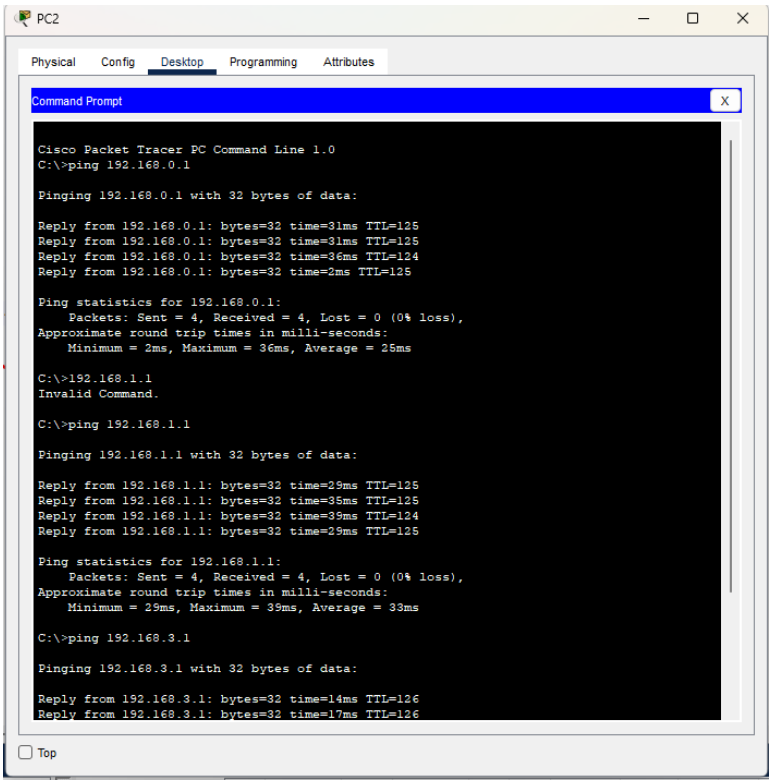


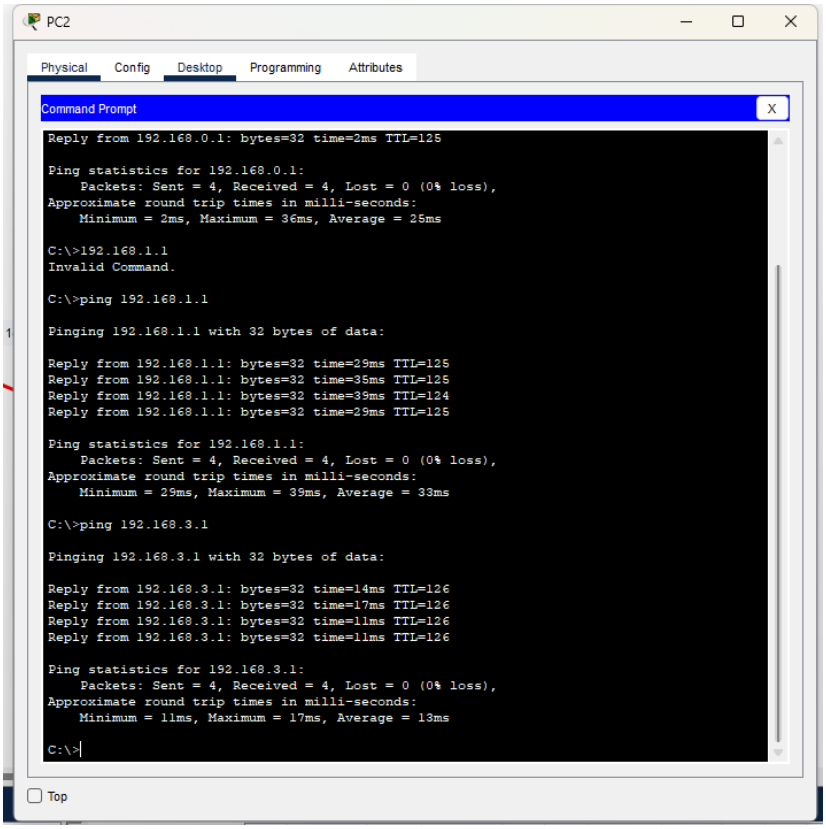
PC1:


PC1
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Reply from 192.168.0.1: bytes=32 time=9ms TTL=126
Reply from 192.168.0.1: bytes=32 time=1ms TTL=126
Reply from 192.168.0.1: bytes=32 time=1ms TTL=126
Reply from 192.168.0.1: bytes=32 time=20ms TTL=126
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 20ms, Average = 7ms
C:\>ping 192.168.2.1
Pinging 192.168.2.1 with 32 bytes of data:
Reply from 192.168.2.1: bytes=32 time=20ms TTL=125
Reply from 192.168.2.1: bytes=32 time=33ms TTL=124
Reply from 192.168.2.1: bytes=32 time=40ms TTL=125
Reply from 192.168.2.1: bytes=32 time=17ms TTL=125
Ping statistics for 192.168.2.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 17ms, Maximum = 40ms, Average = 27ms
C:\>ping 192.168.3.1
Pinging 192.168.3.1 with 32 bytes of data:
Reply from 192.168.3.1: bytes=32 time=27ms TTL=125
Reply from 192.168.3.1: bytes=32 time=39ms TTL=124
Reply from 192.168.3.1: bytes=32 time=32ms TTL=125
Reply from 192.168.3.1: bytes=32 time=32ms TTL=125
Top

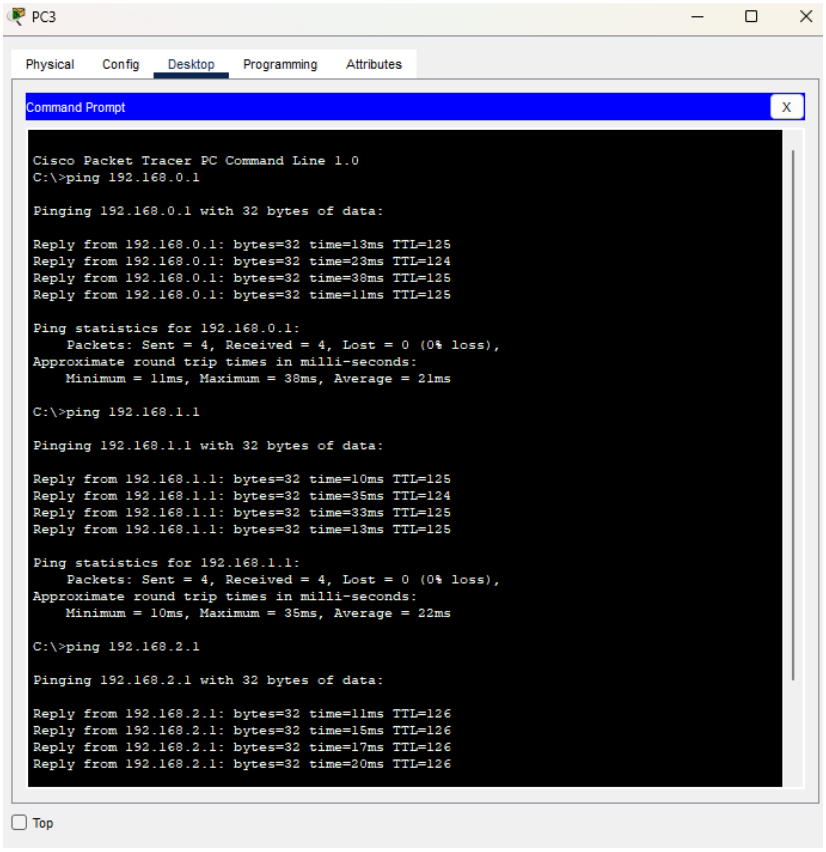

PC1
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Reply from 192.168.0.1: bytes=32 time=9ms TTL=126
Reply from 192.168.0.1: bytes=32 time=1ms TTL=126
Reply from 192.168.0.1: bytes=32 time=1ms TTL=126
Reply from 192.168.0.1: bytes=32 time=20ms TTL=126
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 20ms, Average = 7ms
C:\>ping 192.168.2.1
Pinging 192.168.2.1 with 32 bytes of data:
Reply from 192.168.2.1: bytes=32 time=20ms TTL=125
Reply from 192.168.2.1: bytes=32 time=33ms TTL=124
Reply from 192.168.2.1: bytes=32 time=40ms TTL=125
Reply from 192.168.2.1: bytes=32 time=17ms TTL=125
Ping statistics for 192.168.2.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 17ms, Maximum = 40ms, Average = 27ms
C:\>ping 192.168.3.1
Pinging 192.168.3.1 with 32 bytes of data:
Reply from 192.168.3.1: bytes=32 time=27ms TTL=125
Reply from 192.168.3.1: bytes=32 time=39ms TTL=124
Reply from 192.168.3.1: bytes=32 time=32ms TTL=125
Reply from 192.168.3.1: bytes=32 time=32ms TTL=125
Ping statistics for 192.168.3.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 27ms, Maximum = 39ms, Average = 32ms
C:\>
Top

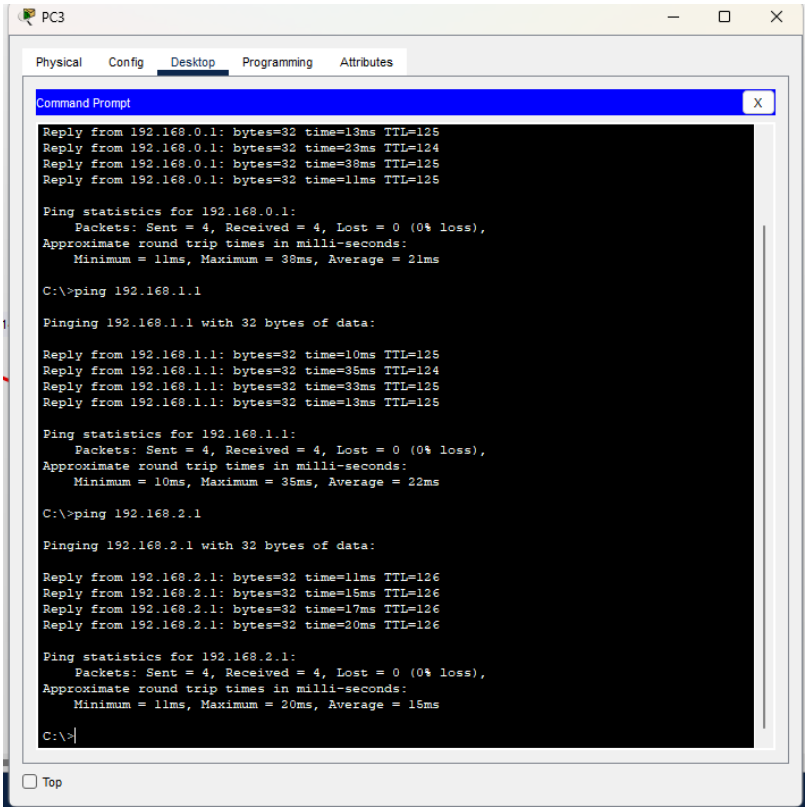
PC2:


PC2
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Reply from 192.168.0.1: bytes=32 time=31ms TTL=125
Reply from 192.168.0.1: bytes=32 time=31ms TTL=125
Reply from 192.168.0.1: bytes=32 time=36ms TTL=124
Reply from 192.168.0.1: bytes=32 time=2ms TTL=125
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 36ms, Average = 25ms
C:\>192.168.1.1
Invalid Command.
C:\>ping 192.168.1.1
Pinging 192.168.1.1 with 32 bytes of data:
Reply from 192.168.1.1: bytes=32 time=29ms TTL=125
Reply from 192.168.1.1: bytes=32 time=35ms TTL=125
Reply from 192.168.1.1: bytes=32 time=39ms TTL=124
Reply from 192.168.1.1: bytes=32 time=29ms TTL=125
Ping statistics for 192.168.1.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 29ms, Maximum = 39ms, Average = 33ms
C:\>ping 192.168.3.1
Pinging 192.168.3.1 with 32 bytes of data:
Reply from 192.168.3.1: bytes=32 time=14ms TTL=126
Reply from 192.168.3.1: bytes=32 time=17ms TTL=126
Top


PC2
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Reply from 192.168.0.1: bytes=32 time=2ms TTL=125
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 36ms, Average = 25ms
C:\>192.168.1.1
Invalid Command.
C:\>ping 192.168.1.1
Pinging 192.168.1.1 with 32 bytes of data:
Reply from 192.168.1.1: bytes=32 time=29ms TTL=125
Reply from 192.168.1.1: bytes=32 time=35ms TTL=125
Reply from 192.168.1.1: bytes=32 time=39ms TTL=124
Reply from 192.168.1.1: bytes=32 time=29ms TTL=125
Ping statistics for 192.168.1.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 29ms, Maximum = 39ms, Average = 33ms
C:\>ping 192.168.3.1
Pinging 192.168.3.1 with 32 bytes of data:
Reply from 192.168.3.1: bytes=32 time=14ms TTL=126
Reply from 192.168.3.1: bytes=32 time=17ms TTL=126
Reply from 192.168.3.1: bytes=32 time=11ms TTL=126
Reply from 192.168.3.1: bytes=32 time=11ms TTL=126
Ping statistics for 192.168.3.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 11ms, Maximum = 17ms, Average = 13ms
C:\>
Top

PC3:


PC3
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Reply from 192.168.0.1: bytes=32 time=13ms TTL=125
Reply from 192.168.0.1: bytes=32 time=23ms TTL=124
Reply from 192.168.0.1: bytes=32 time=38ms TTL=125
Reply from 192.168.0.1: bytes=32 time=11ms TTL=125
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 11ms, Maximum = 38ms, Average = 21ms
C:\>ping 192.168.1.1
Pinging 192.168.1.1 with 32 bytes of data:
Reply from 192.168.1.1: bytes=32 time=10ms TTL=125
Reply from 192.168.1.1: bytes=32 time=35ms TTL=124
Reply from 192.168.1.1: bytes=32 time=33ms TTL=125
Reply from 192.168.1.1: bytes=32 time=13ms TTL=125
Ping statistics for 192.168.1.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 10ms, Maximum = 35ms, Average = 22ms
C:\>ping 192.168.2.1
Pinging 192.168.2.1 with 32 bytes of data:
Reply from 192.168.2.1: bytes=32 time=11ms TTL=126
Reply from 192.168.2.1: bytes=32 time=15ms TTL=126
Reply from 192.168.2.1: bytes=32 time=17ms TTL=126
Reply from 192.168.2.1: bytes=32 time=20ms TTL=126
Top


PC3
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Reply from 192.168.0.1: bytes=32 time=13ms TTL=125
Reply from 192.168.0.1: bytes=32 time=23ms TTL=124
Reply from 192.168.0.1: bytes=32 time=38ms TTL=125
Reply from 192.168.0.1: bytes=32 time=11ms TTL=125
Ping statistics for 192.168.0.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 11ms, Maximum = 38ms, Average = 21ms
C:\>ping 192.168.1.1
Pinging 192.168.1.1 with 32 bytes of data:
Reply from 192.168.1.1: bytes=32 time=10ms TTL=125
Reply from 192.168.1.1: bytes=32 time=35ms TTL=124
Reply from 192.168.1.1: bytes=32 time=33ms TTL=125
Reply from 192.168.1.1: bytes=32 time=13ms TTL=125
Ping statistics for 192.168.1.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 10ms, Maximum = 35ms, Average = 22ms
C:\>ping 192.168.2.1
Pinging 192.168.2.1 with 32 bytes of data:
Reply from 192.168.2.1: bytes=32 time=11ms TTL=126
Reply from 192.168.2.1: bytes=32 time=15ms TTL=126
Reply from 192.168.2.1: bytes=32 time=17ms TTL=126
Reply from 192.168.2.1: bytes=32 time=20ms TTL=126
Ping statistics for 192.168.2.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 11ms, Maximum = 20ms, Average = 15ms
C:\>
Top

7. Conclusion:

In this assignment, we successfully implemented both static and dynamic routing using Cisco Packet Tracer. Through the process, we learned the differences between manually configured static routes and automatically updated routes using the RIP protocol. Static routing gave us control but required manual updates for each route, making it suitable for small networks. On the other hand, dynamic routing using RIP simplified the process by allowing routers to share routing information automatically. This made the network easier to manage as it grew. Overall, this assignment helped us understand the practical applications of routing protocols and how they are used to maintain efficient communication within a network.