

190905514
ROLLNO : 62

MOHAMMAD TOFIK
SECTION : C3

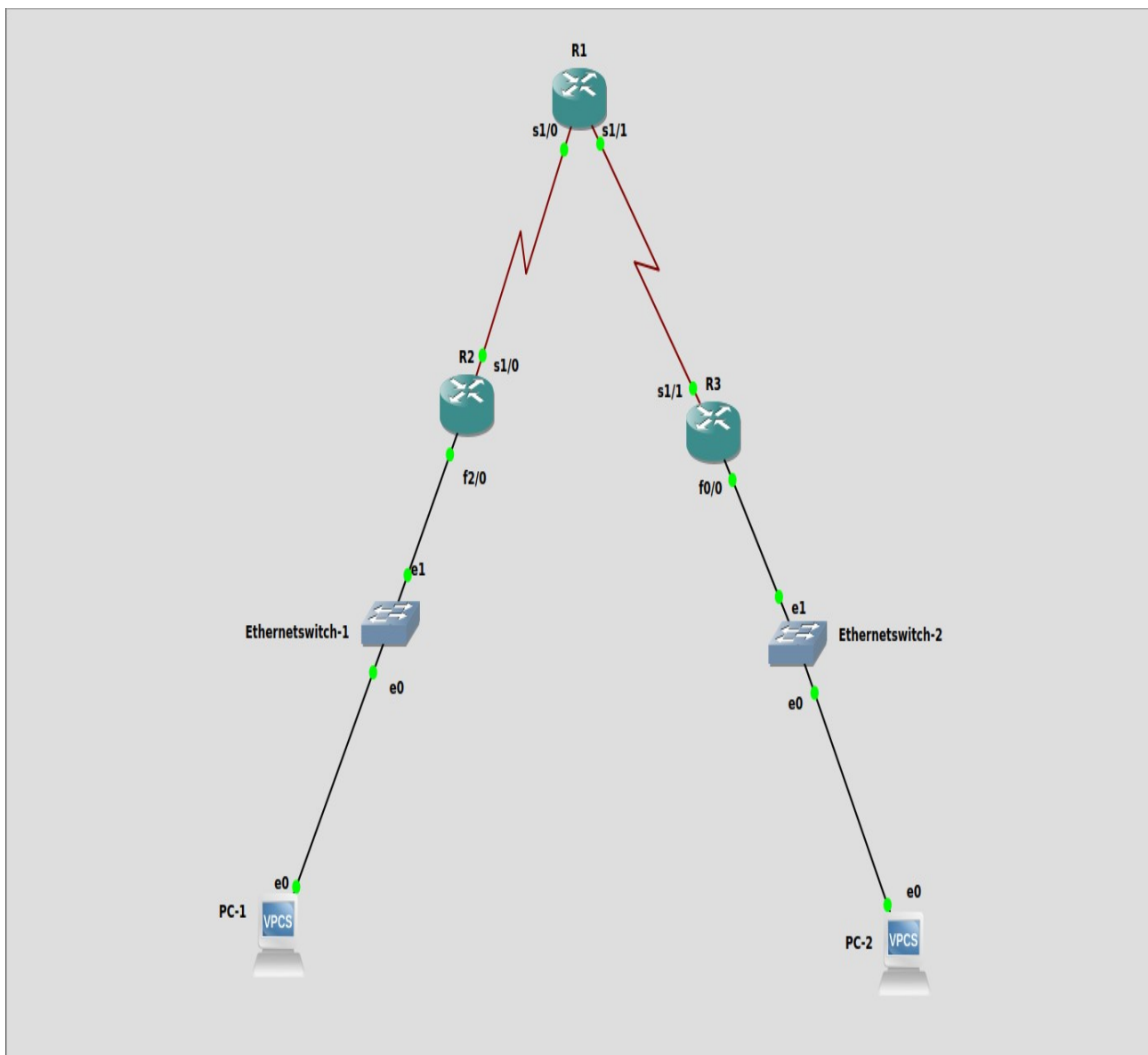
BATCH : C3
SEM : 5th

CN-LAB-8

EXERCISE :

Q1 -> RIP:

Network Topology :



Router 1 configuration :

```
R1
File Edit View Search Terminal Help
changed state to down
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#int s1/0
R1(config-if)#ip add 10.0.0.1 255.255.255.0
R1(config-if)#no sh
R1(config-if)#exit
*Dec 4 08:04:27.571: %LINK-3-UPDOWN: Interface Serial1/0, changed state to up
R1(config-if)#exit
*Dec 4 08:04:27.571: %ENTITY_ALARM-6-INFO: CLEAR INFO Se1/0 Physical Port Administ
rative State Down
R1(config-if)#exit
*Dec 4 08:04:28.575: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, ch
anged state to up
R1(config-if)#
*Dec 4 08:04:52.395: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, ch
anged state to down
R1(config-if)#int s1/1
R1(config-if)#ip add 20.1.1.1 255.255.255.0
R1(config-if)#no sh
R1(config-if)#i
*Dec 4 08:15:34.635: %LINK-3-UPDOWN: Interface Serial1/1, changed state to up
R1(config-if)#int
*Dec 4 08:15:34.635: %ENTITY_ALARM-6-INFO: CLEAR INFO Se1/1 Physical Port Administ
rative State Down
R1(config-if)#int s1
*Dec 4 08:15:35.639: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/1, ch
anged state to up
R1(config-if)#exit
R1(config)#router rip
R1(config-router)#version2
*Dec 4 08:16:02.663: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/1, ch
anged state to down
R1(config-router)#version 2
R1(config-router)#network 20.1.1.0
R1(config-router)#network 100.1.1.0
R1(config-router)#
*Dec 4 08:22:02.819: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, ch
anged state to up
R1(config-router)#
*Dec 4 08:25:22.907: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/1, ch
anged state to up
R1(config-router)#no sh
^
% Invalid input detected at '^' marker.
```

```
R1
File Edit View Search Terminal Help
R1#sh ip route
Codes: 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
       i - IS-IS, su - IS-IS summary, 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

    20.0.0.0/24 is subnetted, 1 subnets
C       20.1.1.0 is directly connected, Serial1/1
    10.0.0.0/24 is subnetted, 1 subnets
C       10.0.0.0 is directly connected, Serial1/0
R1#sh ip protocol
Routing Protocol is "rip"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Sending updates every 30 seconds, next due in 22 seconds
  Invalid after 180 seconds, hold down 180, flushed after 240
  Redistributing: rip
  Default version control: send version 2, receive version 2
    Interface          Send  Recv  Triggered RIP  Key-chain
    Serial1/1           2      2
  Automatic network summarization is in effect
  Maximum path: 4
  Routing for Networks:
    20.0.0.0
    100.0.0.0
  Routing Information Sources:
    Gateway         Distance      Last Update
  Distance: (default is 120)

R1#sh ip rip database
20.0.0.0/8    auto-summary
20.1.1.0/24   directly connected, Serial1/1
R1#debug ip rip
RIP protocol debugging is on
R1#debug ip ri
*Dec  4 08:31:59.455: RIP: sending v2 update to 224.0.0.9 via Serial1/1 (20.1.1.1)
*Dec  4 08:31:59.455: RIP: build update entries - suppressing null update
R1#debug ip rip router
      ^
% Invalid input detected at '^' marker.
```


Router 2 configuration :

```
R2
File Edit View Search Terminal Help
administratively down
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#int f2/0
R2(config-if)#ip add 172.16.2.1 255.255.0.0
R2(config-if)#no sh
R2(config-if)#
*Dec 4 08:10:37.655: %LINK-3-UPDOWN: Interface FastEthernet2/0, changed state to u
p
R2(config-if)#in
*Dec 4 08:10:37.655: %ENTITY_ALARM-6-INFO: CLEAR INFO Fa2/0 Physical Port Administ
rative State Down
*Dec 4 08:10:38.655: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet2
/0, changed state to up
R2(config-if)#int s1/0
R2(config-if)#ip add 100.1.1.1 255.255.255.0
R2(config-if)#no sh
R2(config-if)#
*Dec 4 08:13:51.695: %LINK-3-UPDOWN: Interface Serial1/0, changed state to up
R2(config-if)#i
*Dec 4 08:13:51.695: %ENTITY_ALARM-6-INFO: CLEAR INFO Se1/0 Physical Port Administ
rative State Down
R2(config-if)#i
*Dec 4 08:13:52.699: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, ch
anged state to up
R2(config-if)#exit
R2(config)#router rip
R2(config-router)#version 2
R2(config-router)#network 172.16.0.0
R2(config-router)#network 100.1.1.0
R2(config-router)#exit
R2(config)#exit
R2#
*Dec 4 08:28:28.231: %SYS-5-CONFIG_I: Configured from console by console
R2#sh ip route
Codes: 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
       i - IS-IS, su - IS-IS summary, 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

100.0.0.0/24 is subnetted, 1 subnets
```

```
R2
File Edit View Search Terminal Help
anged state to up
R2(config-if)#exit
R2(config)#router rip
R2(config-router)#version 2
R2(config-router)#network 172.16.0.0
R2(config-router)#network 100.1.1.0
R2(config-router)#exit
R2(config)#exit
R2#
*Dec  4 08:28:28.231: %SYS-5-CONFIG_I: Configured from console by console
R2#sh ip route
Codes: 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
       i - IS-IS, su - IS-IS summary, 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

    100.0.0.0/24 is subnetted, 1 subnets
C       100.1.1.0 is directly connected, Serial1/0
C       172.16.0.0/16 is directly connected, FastEthernet2/0
R2#sh ip protocol
Routing Protocol is "rip"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Sending updates every 30 seconds, next due in 23 seconds
  Invalid after 180 seconds, hold down 180, flushed after 240
  Redistributing: rip
  Default version control: send version 2, receive version 2
    Interface          Send  Recv  Triggered RIP  Key-chain
    Serial1/0           2     2
    FastEthernet2/0     2     2
  Automatic network summarization is in effect
  Maximum path: 4
  Routing for Networks:
    100.0.0.0
    172.16.0.0
  Routing Information Sources:
    Gateway         Distance      Last Update
  Distance: (default is 120)

R2#
```

```
R2
File Edit View Search Terminal Help

R2#sh ip rip database
100.0.0.0/8      auto-summary
100.1.1.0/24    directly connected, Serial1/0
172.16.0.0/16   auto-summary
172.16.0.0/16   directly connected, FastEthernet2/0
R2#debug ip rip
RIP protocol debugging is on
R2#sh running-co
*Dec  4 08:30:57.639: RIP: sending v2 update to 224.0.0.9 via FastEthernet2/0 (172.
16.2.1)
*Dec  4 08:30:57.639: RIP: build update entries
*Dec  4 08:30:57.639:   100.0.0.0/8 via 0.0.0.0, metric 1, tag 0
R2#sh running-config
Building configuration...

*Dec  4 08:31:01.783: RIP: sending v2 update to 224.0.0.9 via Serial1/0 (100.1.1.1)
*Dec  4 08:31:01.783: RIP: build update entries
*Dec  4 08:31:01.787:   172.16.0.0/16 via 0.0.0.0, metric 1, tag 0
Current configuration : 2051 bytes
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname R2
!
boot-start-marker
boot-end-marker
!
!
no aaa new-model
no ip icmp rate-limit unreachable
!
!
ip cef
no ip domain lookup
!
!
ip auth-proxy max-nodata-conns 3
--More--
*Dec  4 08:31:23.423: RIP: sending v2 update to 224.0.0.9 via FastEthernet2/0 (172.
16.2.1)
*Dec  4 08:31:23.423: RIP: build update entries
*Dec  4 08:31:23.423:   100.0.0.0/8 via 0.0.0.0, metric 1, tag 0
```


Router 3 configuration :

```
R3
File Edit View Search Terminal Help
*Dec 4 08:28:53.707: %SYS-5-CONFIG_I: Configured from console by console
R3#sh ip route
Codes: 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
       i - IS-IS, su - IS-IS summary, 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

    20.0.0.0/24 is subnetted, 1 subnets
C       20.1.1.0 is directly connected, Serial1/1
    10.0.0.0/24 is subnetted, 1 subnets
C       10.2.2.0 is directly connected, FastEthernet0/0
R3#sh ip protocol
Routing Protocol is "rip"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Sending updates every 30 seconds, next due in 15 seconds
  Invalid after 180 seconds, hold down 180, flushed after 240
  Redistributing: rip
  Default version control: send version 2, receive version 2
    Interface          Send  Recv  Triggered RIP  Key-chain
  FastEthernet0/0      2     2
  Serial1/1            2     2
  Automatic network summarization is in effect
  Maximum path: 4
  Routing for Networks:
    10.0.0.0
    20.0.0.0
  Routing Information Sources:
    Gateway         Distance      Last Update
  Distance: (default is 120)

R3#sh ip rip database
10.0.0.0/8    auto-summary
10.2.2.0/24   directly connected, FastEthernet0/0
20.0.0.0/8    auto-summary
20.1.1.0/24   directly connected, Serial1/1
R3#sh running-config
Building configuration...

Current configuration : 2142 bytes
```



```
R3
File Edit View Search Terminal Help
Redistributing: rip
Default version control: send version 2, receive version 2
  Interface      Send  Recv  Triggered RIP  Key-chain
  FastEthernet0/0    2    2
  Serial1/1         2    2
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
  10.0.0.0
  20.0.0.0
Routing Information Sources:
  Gateway         Distance      Last Update
Distance: (default is 120)

R3#sh ip rip database
10.0.0.0/8      auto-summary
10.2.2.0/24    directly connected, FastEthernet0/0
20.0.0.0/8      auto-summary
20.1.1.0/24    directly connected, Serial1/1
R3#sh running-config
Building configuration...

Current configuration : 2142 bytes
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname R3
!
boot-start-marker
boot-end-marker
!
!
no aaa new-model
no ip icmp rate-limit unreachable
!
!
ip cef
no ip domain lookup
!
!
ip auth-proxy max-nodata-conns 3
--More--
```

PC1 configuration :

```
PC-1
File Edit View Search Terminal Help
Executing the startup file

PC-1> sh ip

NAME       : PC-1[1]
IP/MASK     : 0.0.0.0/0
GATEWAY     : 0.0.0.0
DNS         :
MAC         : 00:50:79:66:68:00
LPORT      : 10024
RHOST:PORT  : 127.0.0.1:10025
MTU         : 1500

PC-1> ip add 172.16.2.10 255.255.255.0 172.16.2.1
Invalid address

PC-1> ip 172.16.2.10 255.255.255.0 172.16.2.1
Checking for duplicate address...
PC1 : 172.16.2.10 255.255.255.0 gateway 172.16.2.1

PC-1> sh ip

NAME       : PC-1[1]
IP/MASK     : 172.16.2.10/24
GATEWAY     : 172.16.2.1
DNS         :
MAC         : 00:50:79:66:68:00
LPORT      : 10024
RHOST:PORT  : 127.0.0.1:10025
MTU         : 1500

PC-1> ping 10.2.2.20
*172.16.2.1 icmp seq=1 ttl=255 time=10.101 ms (ICMP type=3 code=1 Destination host unreachable)
^C
```

```
PC1> ip 172.16.2.10/24 172.16.2.1
Checking for duplicate address...
PC1 : 172.16.2.10 255.255.255.0 gateway 172.16.2.1

PC1> 
```

PC2 configuration :

```
PC-2
File Edit View Search Terminal Help

Press '?' to get help.

Executing the startup file

PC-2> sh ip

NAME       : PC-2[1]
IP/MASK     : 0.0.0.0/0
GATEWAY     : 0.0.0.0
DNS         :
MAC        : 00:50:79:66:68:01
LPORT      : 10026
RHOST:PORT  : 127.0.0.1:10027
MTU:       : 1500

PC-2> ip 10.2.2.20 255.255.255.0 10.2.2.1
Checking for duplicate address...
PC1 : 10.2.2.20 255.255.255.0 gateway 10.2.2.1

PC-2> sh ip

NAME       : PC-2[1]
IP/MASK     : 10.2.2.20/24
GATEWAY     : 10.2.2.1
DNS         :
MAC        : 00:50:79:66:68:01
LPORT      : 10026
RHOST:PORT  : 127.0.0.1:10027
MTU:       : 1500
```

```
PC2> ip 10.2.2.20/24 10.2.2.1
Checking for duplicate address...
PC2 : 10.2.2.20 255.255.255.0 gateway 10.2.2.1

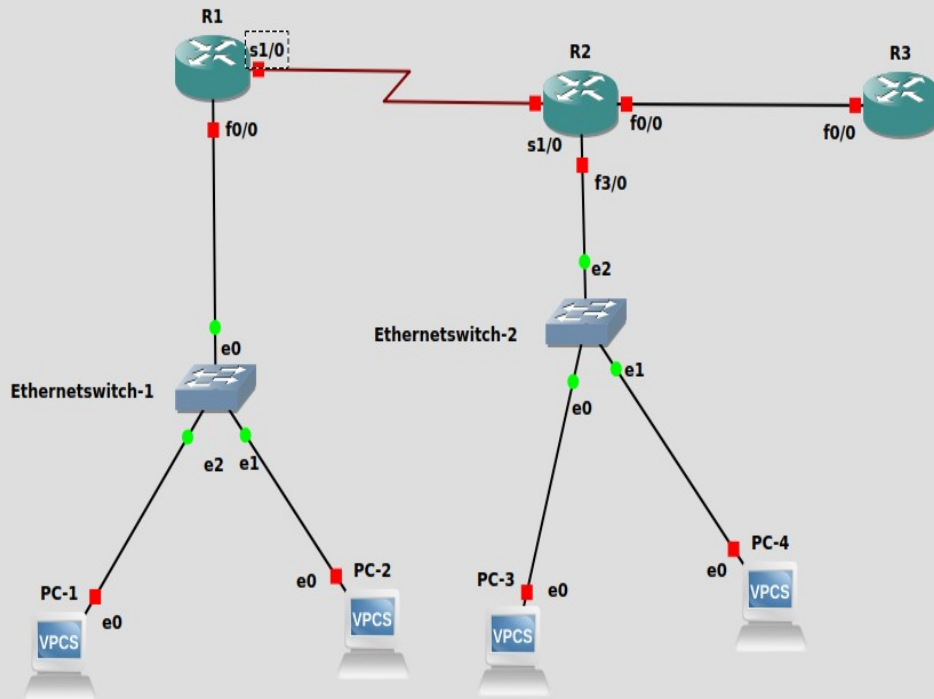
PC2> ping 172.16.2.10

172.16.2.10 icmp_seq=1 timeout
84 bytes from 172.16.2.10 icmp_seq=2 ttl=61 time=45.193 ms
84 bytes from 172.16.2.10 icmp_seq=3 ttl=61 time=58.392 ms
84 bytes from 172.16.2.10 icmp_seq=4 ttl=61 time=58.621 ms
84 bytes from 172.16.2.10 icmp_seq=5 ttl=61 time=49.047 ms

PC2> █
```

Q2 : OSPF

Network Topology :



Router 1 Configuration :

```
File Edit View Search Terminal Help
R1(config)#int s1/0
R1(config-if)#ip address 192.168.1.1 255.255.255.0
R1(config-if)#no shut
R1(config-if)#no shutdown
R1(config-if)#do wr
*Nov 29 07:38:31.983: %LINK-3-UPDOWN: Interface Serial1/0, changed state to up
R1(config-if)#do wr
Building configuration...
[OK]
R1(config-if)#
*Nov 29 07:38:31.983: %ENTITY_ALARM-6-INFO: CLEAR INFO Se1/0 Physical Port Administrative State Down
*Nov 29 07:38:33.103: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to up
R1(config-if)#int f0/0
R1(config-if)#ip address 10.0.0.1
*Nov 29 07:39:00.211: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to down
R1(config-if)#ip address 10.0.0.1 255.0.0.0
R1(config-if)#no shut
R1(config-if)#no shutdown
R1(config-if)#do wr
Building configuration...
[OK]
R1(config-if)#
*Nov 29 07:39:10.611: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
R1(config-if)#
*Nov 29 07:39:10.611: %ENTITY_ALARM-6-INFO: CLEAR INFO Fa0/0 Physical Port Administrative State Down
*Nov 29 07:39:11.611: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R1(config-if)#exit
R1(config)#end
R1# s
*Nov 29 07:40:50.727: %SYS-5-CONFIG_I: Configured from console by console
R1# show ip route
Codes: 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
        i - IS-IS, su - IS-IS summary, 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

C    10.0.0.0/8 is directly connected, FastEthernet0/0
R1#
*Nov 29 07:42:20.211: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to up
R1#config t
Enter configuration commands, one per line. End with CNTL/Z.
```

```
File Edit View Search Terminal Help
        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

C    10.0.0.0/8 is directly connected, FastEthernet0/0
R1#
*Nov 29 07:42:20.211: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to up
R1#config t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#router ospf 200
R1(config-router)#netw
R1(config-router)#network 10.0.0.0 0.255.255.255
% Incomplete command.

R1(config-router)#network 10.0.0.0 0.255.255.255 area 0
R1(config-router)#netw
R1(config-router)#network 192.168.1.0 0.0.0.255 area 0.0.0.0
R1(config-router)#do wr
Building configuration...
[OK]
R1(config-router)#exit
R1(config)#
*Nov 29 07:49:09.399: %OSPF-5-ADJCHG: Process 200, Nbr 192.168.1.2 on Serial1/0 from LOADING to FULL, Loading Done
R1(config)#end
R1#show
*Nov 29 07:53:51.335: %SYS-5-CONFIG_I: Configured from console by console
```

```

R1#show ip route
Codes: 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
       i - IS-IS, su - IS-IS summary, 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

O    20.0.0.0/8 [110/65] via 192.168.1.2, 00:04:40, Serial1/0
C    10.0.0.0/8 is directly connected, FastEthernet0/0
C    192.168.1.0/24 is directly connected, Serial1/0
R1#show ip ospf neighbor

Neighbor ID      Pri   State           Dead Time   Address        Interface
192.168.1.2      0     FULL/ -         00:00:39    192.168.1.2    Serial1/0
R1#show ip ospf database

                OSPF Router with ID (192.168.1.1) (Process ID 200)

                Router Link States (Area 0)

Link ID          ADV Router      Age             Seq#            Checksum Link count
192.168.1.1      192.168.1.1     332            0x80000005     0x00D695 3
192.168.1.2      192.168.1.2     333            0x80000002     0x00085B 3
R1#

```

R2 configuration :

```

R2#config t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#int s1/0
R2(config-if)#ip address 192.168.1.2 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#do wr
Building configuration...
[OK]
R2(config-if)#
*Nov 29 07:42:11.067: %LINK-3-UPDOWN: Interface Serial1/0, changed state to up
R2(config-if)#
*Nov 29 07:42:11.067: %ENTITY_ALARM-6-INFO: CLEAR INFO Se1/0 Physical Port Administrative State Down
*Nov 29 07:42:12.067: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to up
R2(config-if)#exit
R2(config)#int f0/1
R2(config-if)#ip address 20.0.0.1 255.0.0.0
R2(config-if)#no shutdo
R2(config-if)#no shutdown
R2(config-if)#do wr
Building configuration...
[OK]
R2(config-if)#
*Nov 29 07:43:14.611: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up
R2(config-if)#
*Nov 29 07:43:14.611: %ENTITY_ALARM-6-INFO: CLEAR INFO Fa0/1 Physical Port Administrative State Down
*Nov 29 07:43:15.611: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
R2(config-if)#exit
R2(config)#exit

```

```

R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#int f0/0
R2(config-if)#ip address 150.150.150.2 255.255.255.0
R2(config-if)#no shu
R2(config-if)#no shutdown
R2(config-if)#do wr
*Nov 29 08:00:24.759: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
R2(config-if)#do wr
Building configuration...
[OK]
R2(config-if)#
*Nov 29 08:00:24.759: %ENTITY_ALARM-6-INFO: CLEAR INFO Fa0/0 Physical Port Administrative State Down
*Nov 29 08:00:25.815: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R2(config-if)#
*Nov 29 08:00:27.075: %OSPF-5-ADJCHG: Process 200, Nbr 150.150.150.1 on FastEthernet0/0 from LOADING to FULL, Loading Done
R2(config-if)#end

```

```

Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#
R2(config)#router ospf 200
R2(config-router)#netw
R2(config-router)#network 20.0.0.0 0.255.255.255 area 0
R2(config-router)#netw
R2(config-router)#network 192.168.1.0 0.0.0.255 area 0
R2(config-router)#net
R2(config-router)#network
*Nov 29 07:49:09.395: %OSPF-5-ADJCHG: Process 200, Nbr 192.168.1.1 on Serial1/0 from LOADING to FULL, Loading Done
R2(config-router)#network 150.150.150.0 0.0.0.255 area 1
R2(config-router)#do wr
Building configuration...
[OK]
R2(config-router)#exit
R2(config)#end

```

```

File Edit View Search Terminal Help
*Nov 29 08:00:30.075: %SYS-5-CONFIG_I: Configured from console by console
R2#show ip route
Codes: 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
       i - IS-IS, su - IS-IS summary, 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

C    20.0.0.0/8 is directly connected, FastEthernet0/1
O    10.0.0.0/8 [110/65] via 192.168.1.1, 00:00:05, Serial1/0
C    192.168.1.0/24 is directly connected, Serial1/0
     150.150.0.0/24 is subnetted, 1 subnets
C       150.150.150.0 is directly connected, FastEthernet0/0
R2#show ip ospf neighbor

```

Neighbor ID	Pri	State	Dead Time	Address	Interface
192.168.1.1	0	FULL/ -	00:00:33	192.168.1.1	Serial1/0
150.150.150.1	1	FULL/DR	00:00:39	150.150.150.1	FastEthernet0/0

```

R2#show ip ospf database

```

OSPF Router with ID (192.168.1.2) (Process ID 200)

Router Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum	Link count
192.168.1.1	192.168.1.1	696	0x80000005	0x00D695	3
192.168.1.2	192.168.1.2	21	0x80000003	0x000958	3

Summary Net Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum
150.150.150.0	192.168.1.2	17	0x80000001	0x0047C4

Router Link States (Area 1)

Link ID	ADV Router	Age	Seq#	Checksum	Link count
150.150.150.1	150.150.150.1	18	0x80000002	0x00F12D	1
192.168.1.2	192.168.1.2	16	0x80000003	0x006C60	1

Net Link States (Area 1)

Link ID	ADV Router	Age	Seq#	Checksum
---------	------------	-----	------	----------


```

Link ID      ADV Router    Age      Seq#      Checksum
150.150.150.0 192.168.1.2   17       0x80000001 0x0047C4

Router Link States (Area 1)

Link ID      ADV Router    Age      Seq#      Checksum Link count
150.150.150.1 150.150.150.1 18       0x80000002 0x00F12D 1
192.168.1.2   192.168.1.2   16       0x80000003 0x006C60 1

Net Link States (Area 1)

Link ID      ADV Router    Age      Seq#      Checksum
150.150.150.1 150.150.150.1 18       0x80000001 0x00C5B9

Summary Net Link States (Area 1)

Link ID      ADV Router    Age      Seq#      Checksum
10.0.0.0     192.168.1.2   337     0x80000001 0x007411
20.0.0.0     192.168.1.2   338     0x80000001 0x006F4C
192.168.1.0  192.168.1.2   338     0x80000001 0x0030F5
R2#
R2#
R2#
R2#
R2#
R2#
R2#

```

Router R3 configuration :

```
R3#config t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#int f0/0
R3(config-if)#ip add
R3(config-if)#ip address 150.150.150.1 255.255.255.0
R3(config-if)#no shut
R3(config-if)#no shutdown
R3(config-if)#
*Nov 29 07:45:01.479: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
R3(config-if)#d
*Nov 29 07:45:01.479: %ENTITY_ALARM-6-INFO: CLEAR INFO Fa0/0 Physical Port Administrative State Down
*Nov 29 07:45:02.479: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to
R3(config-if)#do wr
Building configuration...
[OK]
R3(config-if)#end
R3#show
*Nov 29 07:45:08.135: %SYS-5-CONFIG_I: Configured from console by console
R3#show ip route
Codes: 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
        i - IS-IS, su - IS-IS summary, 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

        150.150.0.0/24 is subnetted, 1 subnets
C       150.150.150.0 is directly connected, FastEthernet0/0
R3#config t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router ospf 200
R3(config-router)#net
R3(config-router)#network 150.150.150.0 0.0.0.255 area 1
R3(config-router)#do wr
Building configuration...
[OK]
R3(config-router)#exit
R3(config)#do wr
Building configuration...
[OK]
R3(config)#end
```

```
File Edit View Search Terminal Help
R3(config-router)#net
R3(config-router)#network 150.150.150.0 0.0.0.255 area 1
R3(config-router)#do wr
Building configuration...
[OK]
R3(config-router)#exit
R3(config)#do wr
Building configuration...
[OK]
R3(config)#end
R3#show
*Nov 29 07:56:58.299: %SYS-5-CONFIG_I: Configured from console by console
R3#show ip route
Codes: 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
        i - IS-IS, su - IS-IS summary, 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

        150.150.0.0/24 is subnetted, 1 subnets
C       150.150.150.0 is directly connected, FastEthernet0/0
R3#show ip ospf database

        OSPF Router with ID (150.150.150.1) (Process ID 200)

                Router Link States (Area 1)

Link ID        ADV Router    Age          Seq#          Checksum Link count
150.150.150.1  150.150.150.1  400         0x80000001  0x00BD27  1
R3#show ip ospf nei
R3#show ip ospf neighbor

R3#show ip ospf neighbor

R3#
*Nov 29 08:00:27.083: %OSPF-5-ADJCHG: Process 200, Nbr 192.168.1.2 on FastEthernet0/0 from LOADING to FULL, Loading Done
R3#show ip ospf neighbor

Neighbor ID      Pri   State           Dead Time   Address        Interface
192.168.1.2      1    FULL/BDR        00:00:33    150.150.150.2 FastEthernet0/0
R3#
```

