

SEC : A

CN LAB: 05

BATCH : A3

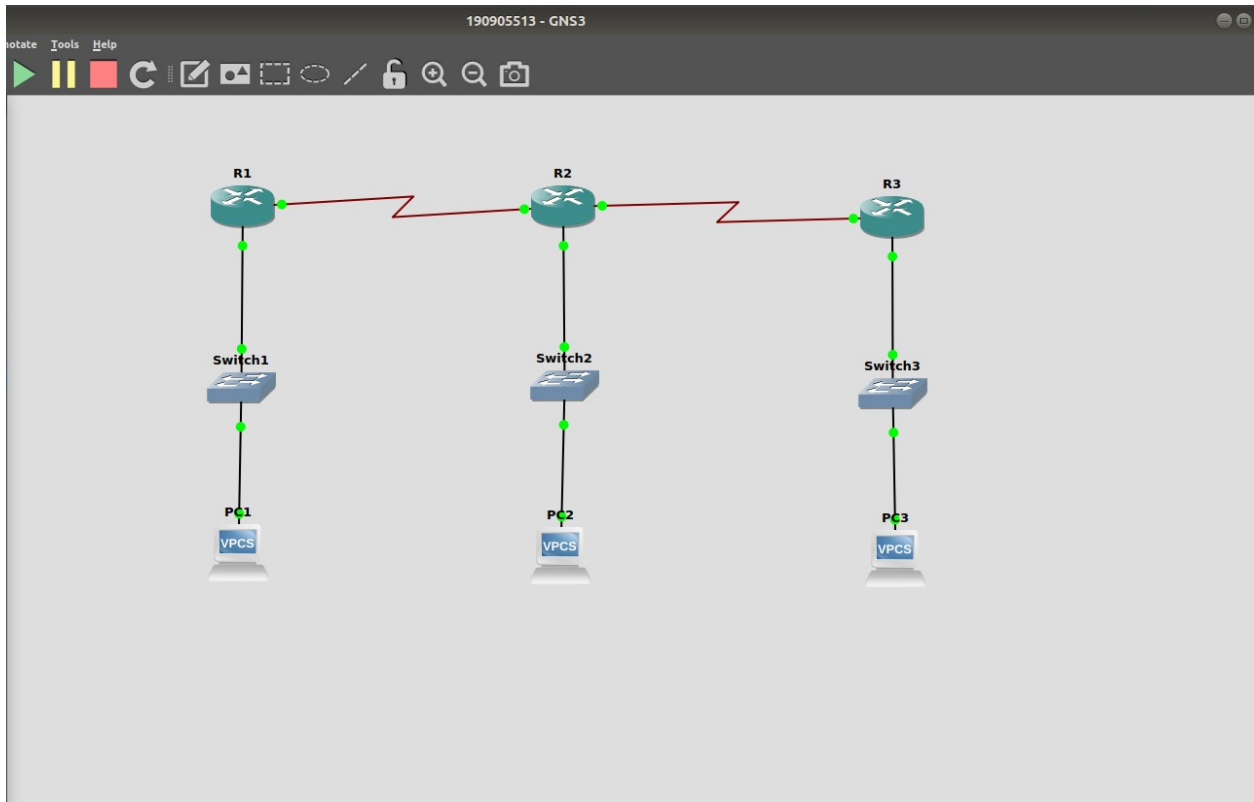
REG: 190905513

CSE 3113

NAME: MOHAMMAD DANISH EQBAL

EXERCISE 01

//Topology



//Configuring router R1

```
R1(config)#interface f0/0
R1(config-if)#ip add
R1(config-if)#ip address 10.10.10.254 255.255.255.0
R1(config-if)#no shut
R1(config-if)#no shutdown
R1(config-if)#d
*Mar  1 00:02:52.679: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar  1 00:02:53.679: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R1(config-if)#do wr
Building configuration...
[OK]
R1(config-if)#exit
R1(config)#int
R1(config)#interface f0/1
R1(config-if)#40.40.40.1 255.255.255.0
^
% Invalid input detected at '^' marker.

R1(config-if)#ip add
R1(config-if)#ip address 40.40.40.1 255.255.255.0
R1(config-if)#no shut
R1(config-if)#no shutdown
R1(config-if)#do wr
Building configuration...
[OK]
R1(config-if)#
*Mar  1 00:03:47.347: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up
*Mar  1 00:03:48.347: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
R1(config-if)#exit
```

//Configuring router *R1* IP routes

```
R1(config)#ip route 20.20.20.0 255.255.255.0 40.40.40.2
R1(config)#ip route 30.30.30.0 255.255.255.0 50.50.50.2
R1(config)#ip route 30.30.30.0 255.255.255.0 40.40.40.2
R1(config)#ip route 50.50.50.0 255.255.255.0 40.40.40.2
R1(config)#exit
R1#sh
*Mar  1 00:10:44.047: %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

    50.0.0.0/24 is subnetted, 1 subnets
S      50.50.50.0 [1/0] via 40.40.40.2
    20.0.0.0/24 is subnetted, 1 subnets
S      20.20.20.0 [1/0] via 40.40.40.2
    40.0.0.0/24 is subnetted, 1 subnets
C      40.40.40.0 is directly connected, FastEthernet0/1
    10.0.0.0/24 is subnetted, 1 subnets
C      10.10.10.0 is directly connected, FastEthernet0/0
    30.0.0.0/24 is subnetted, 1 subnets
S      30.30.30.0 [1/0] via 40.40.40.2
R1#ping 20.20.20.254

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 20.20.20.254, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 8/22/44 ms
R1#ping 50.50.50.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 50.50.50.2, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 16/23/28 ms
```

// Configuring router R2

```
R2(config)#interface f0/0
R2(config-if)#ip add
R2(config-if)#ip address 20.20.20.254 255.255.255.0
R2(config-if)#no shut
R2(config-if)#no shutdown
R2(config-if)#do wr
Building configuration...
[OK]
R2(config-if)#
*Mar  1 00:03:24.079: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar  1 00:03:25.079: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R2(config-if)#exit
R2(config)#int
R2(config)#interface f0/1
R2(config-if)#ip add
R2(config-if)#ip address 40.40.40.2 255.255.255.0
R2(config-if)#no shut
R2(config-if)#no shutdown
R2(config-if)#do wr
Building configuration...
[OK]
R2(config-if)#
*Mar  1 00:03:48.963: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up
*Mar  1 00:03:49.963: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
R2(config-if)#exit
R2(config)#int
R2(config)#interface f1/0
R2(config-if)#ip add
R2(config-if)#ip address
% Incomplete command.

R2(config-if)#ip address 50.50.50.1 255.255.255.0
R2(config-if)#no shut
R2(config-if)#no shutdown
R2(config-if)#do wr
Building configuration...
[OK]
R2(config-if)#
*Mar  1 00:04:13.711: %LINK-3-UPDOWN: Interface FastEthernet1/0, changed state to up
*Mar  1 00:04:14.711: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
R2(config-if)#exit
```

//Configuring router R2 IP routes

```
R2(config)#ip route 10.10.10.0 255.255.255.0 40.40.40.1
R2(config)#ip route 30.30.30.0 255.255.255.0 50.50.50.2
R2(config)#exit
R2#show
*Mar  1 00:10:06.971: %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

    50.0.0.0/24 is subnetted, 1 subnets
C       50.50.50.0 is directly connected, FastEthernet1/0
    20.0.0.0/24 is subnetted, 1 subnets
C       20.20.20.0 is directly connected, FastEthernet0/0
    40.0.0.0/24 is subnetted, 1 subnets
C       40.40.40.0 is directly connected, FastEthernet0/1
    10.0.0.0/24 is subnetted, 1 subnets
S       10.10.10.0 [1/0] via 40.40.40.1
    30.0.0.0/24 is subnetted, 1 subnets
S       30.30.30.0 [1/0] via 50.50.50.2
```

// Configuring router R3

```
R3(config)#interface f0/0
R3(config-if)#ip add
R3(config-if)#ip address 30.30.30.254 255.255.255.0
R3(config-if)#no shut
R3(config-if)#no shutdown
R3(config-if)#do wr
Building configuration...
[OK]
R3(config-if)#
*Mar 1 00:02:39.751: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar 1 00:02:40.751: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R3(config-if)#exit
R3(config)#int
R3(config)#interface f0/1
R3(config-if)#ip add
R3(config-if)#ip address 50.50.50.2 255.255.255.0
R3(config-if)#no shut
R3(config-if)#no shutdown
R3(config-if)#do wr
Building configuration...
[OK]
R3(config-if)#
*Mar 1 00:03:12.451: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up
*Mar 1 00:03:13.451: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
R3(config-if)#exit
```

//Configuring router R3 IP routes

```
R3(config)#ip route 10.10.10.0 255.255.255.0 50.50.50.1
R3(config)#ip route 20.20.20.0 255.255.255.0 50.50.50.1
R3(config)#ip route 40.40.40.0 255.255.255.0 50.50.50.1
R3(config)#exit
R3#show
*Mar 1 00:09:59.379: %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

```

    50.0.0.0/24 is subnetted, 1 subnets
C       50.50.50.0 is directly connected, FastEthernet0/1
    20.0.0.0/24 is subnetted, 1 subnets
S       20.20.20.0 [1/0] via 50.50.50.1
    40.0.0.0/24 is subnetted, 1 subnets
S       40.40.40.0 [1/0] via 50.50.50.1
    10.0.0.0/24 is subnetted, 1 subnets
S       10.10.10.0 [1/0] via 50.50.50.1
    30.0.0.0/24 is subnetted, 1 subnets
C       30.30.30.0 is directly connected, FastEthernet0/0
R3#ping 10.10.10.254
```

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.10.10.254, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 32/36/40 ms

//Configuring router R2 as DHCP server

```
R2(config)#ip dhcp pool CNLab
R2(dhcp-config)#network 10.10.10.0 255.255.255.0
R2(dhcp-config)#default ro
R2(dhcp-config)#default router 10.10.10.254
Translating "router"
          ^
% Invalid input detected at '^' marker.

R2(config)#default router 10.10.10.254
          ^
% Invalid input detected at '^' marker.

R2(config)#def
R2(config)#def
R2(config)#ip dhcp pool CNLab
R2(dhcp-config)#def
R2(dhcp-config)#default-router 10.10.10.254
R2(dhcp-config)#dns
R2(dhcp-config)#dns-server 40.40.40.2
R2(dhcp-config)#exiit
          ^
% Invalid input detected at '^' marker.

R2(dhcp-config)#exit
R2(config)#ip dhcp pool OSLab
R2(dhcp-config)#network 20.20.20.0 255.255.255.0
R2(dhcp-config)#def
R2(dhcp-config)#default-router 20.20.20.254
R2(dhcp-config)#dns
R2(dhcp-config)#dns-server 40.40.40.2
R2(dhcp-config)#exit
R2(config)#ip dhcp pool CDLab
R2(dhcp-config)#network 30.30.30.0 255.255.255.0
R2(dhcp-config)#def
R2(dhcp-config)#default-router 30.30.30.254
R2(dhcp-config)#dns
R2(dhcp-config)#dns-server 50.50.50.1
```

//Configuring router R1 and R3 as relays

```
R1(config-if)#interface f0/0
R1(config-if)#ip help
R1(config-if)#ip helper-address
% Incomplete command.

R1(config-if)#ip helper-address 40.40.40.2
R1(config-if)#exit
```

```
R3(config)#interface f0/0
R3(config-if)#ip hel
R3(config-if)#ip help
R3(config-if)#ip helper-address 50.50.50.1
R3(config-if)#exit
```

//Configuring router R2 as DNS server

```
R2(config)#ip dns server
R2(config)#ip host cnlab.com 10.10.10.1
R2(config)#ip host oslab.com 20.20.20.1
R2(config)#ip host cdlab.com 30.30.30.1
R2(config)#
```

```
R1(config)#ip route 0.0.0.0 0.0.0.0 40.40.40.2
R1(config)#ip domain
R1(config)#ip domain lookup
R1(config)#ip domain lookup
R1(config)#ip name
R1(config)#ip name-server 40.40.40.2
R1(config)#
```

```
R3(config)#ip route 0.0.0.0 0.0.0.0 50.50.50.1
R3(config)#ip domain lookup
R3(config)#ip name
R3(config)#ip name-server 50.50.50.1
R3(config)#
```

//Show ip after setting up DHCP server

//PC1

```
PC1> dhcp
DDORA IP 10.10.10.1/24 GW 10.10.10.254

PC1> show ip

NAME           : PC1[1]
IP/MASK        : 10.10.10.1/24
GATEWAY        : 10.10.10.254
DNS            : 40.40.40.2
DHCP SERVER    : 40.40.40.2
DHCP LEASE     : 86384, 86400/43200/75600
MAC            : 00:50:79:66:68:00
LPORT          : 10030
RHOST:PORT     : 127.0.0.1:10031
MTU:           : 1500
```

//PC2

```
PC2> dhcp  
DDORA IP 20.20.20.1/24 GW 20.20.20.254
```

```
PC2> show ip
```

```
NAME          : PC2[1]  
IP/MASK       : 20.20.20.1/24  
GATEWAY       : 20.20.20.254  
DNS           : 40.40.40.2  
DHCP SERVER   : 20.20.20.254  
DHCP LEASE    : 86396, 86400/43200/75600  
MAC           : 00:50:79:66:68:01  
LPORT        : 10032  
RHOST:PORT    : 127.0.0.1:10033  
MTU:          : 1500
```

//PC3

```
PC3> dhcp  
DDORA IP 30.30.30.1/24 GW 30.30.30.254
```

```
PC3> show ip
```

```
NAME          : PC3[1]  
IP/MASK       : 30.30.30.1/24  
GATEWAY       : 30.30.30.254  
DNS           : 50.50.50.1  
DHCP SERVER   : 50.50.50.1  
DHCP LEASE    : 86396, 86400/43200/75600  
MAC           : 00:50:79:66:68:02  
LPORT        : 10034  
RHOST:PORT    : 127.0.0.1:10035  
MTU:          : 1500
```

//Pinging from *PC1* based on ip and dns name

```
PC1> ping 30.30.30.1
30.30.30.1 icmp_seq=1 timeout
30.30.30.1 icmp_seq=2 timeout
84 bytes from 30.30.30.1 icmp_seq=3 ttl=61 time=46.060 ms
84 bytes from 30.30.30.1 icmp_seq=4 ttl=61 time=47.562 ms
84 bytes from 30.30.30.1 icmp_seq=5 ttl=61 time=46.720 ms

PC1> ping 20.20.20.1
20.20.20.1 icmp_seq=1 timeout
20.20.20.1 icmp_seq=2 timeout
84 bytes from 20.20.20.1 icmp_seq=3 ttl=62 time=24.129 ms
84 bytes from 20.20.20.1 icmp_seq=4 ttl=62 time=26.027 ms
84 bytes from 20.20.20.1 icmp_seq=5 ttl=62 time=26.246 ms

PC1> ping oslab.com
oslab.com resolved to 20.20.20.1
oslab.com icmp_seq=1 timeout
oslab.com icmp_seq=2 timeout
84 bytes from 20.20.20.1 icmp_seq=3 ttl=62 time=26.501 ms
84 bytes from 20.20.20.1 icmp_seq=4 ttl=62 time=26.256 ms
84 bytes from 20.20.20.1 icmp_seq=5 ttl=62 time=26.267 ms
```

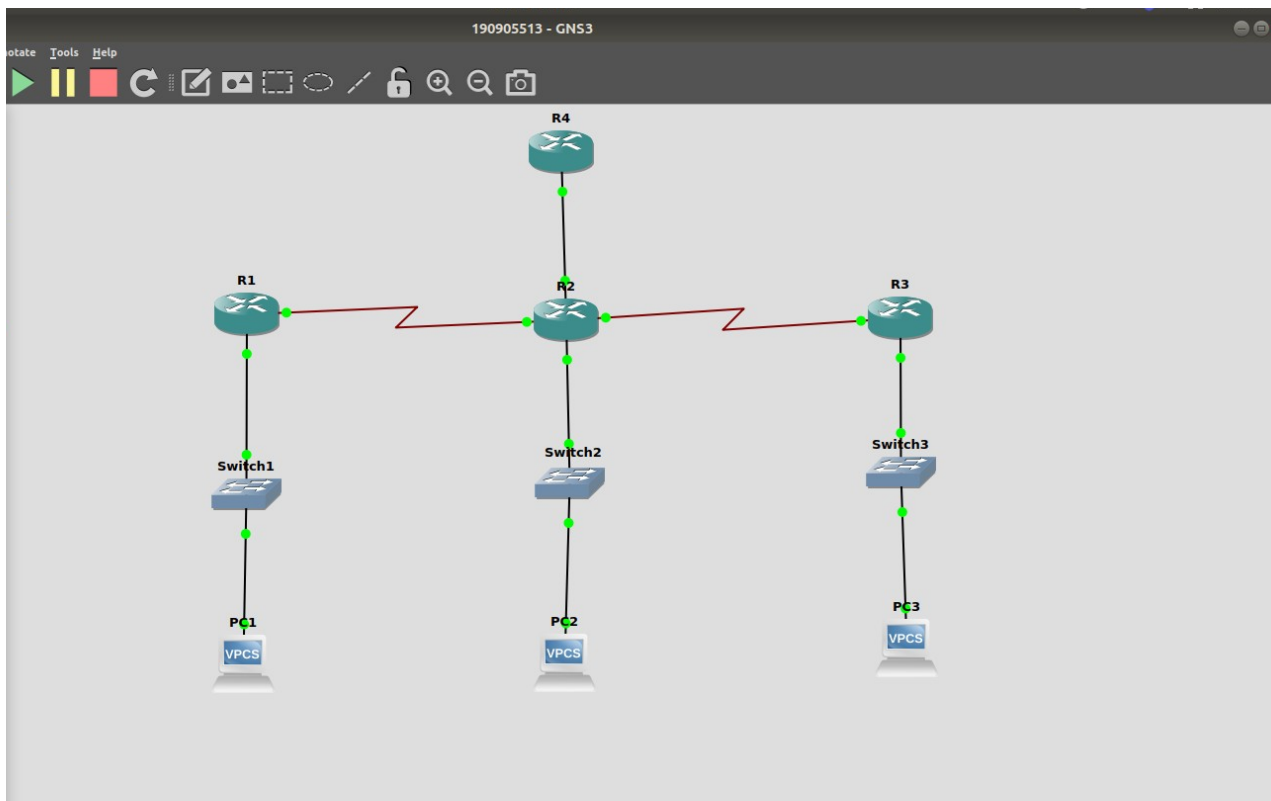
//Pinging from *PC2* based on ip and dns name

```
PC2> ping cnlab.com
cnlab.com resolved to 10.10.10.1
84 bytes from 10.10.10.1 icmp_seq=1 ttl=62 time=30.212 ms
84 bytes from 10.10.10.1 icmp_seq=2 ttl=62 time=25.936 ms
84 bytes from 10.10.10.1 icmp_seq=3 ttl=62 time=25.802 ms
84 bytes from 10.10.10.1 icmp_seq=4 ttl=62 time=26.668 ms
84 bytes from 10.10.10.1 icmp_seq=5 ttl=62 time=27.722 ms

PC2> ping cdlab.com
cdlab.com resolved to 30.30.30.1
cdlab.com icmp_seq=1 timeout
cdlab.com icmp_seq=2 timeout
84 bytes from 30.30.30.1 icmp_seq=3 ttl=62 time=35.575 ms
84 bytes from 30.30.30.1 icmp_seq=4 ttl=62 time=36.380 ms
84 bytes from 30.30.30.1 icmp_seq=5 ttl=62 time=36.880 ms
```


EXERCISE 02

//Topology



//Configuring router R1

```
R1(config)#interface f0/1
R1(config-if)#ip add
R1(config-if)#ip address 10.10.10.1 255.255.255.0
R1(config-if)#exit
R1(config)#int
R1(config)#interface f0/1
R1(config-if)#no shut
R1(config-if)#no shutdown
R1(config-if)#do wr
Building configuration...
[OK]
R1(config-if)#
*Mar  1 00:03:39.643: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up
*Mar  1 00:03:40.643: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
R1(config-if)#exit
R1(config)#int
R1(config)#interface f0/0
R1(config-if)#ip add
R1(config-if)#ip address 14.24.74.126 255.255.255.128
R1(config-if)#no shut
R1(config-if)#no shutdown
R1(config-if)#do wr
Building configuration...
[OK]
```

//Configuring ip routes for router R1

```
R1(config)#ip route 14.24.74.128 255.255.255.192 10.10.10.2
R1(config)#ip route 14.24.74.192 255.255.255.240 10.10.10.2
R1(config)#ip route 20.20.20.0 255.255.255.0 10.10.10.2
R1(config)#ip route 30.30.30.0 255.255.255.0 10.10.10.2
R1(config)#exit
R1#show i
*Mar 1 00:07:13.091: %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

    20.0.0.0/24 is subnetted, 1 subnets
S       20.20.20.0 [1/0] via 10.10.10.2
    10.0.0.0/24 is subnetted, 1 subnets
C       10.10.10.0 is directly connected, FastEthernet0/1
    14.0.0.0/8 is variably subnetted, 3 subnets, 3 masks
C       14.24.74.0/25 is directly connected, FastEthernet0/0
S       14.24.74.192/28 [1/0] via 10.10.10.2
S       14.24.74.128/26 [1/0] via 10.10.10.2
    30.0.0.0/24 is subnetted, 1 subnets
S       30.30.30.0 [1/0] via 10.10.10.2
R1#ping 30.30.30.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 30.30.30.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 8/11/16 ms
R1#
```

//Configuring router R2

```
R2(config)#interface f2/0
R2(config-if)#ip address 30.30.30.1 255.255.255.0
^
% Invalid input detected at '^' marker.

R2(config-if)#ip address 30.30.30.1 255.255.255.0
R2(config-if)#no shut
R2(config-if)#no shutdown
R2(config-if)#do wr
Building configuration...
[OK]
R2(config-if)#
*Mar 1 00:08:37.839: %LINK-3-UPDOWN: Interface FastEthernet2/0, changed state to up
*Mar 1 00:08:38.839: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet2/0, changed state to up
R2(config-if)#exit
```

```
R2(config)#interface f0/0
R2(config-if)#ip add
R2(config-if)#ip address 10.10.10.2 255.255.255.0
R2(config-if)#no shut
R2(config-if)#no shutdown
R2(config-if)#do wr
Building configuration...
[OK]
R2(config-if)#
*Mar 1 00:05:55.291: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar 1 00:05:56.479: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R2(config-if)#exit
R2(config)#int
R2(config)#interface f1/0
R2(config-if)#ip
R2(config-if)#ip add
R2(config-if)#ip address 14.24.74.191 255.255.255.192
Bad mask /26 for address 14.24.74.191
R2(config-if)#ip address 14.24.74.190 255.255.255.192
R2(config-if)#no shut
R2(config-if)#no shutdown
R2(config-if)#do wr
Building configuration...
[OK]
R2(config-if)#
*Mar 1 00:07:27.735: %LINK-3-UPDOWN: Interface FastEthernet1/0, changed state to up
*Mar 1 00:07:28.735: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
R2(config-if)#exit
R2(config)#int
R2(config)#interface f0/1
R2(config-if)#ip add
R2(config-if)#ip address 20.20.20.1 255.255.255.0
R2(config-if)#no shut
R2(config-if)#no shutdown
R2(config-if)#do wr
Building configuration...
[OK]
R2(config-if)#
*Mar 1 00:07:59.399: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up
*Mar 1 00:08:00.399: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
R2(config-if)#exit
```

//Configuring ip routes for router R2

```
R2(config)#ip route 14.24.74.0 255.255.255.128 10.10.10.1
R2(config)#ip route 14.24.74.192 255.255.255.240 20.20.20.1
%Invalid next hop address (it's this router)
R2(config)#ip route 14.24.74.192 255.255.255.240 20.20.20.2
R2(config)#exit
R2#show
*Mar 1 00:10:08.463: %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

    20.0.0.0/24 is subnetted, 1 subnets
C      20.20.20.0 is directly connected, FastEthernet0/1
    10.0.0.0/24 is subnetted, 1 subnets
C      10.10.10.0 is directly connected, FastEthernet0/0
    14.0.0.0/8 is variably subnetted, 3 subnets, 3 masks
S      14.24.74.0/25 [1/0] via 10.10.10.1
S      14.24.74.192/28 [1/0] via 20.20.20.2
C      14.24.74.128/26 is directly connected, FastEthernet1/0
    30.0.0.0/24 is subnetted, 1 subnets
C      30.30.30.0 is directly connected, FastEthernet2/0
R2#ping 30.30.30.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 30.30.30.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 4/17/24 ms
```

//Configuring router R3

```
R3(config)#interface f0/0
R3(config-if)#ip add
R3(config-if)#ip address 14.24.74.206 255.255.255.240
R3(config-if)#no shut
R3(config-if)#no shutdown
R3(config-if)#do wr
Building configuration...

*Mar 1 00:08:24.615: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar 1 00:08:25.623: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up[OK]
R3(config-if)#z}
R3#rmx-t2e5r6mc-o2l5o6rcplor
*Mar 1 00:08:43.767: %SYS-5-CONFIG_I: Configured from console by console
R3#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#int
R3(config)#interface f0/1
R3(config-if)#ip add
R3(config-if)#ip address 20.20.20.2 255.255.255.0
R3(config-if)#no shut
R3(config-if)#no shutdown
R3(config-if)#do wr
Building configuration...
[OK]
R3(config-if)#
*Mar 1 00:09:30.183: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up
*Mar 1 00:09:31.183: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
R3(config-if)#exit
```

//Configuring ip routes for router R3

```
R3(config)#ip route 14.24.74.0 255.255.255.128 20.20.20.1
R3(config)#ip route 14.24.74.128 255.255.255.192 20.20.20.1
R3(config)#ip route 10.10.10.0 255.255.255.0 20.20.20.1
R3(config)#ip route 30.30.30.0 255.255.255.0 20.20.20.1
R3(config)#exit
R3#show
*Mar  1 00:10:45.143: %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

    20.0.0.0/24 is subnetted, 1 subnets
C       20.20.20.0 is directly connected, FastEthernet0/1
    10.0.0.0/24 is subnetted, 1 subnets
S       10.10.10.0 [1/0] via 20.20.20.1
    14.0.0.0/8 is variably subnetted, 3 subnets, 3 masks
S       14.24.74.0/25 [1/0] via 20.20.20.1
C       14.24.74.192/28 is directly connected, FastEthernet0/0
S       14.24.74.128/26 [1/0] via 20.20.20.1
    30.0.0.0/24 is subnetted, 1 subnets
S       30.30.30.0 [1/0] via 20.20.20.1
R3#ping 10.10.10.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.10.10.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 16/19/20 ms
```


//Configuring ip routes for router R4

```
R4(config)#ip route 14.24.74.128 255.255.255.192 30.30.30.1
R4(config)#ip route 14.24.74.192 255.255.255.240 30.30.30.1
R4(config)#exit
R4#sho
*Mar  1 00:12:10.591: %SYS-5-CONFIG_I: Configured from console by console
R4#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

    20.0.0.0/24 is subnetted, 1 subnets
S       20.20.20.0 [1/0] via 30.30.30.1
    10.0.0.0/24 is subnetted, 1 subnets
S       10.10.10.0 [1/0] via 30.30.30.1
    14.0.0.0/8 is variably subnetted, 3 subnets, 3 masks
S       14.24.74.0/25 [1/0] via 30.30.30.1
S       14.24.74.192/28 [1/0] via 30.30.30.1
S       14.24.74.128/26 [1/0] via 30.30.30.1
    30.0.0.0/24 is subnetted, 1 subnets
C       30.30.30.0 is directly connected, FastEthernet0/0
```

//Configuring router *R4* as dhcp and dns server

```
R4(config)#ip dhcp pool lan1
R4(dhcp-config)#network 14.24.74.0 255.255.255.128
R4(dhcp-config)#def
R4(dhcp-config)#default-router 14.24.74.126
R4(dhcp-config)#dns
R4(dhcp-config)#dns-server 30.30.30.2
R4(dhcp-config)#exit
R4(config)#ip dhcp pool lan2
R4(dhcp-config)#network 14.24.74.128 255.255.255.192
R4(dhcp-config)#def
R4(dhcp-config)#default-router 14.24.74.190
R4(dhcp-config)#dns
R4(dhcp-config)#dns-server 30.30.30.2
R4(dhcp-config)#exit
R4(config)#ip dhcp pool lan3
R4(dhcp-config)#network 14.24.74.192 255.255.255.240
R4(dhcp-config)#def
R4(dhcp-config)#default-router 14.24.74.206
R4(dhcp-config)#dns
R4(dhcp-config)#dns-server 30.30.30.2
R4(dhcp-config)#exit
R4(config)#}t
R4#-2x5t6ecroml-o2r5pcolor
*Mar  1 00:22:37.411: %SYS-5-CONFIG_I: Configured from console by console
R4#
R4#
R4#
R4#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line.  End with CNTL/Z.
R4(config)#ip dns server
R4(config)#ip host lan1.com 14.24.74.1
R4(config)#ip host lan2.com 14.24.74.129
R4(config)#ip host lan3.com 14.24.74.193
R4(config)#}t
R4#-2x5t6ecroml-o2r5pcolor
*Mar  1 00:39:44.135: %SYS-5-CONFIG_I: Configured from console by console
R4#-2x5t6ecroml-o2r5pcolor
```

//Configuring router *R1 R2 & R3* as relays and configuring default route for dns server

```
R1(config)#interface f0/0
R1(config-if)#ip help
R1(config-if)#ip helper-address 30.30.30.2
R1(config-if)#exit
R1(config)#ip route 0.0.0.0 0.0.0.0 10.10.10.2
R1(config)#ip domain lookup
R1(config)#ip name
R1(config)#ip name-server 30.30.30.2
R1(config)#
```

```
R2(config)#interface f1/0
R2(config-if)#ip help
R2(config-if)#ip helper-address 30.30.30.2
R2(config-if)#exit
R2(config)#ip route 0.0.0.0 0.0.0.0 30.30.30.2
R2(config)#ip domain lookup
R2(config)#ip name
R2(config)#ip name-server 30.30.30.2
R2(config)#
```

```
R3(config)#interface f0/0
R3(config-if)#ip help
R3(config-if)#ip helper-address 30.30.30.2
R3(config-if)#exit
R3(config)#ip route 0.0.0.0 0.0.0.0 20.20.20.1
R3(config)#ip domain lookup
R3(config)#ip name
R3(config)#ip name-server 30.30.30.2
R3(config)#
```

//Pinging from *PC1* based on ip and dns name

```
PC1> dhcp
DDORA IP 14.24.74.1/25 GW 14.24.74.126

PC1> ping lan2.com
lan2.com resolved to 14.24.74.129
lan2.com icmp_seq=1 timeout
lan2.com icmp_seq=2 timeout
84 bytes from 14.24.74.129 icmp_seq=3 ttl=62 time=34.951 ms
84 bytes from 14.24.74.129 icmp_seq=4 ttl=62 time=36.401 ms
84 bytes from 14.24.74.129 icmp_seq=5 ttl=62 time=36.782 ms

PC1> ping lan3.com
lan3.com resolved to 14.24.74.193
lan3.com icmp_seq=1 timeout
lan3.com icmp_seq=2 timeout
84 bytes from 14.24.74.193 icmp_seq=3 ttl=61 time=37.642 ms
84 bytes from 14.24.74.193 icmp_seq=4 ttl=61 time=36.722 ms
84 bytes from 14.24.74.193 icmp_seq=5 ttl=61 time=36.800 ms
```

//Pinging from *PC2* based on ip and dns name

```
PC2> dhcp
DDORA IP 14.24.74.129/26 GW 14.24.74.190

PC2> ping lan3.com
lan3.com resolved to 14.24.74.193
84 bytes from 14.24.74.193 icmp_seq=1 ttl=62 time=29.517 ms
84 bytes from 14.24.74.193 icmp_seq=2 ttl=62 time=25.806 ms
84 bytes from 14.24.74.193 icmp_seq=3 ttl=62 time=27.023 ms
84 bytes from 14.24.74.193 icmp_seq=4 ttl=62 time=26.674 ms
84 bytes from 14.24.74.193 icmp_seq=5 ttl=62 time=27.463 ms

PC2> ping lan1.com
lan1.com resolved to 14.24.74.1
84 bytes from 14.24.74.1 icmp_seq=1 ttl=62 time=29.863 ms
84 bytes from 14.24.74.1 icmp_seq=2 ttl=62 time=26.882 ms
84 bytes from 14.24.74.1 icmp_seq=3 ttl=62 time=26.742 ms
84 bytes from 14.24.74.1 icmp_seq=4 ttl=62 time=26.625 ms
84 bytes from 14.24.74.1 icmp_seq=5 ttl=62 time=27.373 ms
```

//Pinging from *PC3* based on ip and dns name

```
PC3> dhcp
DDORA IP 14.24.74.193/28 GW 14.24.74.206

PC3> ping lan1.com
lan1.com resolved to 14.24.74.1
84 bytes from 14.24.74.1 icmp_seq=1 ttl=61 time=49.674 ms
84 bytes from 14.24.74.1 icmp_seq=2 ttl=61 time=36.231 ms
84 bytes from 14.24.74.1 icmp_seq=3 ttl=61 time=36.682 ms
84 bytes from 14.24.74.1 icmp_seq=4 ttl=61 time=37.289 ms
84 bytes from 14.24.74.1 icmp_seq=5 ttl=61 time=36.949 ms

PC3> ping lan2.com
lan2.com resolved to 14.24.74.129
84 bytes from 14.24.74.129 icmp_seq=1 ttl=62 time=39.572 ms
84 bytes from 14.24.74.129 icmp_seq=2 ttl=62 time=27.008 ms
84 bytes from 14.24.74.129 icmp_seq=3 ttl=62 time=25.911 ms
84 bytes from 14.24.74.129 icmp_seq=4 ttl=62 time=26.182 ms
84 bytes from 14.24.74.129 icmp_seq=5 ttl=62 time=26.853 ms
```