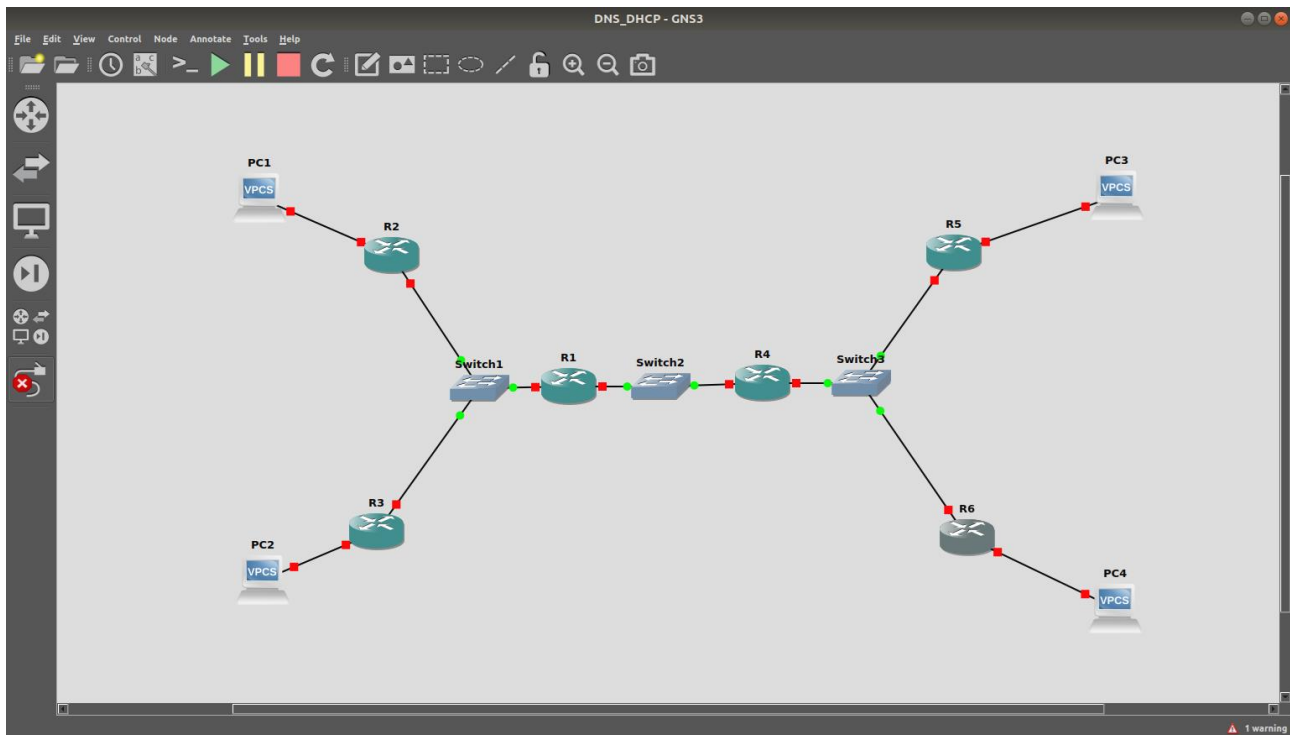


CN Lab #6

Question 1



R2 Setup

Interface f0/0

Network IP: 14.24.74.126

Mask IP: 255.255.255.128

```
R2
File Edit View Search Terminal Help
R2(config)#interface f0/0
R2(config-if)#ip add
R2(config-if)#ip address 14.24.74.126 255.255.255.128
R2(config-if)#no shut
R2(config-if)#no shutdown
R2(config-if)#do wr
Building configuration...
```

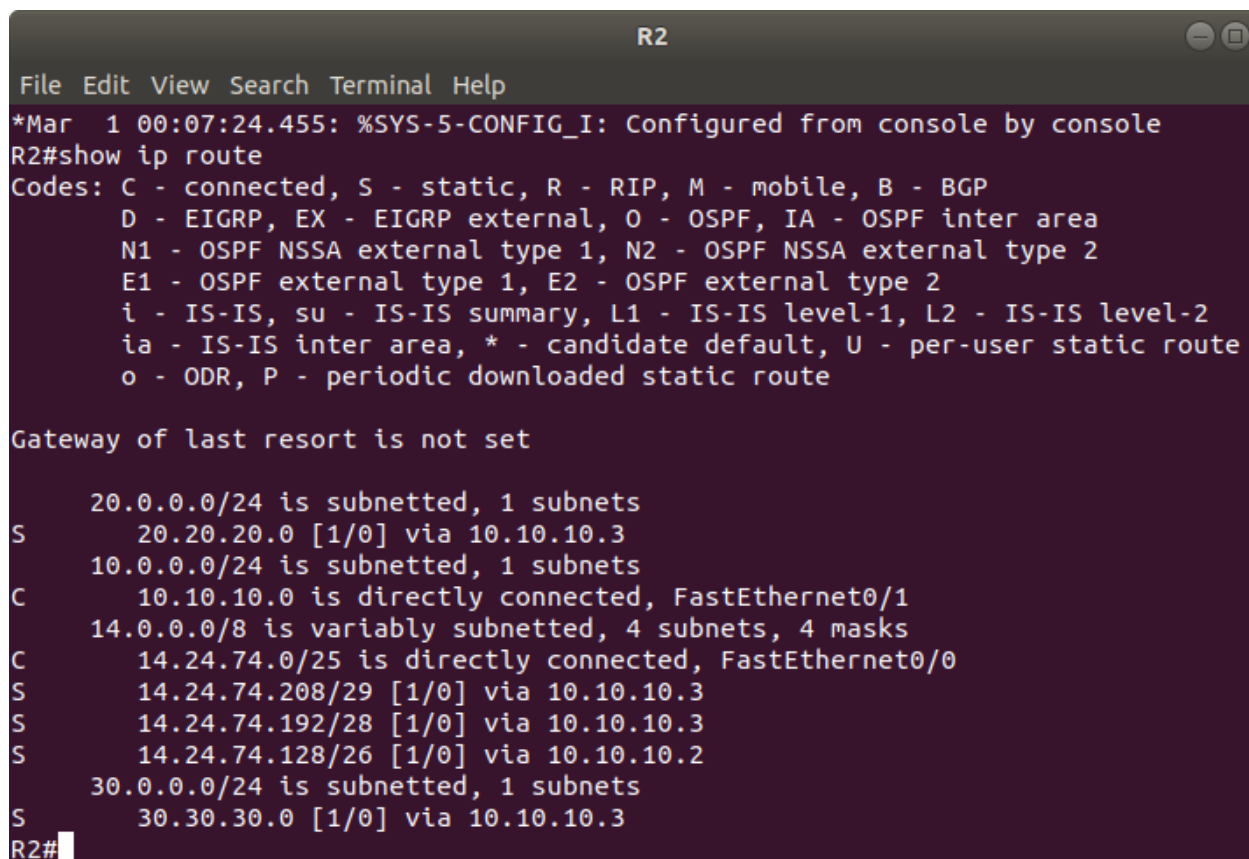
Interface f0/1

Network IP: 10.10.10.1

Mask IP: 255.255.255.0

```
R2(config-if)#exit
R2(config)#int
R2(config)#interface f0/1
R2(config-if)#ip
R2(config-if)#ip ad
R2(config-if)#ip add
R2(config-if)#ip address 10.10.10.1 255.255.255.0
R2(config-if)#no shut
R2(config-if)#no shutdown
R2(config-if)#do wr
Building configuration...
[OK]
```

R2 route Setup



```
R2
File Edit View Search Terminal Help
*Mar  1 00:07:24.455: %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

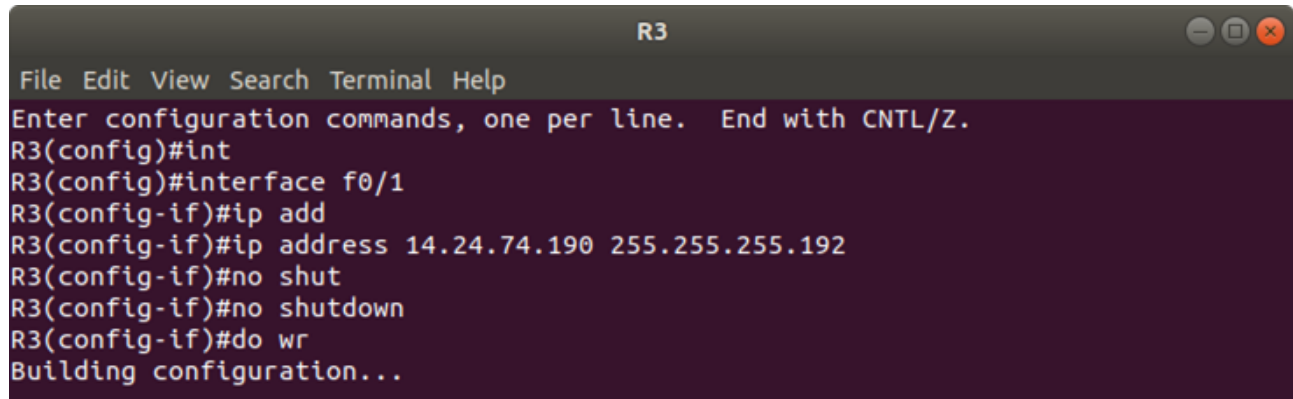
    20.0.0.0/24 is subnetted, 1 subnets
S       20.20.20.0 [1/0] via 10.10.10.3
    10.0.0.0/24 is subnetted, 1 subnets
C       10.10.10.0 is directly connected, FastEthernet0/1
    14.0.0.0/8 is variably subnetted, 4 subnets, 4 masks
C       14.24.74.0/25 is directly connected, FastEthernet0/0
S       14.24.74.208/29 [1/0] via 10.10.10.3
S       14.24.74.192/28 [1/0] via 10.10.10.3
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 10.10.10.3
R2#
```

CONFIGURING R3

Interface f0/1

Network IP: 14.24.74.190

Mask IP: 255.255.255.192

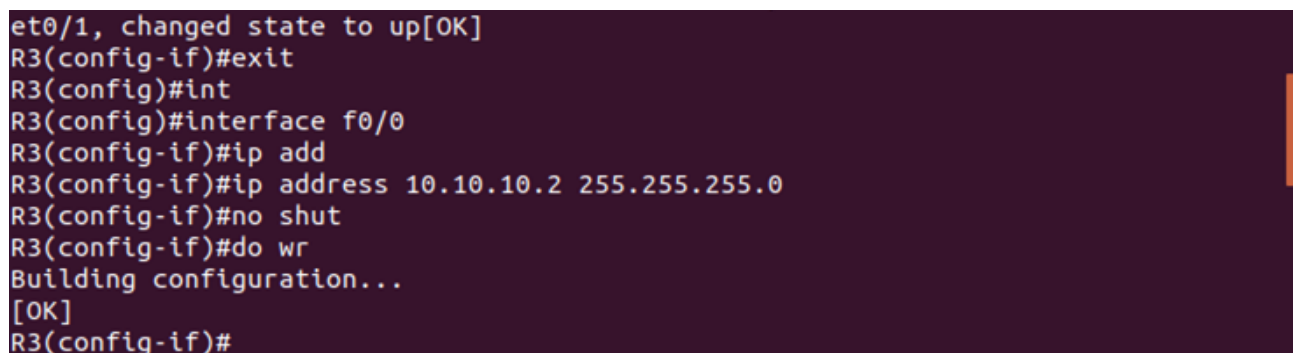
A terminal window titled 'R3' with a menu bar (File, Edit, View, Search, Terminal, Help). The terminal text shows the configuration of interface f0/1: R3(config)#int, R3(config)#interface f0/1, R3(config-if)#ip add, R3(config-if)#ip address 14.24.74.190 255.255.255.192, R3(config-if)#no shut, R3(config-if)#no shutdown, R3(config-if)#do wr, and Building configuration...

```
R3
File Edit View Search Terminal Help
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 14.24.74.190 255.255.255.192
R3(config-if)#no shut
R3(config-if)#no shutdown
R3(config-if)#do wr
Building configuration...
```

Interface f0/0

Network IP: 10.10.10.2

Mask IP: 255.255.255.0

A terminal window showing the configuration of interface f0/0. It starts with 'et0/1, changed state to up[OK]', followed by R3(config-if)#exit, R3(config)#int, R3(config)#interface f0/0, R3(config-if)#ip add, R3(config-if)#ip address 10.10.10.2 255.255.255.0, R3(config-if)#no shut, R3(config-if)#do wr, Building configuration..., [OK], and R3(config-if)#.

```
et0/1, changed state to up[OK]
R3(config-if)#exit
R3(config)#int
R3(config)#interface f0/0
R3(config-if)#ip add
R3(config-if)#ip address 10.10.10.2 255.255.255.0
R3(config-if)#no shut
R3(config-if)#do wr
Building configuration...
[OK]
R3(config-if)#
```

R3 route Setup

```
R3
File Edit View Search Terminal Help
R3(config)#ip route 14.24.74.0 255.255.255.128 10.10.10.1
R3(config)#ip route 20.20.20.0 255.255.255.0 10.10.10.3
R3(config)#ip route 30.30.30.0 255.255.255.0 10.10.10.3
R3(config)#ip route 14.24.74.192 255.255.255.240 10.10.10.3
R3(config)#ip route 14.24.74.208 255.255.255.248 10.10.10.3
R3(config)#exit
R3#
*Mar  1 00:10:16.187: %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
S       20.20.20.0 [1/0] via 10.10.10.3
    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, 4 subnets, 4 masks
S       14.24.74.0/25 [1/0] via 10.10.10.1
S       14.24.74.208/29 [1/0] via 10.10.10.3
S       14.24.74.192/28 [1/0] via 10.10.10.3
C       14.24.74.128/26 is directly connected, FastEthernet0/1
    30.0.0.0/24 is subnetted, 1 subnets
S       30.30.30.0 [1/0] via 10.10.10.3
R3#
```

CONFIGURING R5

Interface f0/0

Network IP: 30.30.30.2

Mask IP: 255.255.255.0

```
R5(config-if)#exit
R5(config)#int f0/0
R5(config-if)#ip add
R5(config-if)#ip address 30.30.30.2 255.255
% Incomplete command.

R5(config-if)#ip address 30.30.30.2 255.255.255.0
R5(config-if)#no shut
R5(config-if)#no shutdown
R5(config-if)#do wr
Building configuration...
[OK]
R5(config-if)#
```

Interface f0/1

Network IP: 14.24.74.190

Mask IP: 255.255.255.192

```
R5(config)#int f0/1
R5(config-if)#ip add
R5(config-if)#ip address 14.24.74.206 255.255.255.240
R5(config-if)#no shut
R5(config-if)#no shutdown
R5(config-if)#do wr
Building configuration...
```

R5 route Setup

```
R5
File Edit View Search Terminal Help
R5(config)#ip route 14.24.74.0 255.255.255.128 30.30.30.1
R5(config)#ip route 14.24.74.128 255.255.255.192 30.30.30.1
R5(config)#ip route 20.20.20.0 255.255.255.0 30.30.30.1
R5(config)#ip route 10.10.10.0 255.255.255.0 30.30.30.1
R5(config)#ip route 14.24.74.208 255.255.255.248 30.30.30.3
R5(config)#exit
R5#
*Mar  1 00:11:50.611: %SYS-5-CONFIG_I: Configured from console by console
R5#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

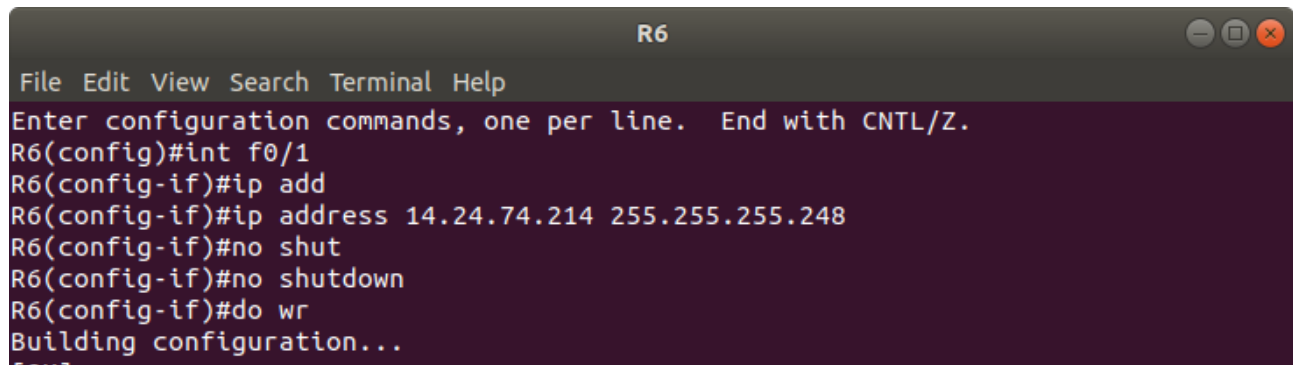
    20.0.0.0/24 is subnetted, 1 subnets
S       20.20.20.0 [1/0] via 30.30.30.1
    10.0.0.0/24 is subnetted, 1 subnets
S       10.10.10.0 [1/0] via 30.30.30.1
    14.0.0.0/8 is variably subnetted, 4 subnets, 4 masks
S       14.24.74.0/25 [1/0] via 30.30.30.1
S       14.24.74.208/29 [1/0] via 30.30.30.3
C       14.24.74.192/28 is directly connected, FastEthernet0/1
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 R6

Interface f0/1

Network IP: 14.24.74.214

Mask IP: 255.255.255.248

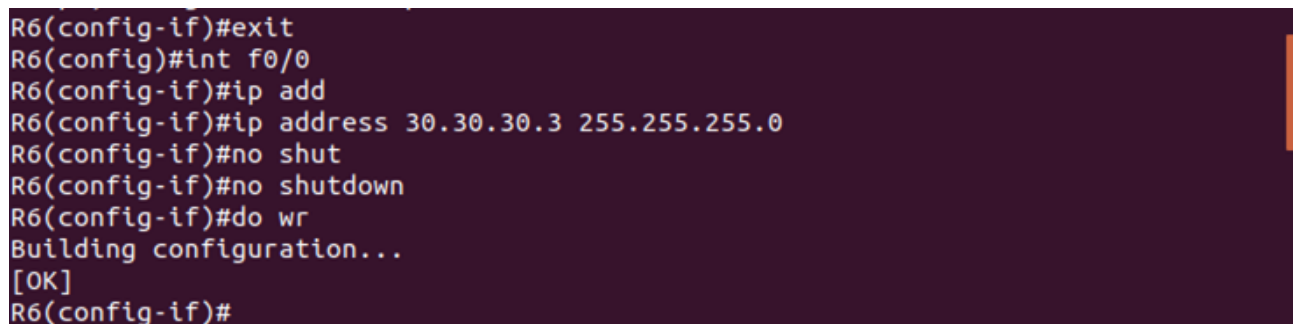
A terminal window titled 'R6' with a menu bar (File, Edit, View, Search, Terminal, Help) and standard window controls. The terminal text shows the configuration of interface f0/1: entering configuration mode, setting the IP address to 14.24.74.214 with a mask of 255.255.255.248, ensuring the interface is not shutdown, and saving the configuration.

```
R6
File Edit View Search Terminal Help
Enter configuration commands, one per line.  End with CNTL/Z.
R6(config)#int f0/1
R6(config-if)#ip add
R6(config-if)#ip address 14.24.74.214 255.255.255.248
R6(config-if)#no shut
R6(config-if)#no shutdown
R6(config-if)#do wr
Building configuration...
5063
```

Interface f0/0

Network IP: 30.30.30.3

Mask IP: 255.255.255.0

A terminal window showing the configuration of interface f0/0. The text shows exiting the previous configuration, entering configuration mode for f0/0, setting the IP address to 30.30.30.3 with a mask of 255.255.255.0, ensuring the interface is not shutdown, and saving the configuration. The prompt returns to R6(config-if)#.

```
R6(config-if)#exit
R6(config)#int f0/0
R6(config-if)#ip add
R6(config-if)#ip address 30.30.30.3 255.255.255.0
R6(config-if)#no shut
R6(config-if)#no shutdown
R6(config-if)#do wr
Building configuration...
[OK]
R6(config-if)#
```

R6 route Setup

```
R6
File Edit View Search Terminal Help
R6(config)#ip route 14.24.74.0 255.255.255.128 30.30.30.1
R6(config)#ip route 14.24.74.128 255.255.255.192 30.30.30.1
R6(config)#ip route 14.24.74.192 255.255.255.240 30.30.30.2
R6(config)#ip route 10.10.10.0 255.255.255.0 30.30.30.1
R6(config)#ip route 20.20.20.0 255.255.255.0 30.30.30.1
R6(config)#exit
R6#
*Mar  1 00:14:03.315: %SYS-5-CONFIG_I: Configured from console by console
R6#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

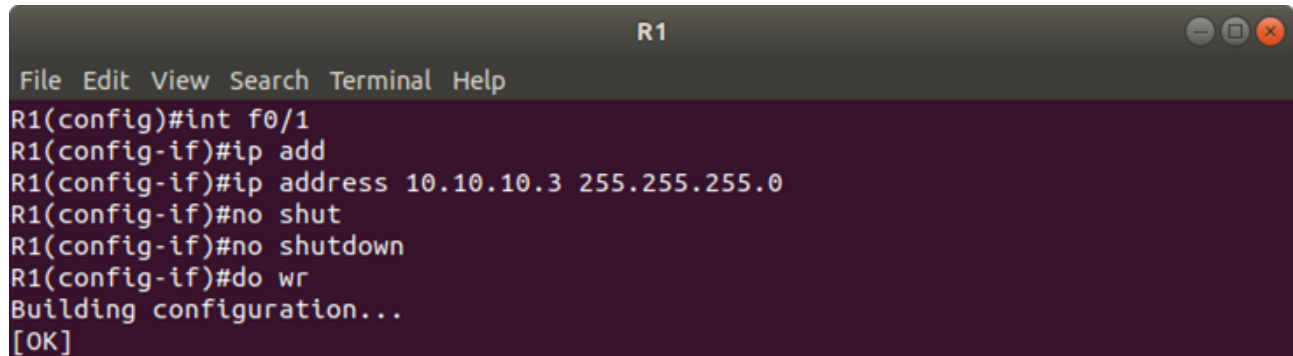
    20.0.0.0/24 is subnetted, 1 subnets
S       20.20.20.0 [1/0] via 30.30.30.1
    10.0.0.0/24 is subnetted, 1 subnets
S       10.10.10.0 [1/0] via 30.30.30.1
    14.0.0.0/8 is variably subnetted, 4 subnets, 4 masks
S       14.24.74.0/25 [1/0] via 30.30.30.1
C       14.24.74.208/29 is directly connected, FastEthernet0/1
S       14.24.74.192/28 [1/0] via 30.30.30.2
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 R1

Interface f0/0

Network IP: 10.10.10.3

Mask IP: 255.255.255.0

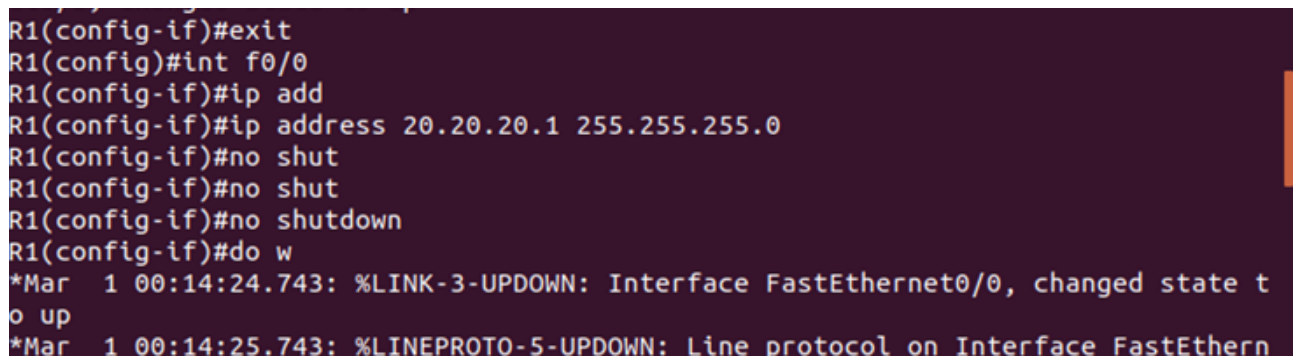


```
R1
File Edit View Search Terminal Help
R1(config)#int f0/1
R1(config-if)#ip add
R1(config-if)#ip address 10.10.10.3 255.255.255.0
R1(config-if)#no shut
R1(config-if)#no shutdown
R1(config-if)#do wr
Building configuration...
[OK]
```

Interface f0/0

Network IP: 20.20.20.1

Mask IP: 255.255.255.0



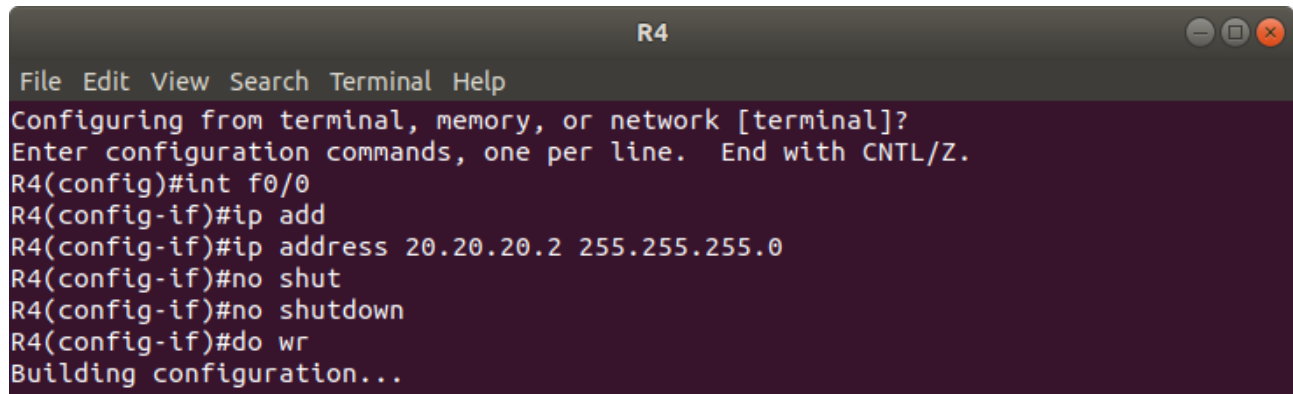
```
R1(config-if)#exit
R1(config)#int f0/0
R1(config-if)#ip add
R1(config-if)#ip address 20.20.20.1 255.255.255.0
R1(config-if)#no shut
R1(config-if)#no shut
R1(config-if)#no shutdown
R1(config-if)#do w
*Mar  1 00:14:24.743: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state t
o up
*Mar  1 00:14:25.743: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
```

CONFIGURING R4

Interface f0/0

Network IP: 20.20.20.2

Mask IP: 255.255.255.0

A screenshot of a terminal window titled "R4" with standard window controls (minimize, maximize, close) in the top right corner. The terminal has a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The text in the terminal is as follows:

```
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line.  End with CNTL/Z.
R4(config)#int f0/0
R4(config-if)#ip add
R4(config-if)#ip address 20.20.20.2 255.255.255.0
R4(config-if)#no shut
R4(config-if)#no shutdown
R4(config-if)#do wr
Building configuration...
```

Interface f0/0

Network IP: 30.30.30.1

Mask IP: 255.255.255.0

```
R4(config-if)#exit
R4(config)#int f0/1
R4(config-if)#ip add
R4(config-if)#ip address 30.30.30.1 255.255.255.0
R4(config-if)#no shut
R4(config-if)#no shutdown
R4(config-if)#do wr
Building configuration...
[OK]
R4(config-if)#
```

R4 route Setup

```
R4
File Edit View Search Terminal Help
R4(config)#ip route 14.24.74.0 255.255.255.128 20.20.20.1
R4(config)#ip route 14.24.74.128 255.255.255.192 20.20.20.1
R4(config)#ip route 14.24.74.192 255.255.255.240 30.30.30.2
R4(config)#ip route 14.24.74.208 255.255.255.248 30.30.30.3
R4(config)#ip route 10.10.10.0 255.255.255.0 20.20.20.1
R4(config)#exit
R4#
*Mar  1 00:18:11.307: %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
C       20.20.20.0 is directly connected, FastEthernet0/0
    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, 4 subnets, 4 masks
S       14.24.74.0/25 [1/0] via 20.20.20.1
S       14.24.74.208/29 [1/0] via 30.30.30.3
S       14.24.74.192/28 [1/0] via 30.30.30.2
S       14.24.74.128/26 [1/0] via 20.20.20.1
```

DCHP Setup

Pool: oslab

Network IP: 14.24.74.0

Mask IP: 255.255.255.128

```
R4(config)#ip dhcp pool OSLab
R4(dhcp-config)#network 14.24.74.0 255.255.255.128
R4(dhcp-config)#default-router 14.24.74.126
R4(dhcp-config)#do wr
Building configuration...
[OK]
```

Pool: cnlab
Network IP: 14.24.74.128
Mask IP: 255.255.255.192

```
R4(config)#ip dhcp pool CNLab
R4(dhcp-config)#network 14.24.74.128 255.255.255.192
R4(dhcp-config)#default
R4(dhcp-config)#default-router 14.24.74.190
R4(dhcp-config)#exit
```

Pool: cdlab
Network IP: 14.24.74.192
Mask IP: 255.255.255.240

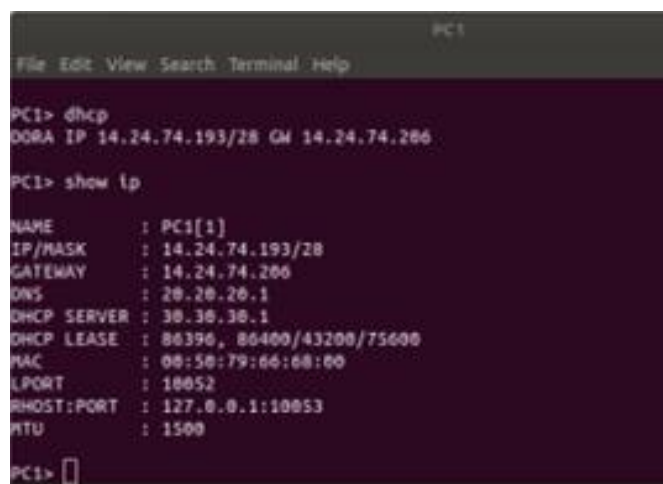
```
R4(config)#ip dhcp pool CDLab
R4(dhcp-config)#network 14.24.74.192 255.255.255.240
R4(dhcp-config)#default-router 14.24.74.206
R4(dhcp-config)#exit
```

Pool: dslab
Network IP: 14.24.74.208
Mask IP: 255.255.255.248

```
R4(config)#ip dhcp pool DSLab
R4(dhcp-config)#network 14.24.74.208 255.255.255.248
R4(dhcp-config)#default-router 14.24.74.214
R4(dhcp-config)#exit
R4(config)#do wr
Building configuration...
[OK]
```

Creating DNS Links

R1



```
PC1
File Edit View Search Terminal Help

PC1> dhcp
DHCP IP 14.24.74.193/28 GW 14.24.74.206

PC1> show ip

NAME       : PC1[1]
IP/MASK    : 14.24.74.193/28
GATEWAY    : 14.24.74.206
DNS        : 20.20.20.1
DHCP SERVER : 30.30.30.1
DHCP LEASE  : 86396, 86400/43200/75600
MAC        : 00:50:79:06:08:00
LPORT      : 10052
RHOST:PORT  : 127.0.0.1:10053
RTU        : 1500

PC1> 
```

R2

```
PC2> dhcp
DORA IP 14.24.74.209/29 GW 14.24.74.214

PC2> show ip

NAME       : PC2[1]
IP/MASK    : 14.24.74.209/29
GATEWAY    : 14.24.74.214
DNS        : 20.20.20.1
DHCP SERVER : 30.30.30.1
DHCP LEASE  : 86397, 86400/43200/75600
MAC        : 00:50:79:66:68:01
LPORT      : 10050
RHOST:PORT  : 127.0.0.1:10051
MTU        : 1500

PC2> 
```

R3

```
PC3> 
PC3> dhcp
DORA IP 14.24.74.1/25 GW 14.24.74.126

PC3> show ip

NAME       : PC3[1]
IP/MASK    : 14.24.74.1/25
GATEWAY    : 14.24.74.126
DNS        : 10.10.10.3
DHCP SERVER : 20.20.20.2
DHCP LEASE  : 86377, 86400/43200/75600
MAC        : 00:50:79:66:68:02
LPORT      : 10048
RHOST:PORT  : 127.0.0.1:10049
MTU        : 1500

PC3> 
```

R4

```
PC4> dhcp
DORA IP 14.24.74.129/26 GW 14.24.74.190

PC4> show ip

NAME       : PC4[1]
IP/MASK    : 14.24.74.129/26
GATEWAY    : 14.24.74.190
DNS        : 10.10.10.3
DHCP SERVER : 20.20.20.2
DHCP LEASE  : 86381, 86400/43200/75600
MAC        : 00:50:79:66:68:03
LPORT      : 10054
RHOST:PORT  : 127.0.0.1:10055
MTU        : 1500

PC4> 
```


Pinging From PC1

```
PC1
File Edit View Search Terminal Help
GATEWAY      : 14.24.74.206
DNS          : 20.20.20.1
DHCP SERVER  : 30.30.30.1
DHCP LEASE   : 86396, 86400/43200/75600
MAC          : 00:50:79:66:68:00
LPORT       : 10052
RHOST:PORT   : 127.0.0.1:10053
MTU          : 1500

PC1> ping 14.24.74.1

84 bytes from 14.24.74.1 icmp_seq=1 ttl=60 time=59.480 ms
84 bytes from 14.24.74.1 icmp_seq=2 ttl=60 time=45.257 ms
84 bytes from 14.24.74.1 icmp_seq=3 ttl=60 time=46.045 ms
84 bytes from 14.24.74.1 icmp_seq=4 ttl=60 time=45.761 ms
84 bytes from 14.24.74.1 icmp_seq=5 ttl=60 time=45.340 ms

PC1> ping 14.24.74.129

84 bytes from 14.24.74.129 icmp_seq=1 ttl=60 time=52.015 ms
84 bytes from 14.24.74.129 icmp_seq=2 ttl=60 time=45.970 ms
84 bytes from 14.24.74.129 icmp_seq=3 ttl=60 time=45.639 ms
p84 bytes from 14.24.74.129 icmp_seq=4 ttl=60 time=45.358 ms
84 bytes from 14.24.74.129 icmp_seq=5 ttl=60 time=47.144 ms

PC1> ping 14.24.74.209

84 bytes from 14.24.74.209 icmp_seq=1 ttl=62 time=34.658 ms
84 bytes from 14.24.74.209 icmp_seq=2 ttl=62 time=26.129 ms
84 bytes from 14.24.74.209 icmp_seq=3 ttl=62 time=26.481 ms
84 bytes from 14.24.74.209 icmp_seq=4 ttl=62 time=26.064 ms
84 bytes from 14.24.74.209 icmp_seq=5 ttl=62 time=26.082 ms

PC1> █
```

```
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#ip dns server
R1(config)#ip host oslab1.com 14.24.74.1
R1(config)#ip host cnlab1.com 14.24.74.129
R1(config)#ip host cdlab1.com 14.24.74.193
R1(config)#ip host dslab1.com 14.24.74.209
R1(config)#do wr
Building configuration...
[OK]
R1(config)#█
```

```
PC3> ping cdlab1.com
cdlab1.com resolved to 14.24.74.193

84 bytes from 14.24.74.193 icmp_seq=1 ttl=60 time=59.530 ms
84 bytes from 14.24.74.193 icmp_seq=2 ttl=60 time=57.084 ms
84 bytes from 14.24.74.193 icmp_seq=3 ttl=60 time=46.265 ms
84 bytes from 14.24.74.193 icmp_seq=4 ttl=60 time=56.215 ms
84 bytes from 14.24.74.193 icmp_seq=5 ttl=60 time=56.282 ms

PC3> ping cnlab1.com
cnlab1.com resolved to 14.24.74.129

84 bytes from 14.24.74.129 icmp_seq=1 ttl=62 time=29.561 ms
84 bytes from 14.24.74.129 icmp_seq=2 ttl=62 time=26.096 ms
84 bytes from 14.24.74.129 icmp_seq=3 ttl=62 time=25.703 ms
84 bytes from 14.24.74.129 icmp_seq=4 ttl=62 time=25.803 ms
84 bytes from 14.24.74.129 icmp_seq=5 ttl=62 time=25.761 ms

PC3> ping dslab1.com
dslab1.com resolved to 14.24.74.209

84 bytes from 14.24.74.209 icmp_seq=1 ttl=60 time=49.965 ms
84 bytes from 14.24.74.209 icmp_seq=2 ttl=60 time=46.511 ms
84 bytes from 14.24.74.209 icmp_seq=3 ttl=60 time=46.406 ms
84 bytes from 14.24.74.209 icmp_seq=4 ttl=60 time=45.914 ms
84 bytes from 14.24.74.209 icmp_seq=5 ttl=60 time=46.045 ms

PC3> █
```