Lab Task: 13/Assignment-3

***_____786**
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Roll No: 20p-0101

Subject: Computer Networks Lab

Submitted To Respected
Ma’am: Hurmat Hidayat

Section: BCS-5B

Question 1:

Answer:

Requirements:

We’ve a person named as Vicky.
Vicky have to create a Network of different Network Devices. Also he have to test the working eligibility of each device.

Devices Used:

We are going to use the following devices for our Network,

1. Router
2. Server
3. Laptop
4. Switch

Integration:

Our job is to establish a proper connection between these devices in order to transfer data successfully between devices by the mean of **“NODES”.**

Configuration:

We will the following configurations for our Network.

We will do,

- Router Configuration
- Server Configuration
- Laptop Configuration

Initial Steps:

Router Placement:

Initially open the packet tracer and the place **“three”** routers from the bottom left corner of the screen.

In this case, we are using “Router-2811”.

Visual Demonstration:

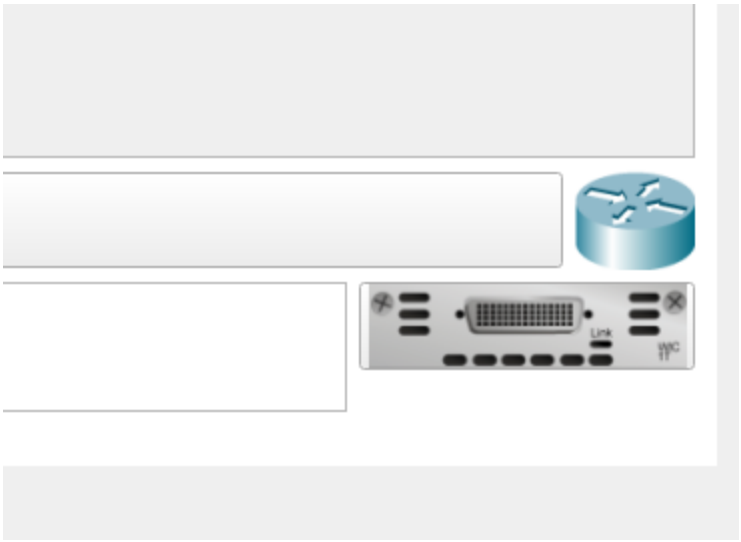
You can observe the previous step of Router placement by the visuals attached below.

Physical Adjustment:

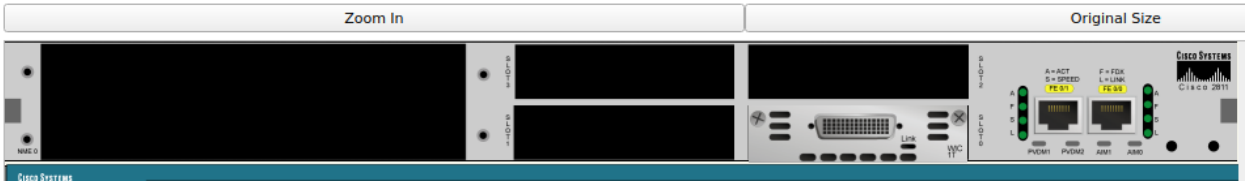
Open the Routers one by one.
Then go to the setting tab and apply the following adjustments.

Router-0:

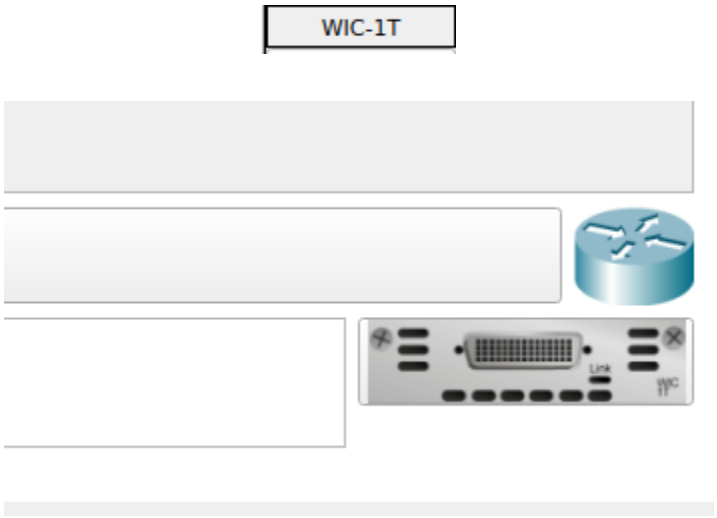
Go to the “**WIC-1T”.**



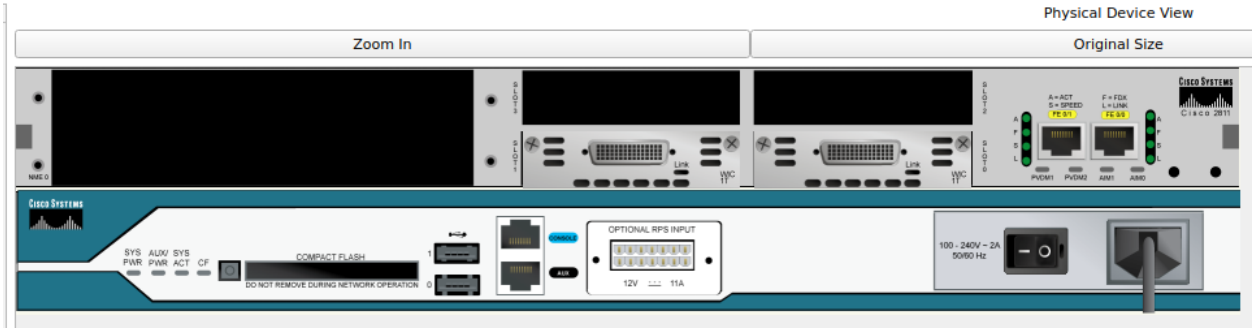
Do a place of these ports in the Black Slots available above.



Router-1:

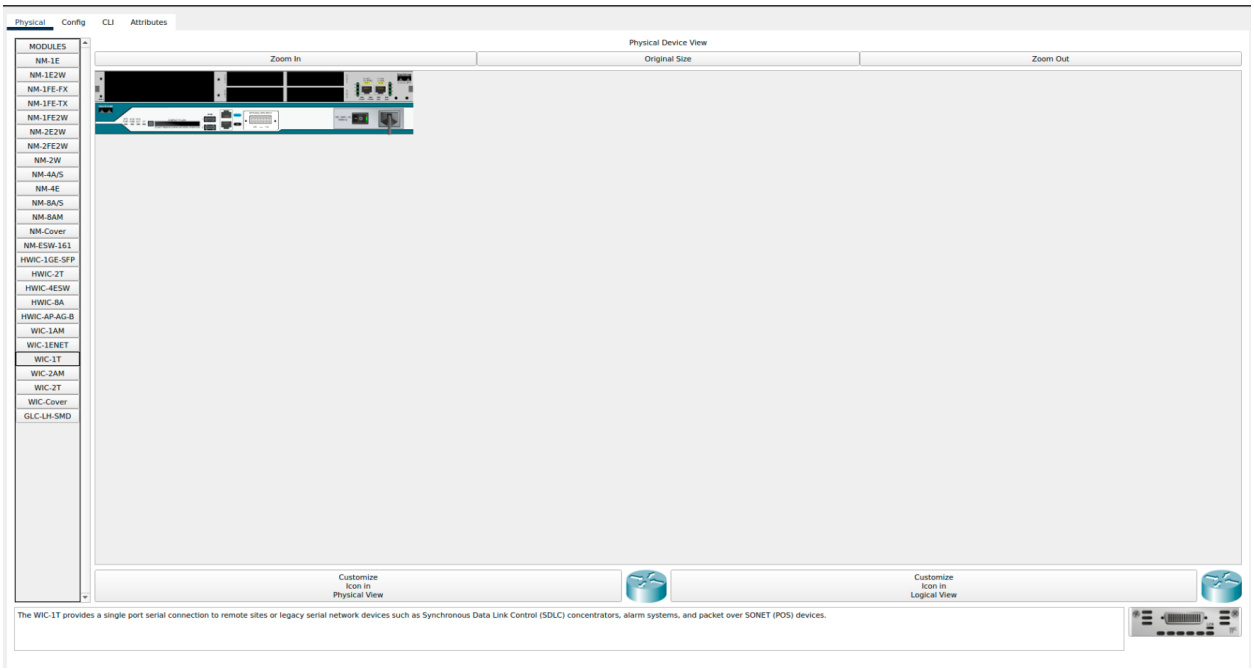


Add two modules, make sure the Power Button is turned off. Elsewise, this will give an error because you cannot add modules while the power button is on.

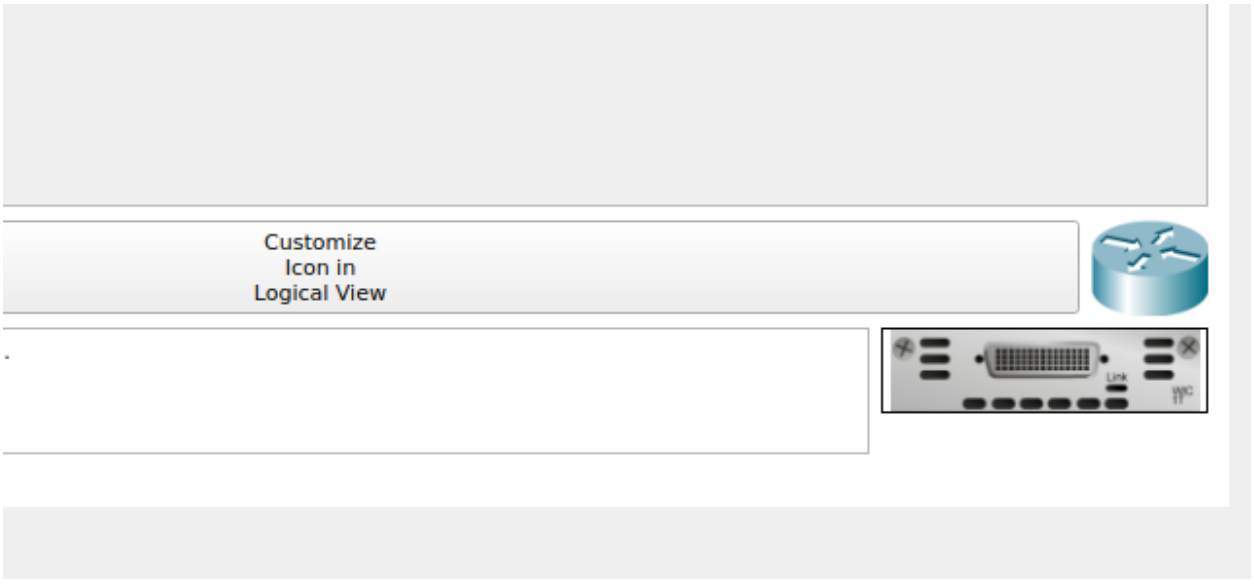


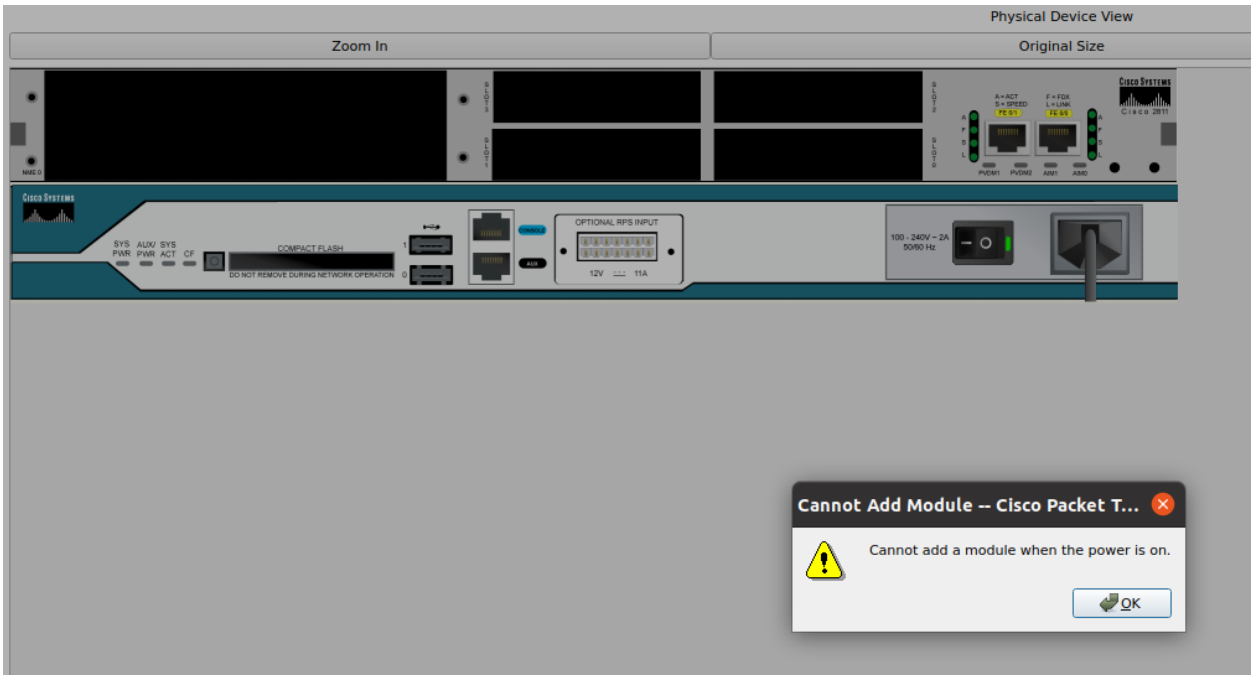
inser

Router-2:


Physical
Config
CLI
Attributes
MODULES
NM-1E
NM-1E2W
NM-1FE-FX
NM-1FE-TX
NM-1FE2W
NM-2E2W
NM-2FE2W
NM-2W
NM-4A/S
NM-4E
NM-8A/S
NM-8AM
NM-Cover
NM-ESW-161
HWIC-1GE-SFP
HWIC-2T
HWIC-4ESW
HWIC-8A
HWIC-AP-AG-B
WIC-1AM
WIC-1ENET
WIC-1T
WIC-2AM
WIC-2T
WIC-Cover
GLC-LH-SMD
Physical Device View
Zoom In
Original Size
Zoom Out
Customize
Icon in
Physical View
Customize
Icon in
Logical View
The WIC-1T provides a single port serial connection to remote sites or legacy serial network devices such as Synchronous Data Link Control (SDLC) concentrators, alarm systems, and packet over SONET (POS) devices.

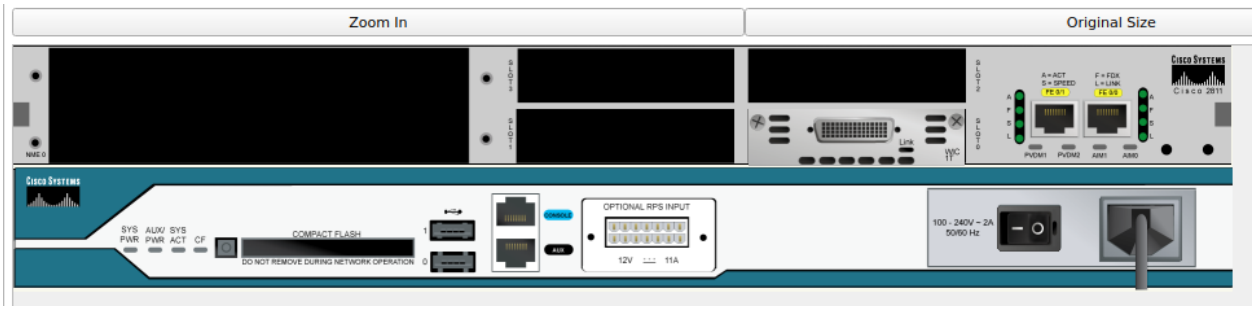

WIC-1T

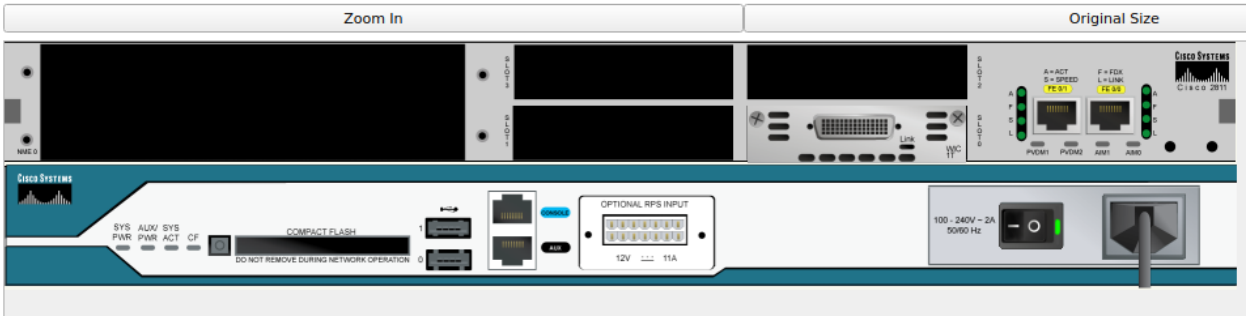

Customize
Icon in
Logical View
Link


Physical Device View
Zoom In
Original Size
Cannot Add Module -- Cisco Packet T...
Cannot add a module when the power is on.
OK

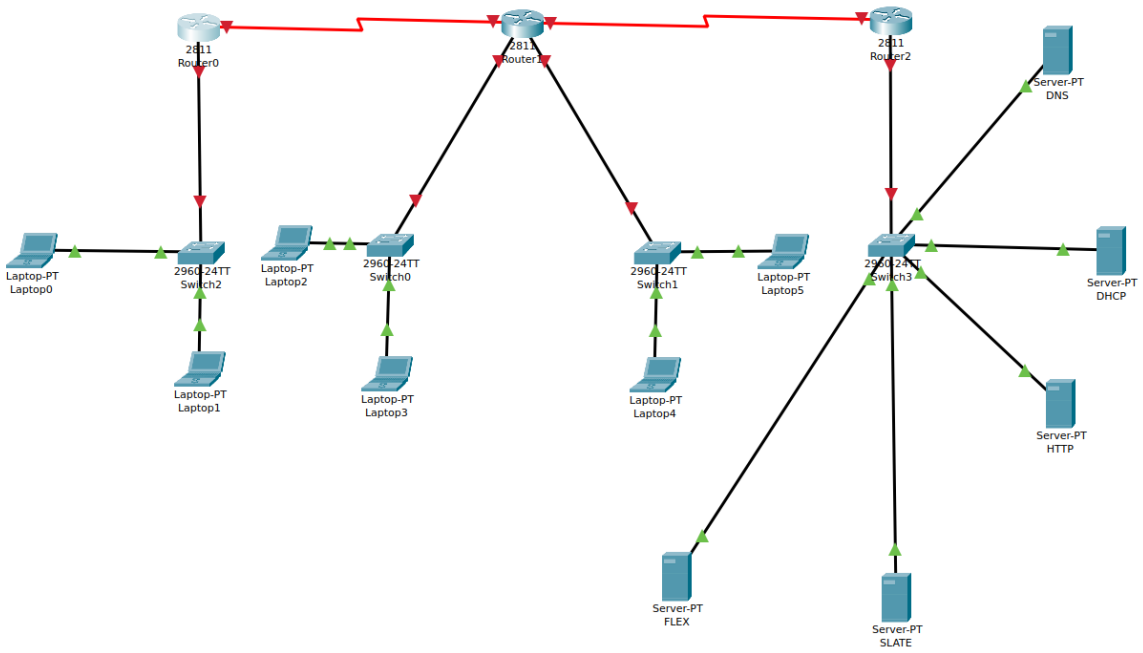

100 - 240V ~ 2A
50/60 Hz


100 - 240V ~ 2A
50/60 Hz

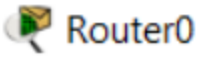

Zoom In
Original Size

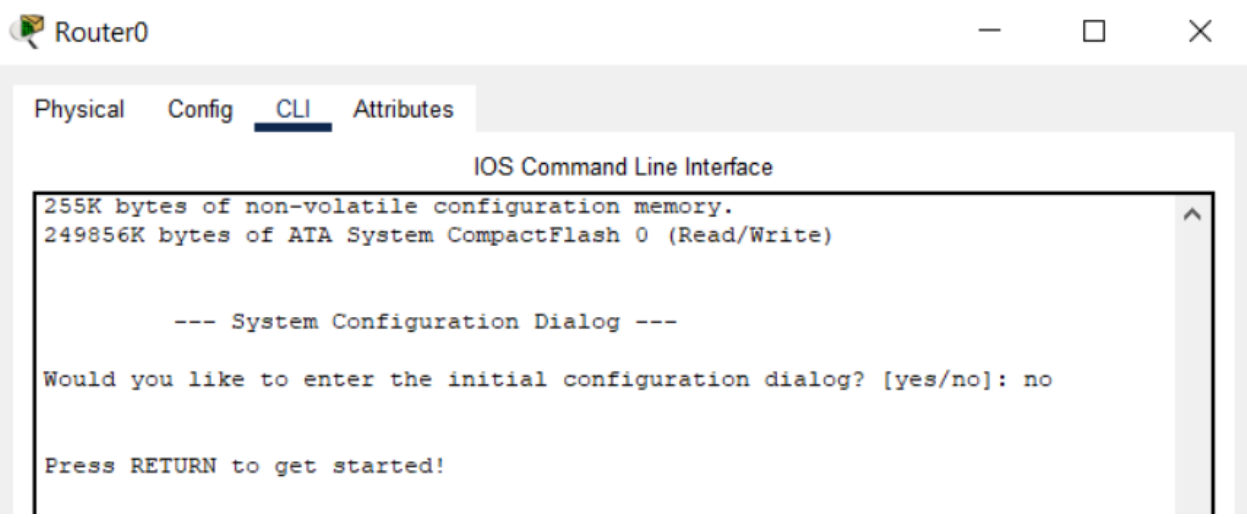


Topology Overview:



Router 0 Configuration:






```
Router>enable
```

```
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 192.168.3.1 255.255.255.0
Router(config-if)#no shutdown
```

```
Router(config)#
Router(config)#
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 192.168.3.1 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed
state to up
```

```
Router(config)#ip dhcp pool fastone
```

```
Router(dhcp-config)#network 192.168.3.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.3.1
Router(dhcp-config)#exit
```

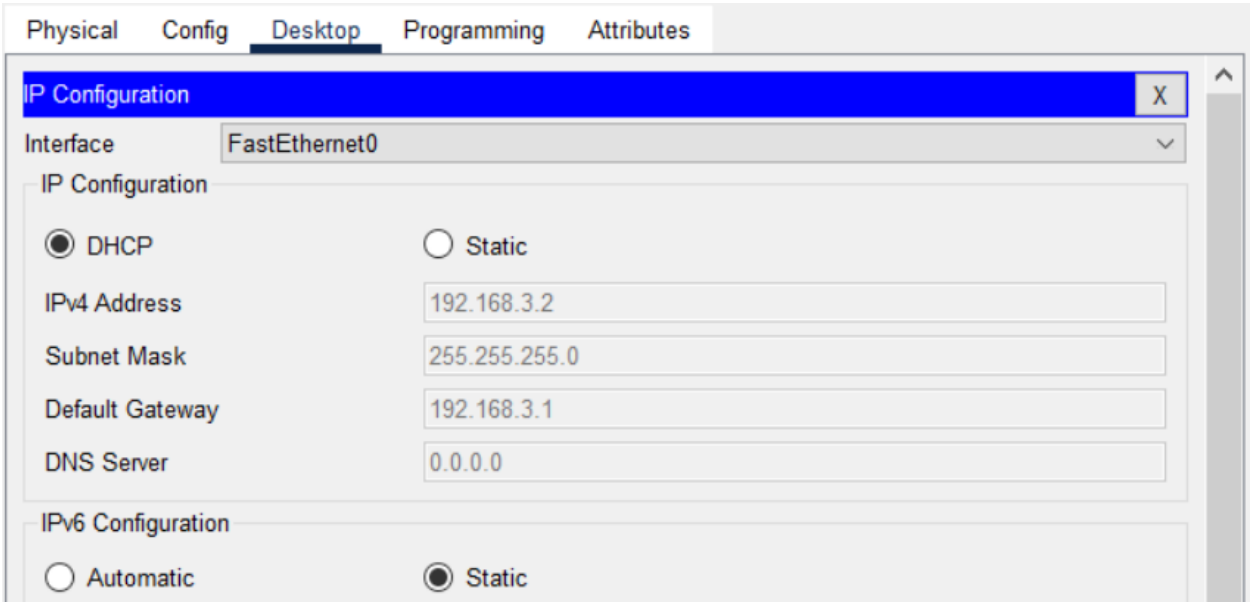
```
Router(config)#ip dhcp excluded-address 192.168.3.1
```

```
Router(config)#interface serial 0/0/0
Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config-if)#clock rate 64000
Router(config-if)#no shutdown
```

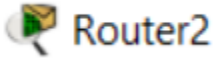
```
Router#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 192.168.1.0
Router(config-router)#exit
Router(config)#
```

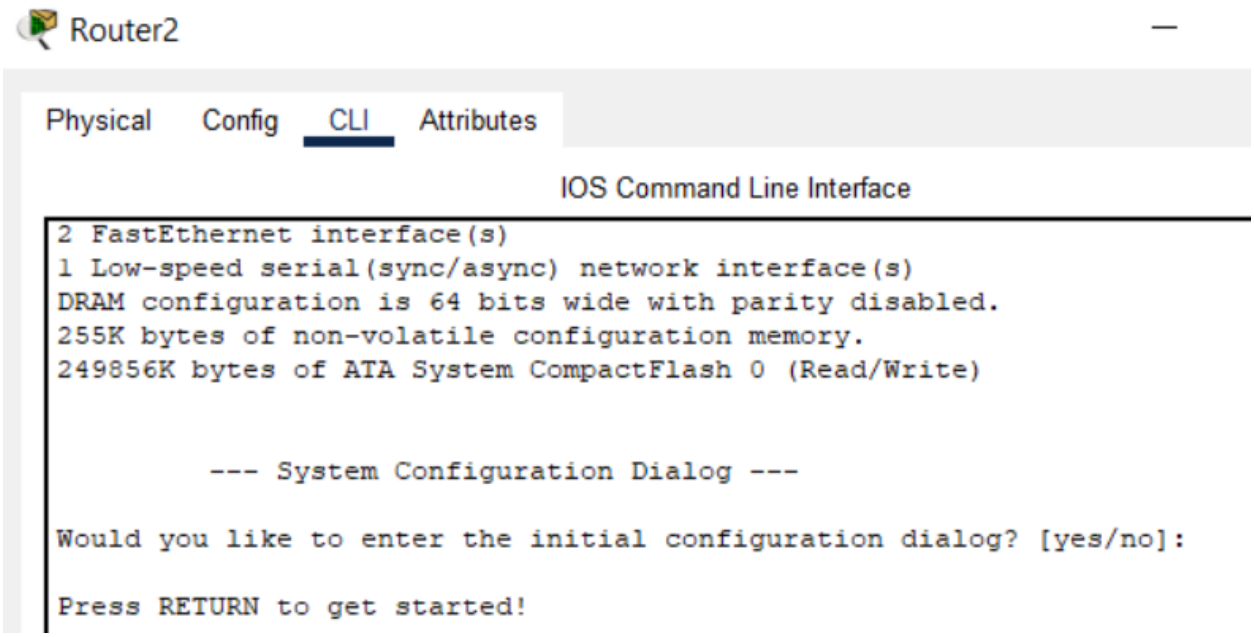
```
Router(config)#exit
```

Laptop 0:

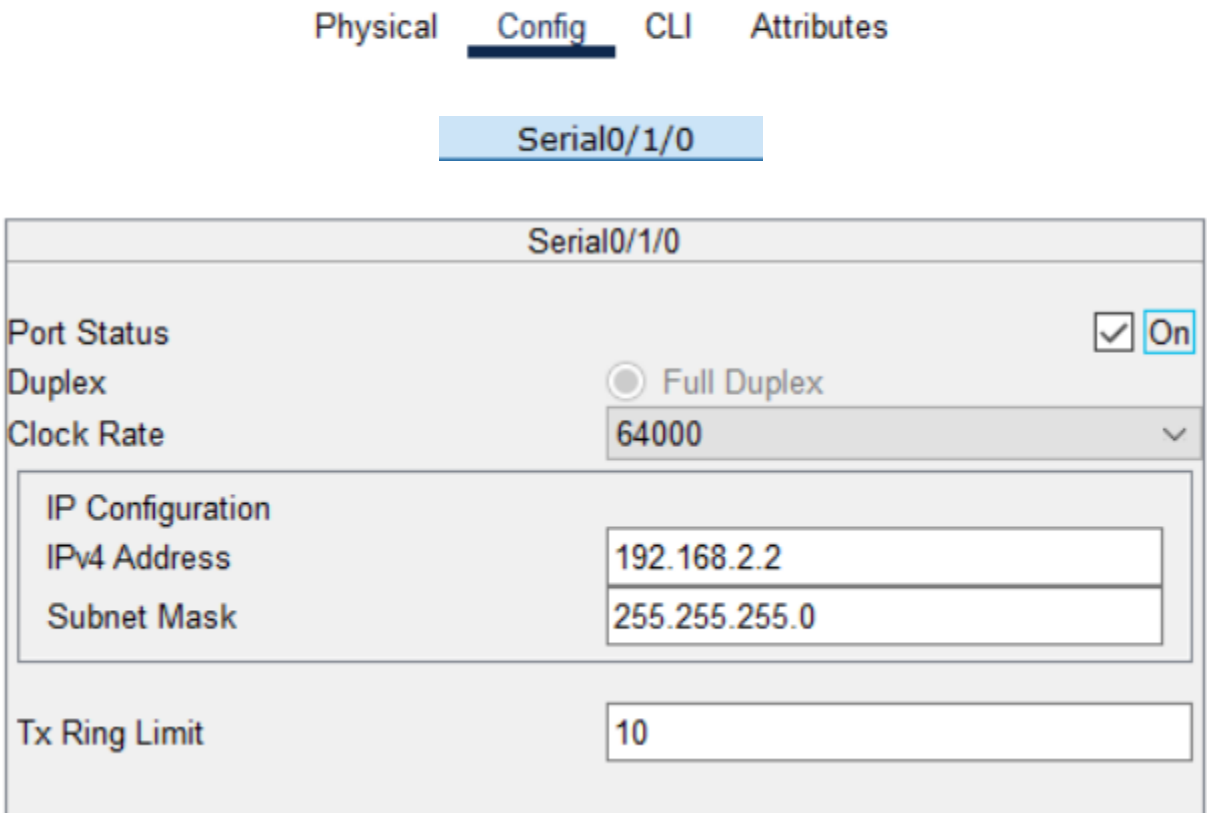


Router 2 Configuration:

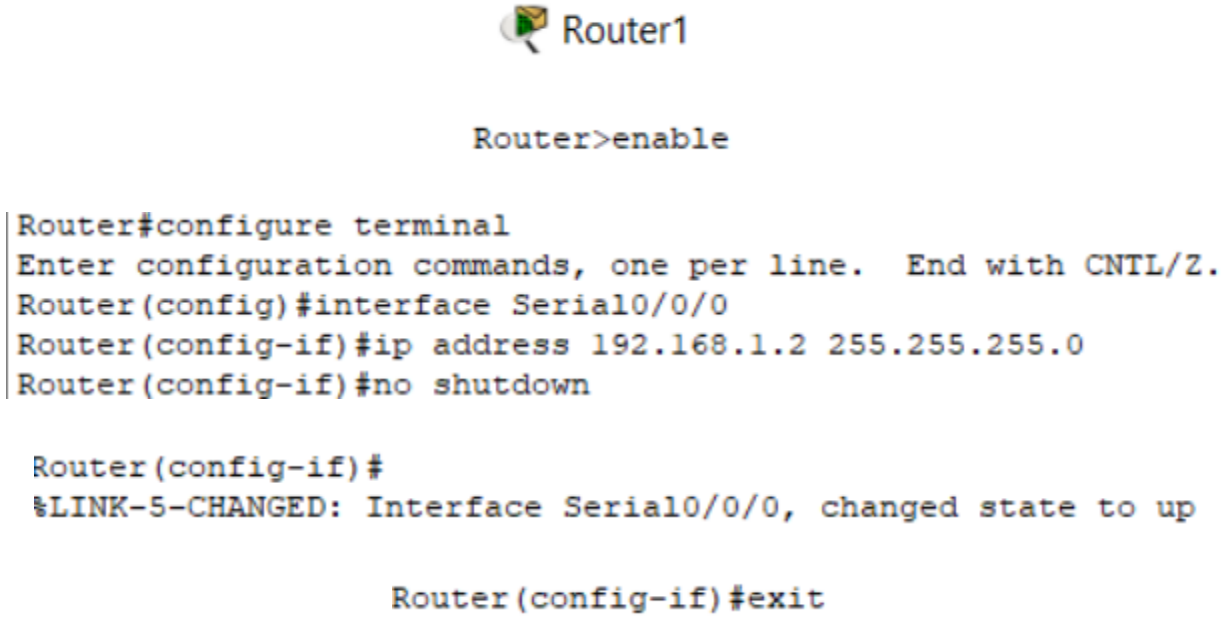


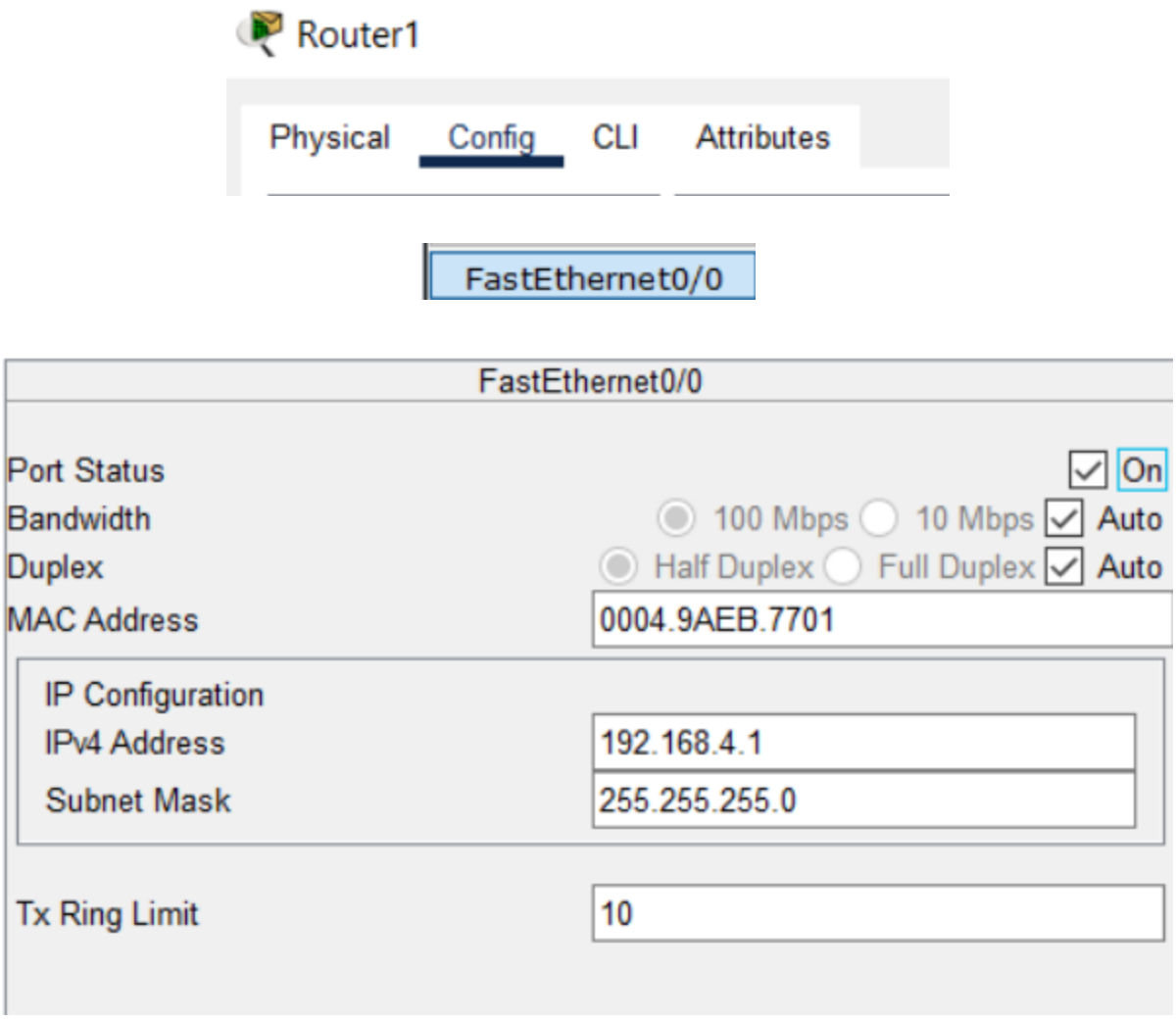



```
Router>enable

Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 192.168.7.1 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed
state to up

Router(dhcp-config)#ip dhcp pool fasttwo
Router(dhcp-config)#network 192.168.7.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.7.1
Router(dhcp-config)#exit
Router(config)#ip dhcp excluded-address 192.168.7.1
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
```



Router 1 Configuration:

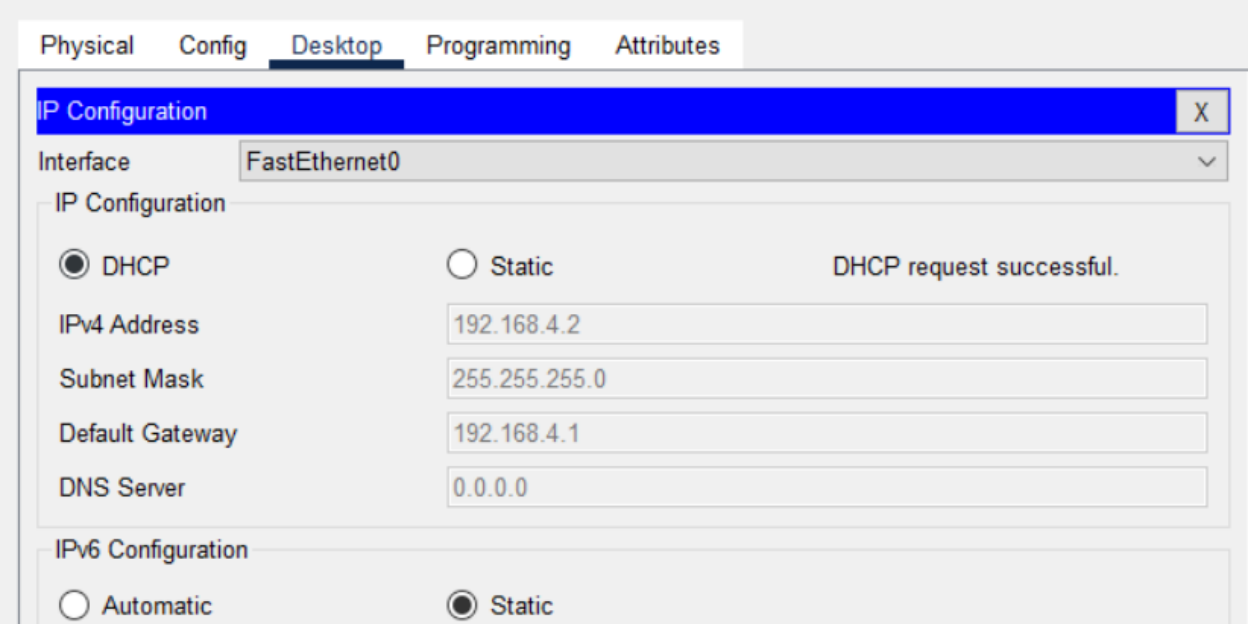





```
Router(dhcp-config)#ip dhcp pool fastthree
Router(dhcp-config)#
```

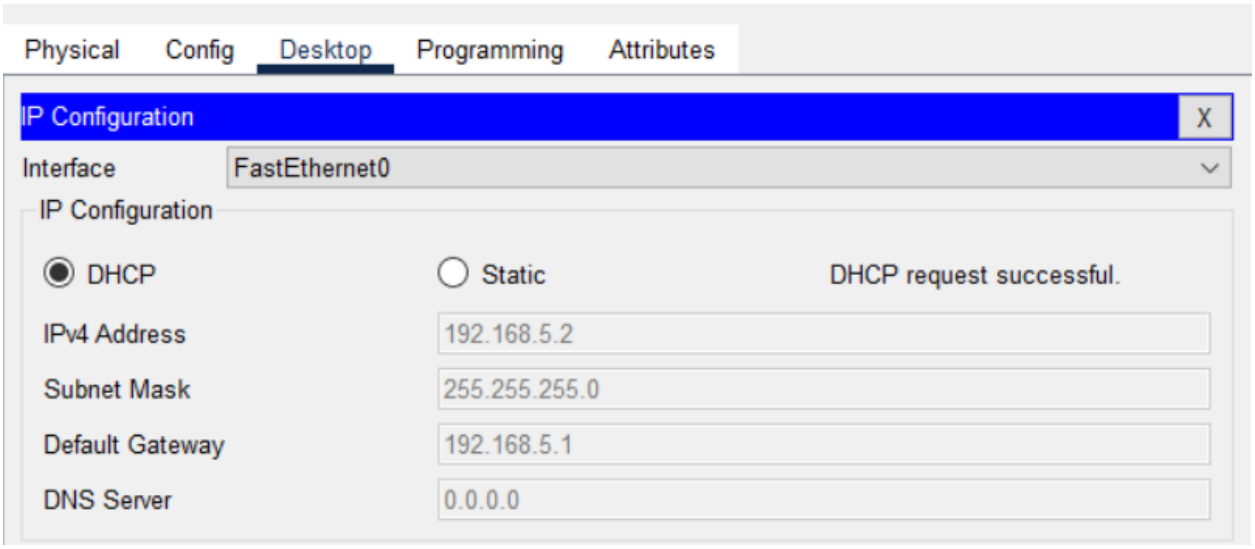
```
Router(dhcp-config)#network 192.168.4.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.4.1
Router(dhcp-config)#exit
Router(config)#ip dhcp excluded-address 192.168.4.1
Router(config)#exit
```

Laptop 2:




```
Router(config-if)#ip address 192.168.5.1 255.255.255.0
Router(config-if)#ip address 192.168.5.1 255.255.255.0
Router(config-if)#exit
Router(config)#ip dhcp pool zeeshan4
Router(dhcp-config)#network 192.168.5.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.5.1
Router(dhcp-config)#exit
Router(config)#ip dhcp excluded-address 192.168.5.1
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

Laptop 5:



Final Routers Configuration:

```
Router#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 192.168.3.0
Router(config-router)#network 192.168.1.0
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

```
Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 192.168.7.0
Router(config-router)#network 192.168.2.0
Router(config-router)#exit
```

```
Router(config-router)#network 192.168.1.0
Router(config-router)#network 192.168.2.0
```

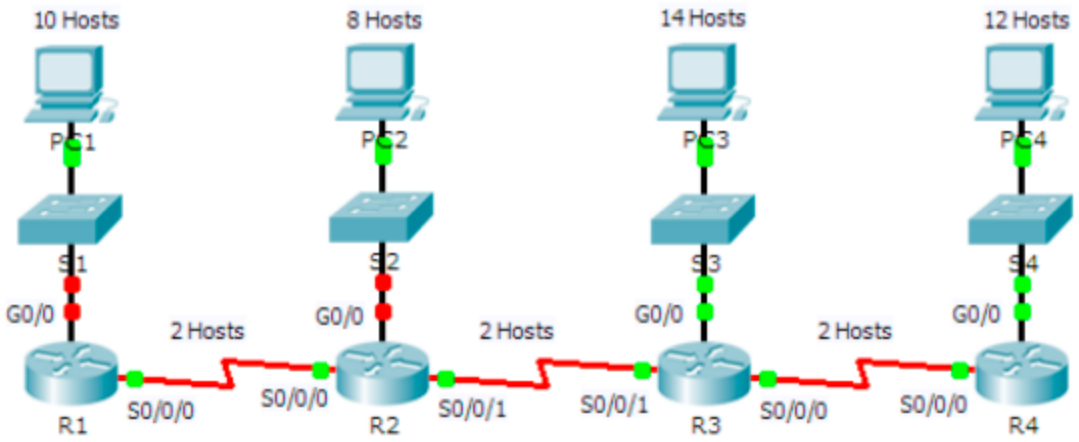
```
Router(config-router)#network 192.168.4.0
Router(config-router)#network 192.168.5.0
```

Question 2:

Answer:

In this question we've given a topology. The visual demonstration of this topology is attached below.

Topology:



Information Related To This Topology:

In this activity, you are given the network address of 172.31.1.0 /24 to subnet and provide the IP
addressing for the network shown in the Topology. The required host addresses for each WAN and
LAN link are labelled in the topology.

Requirements:

1: Based on the topology, how many subnets are needed?
Answer: 7

2: How many bits must be borrowed to support the number of subnets in the topology table?
Answer: 4

3: How many subnets does this create?
Answer: 16

4: How many usable host addresses does this create per subnet?
Answer: 14

5: Calculate the binary value for the first five subnets?
Answer:

Net 0: 172 . 31 . 1 . **0 0 0 0 0 0 0 0**

Net 1: 172 . 31 . 1 . **0 0 0 1 0 0 0 0**

Net 2: 172 . 31 . 1 . **0 0 1 0 0 0 0 0**

Net 3: 172 . 31 . 1 . **0 0 1 1 0 0 0 0**

Net 4: 172 . 31 . 1 . **0 1 0 0 0 0 0 0**

6: Calculate the binary and decimal value of the new subnet mask.
Answer:

11111111.11111111.11111111.**1 1 1 1 0 0 0 0**

255 . 255 . 255 .**240**

7: Complete the Subnet Table, listing all available subnets, the first and last usable host address, and the broadcast address.
Answer:

Subnet Table:

Subnet Number	Subnet IP	First Usable Host IP	Last Usable Host IP	Broadcast Address
0	172.31.1.0	172.31.1.1	172.31.1.14	172.31.1.15
1	172.31.1.16	172.31.1.17	172.31.1.30	172.31.1.31
2	172.31.1.32	172.31.1.33	172.31.1.46	172.31.1.47
3	172.31.1.48	172.31.1.49	172.31.1.62	172.31.1.63
4	172.31.1.64	172.31.1.65	172.31.1.78	172.31.1.79

5	172.31.1.80	172.31.1.81	172.31.1.94	172.31.1.95
6	172.31.1.96	172.31.1.97	172.31.1.110	172.31.1.111
7	172.31.1.112	172.31.1.113	172.31.1.126	172.31.1.127
8	172.31.1.128	172.31.1.129	172.31.1.142	172.31.1.143
9	172.31.1.144	172.31.1.145	172.31.1.158	172.31.1.159
10	172.31.1.160	172.31.1.161	172.31.1.174	172.31.1.175
11	172.31.1.176	172.31.1.177	172.31.1.190	172.31.1.191
12	172.31.1.192	172.31.1.193	172.31.1.206	172.31.1.207
13	172.31.1.208	172.31.1.209	172.31.1.222	172.31.1.223
14	172.31.1.224	172.31.1.225	172.31.1.238	172.31.1.239
15	172.31.1.240	172.31.1.241	172.31.1.254	172.31.1.255