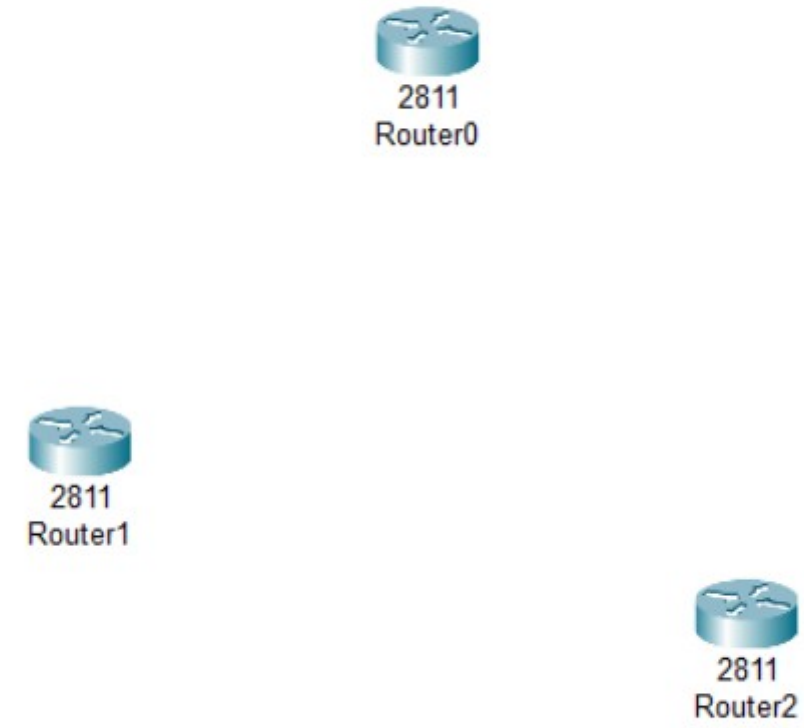
Mahad Ashraf
Section-5B
BSCS
Assignment-3
20p-0563

Question 1:

.



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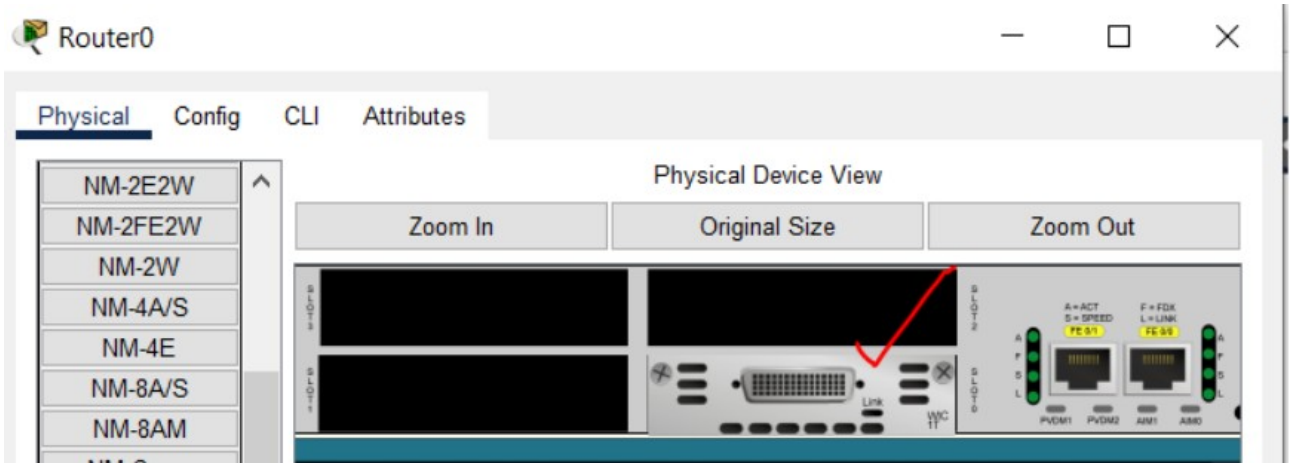
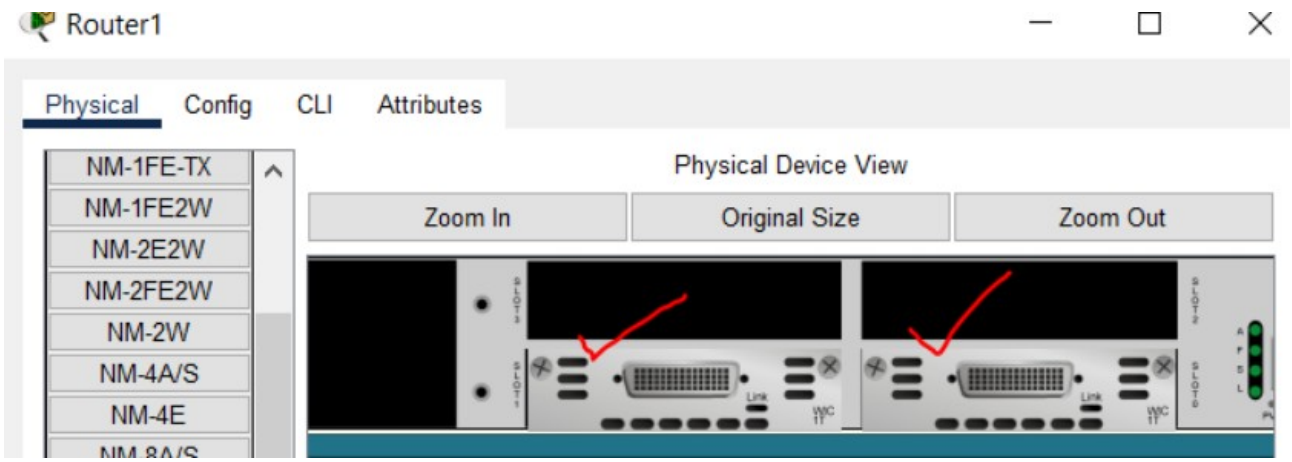
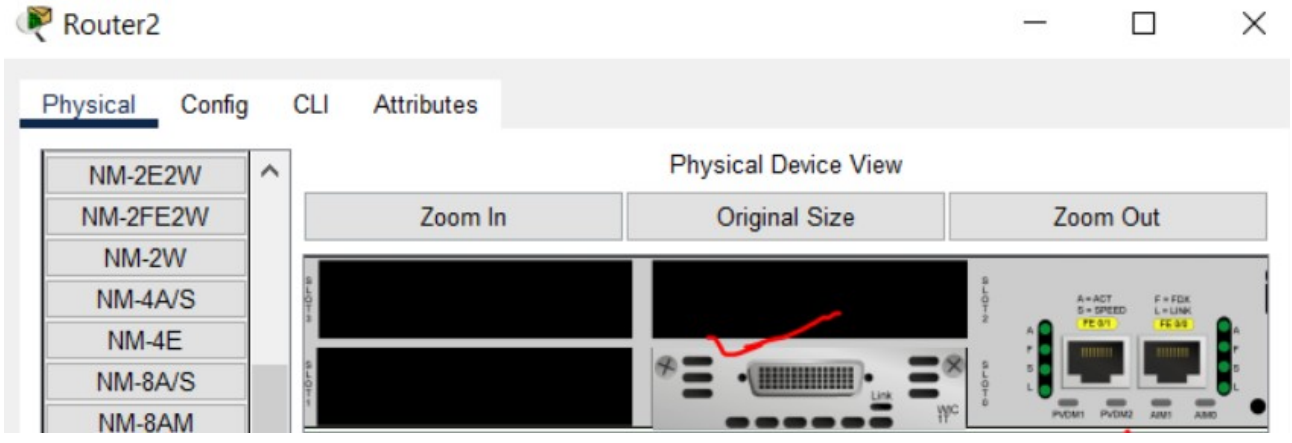
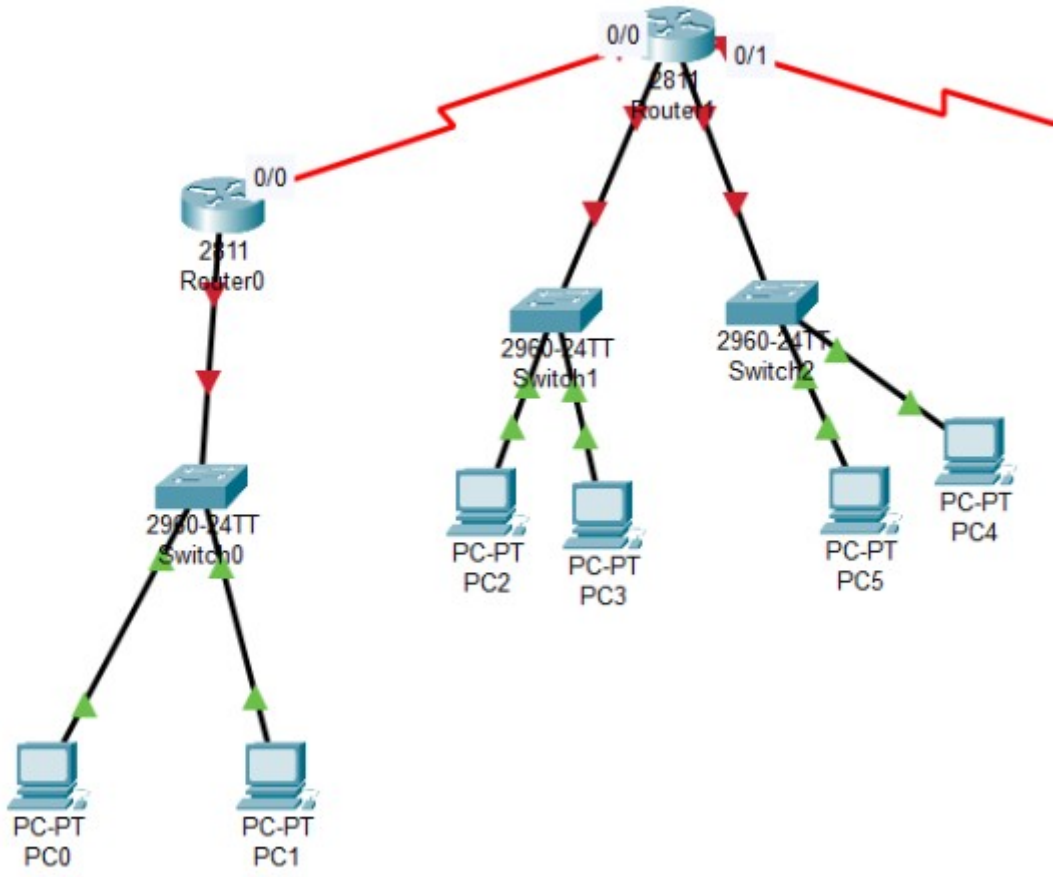
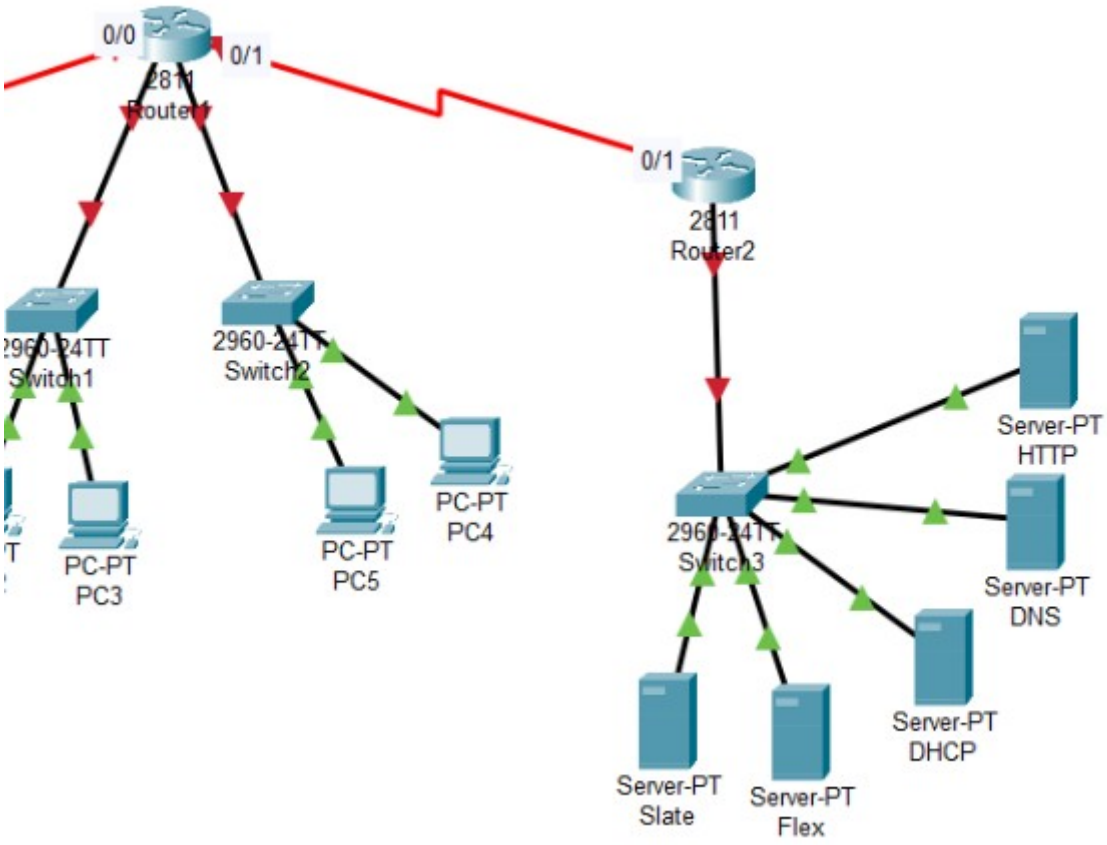

Router0
Physical
Config
CLI
Attributes
NM-2E2W
NM-2FE2W
NM-2W
NM-4A/S
NM-4E
NM-8A/S
NM-8AM
Physical Device View
Zoom In
Original Size
Zoom Out

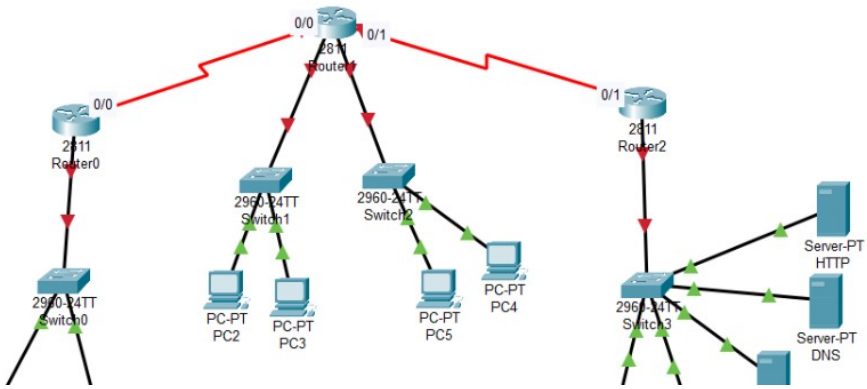

Router1
Physical
Config
CLI
Attributes
NM-1FE-TX
NM-1FE2W
NM-2E2W
NM-2FE2W
NM-2W
NM-4A/S
NM-4E
Physical Device View
Zoom In
Original Size
Zoom Out

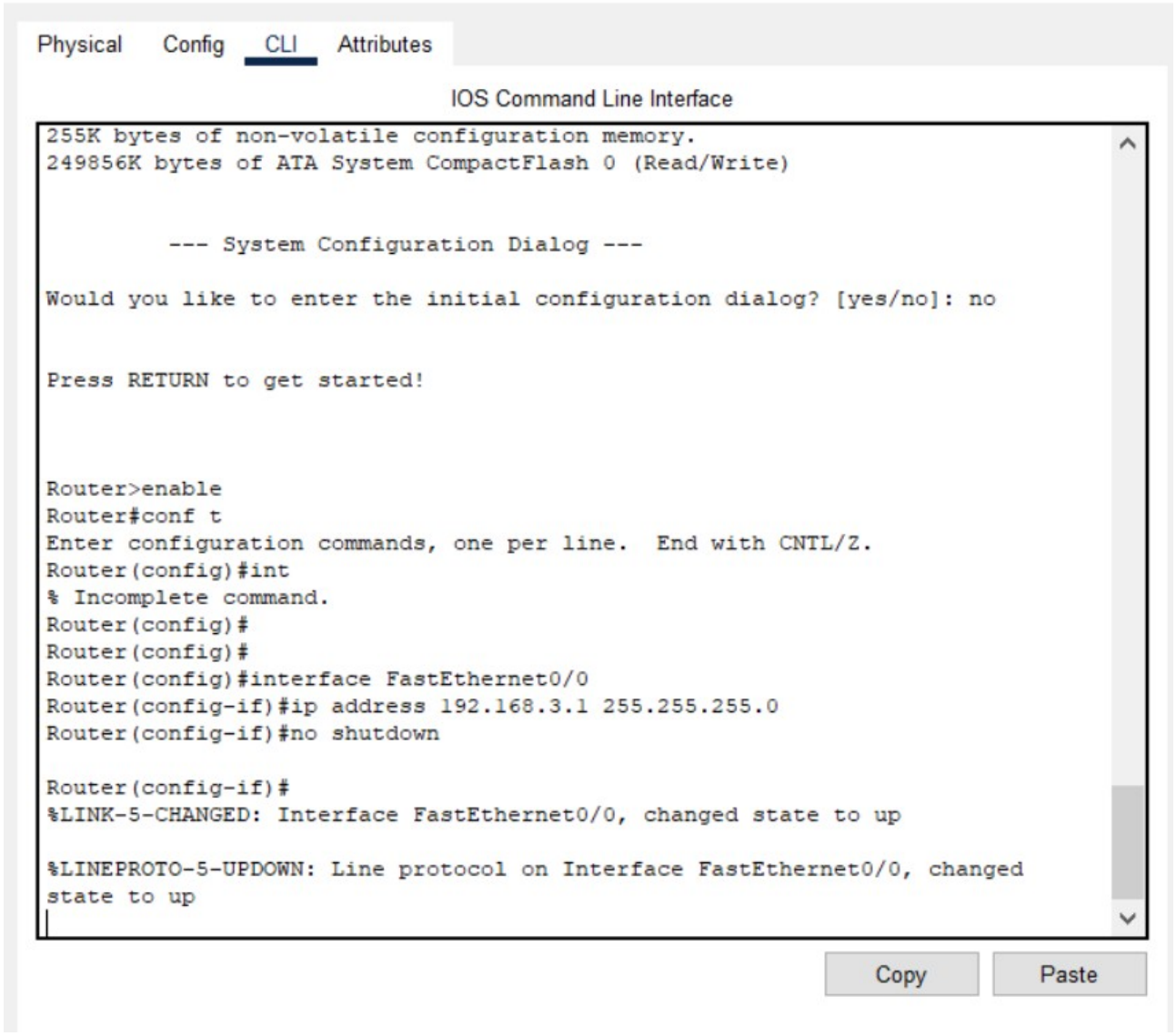

Router2
Physical
Config
CLI
Attributes
NM-2E2W
NM-2FE2W
NM-2W
NM-4A/S
NM-4E
NM-8A/S
NM-8AM
Physical Device View
Zoom In
Original Size
Zoom Out


0/0
0/1
2811
Router1
0/0
2811
Router0
2960-24TT
Switch1
2960-24TT
Switch2
2960-24TT
Switch0
PC-PT
PC2
PC-PT
PC3
PC-PT
PC5
PC-PT
PC4
PC-PT
PC0
PC-PT
PC1

-


0/0
0/1
2811
Router1
0/1
2811
Router2
2960-24TT
Switch1
2960-24TT
Switch2
PC-PT
PC3
PC-PT
PC5
PC-PT
PC4
Server-PT
HTTP
2960-24TT
Switch3
Server-PT
DNS
Server-PT
DHCP
Server-PT
Slate
Server-PT
Flex


0/0
0/1
0/0
0/1
2811
Router0
2960-24TT
Switch0
2960-24TT
Switch1
2960-24TT
Switch2
PC-PT
PC2
PC-PT
PC3
PC-PT
PC5
PC-PT
PC4
2811
Router2
Server-PT
HTTP
Server-PT
DNS


Physical
Config
CLI
Attributes
IOS Command Line Interface
255K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)
--- System Configuration Dialog ---
Would you like to enter the initial configuration dialog? [yes/no]: no
Press RETURN to get started!
Router>enable
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int
% Incomplete command.
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
Copy
Paste

-

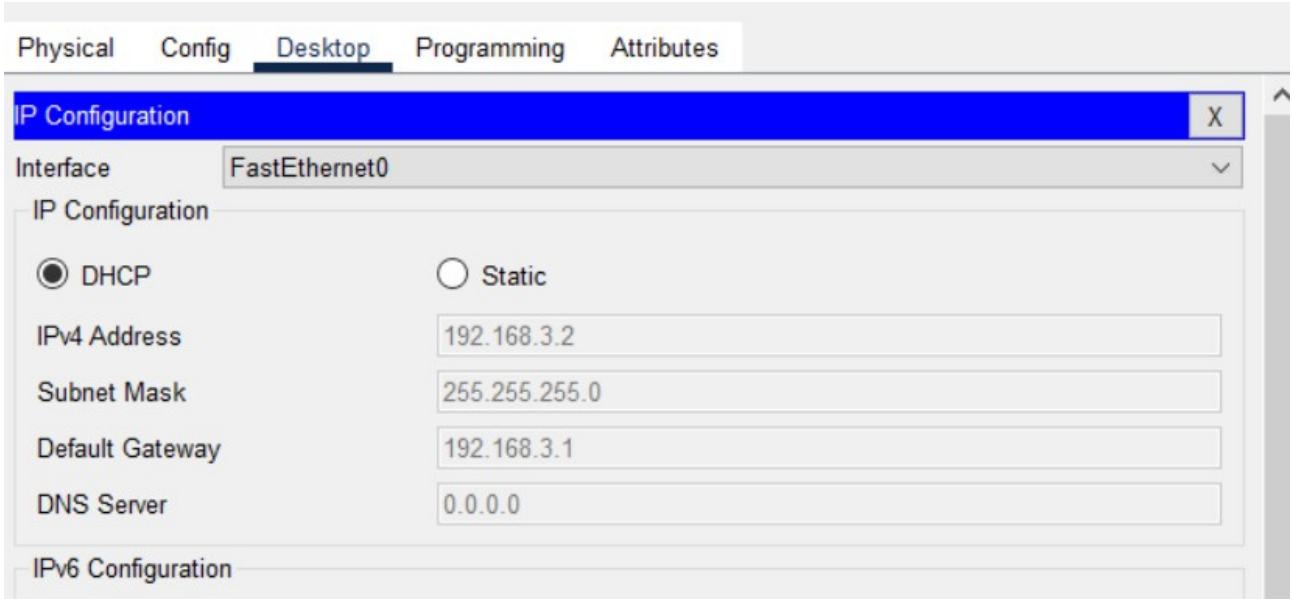
```
Router(config)#
Router(config)#ip dhcp excluded-address 192.168.3.1
Router(config)#
Router(config)#
Router(config)#interface serial 0/0/0
Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config-if)#clock rate 64000
Router(config-if)#no shutdown
```

```
%SYS-5-CONFIG_I: Configured from console by console

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
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

•

PC0:



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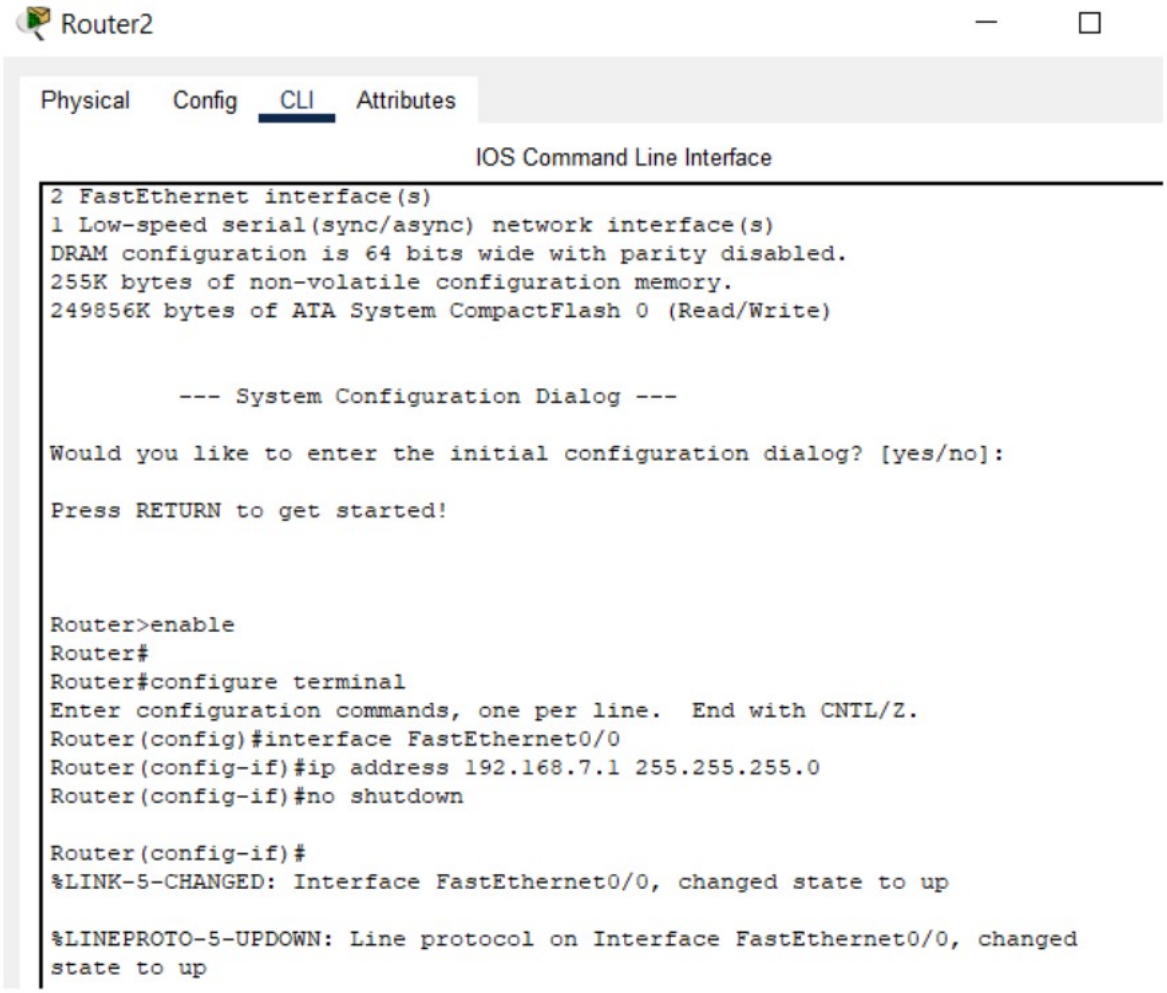


```
Router(config)#ip dhcp pool zeeshan2
Router(dhcp-config)#network 192.168.7.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.7.1
Router(dhcp-config)#exit
Router(config)#ip dhcp excluded-address 192.168.7.1
Router(config)#exit
```

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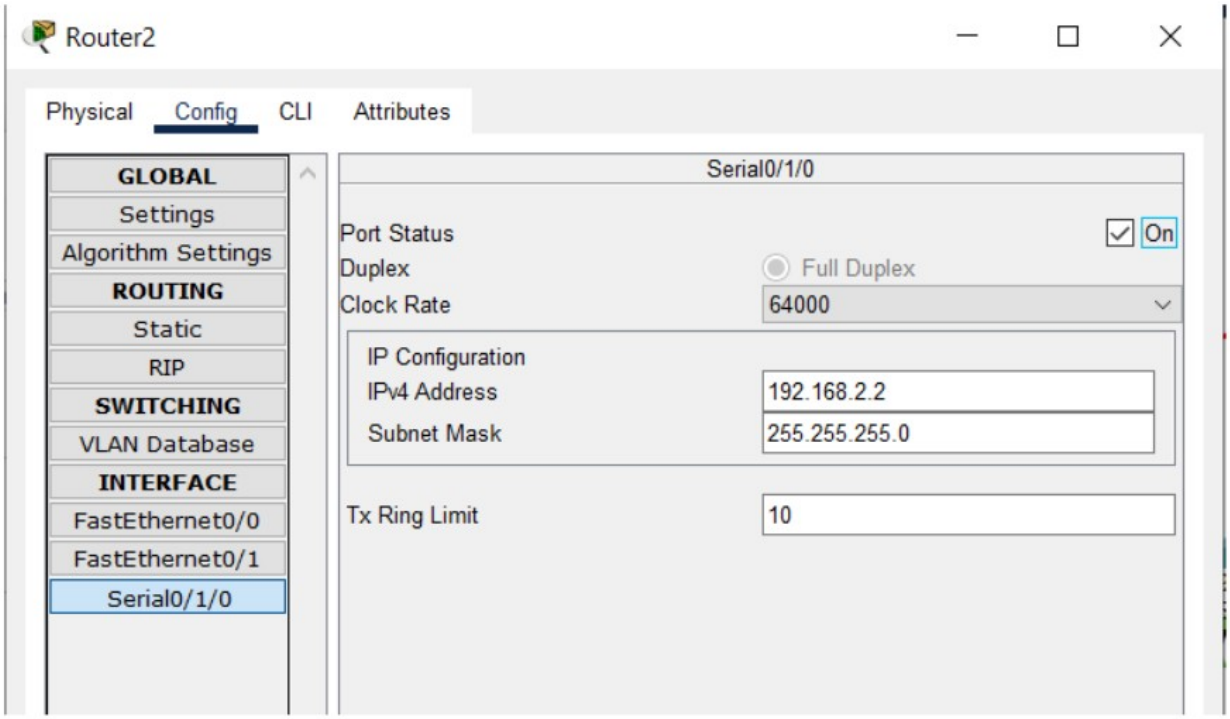
Router2
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/1/0
Serial0/1/0
Port Status
On
Duplex
Full Duplex
Clock Rate
64000
IP Configuration
IPv4 Address
192.168.2.2
Subnet Mask
255.255.255.0
Tx Ring Limit
10

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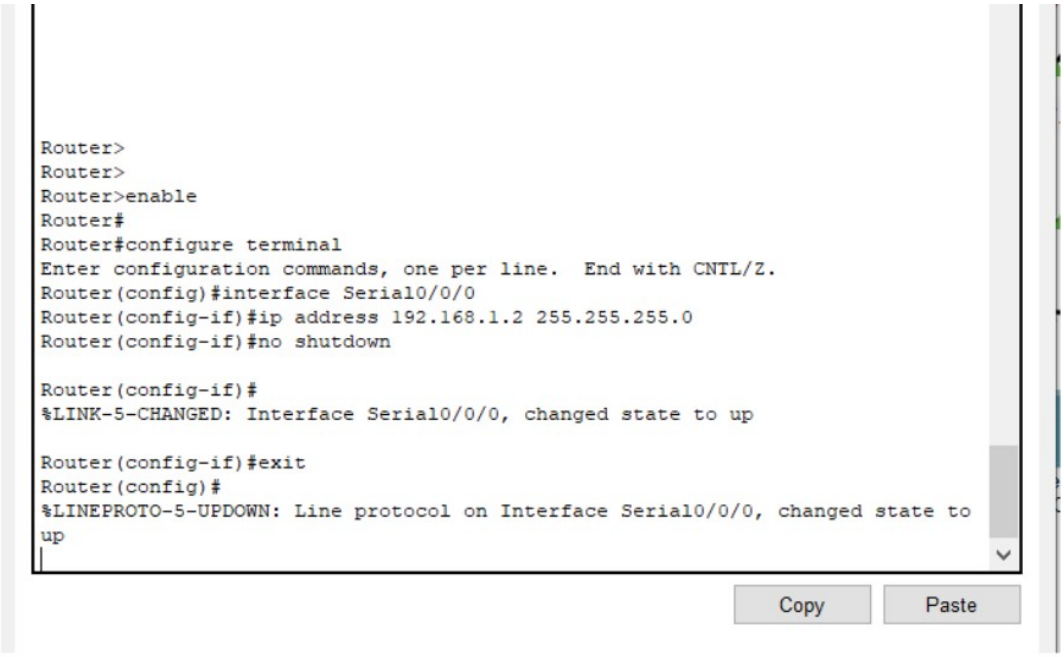
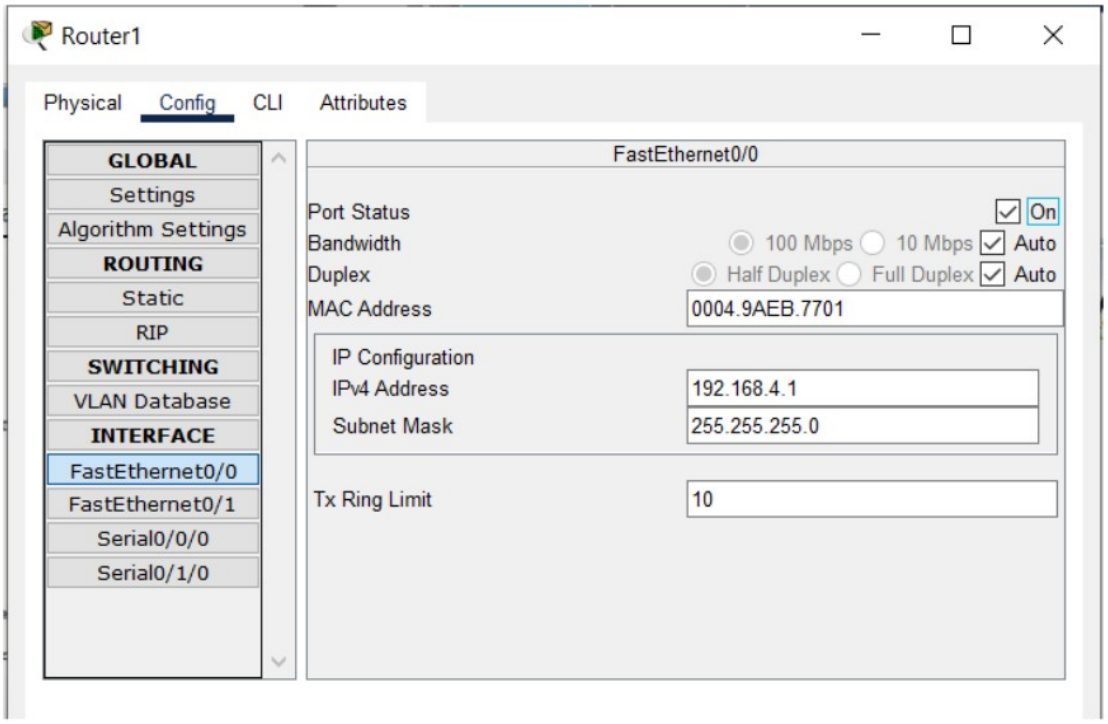
R1”


Router>
Router>
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface Serial0/0/0
Router(config-if)#ip address 192.168.1.2 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
Router(config-if)#exit
Router(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
Copy
Paste

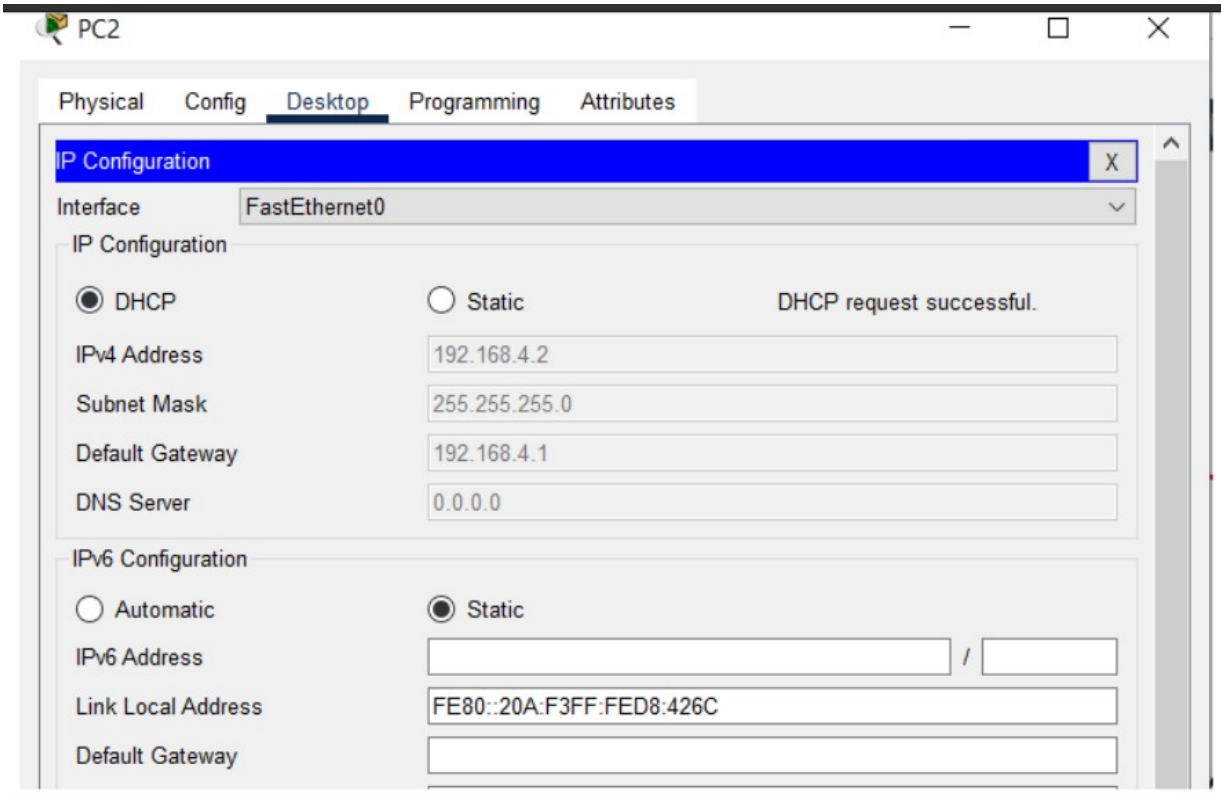
.




```
Router(config-if)#exit
Router(config)#ip dhcp pool zeeshan3
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
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

.

PC2:




```
state to up
no ip address
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

Router#
```

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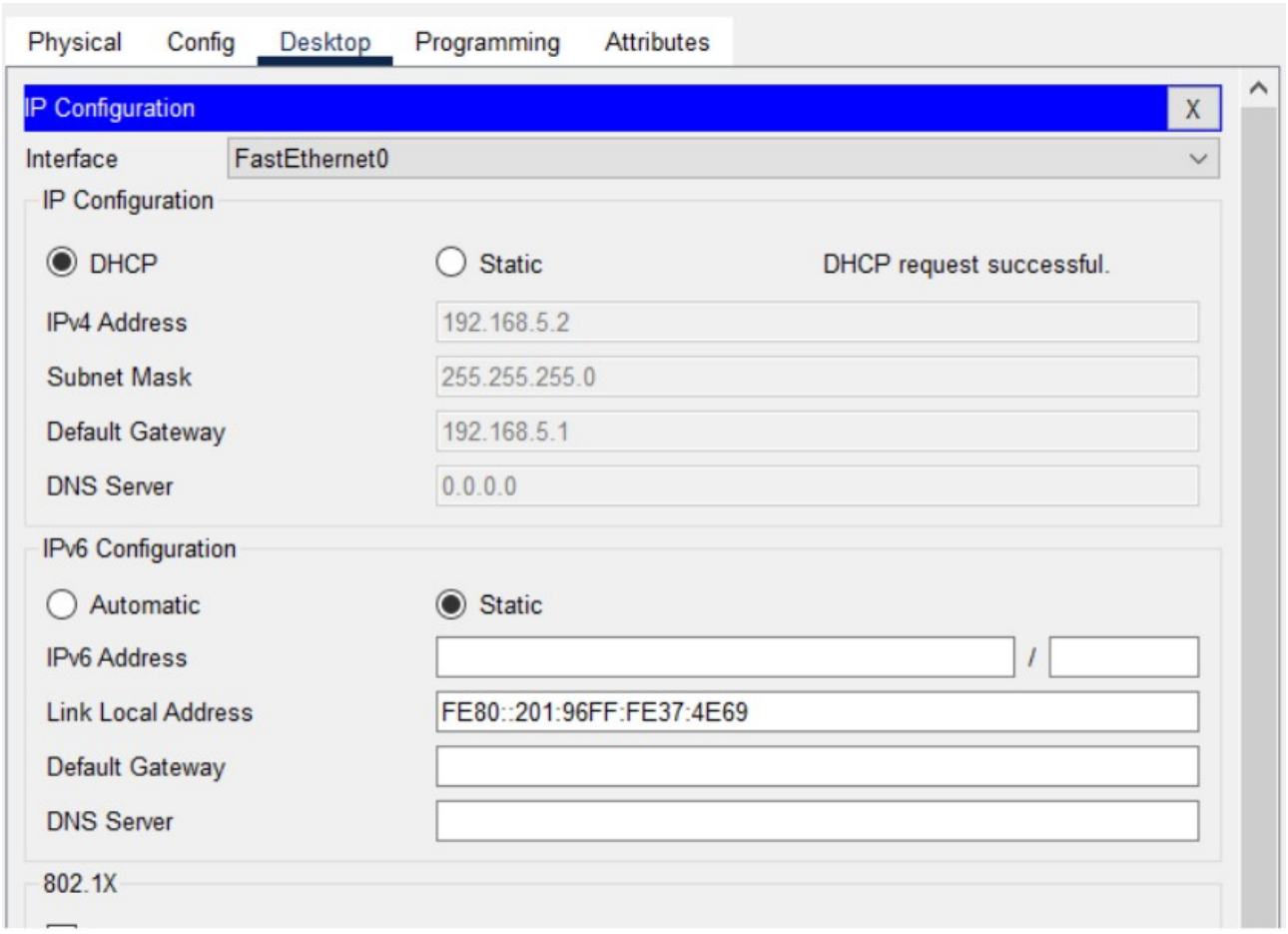
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IPv4 Address
192.168.5.2
Subnet Mask
255.255.255.0
Default Gateway
192.168.5.1
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
/
Link Local Address
FE80::201:96FF:FE37:4E69
Default Gateway
DNS Server
802.1X

-

```
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)#
```

a. Based on the topology, how many subnets are needed? **7**
b. How many bits must be borrowed to support the number of subnets in the topology table? **4**
c. How many subnets does this create? **16**
d. How many usable host addresses does this create per subnet? **14**
Note: If your answer is less than the 14 maximum hosts required for the R3 LAN, then you borrowed too many bits.
e. Calculate the binary value for the first five subnets. Subnet zero is already shown.

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**

f. Calculate the binary and decimal value of the new subnet mask.

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

255 . 255 . 255 . **240**

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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