

LAB 5. and LAB 6.

This lab introduces or reintroduces us to the Cisco Packet Tracer simulator.

LAB 5 :-

Both switches have an empty MAC address table, and all PCs have an empty ARP table.

In the Lab5 I didn't face any issue. I was able to do in one go.

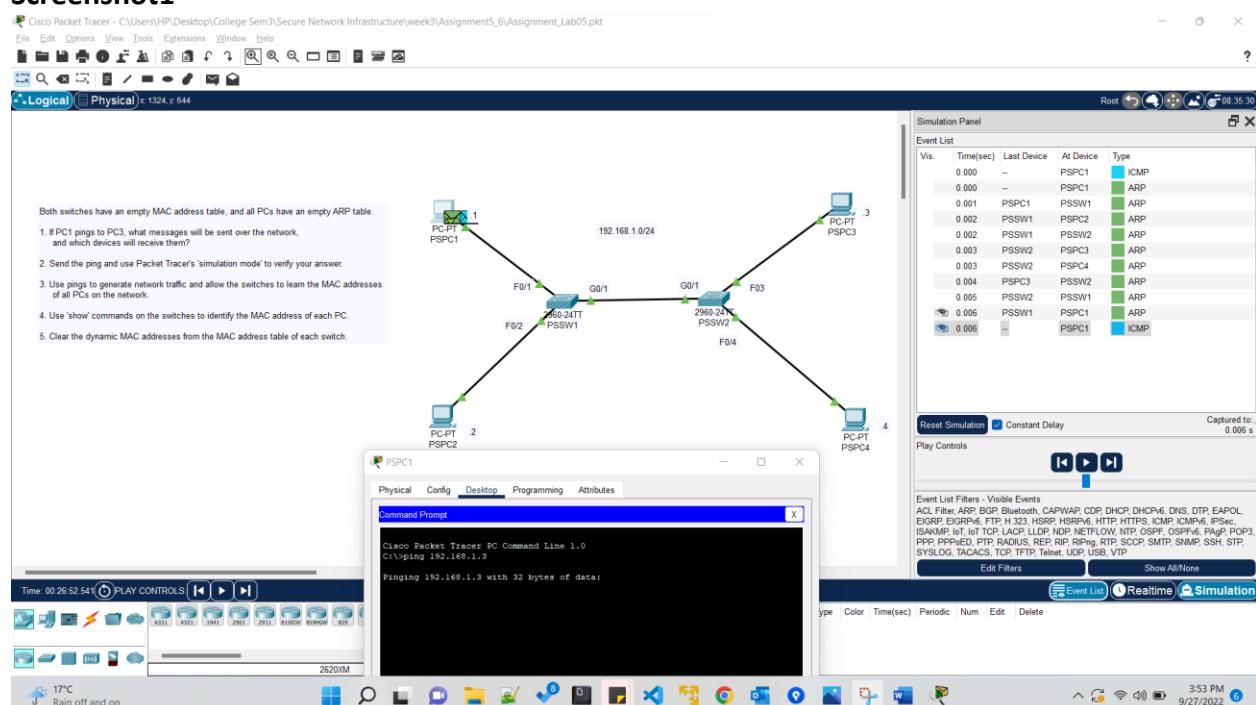
1. If PC1 pings to PC3, what messages will be sent over the network, and which devices will receive them?

- ARP Request**, it is a broadcast message, sent by PC1 and received by PC2, PC3 and PC4.
- ARP Reply**, it is a unicast message, sent by PC3 and received by PC1. Then PC1 will be able to add PC3 MAC address to its ARP Table.
- Then **ICMP Echo Request**, it is a unicast message, will be sent by PC1 and received by PC3.
- After that PC3 will send **ICMP Echo Reply** to PC1. And it is also a unicast message.

2. Send the ping and use Packet Tracer's 'simulation mode' to verify your answer.

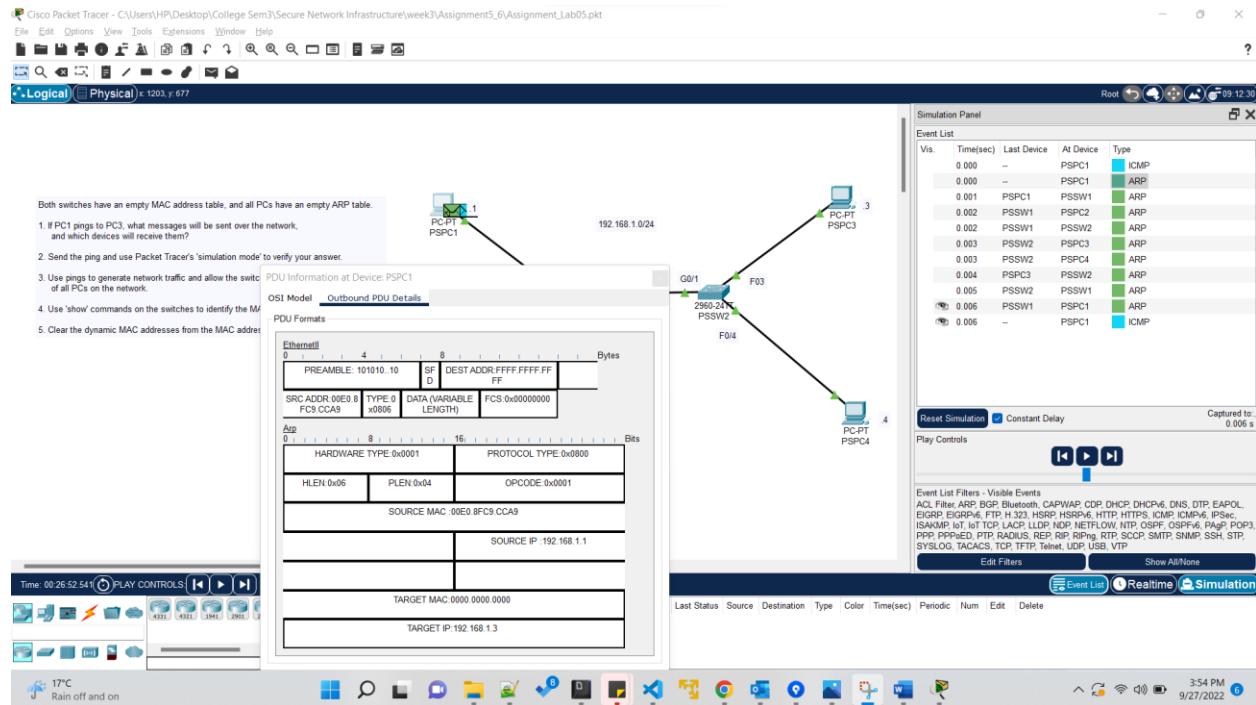
Here I used command # ping 192.168.1.3

Screenshot1

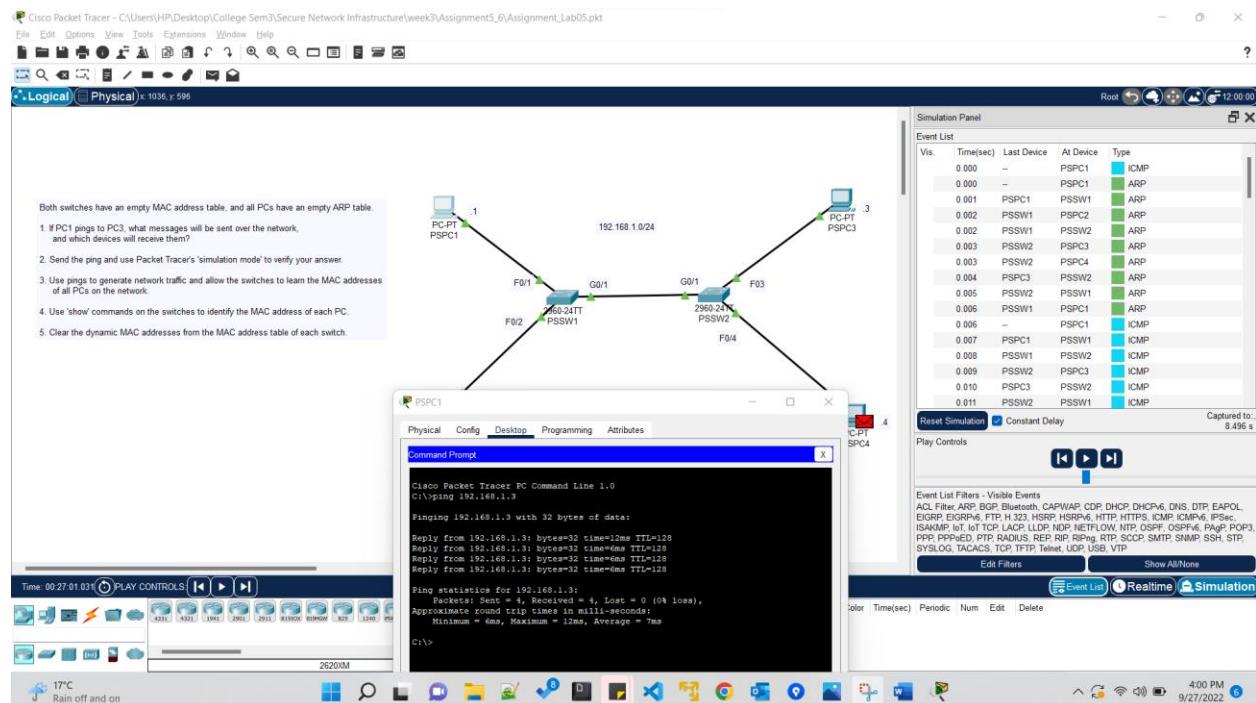


PDU details of the ARP message

Here clicking ARP message and then clicking on PDU details tab, where it is showing the MAC address.

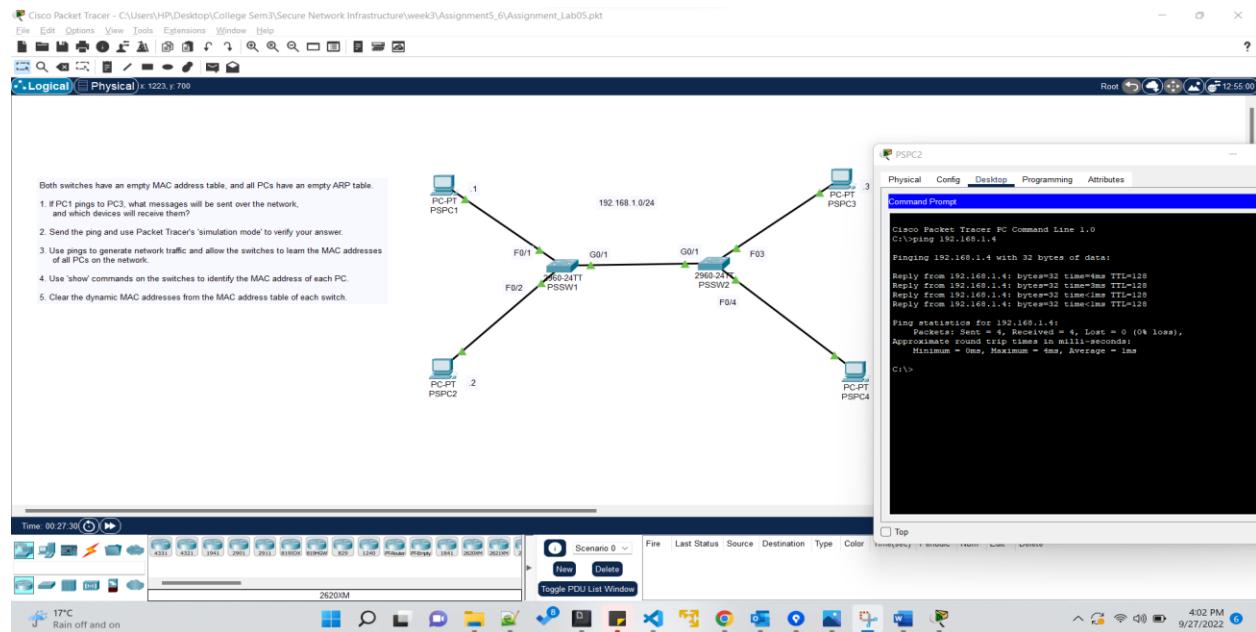


After sending 4 Ping request and in simulation each device is showing the type of Protocol.

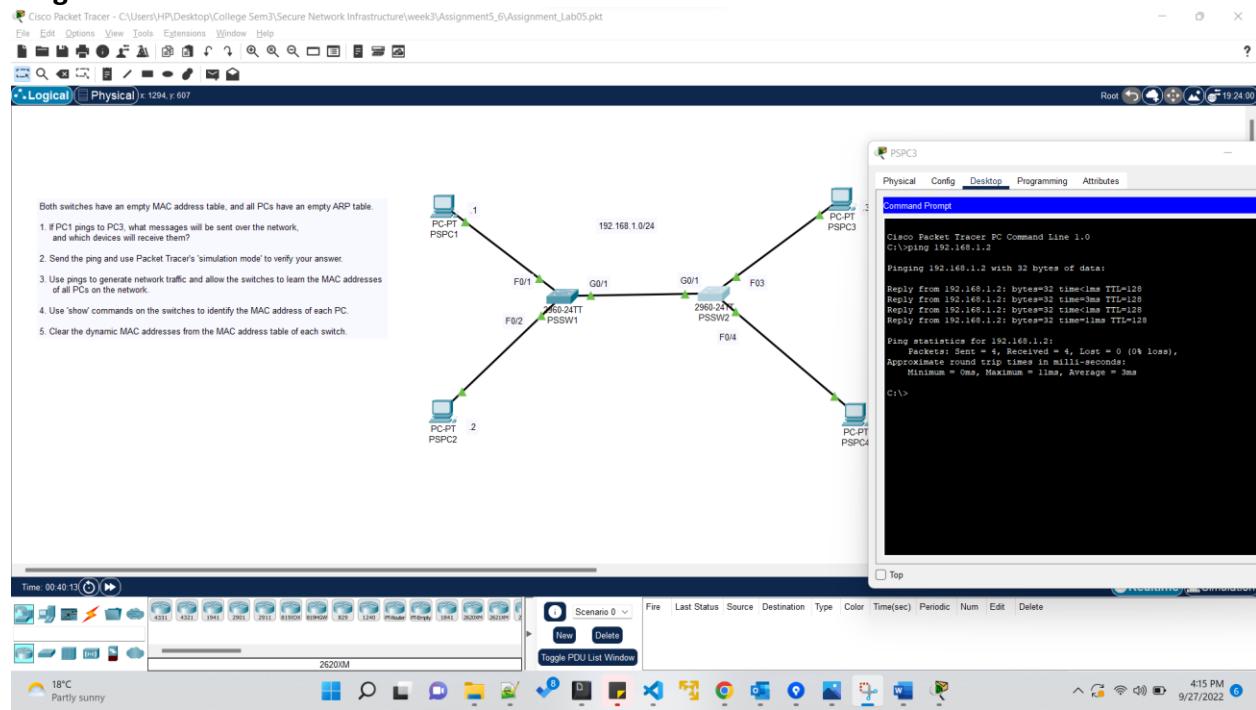


3. Use pings to generate network traffic and allow the switches to learn the MAC addresses of all PCs on the network.

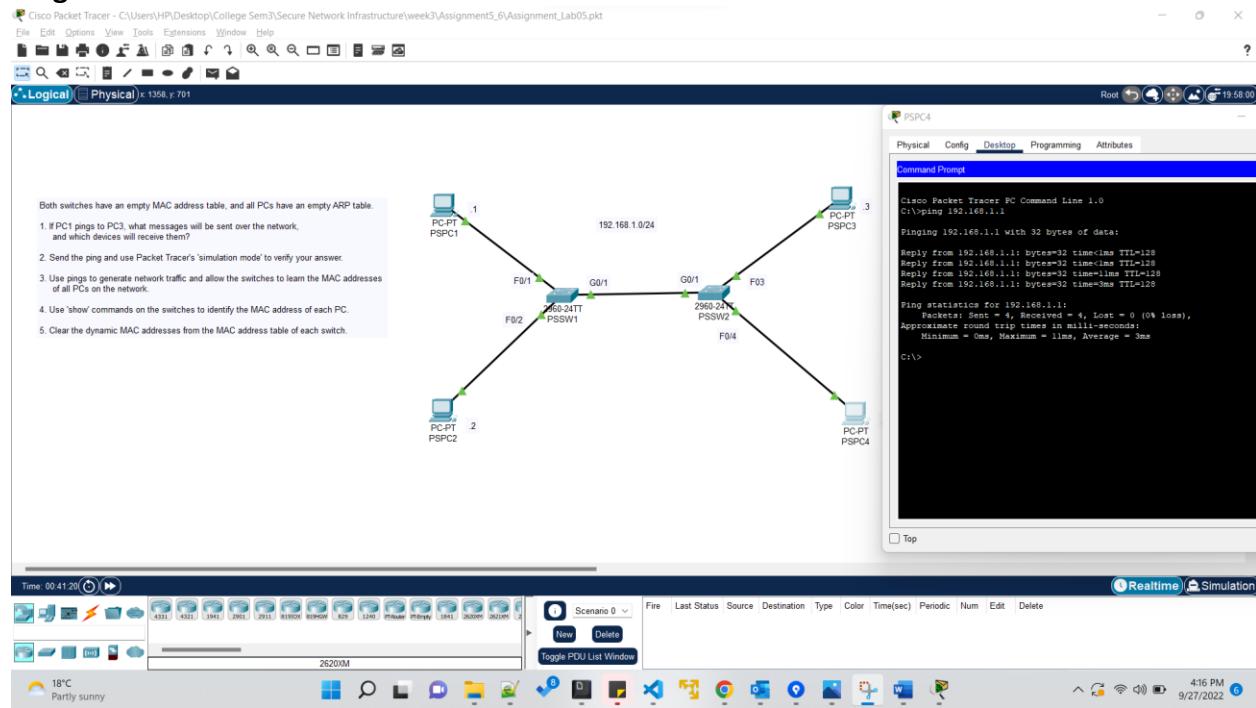
Ping request from PC2 to PC4



Ping from PC3 to PC2



Ping from PC4 to PC1



4. Use 'show' commands on the switches to identify the MAC address of each PC.

Using these commands to display the MAC table and below screenshot for Switch1 – PSSW1.

```
Switch>en
Switch#show mac address-table
Mac Address Table
```

| Vlan | Mac Address | Type | Ports |
|------|-----------------------|---------|--------|
| 1 | 0001.63ec.6119 | DYNAMIC | Gig0/1 |
| 1 | 0009.7c6b.cd1c | DYNAMIC | Fa0/2 |
| 1 | 0060.477b.040d | DYNAMIC | Gig0/1 |
| 1 | 0060.70c6.aee8 | DYNAMIC | Gig0/1 |
| 1 | 00e0.8fc9.cca9 | DYNAMIC | Fa0/1 |

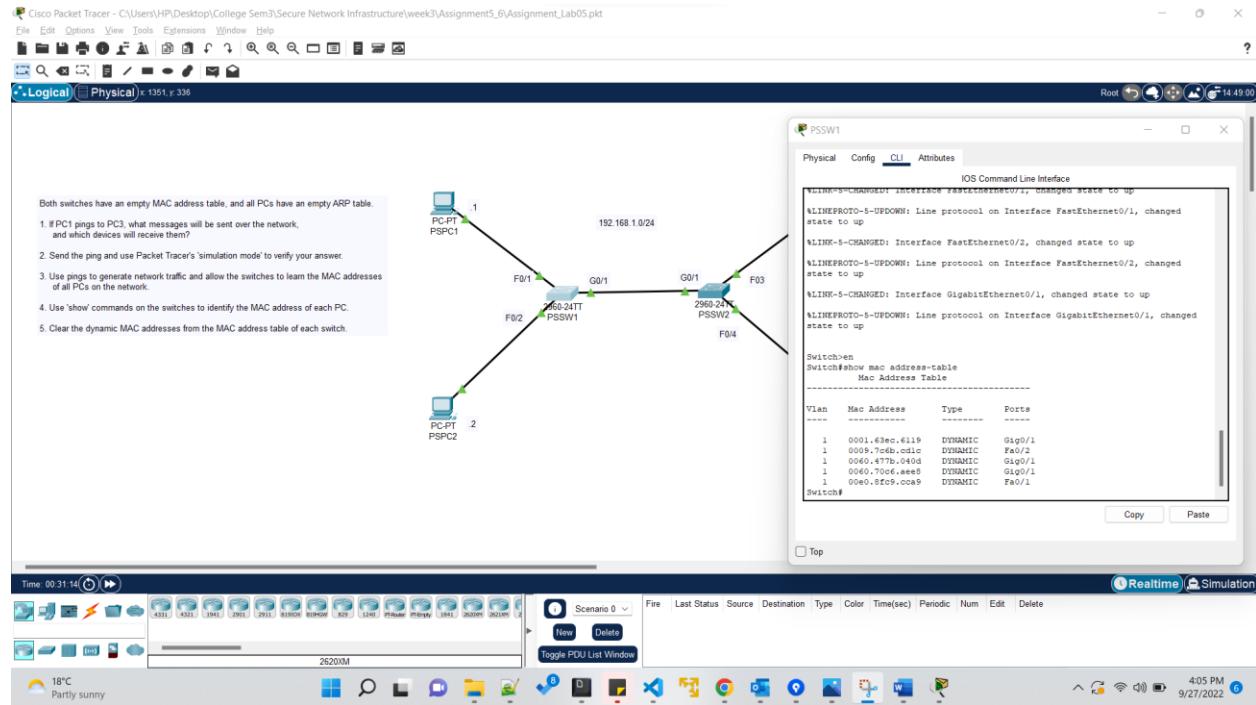
Switch#

So the MAC address of -

PC1 - 00e0.8fc9.cca9

PC2 - 0009.7c6b.cd1c

But we are not sure for the PC3 and PC4, so We will check in the Switch2.



Using these commands to display the MAC table and below screenshot for Switch2 – PSSW2.

Switch#show mac address-table

Mac Address Table

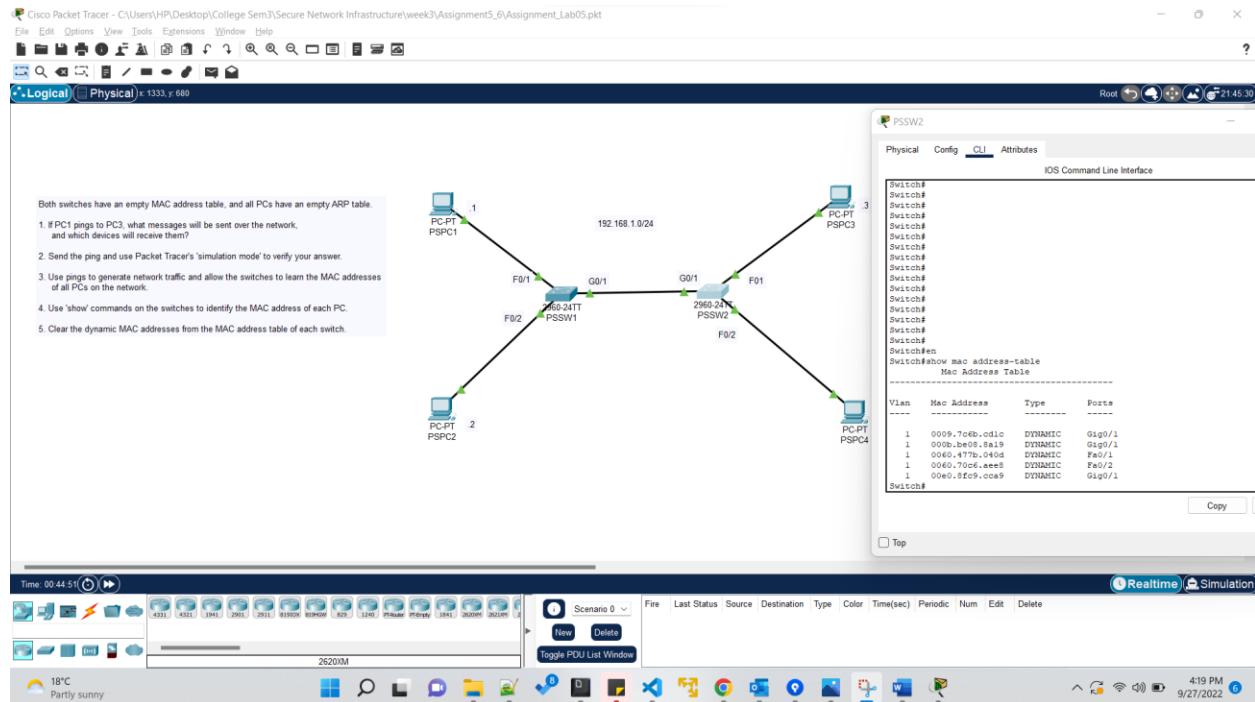
| Vlan | Mac Address | Type | Ports |
|------|-----------------------|---------|--------|
| 1 | 0009.7c6b.cd1c | DYNAMIC | Gig0/1 |
| 1 | 000b.be08.8a19 | DYNAMIC | Gig0/1 |
| 1 | 0060.477b.040d | DYNAMIC | Fa0/1 |
| 1 | 0060.70c6.aee8 | DYNAMIC | Fa0/2 |
| 1 | 00e0.8fc9.cca9 | DYNAMIC | Gig0/1 |

Switch#

So, the MAC address of :-

PC3 - **0060.477b.040d**

PC4 - **0060.70c6.aee8**



5. Clear the dynamic MAC addresses from the MAC address table of each switch.

Cleared MAC addresses in the Switch2

I used below commands.

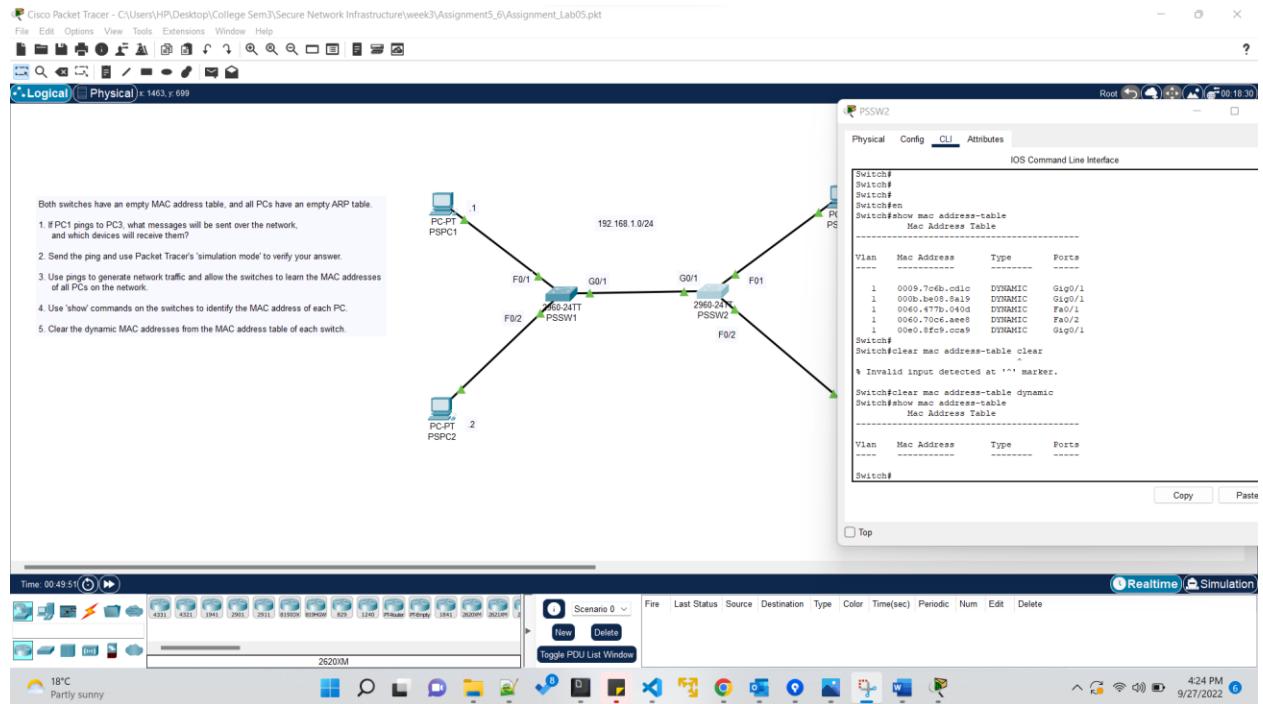
Switch#clear mac address-table dynamic

Switch#show mac address-table

Mac Address Table

Vlan Mac Address Type Ports

Switch#



Cleared MAC addresses in the Switch1 using below commands.

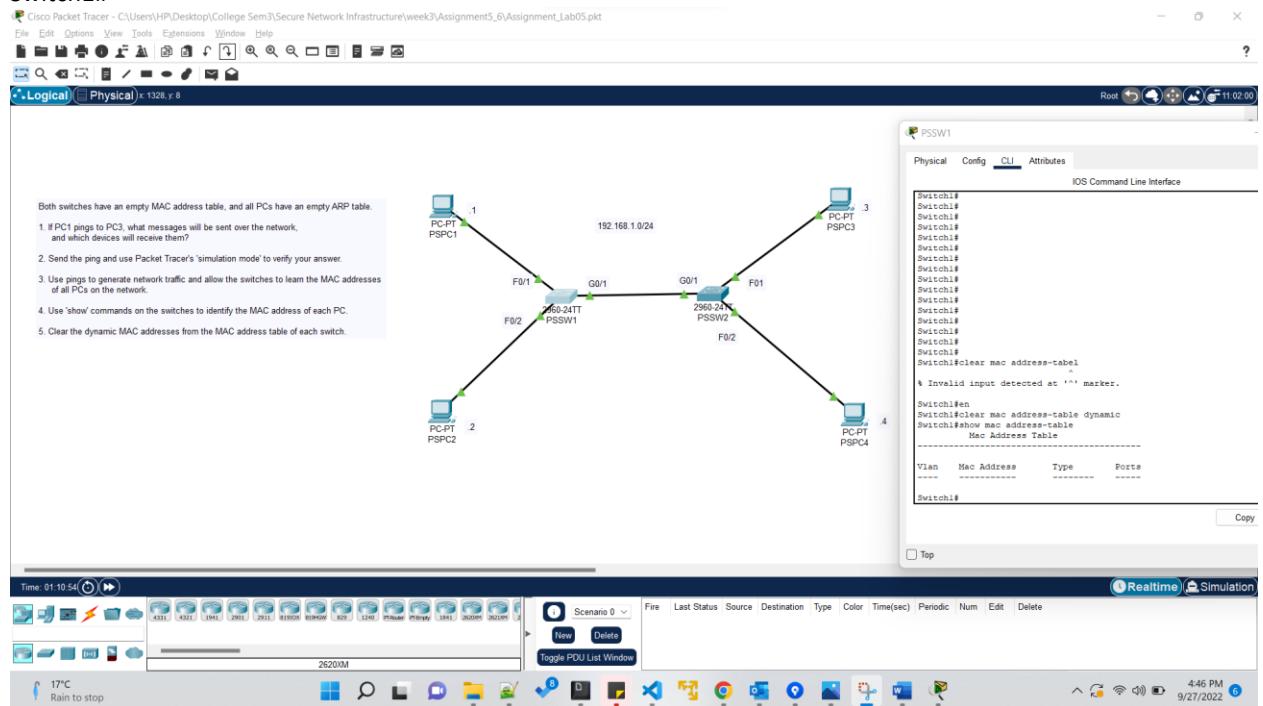
Switch1#clear mac address-table dynamic

Switch1#show mac address-table

Mac Address Table

Vlan Mac Address Type Ports

Switch1#



LAB 6 :-

In Lab6 I faced issue while doing ping to PC2 from Pc1 in the last question, because I took the wrong IP address for the PC2 and Rouetr1. So, I corrected the IP address of both and took few screenshots again. So, there might be time discrepancy in the 3 screenshots but It did affected overall functionality of this Lab.

1. Configure R1's hostname

Used below commands.

First, we are moving to configuration mode and then setting the hostname to PSR1

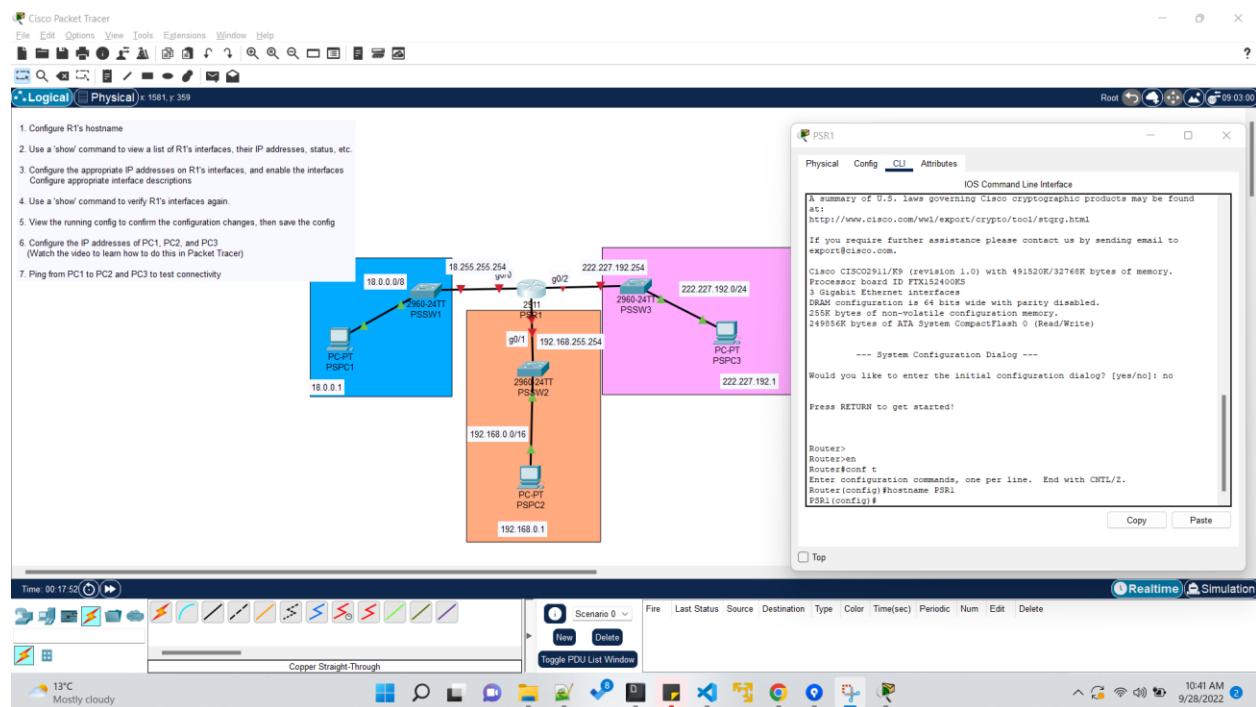
Router>en

Router#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#hostname PSR1

PSR1(config)#



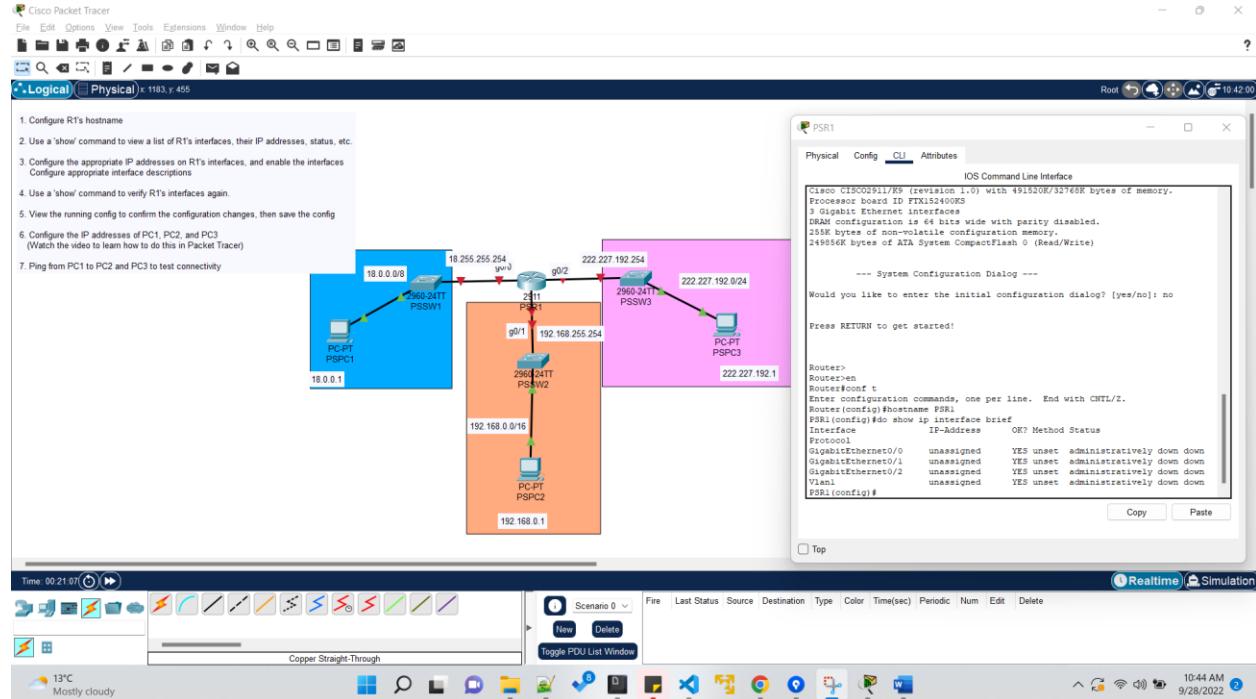
2. Use a 'show' command to view a list of R1's interfaces, their IP addresses, status, etc.

Used below command to check the status. Here all the interfaces are down because we have not set the IP address and their status to up.

PSR1(config)#**do show ip interface brief**

| Interface | IP-Address | OK? | Method | Status | Protocol |
|--------------------|------------|-----|--------|-----------------------|----------|
| GigabitEthernet0/0 | unassigned | YES | unset | administratively down | down |
| GigabitEthernet0/1 | unassigned | YES | unset | administratively down | down |
| GigabitEthernet0/2 | unassigned | YES | unset | administratively down | down |
| Vlan1 | unassigned | YES | unset | administratively down | down |

PSR1(config)#



3. Configure the appropriate IP addresses on R1's interfaces, and enable the interfaces Configure appropriate interface descriptions

Here, navigating to each interface and setting its IP address, description, and status to up.

a. Configuration of Router1 interface g0/0

```

PSR1(config)#interface giga
PSR1(config)#interface gigabitEthernet 0/0
PSR1(config-if)#ip address 18.255.255.254 255.0.0.0
PSR1(config-if)#desc
PSR1(config-if)#description ## to PSSW1 ##

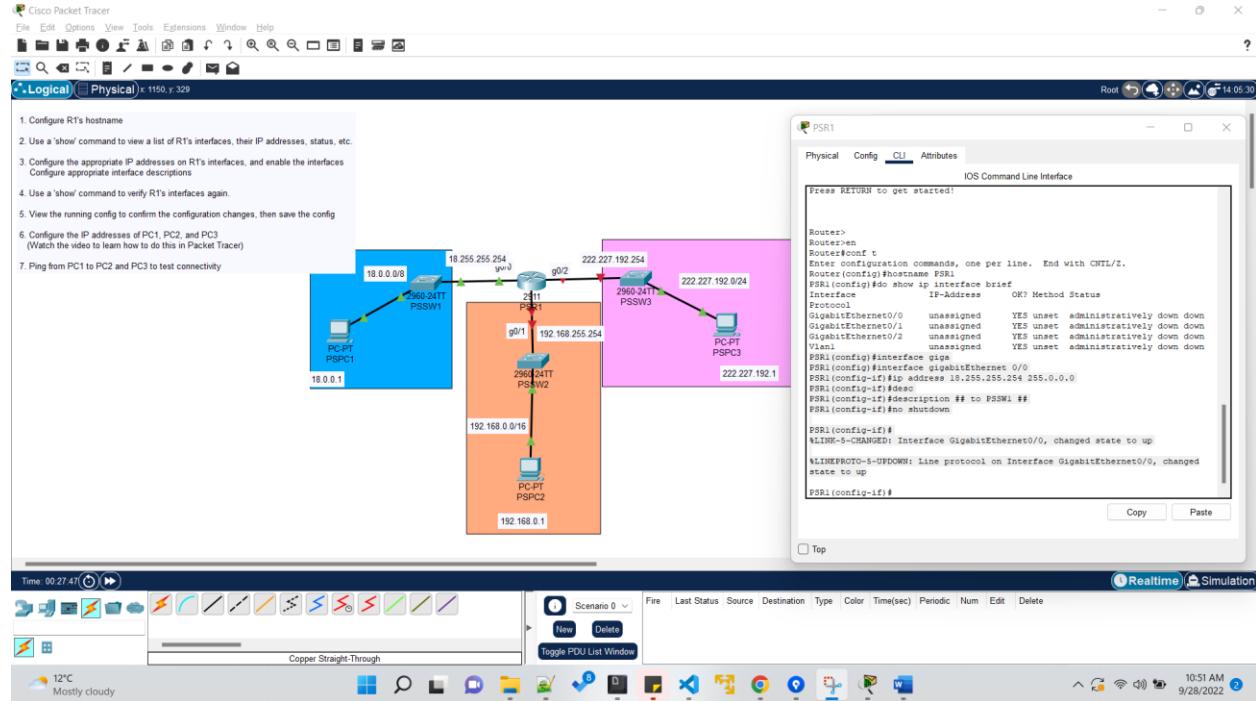
```

PSR1(config-if)#**no shutdown**

PSR1(config-if)#

%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up



b. Now configuring interface g0/1 with below commands.

Note - In this screenshot, there is time discrepancy it is because initially I took wrong IP class, but later I corrected and took the screenshot.

PSR1(config-if)#**int g0/1**

PSR1(config-if)#**ip add 182.168.255.254 255.255.0.0**

PSR1(config-if)#**description ## to PSSW2 ##**

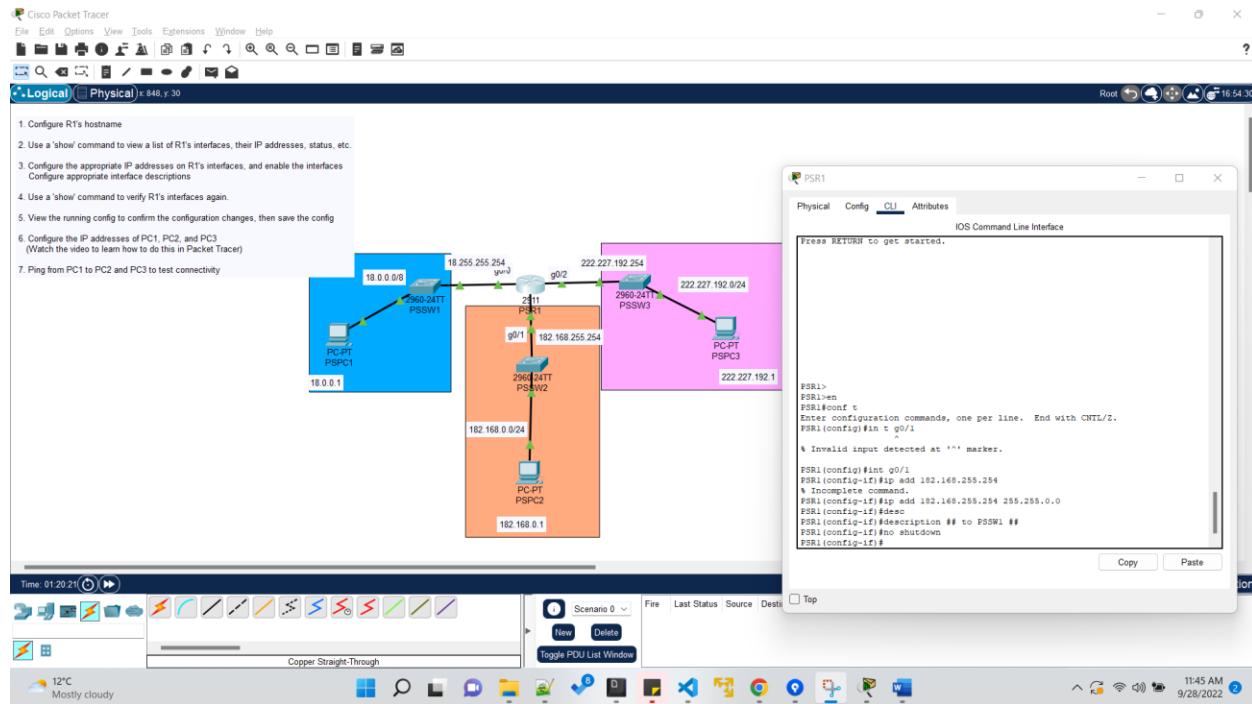
PSR1(config-if)#**no shutdown**

PSR1(config-if)#

%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

PSR1(config-if)#



c. Now Configuring interface g0/3 with below commands

```

PSR1(config-if)#int g0/2
PSR1(config-if)#ip address 222.227.192.254 255.255.255.0
PSR1(config-if)#desc
PSR1(config-if)#description ## to PSSW3 ##
PSR1(config-if)#no shutdown

```

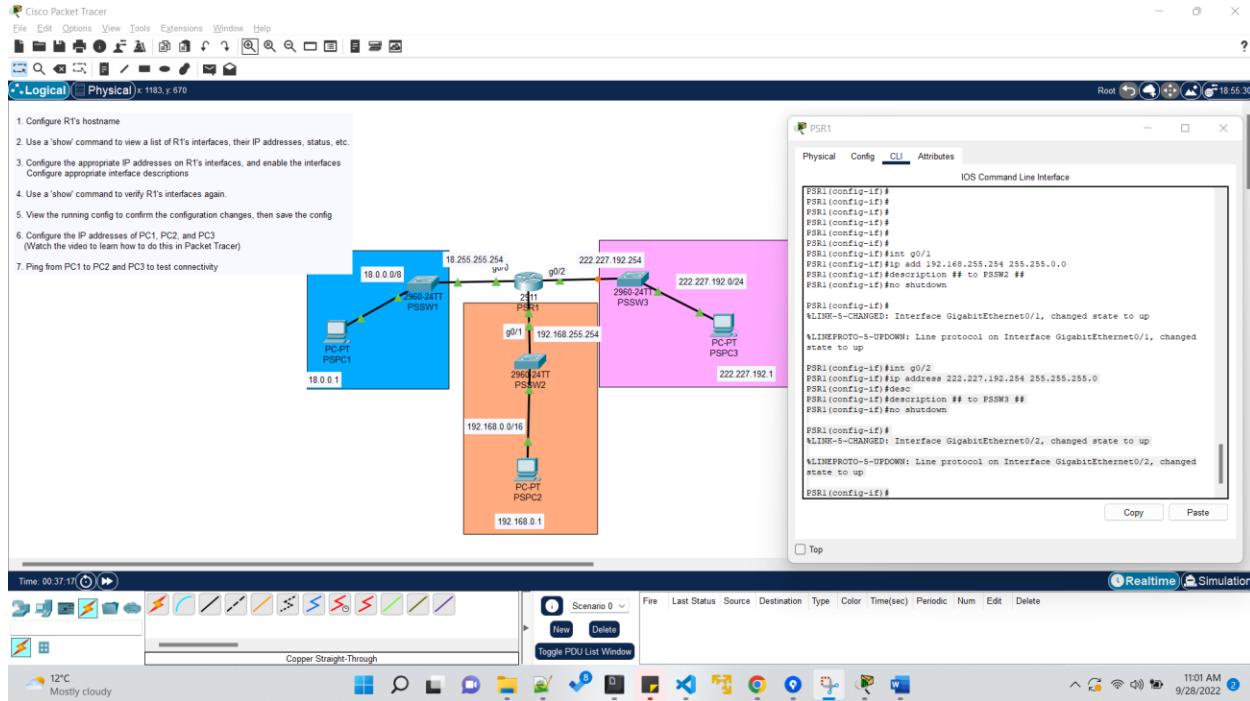
```

PSR1(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/2, changed state to up

PSR1(config-if)#

```



4. Use a 'show' command to verify R1's interfaces again.

Now checking the interfaces status again with below command.

Note - In this screenshot, there is time discrepancy it is because initially I took wrong IP class, but later I corrected and took the screenshot of show command.

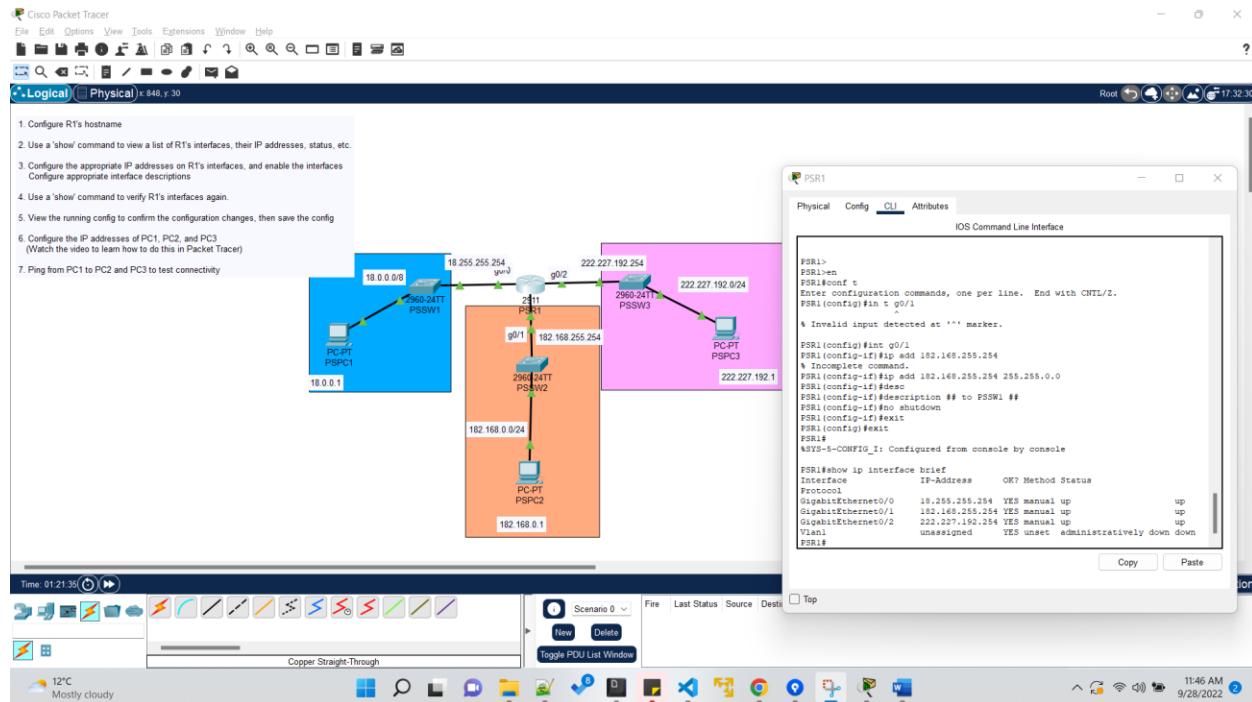
First we will exit from the global privilege execution mode with exit command two times.

```
PSR1(config-if)#exit
PSR1(config)#exit
PSR1#
%SYS-5-CONFIG_I: Configured from console by console
```

PSR1#show ip interface brief

| Interface | IP-Address | OK? Method | Status | Protocol |
|--------------------|-----------------|------------|-----------------------------|----------|
| GigabitEthernet0/0 | 18.255.255.254 | YES manual | up | up |
| GigabitEthernet0/1 | 182.168.255.254 | YES manual | up | up |
| GigabitEthernet0/2 | 222.227.192.254 | YES manual | up | up |
| Vlan1 | unassigned | YES | unset administratively down | down |

Now all these 3 interfaces are up and IP address is assigned.

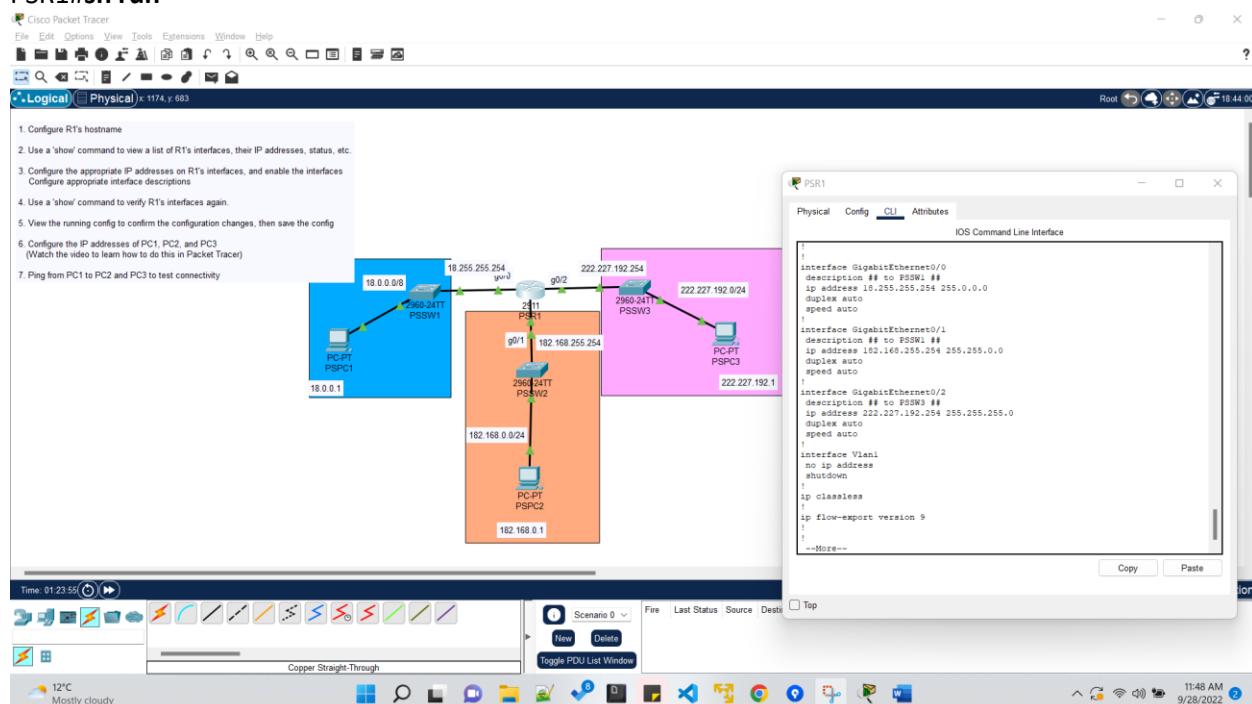


5. View the running config to confirm the configuration changes, then save the config

Note - In this screenshot, there is time discrepancy it is because initially I took wrong IP class, but later I corrected and took the screenshot.

Command used –

PSR1#sh run



Save the Configuration, we can save configuration with below two commands.

```
PSR1#copy running-config start
```

```
Destination filename [startup-config]? 
```

```
Building configuration... 
```

```
[OK] 
```

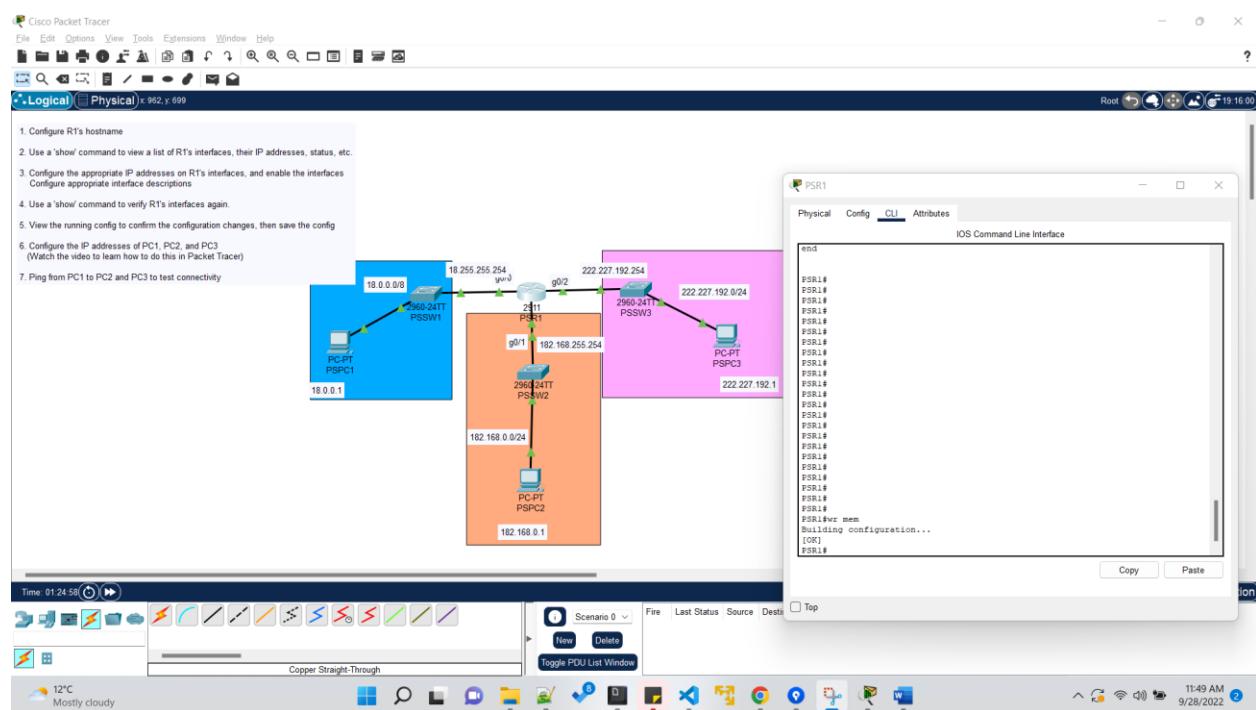
```
PSR1#write mem 
```

```
PSR1#write memory 
```

```
Building configuration... 
```

```
[OK] 
```

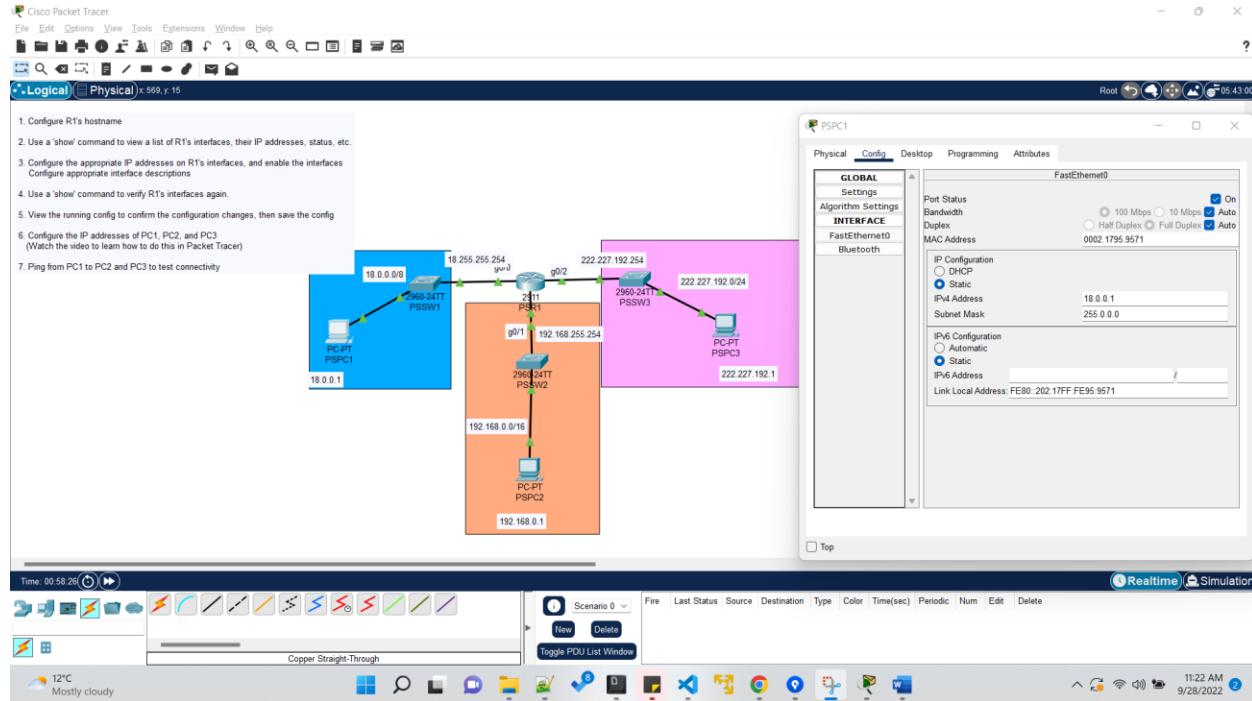
```
PSR1# 
```



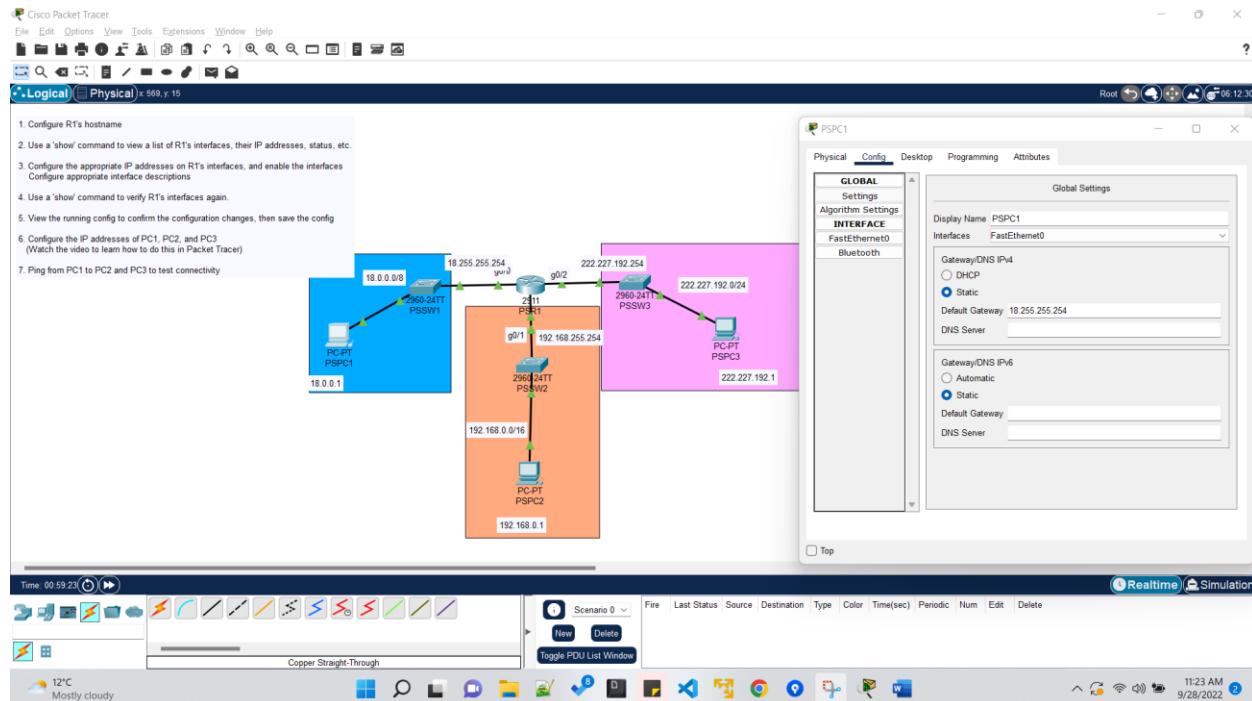
6. Configure the IP addresses of PC1, PC2, and PC3

In this step, Setting the IP address and subnet mask of each PC and also the default gateway of individual PC to the assigned IP address of interfaces.

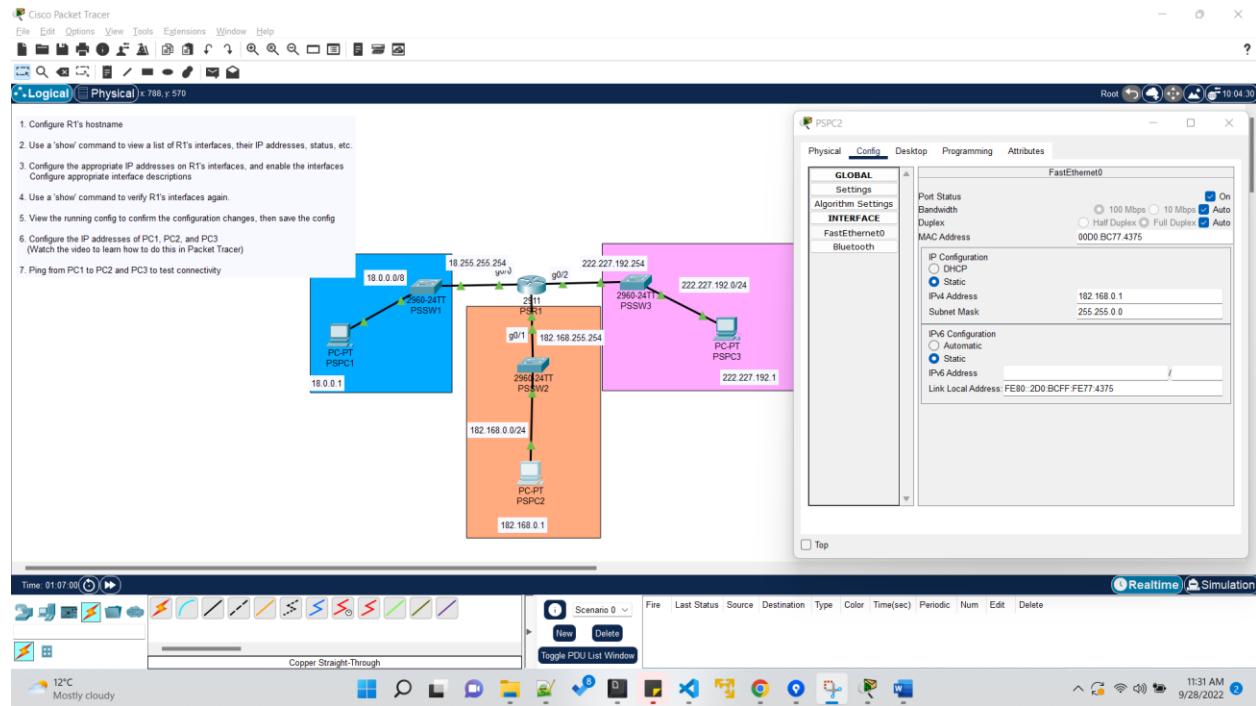
Set IP address, subnet mask of PSPC1



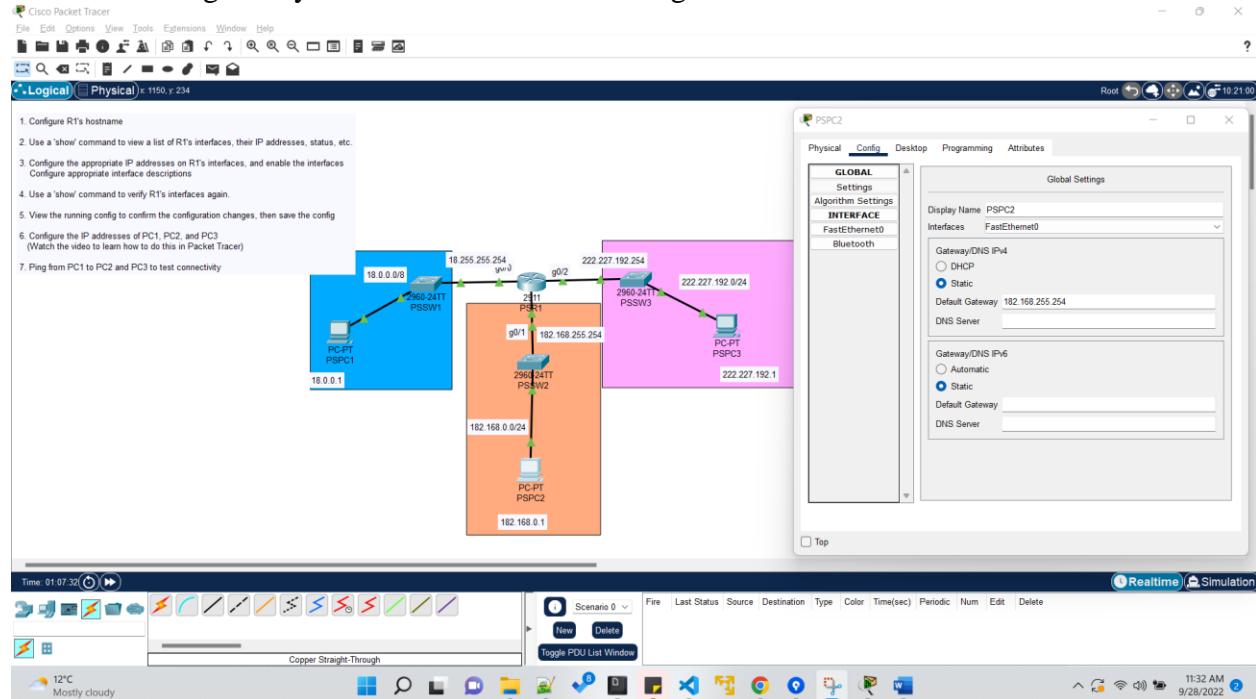
Set the default gateway in PSPC1 to the IP address of g0/0



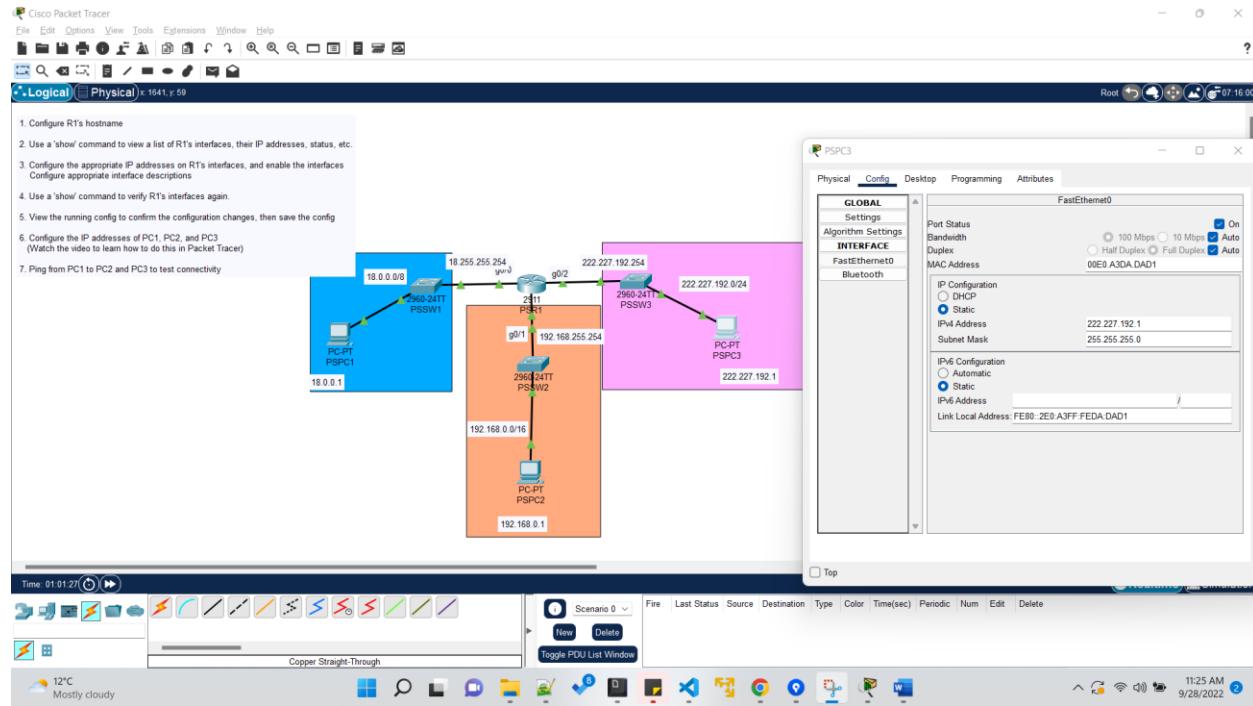
Set the IP address and subnet mask of PC2



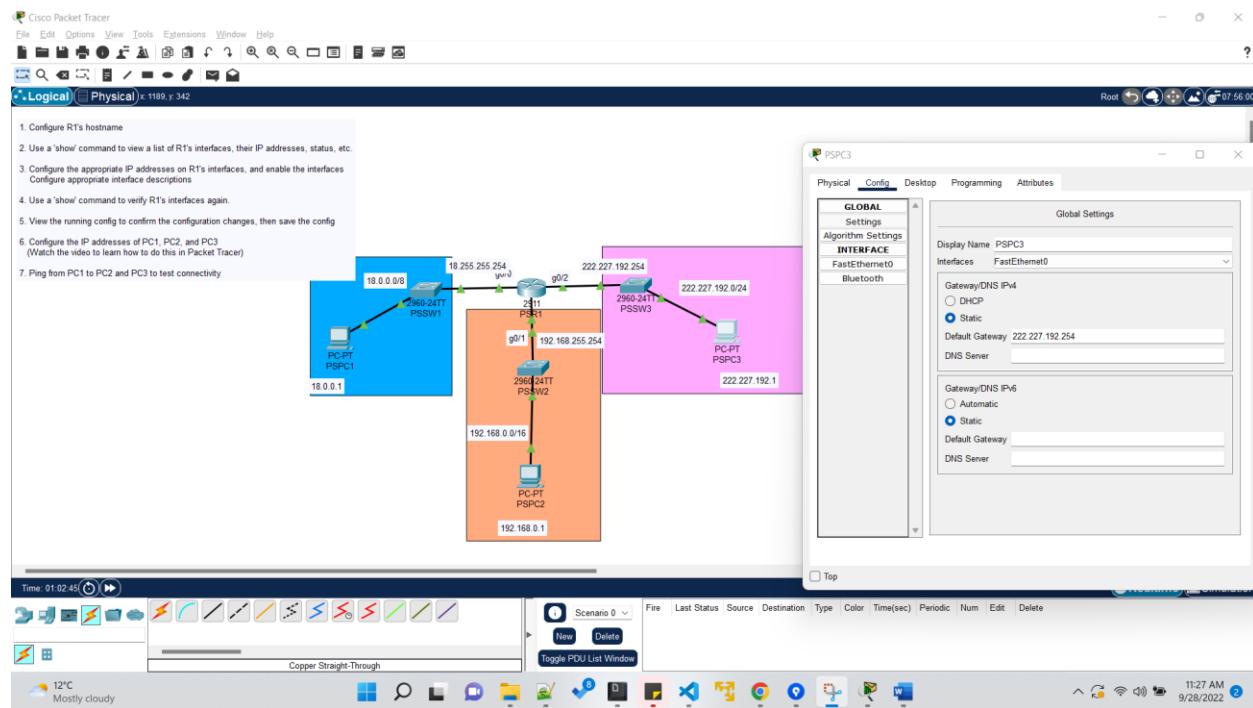
Set the default gateway of PC2 to the IP address of g0/1



Set the IP address and subnet mask for the PC3



Set the default gateway for PC3 to the IP address of g0/3



7. Ping from PC1 to PC2 and PC3 to test connectivity.

In this step using the ping command to check the connectivity of the PC1 with PC2 and PC3.

a. Ping from PC1 to PC2

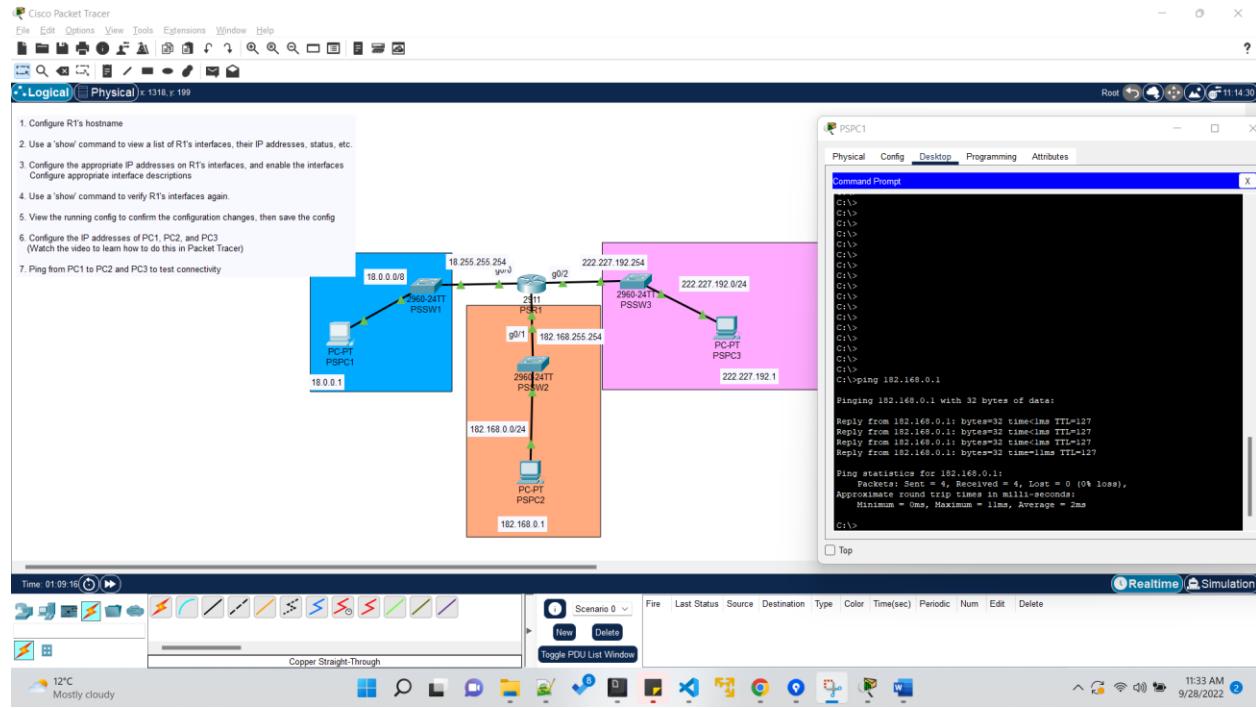
C:\>ping 182.168.0.1

Pinging 182.168.0.1 with 32 bytes of data:

```
Reply from 182.168.0.1: bytes=32 time<1ms TTL=127
Reply from 182.168.0.1: bytes=32 time<1ms TTL=127
Reply from 182.168.0.1: bytes=32 time<1ms TTL=127
Reply from 182.168.0.1: bytes=32 time=11ms TTL=127
```

Ping statistics for 182.168.0.1:

```
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 11ms, Average = 2ms
```



b. Ping from PC1 to PC3

C:\>ping 222.227.192.1

Pinging 222.227.192.1 with 32 bytes of data:

```
Reply from 222.227.192.1: bytes=32 time<1ms TTL=127
```

Ping statistics for 222.227.192.1:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 0ms, Average = 0ms

