Fr. Conceicao Rodrigues College of Engineering

Department of Computer Engineering

Academic Term : July-Nov 2023-24

Class: T.E. (Computer B)
Subject Name: Computer Network Lab
Subject Code: CSL 502

Experiment No:	6
Date of Performance:	31/08/2023
Roll No:	9614
Name of the Student:	Aqib Firdous Khan

AIM: Design VPN and Configure RIP/OSPF using Packet tracer.

THEORY:

Routing Information Protocol (RIP) is a dynamic routing protocol which uses hop count as a routing metric to find the best path between the source and the destination network. It is a distance vector routing protocol which has AD value 120 and works on the application layer of OSI model. RIP uses port number 520.

Hop Count:

Hop count is the number of routers occurring in between the source and destination network. The path with the lowest hop count is considered as the best route to reach a network and therefore placed in the routing table. RIP prevents routing loops by limiting the number of hopes allowed in a path from source and destination. The maximum hop count allowed for RIP is 15 and hop count of 16 is considered as network unreachable.

Features of RIP:

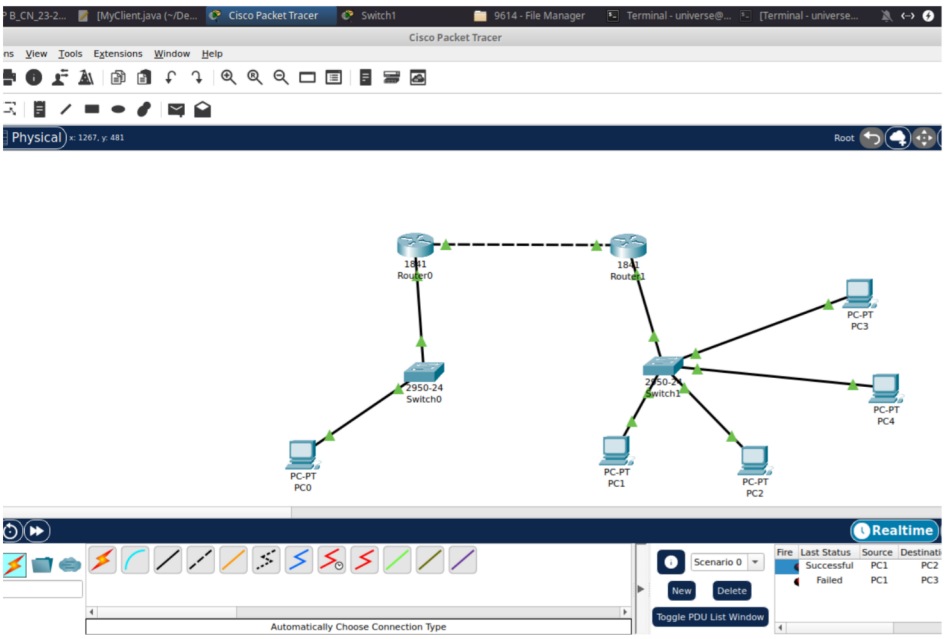
1. Updates of the network are exchanged periodically.
2. Updates (routing information) are always broadcast.
3. Full routing tables are sent in updates.
4. Routers always trust on routing information received from neighbor routers. This is also known as Routing on rumors.

Steps for implementing RIP:

Step1:

Select Router – select 1841 router and drag it to the screen (Router0).
Select another Router – select 1841 and drag it to the right of the Router0 (Router1). Select Switches – select 2950-24 and drag it below the Router0 (Switch0).
Select Switches – select 2950-24 and drag it below the Router1 (Switch1).
Select End Device – select Generic and drag it below Switch0 (PC-PT PC0).

Select End Device – select Generic and drag it below Switch1 (PC-PT PC1).
Select End Device – select Generic and drag it below Switch1 (PC-PT PC2).
Select Connections – Connect routers, switches and PCs to each other.

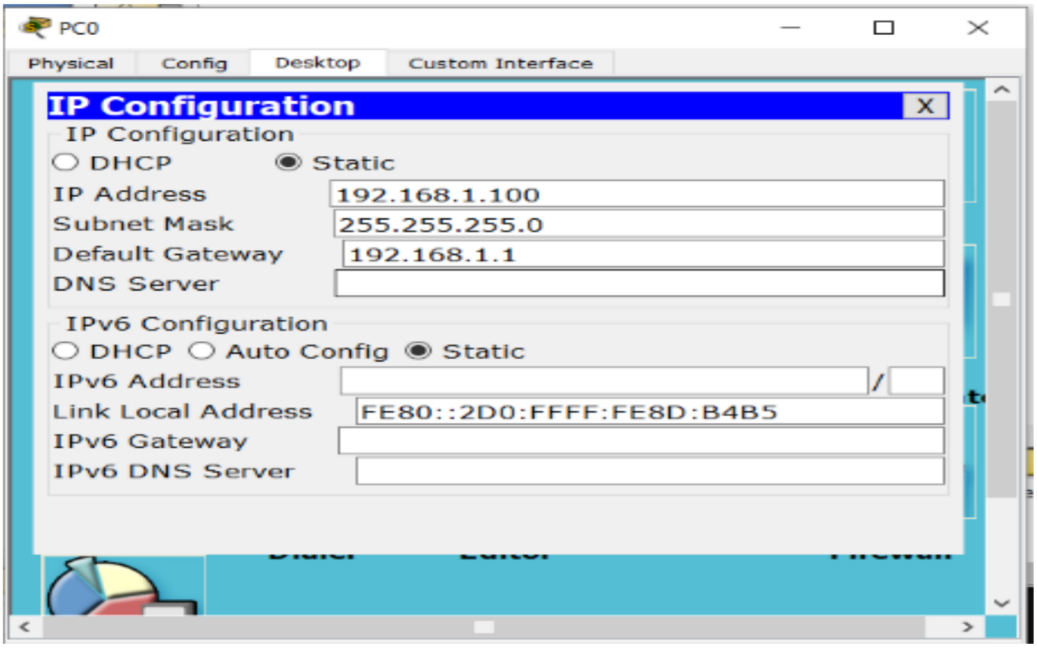


Step 2:

Click on PC0 and go to Desktop > IP Configuration

Add IP Address, as you will add the IP Address, Subnet Mask will be automatically added and displayed.

Add Default Gateway and close the window.

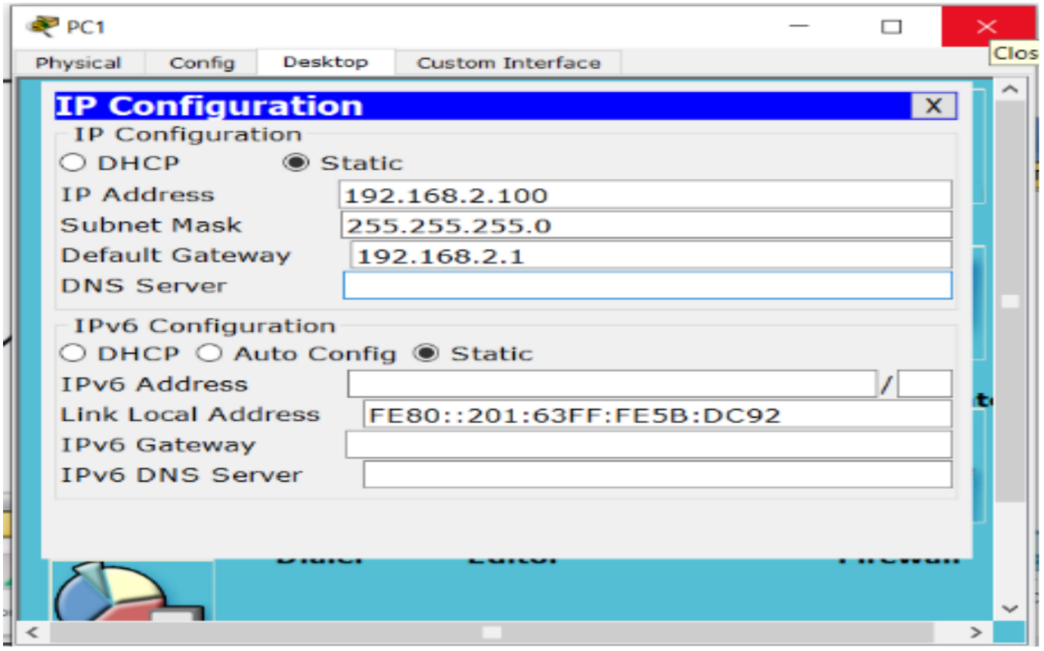


Step 3:

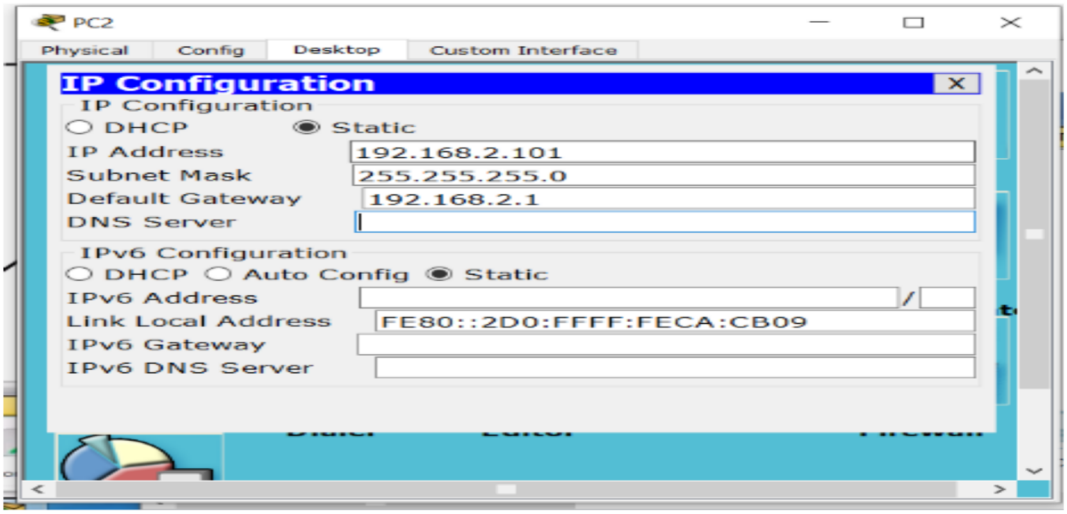
Click on PC1 and go to Desktop > IP Configuration

Add IP Address, as you will add the IP Address, Subnet Mask will be automatically added and displayed.

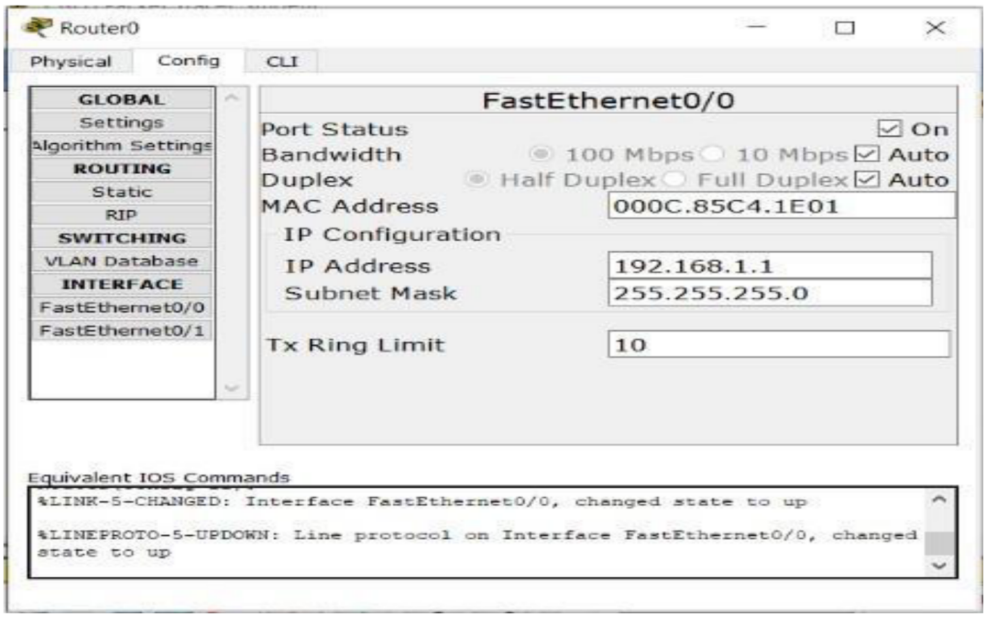
Add Default Gateway and close the window.



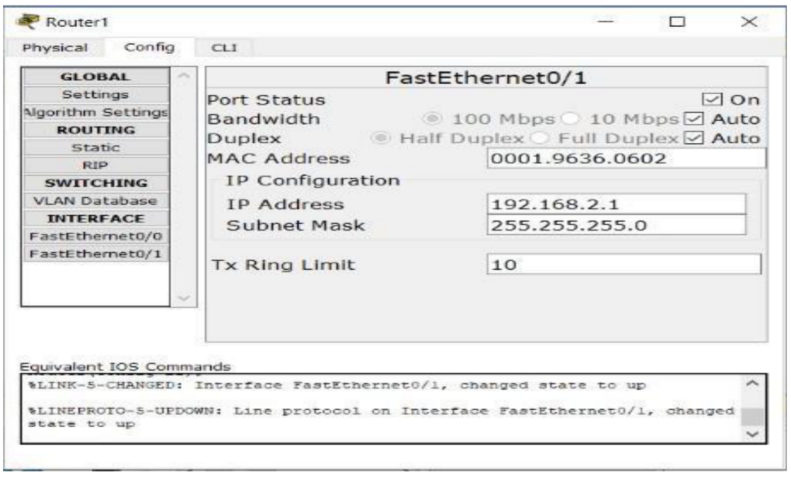
Step 4:
Click on PC2 and go to Desktop > IP Configuration
Add IP Address, as you will add the IP Address, Subnet Mask will be automatically added and displayed.
Add Default Gateway and close the window.

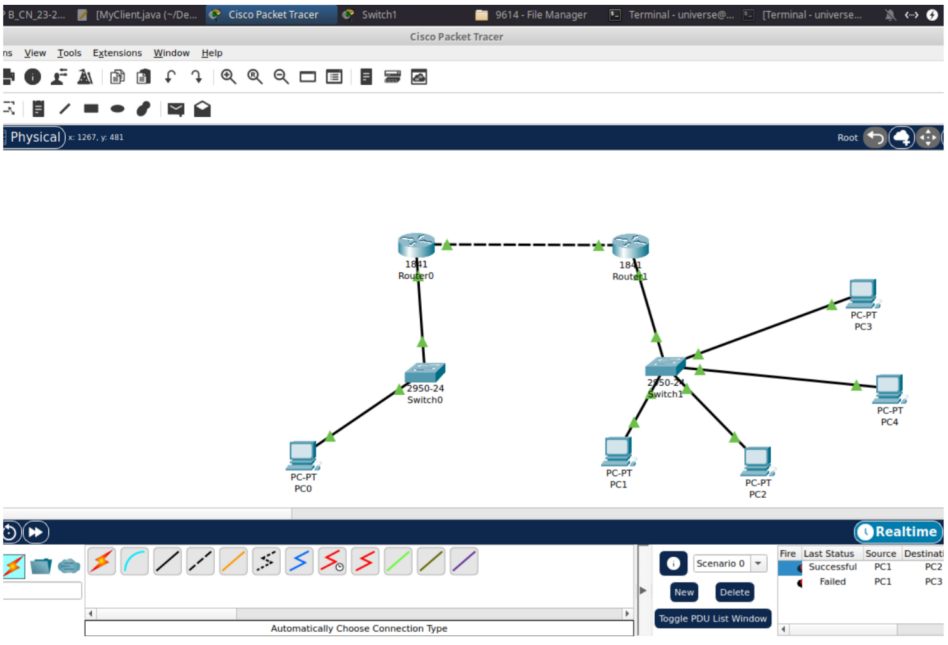


Step 5:
Click on Router0. Go to Config > FastEthernet0/0.
Here, add IP Address and On the Port Status.



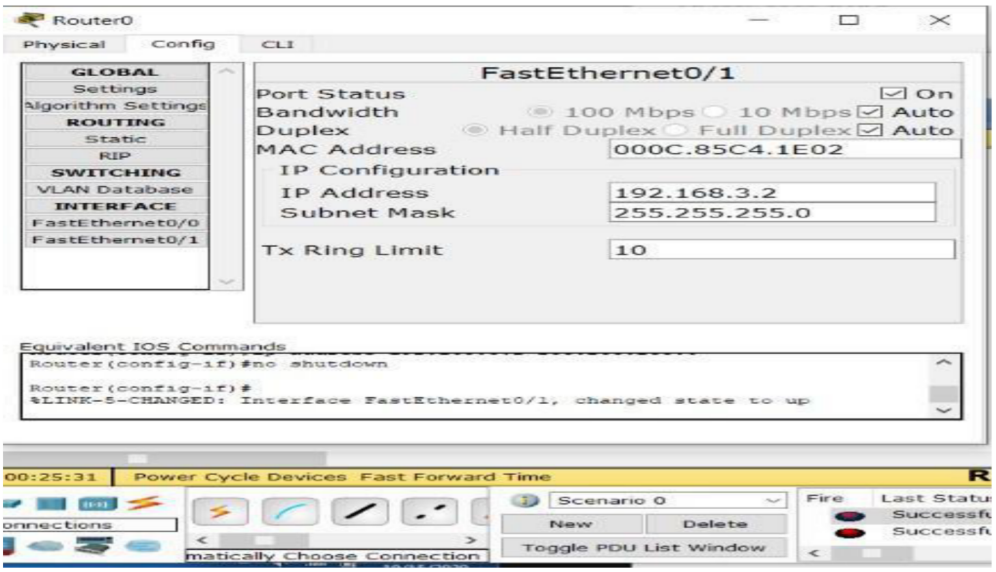
Step 6:
Click on Router1. Go to Config > FastEthernet0/1.
Here, add IP Address and On the Port Status.



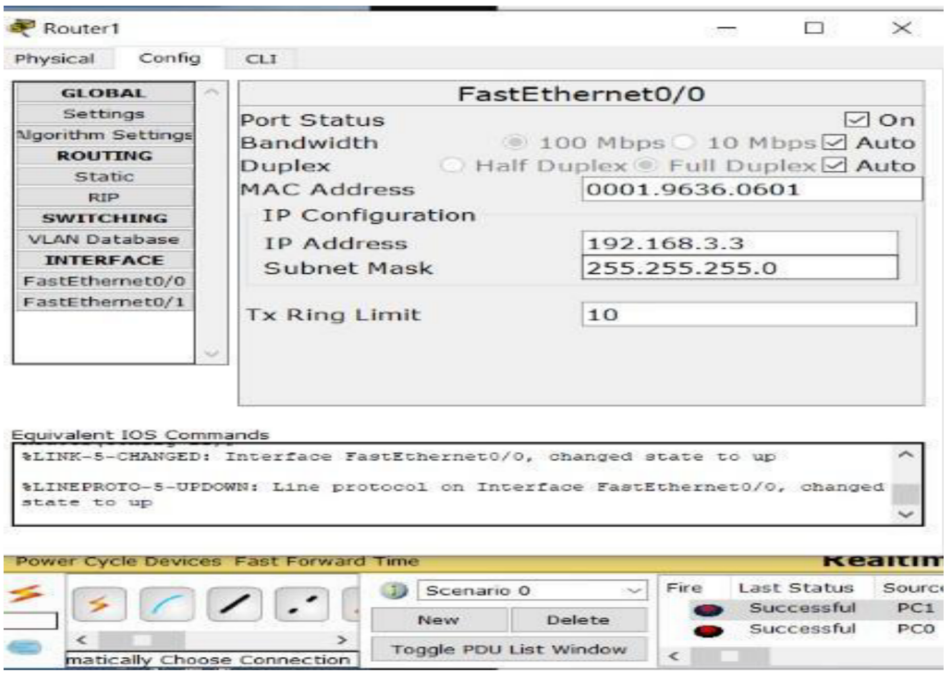


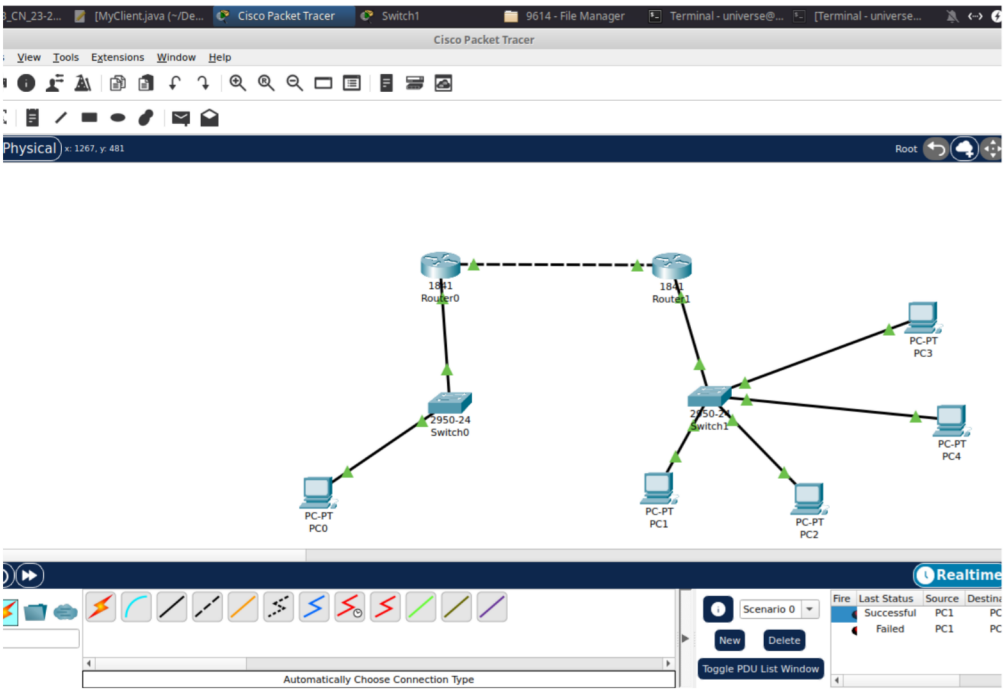
As you will see above, there are green dots which means connections are done successfully between Router, Switches and PCs.

Step 7:
Click on Router0. Go to Config > FastEthernet0/1.
Here, add IP Address and On the Port Status.

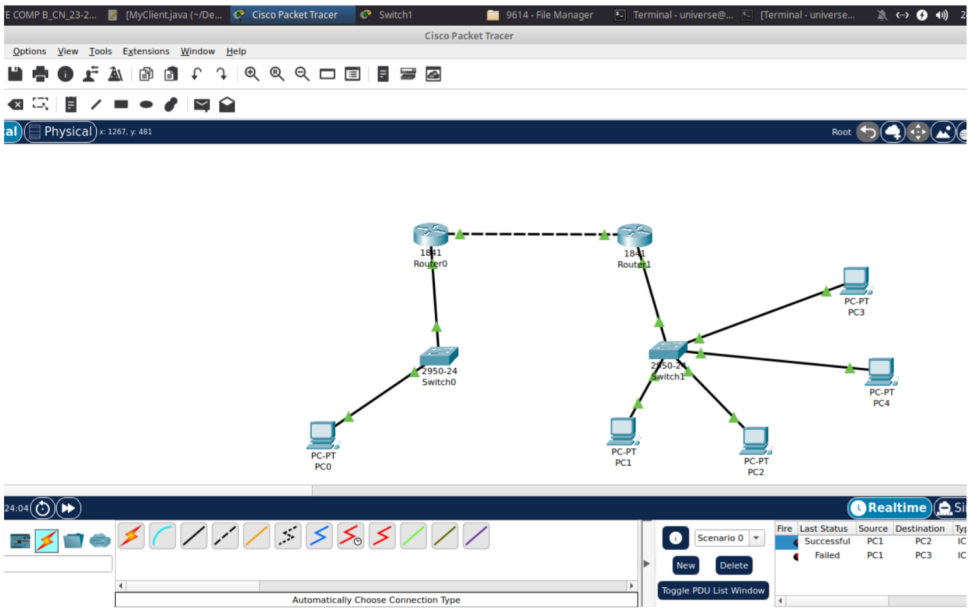


Step 8:
Click on Router1. Go to Config > FastEthernet0/0.
Here, add IP Address and On the Port Status.

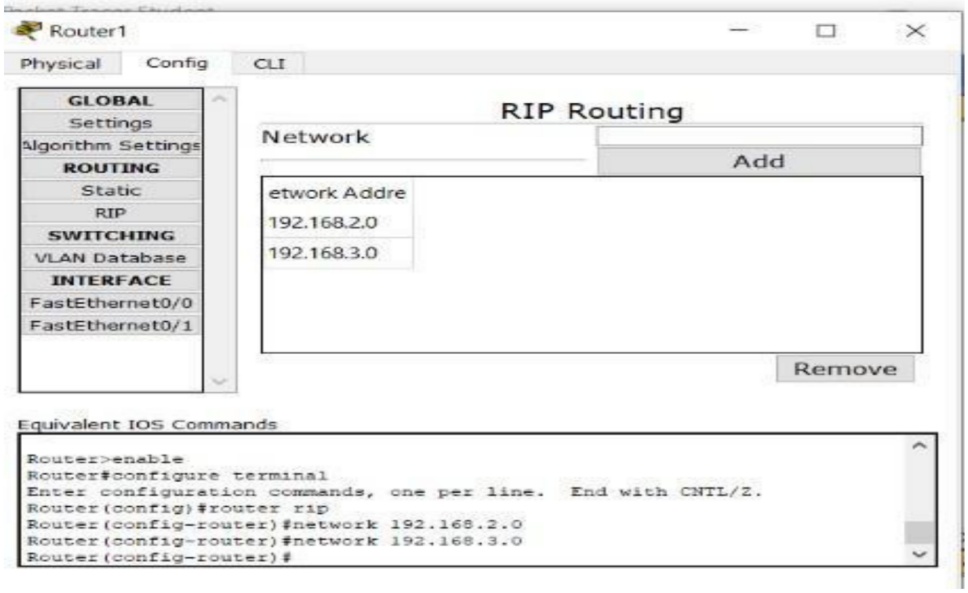




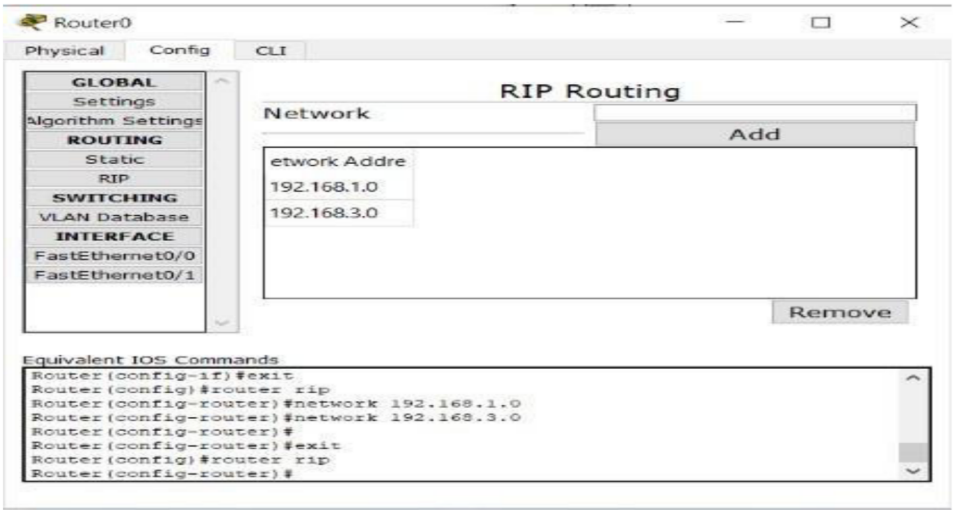
As you can see above, connection is done between both the Routers successfully



Step 9:
Click on Router1. Go to Config > RIP.
Here, add the network address to connect router1 with switch1, PC1, PC2 and router0.



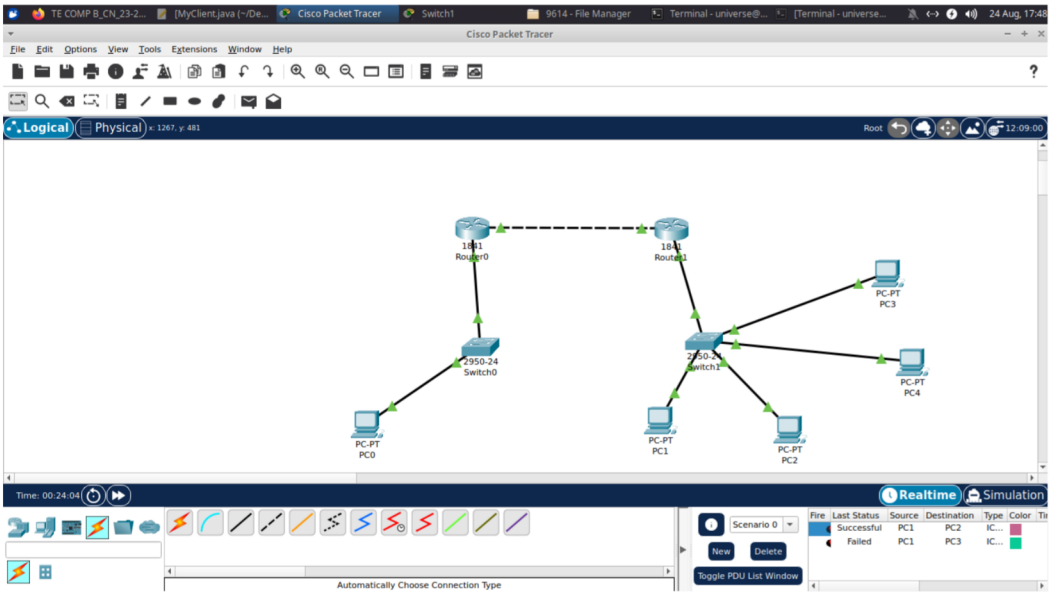
Step 10:
Click on Router0. Go to Config > RIP.
Here, add the network address to connect router0 with switch0, PC0 and router1.



Now, all the connections are done successfully, you can check it by clicking on this symbol

And then, click on any two PCs, you will get the status as successful.

Final Output:



So, Routing Information Protocol is done.

Steps for implementing VLAN:

Step1:

Select Router – select 1841 router and drag it to the screen (Router0).
Select another Router – select 1841 and drag it to right of the Router0 (Router1).
Select Switches – select 2950-24 and drag it below the Router0 (Switch0).
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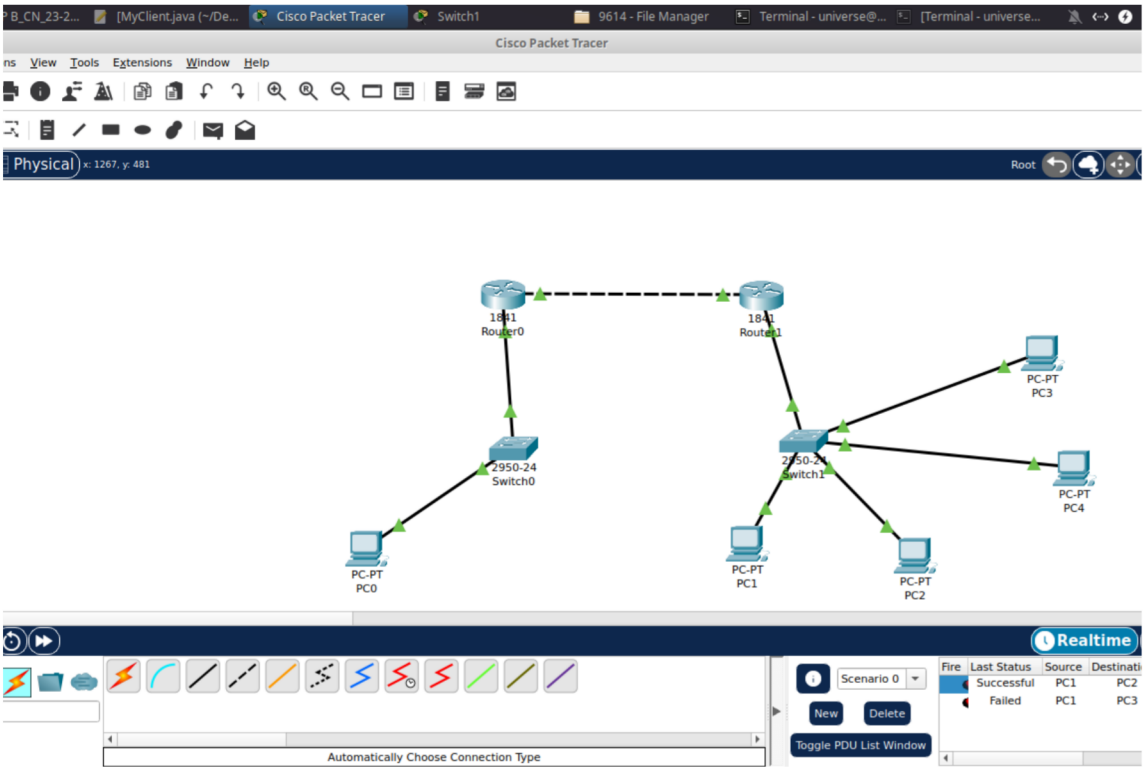
Select Connections – Connect routers, switches and PCs to each other.

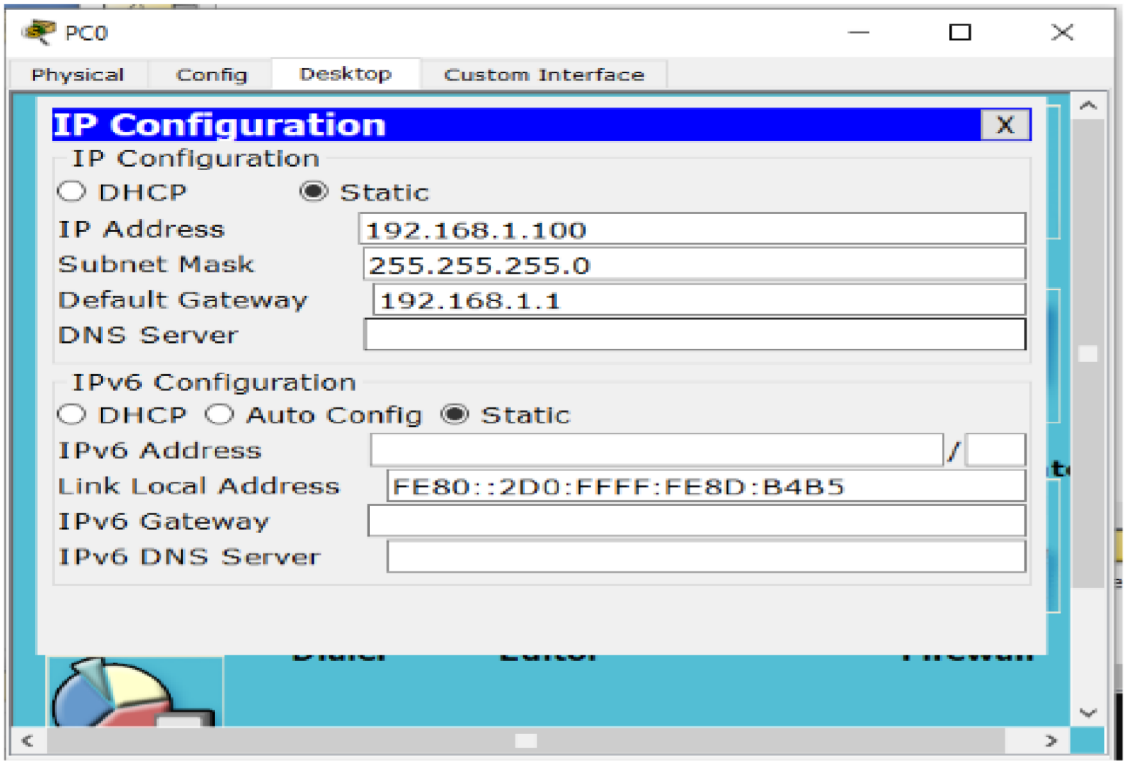


Step 2:

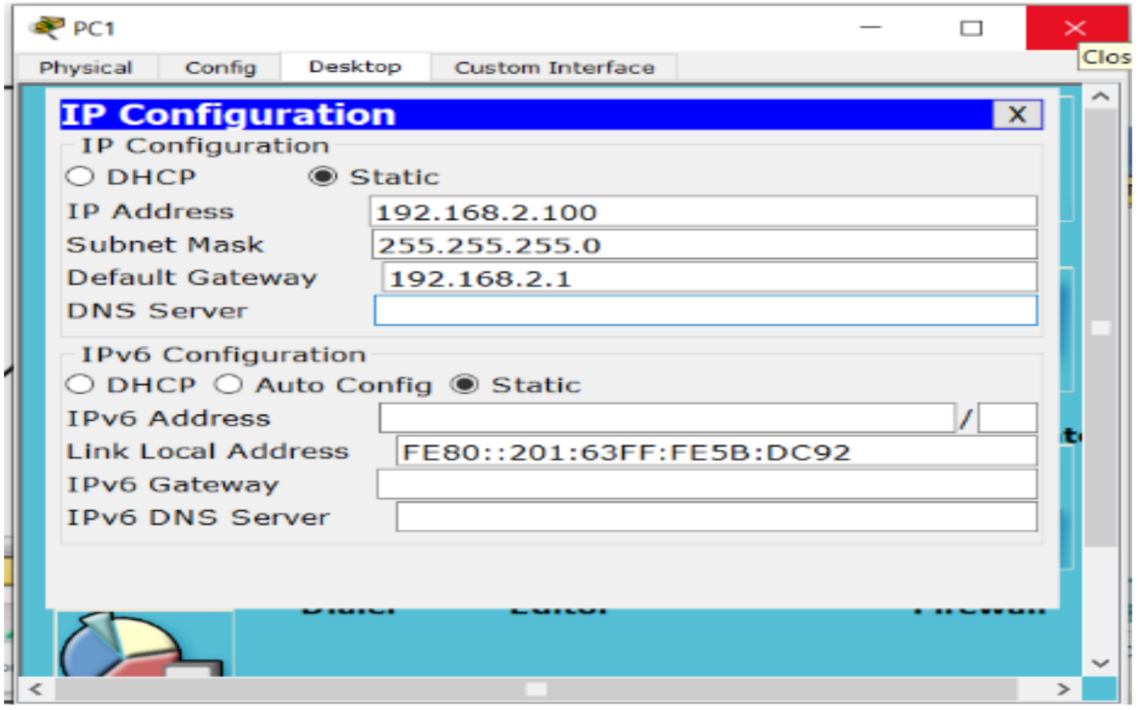
Click on PC0 and go to Desktop > IP Configuration

Add IP Address, as you will add the IP Address, Subnet Mask will be automatically added and displayed.

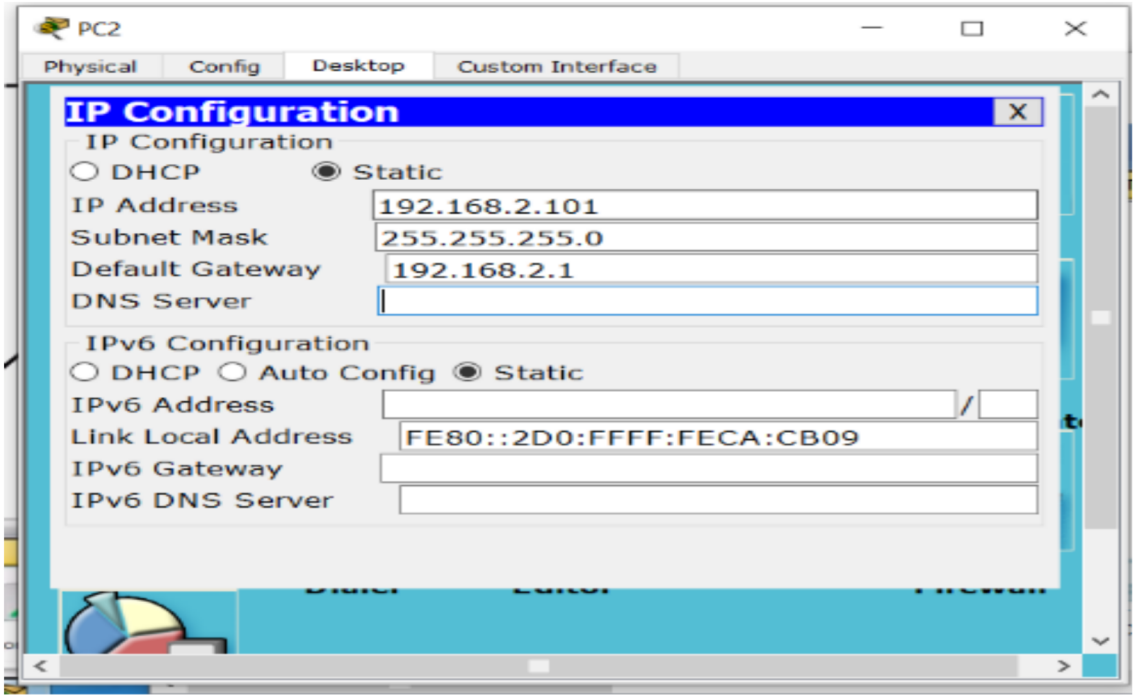
Add Default Gateway and close the window.



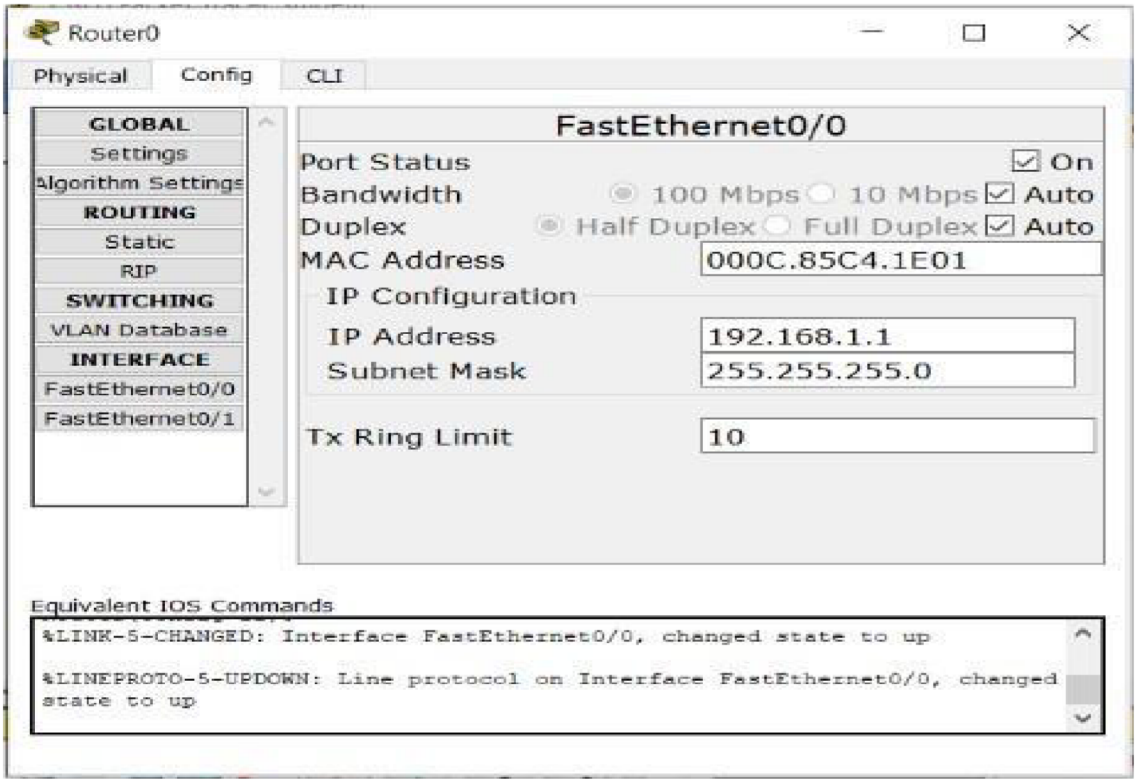
Step 3:
Click on PC1 and go to Desktop > IP Configuration
Add IP Address, as you will add the IP Address, Subnet Mask will be automatically added and displayed.
Add Default Gateway and close the window.



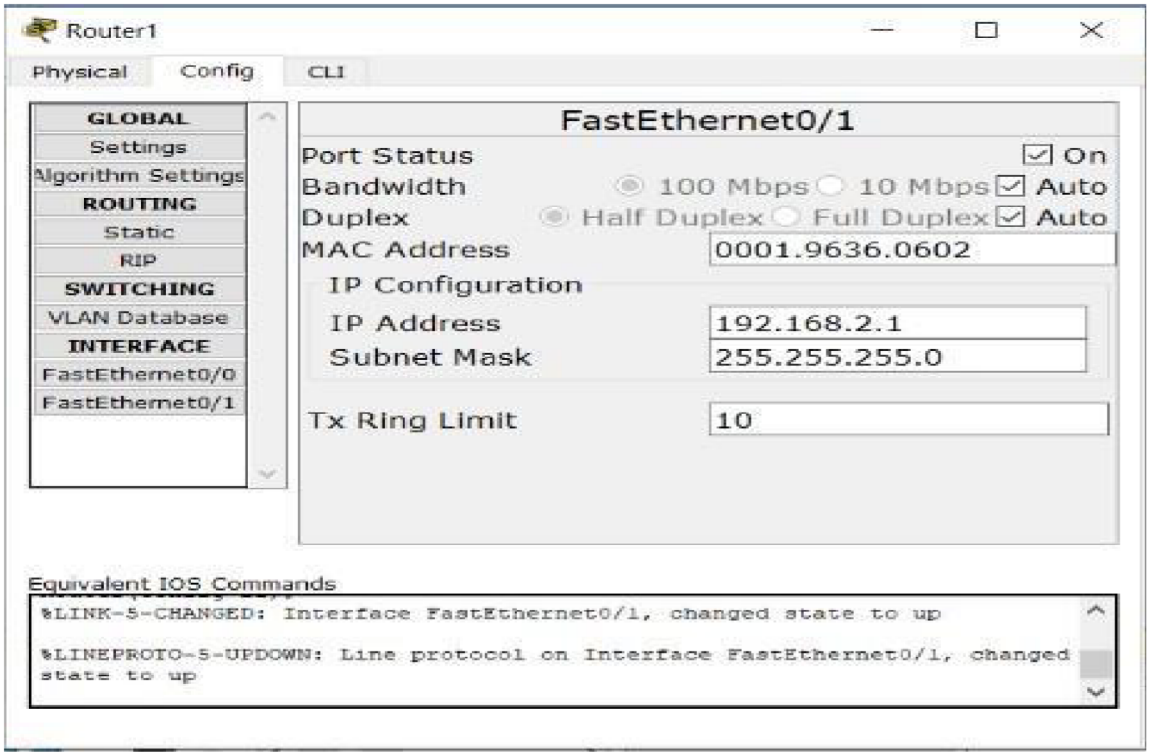
Step 4:
Click on PC2 and go to Desktop > IP Configuration
Add IP Address, as you will add the IP Address, Subnet Mask will be automatically added and displayed.
Add Default Gateway and close the window.

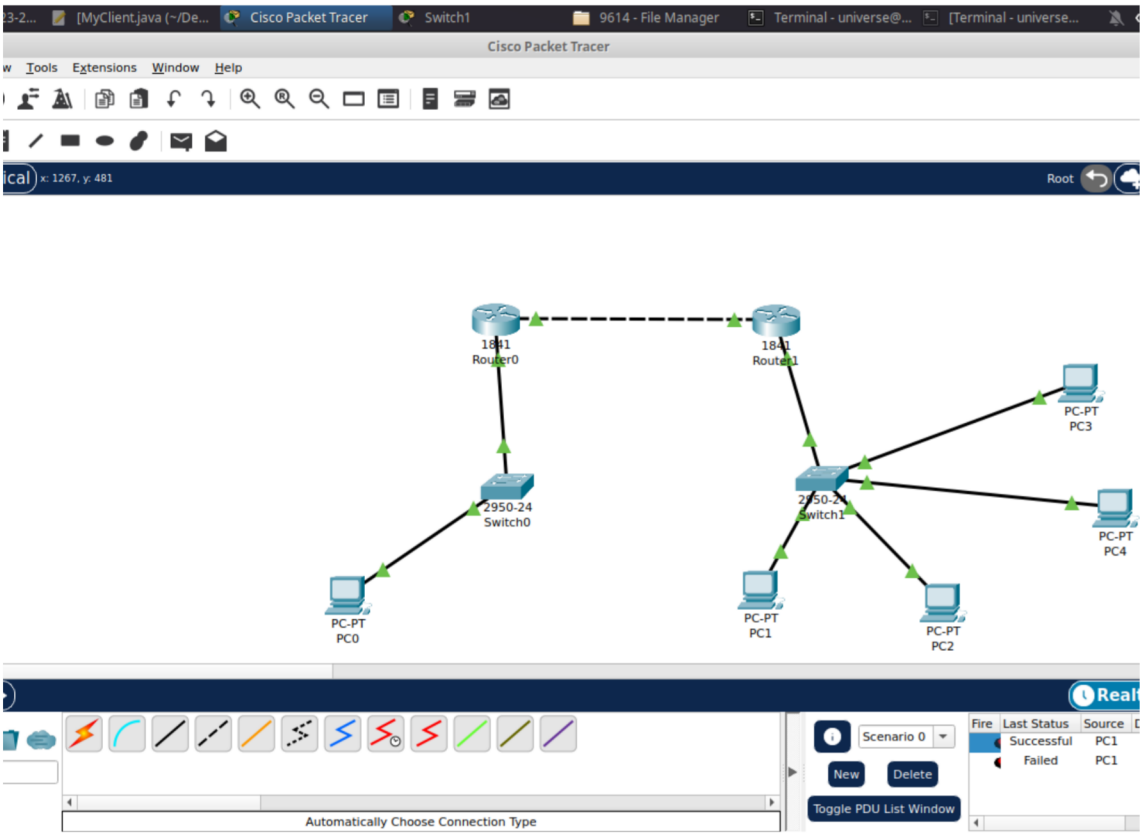


Step 5:
Click on Router0. Go to Config > FastEthernet0/0.
Here, add IP Address and On the Port Status.



Step 6:
Click on Router1. Go to Config > FastEthernet0/1.
Here, add IP Address and On the Port Status.





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Step 7:
Click on Router0. Go to Config > FastEthernet0/1.
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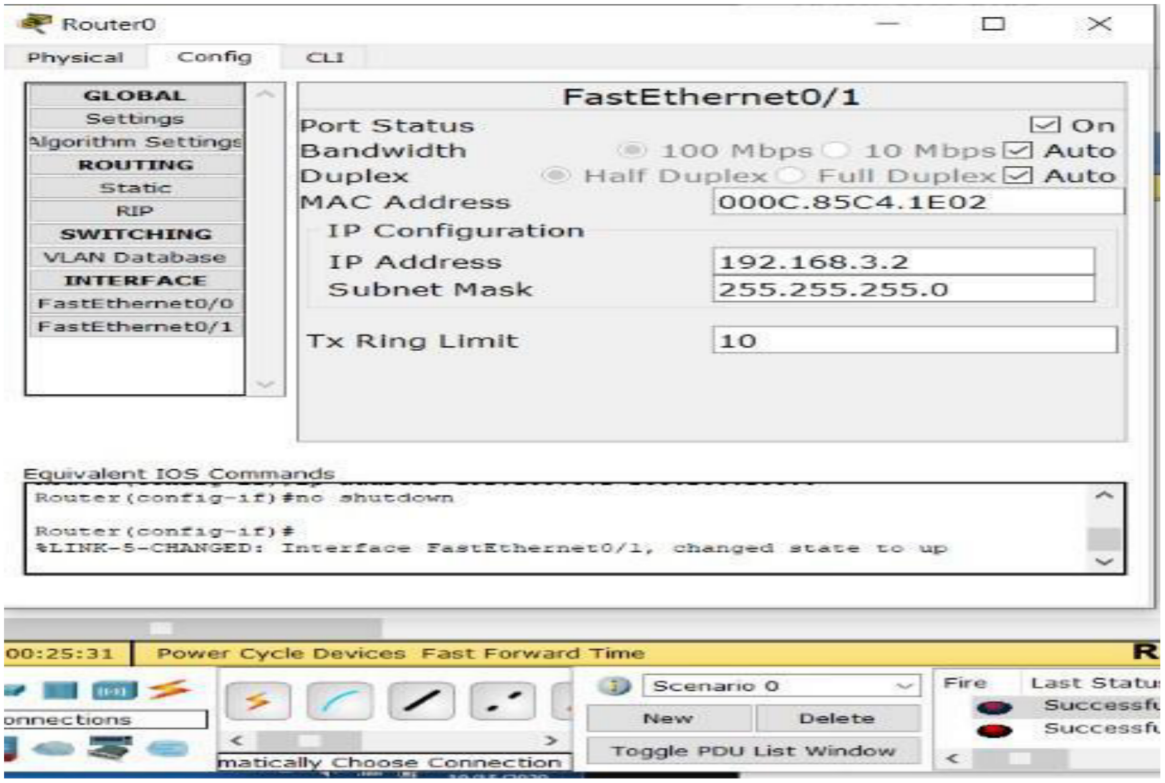
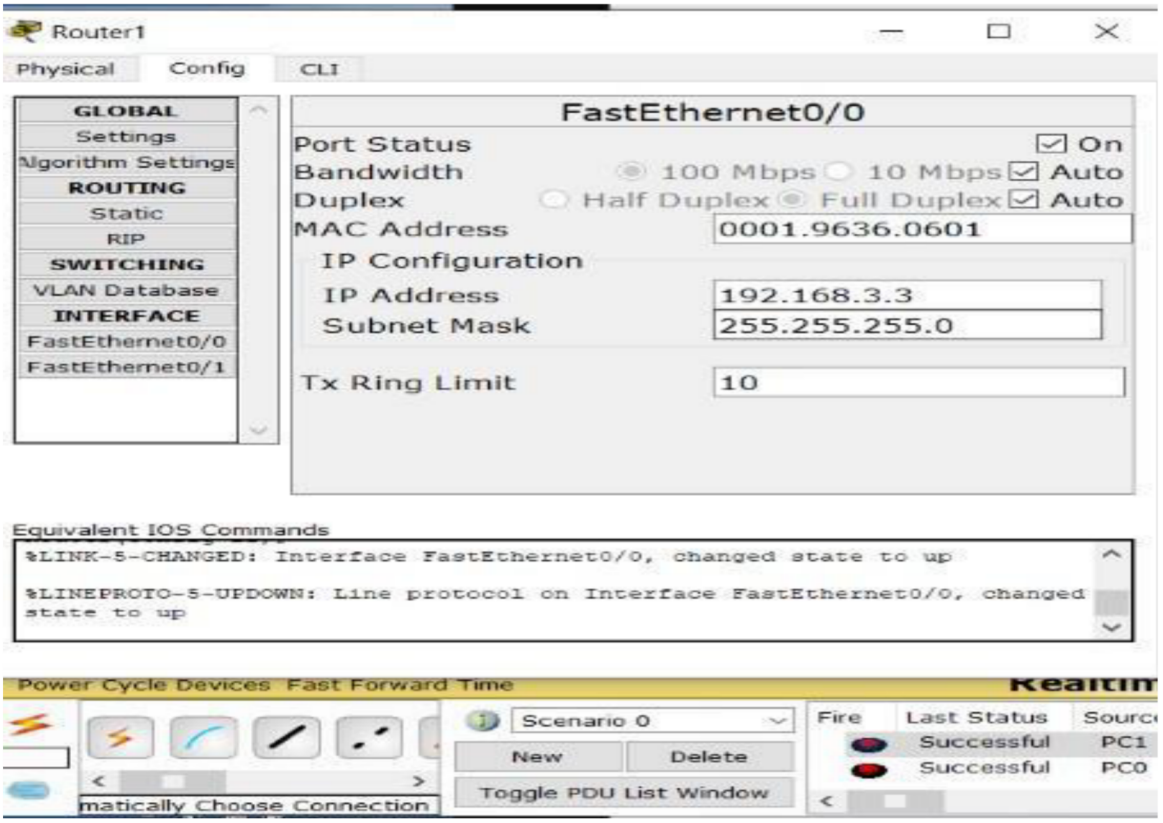
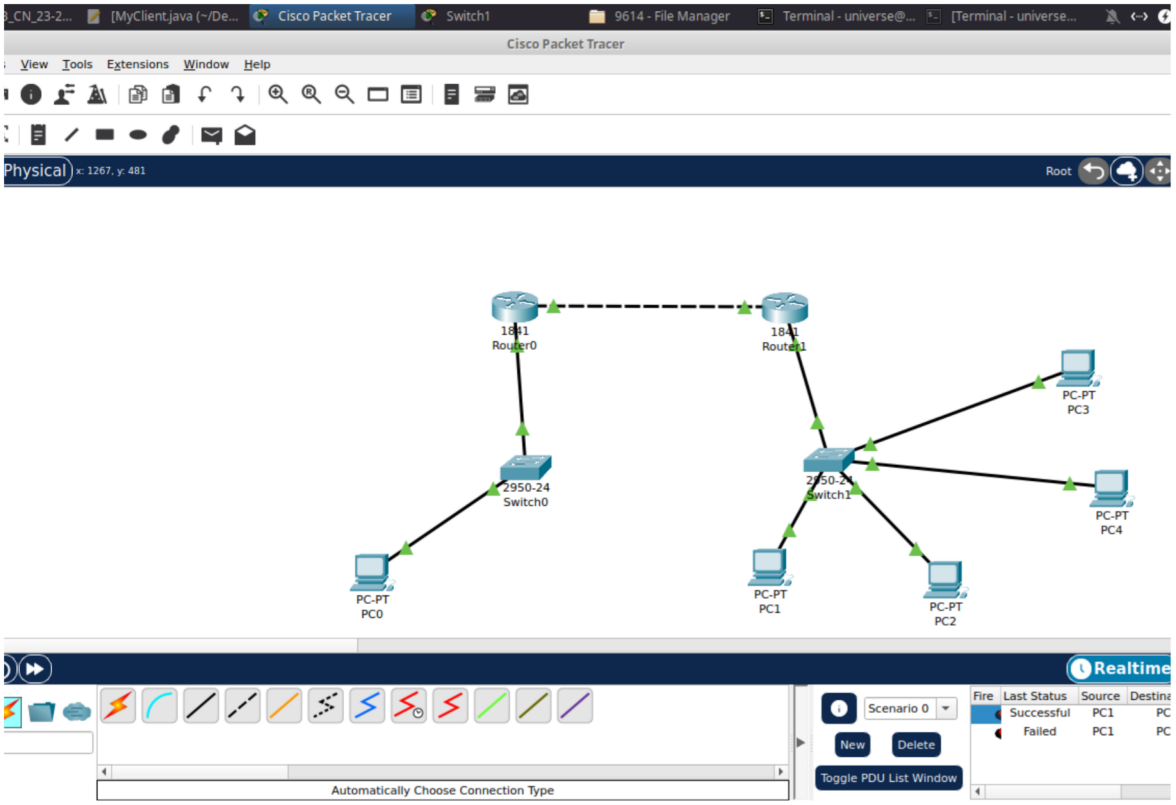
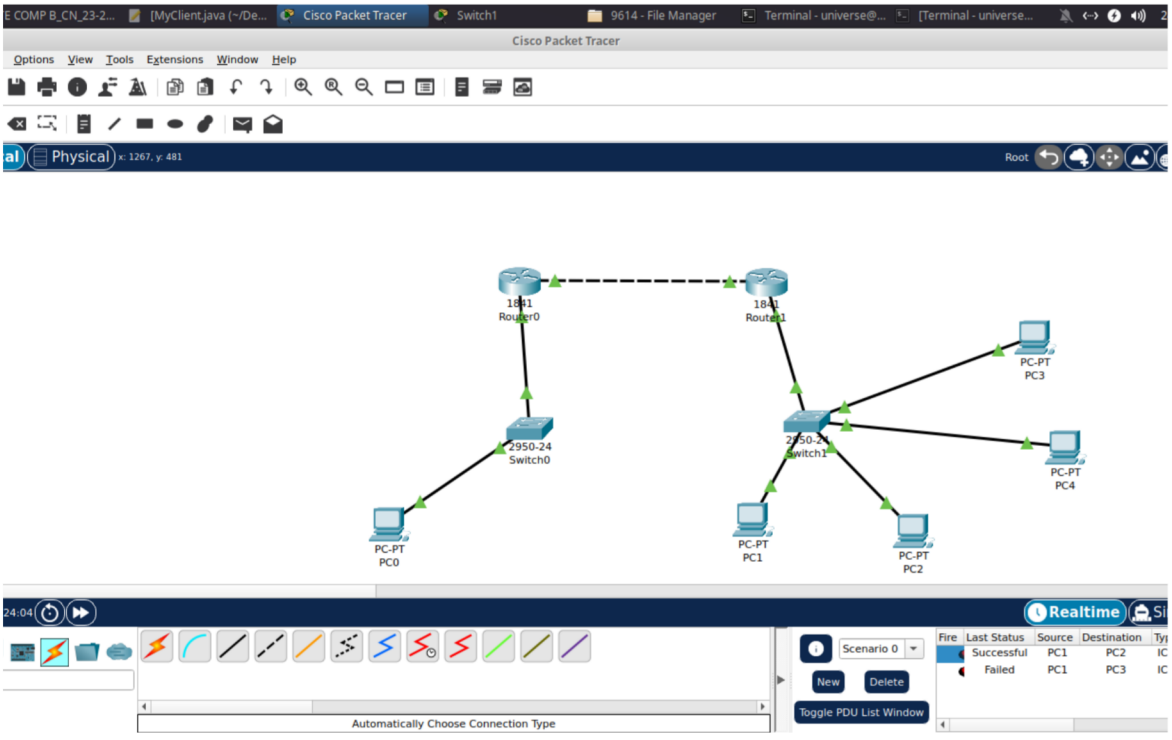


Step 8:
Click on Router1. Go to Config > FastEthernet0/0.
Here, add IP Address and On the Port Status.





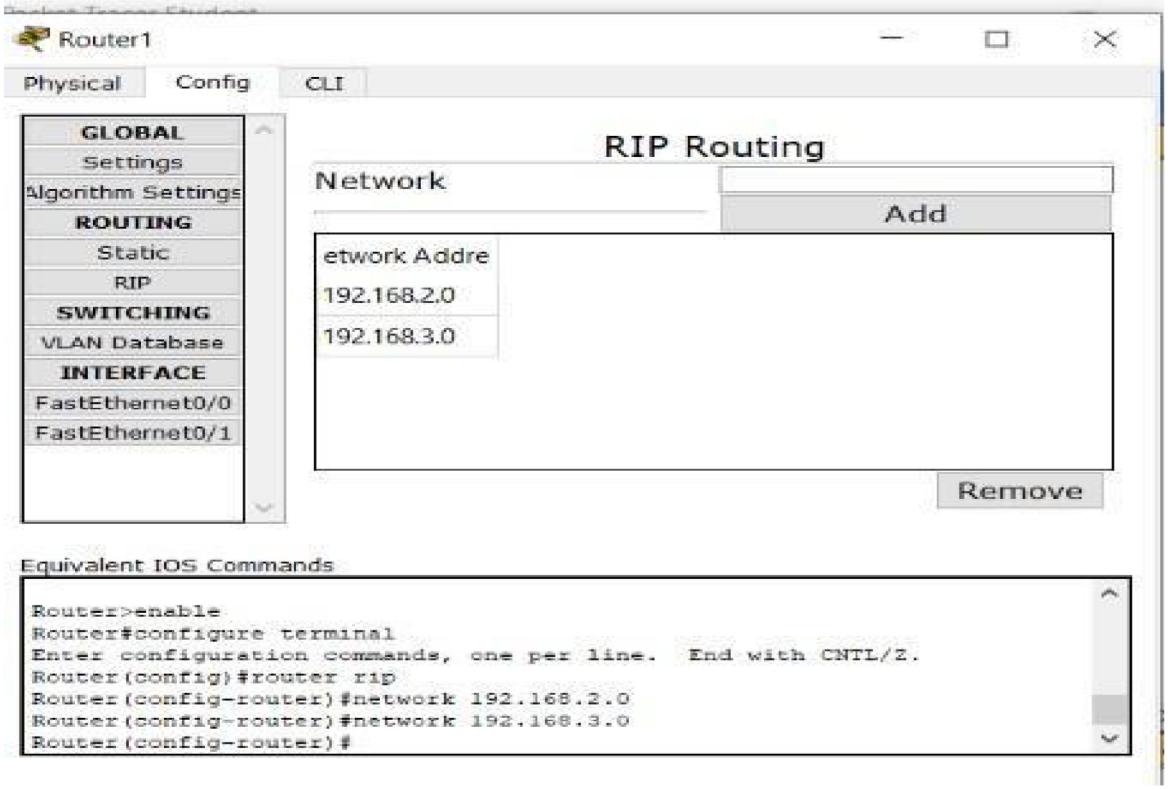
As you can see above, connection is done between both the Routers successfully.



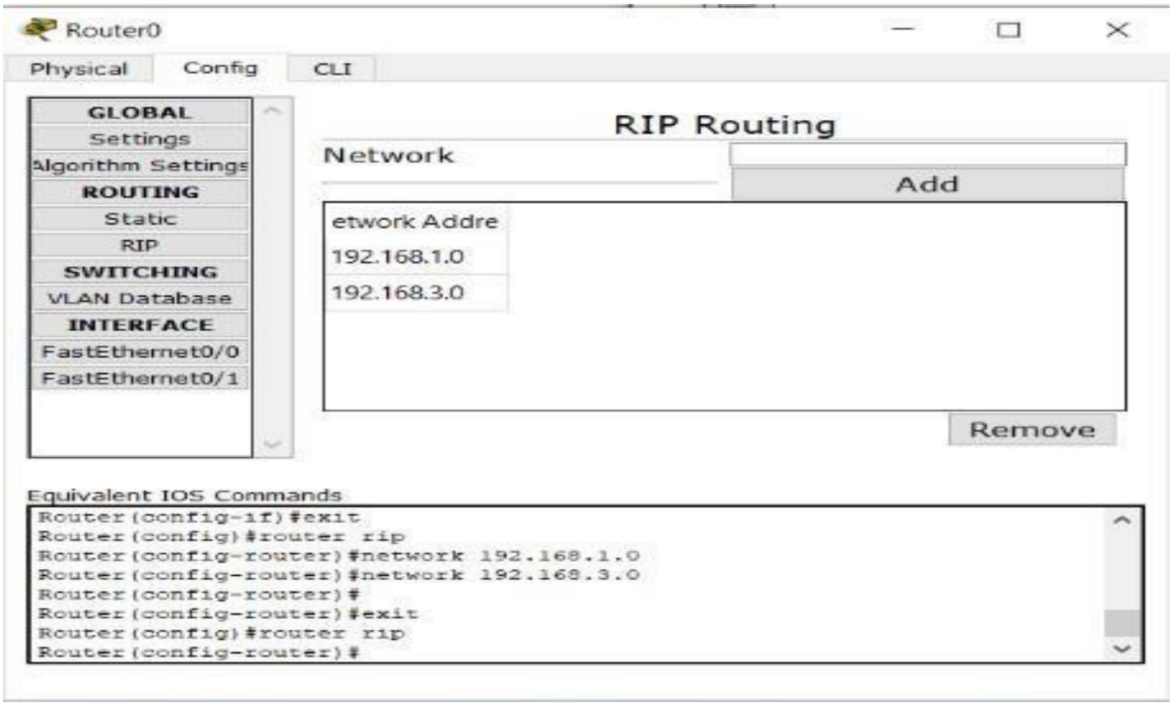
Step 9:

Click on Router1. Go to Config > RIP.

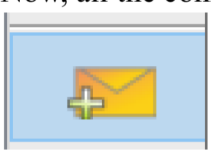
Here, add the network address to connect router1 with switch1, PC1, PC2 and router0.



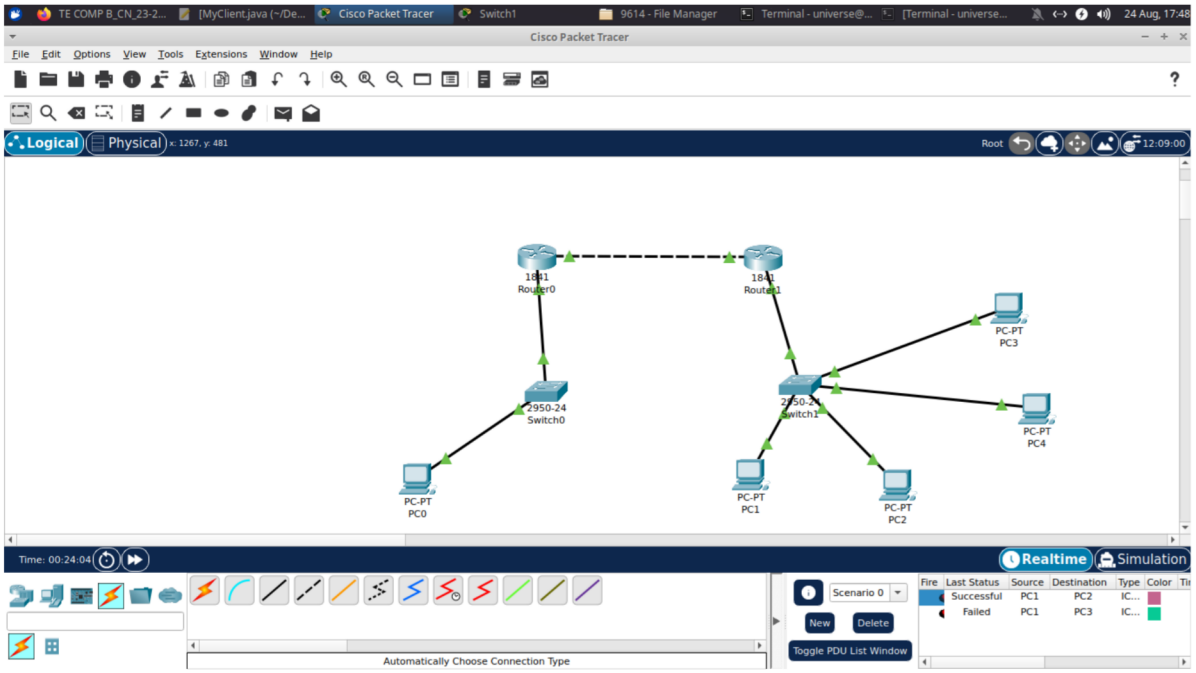
Step 10:
Click on Router0. Go to Config > RIP.
Here, add the network address to connect router0 with switch0, PC0 and router1.



Now, all the connections are done successfully, you can check it by clicking on this symbol

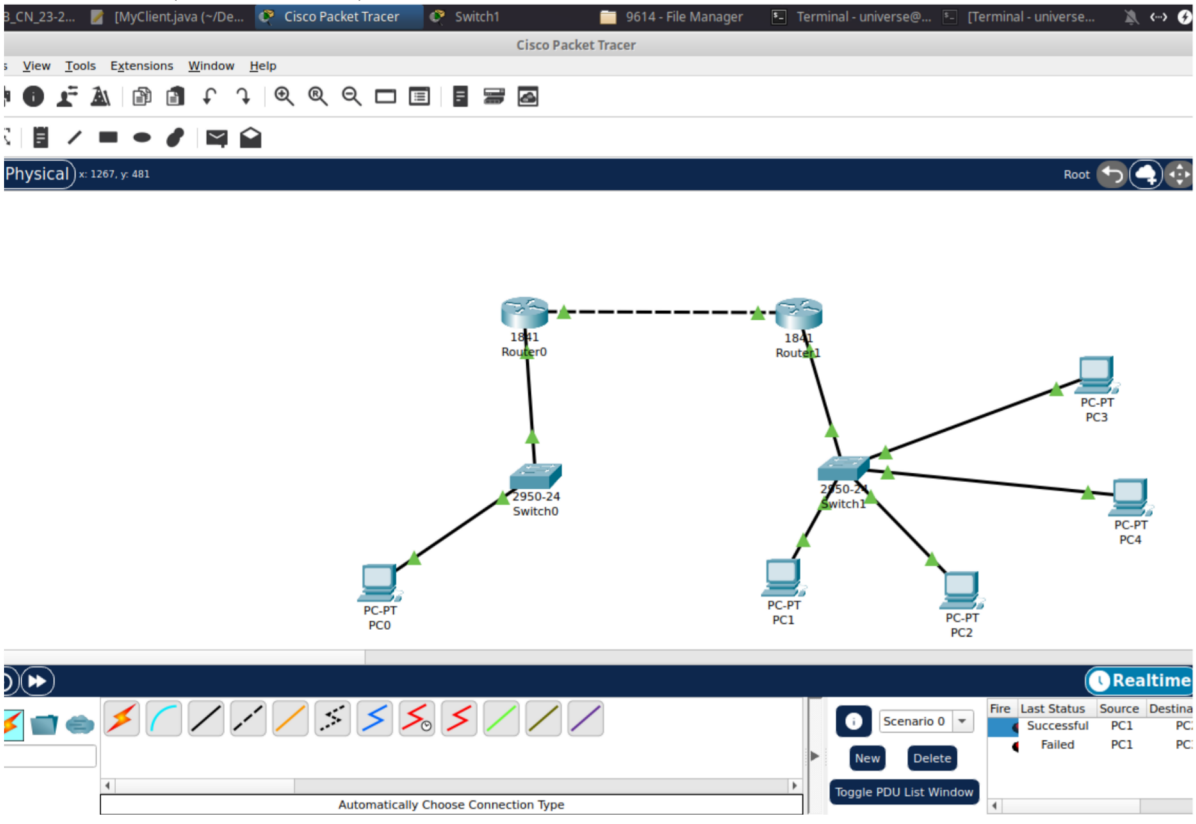


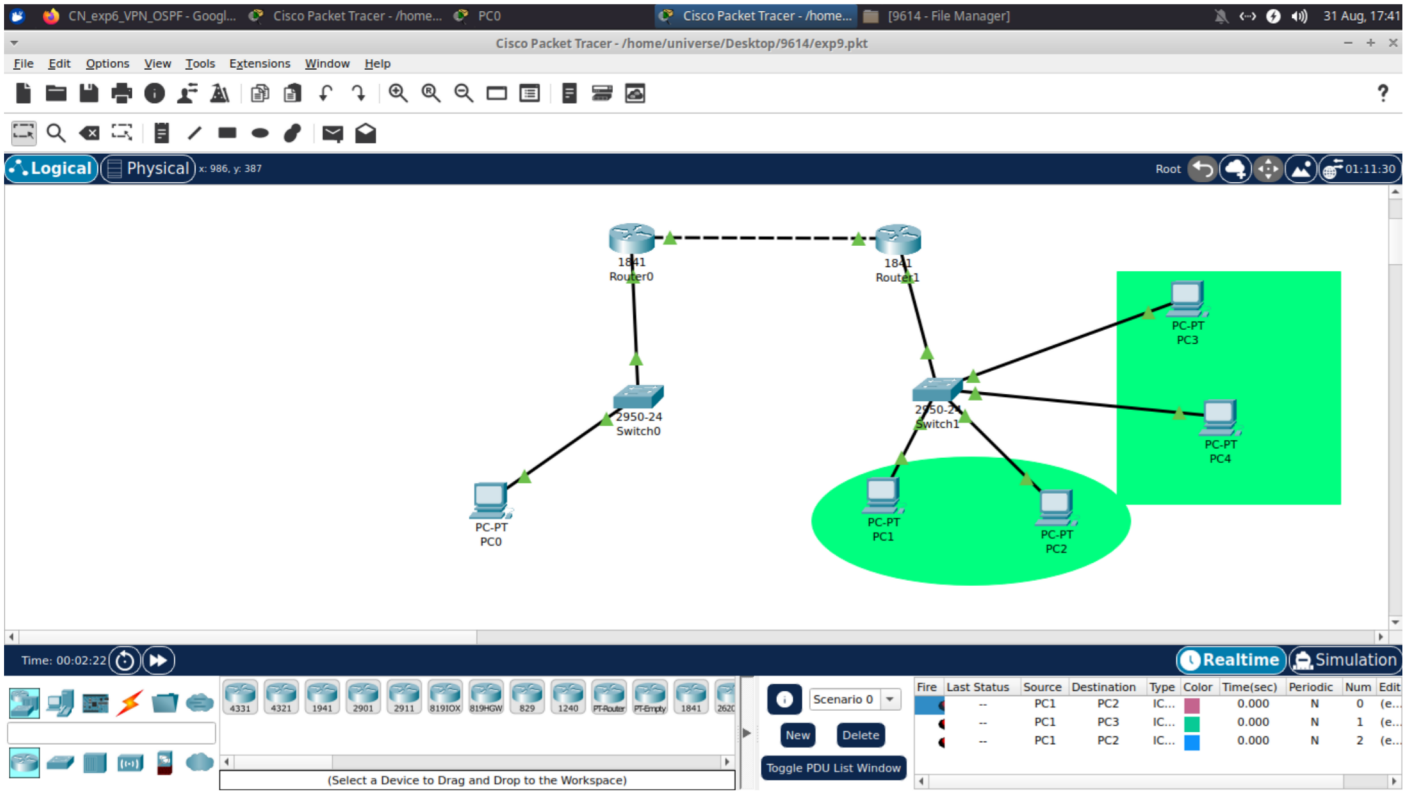
And then, click on any two PCs , you will get the status as successful.



So till now, Routing Information Protocol is done.
Now, we will start with implementing VLAN.

Step 11:
Add two PC (PC 3 and PC4) and connect it with switch.

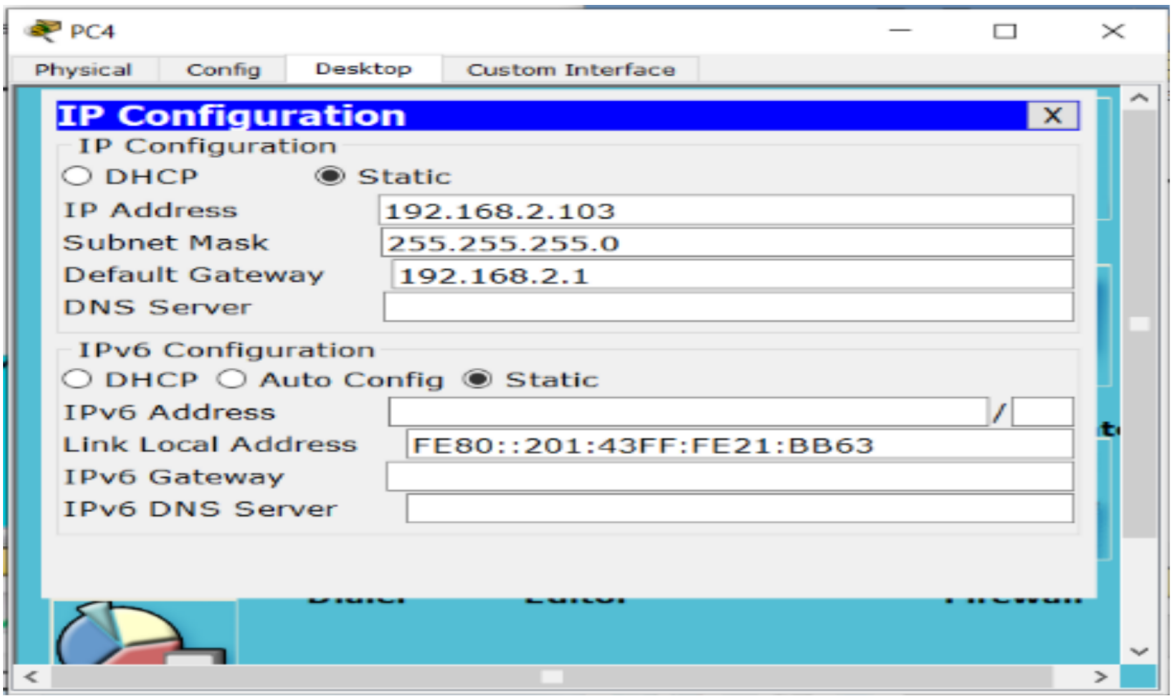




Step 12:
Click on PC3 and go to Desktop > IP Configuration
Add IP Address, as you will add the IP Address, Subnet Mask will be automatically added and displayed.
Add Default Gateway and close the window.

Step 13:
Click on PC3 and go to Desktop > IP Configuration
Add IP Address, as you will add the IP Address, Subnet Mask will be automatically added and displayed.

Add Default Gateway and close the window.

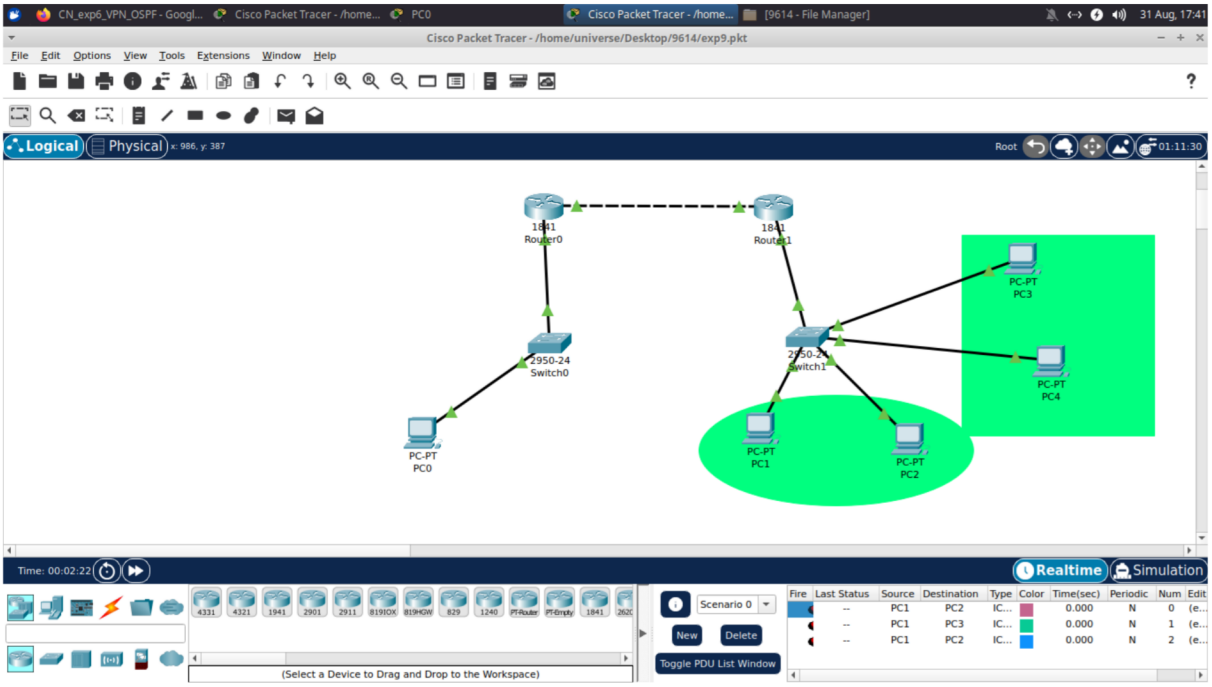


Step 14:
Click on Switch1 and go to CLI
Add type the VLAN code –
VLAN CODE:
VLAN

```
enable
config t
vlan 20
name purchase
exit
vlan 30
name sales
exit

int fa0/2
switchport access vlan 20
exit

int fa0/3
switchport access vlan 20
exit

int fa0/4
switchport access vlan 30
exit

int fa0/5
switchport access vlan 30
exit
```

Final Output:

Now, PC1, PC2 are not connected to PC3 and PC4.



CONCLUSION: Thus, we have successfully implemented VLAN and RIP protocol.