Name: Aaditya Bhatt **Reg.No: 21BEC1531**

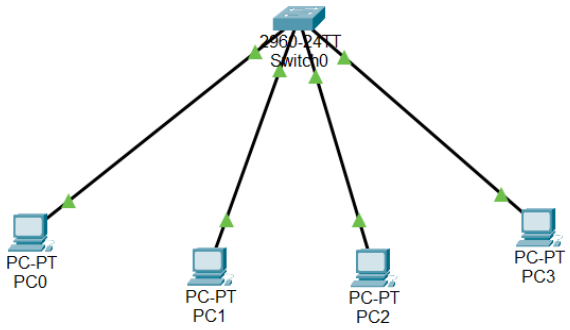
Experiment 1

Aim: To create a Server Client Architecture (Webapp) using Cisco Packet Tracer.

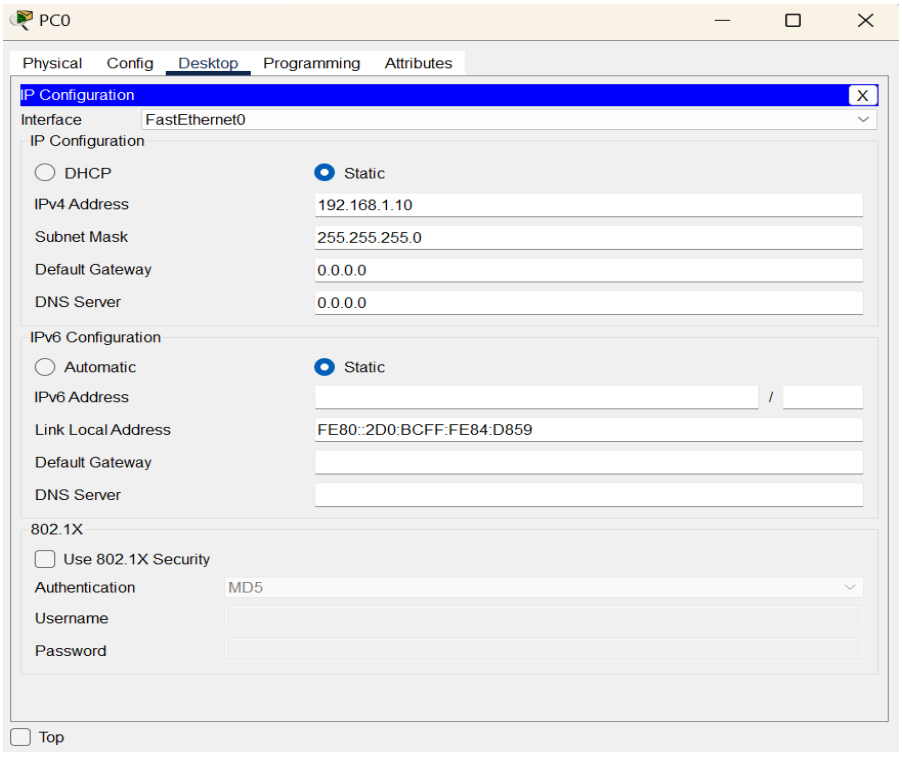
Software used: Cisco Packet Tracer

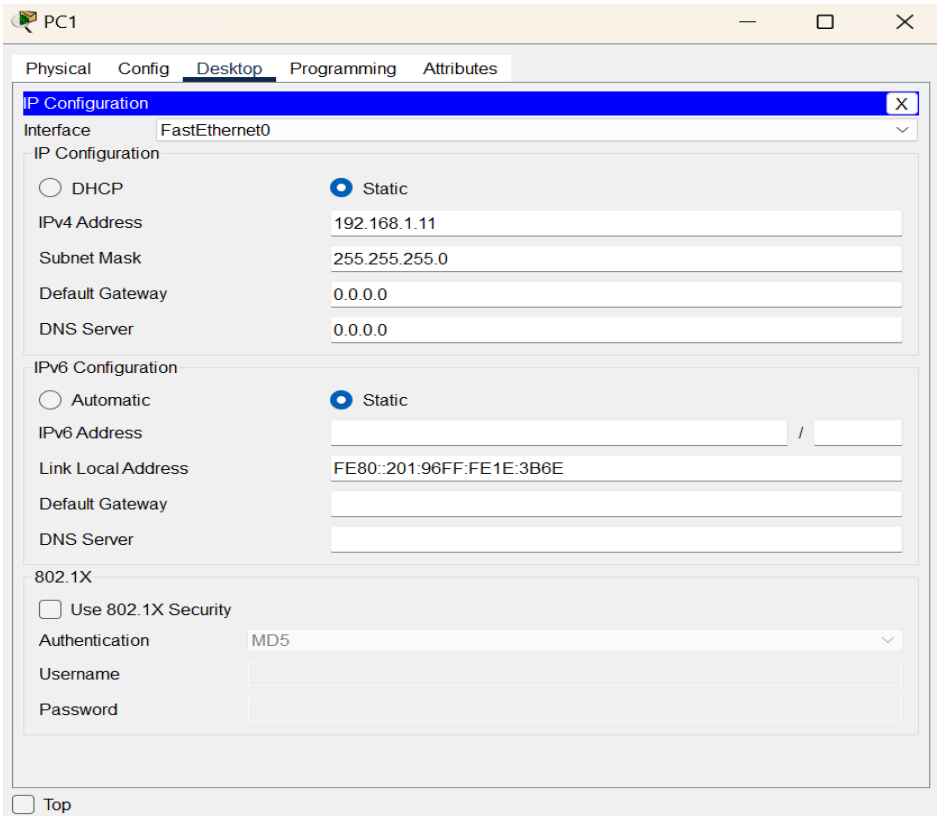
Procedure:

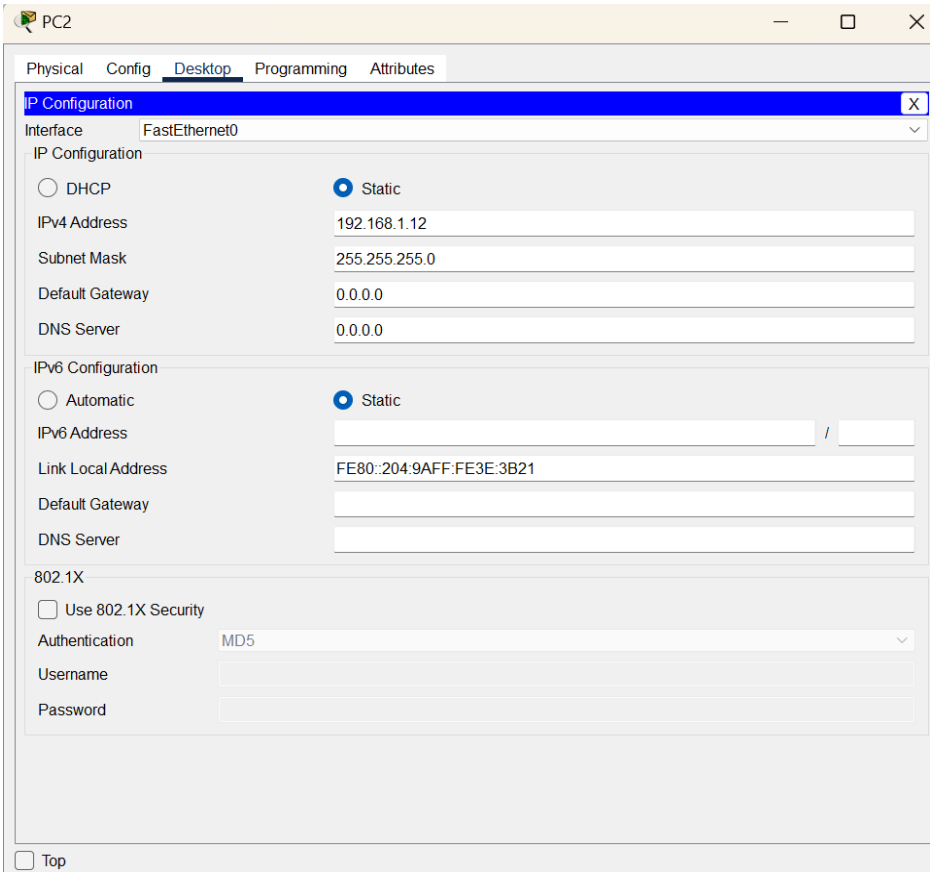
1. Create a network using multiple PCs and a switch. Connect them using wires.

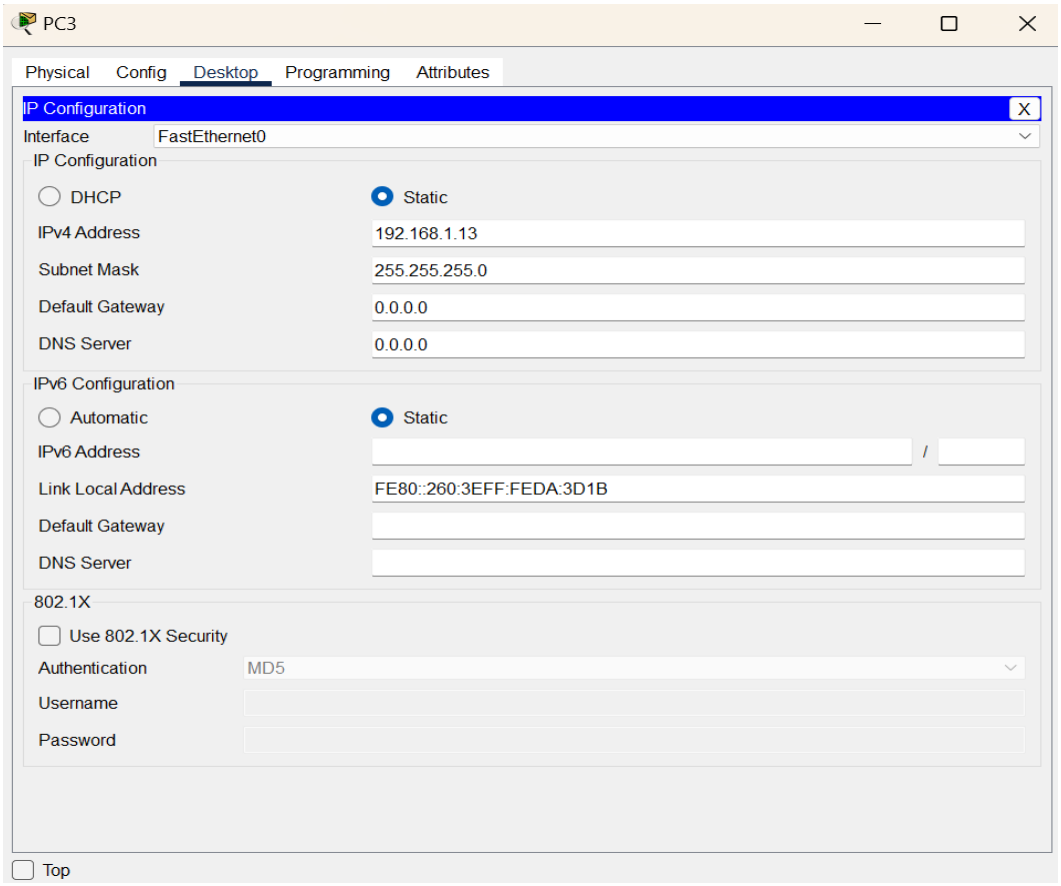


2. Configure the IP addresses for all the PCs.

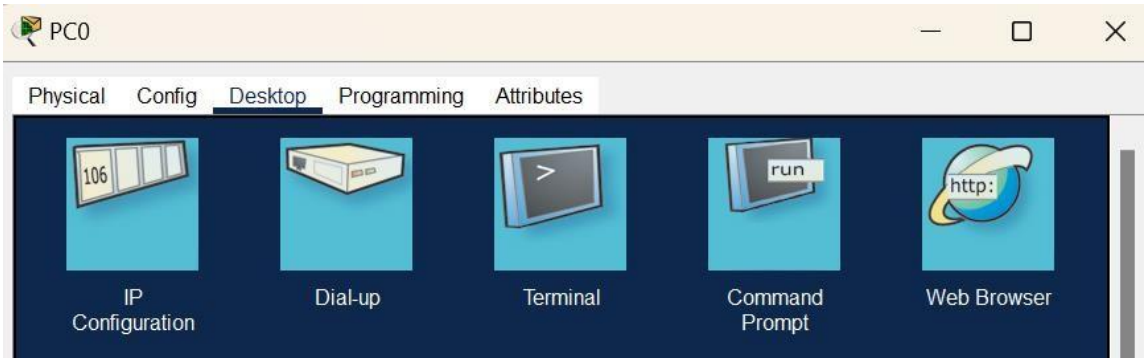




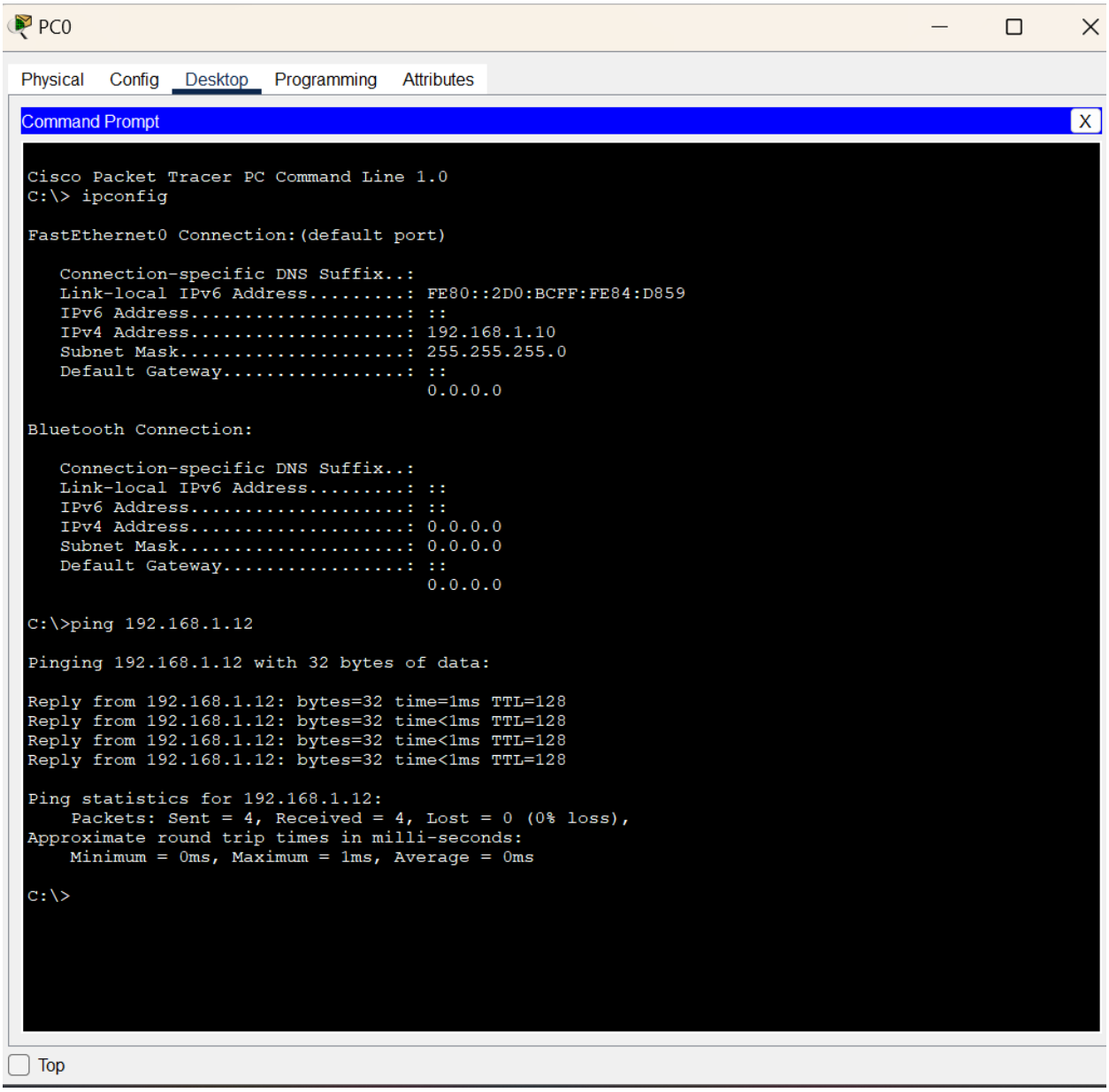

PC2
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.1.12
Subnet Mask
255.255.255.0
Default Gateway
0.0.0.0
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
/
Link Local Address
FE80::204:9AFF:FE3E:3B21
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top



3. PC0 -> Desktop -> Command Prompt

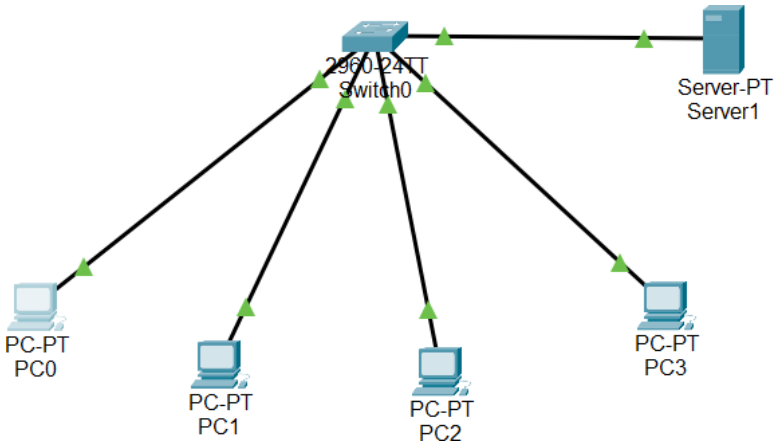


4. Ping PC3 to check for the successful establishment of network.

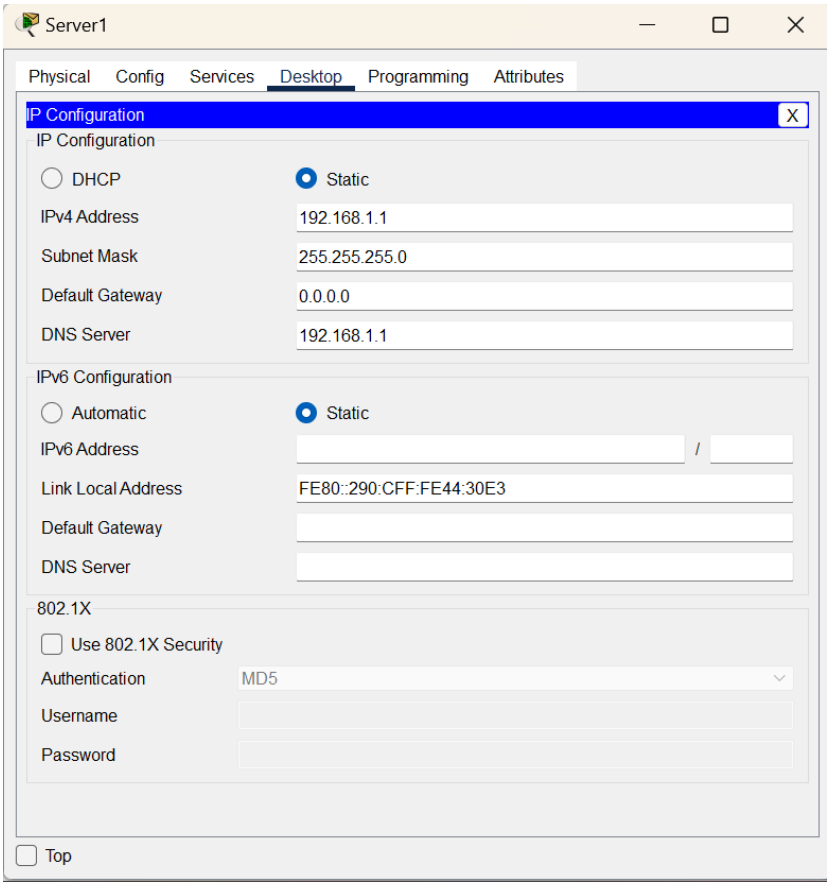


5. Check the same for all the PCs.

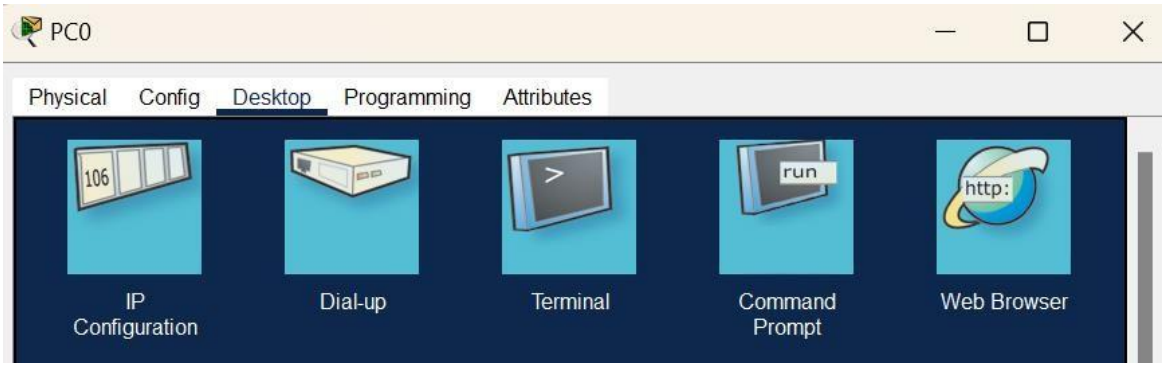
6. Add a server to the network.



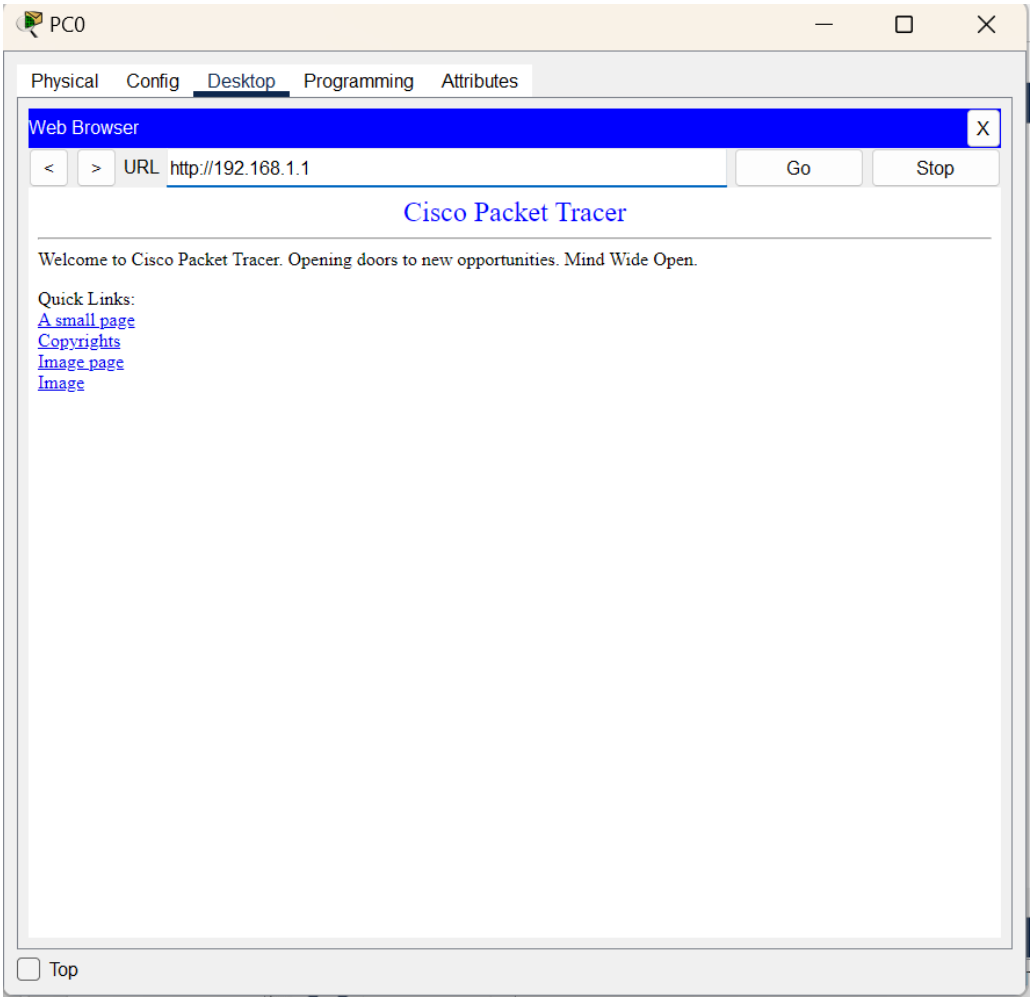
7. Configure the IP address and Default Gateway.



8. PC0 -> Desktop -> Web Browser



9. Ping the server.



Inference:

1) **Network Configuration:** Through this experiment, you will learn how to configure network devices such as pc, switches, and servers using Cisco Packet Tracer. This includes setting up IP addresses, subnetting, routing.
2) We ping the pc's which are present in our network and added a server to them.
3) **Client-Server Interaction:** Exploring how clients interact with the server helps in understanding request-response mechanisms. Clients send requests to the server, which processes them and sends back responses containing the requested data or resources.
4) Now in the web browser we ping the server 192.168.1.1 and got our output.

Conclusion:

Through this experiment, you will develop a deeper understanding of networking concepts and gain practical experience in configuring and managing network devices and services. Overall, this experiment provides a hands-on approach to learning essential skills for designing, implementing, and maintaining robust network infrastructures. This experiment tells us managing and pinging the server and the overall network.

Name: Aaditya Bhatt **Reg.No: 21BEC1531**

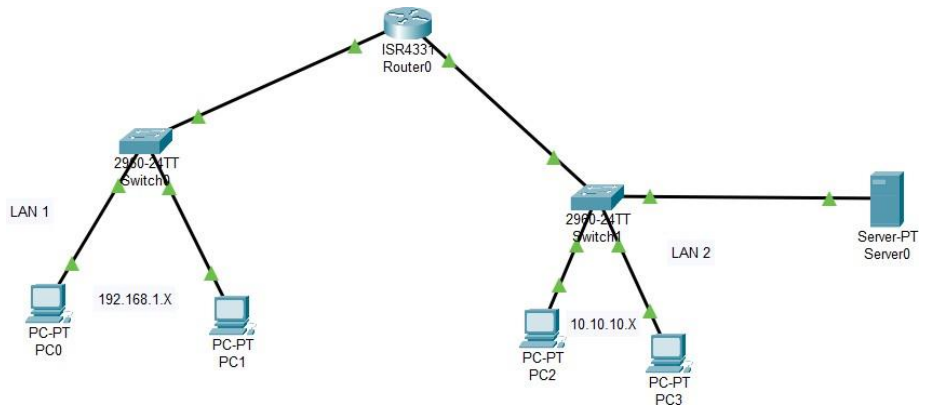
Experiment:2

Aim: To configure and setup a Wide Area Network in Cisco Packet Tracer.

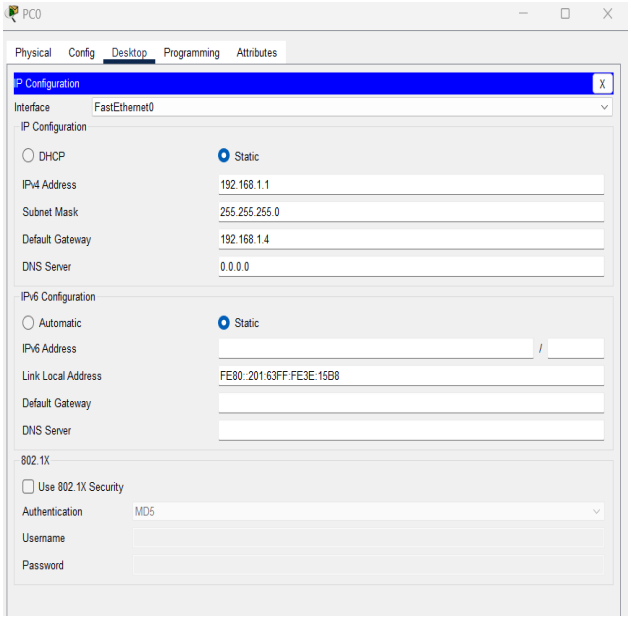
Software used: Cisco Packet Tracer

Procedure:

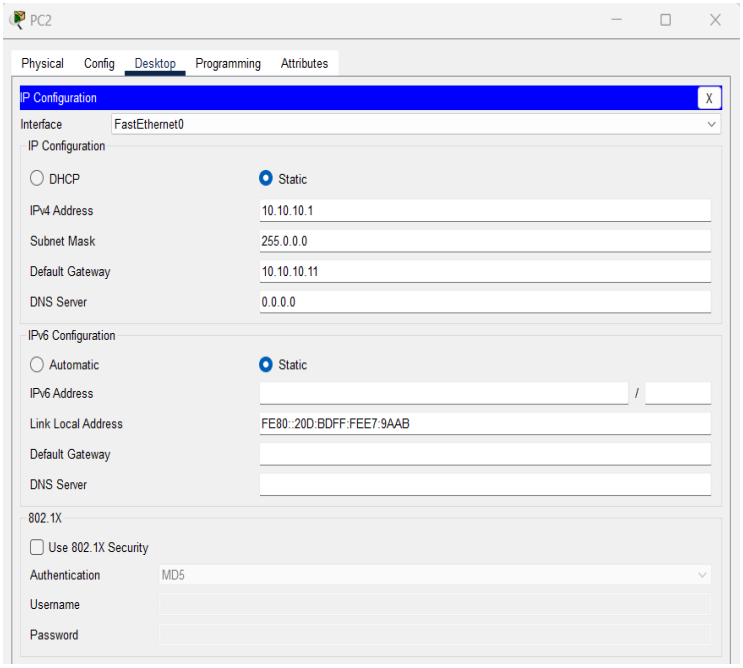
1. Set up two different LAN network through a router and connect one LAN with a server.



2. Assign the IP addresses to all the devices.

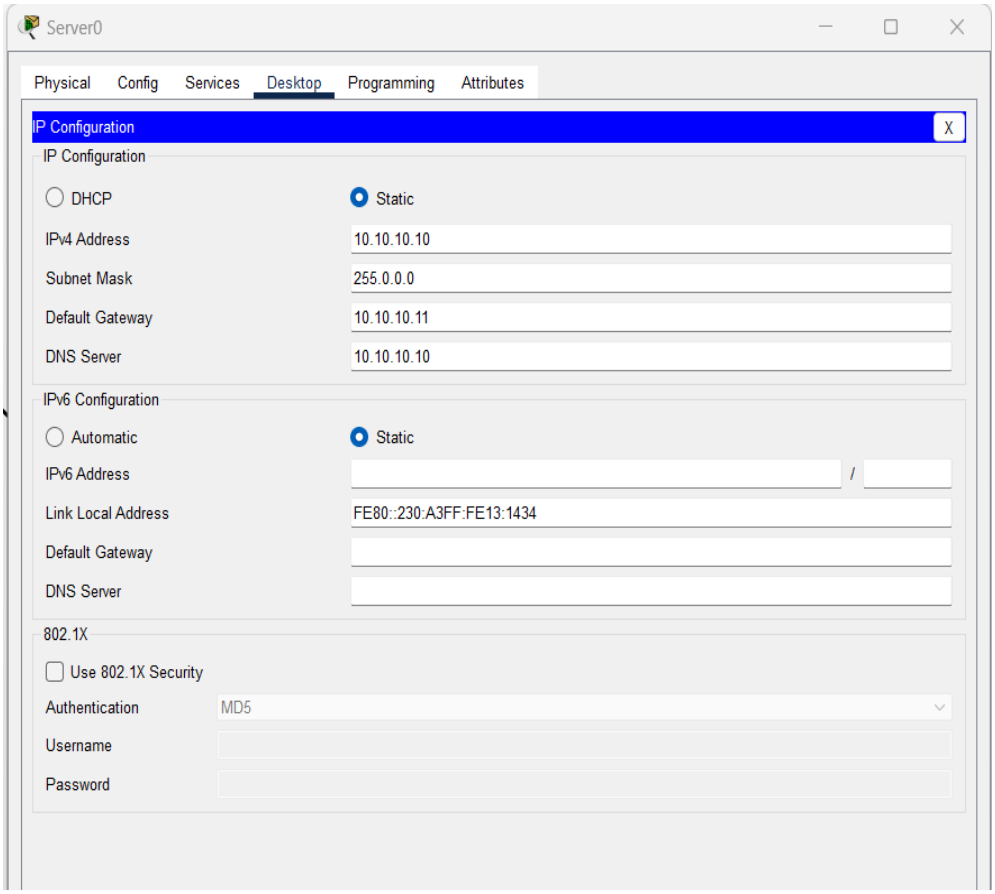


LAN 1 is assigned with 192.168.1.X with default gateway 192.168.1.4

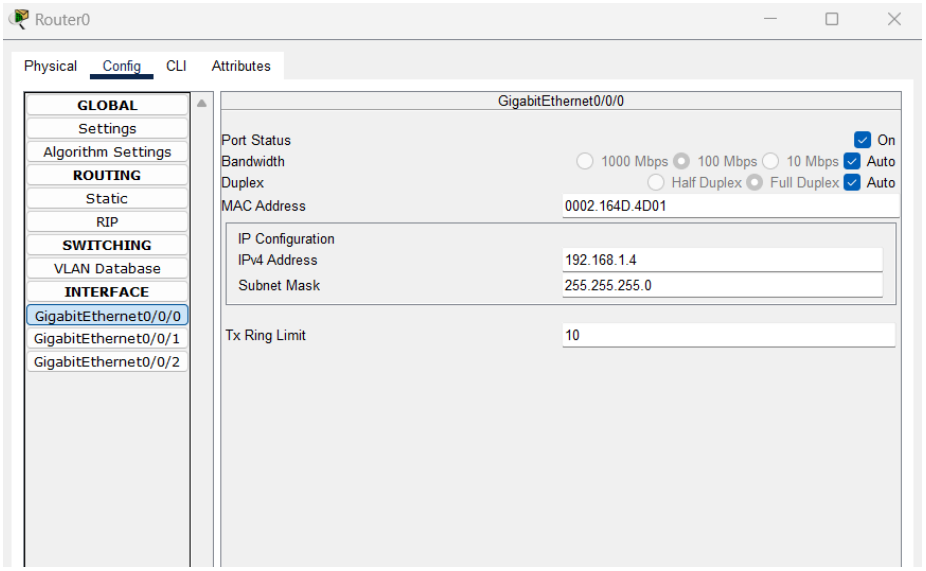


LAN 2 is assigned with 10.10.10.X with default gateway 10.10.10.11

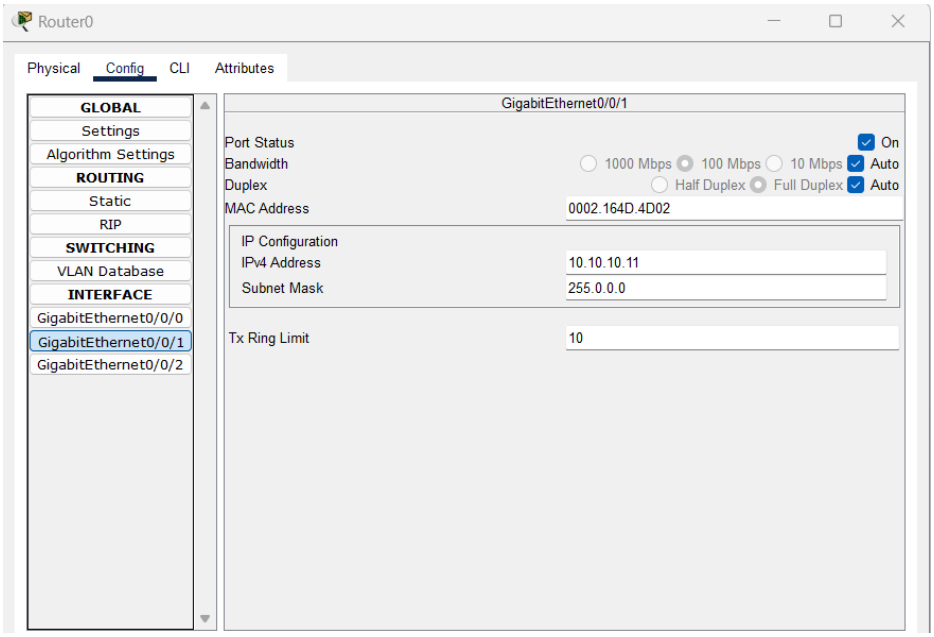
Server's IP address and DNS server is 10.10.10.10 and 10.10.10.10 respectively.



3. Set up the router configuration

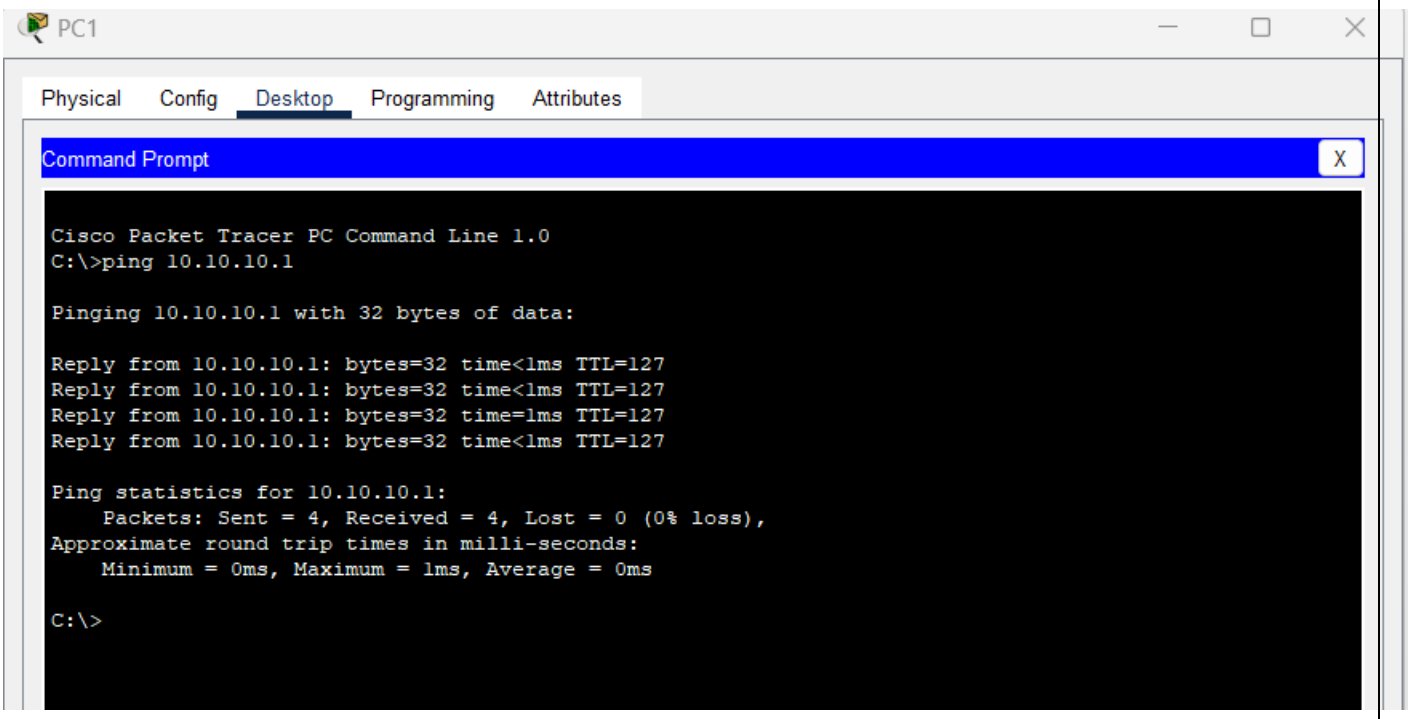


The LAN 1 interface is connected through the GigabitEthernet0/0/0 wire. So the IPv4 Address respective is the default gateway provided in the LAN 1.

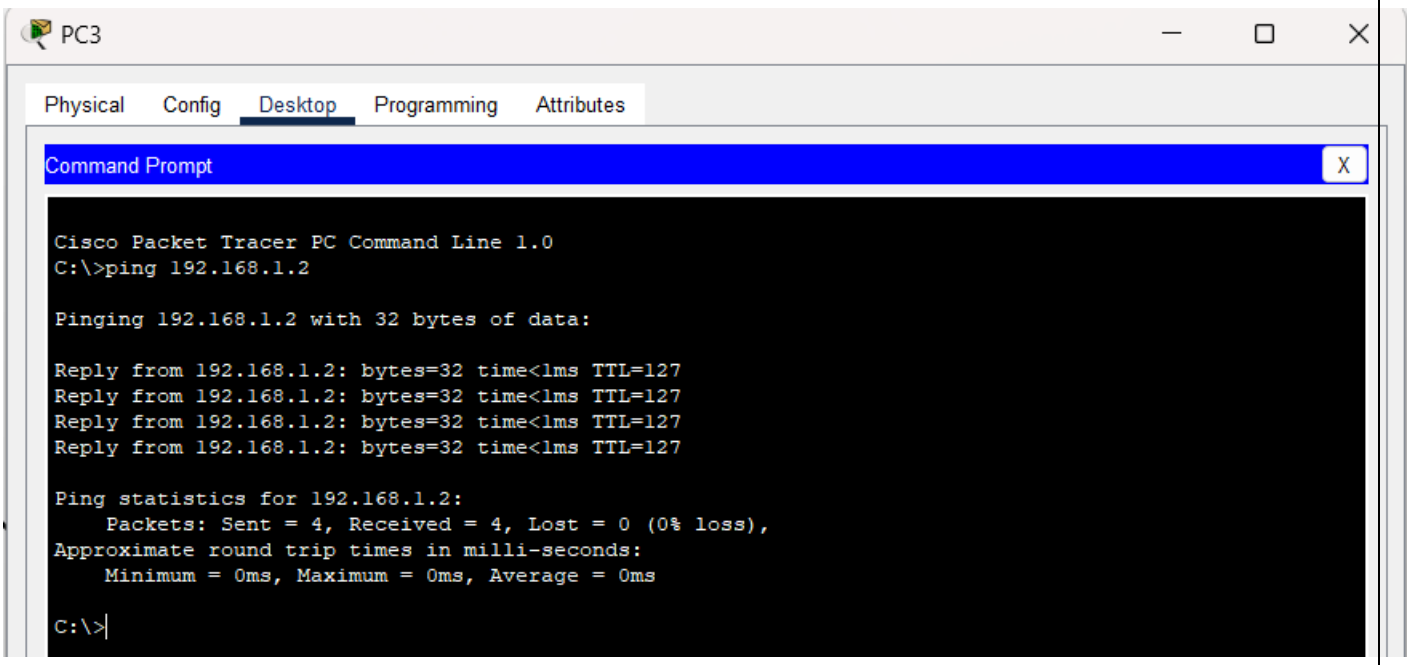


The LAN 2 interface is connected through the GigabitEthenet0/0/1 wire. So the IPv4 Address respective is the default gateway provided in LAN 2.

4. To check whether the devices are able to ping each other or not, we have to write ping<respective_address>.

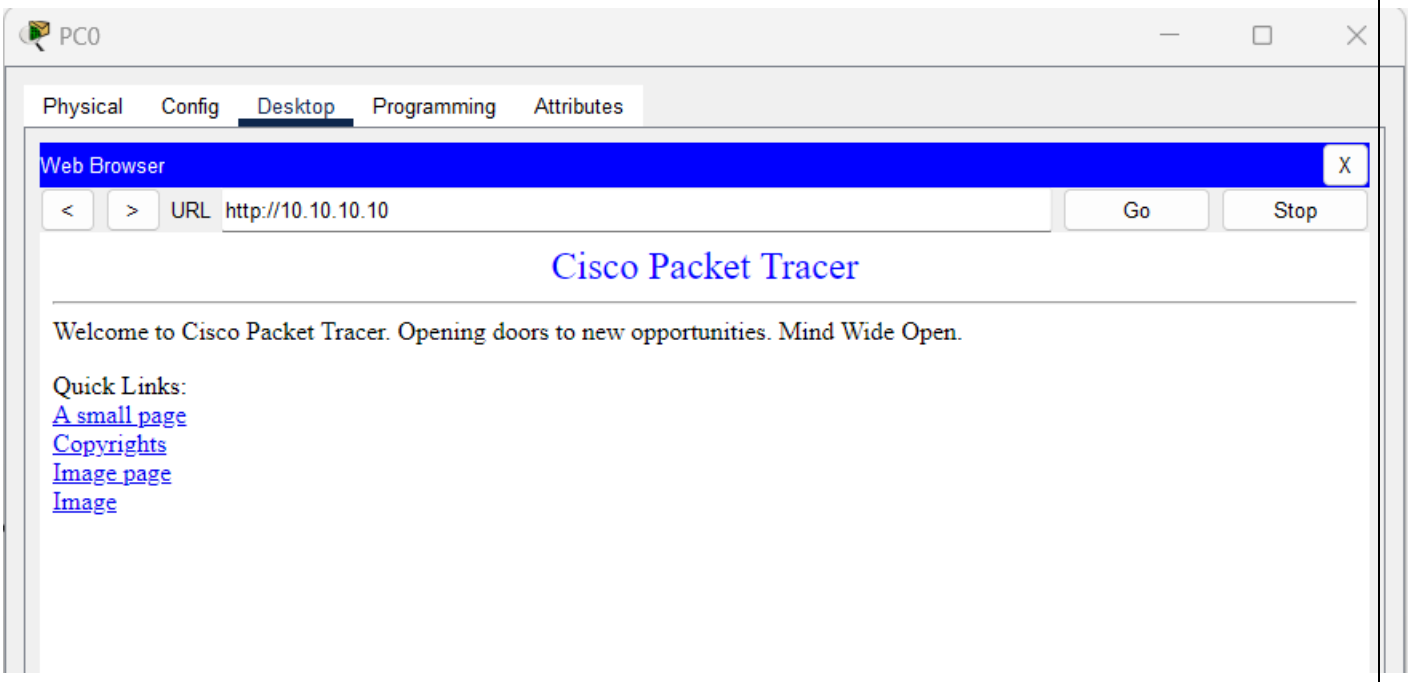


We are successfully able to ping PC1 of LAN1 with PC3 of LAN2.



Similarly, we are successfully able to ping a PC in LAN1 from PC in LAN2.

5. Ping the server.



Inference: The objective of the experiment was to establish a Wide Area Network (WAN) by interconnecting two separate Local Area Networks (LANs) using switches and PCs, with a router facilitating the connection. Each device was meticulously configured with the assigned IP addresses to form a cohesive WAN network.

Through thorough testing, including pinging devices to ensure connectivity, the network operated seamlessly as intended, demonstrating successful communication between devices and access to the server.

Name: Aaditya Bhatt **Reg.No: 21BEC1531**

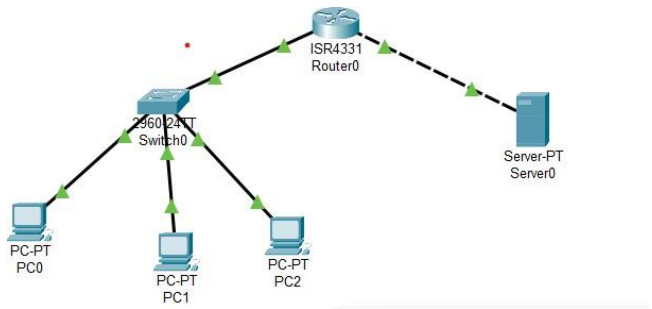
Experiment 3

Aim: To create a network between the clients for connecting through email.

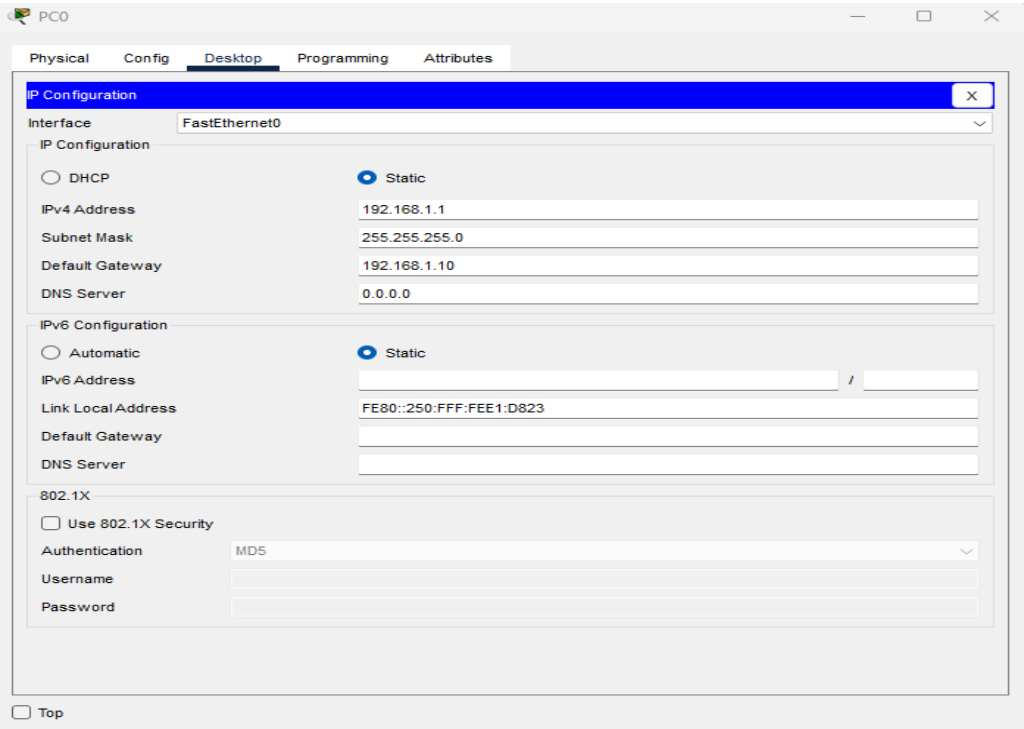
Software used: Cisco Packet Tracer

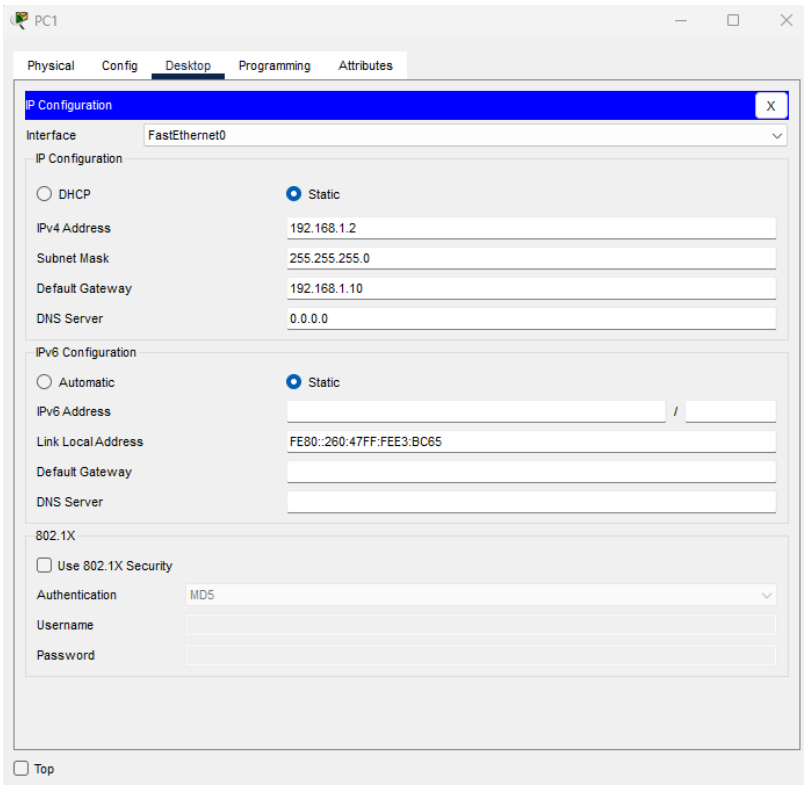
Procedure:

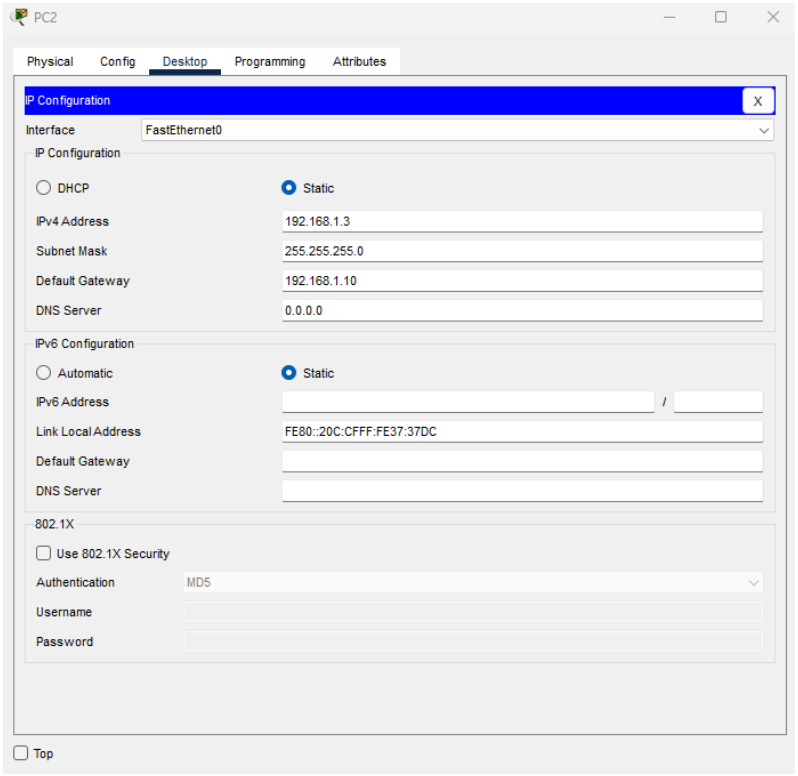
1. Create a network using multiple PC, switch, router and server. Connect them using wires.



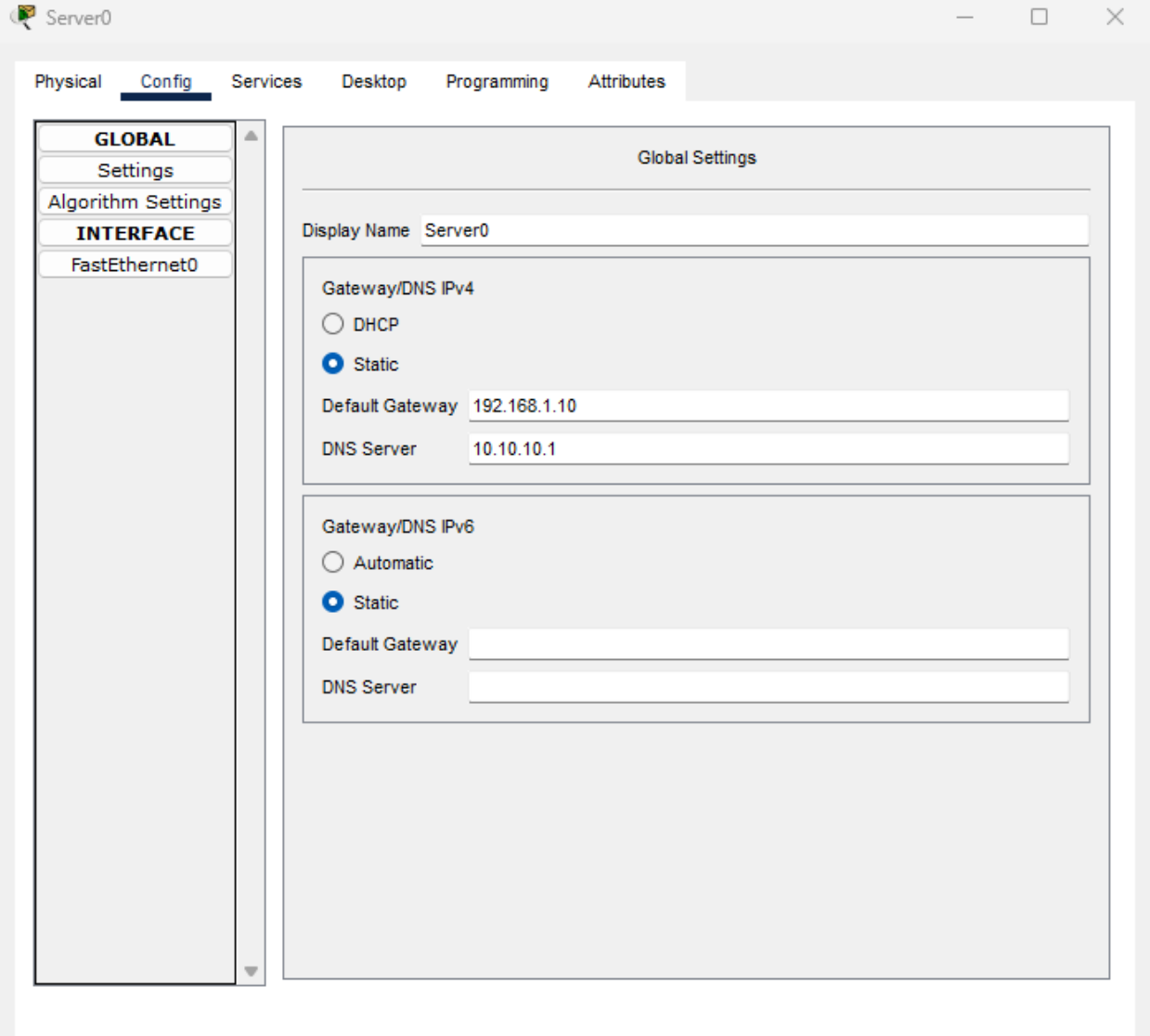
2. Configure the IP addresses and default gateway for all the PCs.



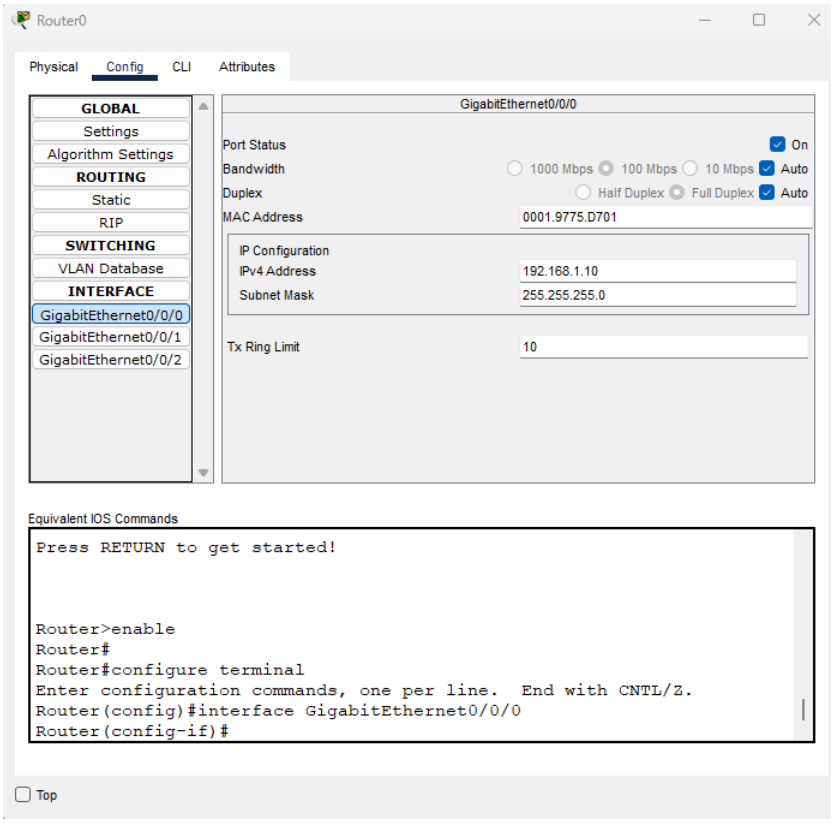

PC1
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.1.2
Subnet Mask
255.255.255.0
Default Gateway
192.168.1.10
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
/
Link Local Address
FE80::260:47FF:FEE3:BC65
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top

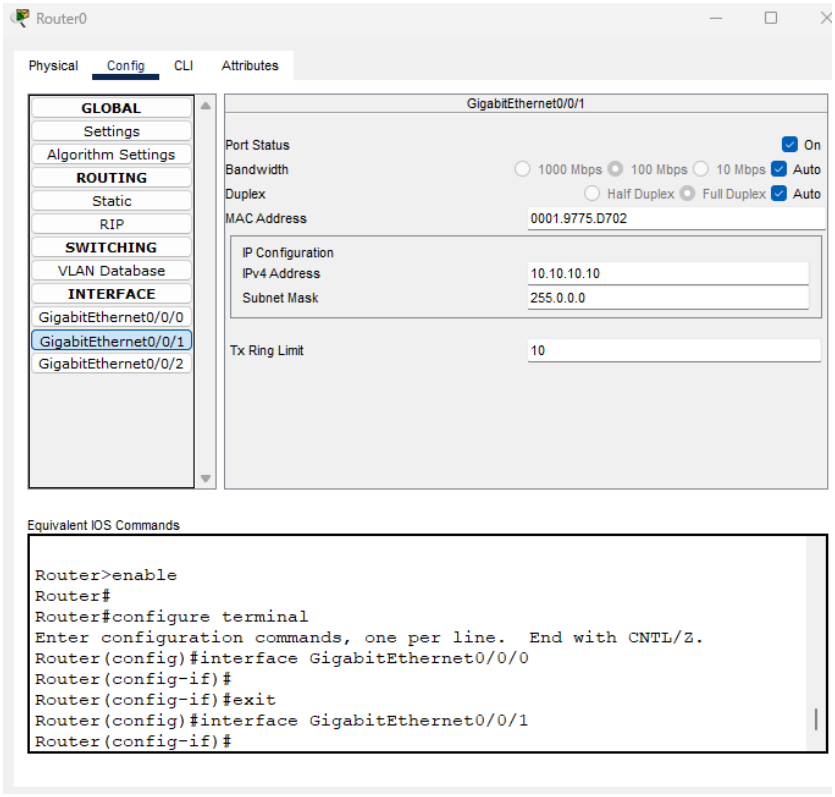

PC2
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.1.3
Subnet Mask
255.255.255.0
Default Gateway
192.168.1.10
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
/
Link Local Address
FE80::20C:CFFF:FE37:37DC
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top

3. Configure the default gateway and DNS server for the server.

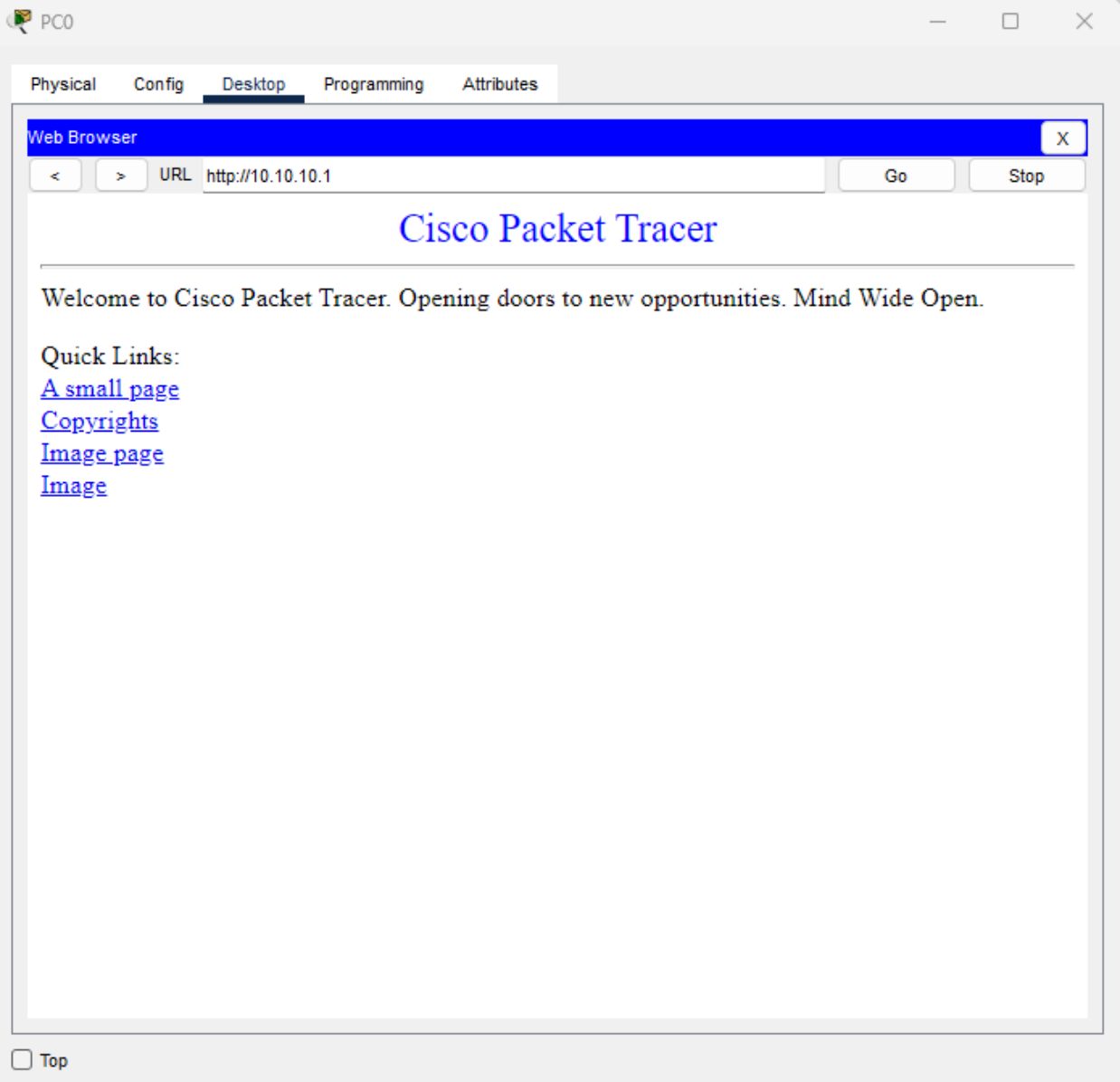


4. Configure the IP addresses of the ethernet connections for the router.



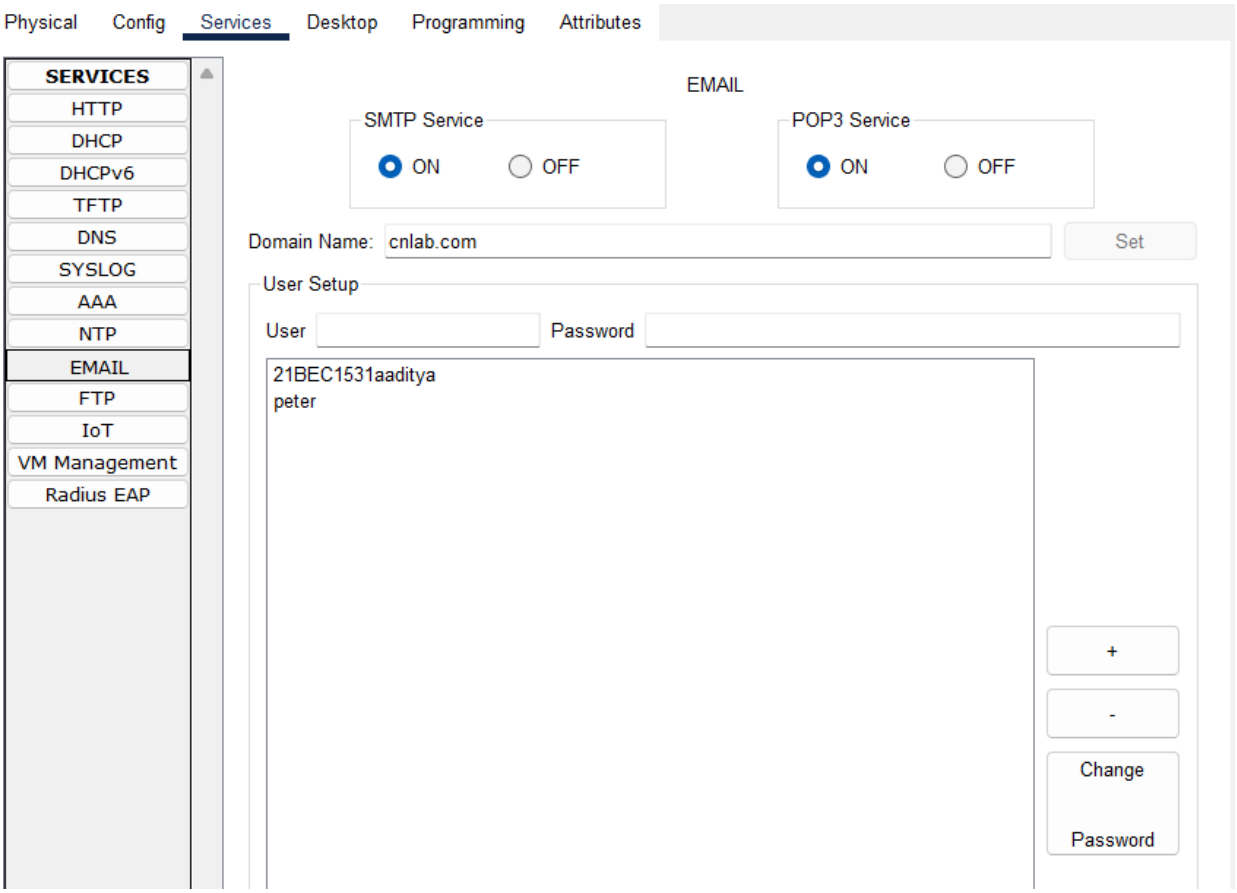


5. Open the Web Browser from one of the pc and ping the server IP address.



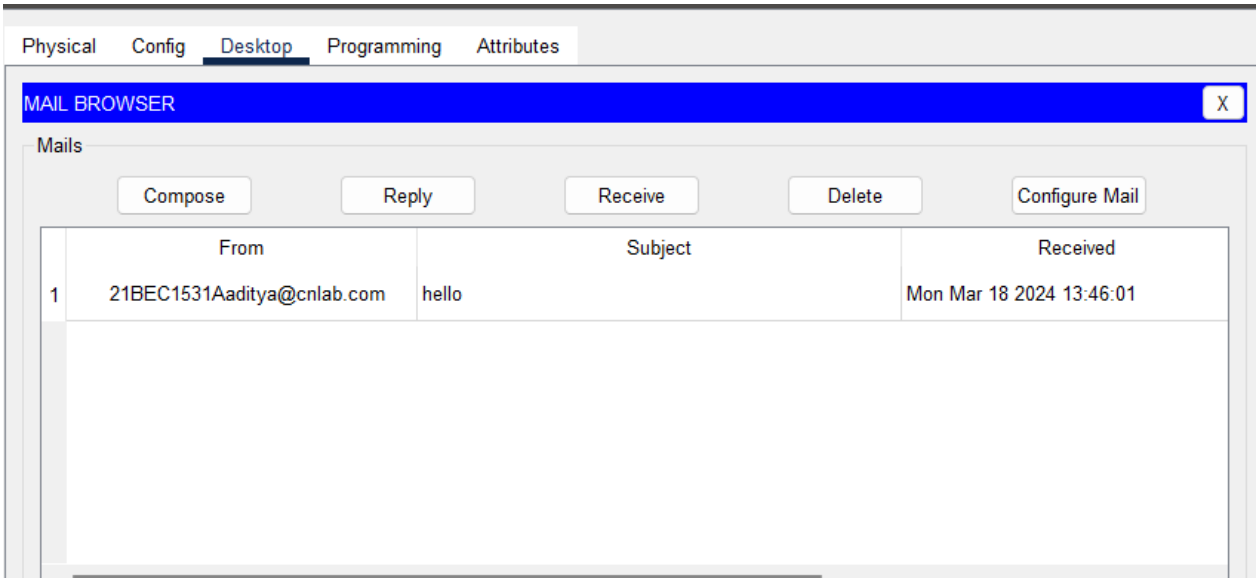
6. Server -> Services ->Email

7. Type in the username and password to create the email accounts for different users.



7. Open a PC -> Desktop -> Email

8. Write and send emails.



Inference:

We configured local network with DNS server and Email services using Cisco Packet Tracer and the output obtained was observed. It was observed that the email server works on two protocols Simple Mail Transfer Protocol (SMTP) for sending and POP3 for retrieving and organizing mails.

Conclusion: In conclusion, the network setup successfully facilitated email communication between the clients, demonstrating effective connectivity and data exchange within the network. This experiment provided practical insights into configuring email clients, setting up mail servers, and establishing network protocols for seamless communication. Overall, it highlighted the importance of networking fundamentals in enabling efficient email correspondence among interconnected clients.

Name: Aaditya Bhatt **Reg.No: 21BEC1531**

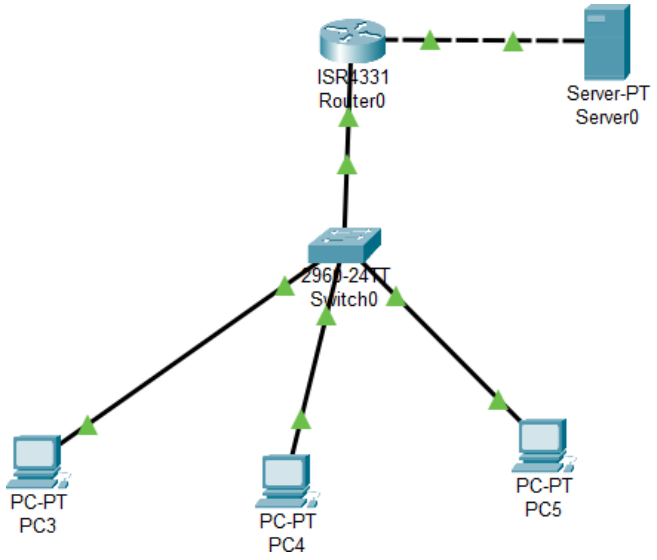
Experiment 4

Aim: To setup an FTP Server and evaluate the confirmation in Cisco Packet Tracer

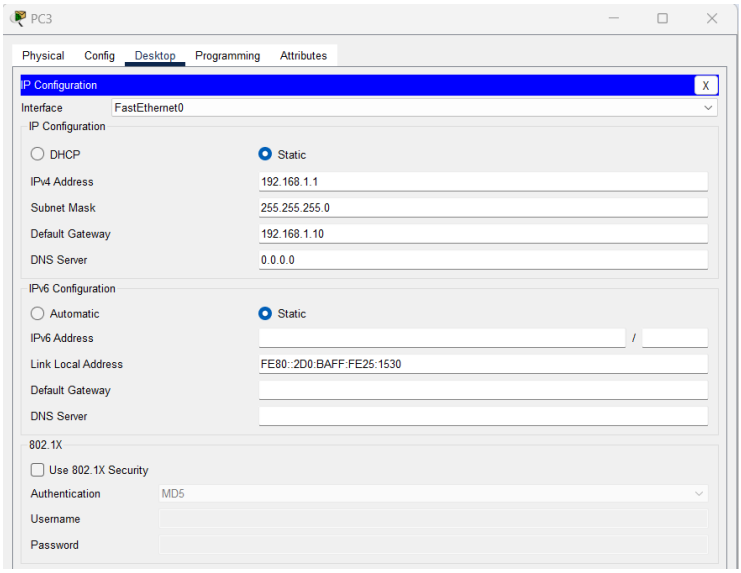
Software used: Cisco Packet Tracer

Procedure:

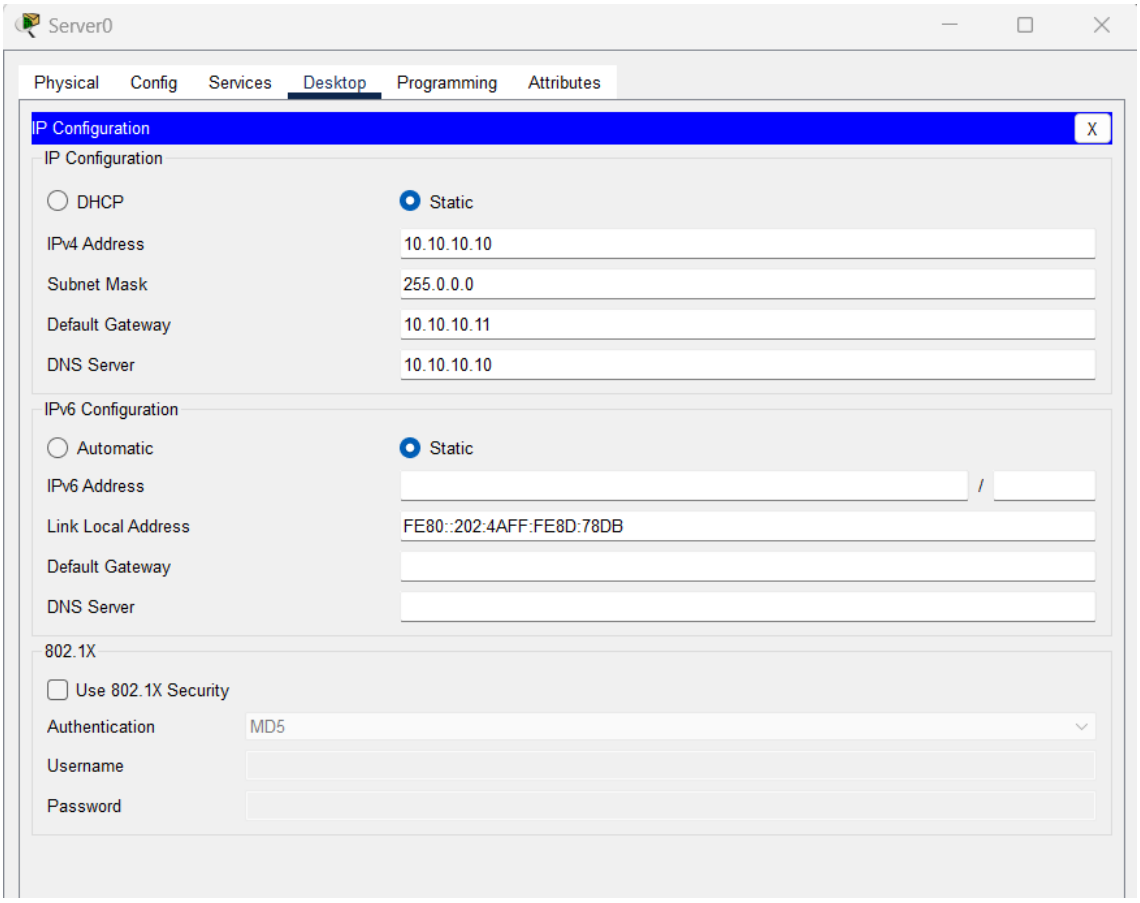
1. Set up a multiple device network using PCs, switches, routers and server.



2. Configure all the IP addresses of the PCs and Server.

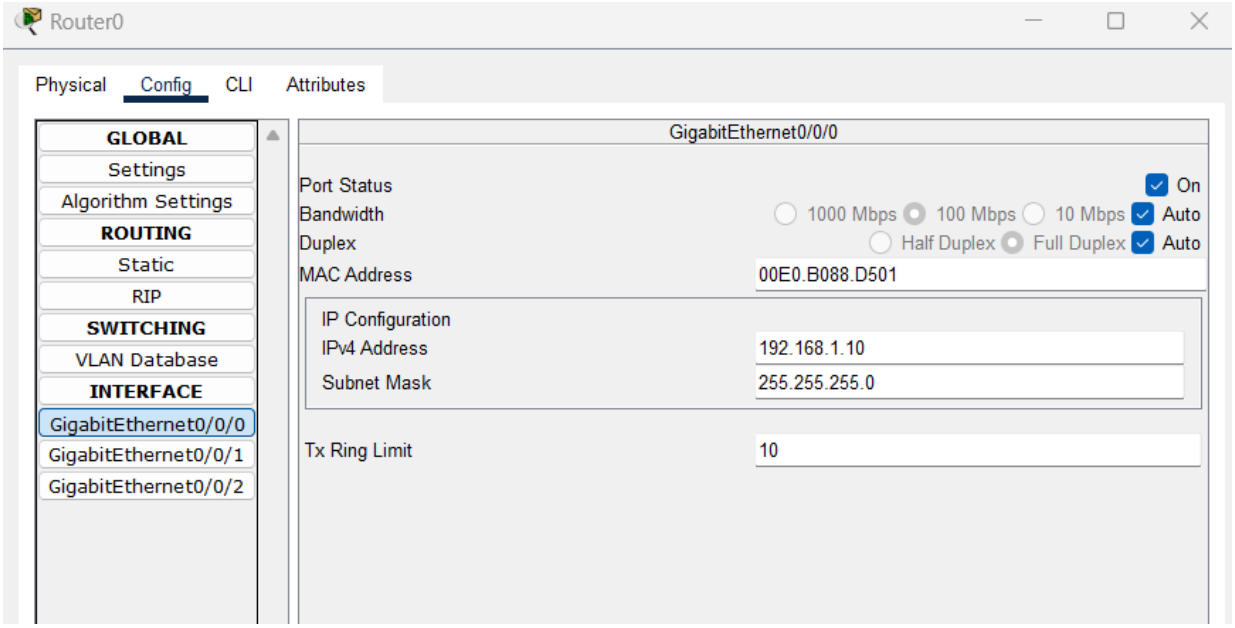


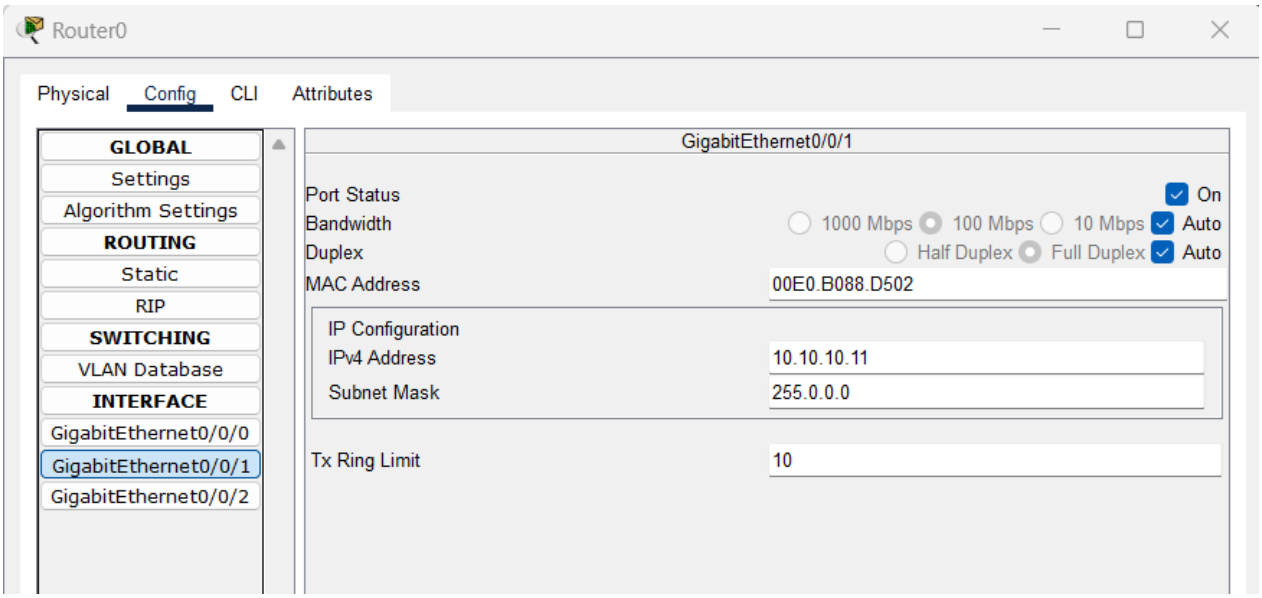
The IP addresses and default gateway of the PCs are 192.168.1.1, 192.168.1.2, 192.168.1.3 and 192.168.1.10 respectively.



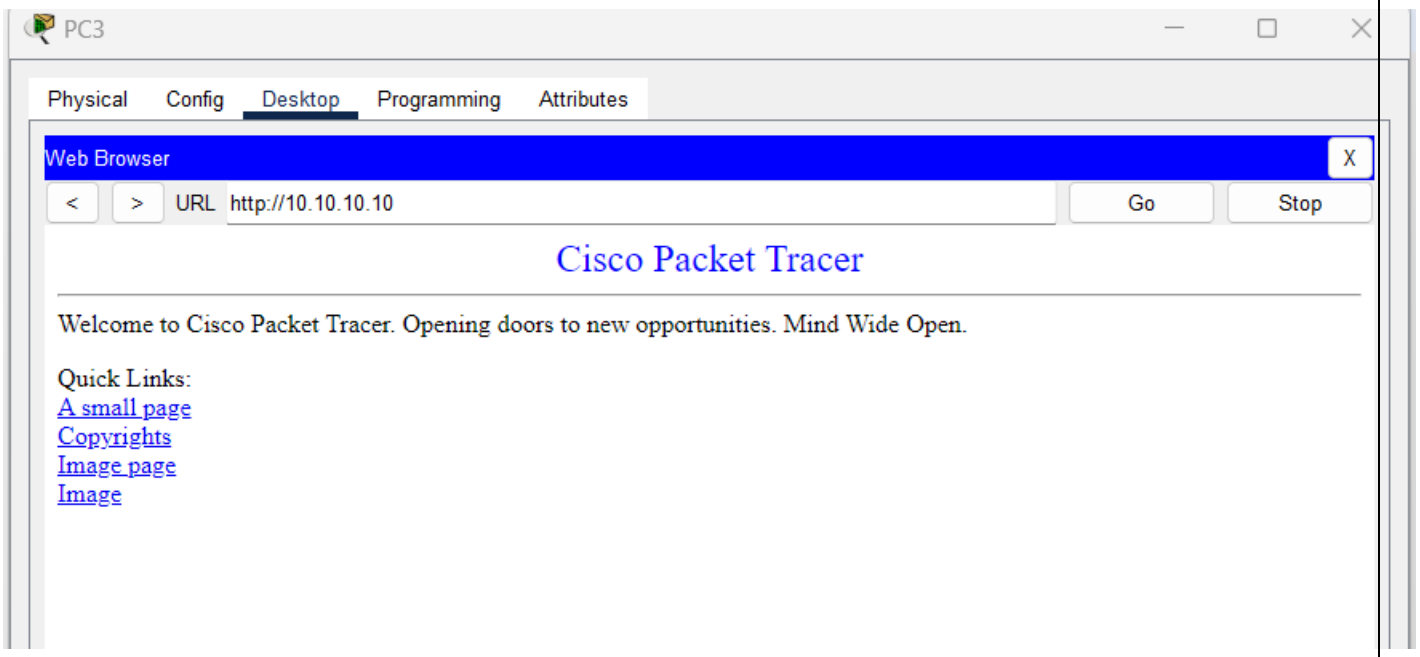
The IP address of the server is 10.10.10.10 and the default gateway assigned is 10.10.10.11.

3. Setup the router configuration.



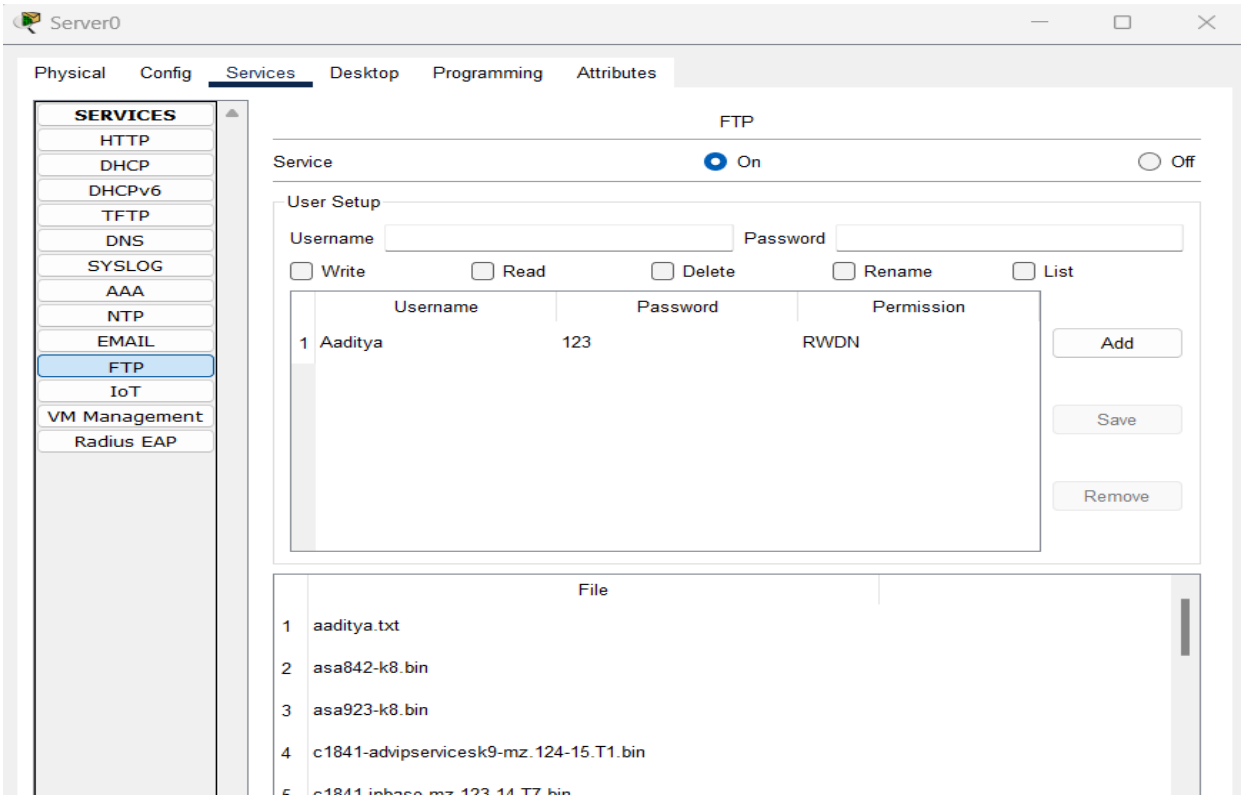


The interface is successfully configured and to verify, the PCs are able to access the server.



4. Now, for FTP protocol, go to Server -> Services -> FTP

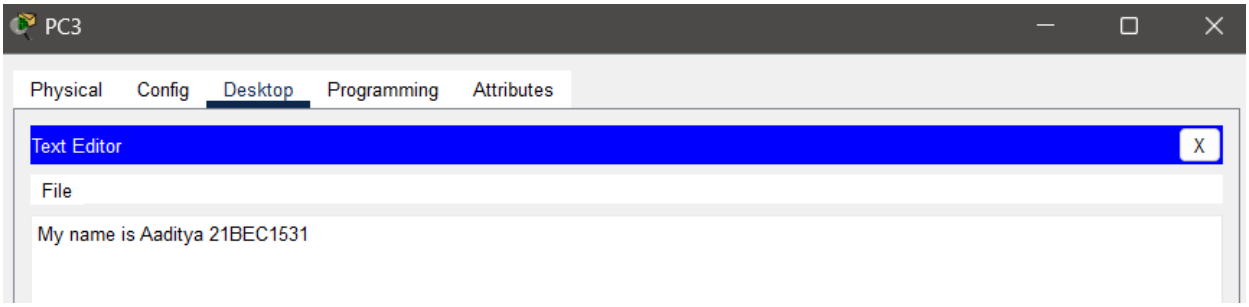
Create a new username and password for your ftp protocol services and mark for read and write services and then add it.



We can see the “Aaditya” named username is created and password is also visible.

5. Go to any of the PC -> Desktop -> Text Editor.

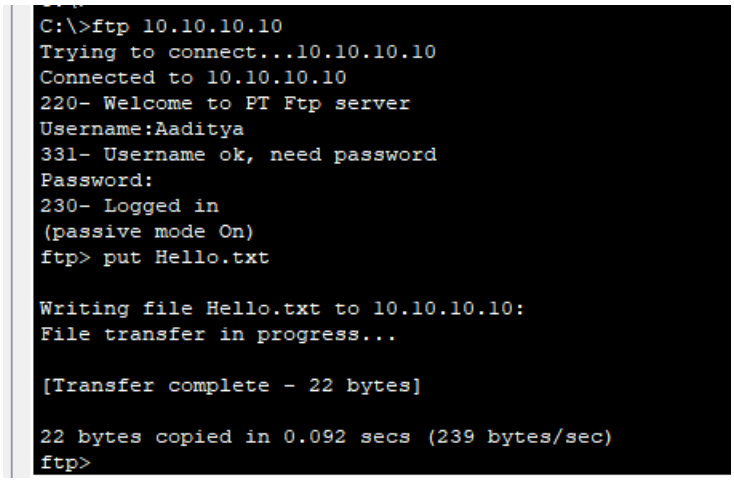
Create a new text file and save it in the respective PC.



I have saved it as “Hello.txt”.

6. Go to the PC -> Desktop -> Command Prompt -> Type ftp <Server IP address> (in my case ftp 10.10.10.10)

After entering, we will get to see username, we have type respective username provided and password to enter the FTP services.



Now type put <filename> (put Hello.txt). This command will save the file you have created in that respective PC.

```
C:\>ftp 10.10.10.10
Trying to connect...10.10.10.10
Connected to 10.10.10.10
220- Welcome to PT Ftp server
Username:Aaditya
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp> put Hello.txt

Writing file Hello.txt to 10.10.10.10:
File transfer in progress...

[Transfer complete - 22 bytes]

22 bytes copied in 0.092 secs (239 bytes/sec)
ftp>
```

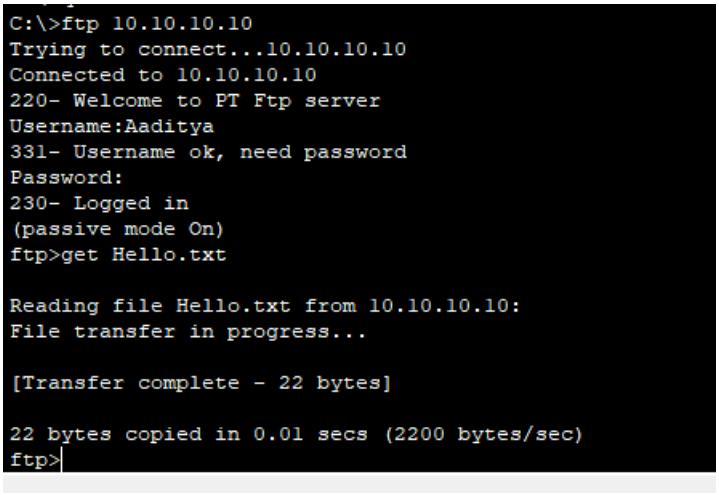
Type dir in the command prompt. This command will enable us see all the files available in the FTP service.

We can see Hello.txt file has been saved.

```
ftp>dir

Listing /ftp directory from 10.10.10.10:
0    : Hello.txt                                    34
1    : asa842-k8.bin                                5571584
2    : c1841-advipservicesk9-mz.124-15.T1.bin       33591768
3    : c1841-ipbase-mz.123-14.T7.bin                13832032
4    : c1841-ipbasek9-mz.124-12.bin                 16599160
5    : c1900-universalk9-mz.SPA.155-3.M4a.bin       33591768
6    : c2600-advipservicesk9-mz.124-15.T1.bin       33591768
7    : c2600-i-mz.122-28.bin                        5571584
8    : c2600-ipbasek9-mz.124-8.bin                  13169700
9    : c2800nm-advipservicesk9-mz.124-15.T1.bin     50938004
10   : c2800nm-advipservicesk9-mz.151-4.M4.bin      33591768
11   : c2800nm-ipbase-mz.123-14.T7.bin              5571584
12   : c2800nm-ipbasek9-mz.124-8.bin                15522644
13   : c2900-universalk9-mz.SPA.155-3.M4a.bin       33591768
14   : c2950-i6q4l2-mz.121-22.EA4.bin               3058048
15   : c2950-i6q4l2-mz.121-22.EA8.bin               3117390
16   : c2960-lanbase-mz.122-25.FX.bin               4414921
17   : c2960-lanbase-mz.122-25.SEE1.bin             4670455
18   : c2960-lanbasek9-mz.150-2.SE4.bin             4670455
19   : c3560-advipservicesk9-mz.122-37.SE1.bin      8662192
20   : c3560-advipservicesk9-mz.122-46.SE.bin       10713279
21   : c800-universalk9-mz.SPA.152-4.M4.bin         33591768
22   : c800-universalk9-mz.SPA.154-3.M6a.bin        83029236
23   : cat3k_caa-universalk9.16.03.02.SPA.bin       505532849
24   : cgr1000-universalk9-mz.SPA.154-2.CG          159487552
25   : cgr1000-universalk9-mz.SPA.156-3.CG          184530138
26   : ir800-universalk9-bundle.SPA.156-3.M.bin     160968869
27   : ir800-universalk9-mz.SPA.155-3.M             61750062
28   : ir800-universalk9-mz.SPA.156-3.M             63753767
29   : ir800_yocto-1.7.2.tar                        2877440
30   : ir800_yocto-1.7.2_python-2.7.3.tar           6912000
31   : pt1000-i-mz.122-28.bin                       5571584
32   : pt3000-i6q4l2-mz.121-22.EA4.bin              3117390
ftp>quit
```

7. Go to any other PC -> Desktop -> Command Prompt -> Type ftp 10.10.10.10 -> sign in After signing in into your FTP services, type get <filename>. This command will read the file that you have put in your FTP service.



Inference: To set up FTP services, all the PCs and routers are configured assigning all the IP addresses. By configuring the FTP server and ensuring connectivity between devices, the FTP protocol implementation and network file sharing has completed. This experiment enhances the knowledge of FTP services, essential for efficient data exchange and management within network infrastructures.

Name: Aaditya Bhatt **Reg.No: 21BEC1531**

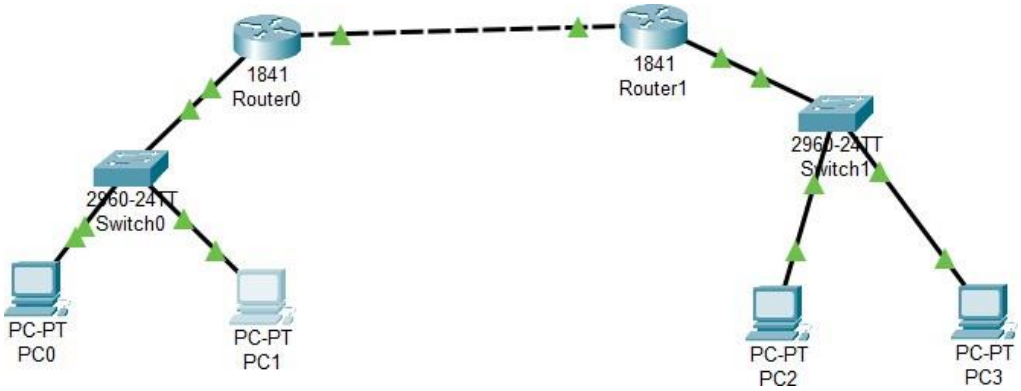
Experiment 5

Aim: To configure and implement the static routing using Cisco Packet Tracer

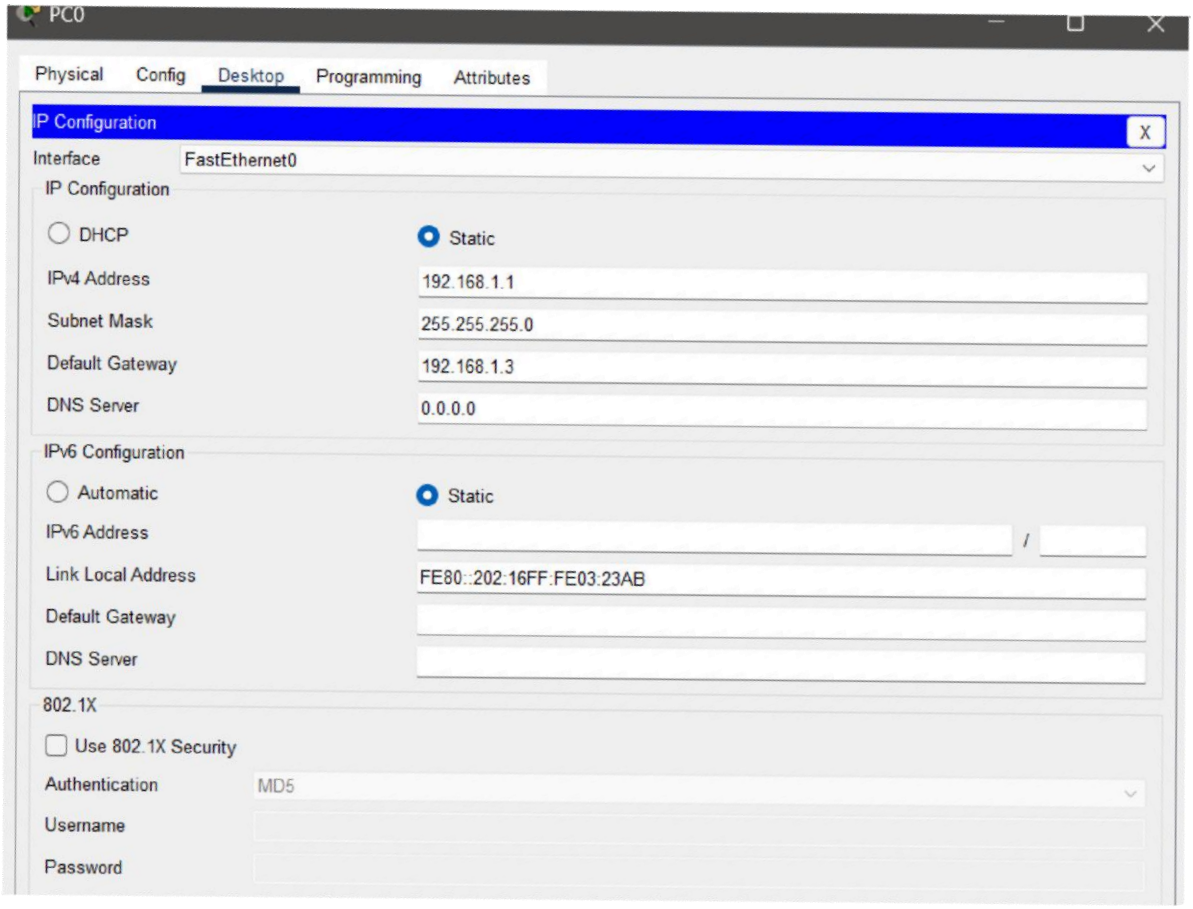
Software used: Cisco Packet Tracer

Procedure:

1. Create a network using multiple PC, two switches, two routers. Connect them using wires.

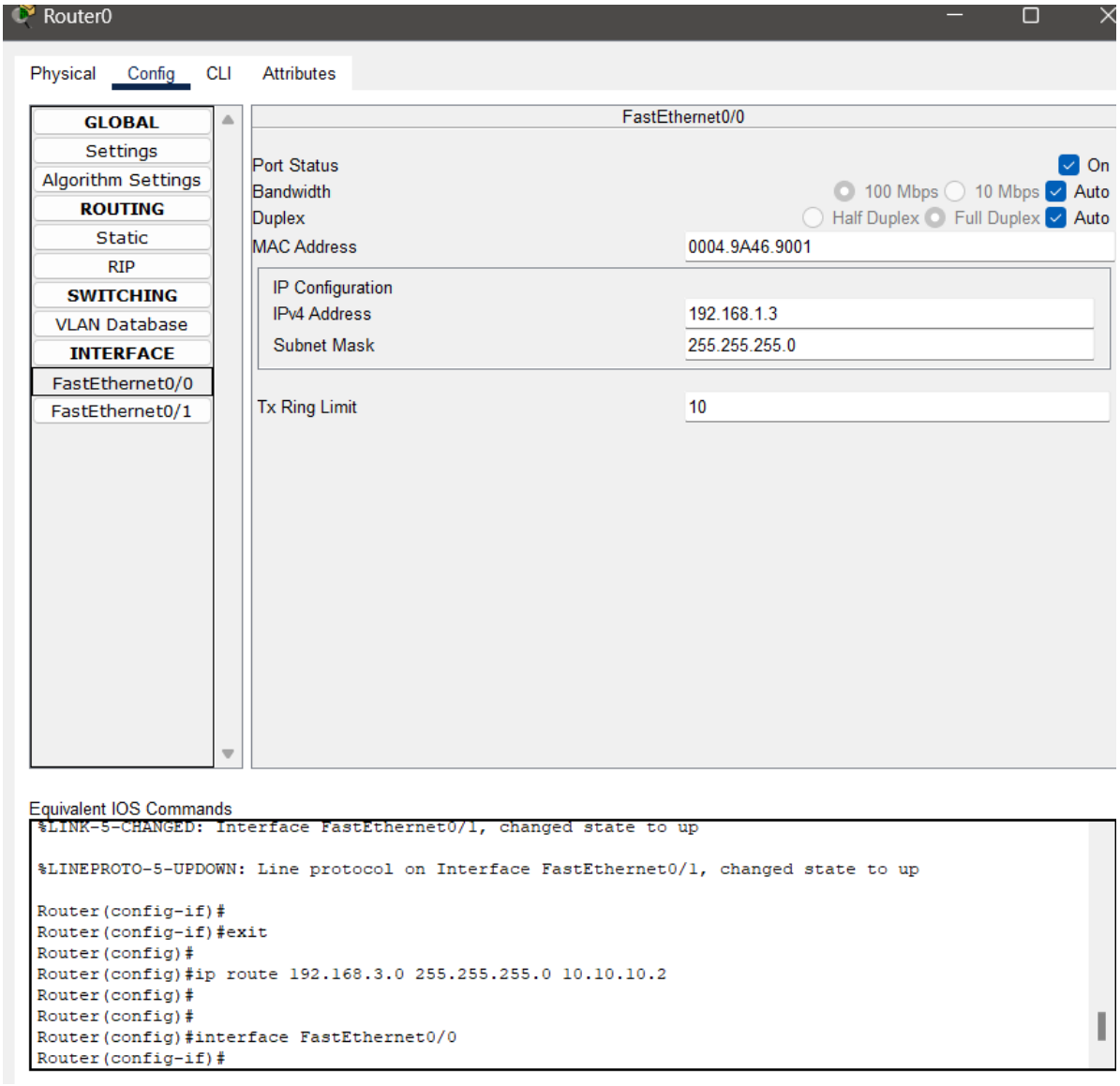


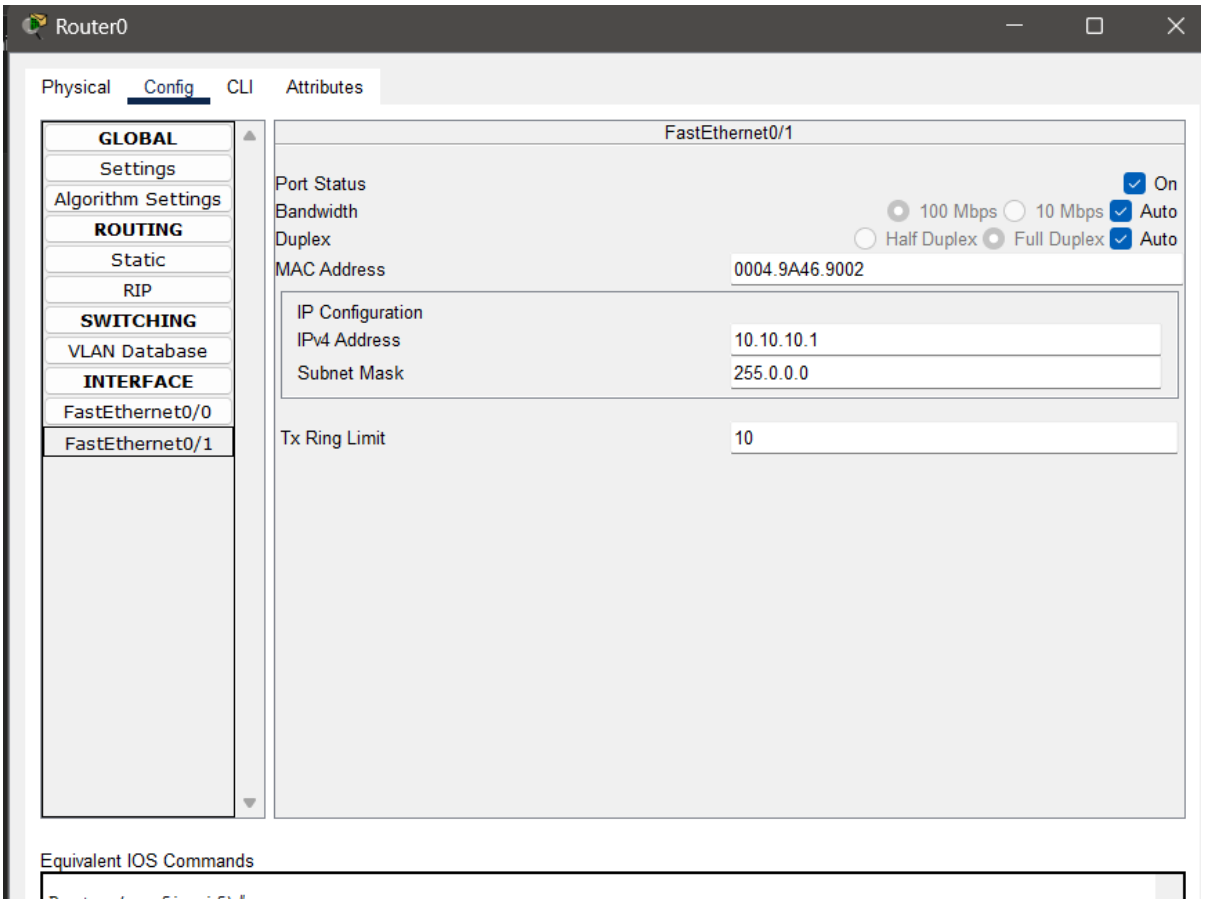
2. Configure the IP addresses and default gateway for all the PCs.

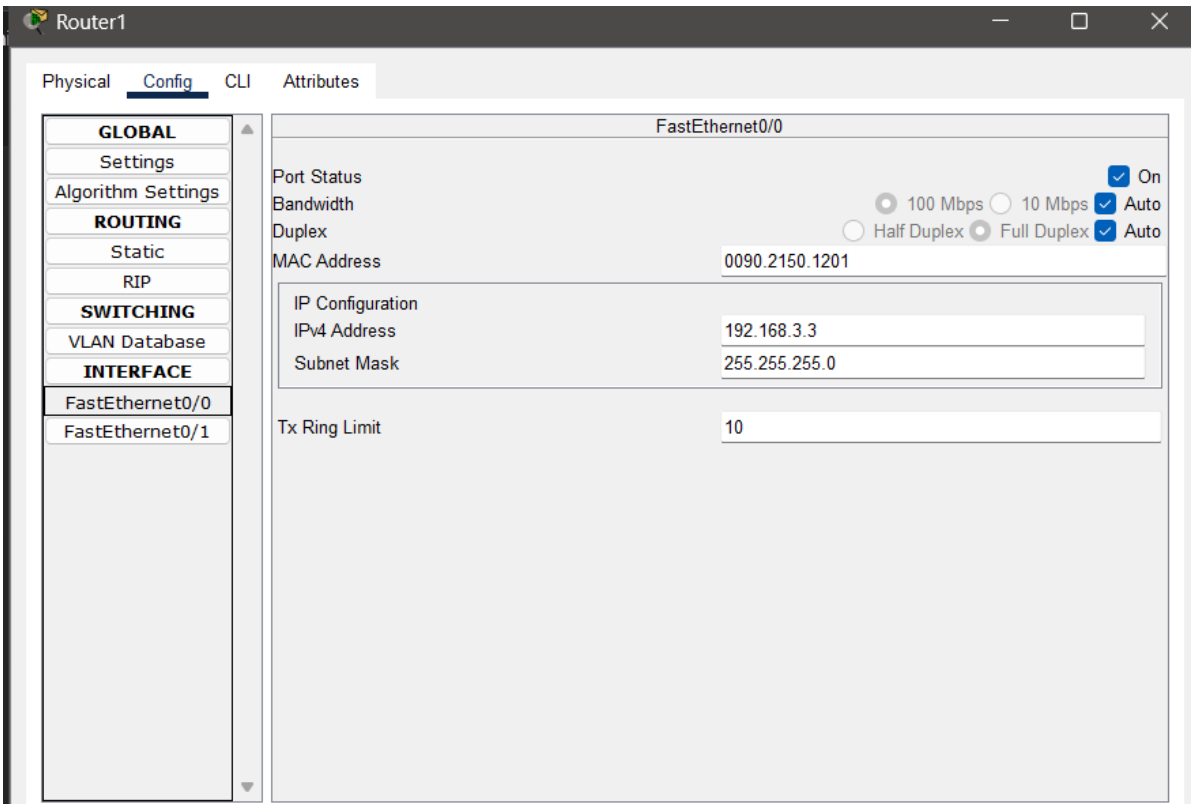


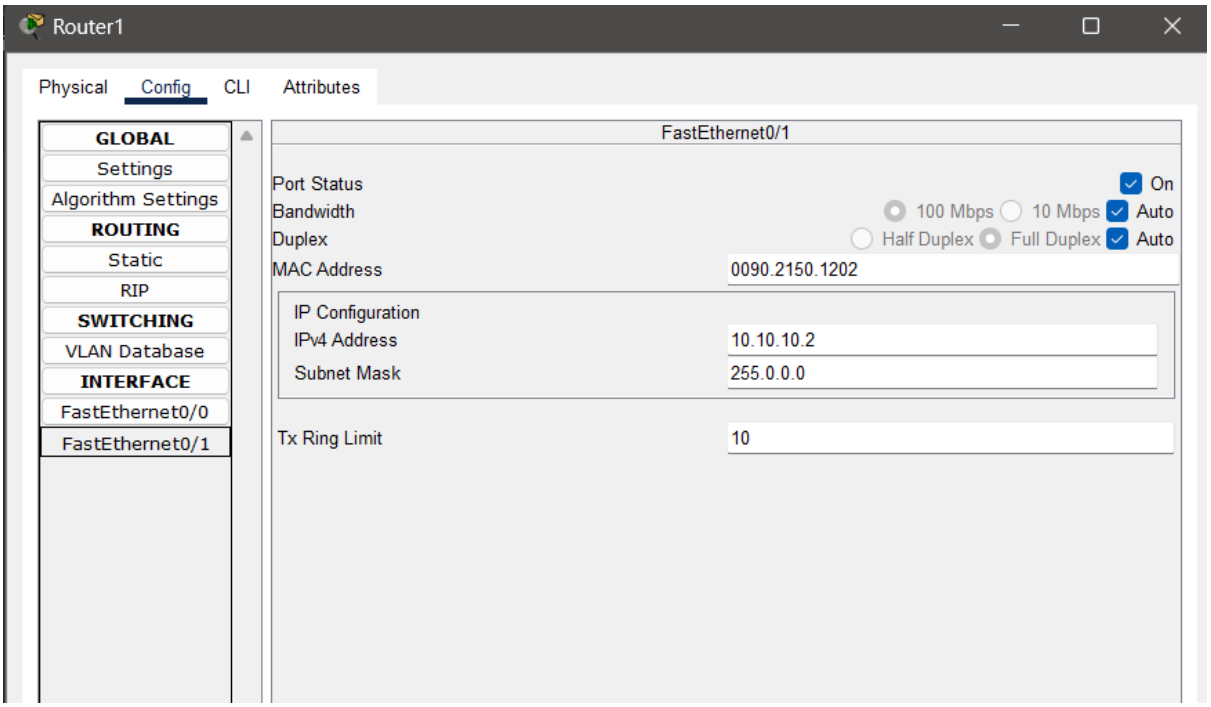
Similarly, we configured all the PC's

3. Configure the IP addresses of the fast ethernet connections for the router.

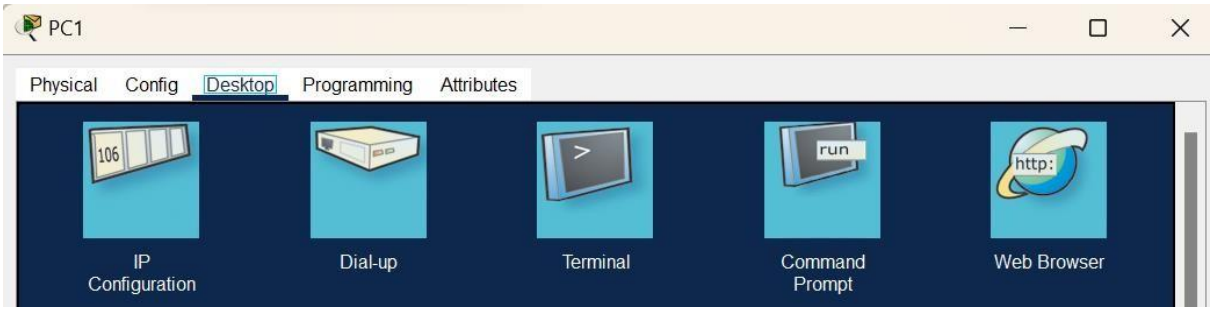

Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0004.9A46.9001
IP Configuration
IPv4 Address
192.168.1.3
Subnet Mask
255.255.255.0
Tx Ring Limit
10
Equivalent IOS Commands
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
Router(config-if)#
Router(config-if)#exit
Router(config)#
Router(config)#ip route 192.168.3.0 255.255.255.0 10.10.10.2
Router(config)#
Router(config)#
Router(config)#interface FastEthernet0/0
Router(config-if)#


Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
FastEthernet0/1
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0004.9A46.9002
IP Configuration
IPv4 Address
10.10.10.1
Subnet Mask
255.0.0.0
Tx Ring Limit
10
Equivalent IOS Commands


Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0090.2150.1201
IP Configuration
IPv4 Address
192.168.3.3
Subnet Mask
255.255.255.0
Tx Ring Limit
10

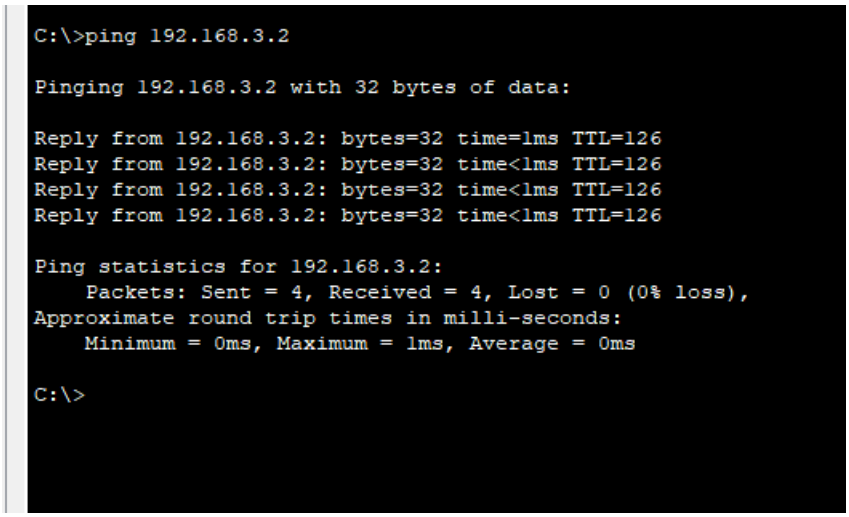


4.. PC1 -> Web Browser



5. The network setup is complete

6. Ping PC 1 by PC3 a. Enter ‘Command Prompt’ enter command ‘ping 192.168.3.2’



Inference:

Routing Configuration: Through this experiment, students learn to configure static routing protocols on Cisco Packet Tracer. This involves setting up routing tables manually to direct traffic between different network segments.

Experimenting with static routing allows students to grasp the concept of routing tables and their importance in directing traffic. They learn to add, modify, or remove static routes to accommodate changes in network topology or routing requirements.

Conclusion: the experiment on configuring and implementing static routing using Cisco Packet Tracer provides valuable hands-on experience in network configuration and management. Through this exercise, students gain a deeper understanding of routing protocols, network optimization, and routing table management. This practical knowledge equips them with essential skills for designing and maintaining efficient network infrastructures in real-world scenarios.

Name: Aaditya Bhatt **Reg.No: 21BEC1531**

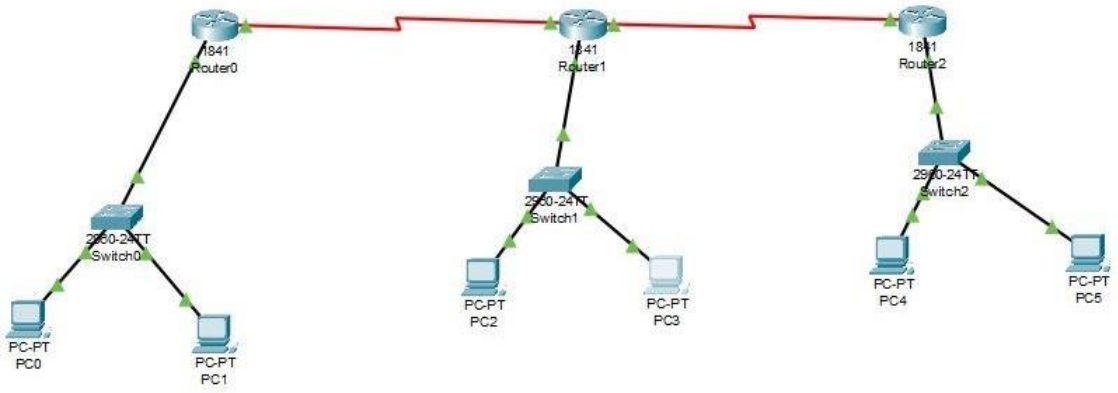
Experiment 6

Aim: To configure and implement the dynamic routing using Cisco Packet Tracer.

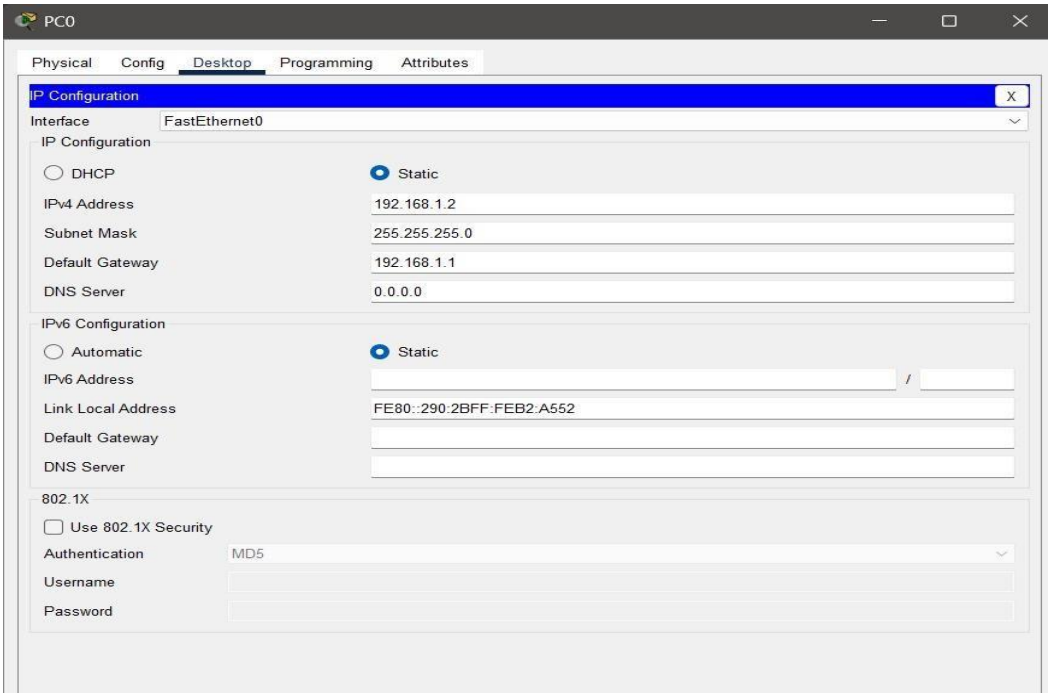
Software used: Cisco Packet Tracer

Procedure:

1. Create a network using multiple 6 PC, 3 switches and 3 routers 1841.

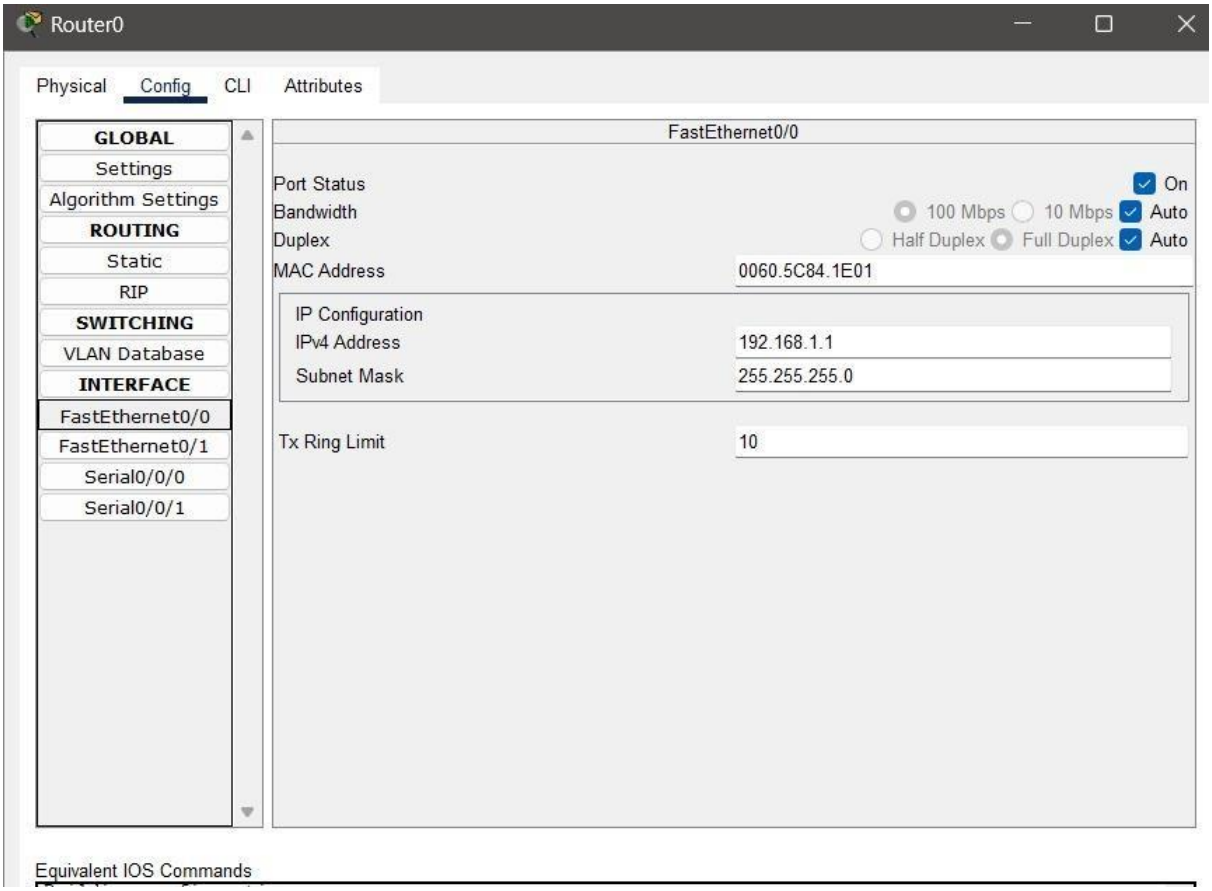


2. Configure the PCs IP address.


PC0
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.1.2
Subnet Mask
255.255.255.0
Default Gateway
192.168.1.1
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
/
Link Local Address
FE80::290:2BFF:FEB2:A552
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password

Configure all the PC's and their IP's addresses.

3. Assign IP Addresses to LAN 1. Assign IP address '192.168.1.2' to PC0. Assign IP address '192.168.1.3' to PC1 b. Assign IP Addresses to LAN 2. Assign IP address '192.168.2.2'' to PC2. Assign IP address '192.168.2.3'' to PC3 c. Assign IP Addresses to LAN 3. Assign IP address '192.168.3.2'' to PC4. Assign IP address '192.168.3.3'' to PC5.
4. Connect the Switches to each Routers 1841 via Fast Ethernet interface. Connect Fa0/3 of SW 1 to Fa0/0 of Router 0
5. Assign IP Addresses '192.168.1.1' to the Fa0/0 interface of the Router 0 and Check 'Port Status' to 'On'

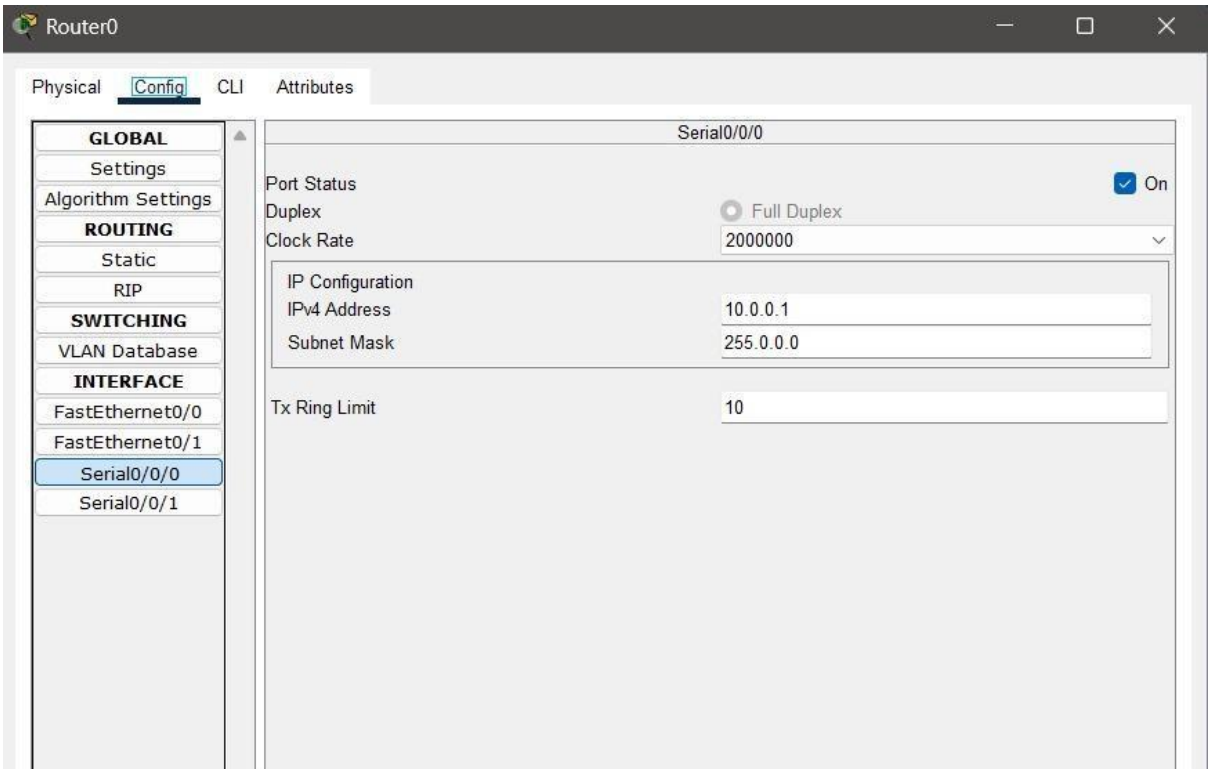


Connect Fa0/2 of SW 2 to Fa0/0 of Router 1

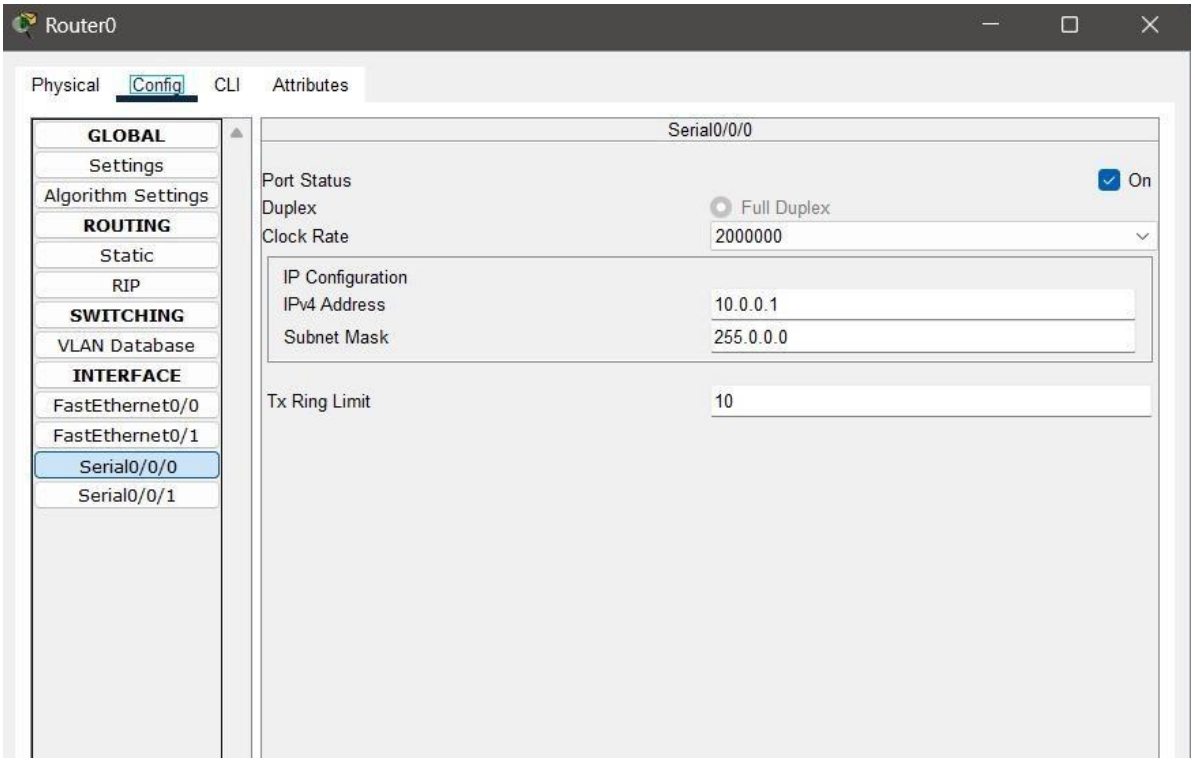
Assign IP Addresses '192.168.2.1' to the Fa0/1 interface of the Router 1 and Check 'Port Status' to 'On'

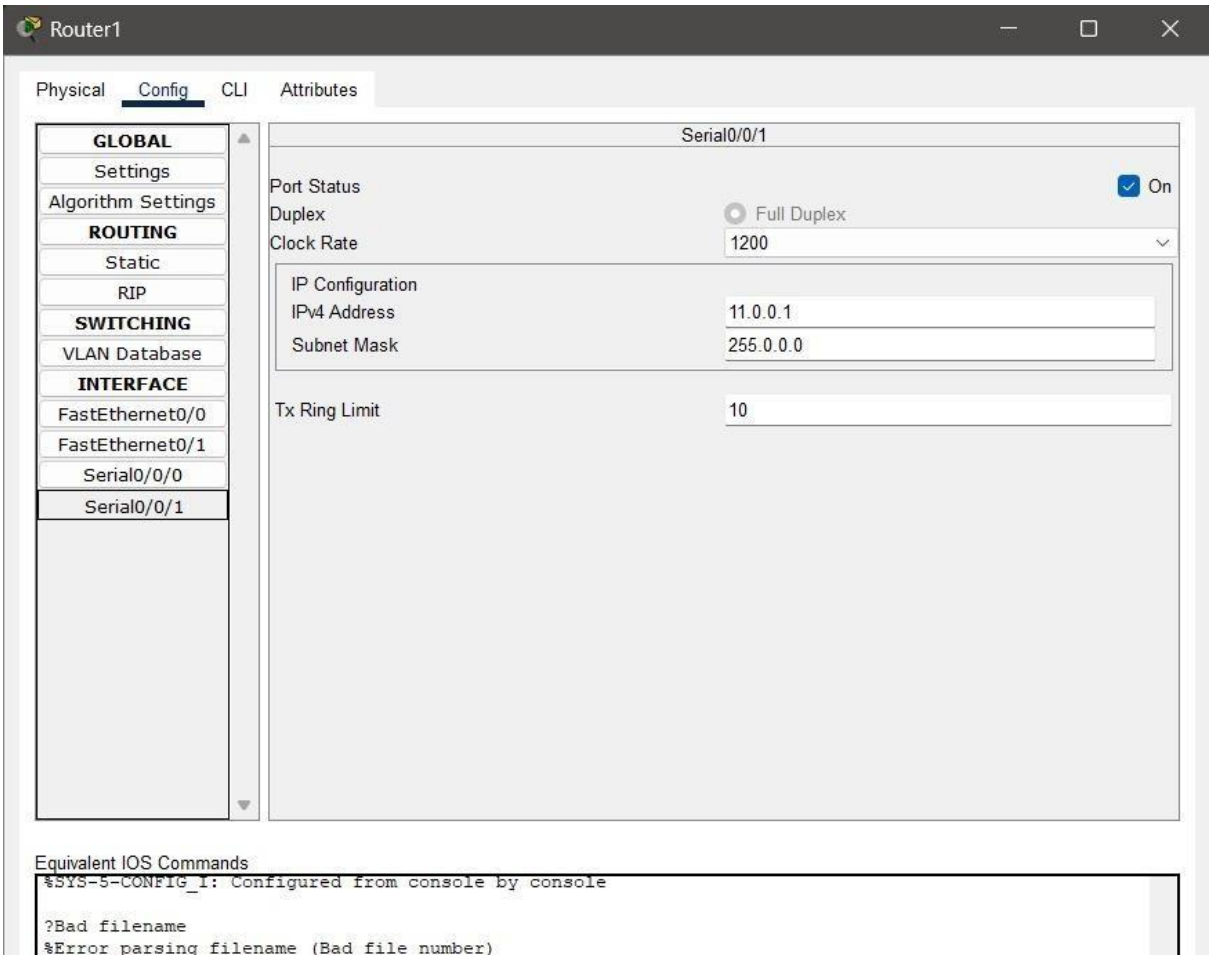
And similarly do for router 2 also with IP 192.168.3.1

set serial0/0/0 for router 0



set for router 1 serial 0/0/0 and serial 0/0/1

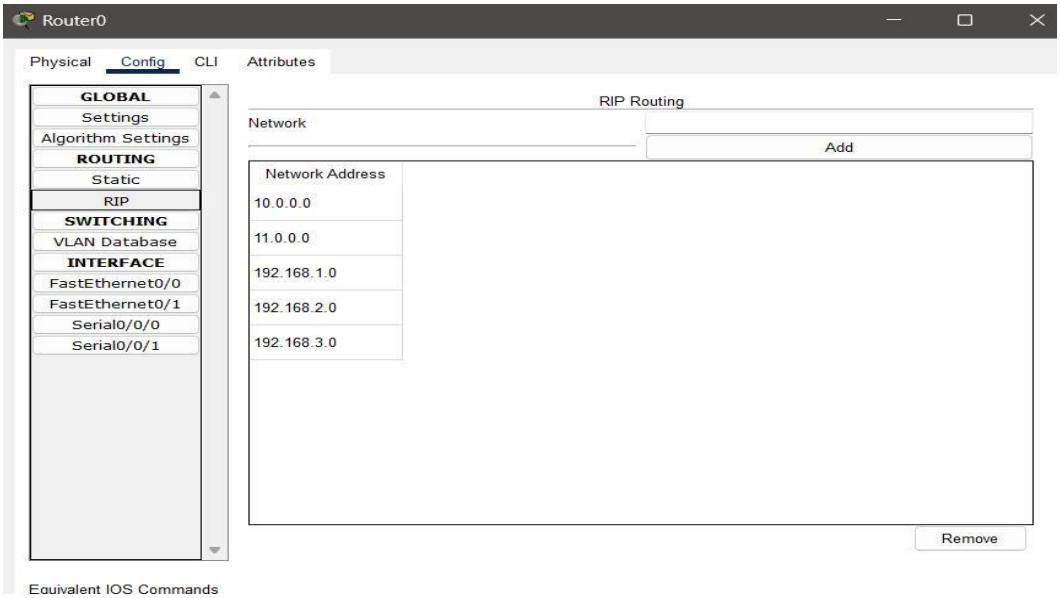




Configure the Dynamic Routing Table using RIP Protocol

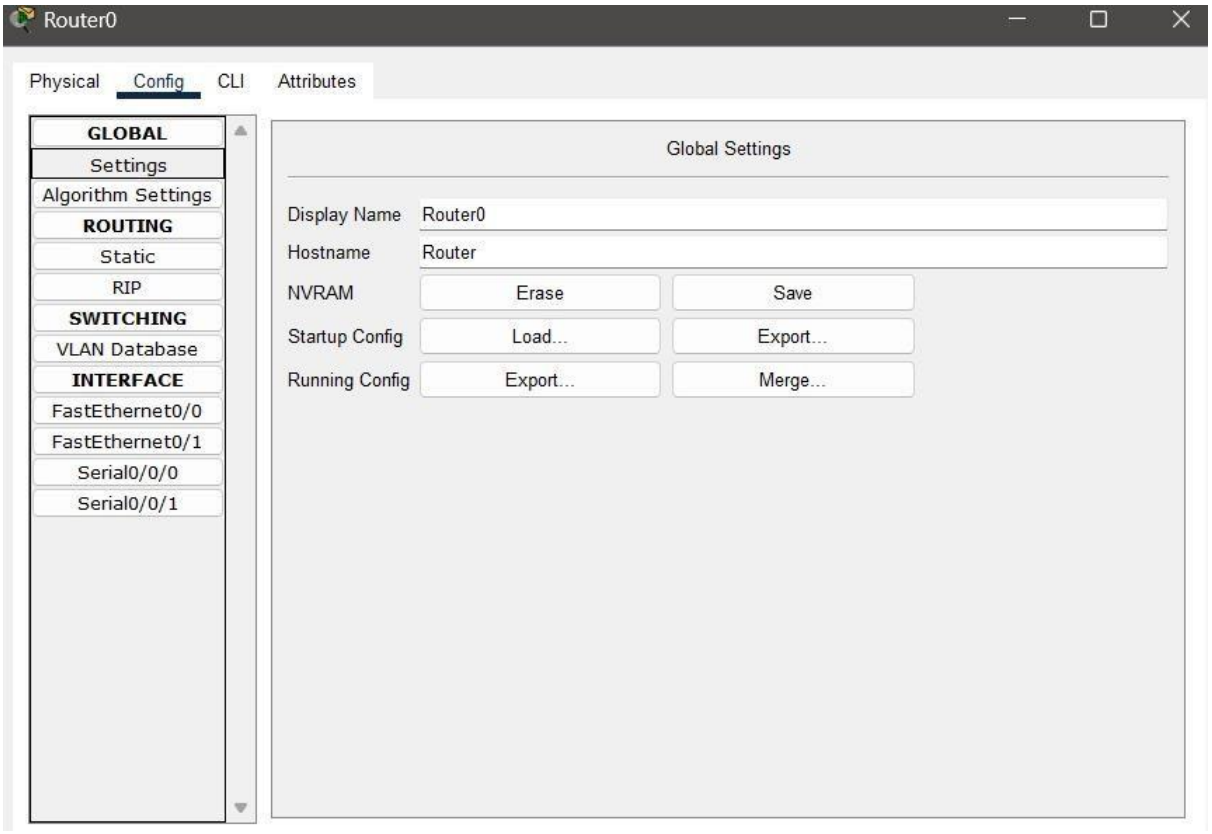
a. Choose Router 1 Select Routing > RIP ii. Add Network Address of Each Network as • 10.0.0.0 • 11.0.0.0 • 192.168.1.0 • 192.168.2.0 • 192.168.3.0

b.



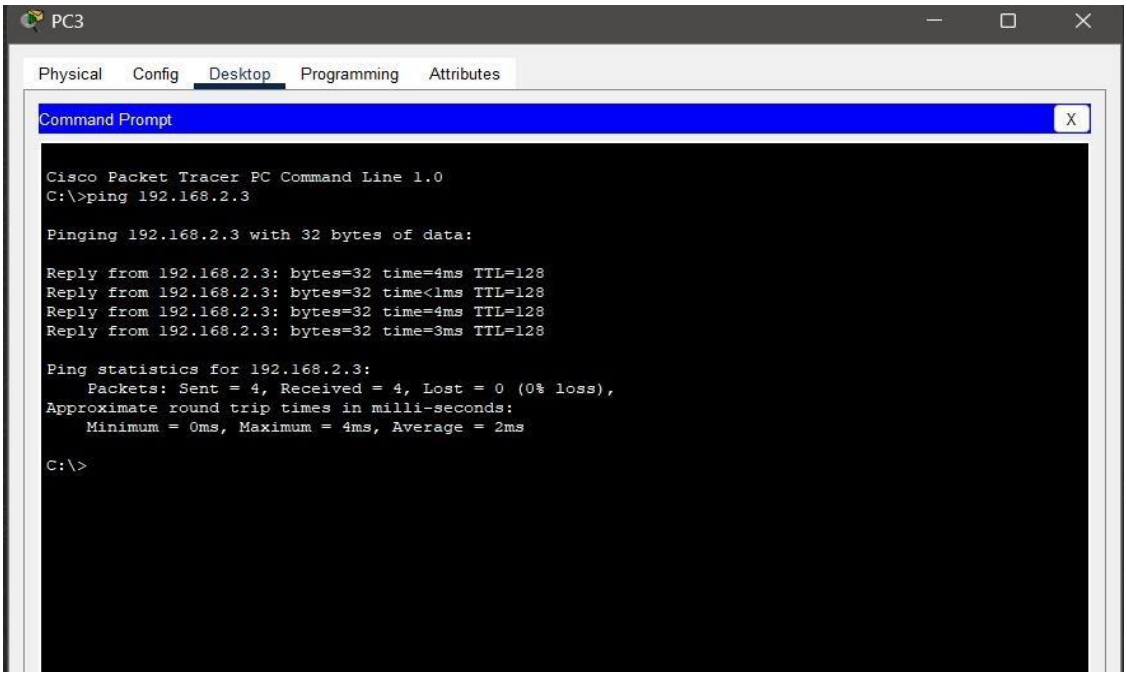
Similarly repeat for Router 1 and router 2.

Go to the Setting Tab: Select Save on NVRAM settings for each router.



The network setup is completed

Now ping PC1 by PC3. Enter command ping 192.168.2.3



Inference:

Dynamic routing protocols offer advantages over static routing, such as automatic adaptation, scalability, and efficient distribution of routing information across multiple routers. Cisco Packet Tracer is a valuable platform for experimentation with dynamic routing, allowing users to visually observe routing tables and packet flow. It also allows users to create various network scenarios, gaining insights into convergence speed and resilience. The choice of dynamic routing protocol depends on network size, complexity, and desired features. Experimentation with different protocols in Cisco Packet Tracer helps evaluate their strengths and weaknesses, resulting in more efficient and adaptable network management.