Lab Report

Only for course Teacher						
		Needs Improvement	Developing	Sufficient	Above Average	Total Mark
Allocate mark & Percentage		25%	50%	75%	100%	25
Understanding	3					
Analysis	4					
Implementation	8					
Report Writing	10					
					Total obtained mark	
Comments						

Semester: Spring 2025

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Batch: 40 **Section: D1**

Course Code: SE226 **Course Name: Data Communication and Computer Networking Lab**

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Submission Date: 16/04/2025

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INTRODUCTION TO NETWORK FUNDAMENTALS

Lab Objectives:

- **Network Elements**
- **Network Types**
- **Network Models**
- **Basic Topology of connecting to peers and checking connectivity**
- **Check their message passing real-time simulation**

Network Elements

Network elements are the elements a network is mostly comprised of Basic elements of a computer network include hardware, software, and protocols.
We use the elements below to make the computer network.
elements are as follows:

- Hubs - 2
- End Devices – 8

Hub:
A hub is a common connection point for devices in a network. Hubs are commonly used to connect

End Devices:
An **end device** in a computer network is any device that connects to the network to send or receive data.

Network Types

A star network is a local area network (LAN) topology in which all nodes -- personal computers (PCs), workstations or other devices -- are directly connected to a common central computer that is often referred to as a hub. Therefore, a star network is often referred to as a hub-and-spoke network topology.

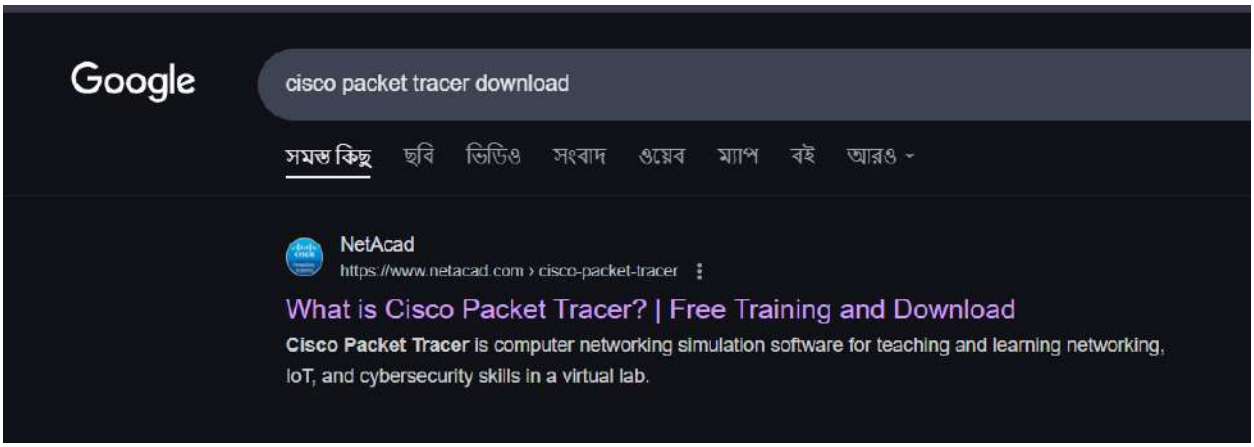
Network Models

Star Topology is a network setup in which each device is connected to a central node called a hub. The hub manages the data flow between the devices. If one device wants to send data to another device, it has to first send the information to the hub, and then the hub transmits that data to the required device.

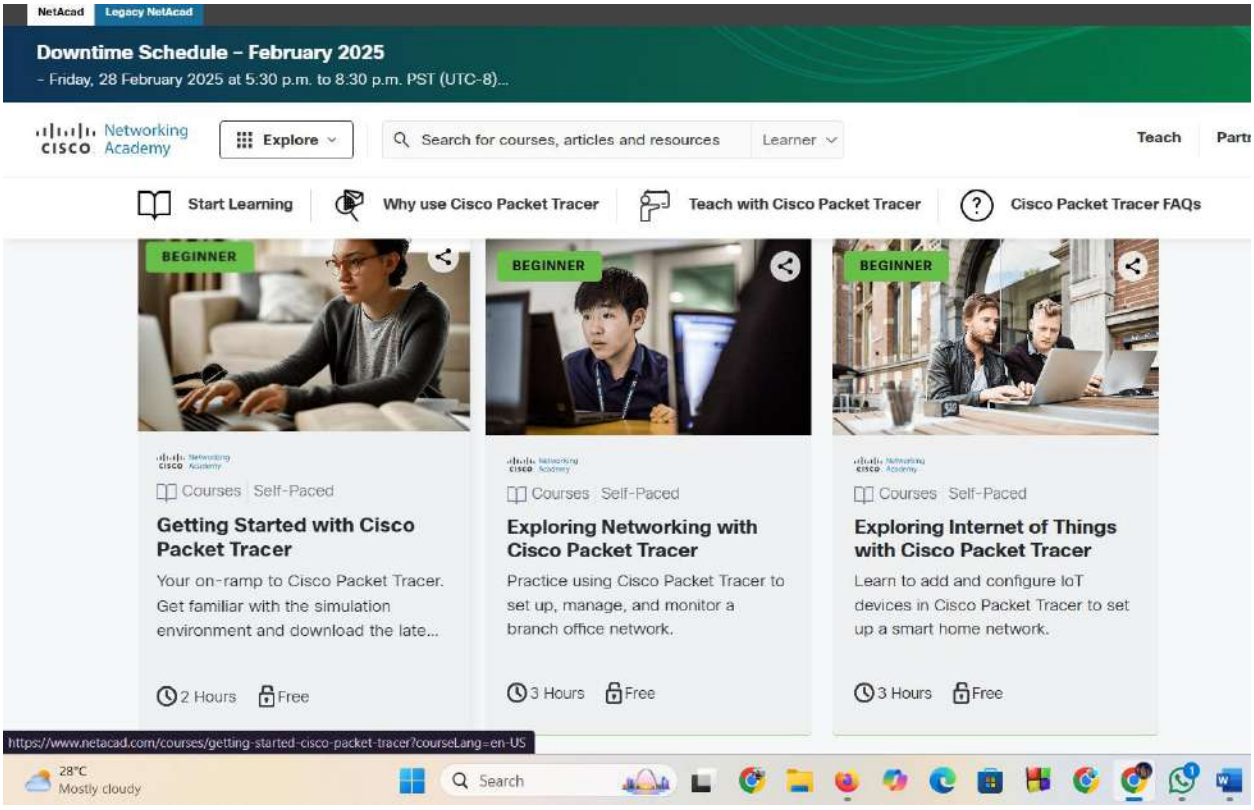
Installation Process for Cisco Packet Tracer

💻 For Computers (Windows):

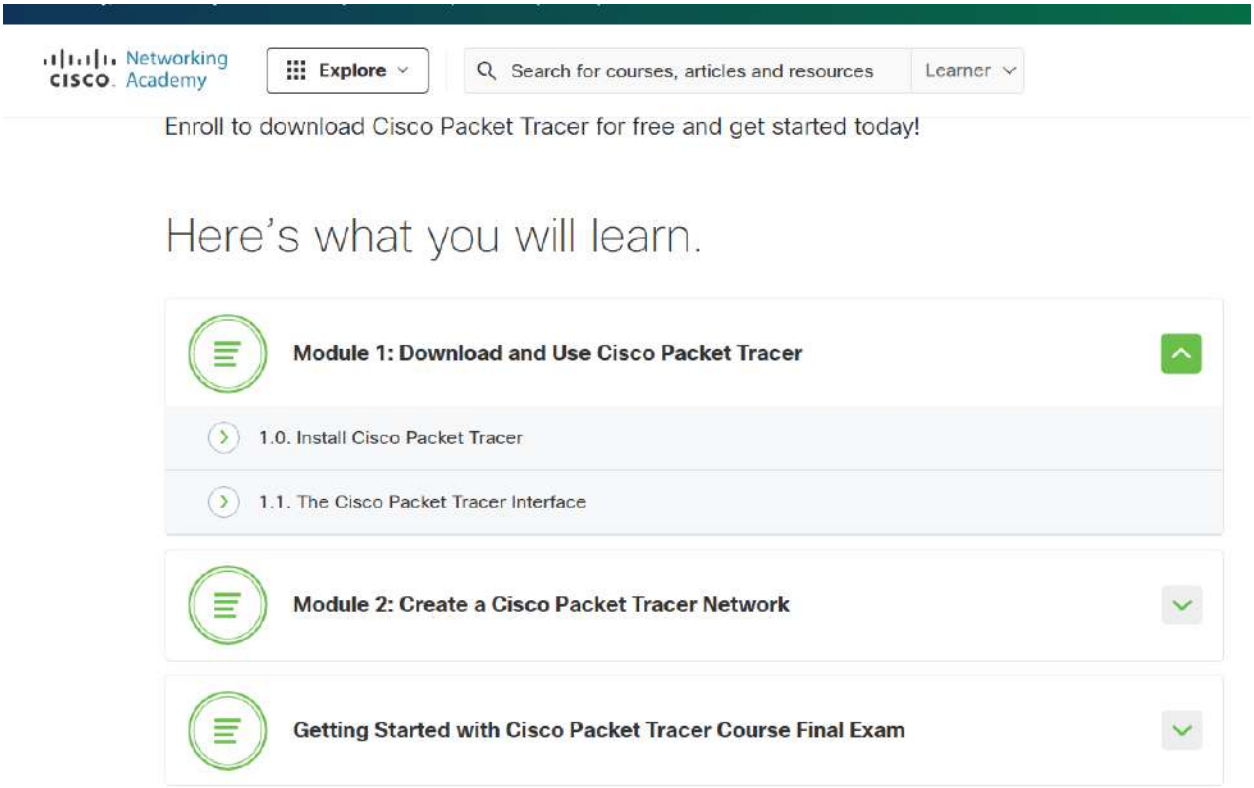
1. Visit the **Cisco official website**: Cisco Downloads



2. Go to beginner



3. Go to module 1 for download and use the Cisco packet tracer and install it,



TASK 01: Make a connection and check basic connectivity.

Step 1: Take more then one computer (End Device).
And take One hub.
Figure 1

Figure: 1

Step 2: Connect 1st PC to Hub with connection cable. Then connect 2nd PC to Hub with another connection cable.

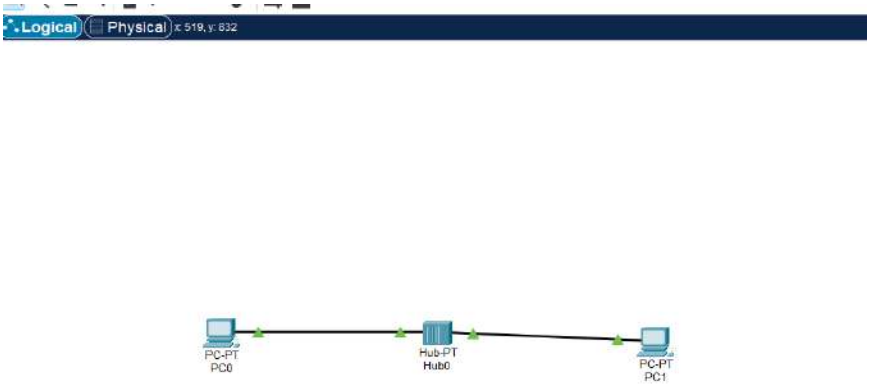


Figure 2

Step3: Clack the PC and select IP connection.
Figure 3

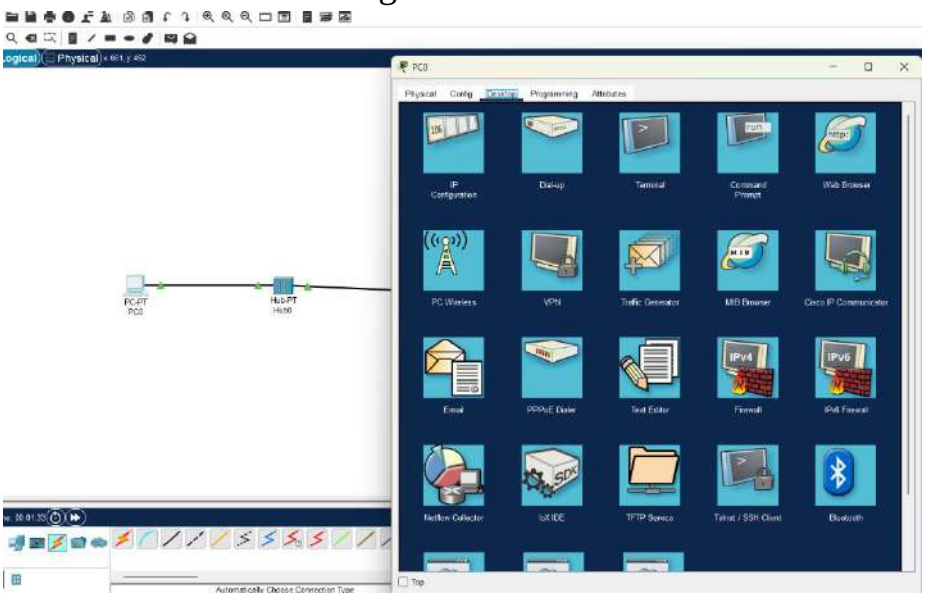


Figure 3

Step4: Write IPv4 and clack Subnet mask.
Figure 4

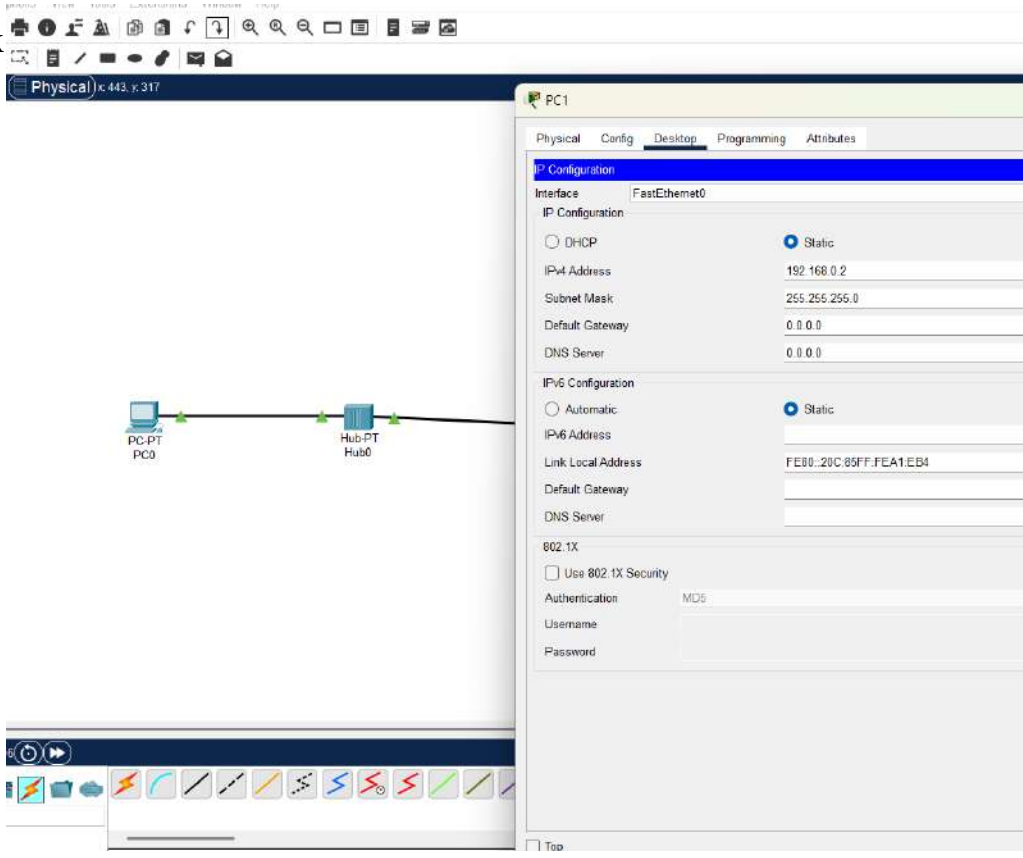


Figure 4

Step5: To check the connectivity we have to select a computer and then go to the desktop, select command prompt and then type ping and the other Computer's IP address.

Figure 5

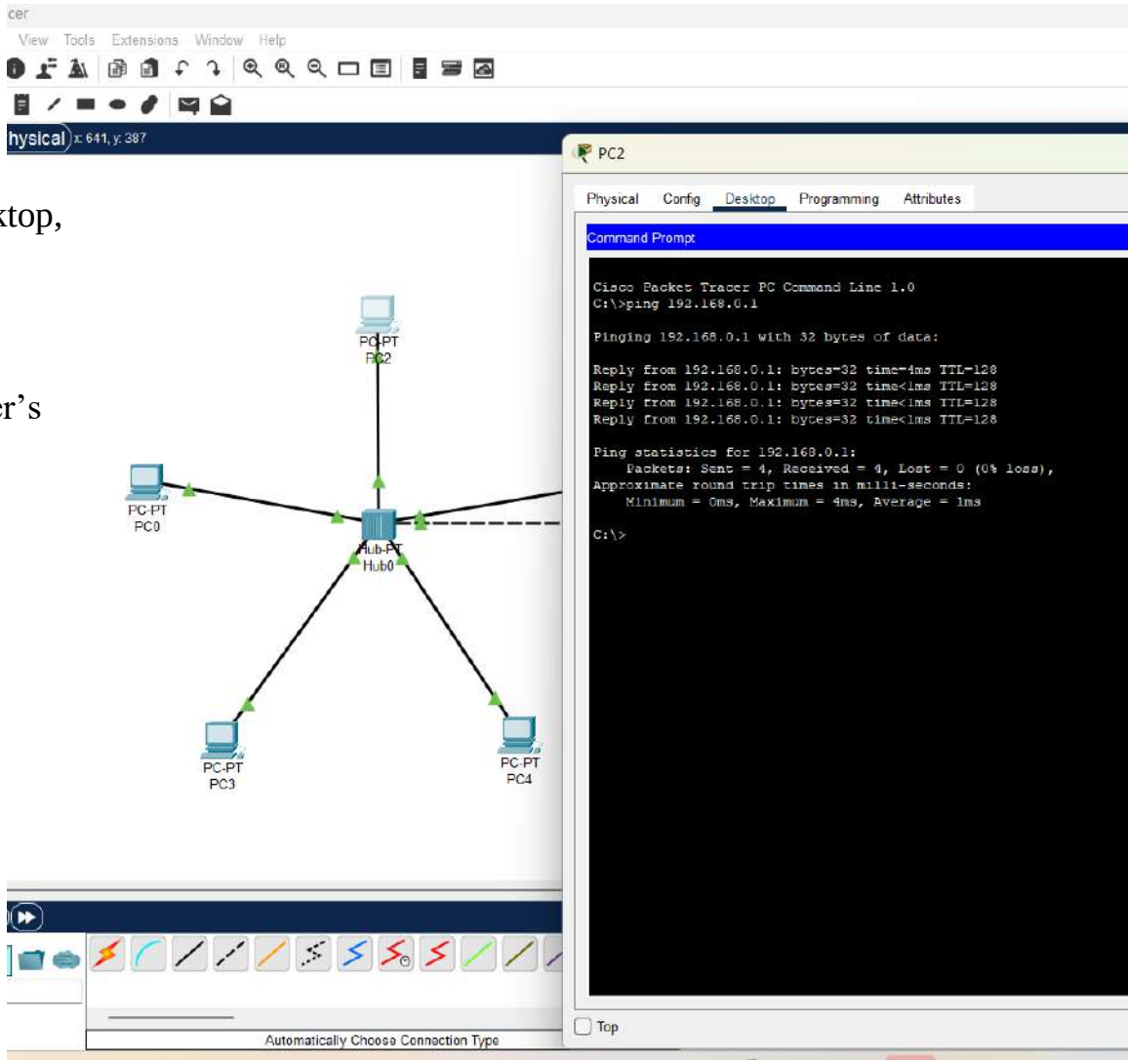


Figure 5

Simulation Video: https://drive.google.com/file/

Massage Passing in Different Network

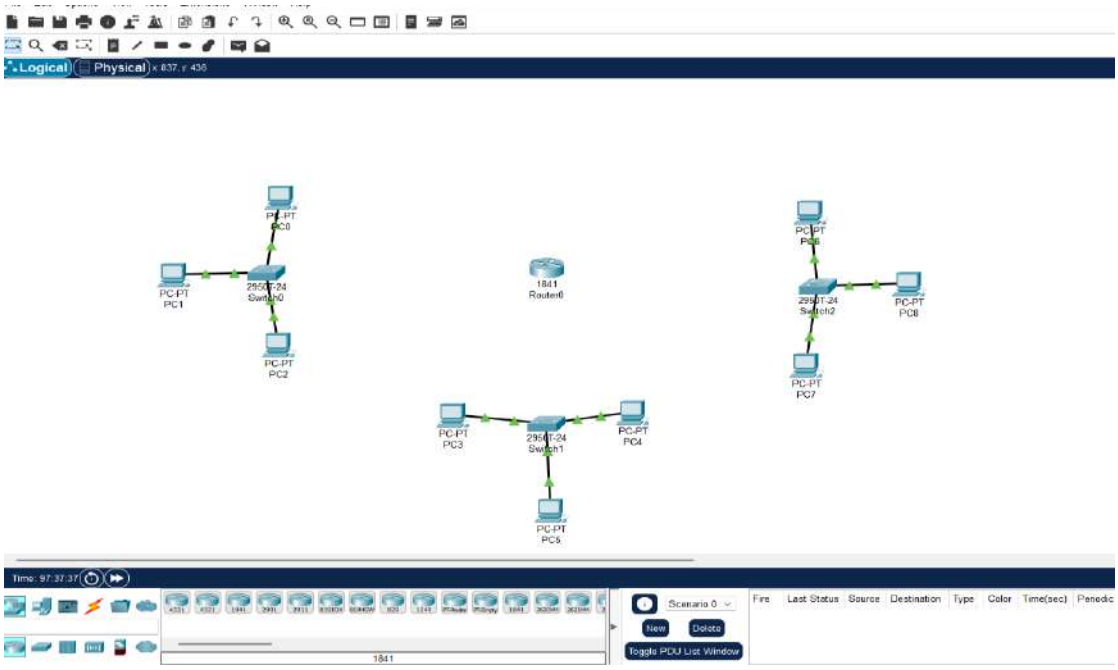
Step 1: Create 3 Different networks,

1. Branch 1:
   Branch 1 includes 3 PC. IP address of the PC respectively.
   i.PC1:192.168.10.2
   ii.PC2:192.168.10.3
   iii.PC3:192.168.10.4
   The Gigabit ethernet IP address is: 192.168.10.1
2. Branch 2:
   Branch 2 includes 3 PC. IP address of the PC respectively.
   i.PC1:192.168.20.2
   ii.PC2:192.168.20.3
   iii.PC3:192.168.20.4
   The Gigabit ethernet IP address is: 192.168.20.1

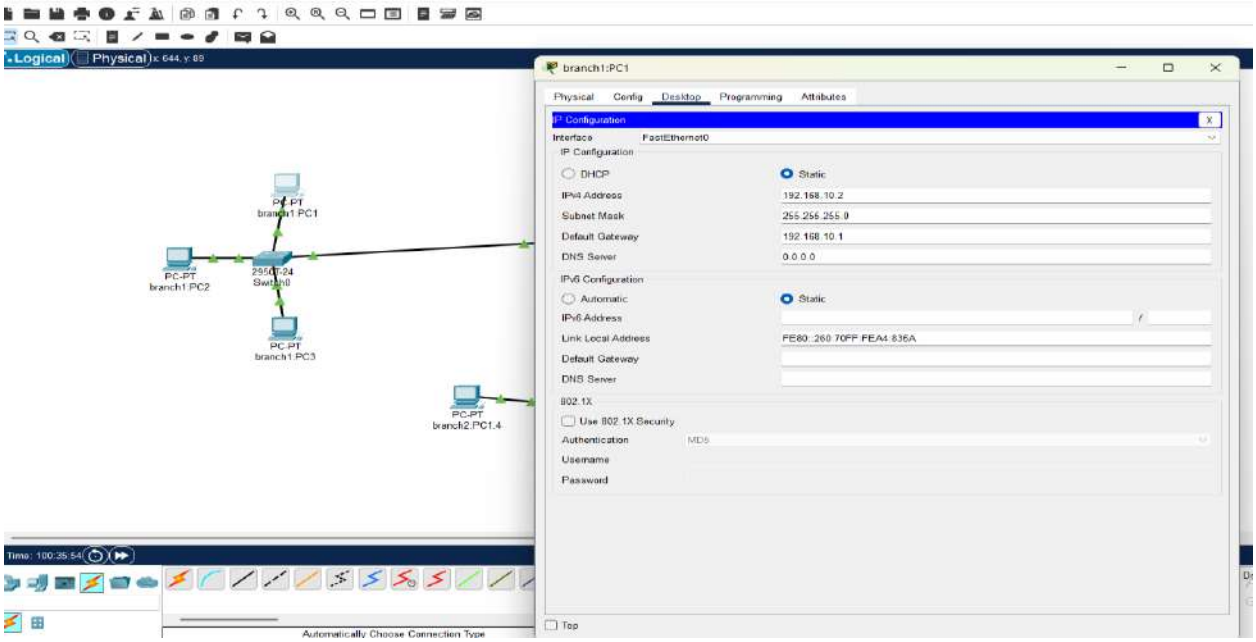
3. Branch 3:
   Branch 1 includes 3 PC. IP address of the PC respectively.
   i.PC1:192.168.30.2
   ii.PC2:192.168.30.3
   iii.PC3:192.168.30.4
   The Gigabit ethernet IP address is: 192.168.30.1

In every branch, all PC are connected to a switch.

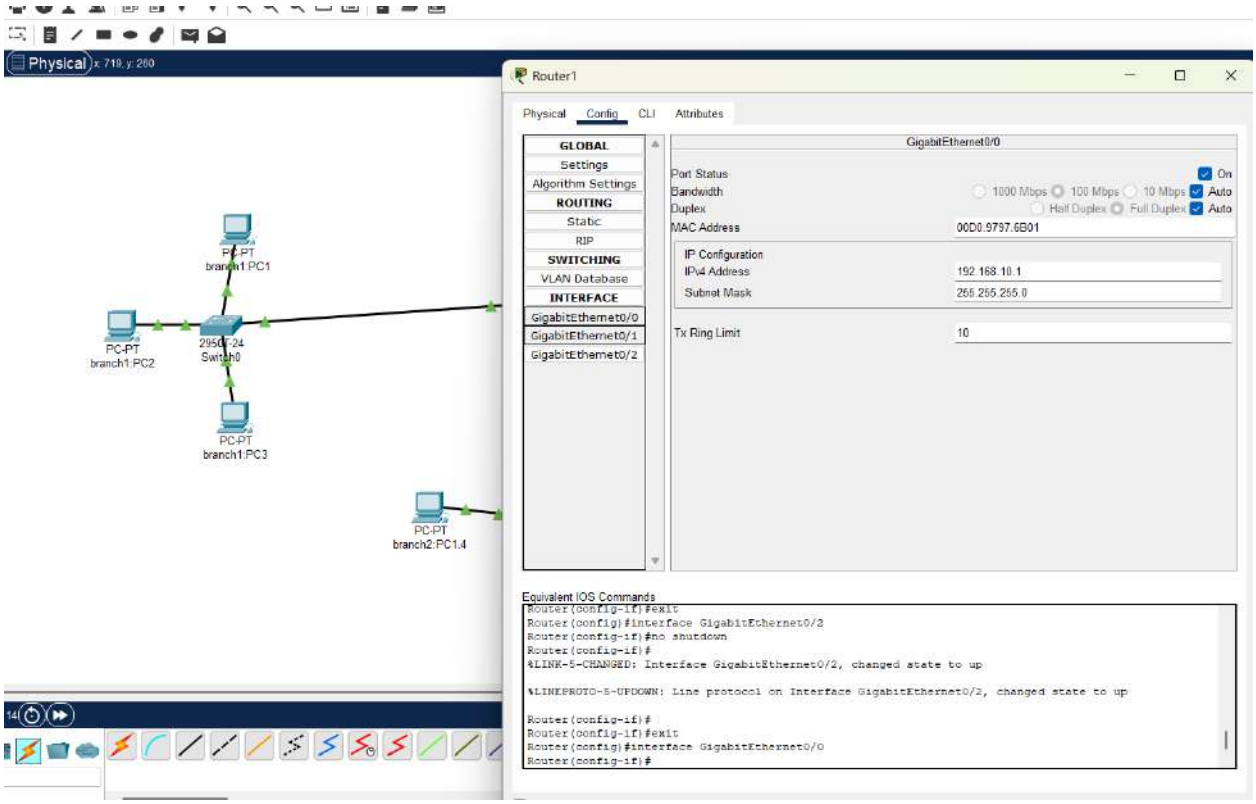
And all branches are connected to a 2911 router



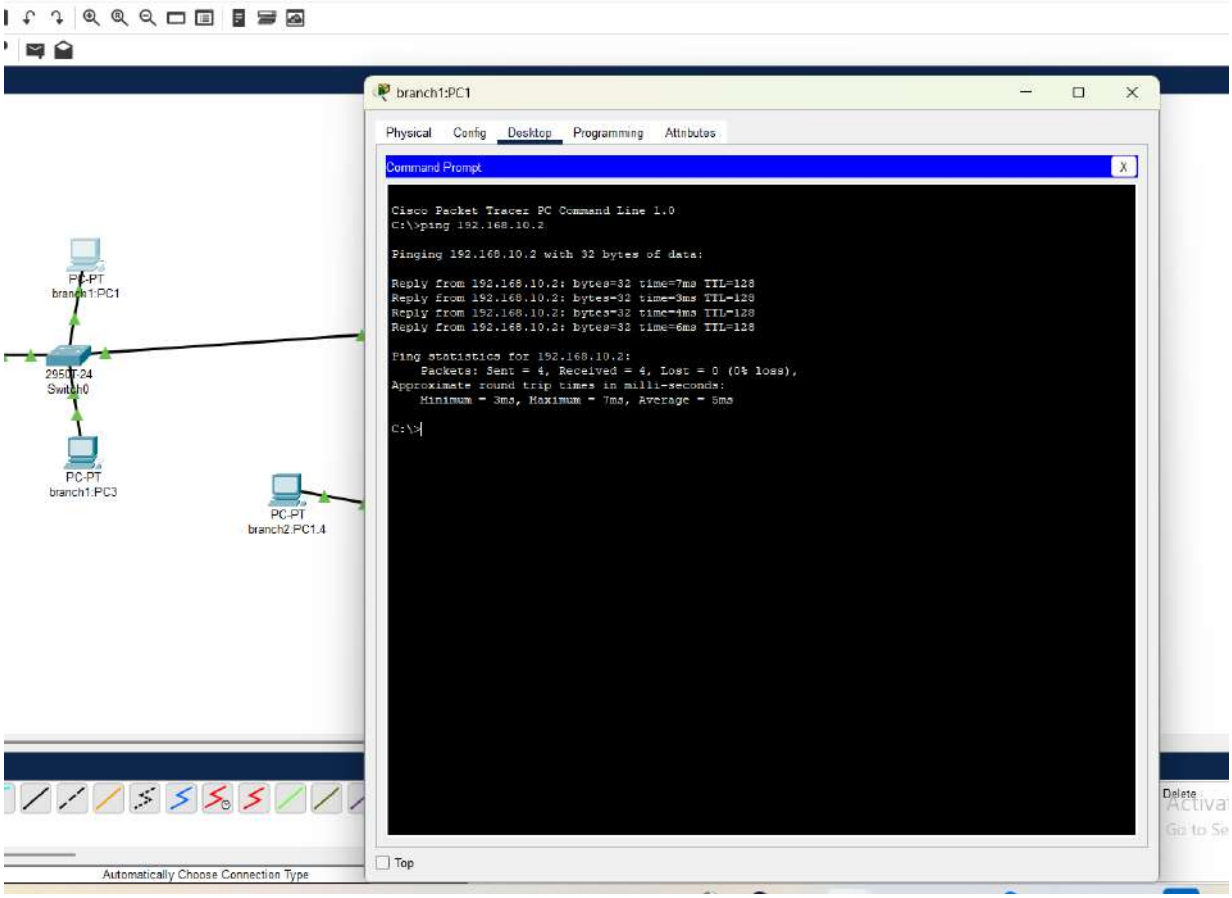
Step 2: Set the network IP address and the default gateway.



Step 3: Set the Gateway IP address and switch on the router.



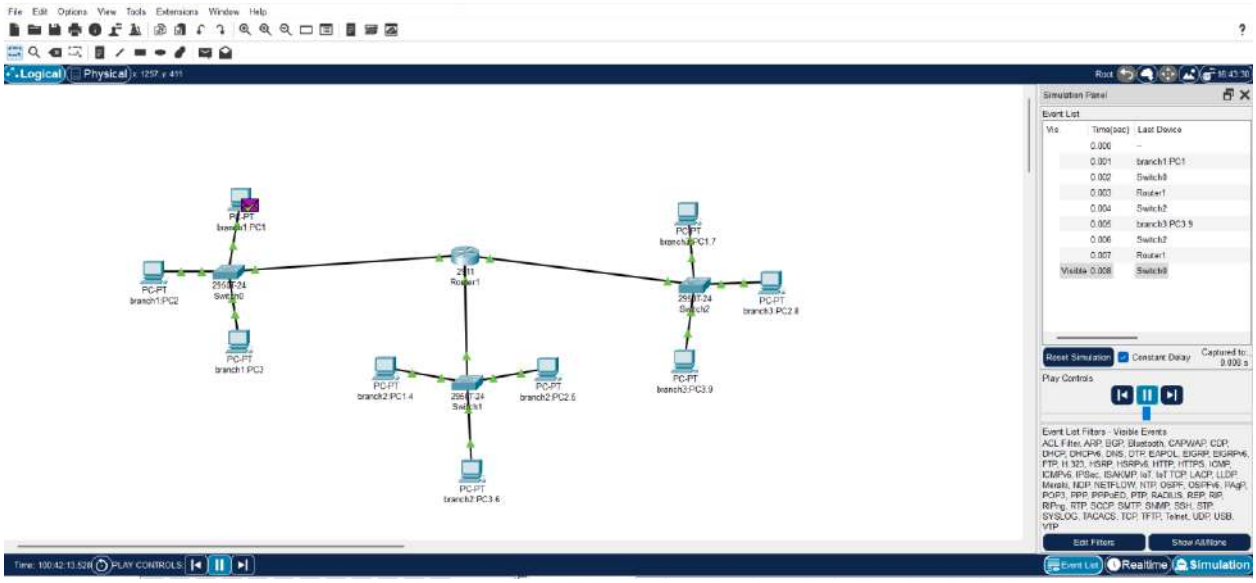
Step 4: Check Ping and run. Ping runs successfully



Step 5: Check message passing. Massage passing successfully.

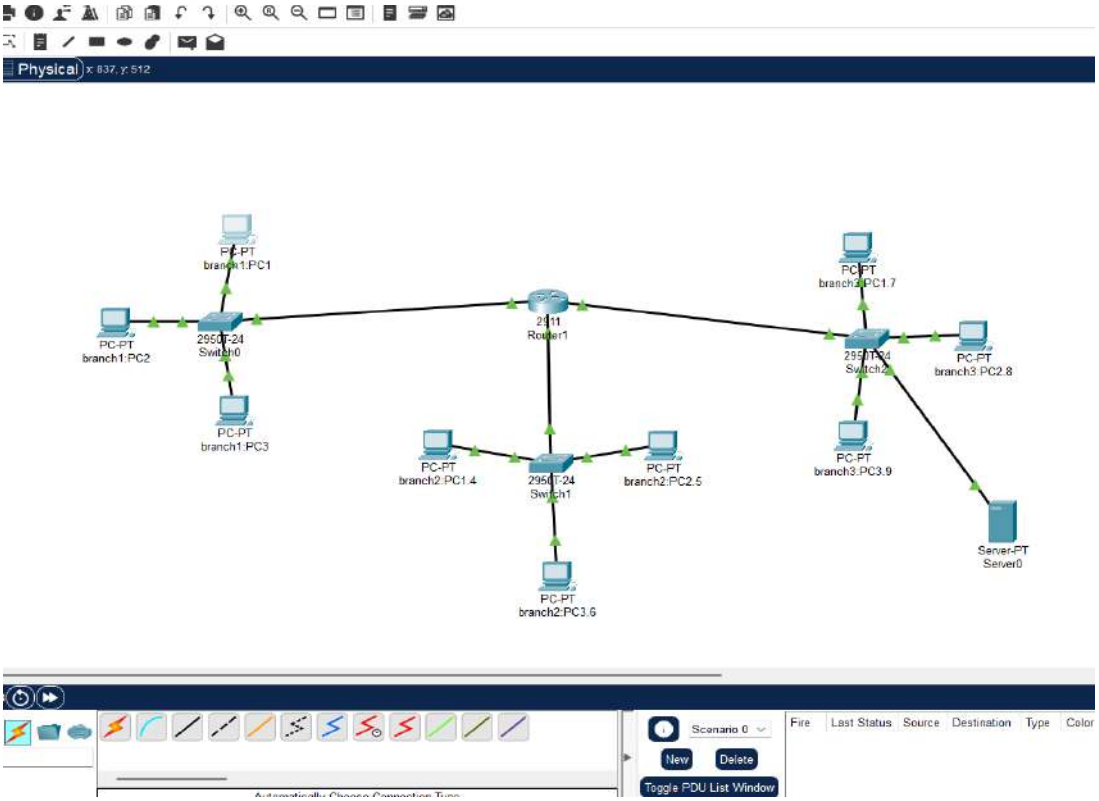
1. Message passing between Branch, PC 1 to Branch 3, PC 9.
2. First of all, the message will go from PC1 to Switch0 of branch 1.
3. Then the message will be sent from switch0 to router0.
4. Then the message will sent from router0 to switch2
5. Then the message will sent from switch2 to PC9
6. Then PC9 will receive the message
7. Then PC9 sent back a message
8. Then the message will back from PC9 to switch2
9. Then the message will back from switch2 to router0
10. Then the message will back from router0 to switch0
11. Then the message will back from switch0 to PC1
12. Then PC1 will receive the message.

Massage Passing Video Link: Massage passing video



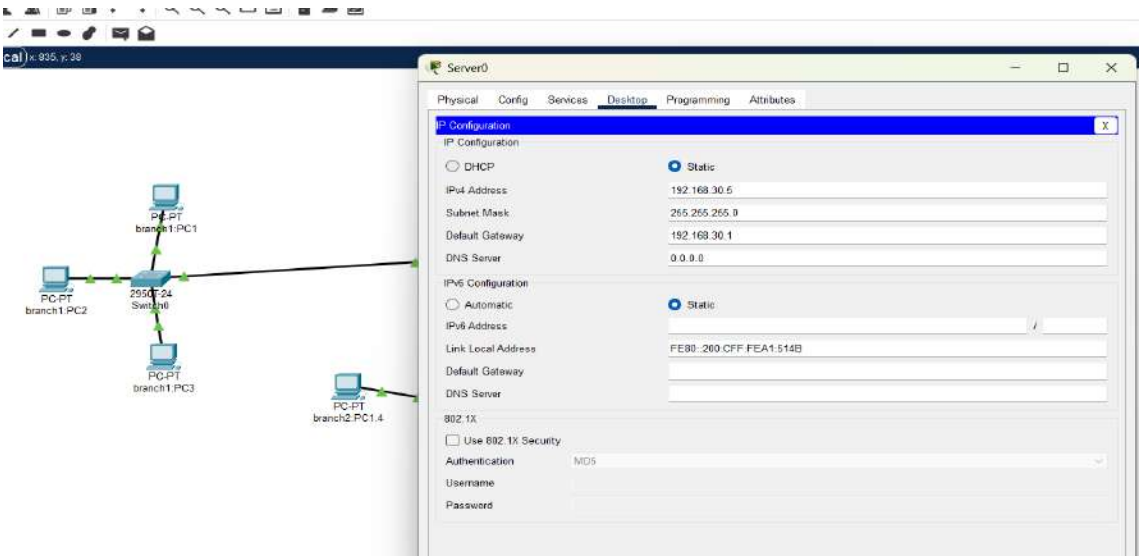
HTTP / Web server configuration in Cisco packet tracer

Step 1: Connect a server to the network3(Branch3) named Server0

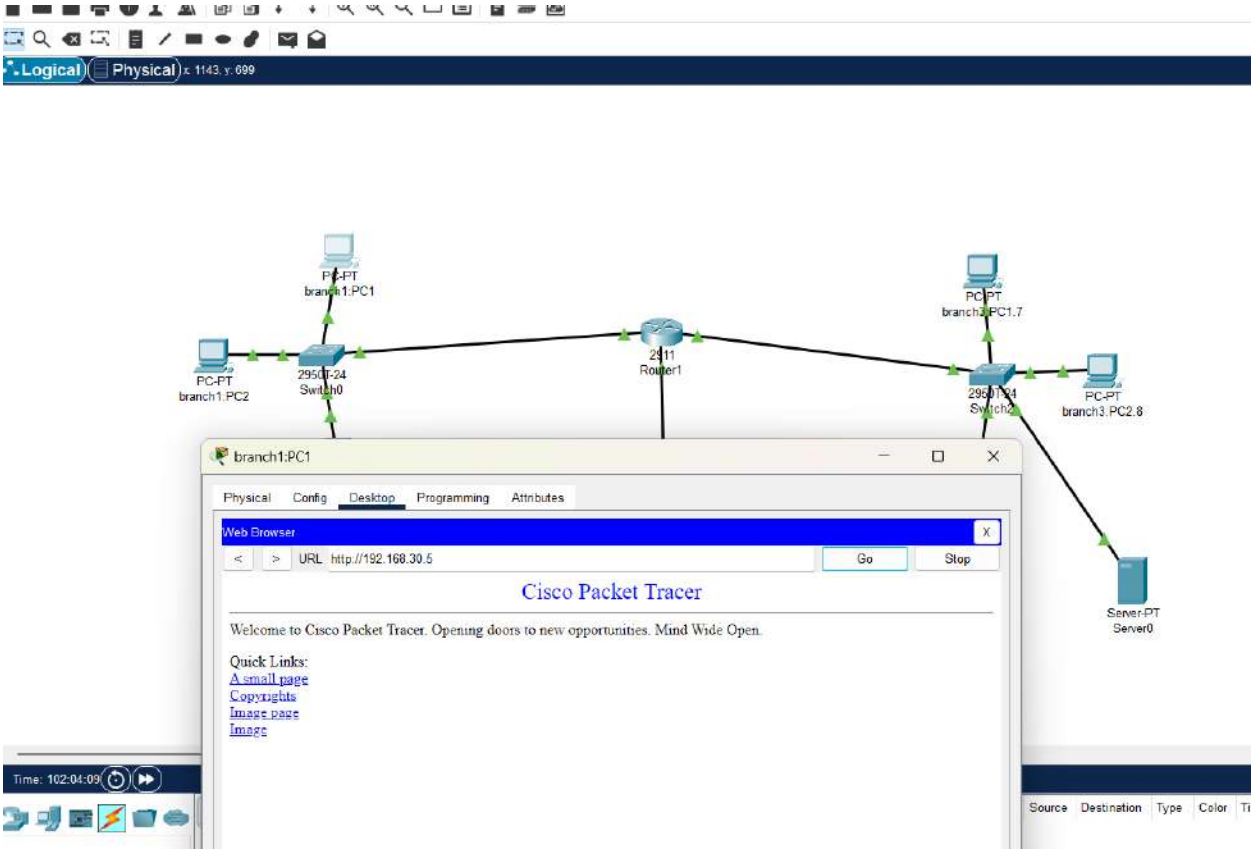


Step 2: Server configuration,

1. Set IP, and Gateway IP address

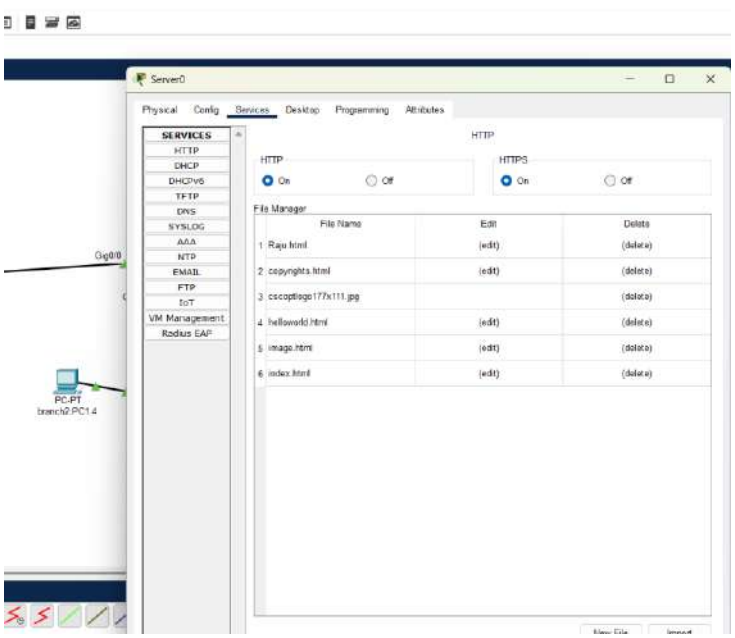


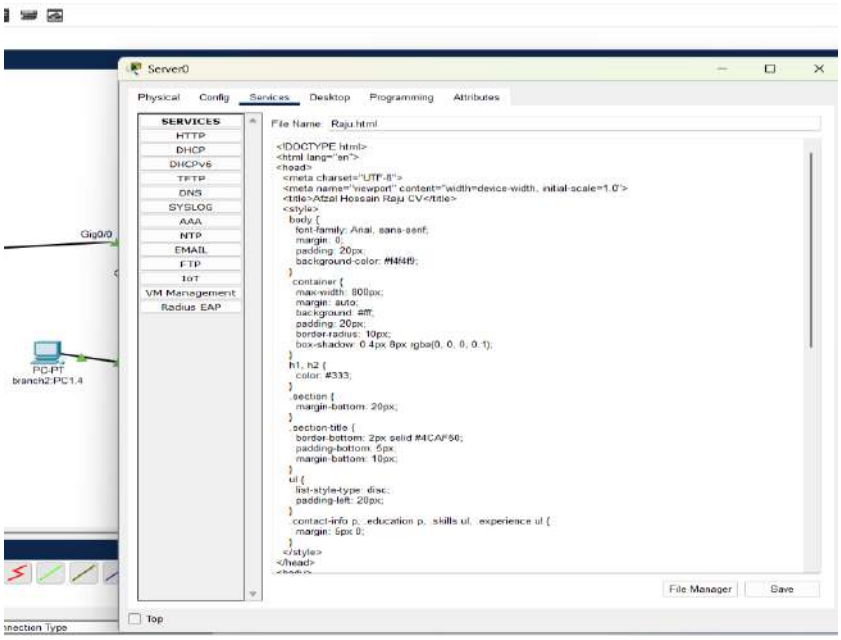
Step 3: Primary access check, in this area, we can check whether the server is accessible or not from another network. Here access the server from Branch1(Network 1) PC1. And server access successfully.

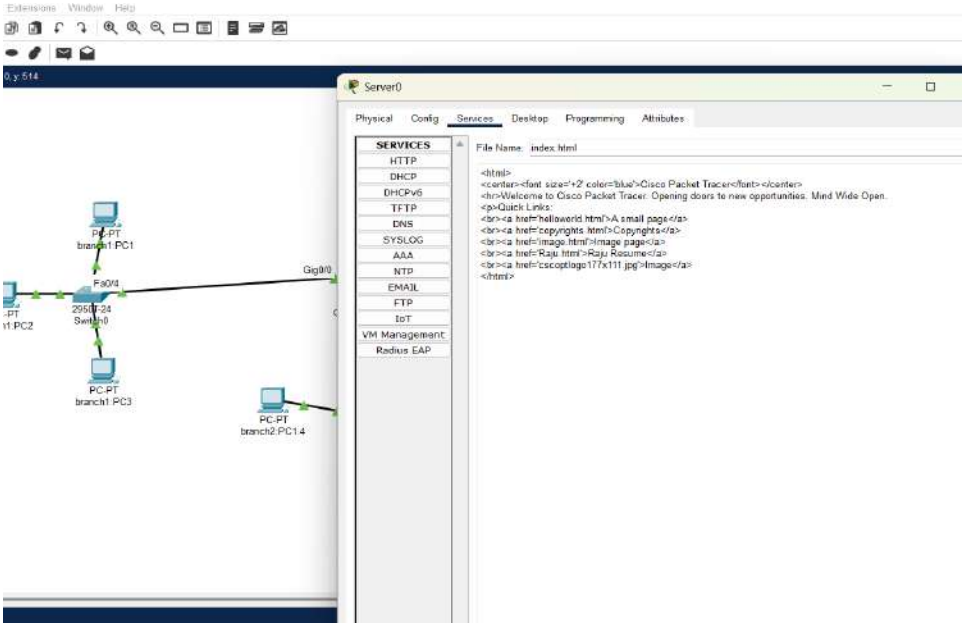


Step 4: Edit server,

1. Add a new file name Raju.html which shows Raju's Resume
2. Go to the file and build a resume as a Software Engineering Student
3. Go to the index file and edit to include the new file Raju.html otherwise the page will not show on the web page.

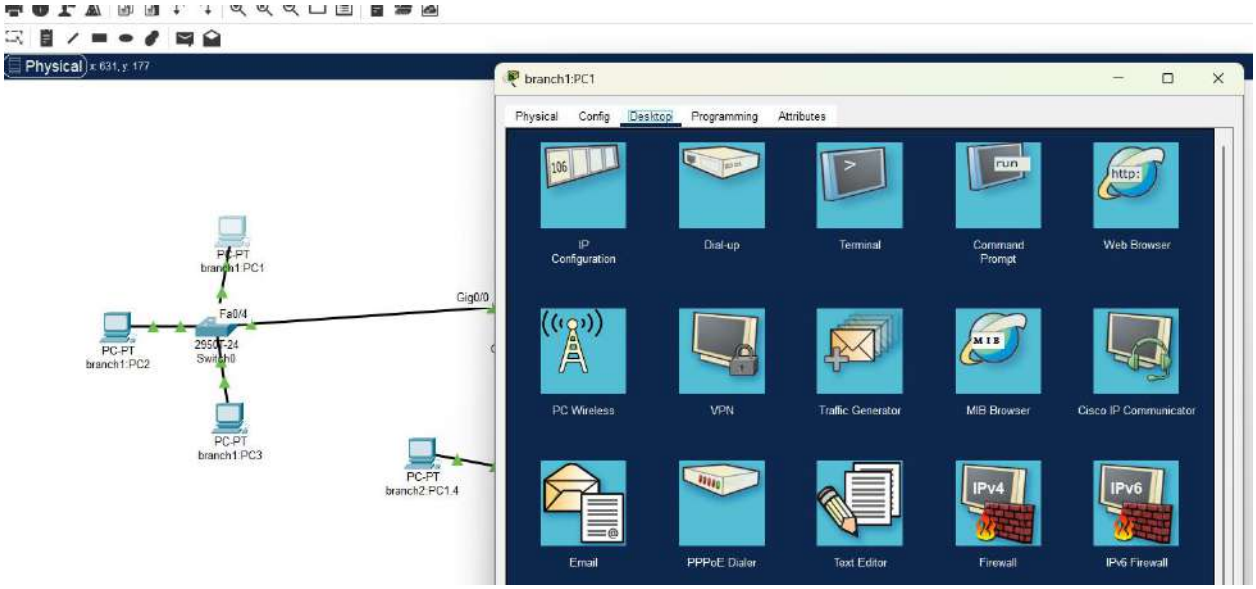




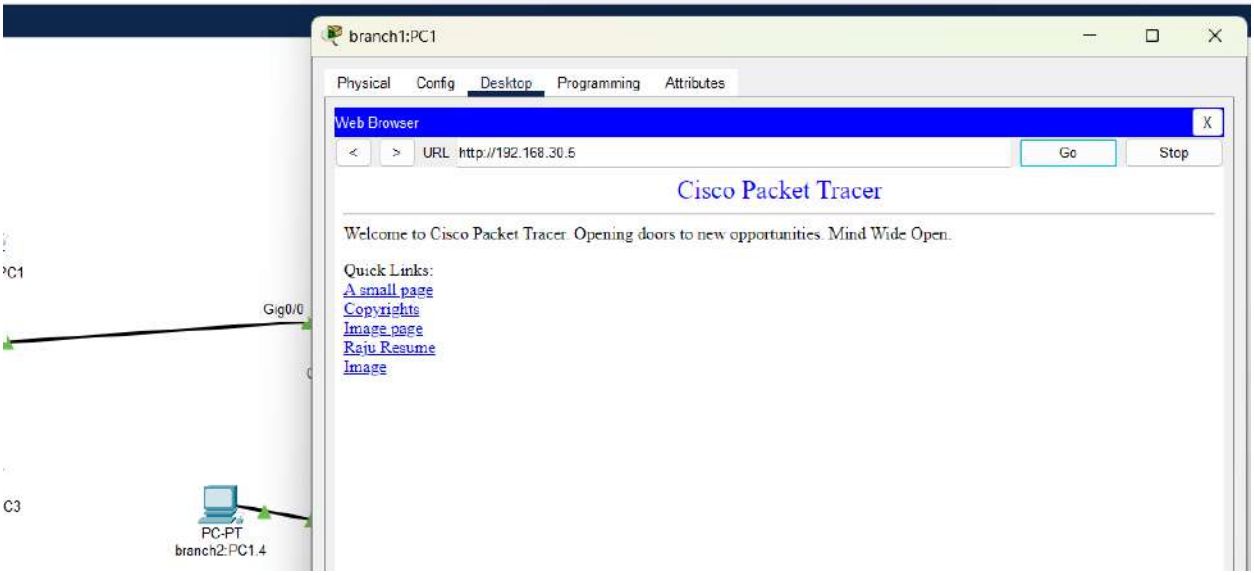


Step 5: In this step, we will finally run and check the access of the server

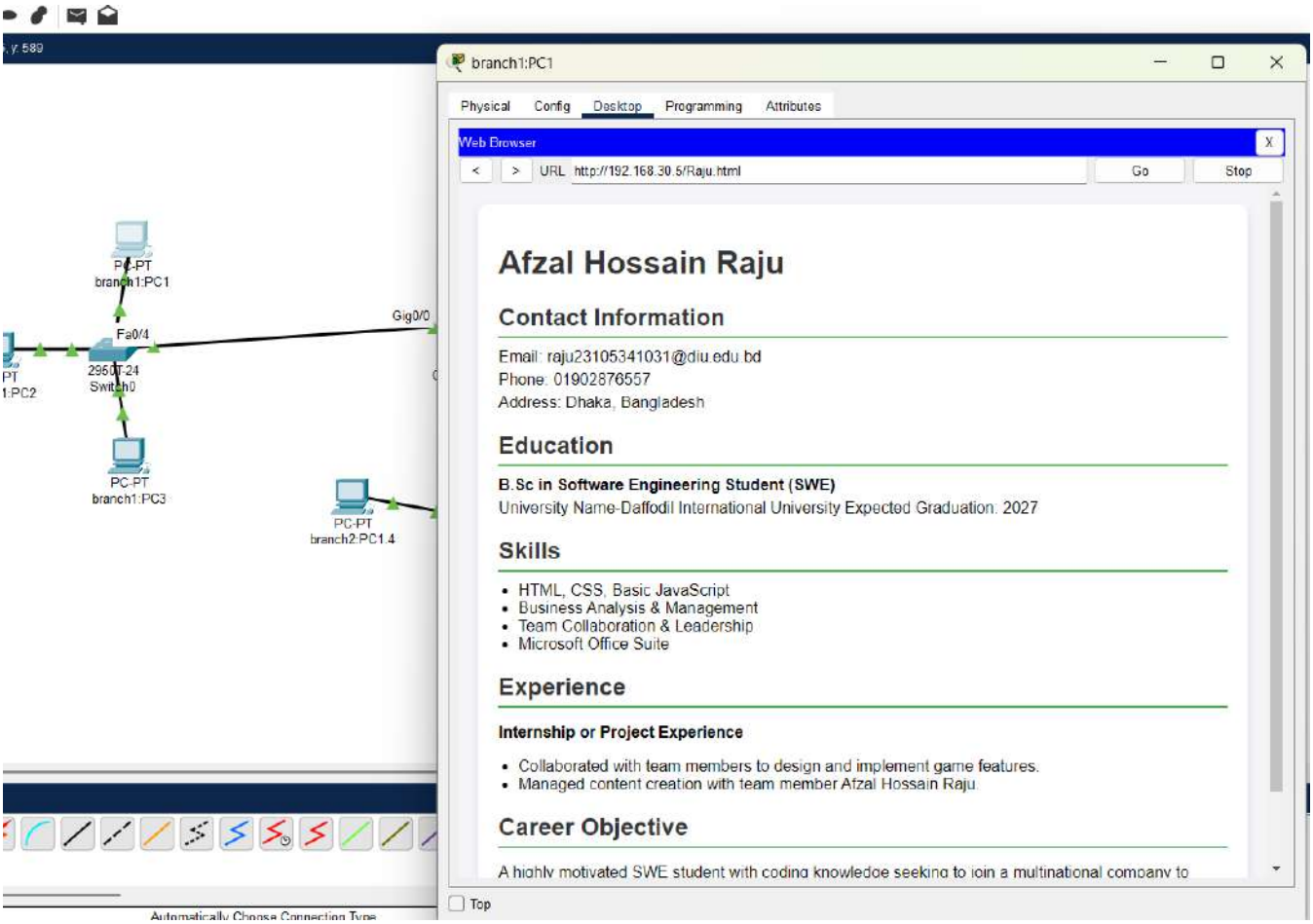
1. First, we must go to a random PC of any network from the connected network. I will choose PC1 of Branch1(Network1)
   And go to Web Browser.



2. Provide the server IP address and click to Go. Then the server will open then we will go to the new file we made named Raju Resume.

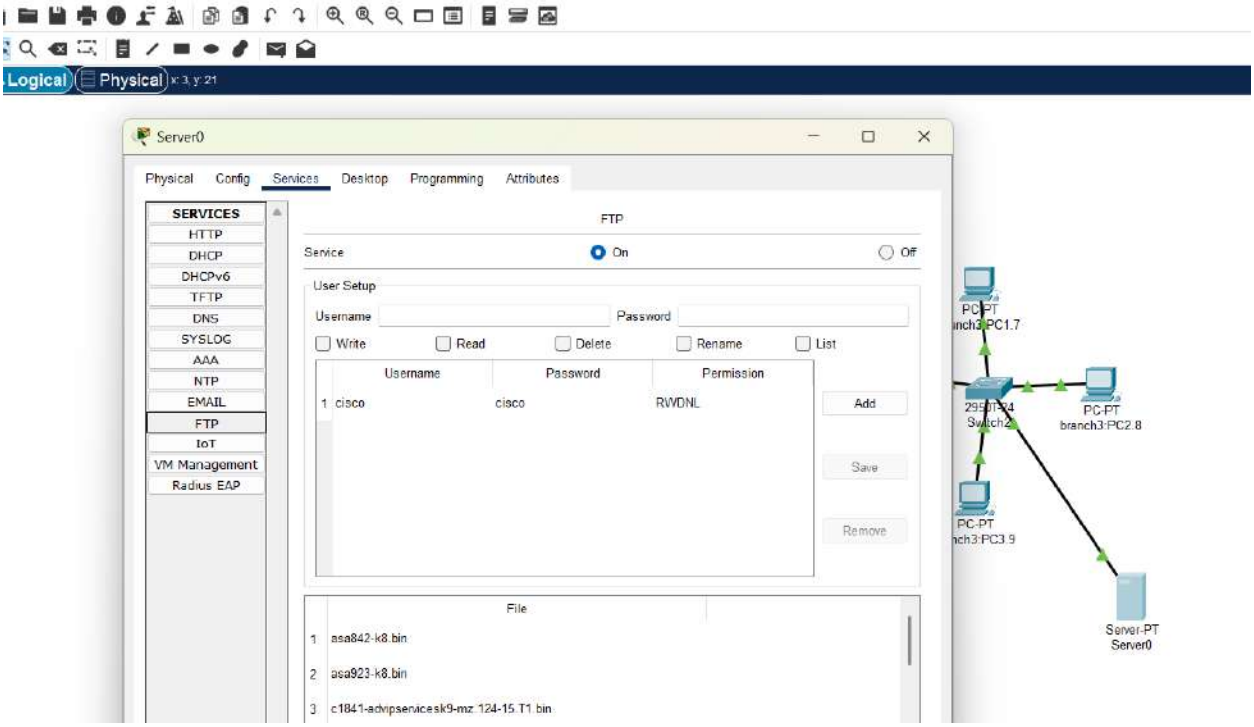


3. When we click the Link Raju Resume. Then the resume of raju will be opened in short Raju.html file will be open.



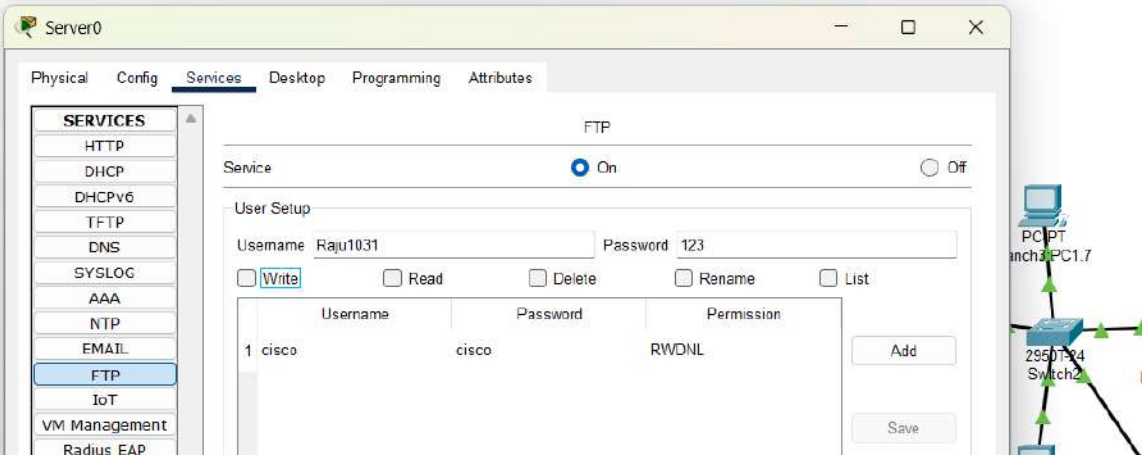
FTP server configuration in cisco packet tracer

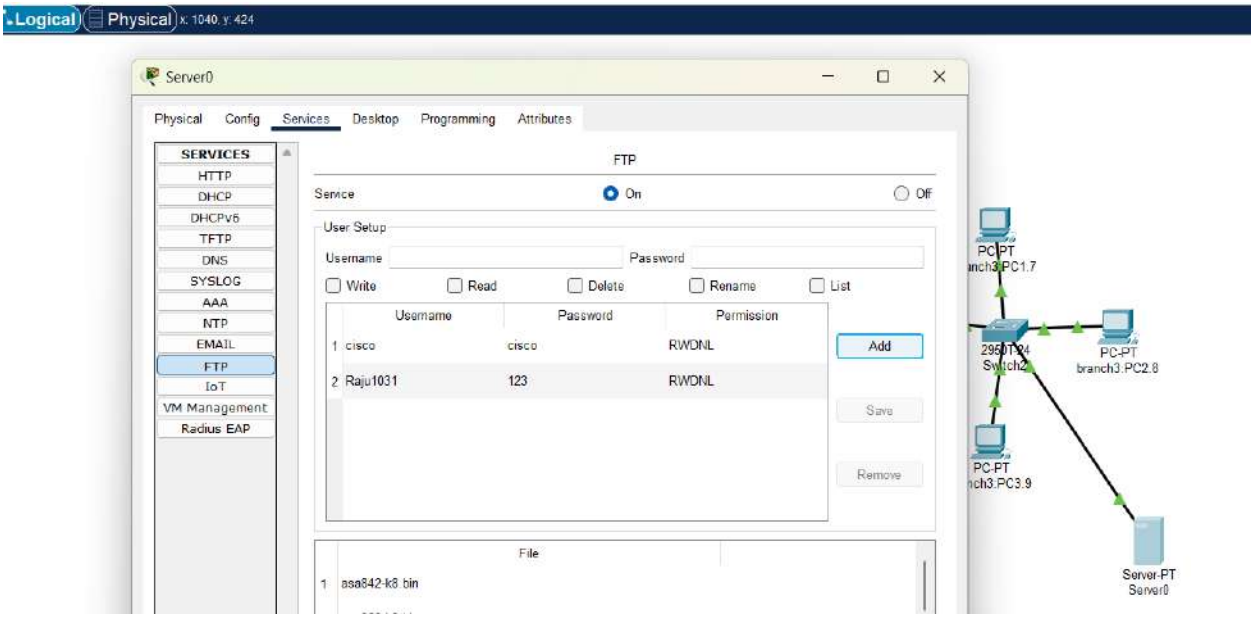
Step 1: Follow the Services of FTP Server.



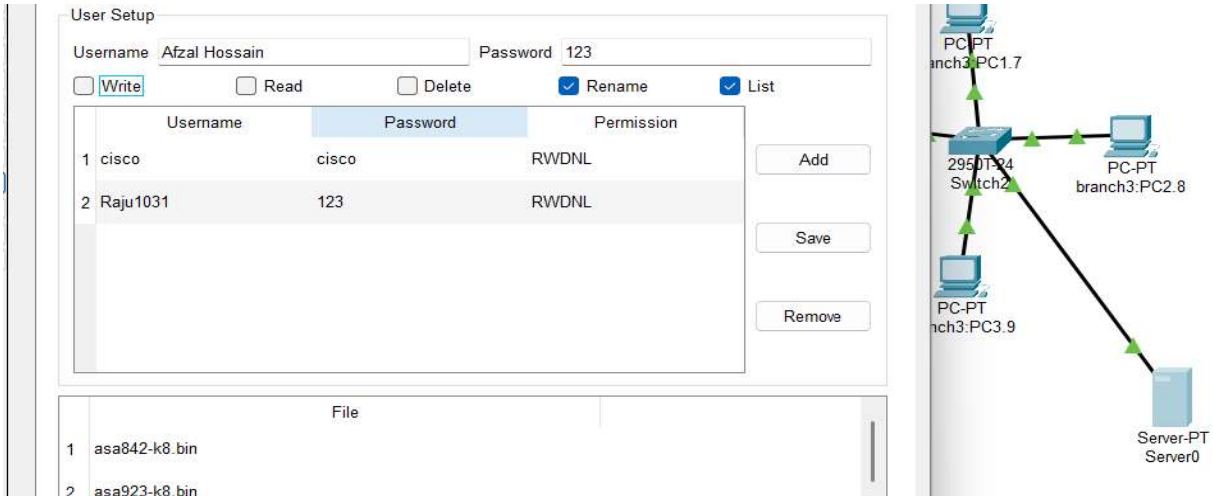
Step 2: Create more than one Username and Password

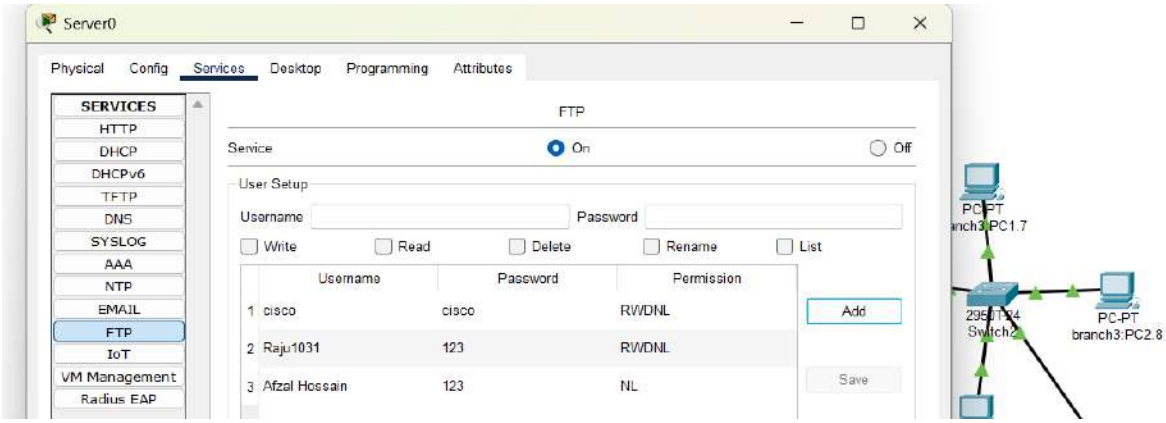
i. Create the First username: Raju1031 and Password:123 then save the user.





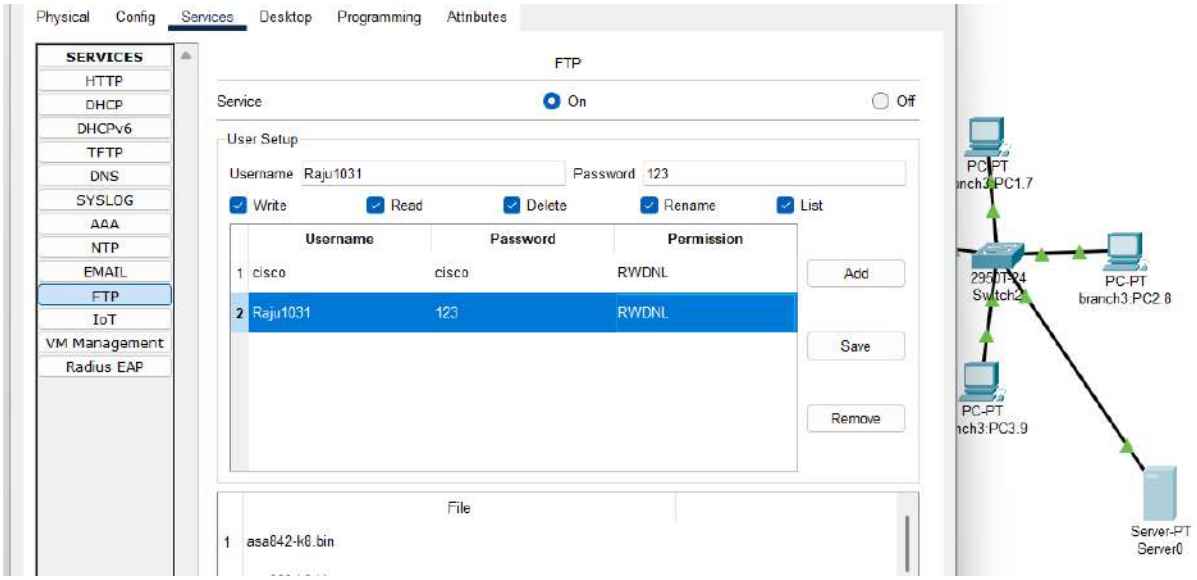
ii. Create the Second username: Afzal Hossain and Password:123 then save the user.



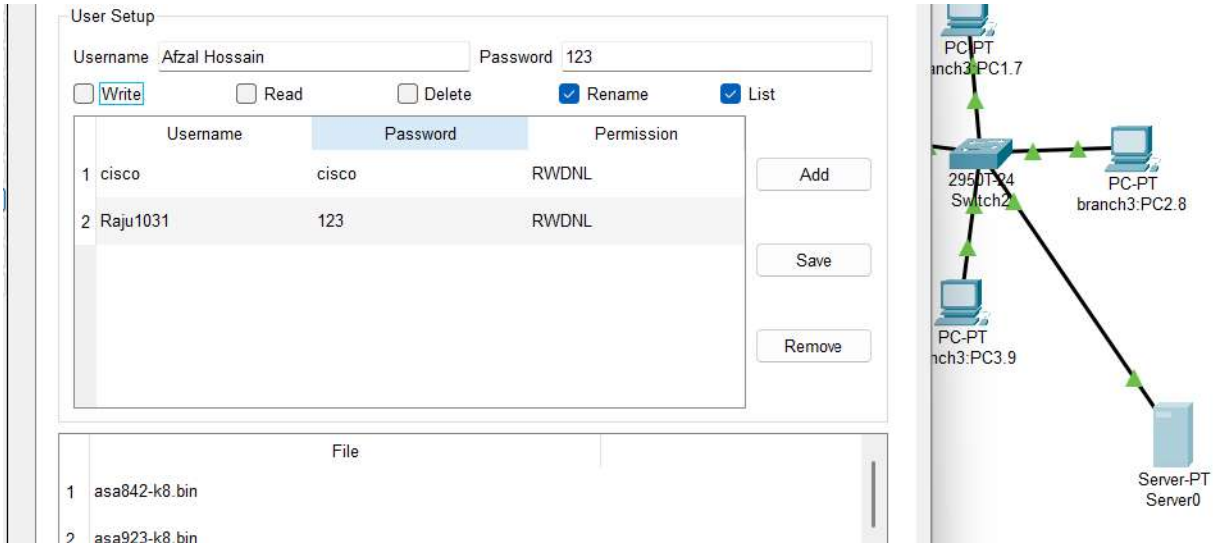


Step 3: Access Permission to different users,

i. Allow username: Raju1031 Password:123 for all access including write, Read, Delete, Rename, List



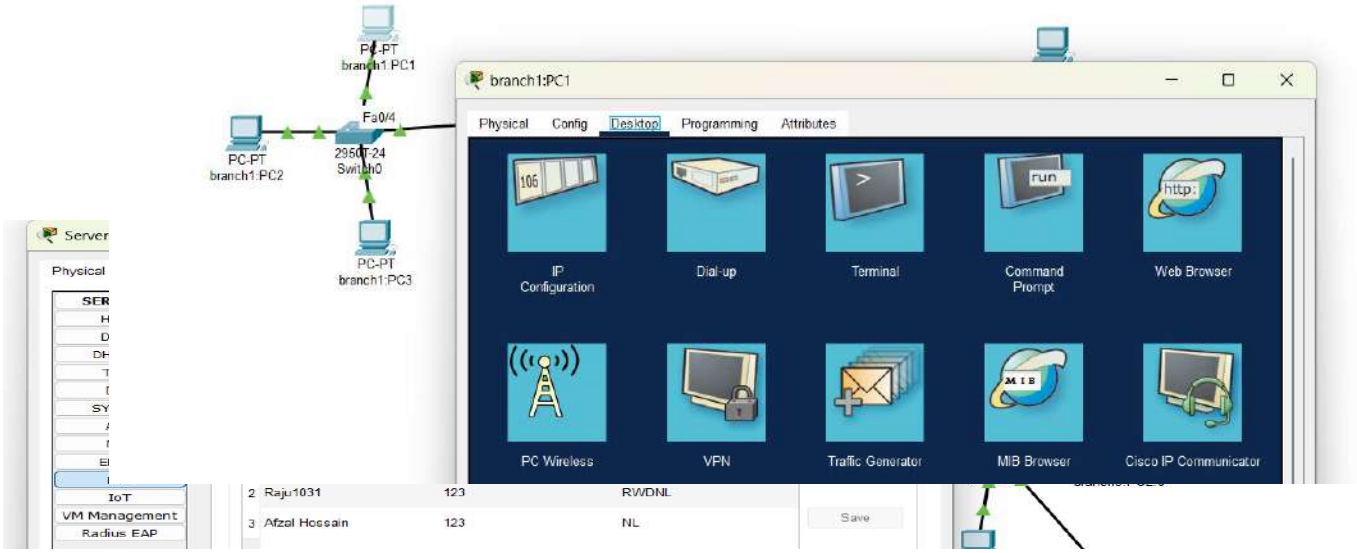
ii. Allow username: Afzal Hossain password:123 for Rename and List only.

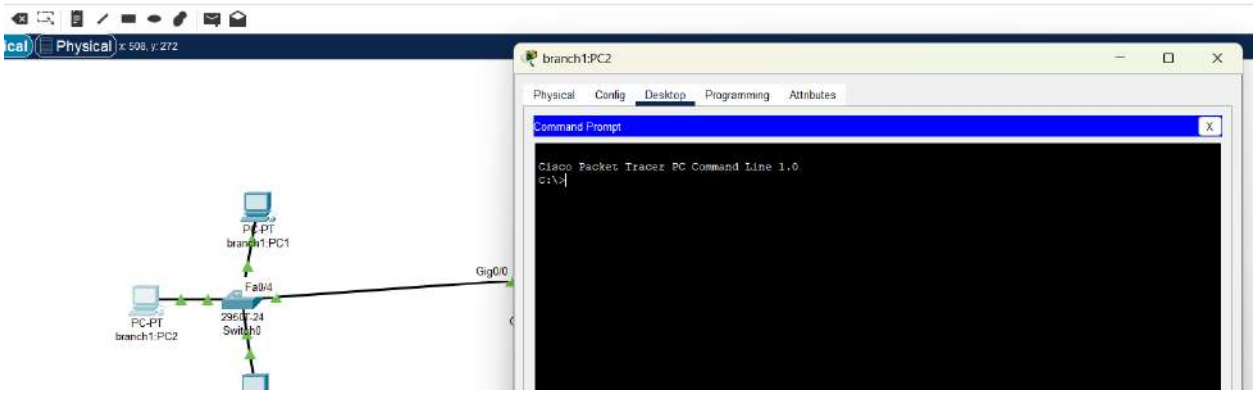


iii. Both Username and password are saved successfully.

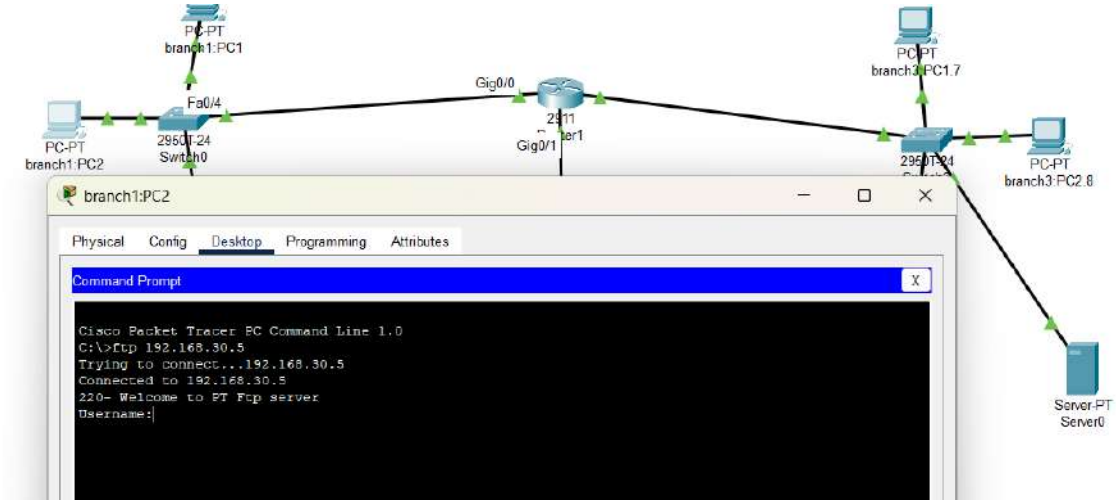
Step 4: Check the Server accessibility of different users based on authorization by creating, uploading, downloading, deleting, and rename the files on Server.

1. Go to a random PC of any network added by Router 2911. I will choose PC3. Then Open the Command Prompt.

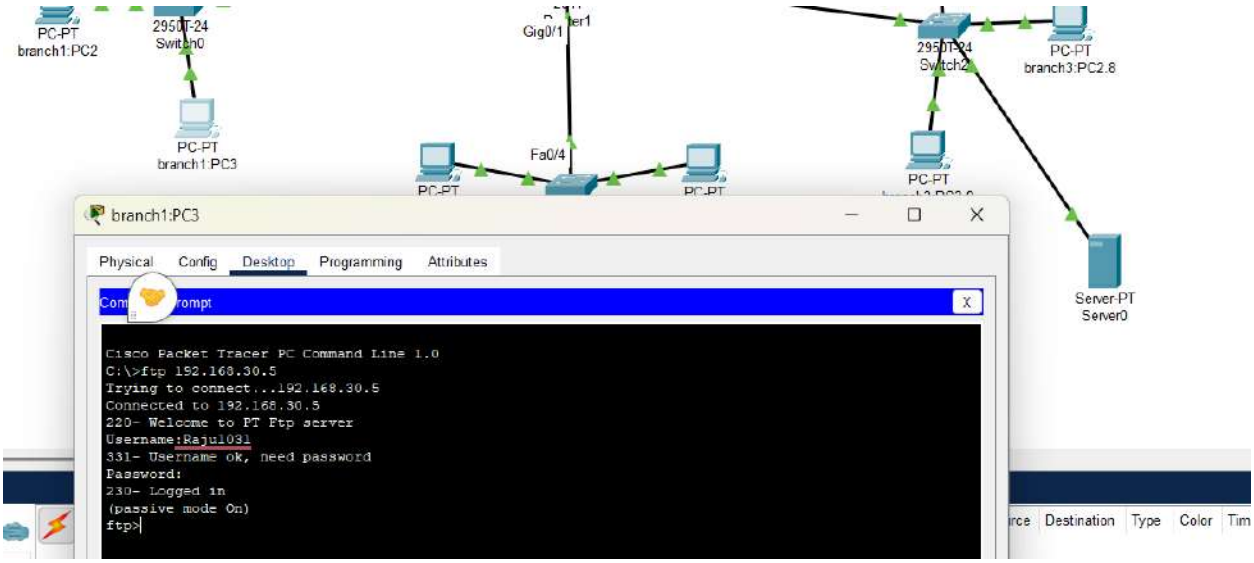




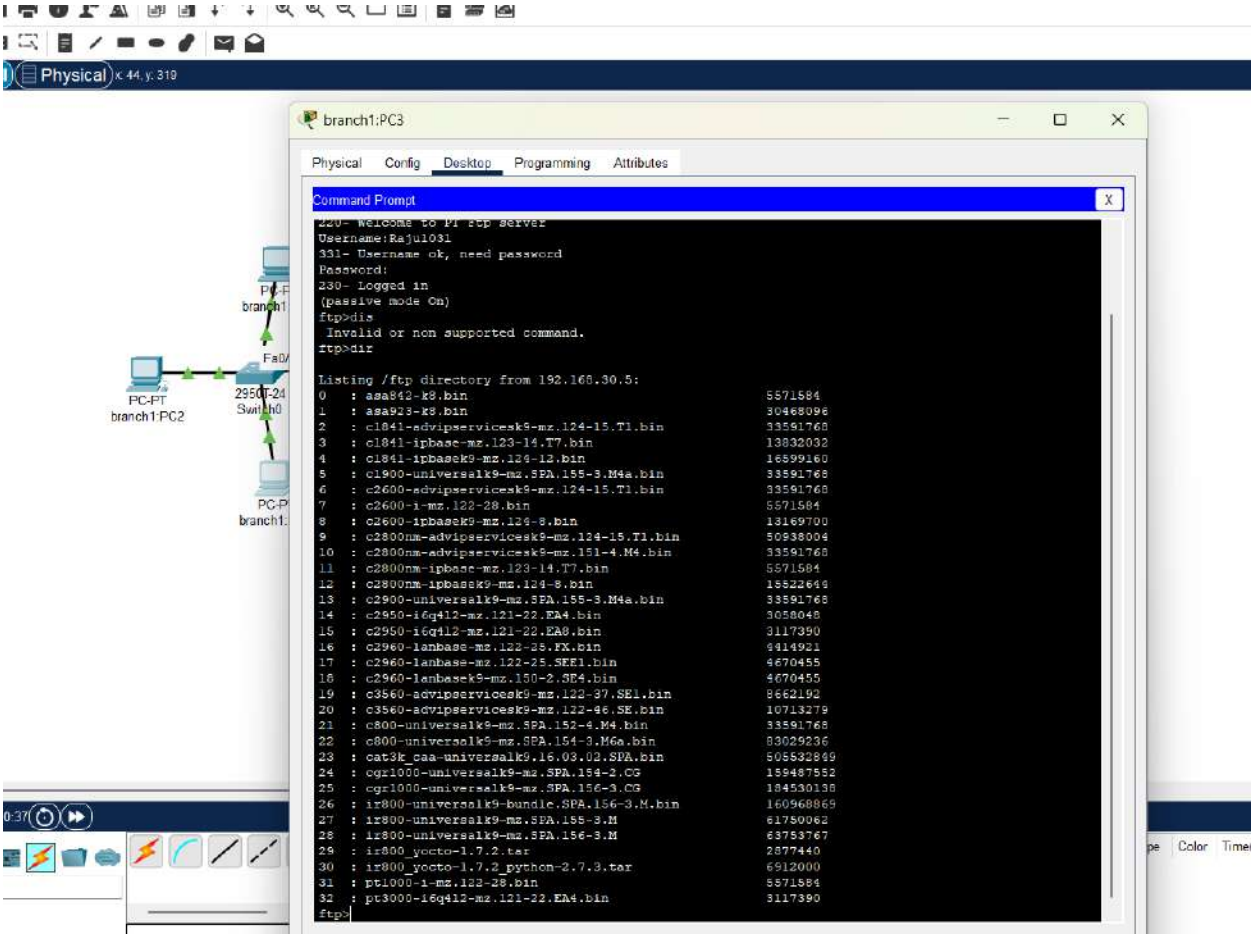
2. Write the IP of server on the command prompt for access to FTP server from PC3 of Branch1 ftp 192.168.30.5 then enter.
   Access FTP server successfully



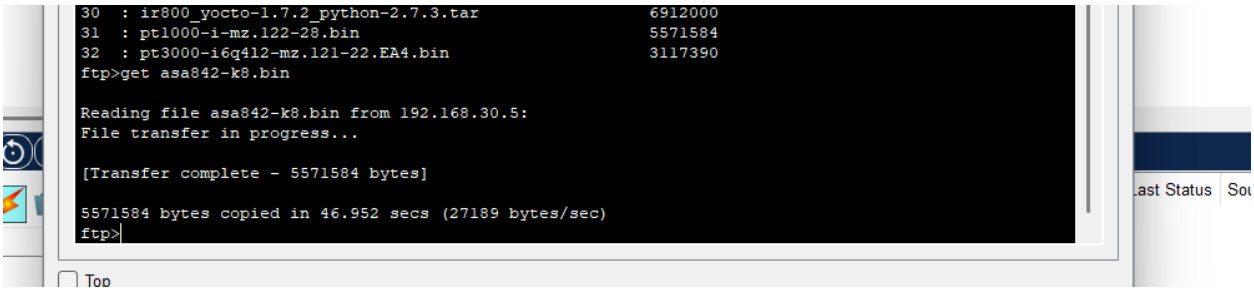
3. Write the username Raju1031 and password: 123 for login with Raju1031 and successfully login.



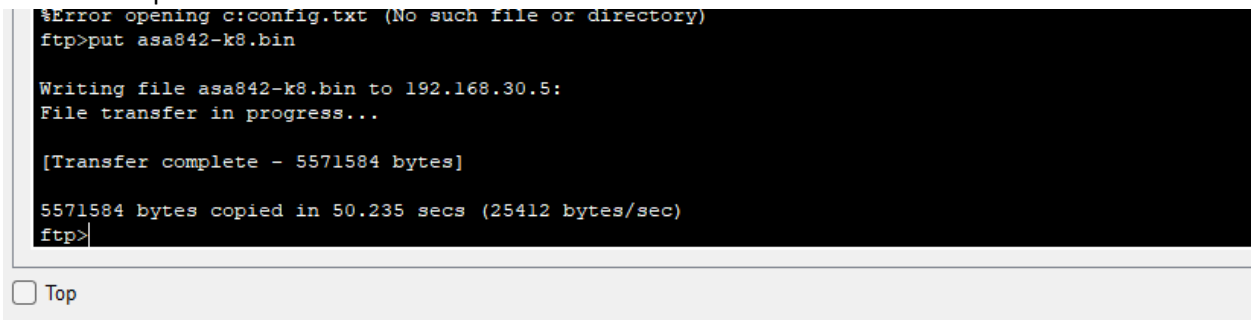
4. View list ,
   Command: dir



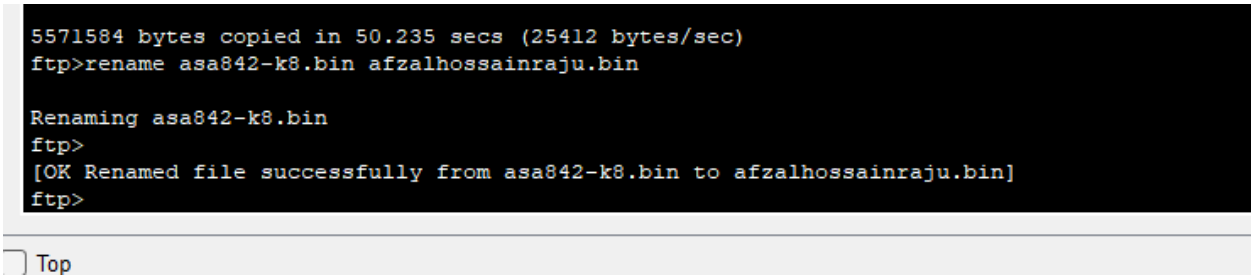
5. Read a file (Download from FTP Server)
   Command: “get asa842-k8.bin”



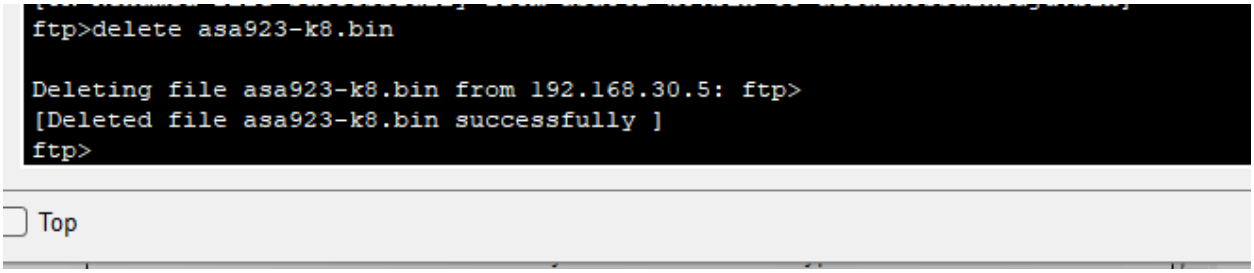
6. Write a file (Upload to FTP Server),
   Command: “put asa842-k8.bin”



7. Rename a file,
   Command: “rename asa842-k8.bin afzalhossainraju.bin”



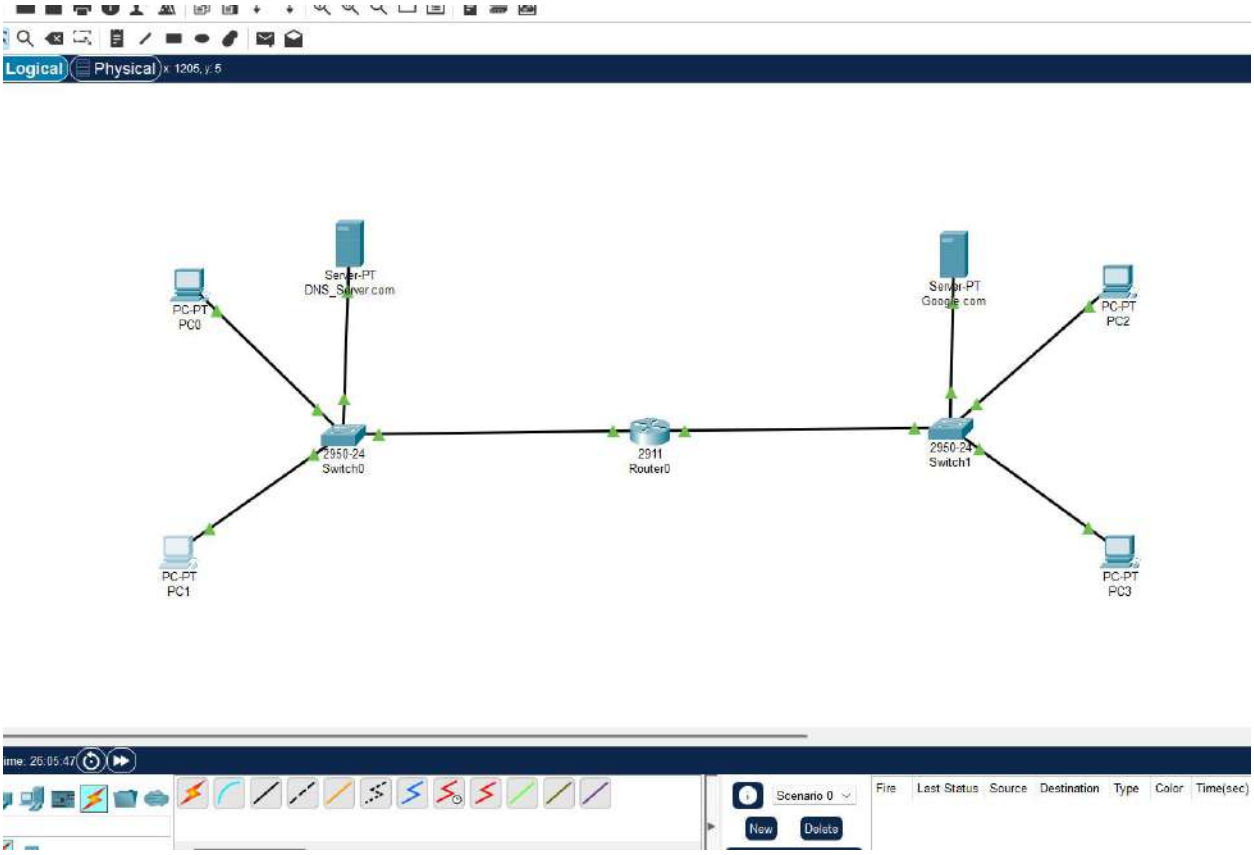
8. Delete a file,
   Command: “delete asa923-k9.bin”



Lab Report 5

Lab Task: DNS server configuration/implementation in Cisco Packet Tracer

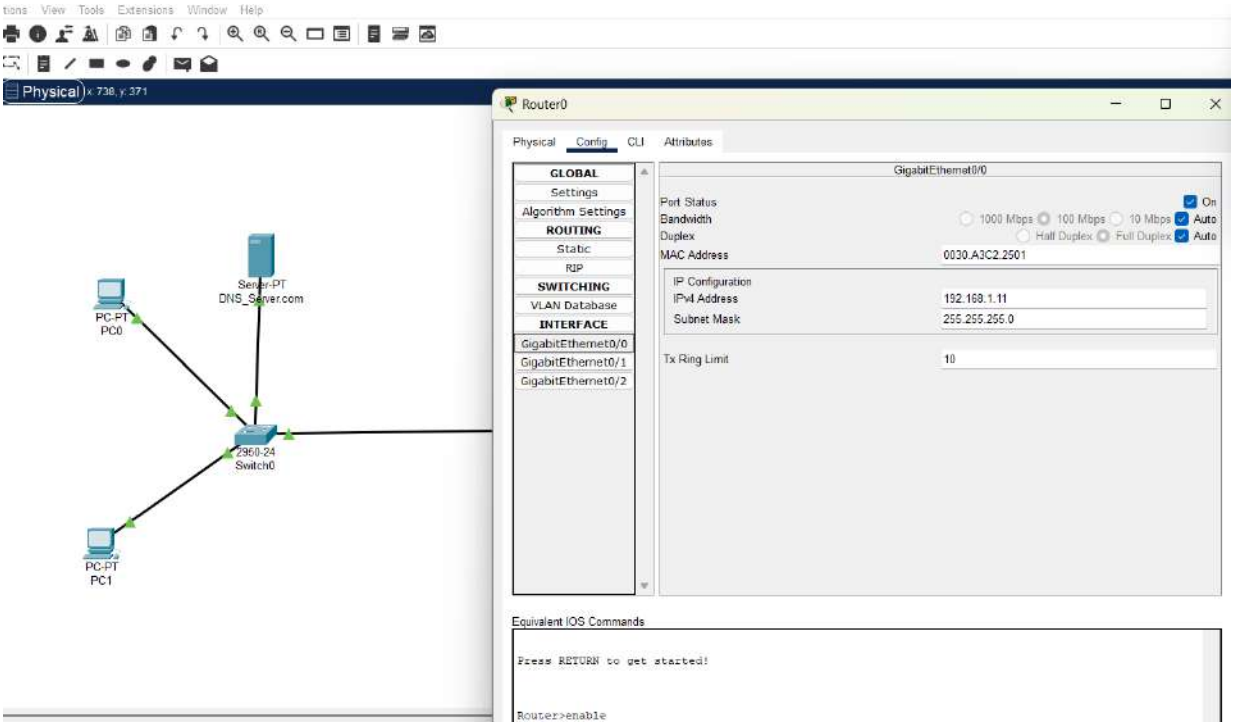
Step 1: First of all, we need to connect two networks every network includes some End Device and two servers in two different networks. (I have already shown the network connection building step by step)

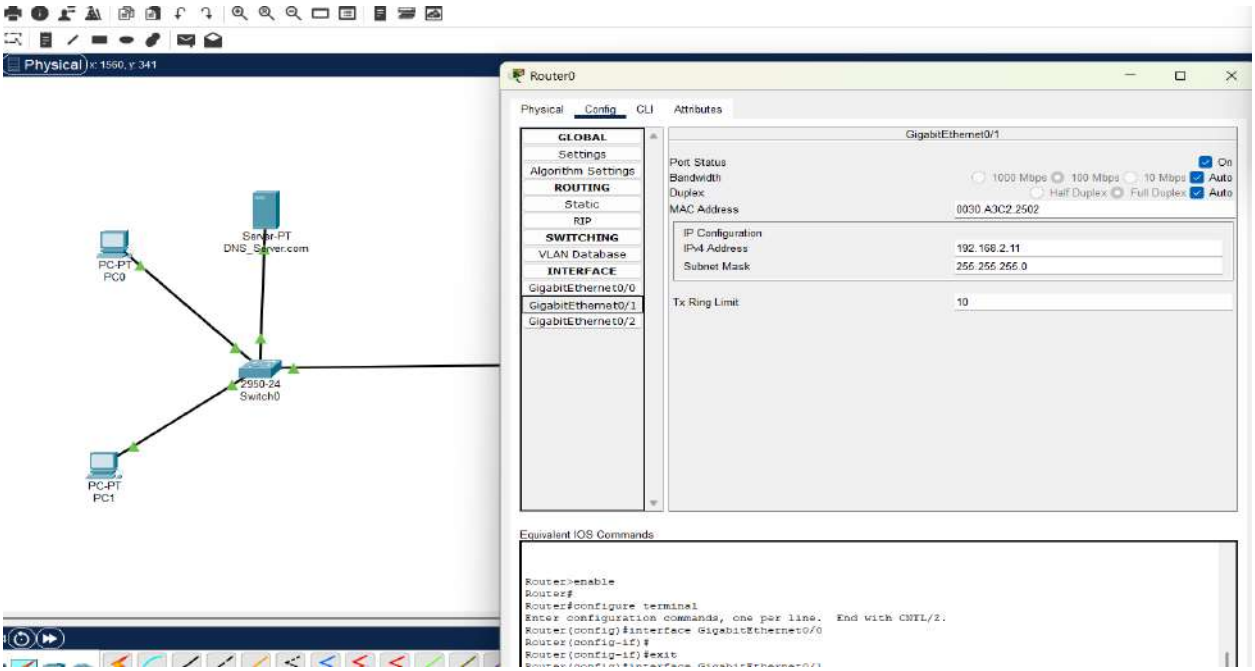


Step 2: Set gateway IP for two networks and switch ON.

Network 1 IP: 192.168.1.11

Network 2 IP: 192.168.2.11

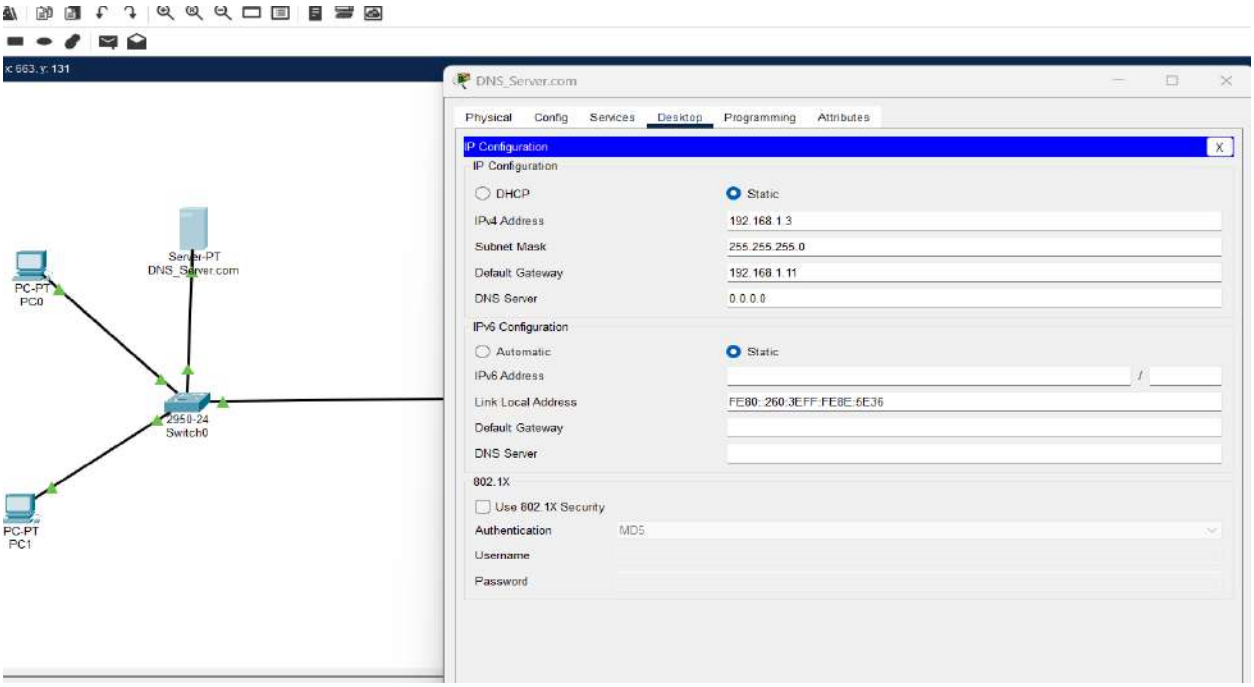




Step 3: Add the DNS server to 1st network and set the server's IP.

IP Address : 192.168.1.3

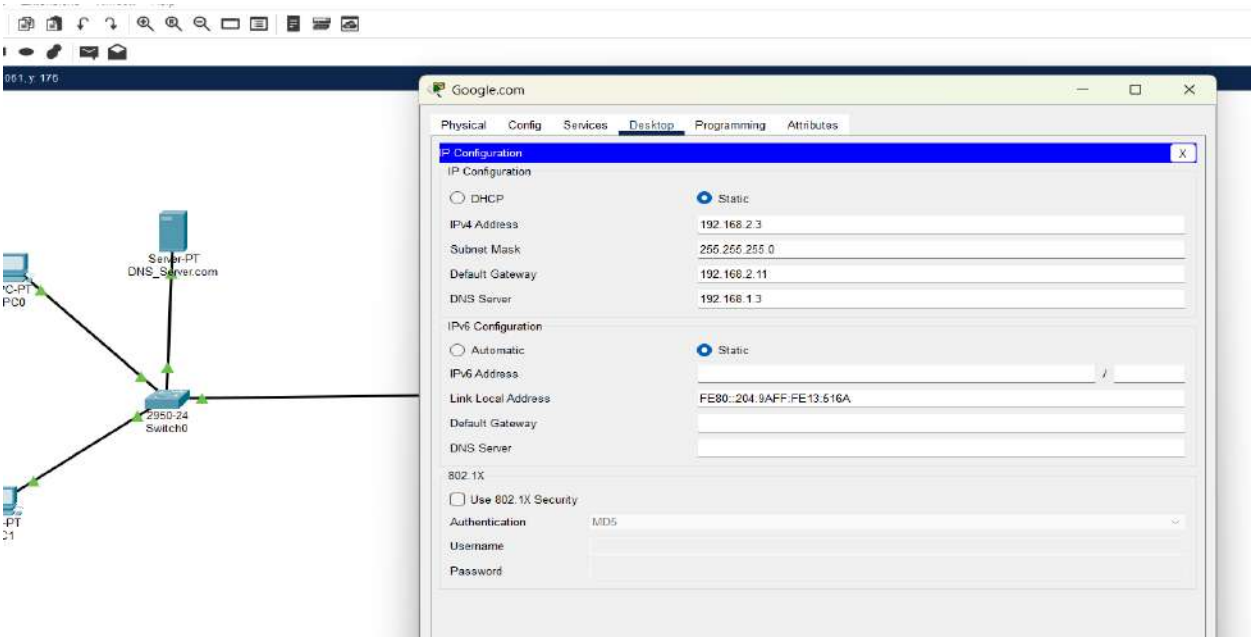
Default Gateway: 192.168.1.11



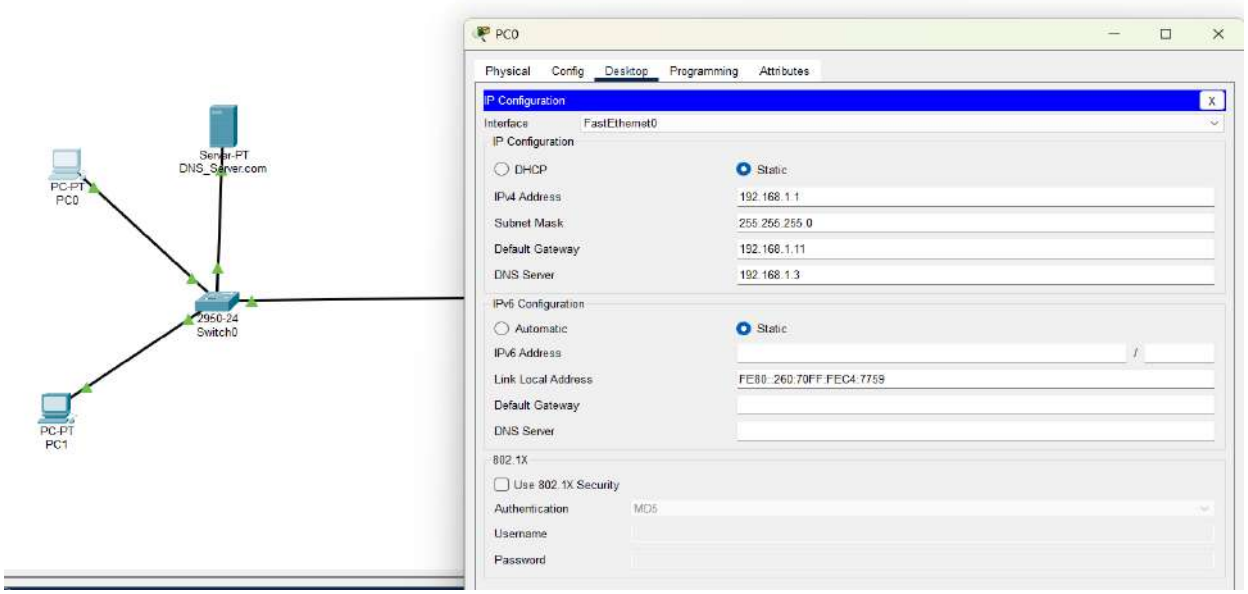
Step 3: Add the DNS server to 1st network and set the server's IP. IP Address: 192.168.2.3

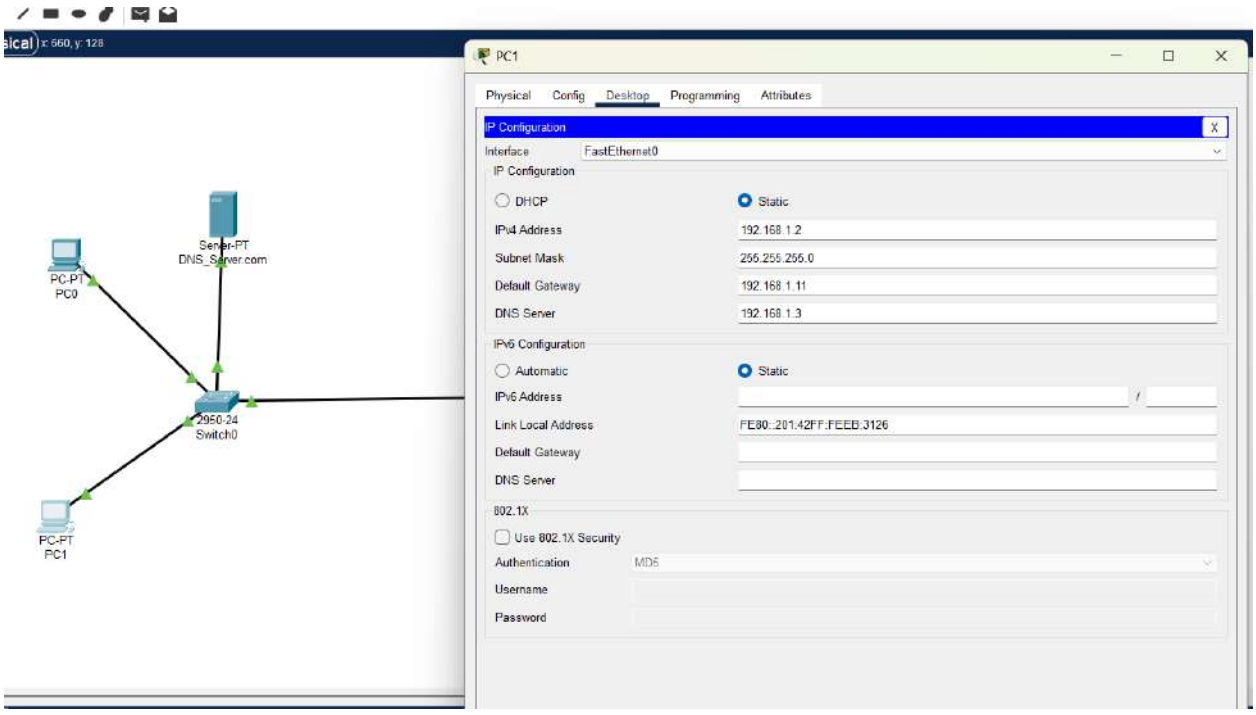
Default Gateway: 192.168.2.11

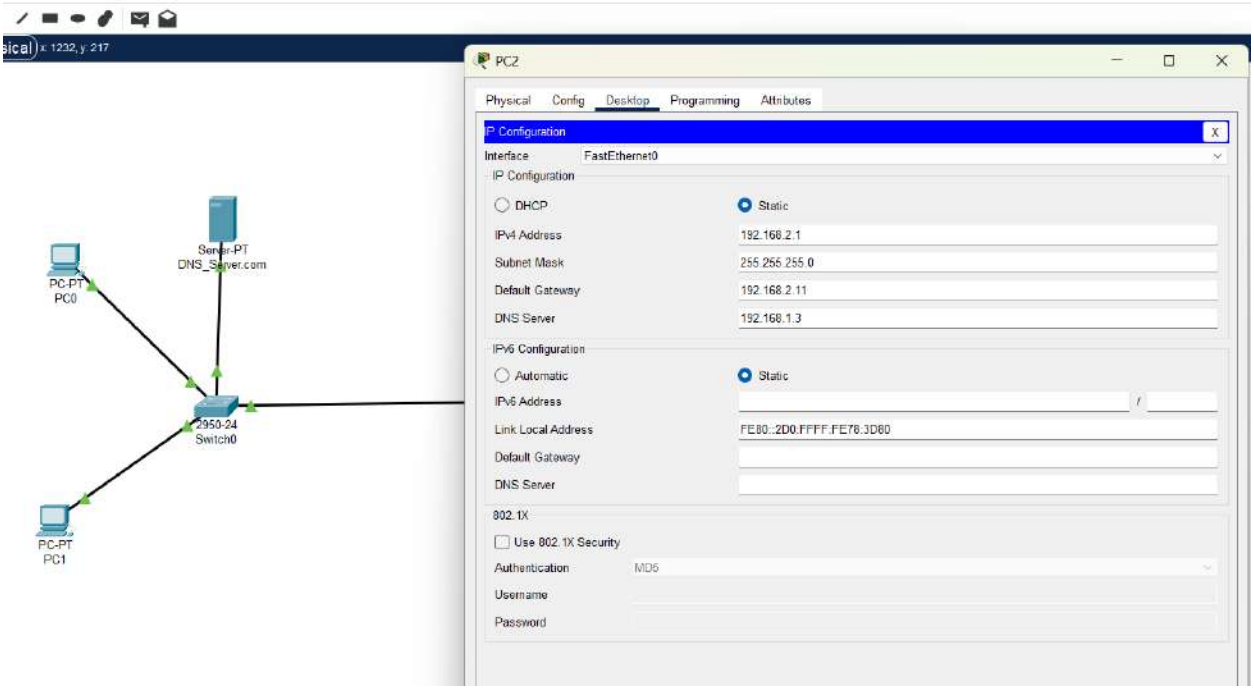
DNS Server : 192.168.1.3

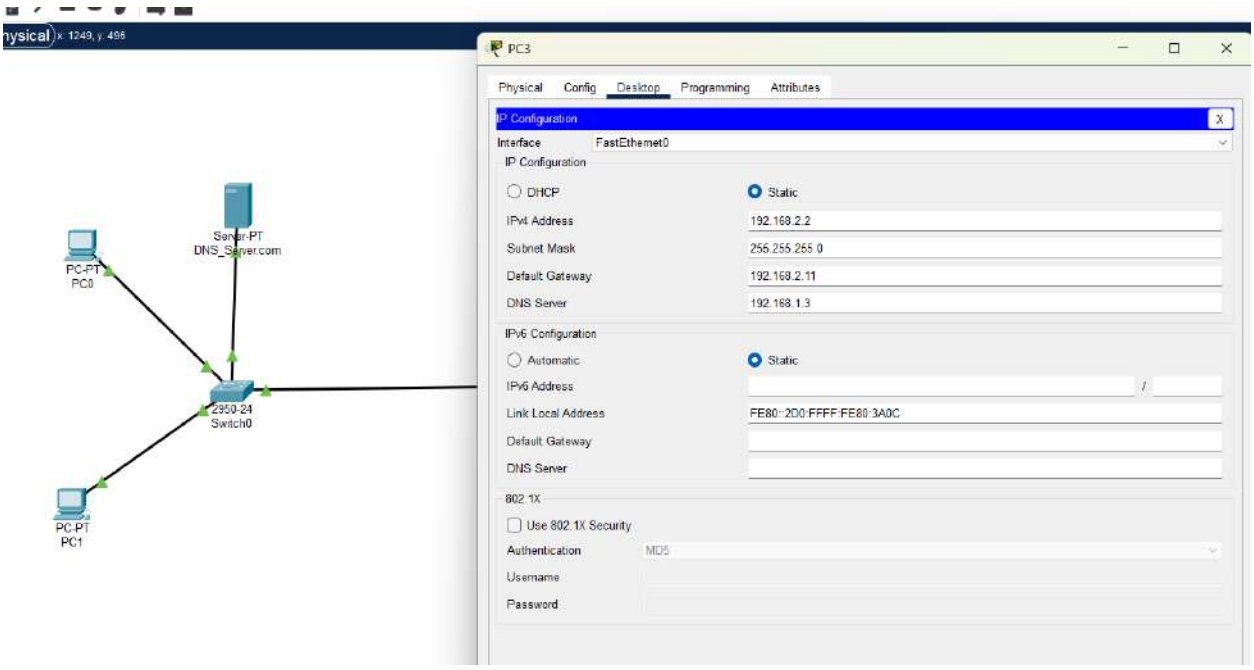


Step 4: Set the IP of all End Devices and also include subnet mask, default gateway, DNS server.



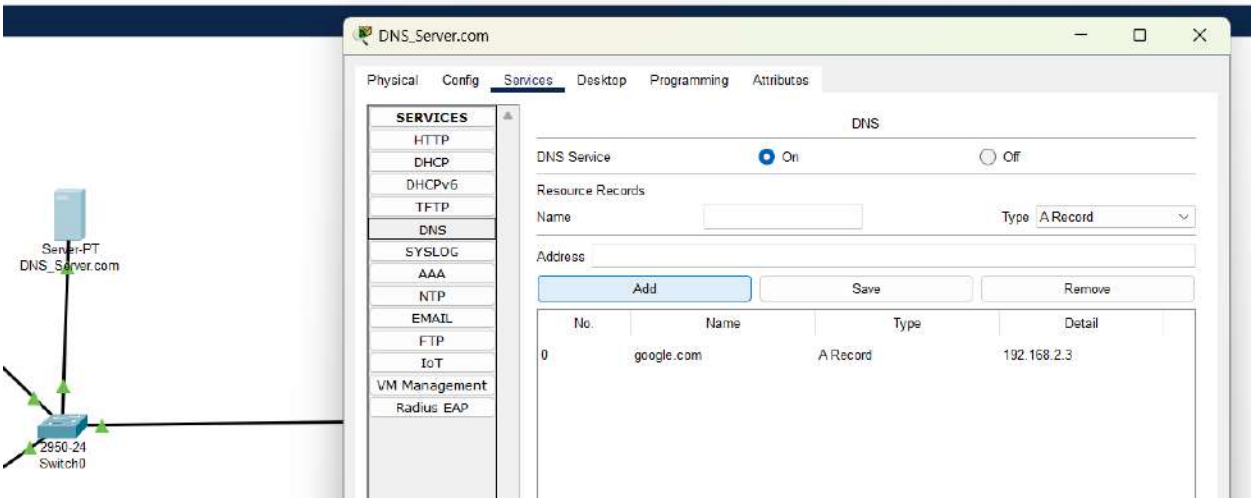



sical) x: 1232, y: 217
PC2
Physical
Config
Desktop
Programming
Attributes
IP Configuration
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.2.1
Subnet Mask
255.255.255.0
Default Gateway
192.168.2.11
DNS Server
192.168.1.3
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::2D0:FFFF:FE76:3D60
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Server-PT
DNS_Server.com
PC-PT
PC0
2950-24
Switch0
PC-PT
PC1


ysical) x: 1249, y: 496
PC3
Physical
Config
Desktop
Programming
Attributes
IP Configuration
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
192.168.2.2
Subnet Mask
255.255.255.0
Default Gateway
192.168.2.11
DNS Server
192.168.1.3
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::2D0:FFFF:FE80:3A0C
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Server-PT
DNS_Server.com
PC-PT
PC0
2950-24
Switch0
PC-PT
PC1

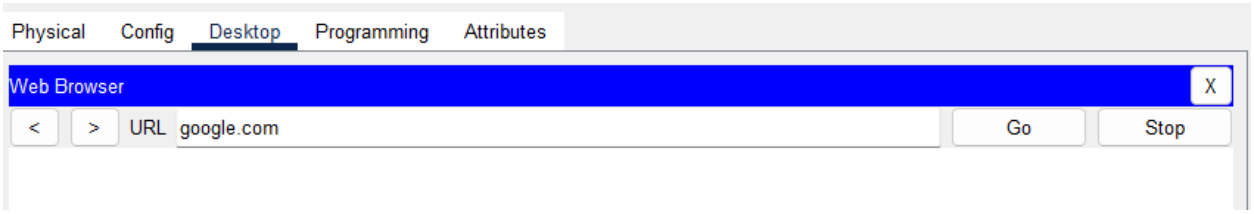
Step 5: Add google.com and its IP to the DNS server. Then save it.

Now the network is ready. We can access the google.com server through DNS_server.com.

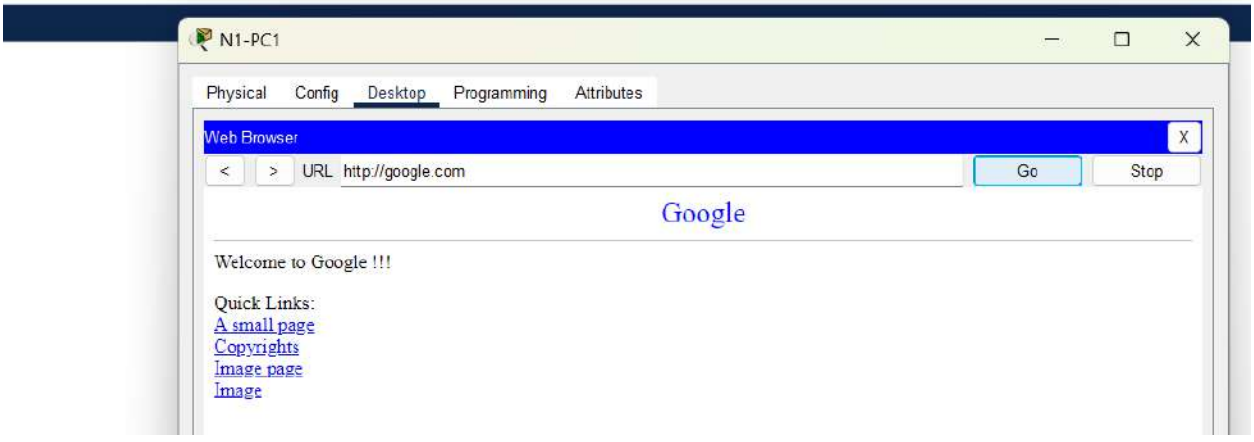


Step 6: Now we try to access google.com through N1-PC1.

First of all, we go to N1-PC1. Then we go to the browser. After that, we Search google.com.



The browser show the Google server.

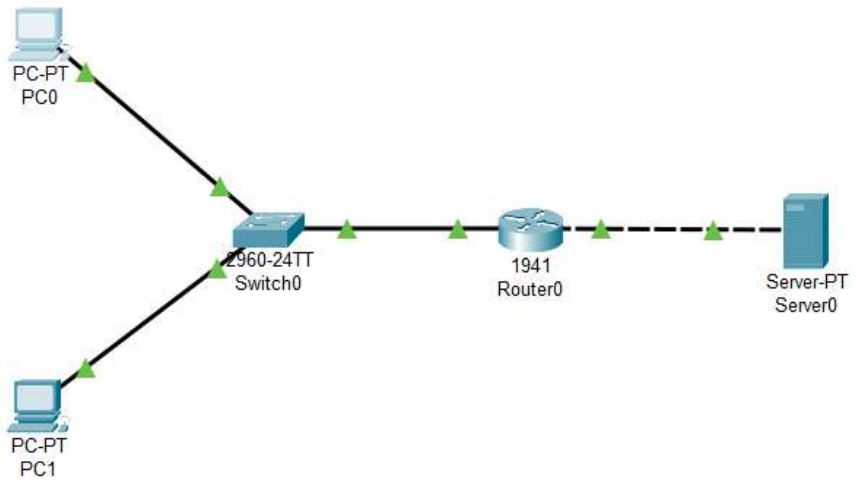


Video Link: Video of working of DNS Server

Lab Report - 6: Email server implementation

Step 1:

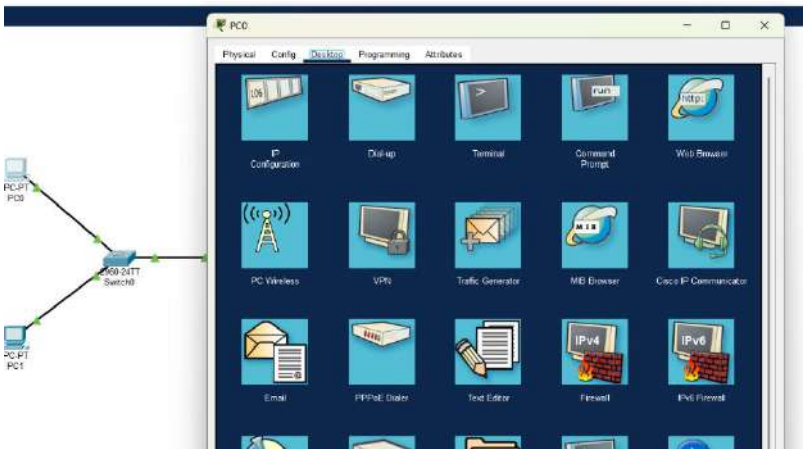
Build a structure of a topology that includes two PC, one switch, one router, and one server.

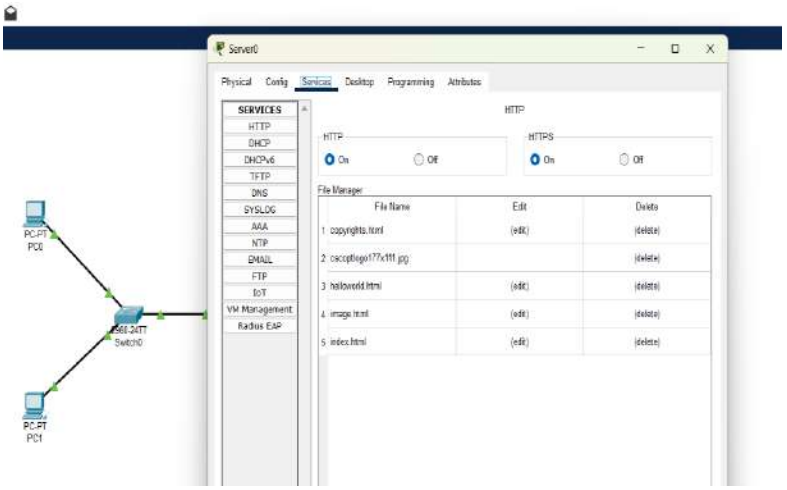


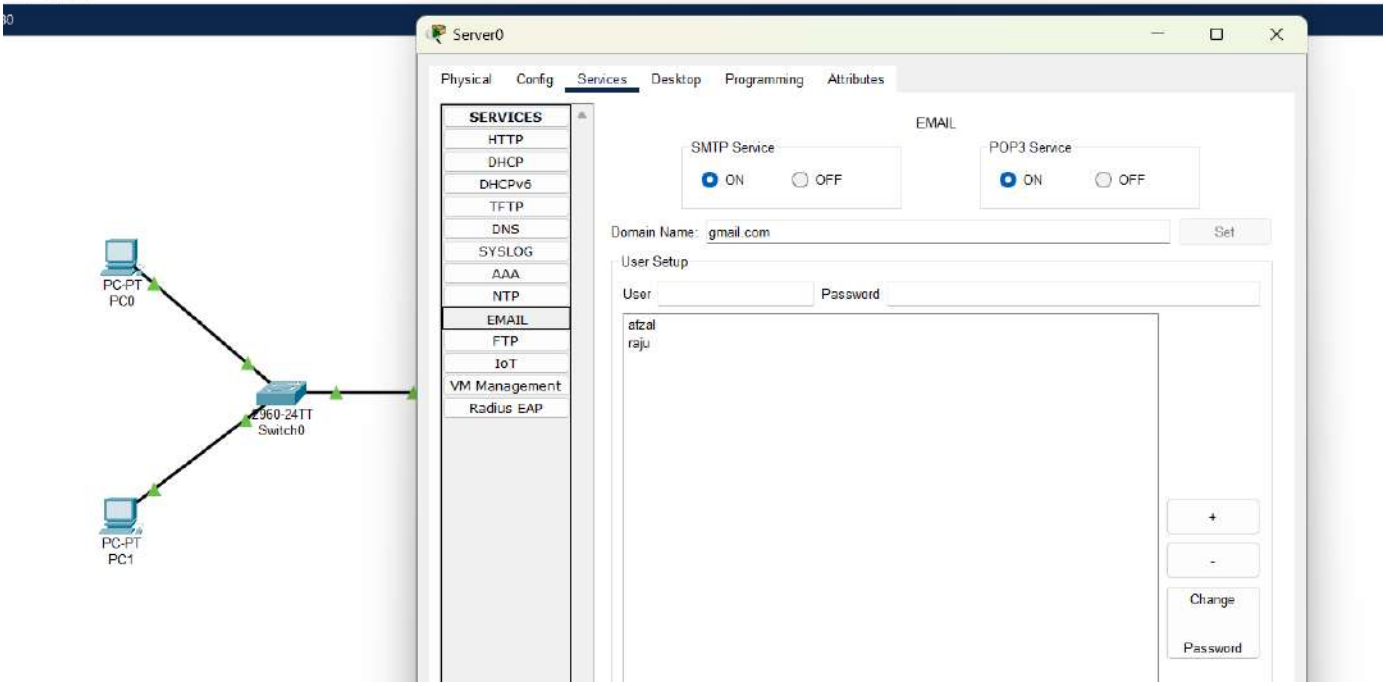
Step 2:

Now, configure the email server.

i) Go to the server
ii) Go to the service and select email.
iii) Set the domain name(gmail.com)
iv) Set user 1. afzal 2. raju .Also, set the password(1234) and add the two users.

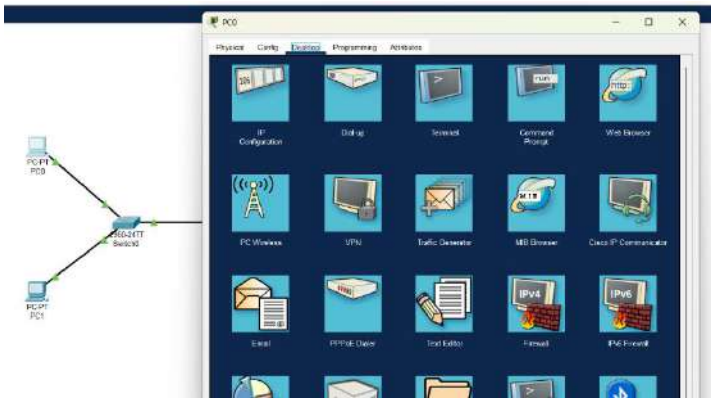

PC0
Physical
Config
Desktop
Programming
Attributes
IP Configuration
Dial-up
Terminal
Command Prompt
Web Browser
PC Wireless
VPN
Traffic Generator
MIB Browser
Cisco IP Communicator
Email
PPPoE Dialer
Text Editor
Firewall
IPv6 Firewall
PC-PT PC0
2960-24TT Switch0
PC-PT PC1

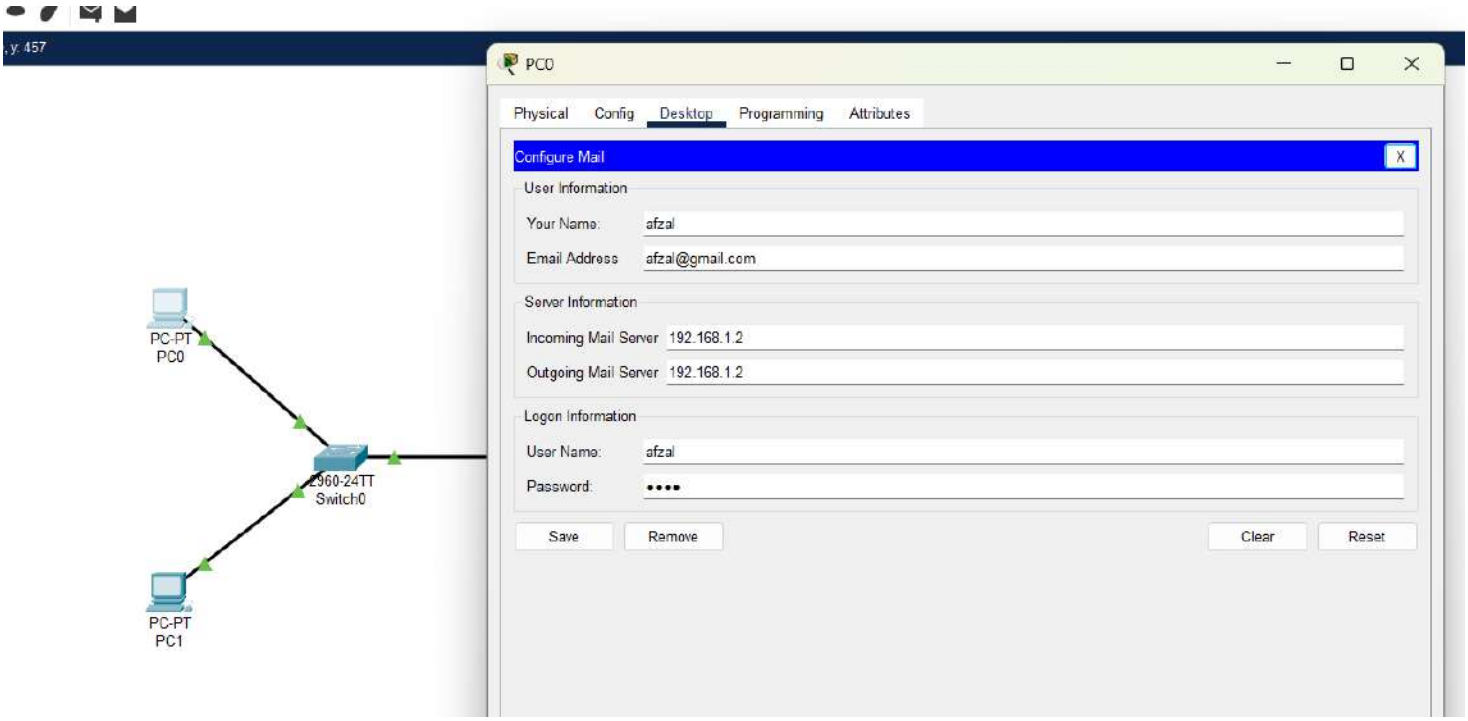

Server0
Physical
Config
Services
Desktop
Programming
Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
HTTP
HTTPS
On
Off
File Manager
File Name
Edit
Delete
1 copyrights.html
2 cscoptiego177x111.jpg
3 helloworld.html
4 image.html
5 index.html
(edit)
(delete)
PC-PT PC0
2960-24TT Switch0
PC-PT PC1


Server0
Physical
Config
Services
Desktop
Programming
Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
EMAIL
SMTP Service
ON
OFF
POP3 Service
ON
OFF
Domain Name:
gmail.com
Set
User Setup
User
Password
atzal
raju
+
-
Change
Password
PC-PT PC0
2960-24TT Switch0
PC-PT PC1

Step 3: To Configure Mail PC0

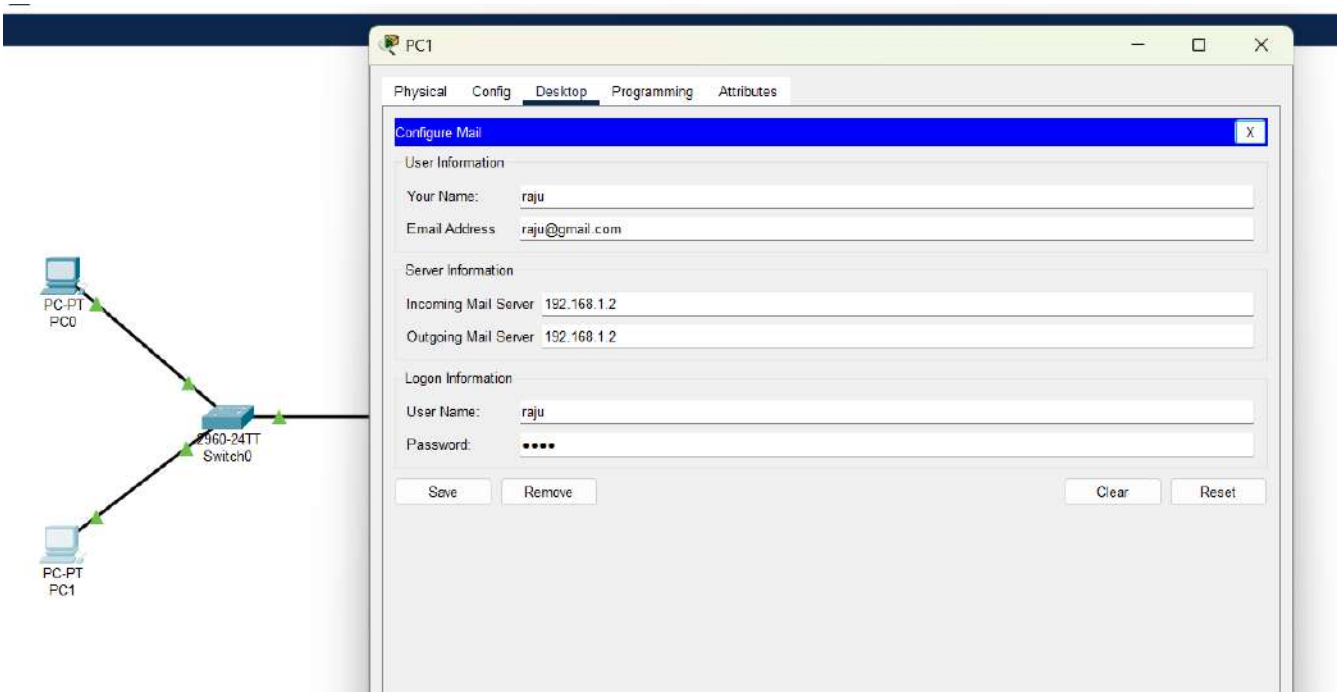
i) Select PC0 and go to the desktop, and select Email.
ii) Configure the PC0.
iii) Set name (afzal)
iv) Set email address(afzal@gmail.com)
v) Set incoming and outgoing email server (192.168.1.2)
vi) Set user and password (afzal, 1234)





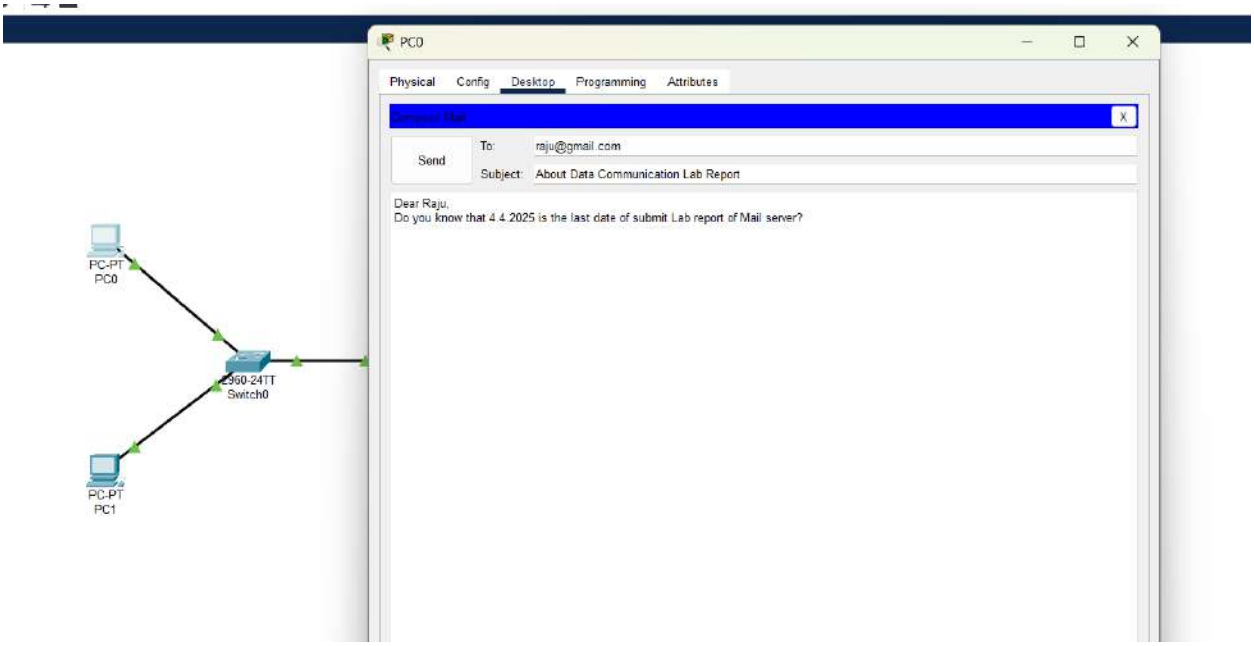
Step 4: To Configure Mail PC1

i) Select PC1 and go to the desktop, and select Email.
ii) Configure PC1.
iii) Set name (raju)
iv) Set email address(raju@gmail.com)
v) Set incoming and outgoing email server (192.168.1.2)
vi) Set user and password (raju, 1234)



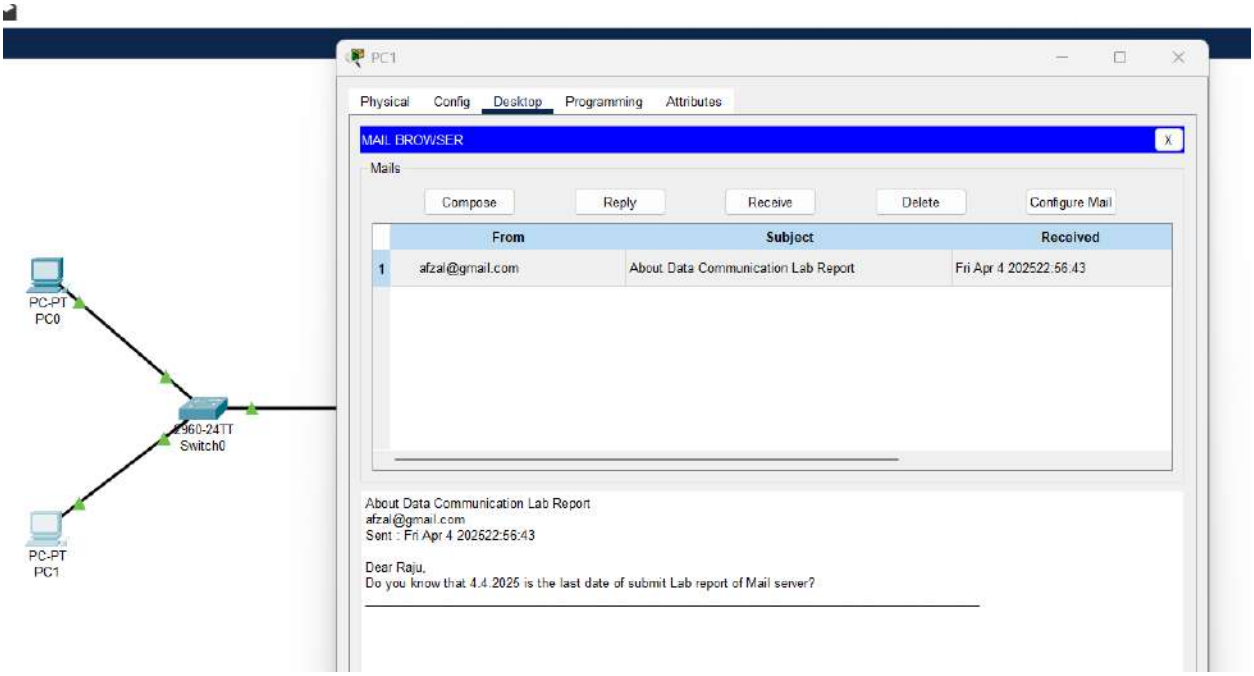
Step 5: Send Email

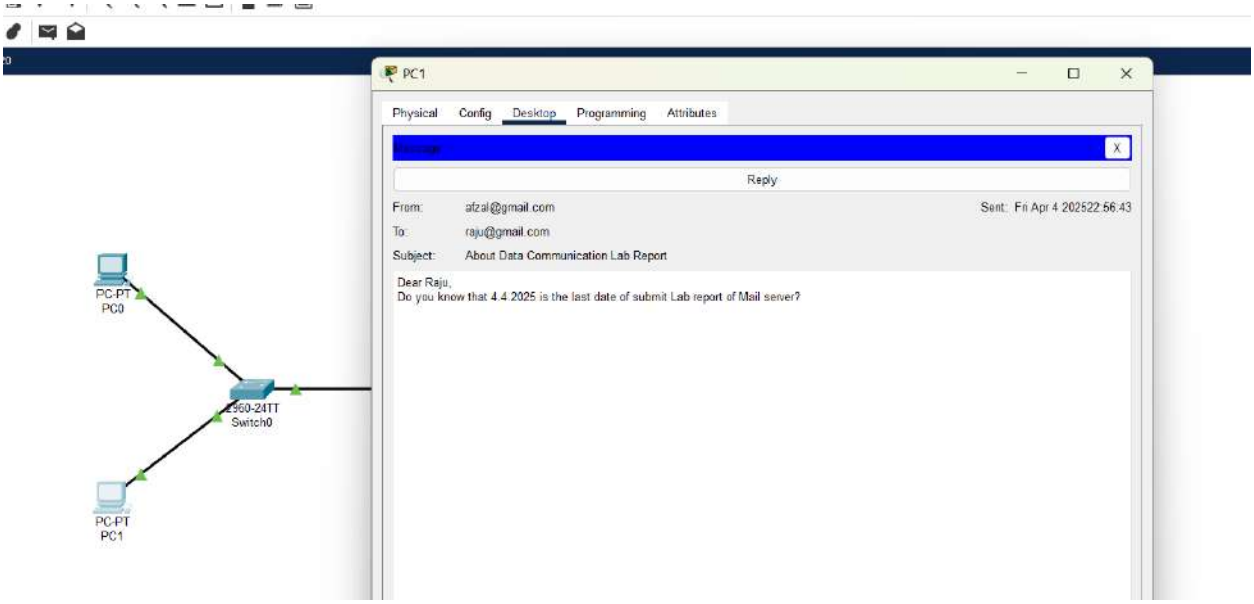
i) Go to PC0, select email, then go to compose
ii) Provide receiver email ID (raju@gmail.com)
iii) Add the subject and write the description.
iv) Then press send option



Step 6: Check Email from PC1.

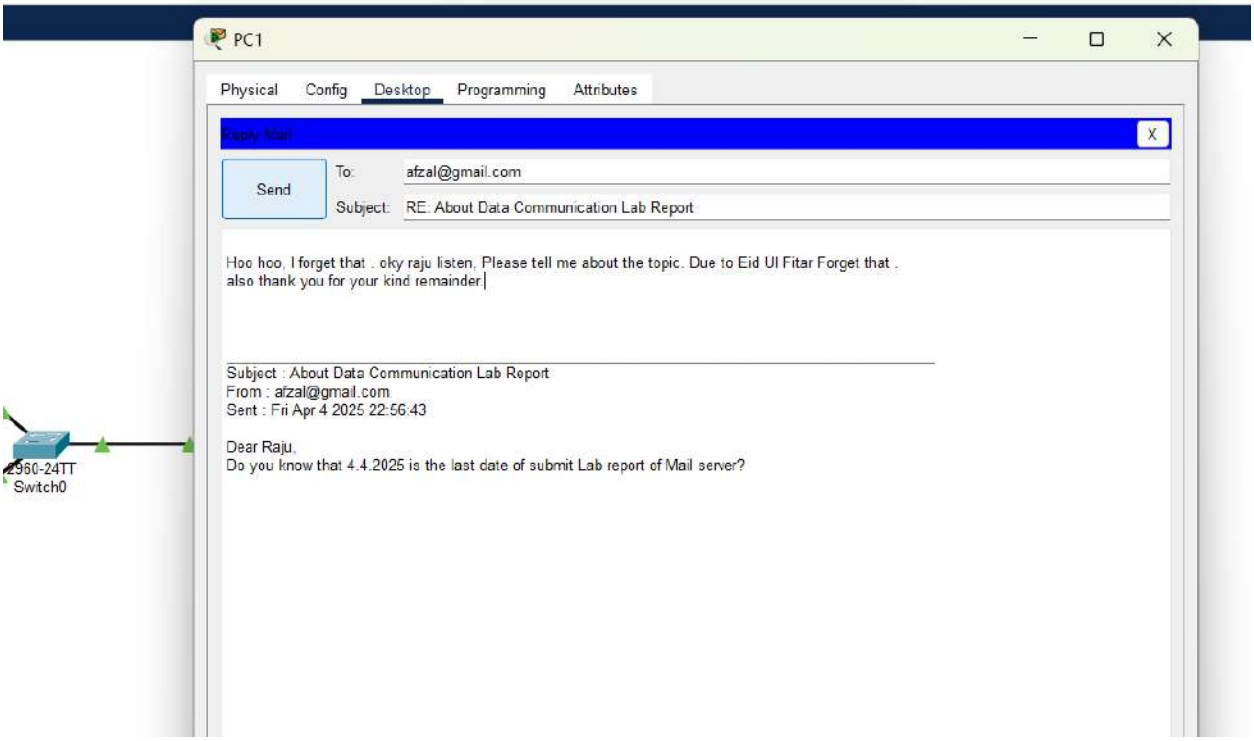
i) Select PC1.
ii) Go to the desktop and choose email.
iii) Check received
iv) Open the email of afzal.


PC1
Physical
Config
Desktop
Programming
Attributes
MAIL BROWSER
Mails
Compose
Reply
Receive
Delete
Configure Mail
From
Subject
Received
1
afzal@gmail.com
About Data Communication Lab Report
Fri Apr 4 202522:56:43
About Data Communication Lab Report
afzal@gmail.com
Sent : Fri Apr 4 202522:56:43
Dear Raju,
Do you know that 4.4.2025 is the last date of submit Lab report of Mail server?
PC-PT
PC0
2960-24TT
Switch0
PC-PT
PC1

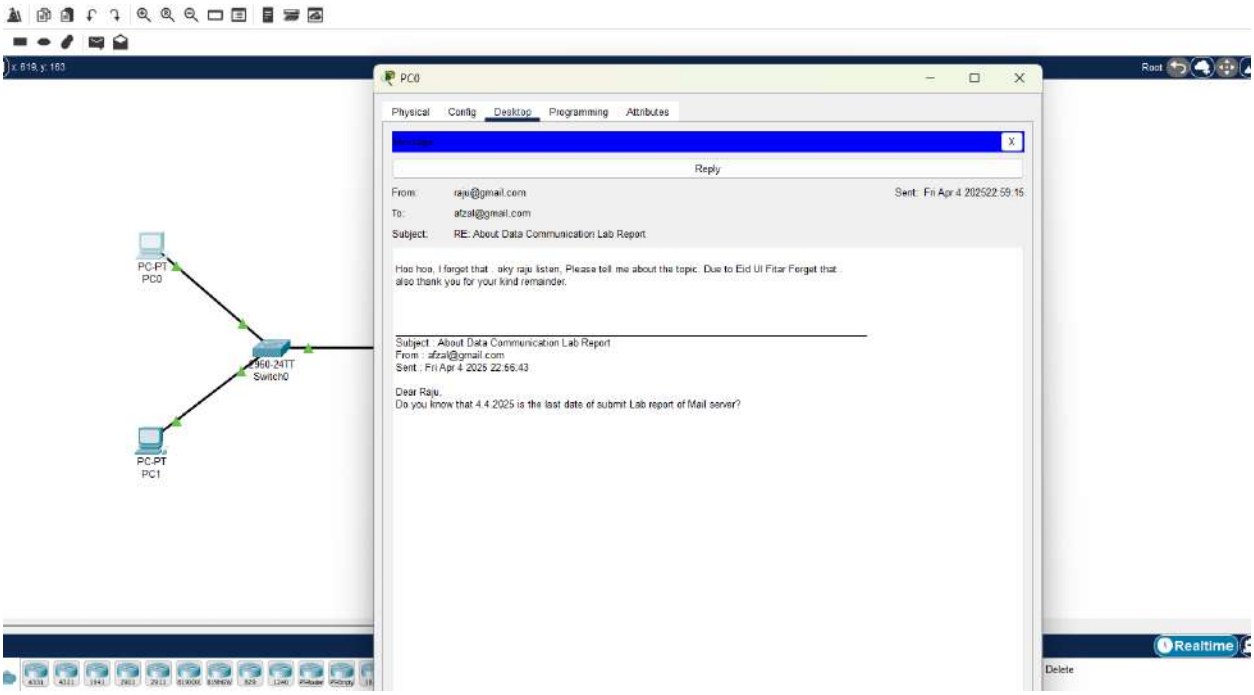

PC1
Physical
Config
Desktop
Programming
Attributes
Reply
From:
afzal@gmail.com
Sent: Fri Apr 4 202522:56:43
To:
raju@gmail.com
Subject:
About Data Communication Lab Report
Dear Raju,
Do you know that 4.4.2025 is the last date of submit Lab report of Mail server?
PC-PT
PC0
2960-24TT
Switch0
PC-PT
PC1

Step 7: Replay to the Email

i) Select the reply option from PC1.
ii) Write the description.
iii) And press send option.



Step 8: The same applies as step 6 to check the received email.



[Video Link Of Email Server]