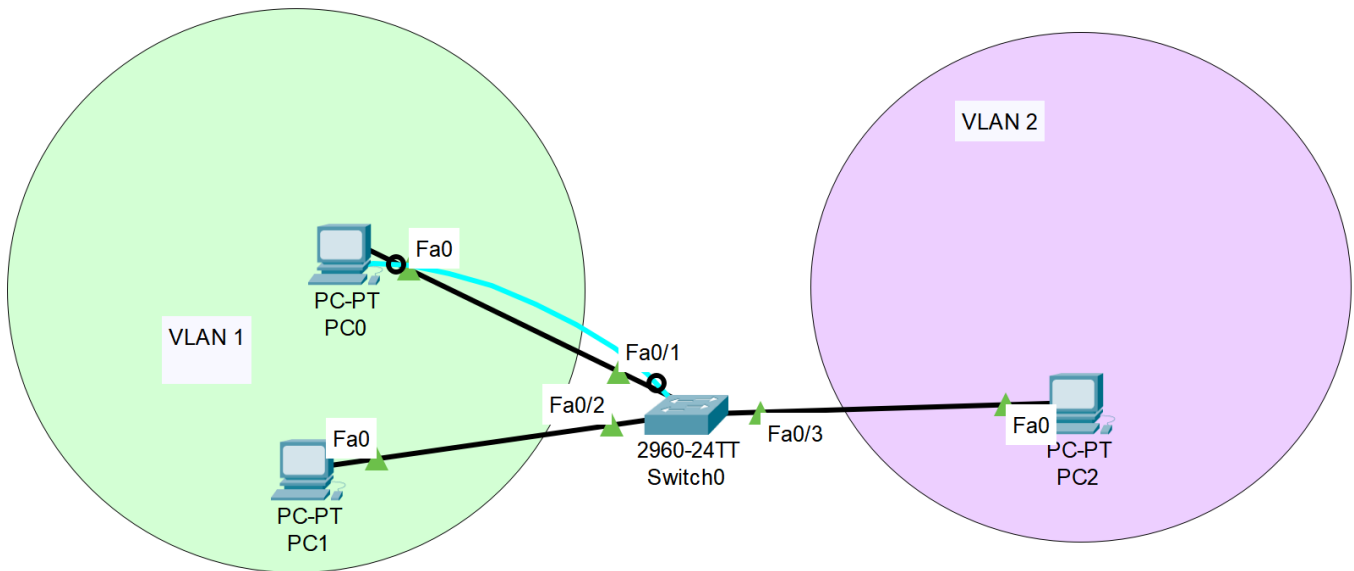


Practical 2: Implement and execute VLAN 1 & 2 in CISCO packet tracer on switch to split the network and observe VLAN table:

Devices:

1. PCs - 3
2. Switch - 1



Steps:

1. Connect the Devices as shown in the Screenshot.
2. Assign IP addresses to all the PCs.

3. Switch0:

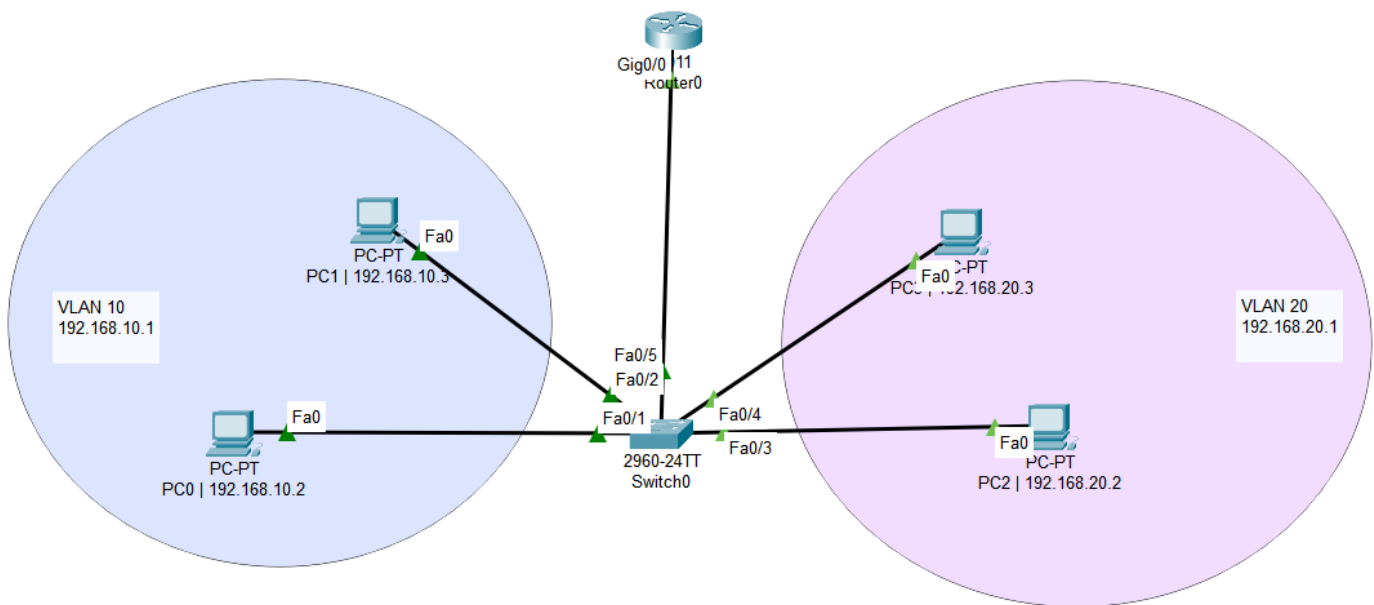
- enable
- config t
- vlan 10
- exit
- vlan 20
- exit
- interface fa0/1
- no shutdown
- switchport mode access
- switchport access vlan 10

- exit
- interface fa0/2
- no shutdown
- switchport mode access
- switchport access vlan 10
- exit
- interface fa0/3
- no shutdown
- switchport mode access
- switchport access vlan 20
- exit

Practical 3: Implement and execute VLAN 1 & 2 in CISCO packet tracer on router to connect two different networks, and observe route table and VLAN database:

Devices:

1. PCs - 4
2. Switch - 1
3. Router (2911) - 1



Steps:

1. Connect the Devices as shown in the Screenshot.
2. Assign IP addresses to all the PCs and default gateways.
3. Switch0:
 - enable
 - config t
 - vlan 10
 - exit
 - vlan 20
 - exit
 - interface fa0/5 (connected to router)
 - no shutdown

- switchport mode trunk
- exit
- interface fa0/1
- no shutdown
- switchport mode access
- switchport access vlan 10
- exit
- interface fa0/2
- no shutdown
- switchport mode access
- switchport access vlan 10
- exit
- interface fa0/3
- no shutdown
- switchport mode access
- switchport access vlan 20
- exit
- interface fa0/4
- no shutdown
- switchport mode access
- switchport access vlan 20
- exit

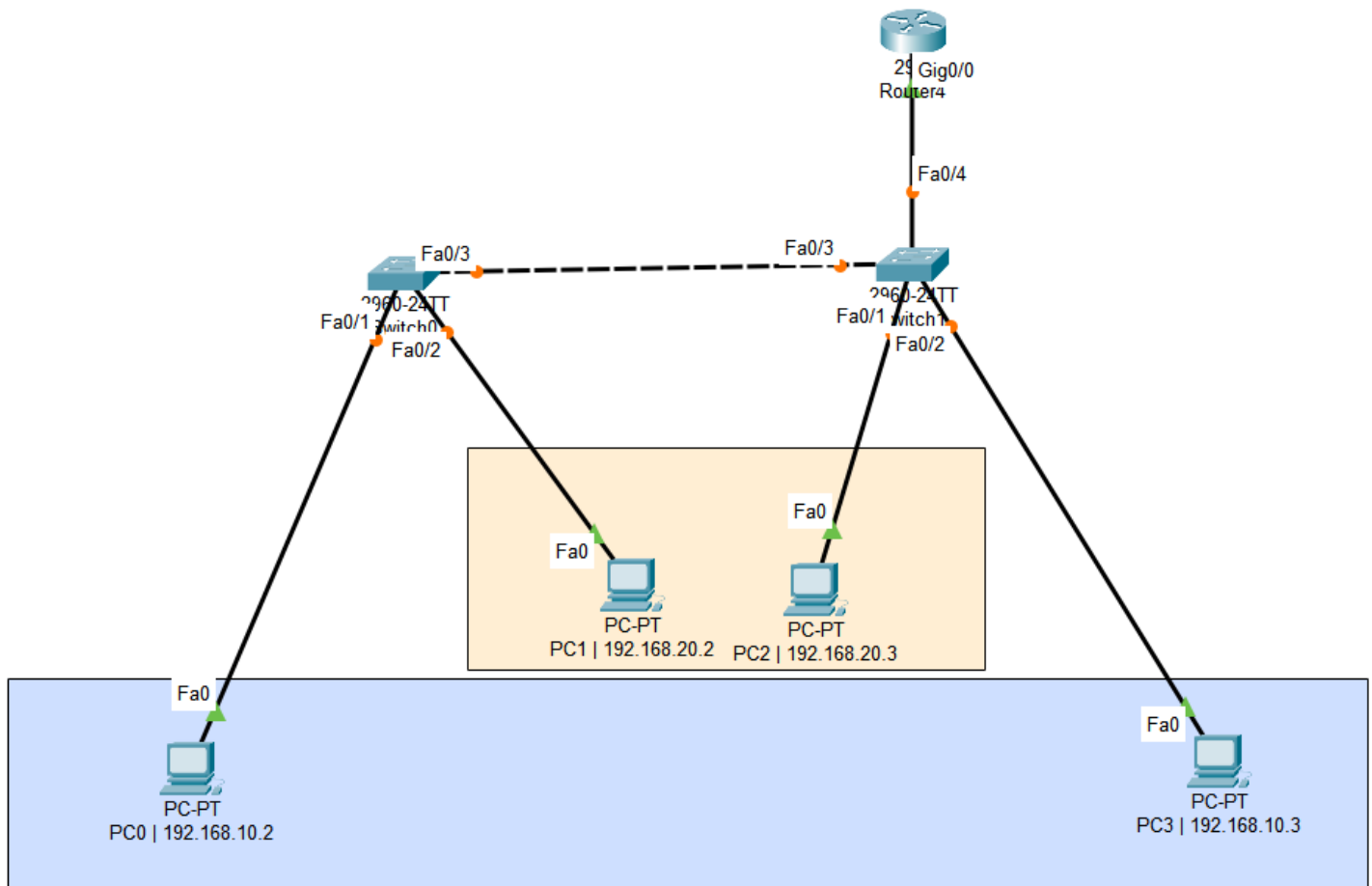
4. Router0:

- enable
- config t
- interface gigabitEthernet0/0
- no shutdown
- exit
- interface gigabitEthernet0/0.1
- encapsulation dot1Q 10
- ip address 192.168.10.1 255.255.255.0
- no shutdown
- exit
- interface gigabitEthernet0/0.2
- encapsulation dot1Q 20
- ip address 192.168.20.1 255.255.255.0
- no shutdown
- exit
- exit

Practical 4: Implement and execute VLAN 1 & 2 in CISCO packet tracer with one router and two switches and observe route table and VLAN database:

Devices:

1. PCs - 4
2. Switches - 2
3. Router - 1



Steps:

1. Connect the Devices as shown in the Screenshot.
2. Assign IP addresses to all the PCs and default gateways.
3. Switch0:
 - enable
 - config t
 - interface fa0/1

- no shutdown
- switchport mode access
- switchport access vlan 10
- exit
- interface fa0/2
- no shutdown
- switchport mode access
- switchport access vlan 20
- exit
- interface fa0/3 (connected to Switch1)
- no shutdown
- switchport mode trunk
- exit

4. Switch1:

- enable
- config t
- interface fa0/1
- no shutdown
- switchport mode access
- switchport access vlan 20
- exit
- interface fa0/2
- no shutdown
- switchport mode access
- switchport access vlan 10
- exit
- interface fa0/4 (connected to Router0)
- no shutdown
- switchport mode trunk
- exit

5. Router0:

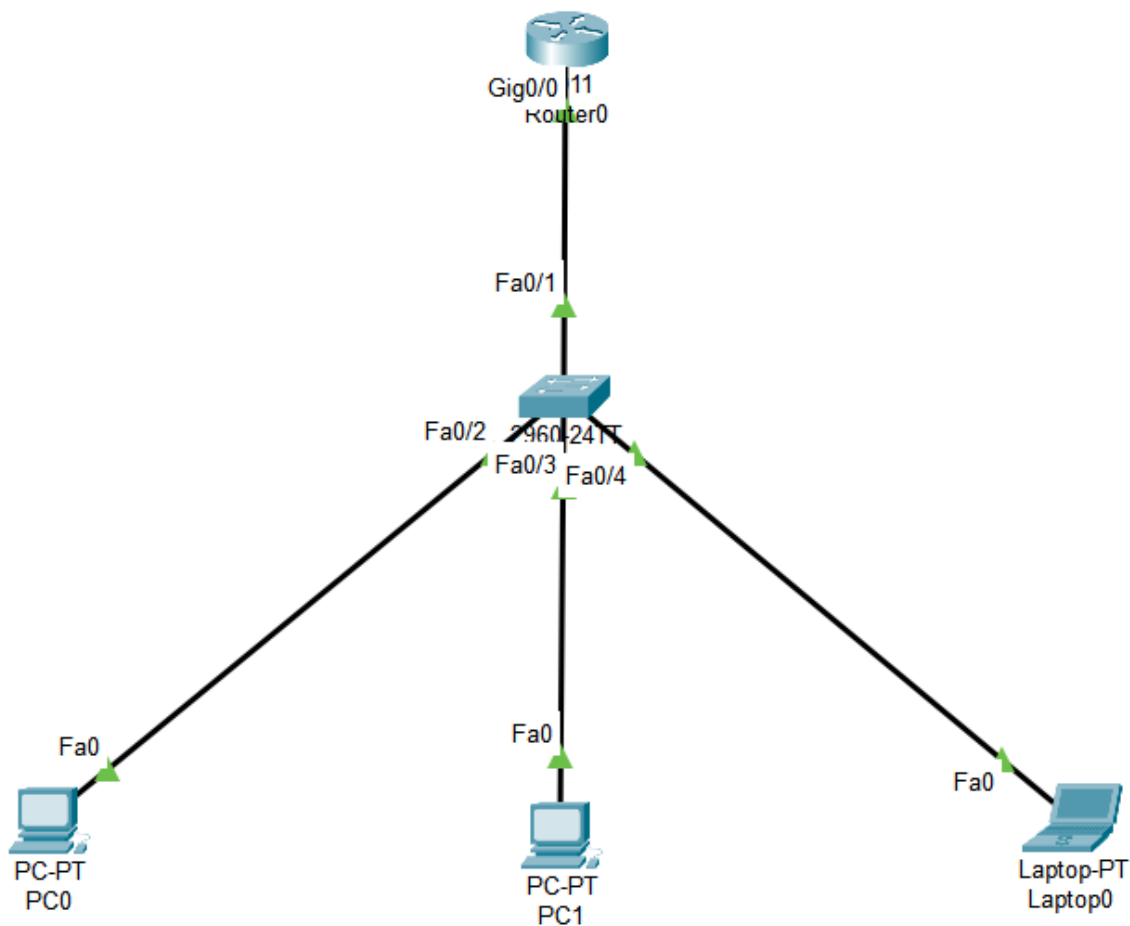
- enable
- config t
- interface gigabitEthernet0/0
- no shutdown
- exit
- interface gigabitEthernet0/0.1
- encapsulation dot1Q 10

- ip address 192.168.10.1 255.255.255.0
- no shutdown
- exit
- interface gigabitEthernet0/0.2
- encapsulation dot1Q 20
- ip address 192.168.20.1 255.255.255.0
- no shutdown
- exit
- exit

Practical 5: Implement class A or B or C network with auto IP configuration using DHCP protocol on router and observe IP configuration on host machines:

Devices:

1. PCs - 3
2. Switch - 1
3. Router - 1



Steps:

1. Connect the Devices as shown in the Screenshot.
2. Router0:
 - enable
 - config t
 - interface gigabitEthernet0/0 (connected to Switch0)

- ip address 192.168.1.1 255.255.255.0
- no shutdown
- exit
- ip dhcp pool DHCP_POOL
- network 192.168.1.0 255.255.255.0
- default-router 192.168.1.1
- dns-server 8.8.8.8
- exit
- exit
- write memory
- show ip dhcp pool

3. Switch0:

- enable
- config t
- interface FastEthernet0/1 (connected to Router0)
- switchport mode trunk
- no shutdown
- exit

The screenshot shows a terminal window titled "Router0" with tabs for Physical, Config, CLI (selected), and Attributes. The CLI tab displays the "IOS Command Line Interface" with the following text:

```

Cisco CISCO2911/K9 (revision 1.0) with 491520K/32768K bytes of memory.
Processor board ID FTX152400K5
3 Gigabit Ethernet interfaces
DRAM configuration is 64 bits wide with parity disabled.
255K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)

Press RETURN to get started!

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

Router>enable
Router#show ip dhcp pool

Pool DHCP_POOL :
  Utilization mark (high/low)      : 100 / 0
  Subnet size (first/next)         : 0 / 0
  Total addresses                   : 254
  Leased addresses                  : 0
  Excluded addresses                : 0
  Pending event                     : none

  1 subnet is currently in the pool
  Current index   IP address range      Leased/Excluded/
Total
192.168.1.1      192.168.1.1 - 192.168.1.254  0 / 0 / 254
Router#
  
```

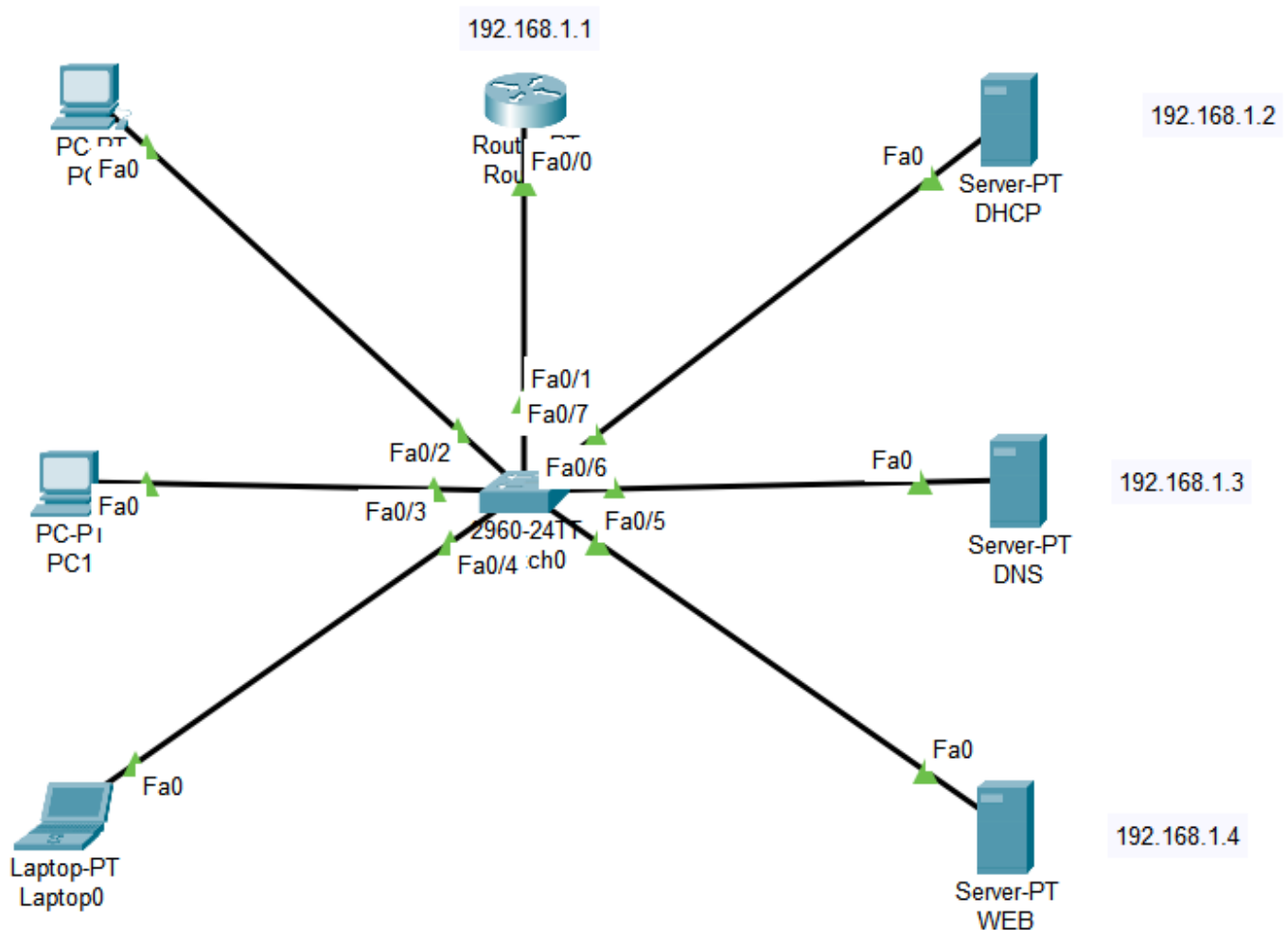
At the bottom of the window, there are "Copy" and "Paste" buttons, and a "Top" button with a checkbox.

Practical 6: Implement DHCP, WEB and DNS Server in CISCO Packet tracer and observe:

- a. Auto IP configuration through DHCP server.
- b. WEB Server access through browser on host Machine.
- c. DNS server to naming the WEB access.

Devices:

1. PCs - 2
2. Laptop - 1
3. Servers - 3 (WEB, DNS & DHCP)
4. Switch - 1
5. Router - 1



Steps:

1. Connect the Devices as shown in the Screenshot.

2. Router0:

- en
- config t
- interface FastEthernet0/0 (connected to Switch0)
- no shutdown
- ip address 192.168.1.1 255.255.255.0
- exit
- ip dhcp pool DHCP_POOL
- network 192.168.1.0 255.255.255.0
- default-router 192.168.1.1
- exit
- show ip dhcp pool

3. Switch0:

- enable
- config t
- interface FastEthernet0/1 (connected to Router0)
- no shutdown
- switchport mode trunk

4. Assign Static IP Address, Default Gateway (Router's IP) and DNS Server to WEB, DNS & DHCP Servers.

5. Add Interface to DHCP Server as show in the screenshot.

6. Map the website name with IP Address of WEB server in the DNS server.

7. Enable the DHCP IP Configuration of PCs and Laptops.

Physical

Config

Services

Desktop

Programming

Attributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

DHCP

InterfaceFastEthernet0

ServiceOnOff

Pool NameserverPool

Default Gateway192.168.1.1

DNS Server192.168.1.3

Start IP Address :19216810

Subnet Mask:2552552550

Maximum Number of Users :255

TFTP Server:0.0.0.0

WLC Address:0.0.0.0

AddSaveRemove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	192.168.1.1	192.168.1.3	192.168.1.0	255.255.255.0	255	0.0.0.0	0.0.0.0

Top

Physical

Config

Services

Desktop

Programming

Attributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

DNS

DNS ServiceOnOff

Resource Records

NameTypeA Record

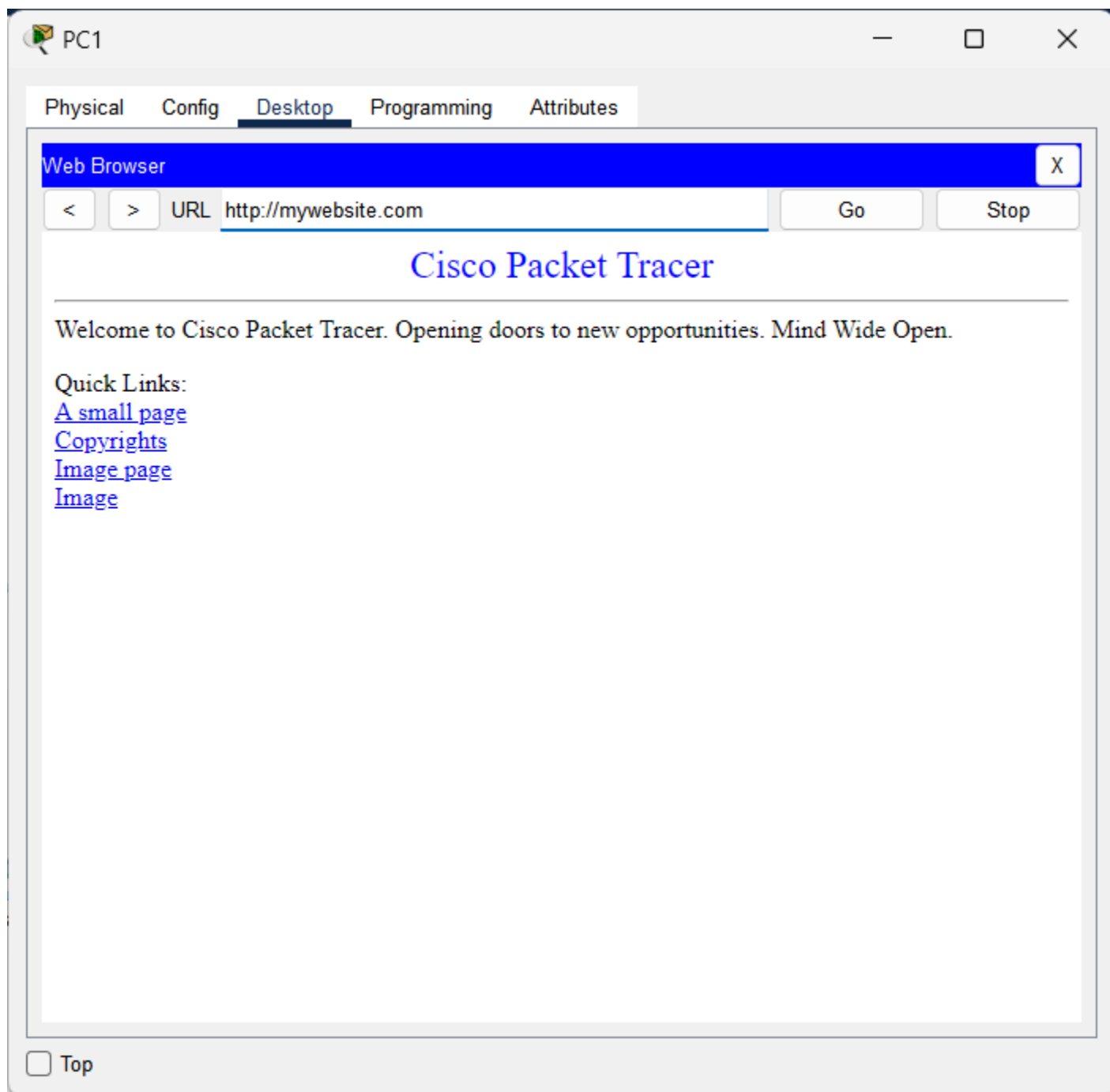
Address

AddSaveRemove

No.	Name	Type	Detail
0	mywebsite.com	A Record	192.168.1.4

DNS Cache

Top

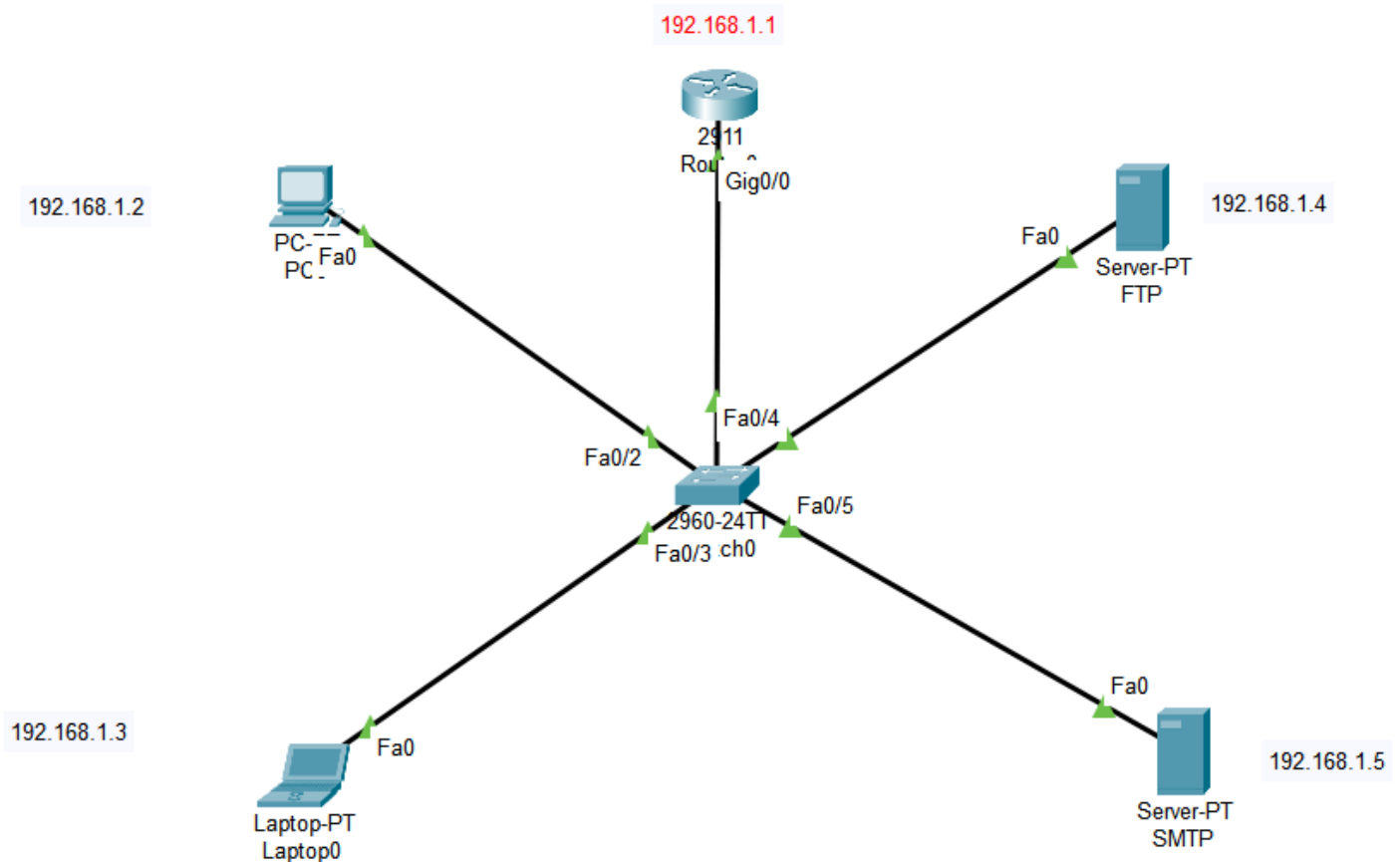


Practical 7: Implement FTP and SMTP server in CISCO packet tracer to observe:

- a. File transmission in the local network.
- b. E-mail transmission in the local network.

Devices:

1. PCs - 1
2. Laptop - 1
3. Servers - 2 (FTP & SMTP)
4. Switch - 1
5. Router - 1



Steps:

1. Connect the Devices as shown in the Screenshot.

2. Switch0:

- enable
- config t
- interface FastEthernet0/1
- switchport mode trunk
- no shutdown
- exit

3. Router0:

- enable
- config t
- interface gigabitEthernet0/0
- ip address 192.168.1.1 255.255.255.0
- no shutdown
- exit

4. Assign the Static IP Address, Default Gateway and DNS Server IP to PC's, Laptops and Servers.

5. FTP Server:

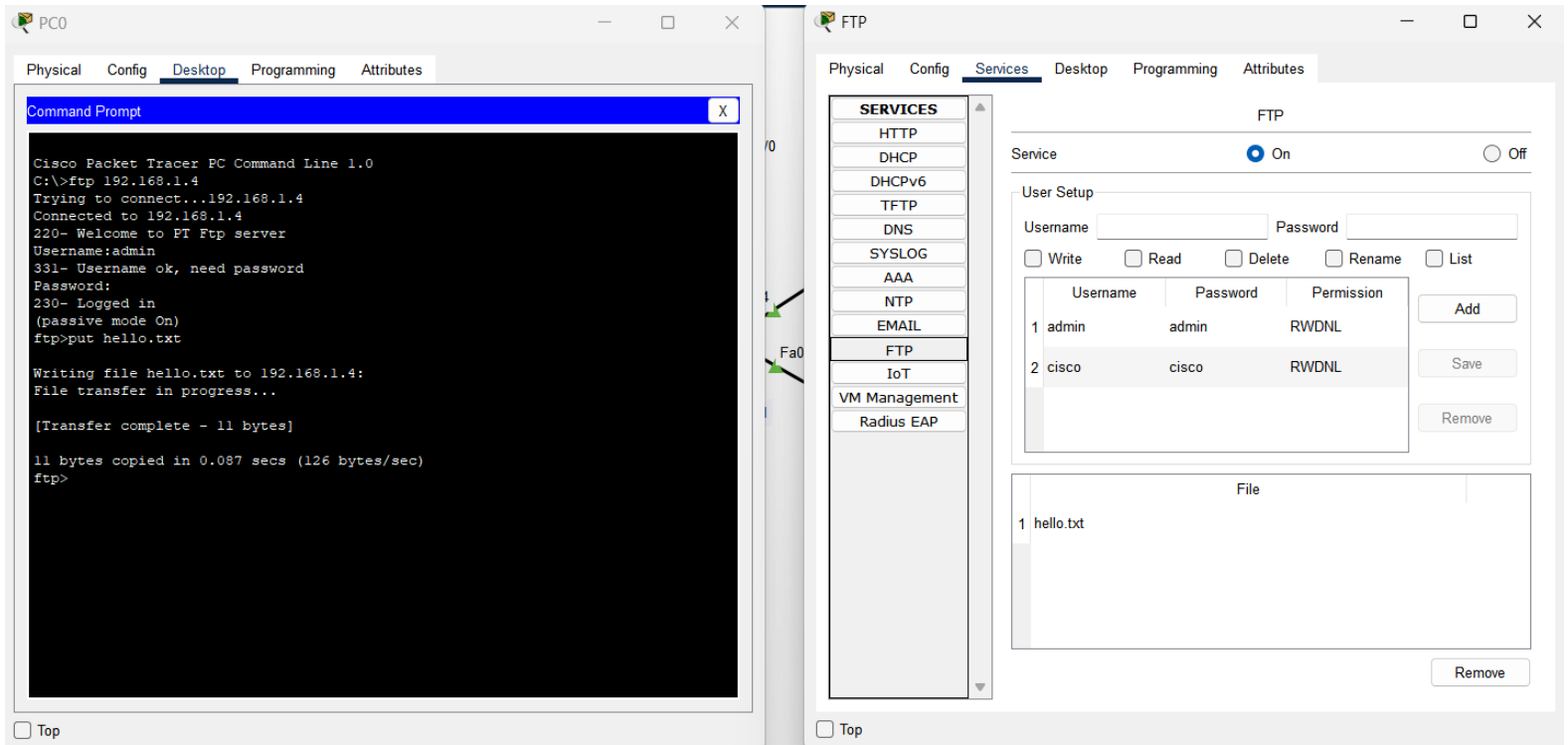
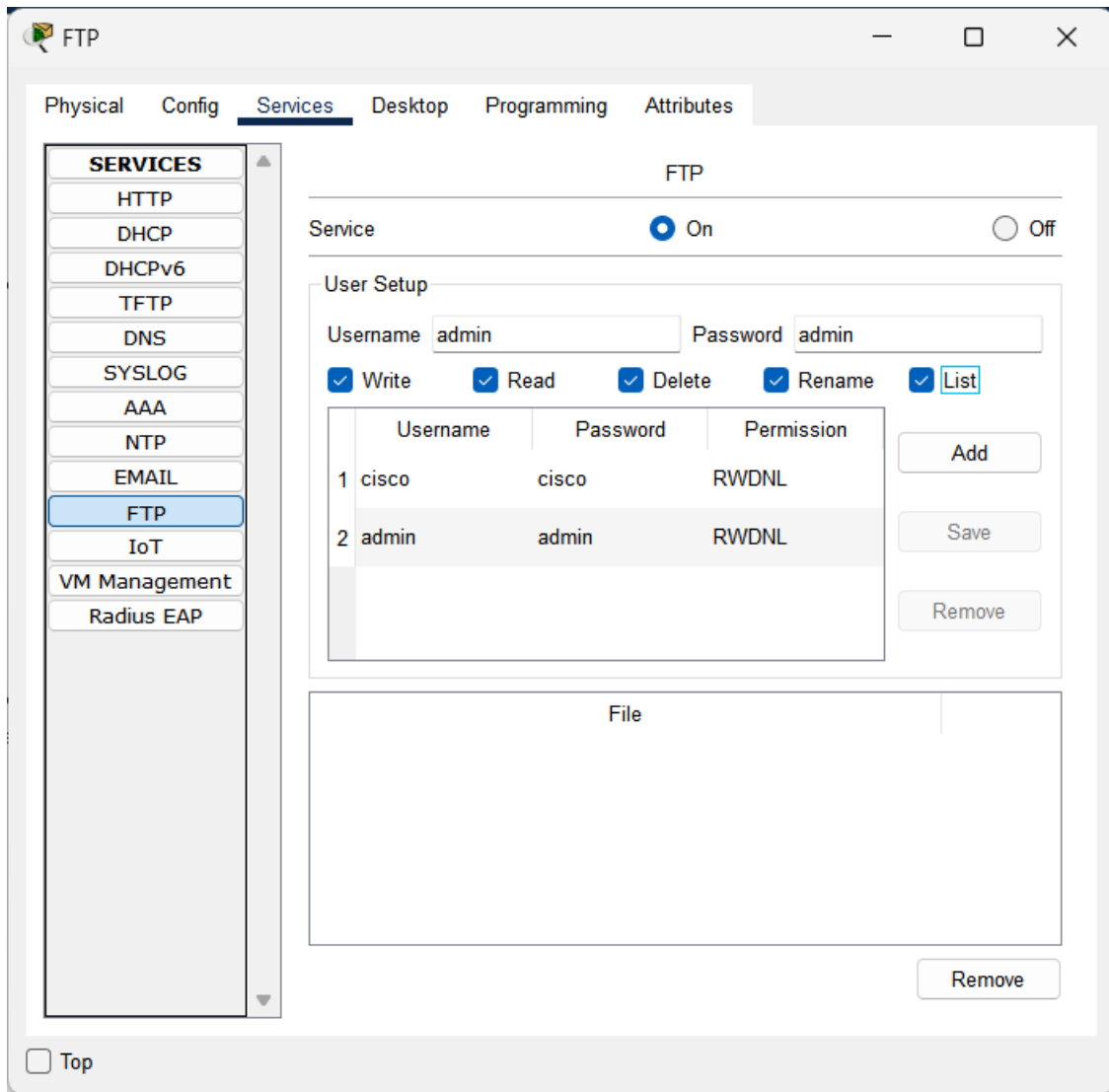
- Enable the FTP Service.
- Set the Username & Password. Assign the Permissions and Add the record.

6. Create a new file using Text Editor in PC0 & save it. Send it through FTP from Command Prompt using 'put <filename>' command.

7. SMTP Server:

- Enable the EMAIL Service.
- Set the Domain Name (e.g. gmail.com). Add Usernames & Passwords of Users (PC0 & Laptop0).

8. Add the Email User Information in PC0 and Laptop0. Compose & send mail from PC0 to Laptop0 and receive the it on Laptop0.



SMTP

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:

User Setup

User Password

pc0
laptop0

☐ Top

PC0

Physical Config **Desktop** Programming Attributes

Configure Mail

User Information

Your Name:

Email Address:

Server Information

Incoming Mail Server:

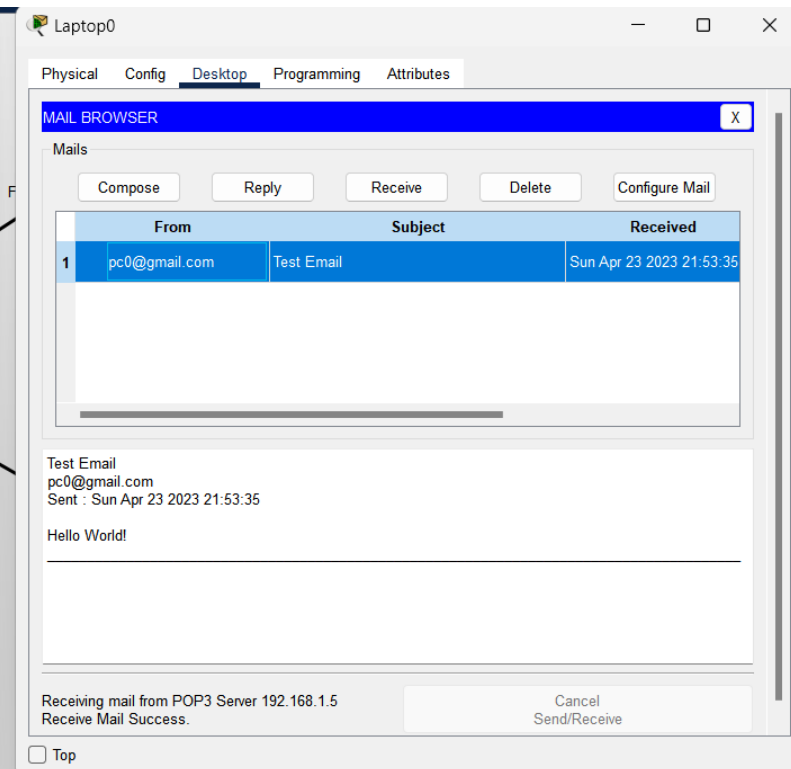
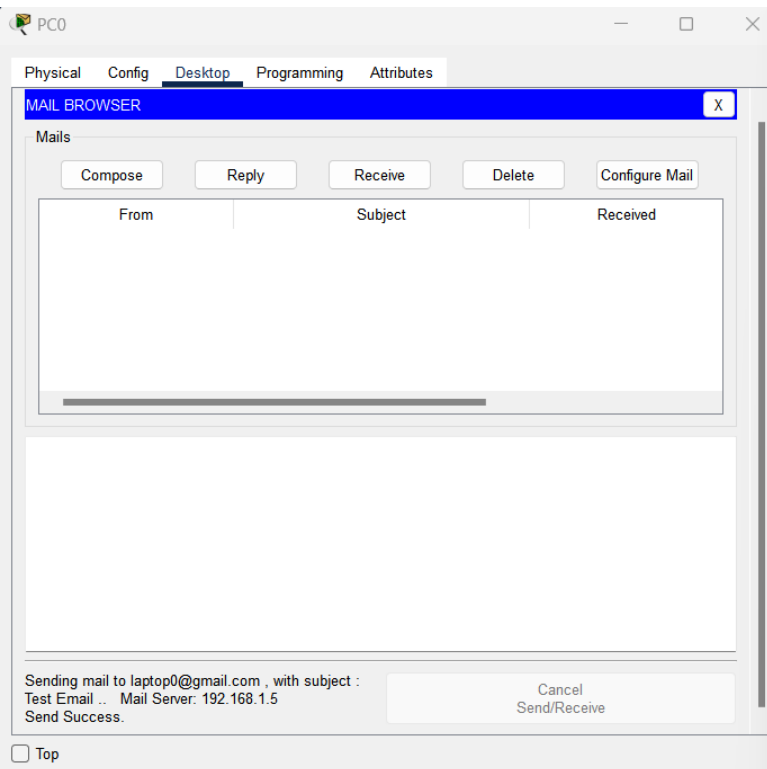
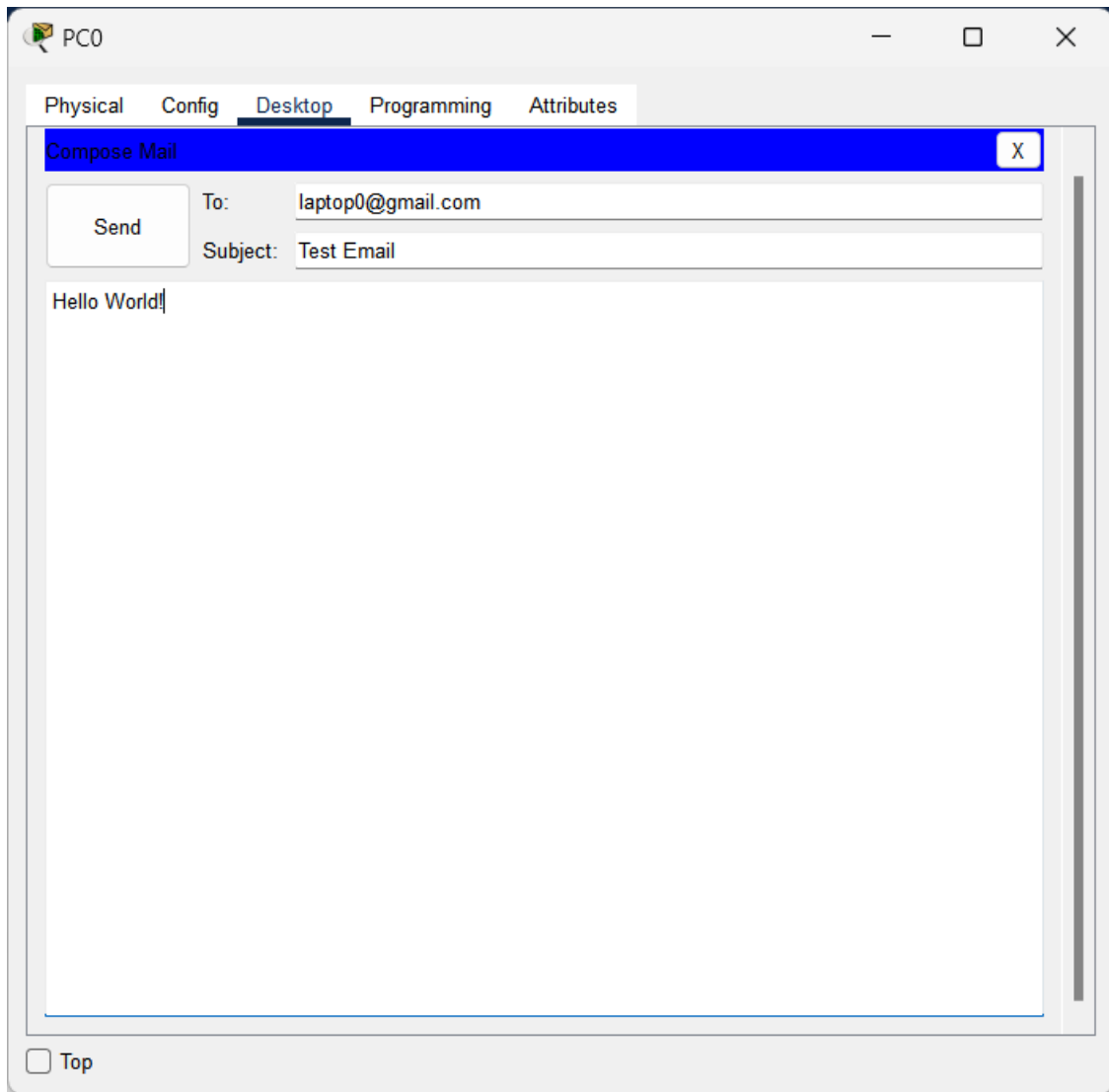
Outgoing Mail Server:

Logon Information

User Name:

Password:

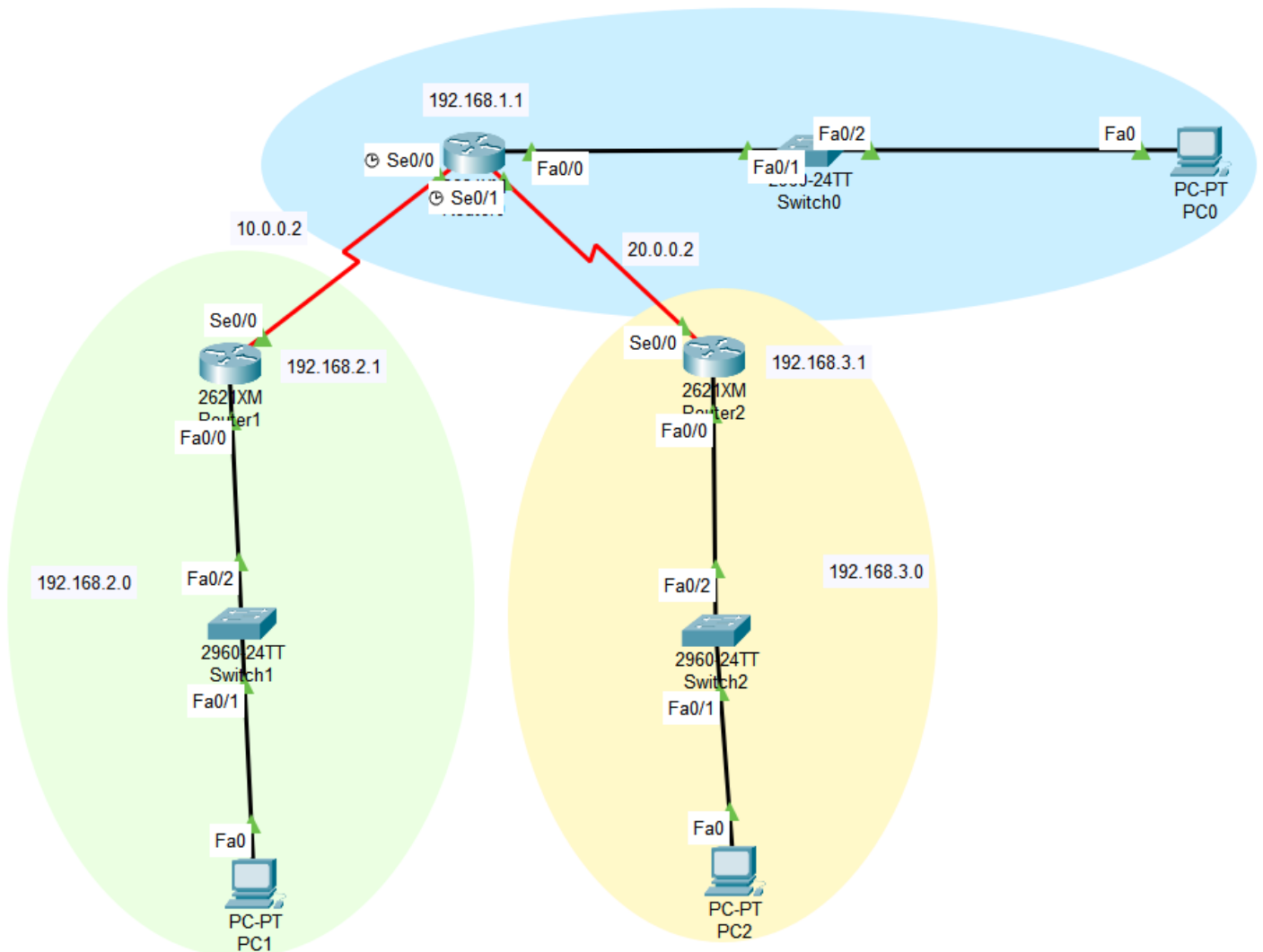
☐ Top



Practical 8: Implement Routing Information Protocol (RIP) to observe the on-demand up gradation of routing table to configure multiple gateways on Internet:

Devices:

1. PCs - 3
2. Switch(2960-24T) - 3
3. Router (2621XM) - 3



Steps:

1. Connect the Devices as shown in the Screenshot.
2. Add WIC - 1T Port to all the Routers.
3. Connect Routers with Serial DCE Wires as shown in screenshot.

4. Router0:

- enable
- config t
- interface FastEthernet0/0 (connected to Switch0)
- ip address 192.168.1.1 255.255.255.0
- no shutdown
- exit
- interface Serial0/0 (connected to Router0)
- ip address 10.0.0.2 255.0.0.0
- no shutdown
- exit
- interface Serial0/1 (connected to Router1)
- ip address 20.0.0.2 255.0.0.0
- no shutdown
- exit
- router rip
- network 10.0.0.0
- network 20.0.0.0
- network 192.168.1.0
- end
- exit

5. Router1:

- enable
- config t
- interface FastEthernet0/0 (connected to Switch1)
- ip address 192.168.2.1 255.255.255.0
- no shutdown
- exit
- interface Serial0/0 (connected to Router0)
- ip address 10.0.0.3 255.0.0.0
- no shutdown
- exit

- router rip
- network 10.0.0.0
- network 192.168.2.0
- end
- exit

6. Router2:

- enable
- config t
- interface FastEthernet0/0 (connected to Switch2)
- ip address 192.168.3.1 255.255.255.0
- no shutdown
- exit
- interface Serial0/0 (connected to Router0)
- ip address 20.0.0.3 255.0.0.0
- no shutdown
- exit
- router rip
- network 20.0.0.0
- network 192.168.3.0
- end
- exit

7. Switch0:

- enable
- config t
- interface FastEthernet0/1 (connected to Router0)
- switchport mode trunk
- no shutdown
- exit

8. Switch1:

- enable
- config t
- interface FastEthernet0/2 (connected to Router1)
- switchport mode trunk
- no shutdown
- exit

9. Switch2:

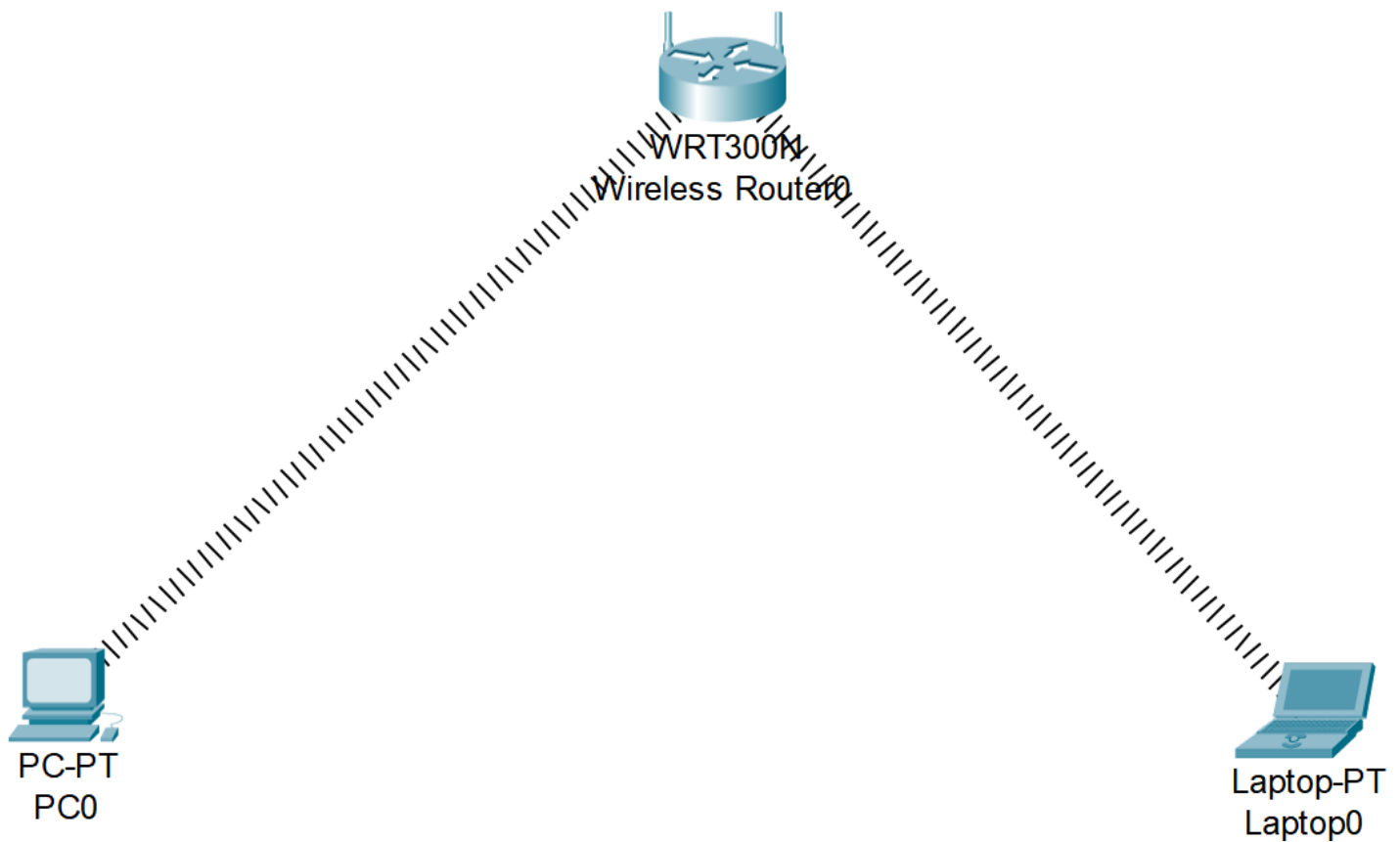
- enable
- config t
- interface FastEthernet0/2 (connected to Router2)
- switchport mode trunk
- no shutdown
- exit

10. Assign Static IP Address & Default Gateway (Router's IP) to the PCs.

Practical 9: Configure Wi-Fi router in CISCO packet tracer using DHCP and Wireless Encryption Protocol (WEP) in local network:

Devices:

1. PCs - 1
2. Laptop - 1
3. Wireless Router (WRT300N) - 1



Steps:

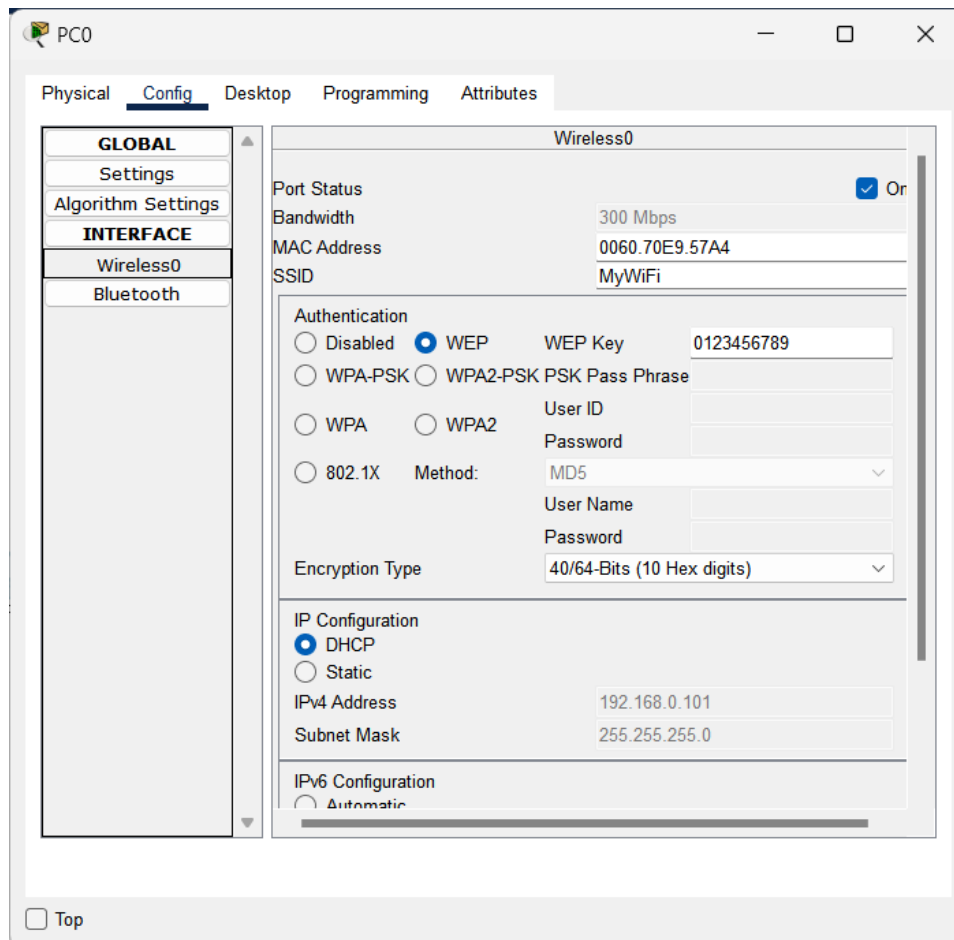
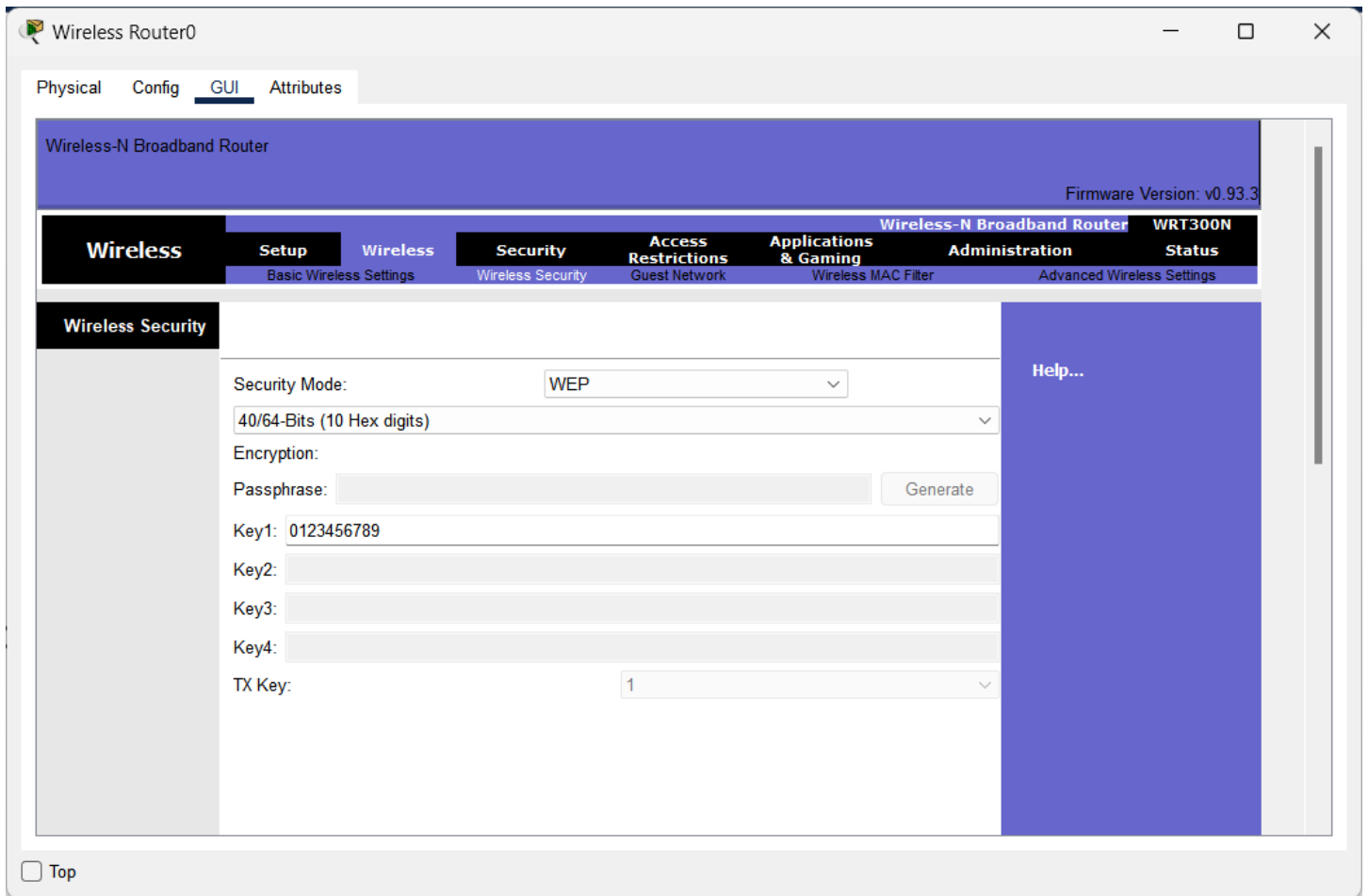
1. Connect the Devices as shown in the Screenshot.
2. Turn Off the PC0 and Add WMP300N Module to it. In PC 0 set Authentication to WEP and IP Configuration to DHCP.
3. Turn Off the Laptop0 and Add WMP300N Module to it. In Laptop 0 set Authentication to WEP and IP Configuration to DHCP.

4. In Wireless Router0, go to GUI > Wireless. Set Network Name (SSID) to 'MyWiFi'.
5. In Wireless Router0, go to GUI > Wireless > Wireless Security. Select WEP as Security Mode.
6. Set Key1 to '0123456789'.
7. Save the Settings.

The screenshot shows the 'Wireless Router0' web interface. At the top, there are tabs for 'Physical', 'Config', 'GUI', and 'Attributes', with 'GUI' being the active tab. Below the tabs, the page is titled 'Wireless-N Broadband Router' with the 'Firmware Version: v0.93.3' displayed on the right. A navigation bar contains several menu items: 'Wireless', 'Setup', 'Wireless', 'Security', 'Access Restrictions', 'Applications & Gaming', 'Administration', and 'Status'. Under the 'Wireless' menu, there are sub-items: 'Basic Wireless Settings', 'Wireless Security', 'Guest Network', 'Wireless MAC Filter', and 'Advanced Wireless Settings'. The 'Basic Wireless Settings' sub-item is selected, and its settings are displayed in a form. The form includes the following fields and options:

Network Mode:	Mixed
Network Name (SSID):	MyWiFi
Radio Band:	Auto
Wide Channel:	Auto
Standard Channel:	1 - 2.412GHz
SSID Broadcast:	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled

At the bottom left of the interface, there is a 'Top' button with a small square icon next to it.



Practical 10: Design a campus network with 7 departments each department having a dedicated network of Class A. Deploy suitable network components such as Servers, Routers, Wi-Fi router and Switches and observe connectivity using PING command:

Devices:

1. PCs - 15
2. Laptop - 1
3. Servers - 2 (WEB, DNS-FTP)
4. Printers - 7
5. Switch - 8
6. Router - 3 & Wireless Router (WRT300N) - 1

Steps:

1. First connect Switches with Router and then make other connections of the Devices as shown in the Screenshot.
2. Add PT-ROUTER-NM-1CFE Module to Routers (For extra Ethernet ports).
3. Switch0 to Switch7:
 - `config t`
 - `interface FastEthernet0/1 (connected to Routers)`
 - `switchport mode trunk`
 - `exit`
4. Router0:
 - `enable`
 - `config t`
 - `interface FastEthernet0/0 (connected to Switch 0)`
 - `ip address 2.0.0.1 255.0.0.0`
 - `no shutdown`
 - `exit`
 - `interface FastEthernet1/0 (connected to Switch 4)`
 - `ip address 6.0.0.1 255.0.0.0`
 - `no shutdown`

- exit
- interface Serial2/0 (connected to Router 1)
- ip address 10.0.0.2 255.0.0.0
- no shutdown
- exit
- router rip
- network 10.0.0.0
- network 2.0.0.0
- network 6.0.0.0
- end
- exit

5. Router1:

- enable
- config t
- interface FastEthernet0/0 (connected to Switch5)
- ip address 7.0.0.1 255.0.0.0
- no shutdown
- exit
- interface FastEthernet1/0 (connected to Switch6)
- ip address 8.0.0.1 255.0.0.0
- no shutdown
- exit
- interface FastEthernet6/0 (connected to Switch7)
- ip address 9.0.0.1 255.0.0.0
- no shutdown
- exit
- interface Serial2/0 (connected to Router0)
- ip address 10.0.0.3 255.0.0.0
- no shutdown
- exit
- interface Serial3/0 (connected to Router2)
- ip address 20.0.0.2 255.0.0.0
- no shutdown
- exit
- router rip
- network 10.0.0.0
- network 20.0.0.0
- network 7.0.0.0
- network 8.0.0.0

- network 9.0.0.0
- end
- exit

6. Router2:

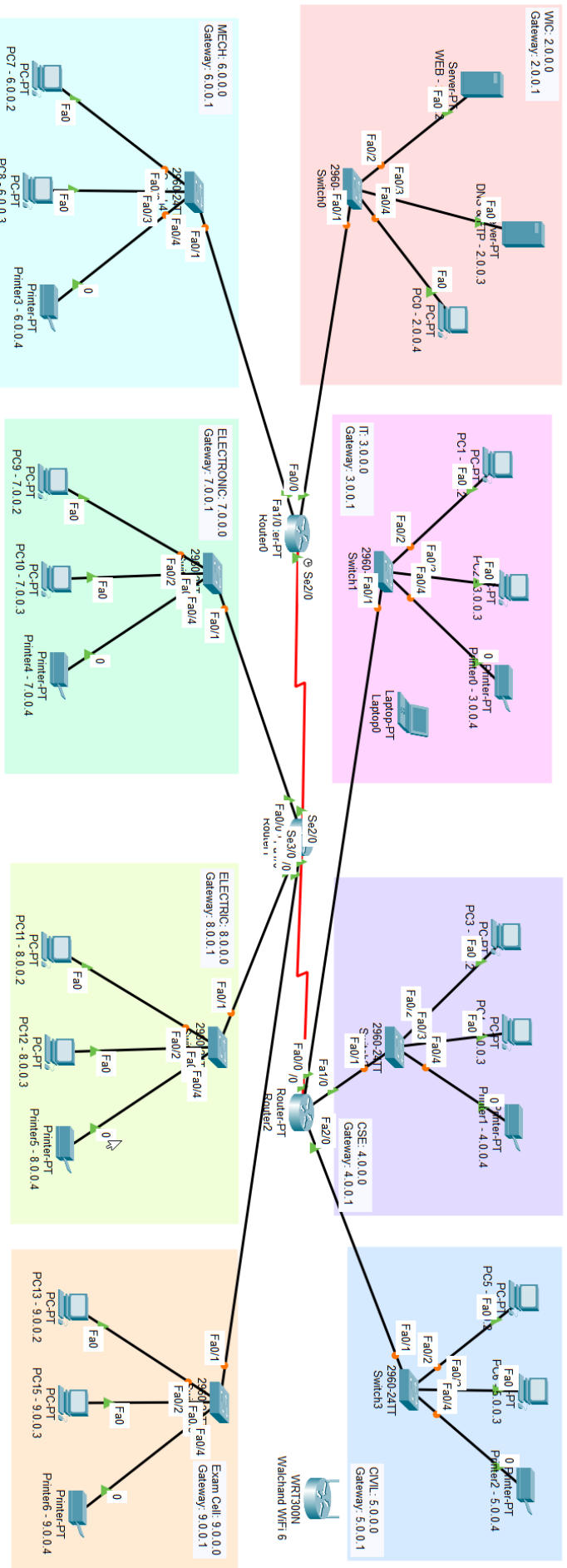
- enable
- config t
- interface FastEthernet0/0 (connected to Switch1)
- ip address 3.0.0.1 255.0.0.0
- no shutdown
- exit
- interface FastEthernet1/0 (connected to Switch2)
- ip address 4.0.0.1 255.0.0.0
- no shutdown
- exit
- interface FastEthernet2/0 (connected to Switch3)
- ip address 5.0.0.1 255.0.0.0
- no shutdown
- exit
- interface Serial3/0 (connected to Router1)
- ip address 20.0.0.3 255.0.0.0
- no shutdown
- exit
- router rip
- network 20.0.0.0
- network 3.0.0.0
- network 4.0.0.0
- network 5.0.0.0
- end
- exit

7. Configure the Servers, assign IP address, default gateway and enable the respective services.

8. Create network of each department by assigning respective static IP addresses and default gateways to the PCs and Printers.

9. Set DNS IP address of all PCs to the IP Address of DNS Server.

10. Set up the Wireless Router and Connect it to the Laptop0.



Practical 11: Using Wireshark capture the packets to identify the password with HTTP and HTTPS request:

Steps:

- 1.

Practical 12: Using Wireshark capture the packets to identify the password with HTTP and HTTPS request:

Steps:

- 1.