



INSTITUTE OF INFORMATICS AND COMMUNICATION
M.Sc. Informatics
(2022-2024)

PRACTICAL FILE

COMPUTER COMMUNICATION AND NETWORKS
(ITCC-201)

SUBMITTED BY: -

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ROLL NO - 22/1408

SUBMITTED TO: -

Dr. Sunil Kumar

Practical - 1

AIM: To configure and compare various network topologies using cisco packet tracer.

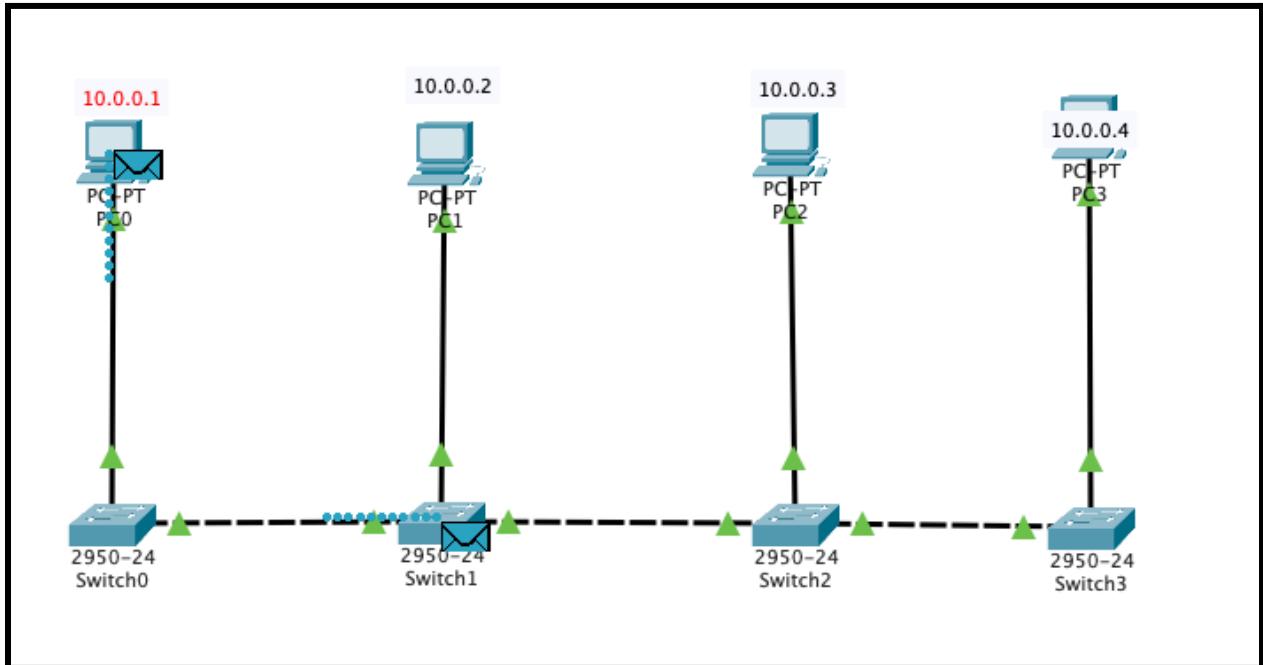
OBJECTIVES:

Part 1: To configure the following network topologies:

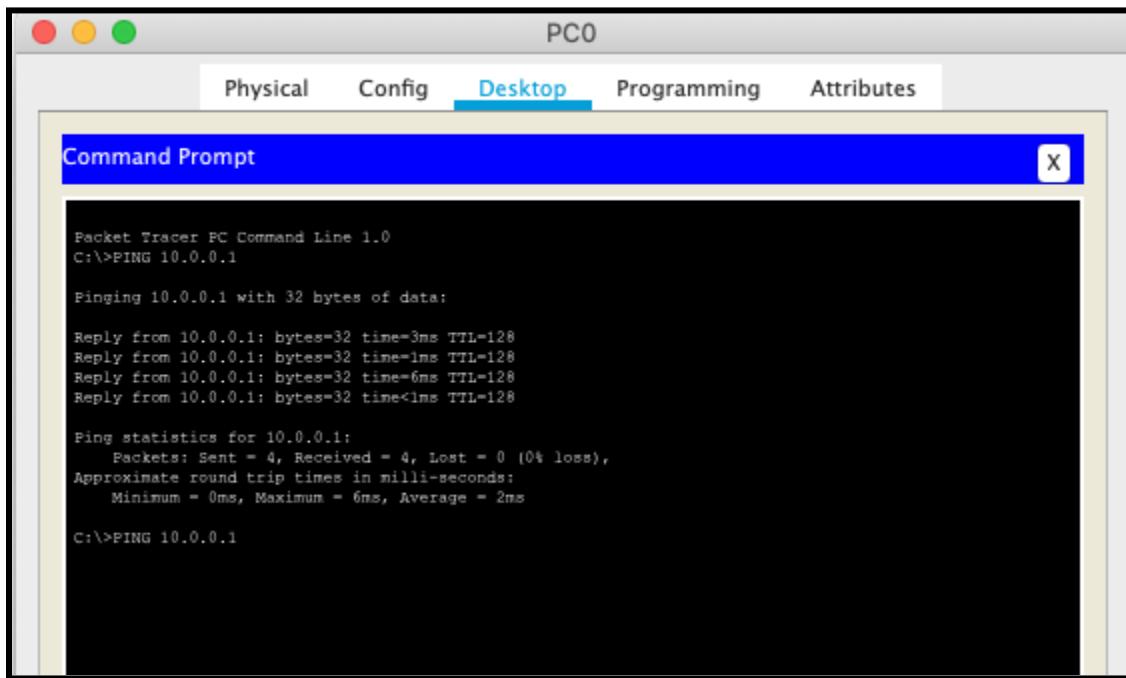
Bus, Star, Mesh, Ring, dual ring, tree and hybrid topology

→ BUS TOPOLOGY:

Input:



Output



PC0

Physical Config Desktop Programming Attributes

Command Prompt X

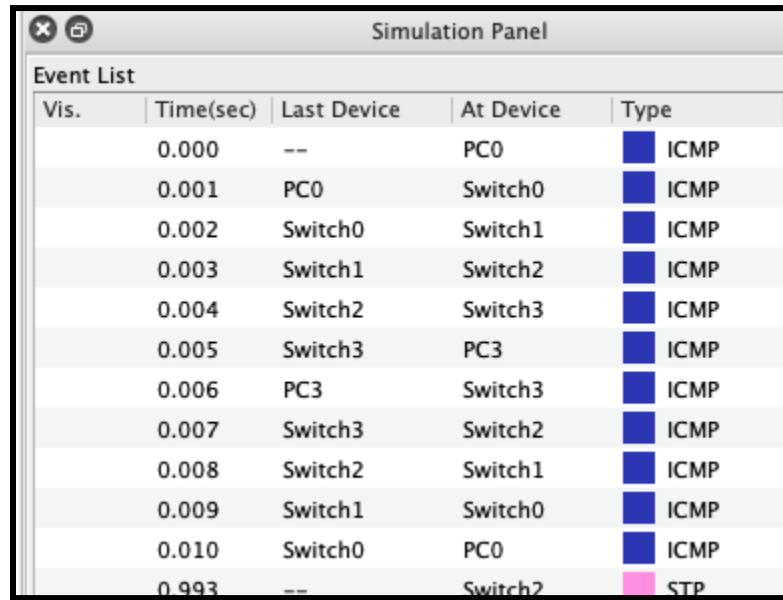
```
Packet Tracer PC Command Line 1.0
C:\>PING 10.0.0.1

Pinging 10.0.0.1 with 32 bytes of data:

Reply from 10.0.0.1: bytes=32 time=3ms TTL=128
Reply from 10.0.0.1: bytes=32 time=1ms TTL=128
Reply from 10.0.0.1: bytes=32 time=6ms TTL=128
Reply from 10.0.0.1: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 6ms, Average = 2ms

C:\>PING 10.0.0.1
```



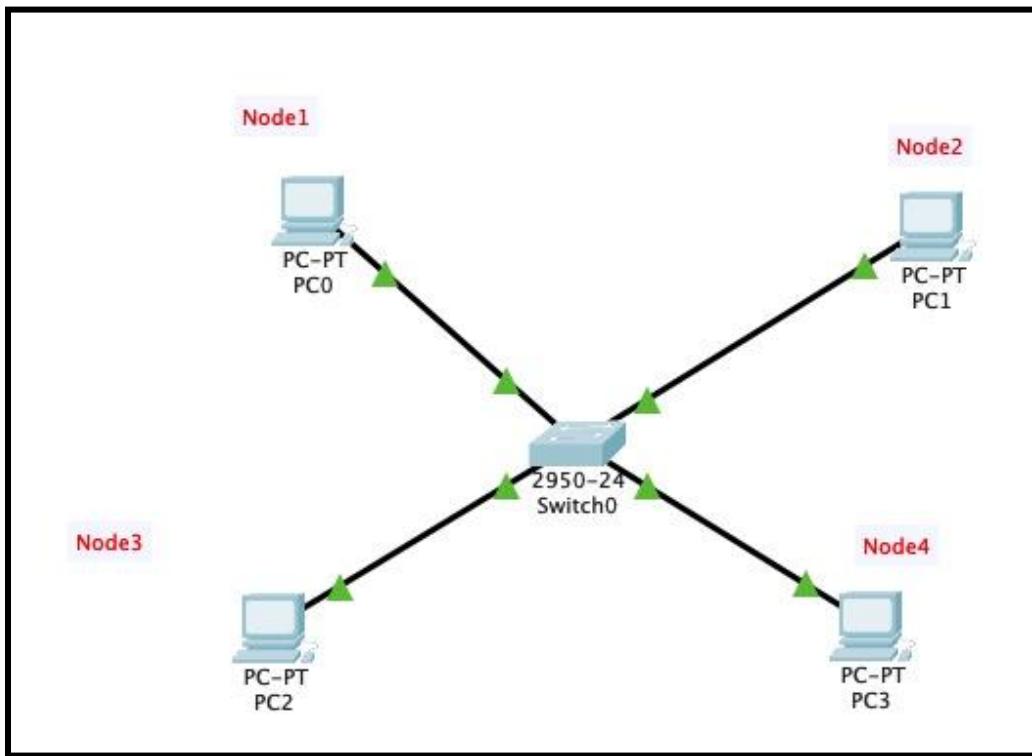
Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC0	ICMP
	0.001	PC0	Switch0	ICMP
	0.002	Switch0	Switch1	ICMP
	0.003	Switch1	Switch2	ICMP
	0.004	Switch2	Switch3	ICMP
	0.005	Switch3	PC3	ICMP
	0.006	PC3	Switch3	ICMP
	0.007	Switch3	Switch2	ICMP
	0.008	Switch2	Switch1	ICMP
	0.009	Switch1	Switch0	ICMP
	0.010	Switch0	PC0	ICMP
	0.993	--	Switch2	STP

→ STAR TOPOLOGY:

Input



Output:

The screenshot shows a desktop environment with a window titled "PC0". The window has a tab bar with "Physical", "Config", "Desktop" (which is highlighted in blue), "Programming", and "Attributes". Below the title bar is a "Command Prompt" window with a blue header bar containing the text "Command Prompt" and a close button "X". The main area of the Command Prompt window displays the following text:

```

Packet Tracer PC Command Line 1.0
C:\>PING 10.0.0.1

Pinging 10.0.0.1 with 32 bytes of data:

Reply from 10.0.0.1: bytes=32 time=3ms TTL=128
Reply from 10.0.0.1: bytes=32 time=1ms TTL=128
Reply from 10.0.0.1: bytes=32 time=6ms TTL=128
Reply from 10.0.0.1: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 6ms, Average = 2ms

C:\>PING 10.0.0.1
  
```

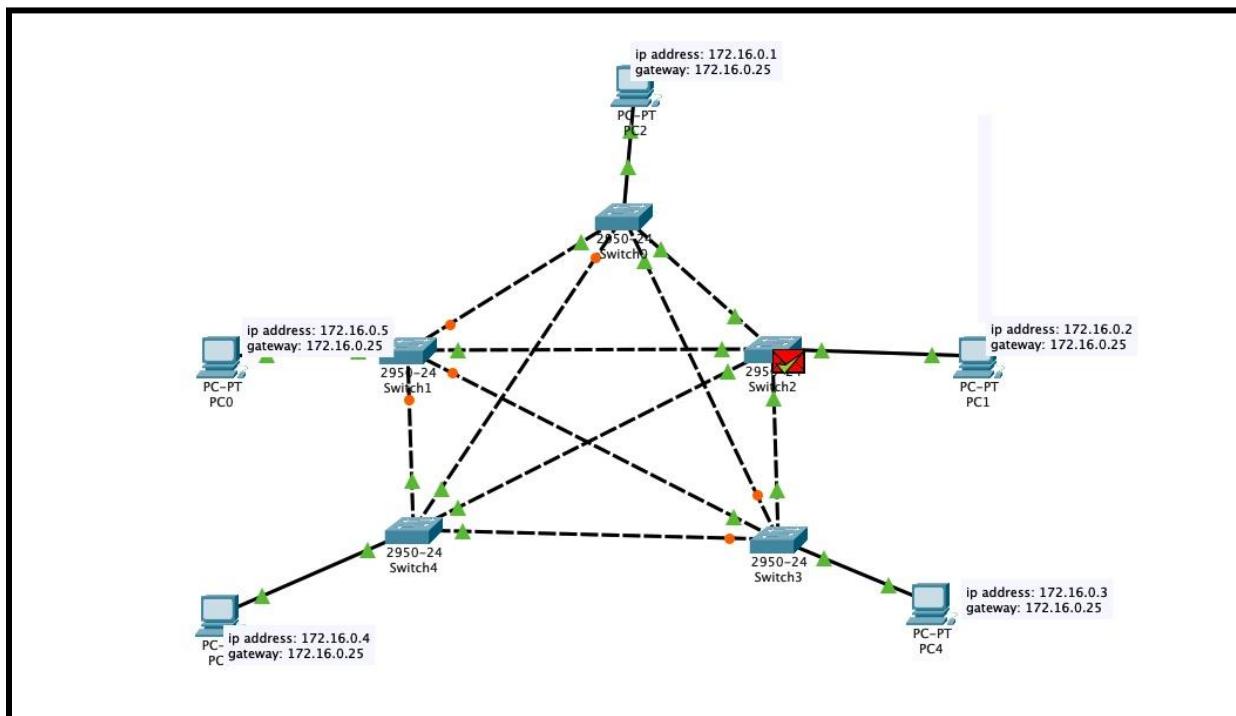
Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type
	0.733	--	Switch0	CDP
	0.733	--	Switch0	CDP
	0.733	--	Switch0	CDP
	0.733	--	Switch0	CDP
	0.734	Switch0	PC0	CDP
	0.734	Switch0	PC1	CDP
	0.734	Switch0	PC2	CDP
	0.734	Switch0	PC3	CDP
	0.893	--	Switch0	DTP
	0.894	Switch0	PC3	DTP
	1.697	--	Switch0	STP
🕒	1.698	Switch0	PC2	STP
🕒	1.698	Switch0	PC0	STP
🕒	1.698	Switch0	PC1	STP
🕒	1.698	Switch0	PC3	STP

→ MESH TOPOLOGY:

Input:



Output:

```
Command Prompt

Packet Tracer PC Command Line 1.0
C:\>ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

Reply from 10.0.0.2: bytes=32 time=5ms TTL=128
Reply from 10.0.0.2: bytes=32 time=3ms TTL=128
Reply from 10.0.0.2: bytes=32 time=3ms TTL=128
Reply from 10.0.0.2: bytes=32 time=2ms TTL=128

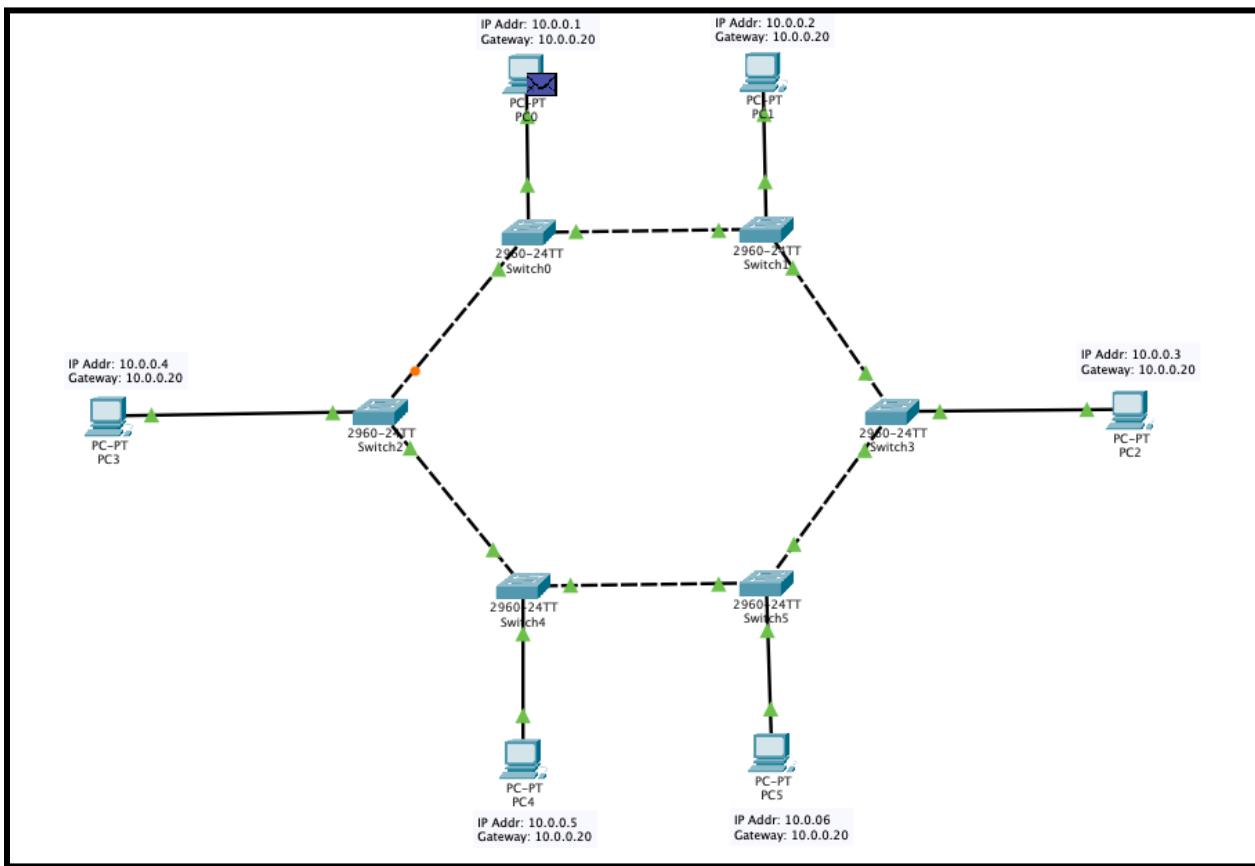
Ping statistics for 10.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 5ms, Average = 3ms

C:\>
```

Event List				
Vis.	Time(sec)	Last Device	At Device	Type
	0.743	--	Switch2	STP
	0.744	Switch2	Switch4	STP
	0.744	Switch2	PC1	STP
	0.744	Switch2	Switch3	STP
	0.744	Switch2	Switch0	STP
	0.744	Switch2	Switch1	STP
	0.745	Switch4	Switch3	STP
	0.745	Switch4	Switch0	STP
	0.745	Switch4	PC3	STP
	0.745	Switch4	Switch1	STP
	0.745	Switch3	Switch1	STP
	0.745	Switch3	PC4	STP
	0.745	Switch0	Switch1	STP
	0.745	Switch0	PC2	STP
	0.745	Switch0	Switch3	STP
	0.745	Switch1	PC0	STP
	1.814	--	Switch0	DTP
	1.815	Switch0	Switch2	DTP

→ RING TOPOLOGY:

Input:



Output:

PC0

Physical Config Desktop Programming Attributes

Command Prompt

```
Packet Tracer PC Command Line 1.0
C:\>PING 10.0.0.1

Pinging 10.0.0.1 with 32 bytes of data:

Reply from 10.0.0.1: bytes=32 time=3ms TTL=128
Reply from 10.0.0.1: bytes=32 time=1ms TTL=128
Reply from 10.0.0.1: bytes=32 time=6ms TTL=128
Reply from 10.0.0.1: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 6ms, Average = 2ms

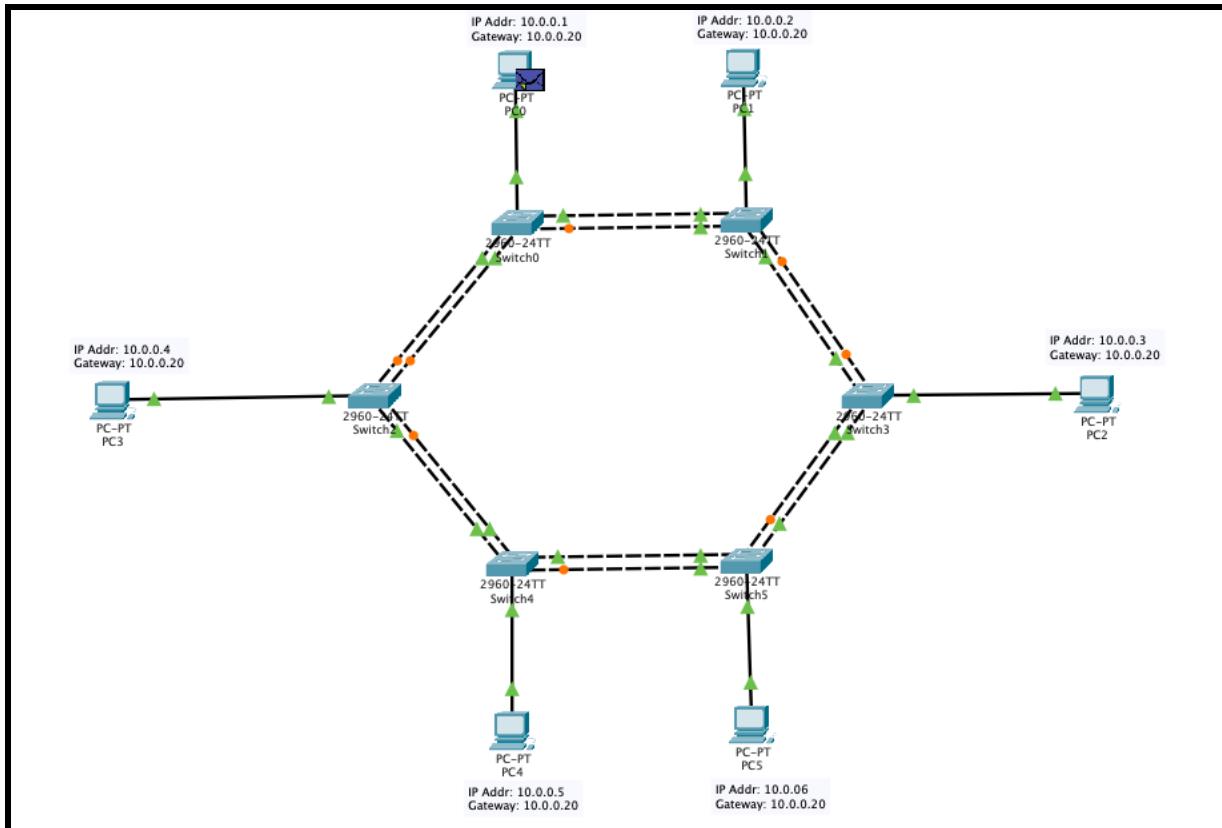
C:\>PING 10.0.0.1
```

Simulation Panel

Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC0	ICMP
	0.001	PC0	Switch0	ICMP
	0.002	Switch0	Switch1	ICMP
	0.003	Switch1	Switch3	ICMP
	0.004	Switch3	Switch5	ICMP
	0.005	Switch5	PC5	ICMP
	0.006	PC5	Switch5	ICMP
	0.007	Switch5	Switch3	ICMP
	0.008	Switch3	Switch1	ICMP
	0.009	Switch1	Switch0	ICMP
eye	0.010	Switch0	PC0	ICMP

→ **DUAL RING TOPOLOGY:**

Input:



Output:

The screenshot shows the Packet Tracer software interface. At the top, there is a menu bar with tabs: Physical, Config, Desktop (which is selected), Programming, and Attributes. Below the menu bar is a toolbar with icons for Save, Undo, Redo, Cut, Copy, Paste, Delete, Find, and Select. A status bar at the bottom displays the text "PC0".

Command Prompt Window:

```
Packet Tracer PC Command Line 1.0
C:\>PING 10.0.0.1

Pinging 10.0.0.1 with 32 bytes of data:

Reply from 10.0.0.1: bytes=32 time=3ms TTL=128
Reply from 10.0.0.1: bytes=32 time=1ms TTL=128
Reply from 10.0.0.1: bytes=32 time=6ms TTL=128
Reply from 10.0.0.1: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 6ms, Average = 2ms

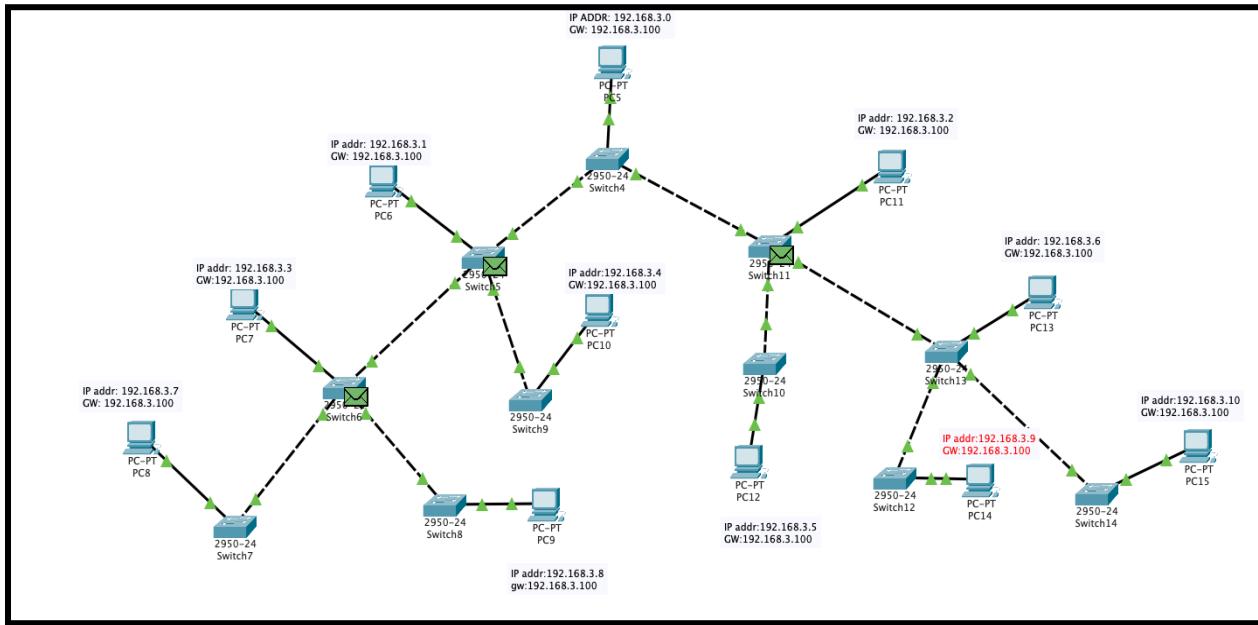
C:\>PING 10.0.0.1
```

Simulation Panel - Event List:

Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC0	ICMP
	0.001	PC0	Switch0	ICMP
	0.002	Switch0	Switch1	ICMP
	0.003	Switch1	Switch3	ICMP
	0.004	Switch3	Switch5	ICMP
	0.005	Switch5	PC5	ICMP
	0.006	PC5	Switch5	ICMP
	0.007	Switch5	Switch3	ICMP
	0.008	Switch3	Switch1	ICMP
	0.009	Switch1	Switch0	ICMP
	0.010	Switch0	PC0	ICMP

→ TREE TOPOLOGY:

Input:



Output:

The screenshot shows a terminal window titled "PC5" with the "Desktop" tab selected. The window displays the output of a ping command:

```
Packet Tracer PC Command Line 1.0
C:\>PING 192.168.3.0

Pinging 192.168.3.0 with 32 bytes of data:

Reply from 192.168.3.0: bytes=32 time=1ms TTL=128
Reply from 192.168.3.0: bytes=32 time<1ms TTL=128
Reply from 192.168.3.0: bytes=32 time=4ms TTL=128
Reply from 192.168.3.0: bytes=32 time=2ms TTL=128

Ping statistics for 192.168.3.0:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 4ms, Average = 1ms
```

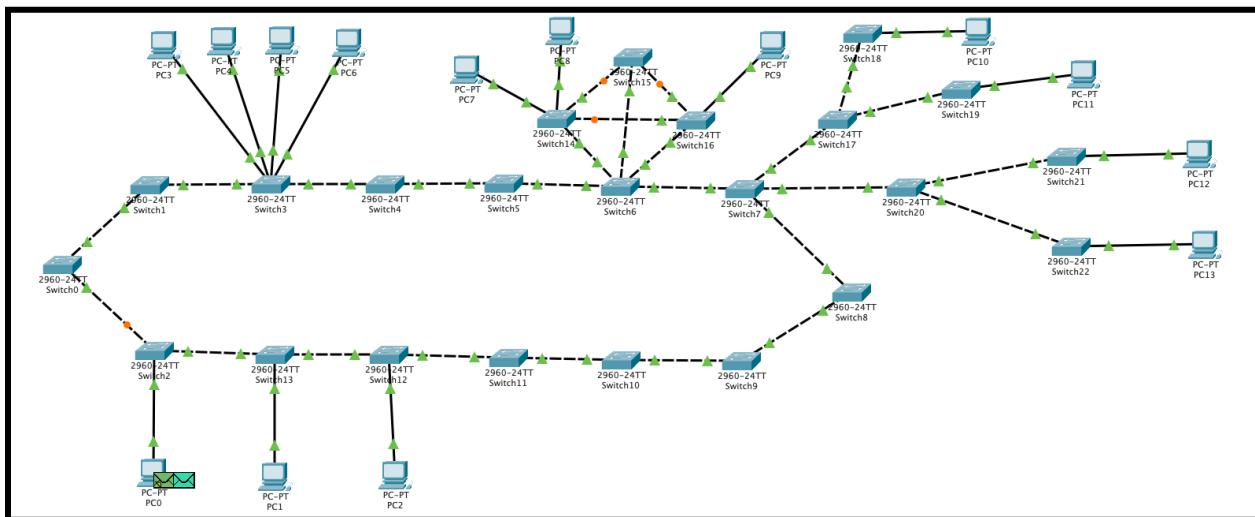
Simulation Panel

Event List

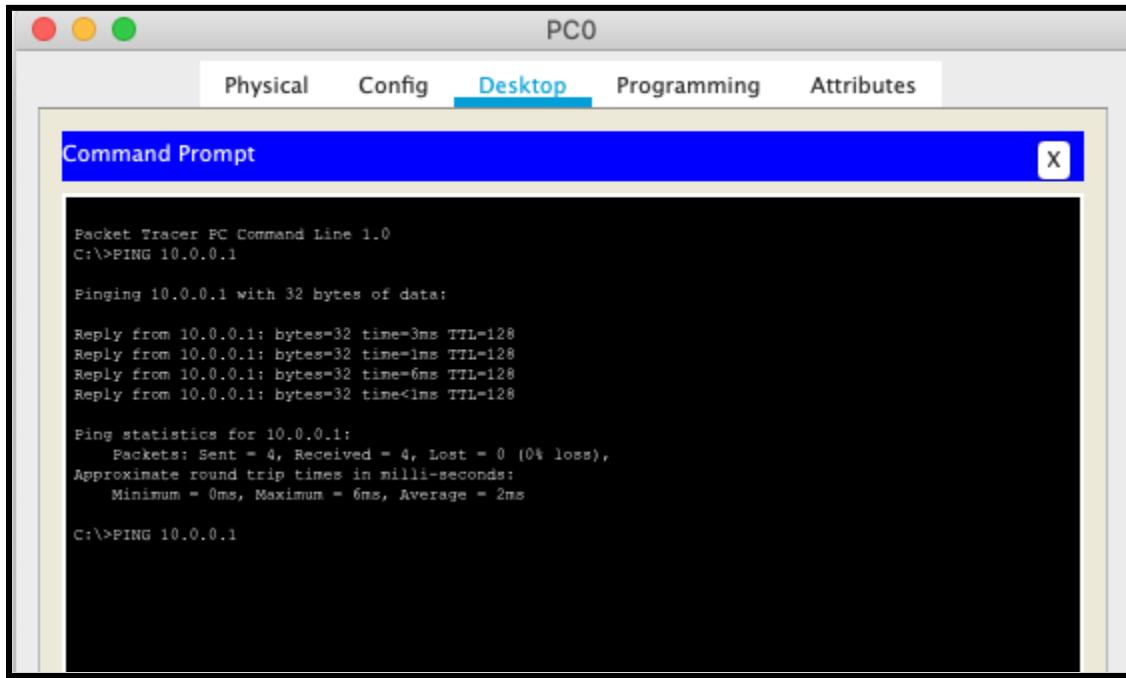
Vis.	Time(sec)	Last Device	At Device	Type
0.UUU	--	--	PC5	ARP
	0.001	PC8	Switch7	ARP
	0.001	PC5	Switch4	ARP
⌚	0.002	Switch7	Switch6	ARP
⌚	0.002	Switch4	Switch5	ARP
⌚	0.002	Switch4	Switch11	ARP
	0.003	Switch6	Switch5	ARP
	0.003	Switch6	Switch8	ARP
	0.003	Switch6	PC7	ARP
	0.003	Switch5	Switch6	ARP
	0.003	Switch5	Switch9	ARP
	0.003	Switch5	PC6	ARP
	0.003	Switch11	Switch13	ARP
	0.003	Switch11	Switch10	ARP
	0.003	Switch11	PC11	ARP
	0.004	Switch5	Switch4	ARP
	0.004	Switch5	Switch9	ARP
	0.004	Switch5	PC6	ARP
	0.004	Switch8	PC9	ARP

→ HYBRID TOPOLOGY:

Input:



Output:



PC0

Physical Config Desktop Programming Attributes

Command Prompt X

```
Packet Tracer PC Command Line 1.0
C:\>PING 10.0.0.1

Pinging 10.0.0.1 with 32 bytes of data:

Reply from 10.0.0.1: bytes=32 time=3ms TTL=128
Reply from 10.0.0.1: bytes=32 time=1ms TTL=128
Reply from 10.0.0.1: bytes=32 time=6ms TTL=128
Reply from 10.0.0.1: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 6ms, Average = 2ms

C:\>PING 10.0.0.1
```

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC0	ICMP
	0.000	--	PC0	ARP
	0.001	PC0	Switch2	ARP
	0.002	Switch2	Switch13	ARP
	0.003	Switch13	Switch12	ARP
	0.003	Switch13	PC1	ARP
	0.004	Switch12	Switch11	ARP
	0.004	Switch12	PC2	ARP
	0.005	Switch11	Switch10	ARP
	0.006	Switch10	Switch9	ARP
	0.007	Switch9	Switch8	ARP
	0.008	Switch8	Switch7	ARP
	0.009	Switch7	Switch6	ARP
	0.009	Switch7	Switch17	ARP
	0.010	Switch7	Switch20	ARP
	0.010	Switch6	Switch5	ARP
	0.010	Switch6	Switch16	ARP
	0.010	Switch6	Switch14	ARP
	0.010	Switch6	Switch15	ARP
	0.010	Switch17	Switch18	ARP
	0.010	Switch17	Switch19	ARP
	0.010	Switch20	Switch21	ARP
	0.010	Switch20	Switch22	ARP
	0.011	Switch5	Switch4	ARP
	0.011	Switch16	Switch15	ARP
	0.011	Switch16	Switch14	ARP
	0.011	Switch16	PC9	ARP
	0.011	Switch14	Switch15	ARP
	0.011	Switch14	PC7	ARP
	0.011	Switch14	PC8	ARP
	0.011	Switch18	PC10	ARP
	0.011	Switch19	PC11	ARP

	0.011	Switch21	PC12	ARP
	0.011	Switch22	PC13	ARP
	0.012	Switch4	Switch3	ARP
	0.012	PC10	Switch18	ARP
	0.013	Switch3	Switch1	ARP
	0.013	Switch3	PC4	ARP
	0.013	Switch3	PC5	ARP
	0.013	Switch3	PC6	ARP
	0.013	Switch3	PC3	ARP
	0.013	Switch18	Switch17	ARP
	0.014	Switch1	Switch0	ARP
	0.014	Switch17	Switch7	ARP
	0.015	Switch0	Switch2	ARP
	0.015	Switch7	Switch8	ARP
	0.016	Switch8	Switch9	ARP
	0.017	Switch9	Switch10	ARP
	0.018	Switch10	Switch11	ARP
	0.019	Switch11	Switch12	ARP
	0.020	Switch12	Switch13	ARP
	0.021	Switch13	Switch2	ARP
Eye icon	0.022	Switch2	PC0	ARP
Eye icon	0.022	--	PC0	ICMP

Part 2 : To compare the network topologies.

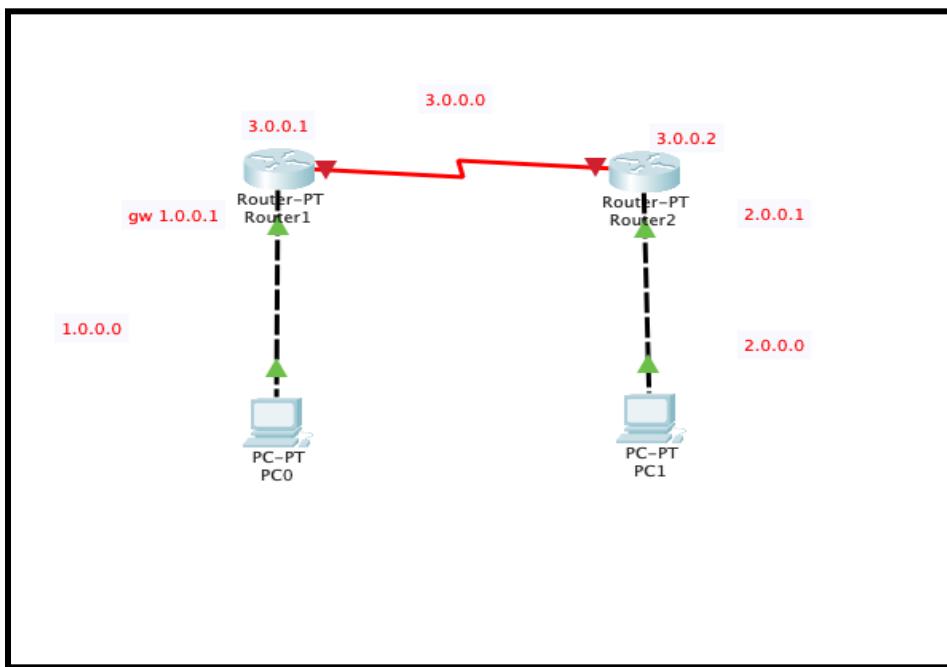
Comparison of Network Topologies

Topology	Total No of Links	Privacy	I/O lines with each device	Installation and Reconnection	Cost	Fault Identification and Isolation	Line Configuration	Application
Mesh	$n(n-1)/2$	Yes	$n-1$	Difficult	Expensive	Easy	P2P	Regional Telephone offices
Star	n	No	One	Easy	Less expensive	Easy	P2P	LANs, High speed LANs
Bus	Single backbone with n drop lines	No	One	Difficult	Least expensive	Difficult	Multipoint	Not used in large networks
Ring	n	No	One	Easy	Moderate	Easy	Multipoint	IBM token ring. Not referred in todays LANs

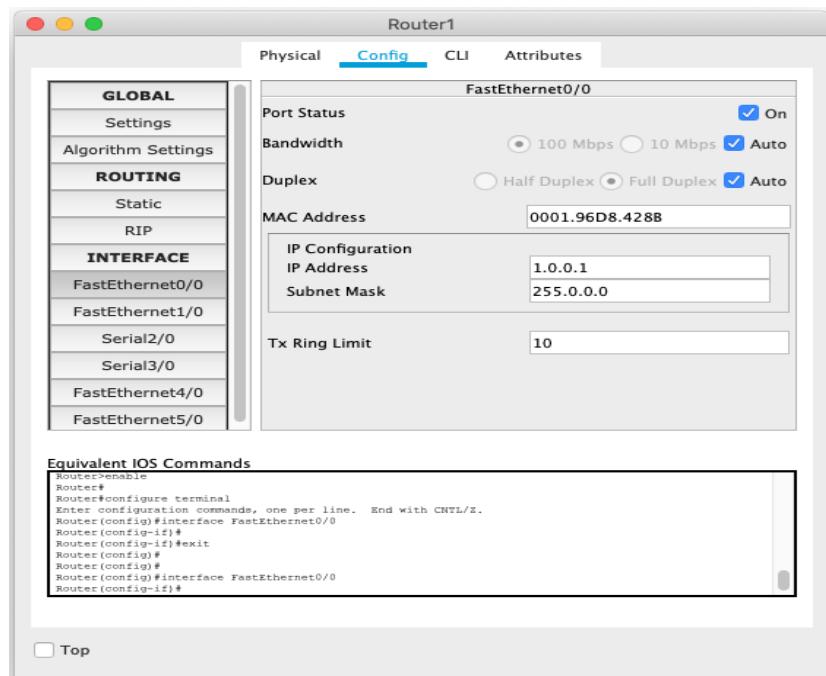
Practical - 2

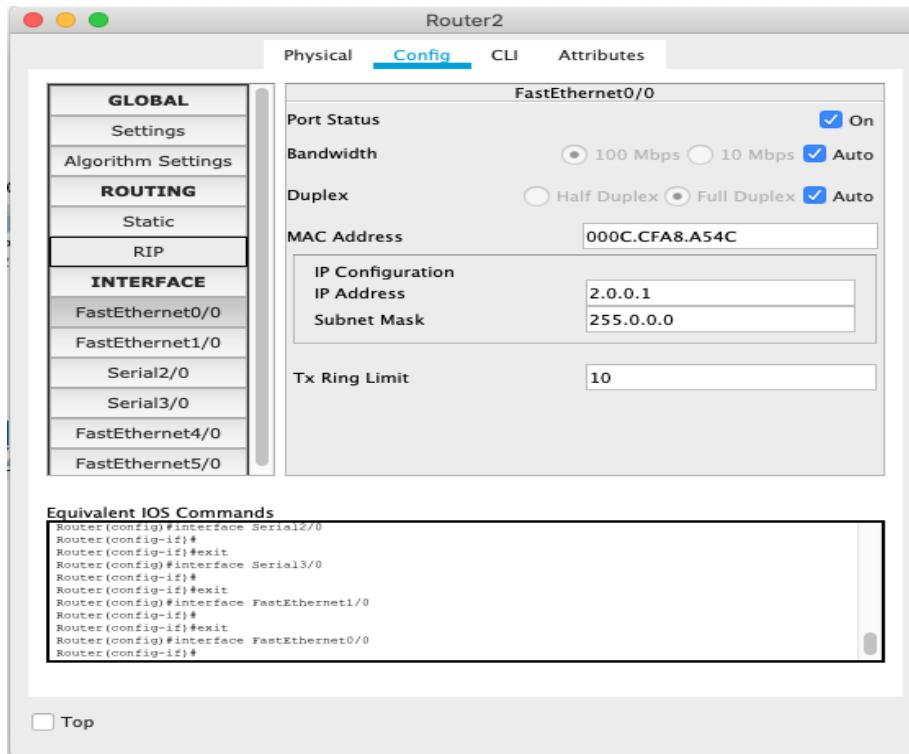
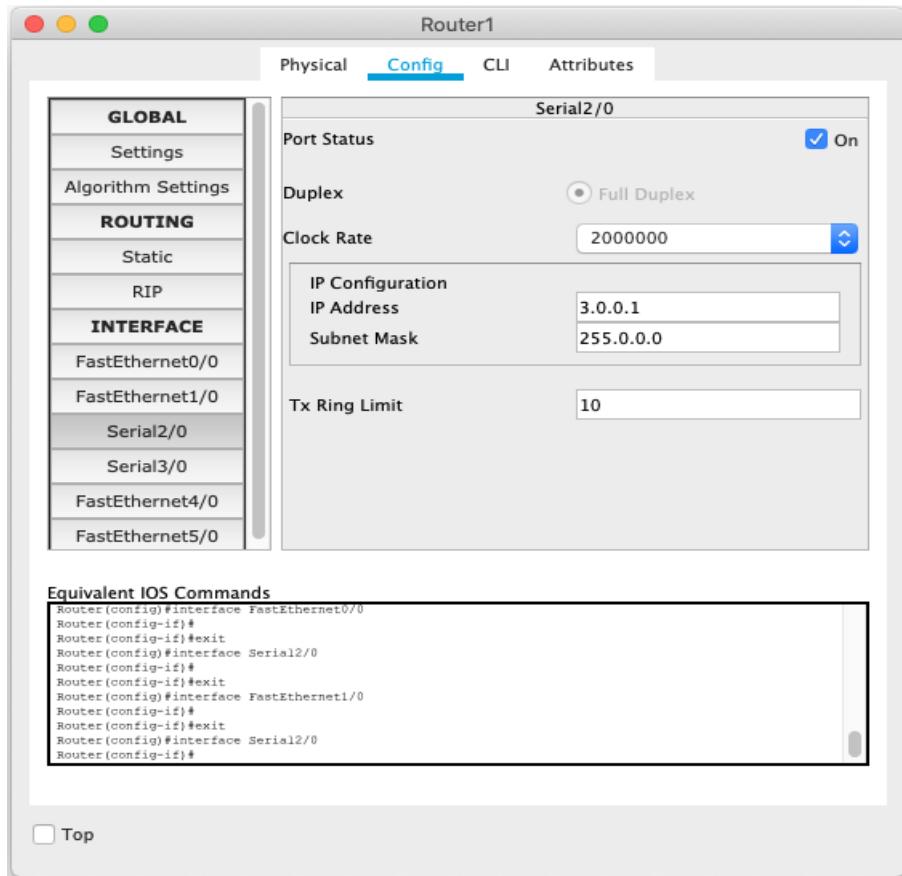
Aim: To implement Static routing using cisco packet tracer.

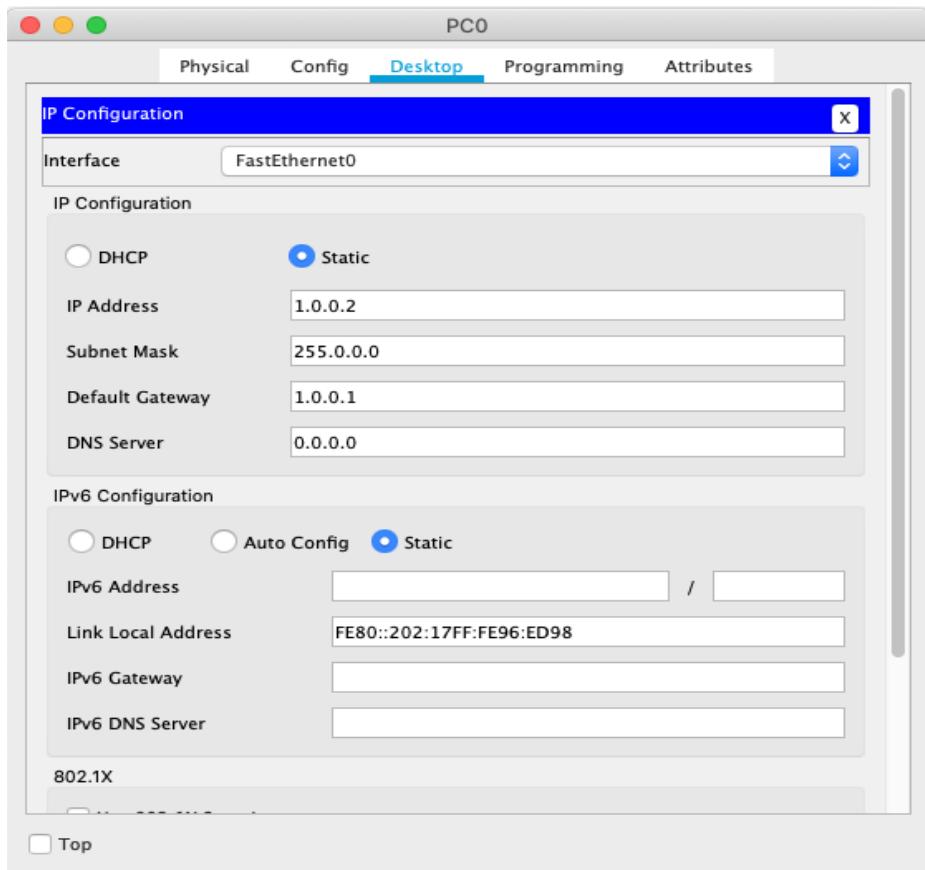
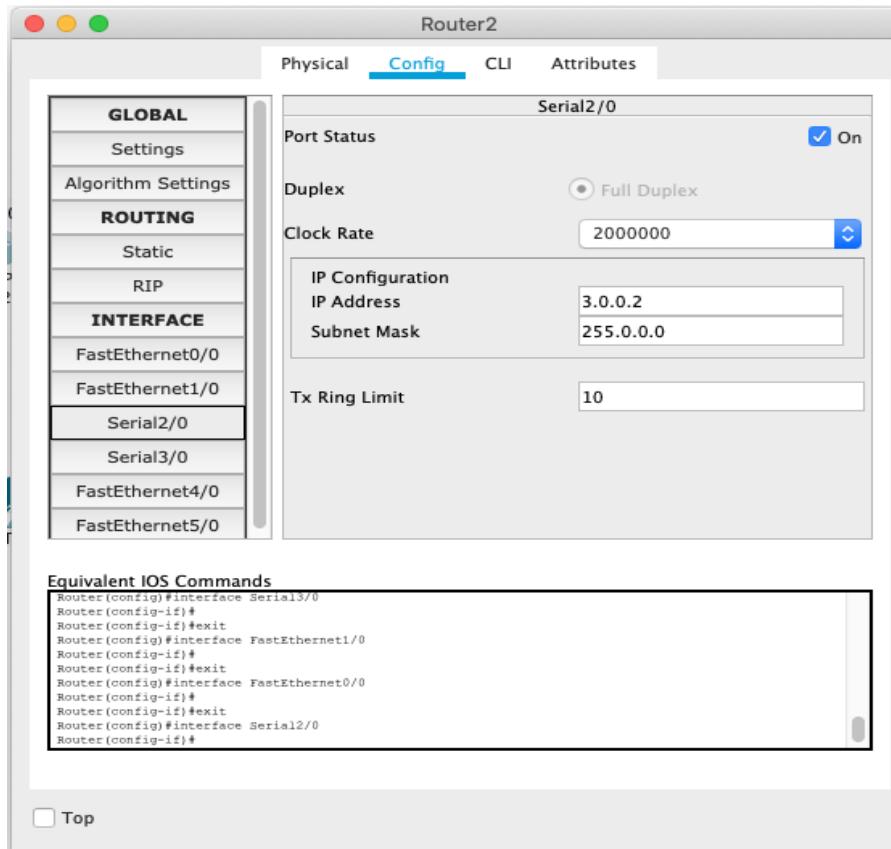
Input 1:

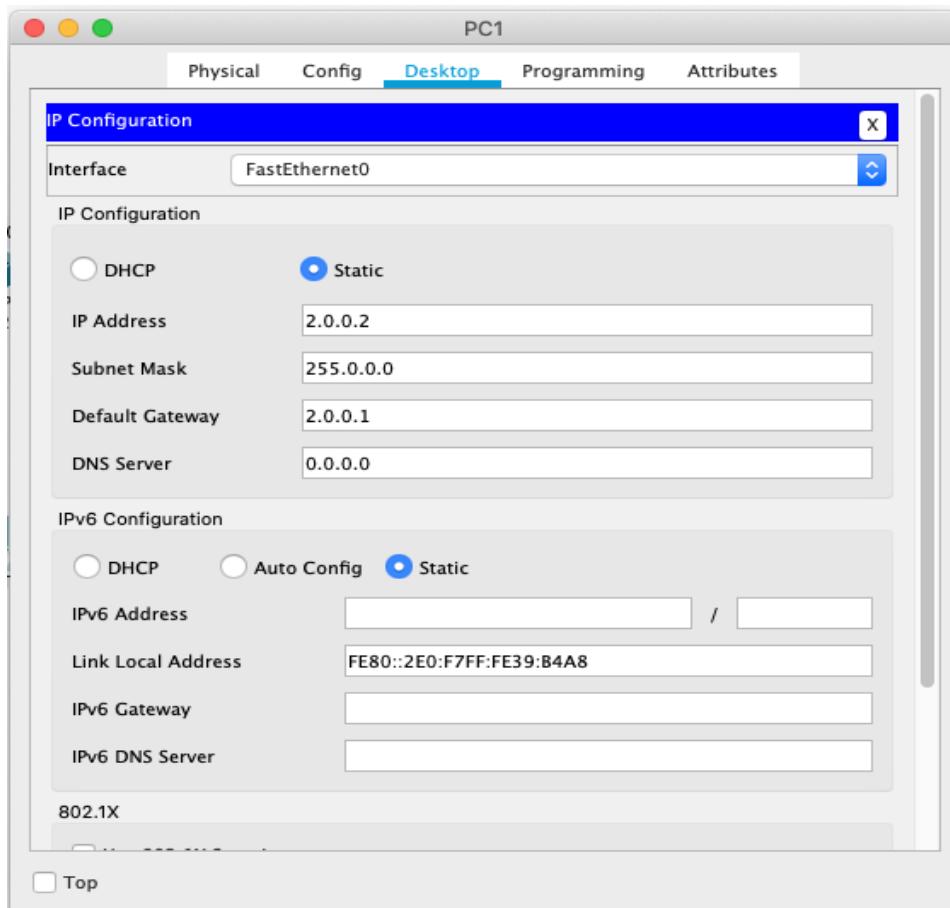


Output 1:

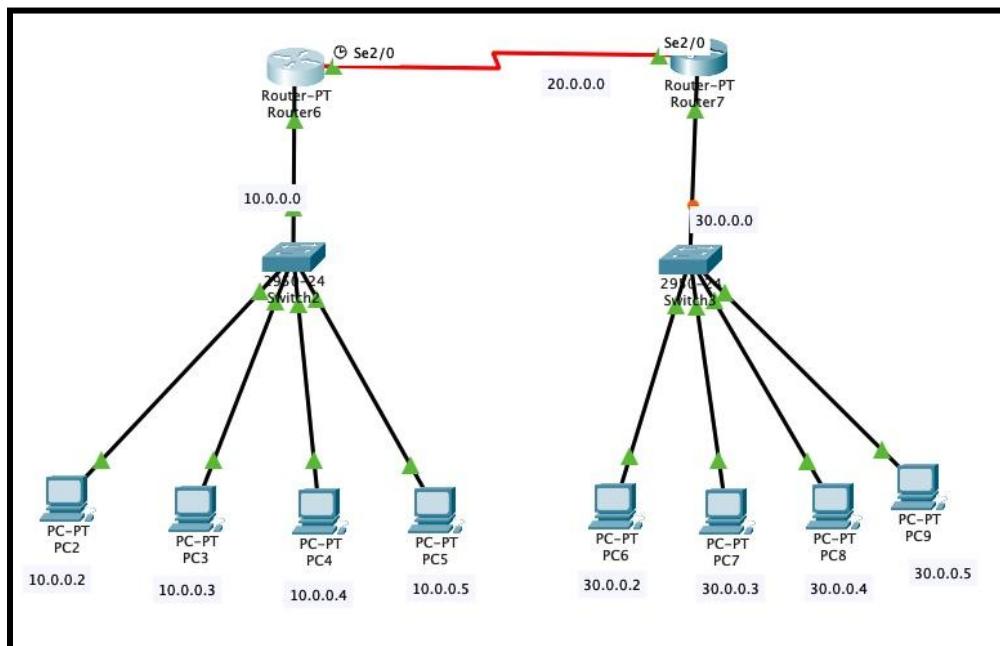




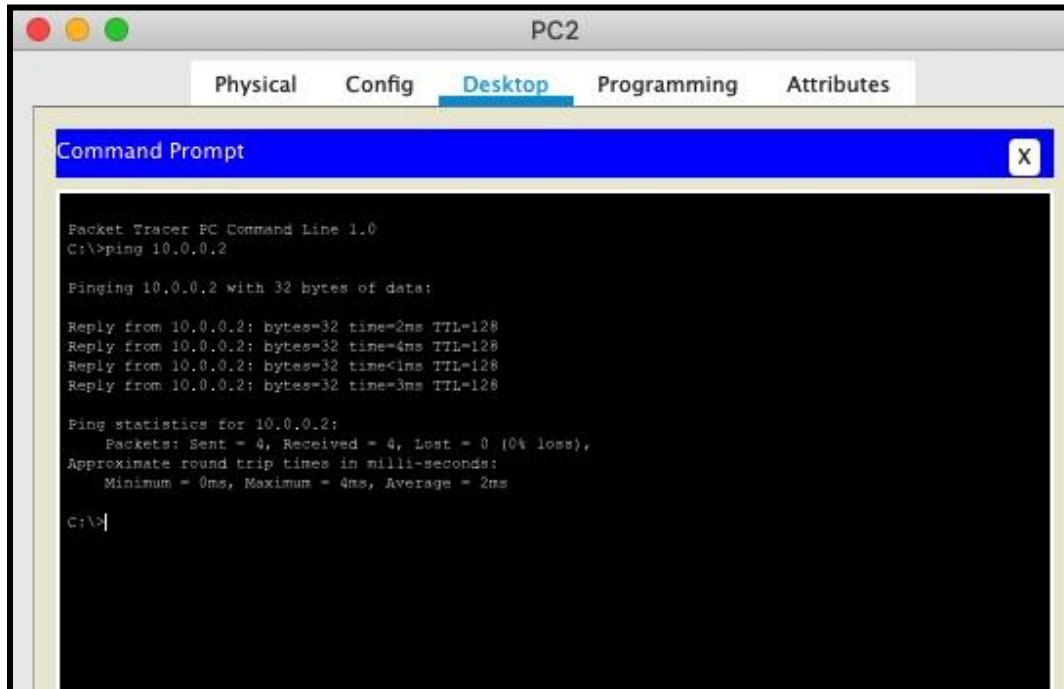
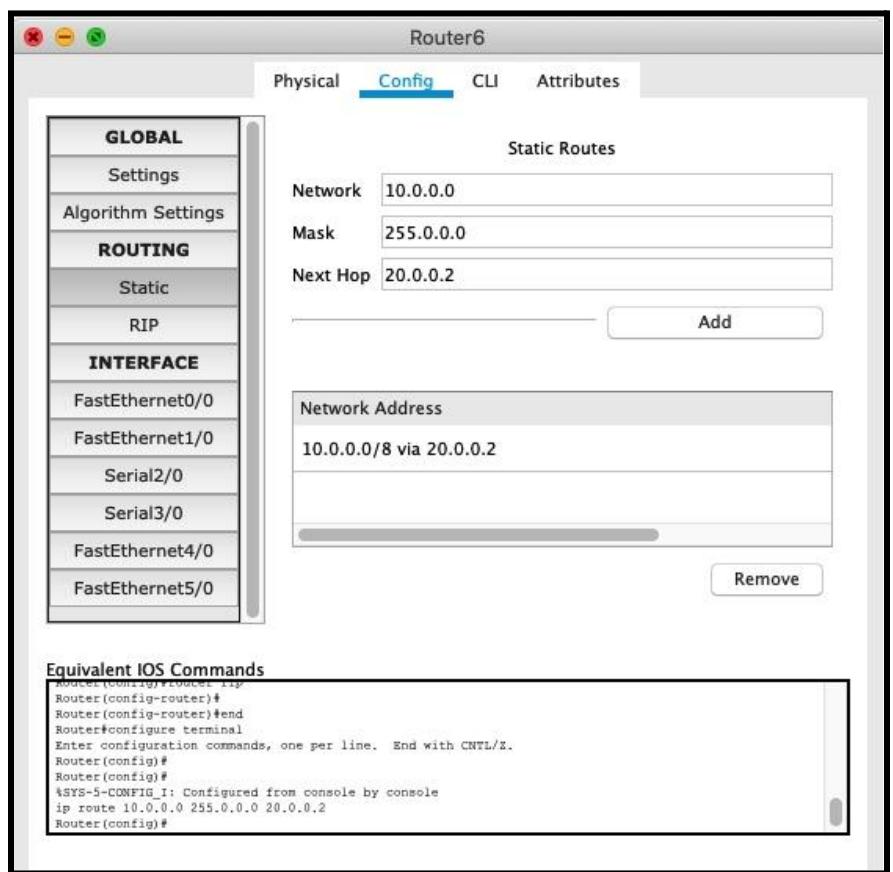




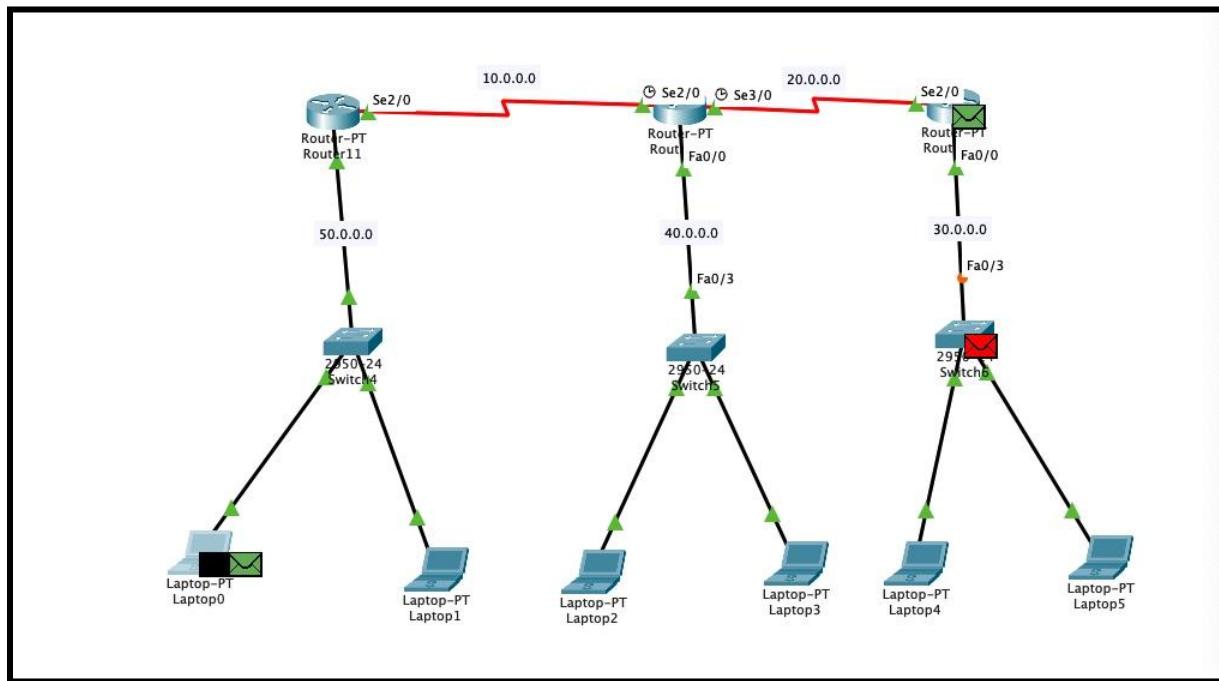
Input 2:



Output 2:



Input 3:



Output 3:

The screenshot shows a software interface for managing network configurations. The title bar says "Router11". Below it is a navigation menu with tabs: "Physical", "Config" (which is selected), "CLI", and "Attributes".

The left sidebar contains a tree view of configuration sections:

- GLOBAL**
- Settings
- Algorithm Settings
- ROUTING**
- Static (selected)
- RIP
- INTERFACE**
- FastEthernet0/0
- FastEthernet1/0
- Serial2/0
- Serial3/0
- FastEthernet4/0
- FastEthernet5/0

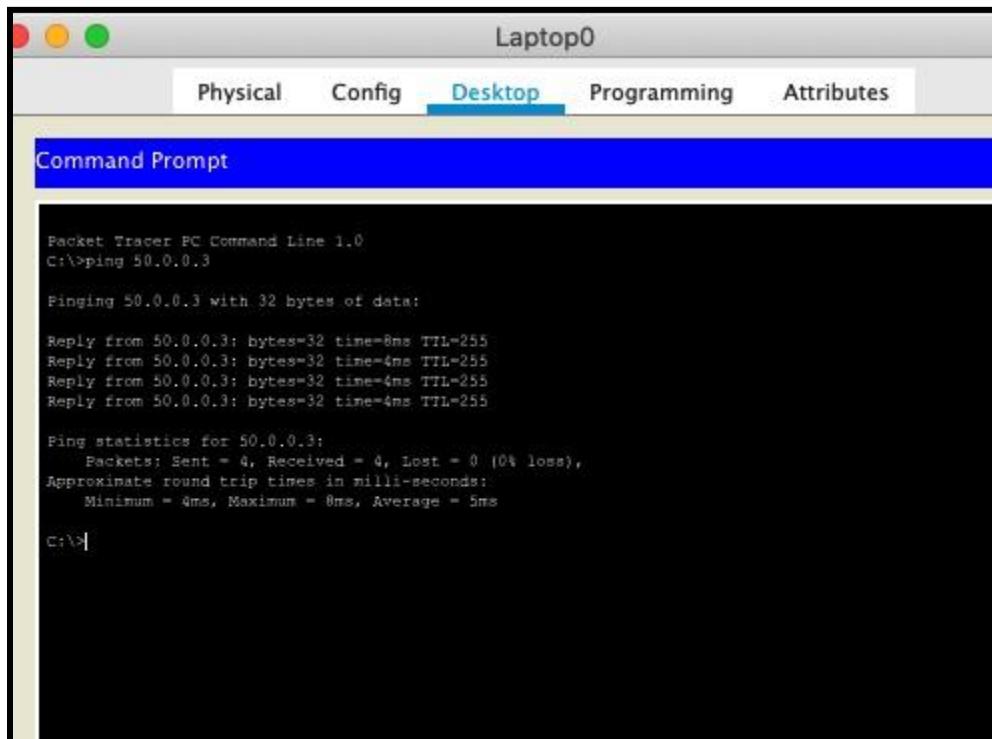
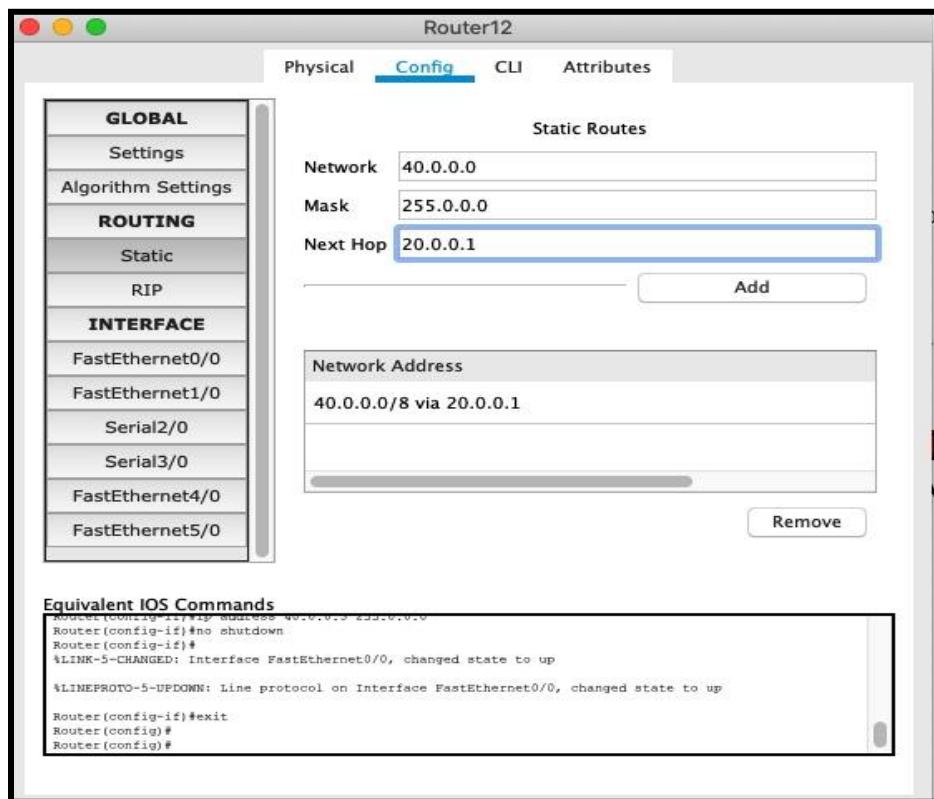
The main panel displays "Static Routes" configuration. It includes fields for "Network" (50.0.0.0), "Mask" (255.0.0.0), and "Next Hop" (10.0.0.1). There is an "Add" button below these fields.

A "Network Address" section shows the entry "50.0.0.0/8 via 10.0.0.1". A "Remove" button is located to the right of this entry.

At the bottom, under "Equivalent IOS Commands", there is a text box containing the following command:

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#
Router(config)#
```



Practical - 3

Aim: Explain the following networking commands with example.

- (i) tracert (ii) ping (iii) ipconfig (iv) arp

Answer:

1. The **TRACERT** command is used to trace the route during the transmission of the data packet over to the destination host and also provides us with the “hop” count during transmission.

Using the number of hops and the hop IP address, we can troubleshoot network issues and identify the point of the problem during the transmission of the data packet.

```
(c) Microsoft Corporation. All rights reserved.  
C:\Users\cs991>TRACERT  
  
Usage: tracert [-d] [-h maximum_hops] [-j host-list] [-w timeout]  
                [-R] [-S srcaddr] [-4] [-6] target_name
```

Options:

-d	Do not resolve addresses to hostnames.
-h maximum_hops	Maximum number of hops to search for target.
-j host-list	Loose source route along host-list (IPv4-only).
-w timeout	Wait timeout milliseconds for each reply.
-R	Trace round-trip path (IPv6-only).
-S srcaddr	Source address to use (IPv6-only).
-4	Force using IPv4.
-6	Force using IPv6.

```
C:\Users\cs991>
```

2. The **Ping** command is one of the most widely used commands in the prompt tool, as it allows the user to check the connectivity of our system to another host.

This command sends four experimental packets to the destination host to check whether it receives them successfully, if so, then, we can communicate with the destination host. But in case the packets have not been received, that means, no communication can be established with the destination host.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.0.0.1

Pinging 10.0.0.1 with 32 bytes of data:

Reply from 10.0.0.1: bytes=32 time=49ms TTL=128
Reply from 10.0.0.1: bytes=32 time=4ms TTL=128
Reply from 10.0.0.1: bytes=32 time=2ms TTL=128
Reply from 10.0.0.1: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 49ms, Average = 13ms

C:\>10.0.0.15
Invalid Command.

C:\>ping 10.0.0.15

Pinging 10.0.0.15 with 32 bytes of data:

Reply from 10.0.0.15: bytes=32 time=12ms TTL=128
Reply from 10.0.0.15: bytes=32 time<1ms TTL=128
Reply from 10.0.0.15: bytes=32 time<1ms TTL=128
Reply from 10.0.0.15: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.15:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 12ms, Average = 3ms
```

3. The **IPCONFIG** network command provides a comprehensive view of information regarding the [IP address](#) configuration of the device we are currently working on.

The IPConfig command also provides us with some variation in the primary command that targets specific system settings or data, which are:

- IPConfig/all - Provides primary output with additional information about network adapters.

- **IPConfig/renew** - Used to renew the system's IP address.
- **IPConfig/release** - Removes the system's current IP address.

```
Microsoft Windows [Version 10.0.22621.2134]
(c) Microsoft Corporation. All rights reserved.

C:\Users\cs991>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix  . .

Ethernet adapter Ethernet 2:

  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix  . .

Unknown adapter Local Area Connection:

  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix  . .

Unknown adapter Local Area Connection 3:

  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix  . .

Ethernet adapter Ethernet 3:
```

4. The **ARP** command is used to access the mapping structure of IP addresses to the MAC address. This provides us with a better understanding of the transmission of packets in the network channel.

```
C:\Users\cs991>arp
```

Displays and modifies the IP-to-Physical address translation tables used by address resolution protocol (ARP).

```
ARP -s inet_addr eth_addr [if_addr]  
ARP -d inet_addr [if_addr]  
ARP -a [inet_addr] [-N if_addr] [-v]
```

-a	Displays current ARP entries by interrogating the current protocol data. If inet_addr is specified, the IP and Physical addresses for only the specified computer are displayed. If more than one network interface uses ARP, entries for each ARP table are displayed.
-g	Same as -a.
-v	Displays current ARP entries in verbose mode. All invalid entries and entries on the loop-back interface will be shown.
inet_addr	Specifies an internet address.
-N if_addr	Displays the ARP entries for the network interface specified by if_addr.
-d	Deletes the host specified by inet_addr. inet_addr may be wildcarded with * to delete all hosts.
-s	Adds the host and associates the Internet address inet_addr with the Physical address eth_addr. The Physical address is given as 6 hexadecimal bytes separated by hyphens. The entry is permanent.
eth_addr	Specifies a physical address.
if_addr	If present, this specifies the Internet address of the interface whose address translation table should be modified. If not present, the first applicable interface will be used.

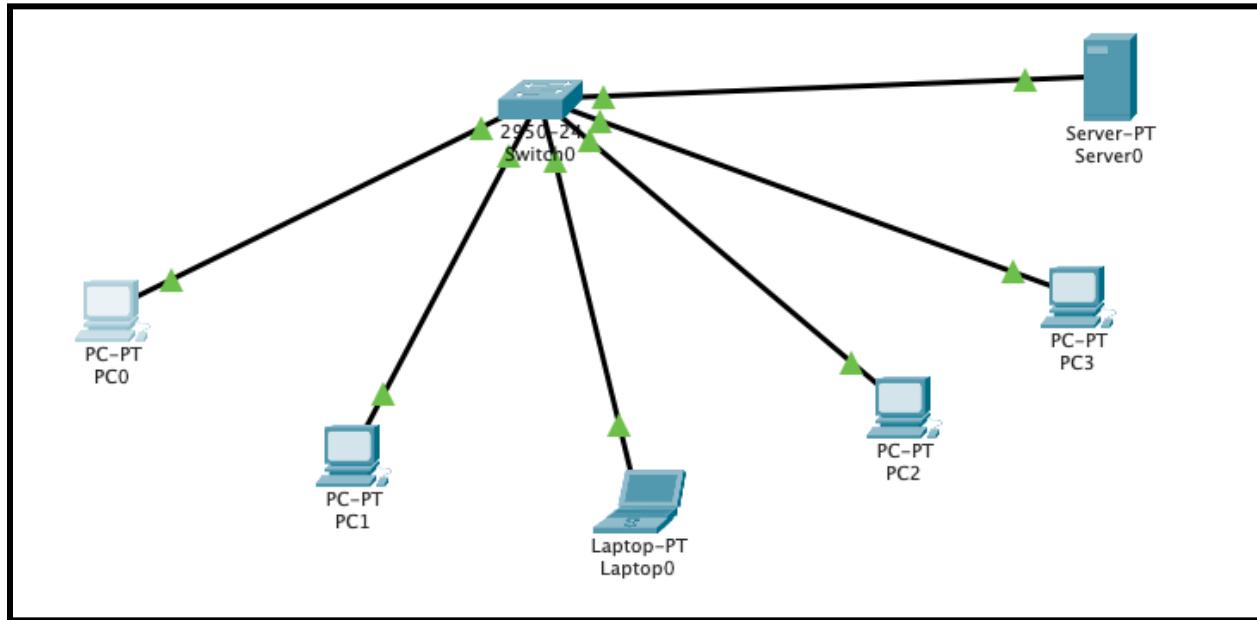
Example:

```
> arp -s 157.55.85.212 00-aa-00-62-c6-09 .... Adds a static entry.  
> arp -a ..... Displays the arp table.
```

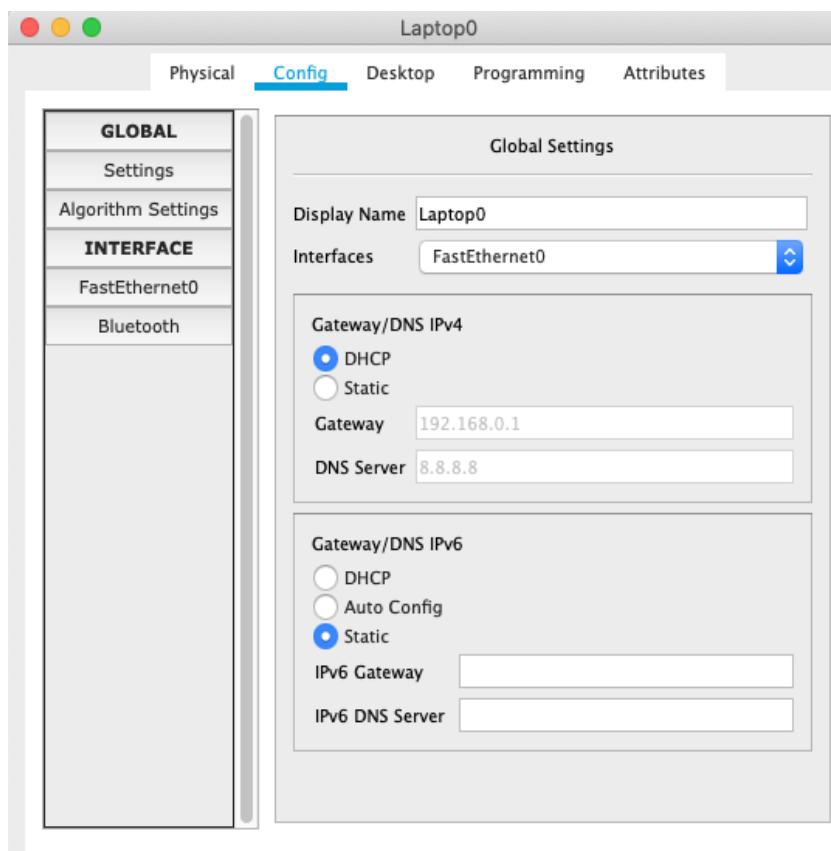
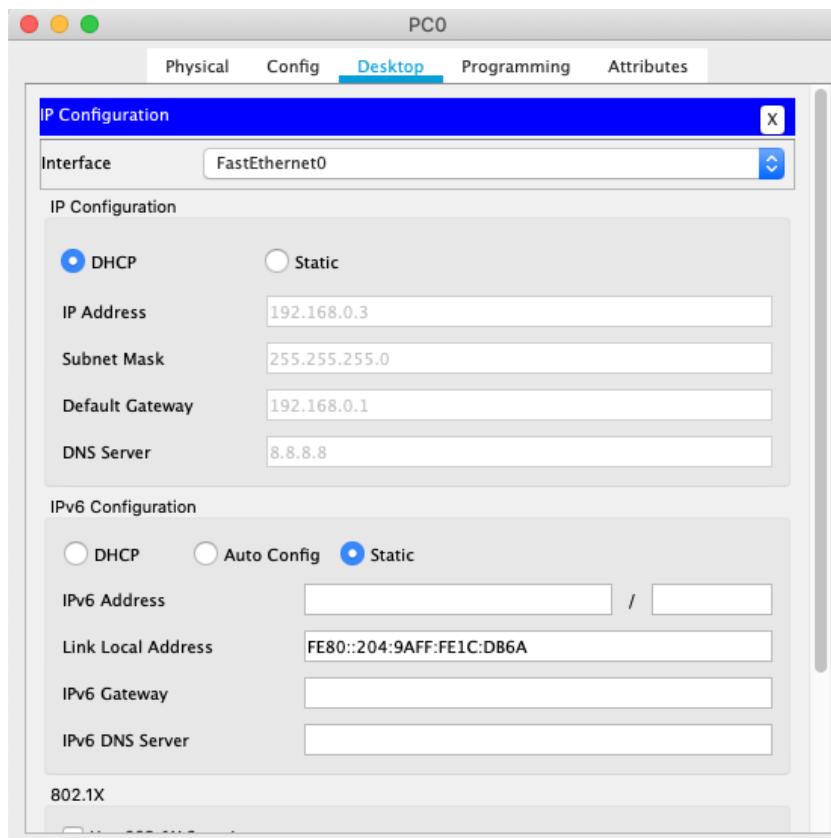
```
C:\Users\cs991>
```

Aim: To implement DHCP(Dynamic Host Configuration Protocol) using cisco packet tracer.

Input:



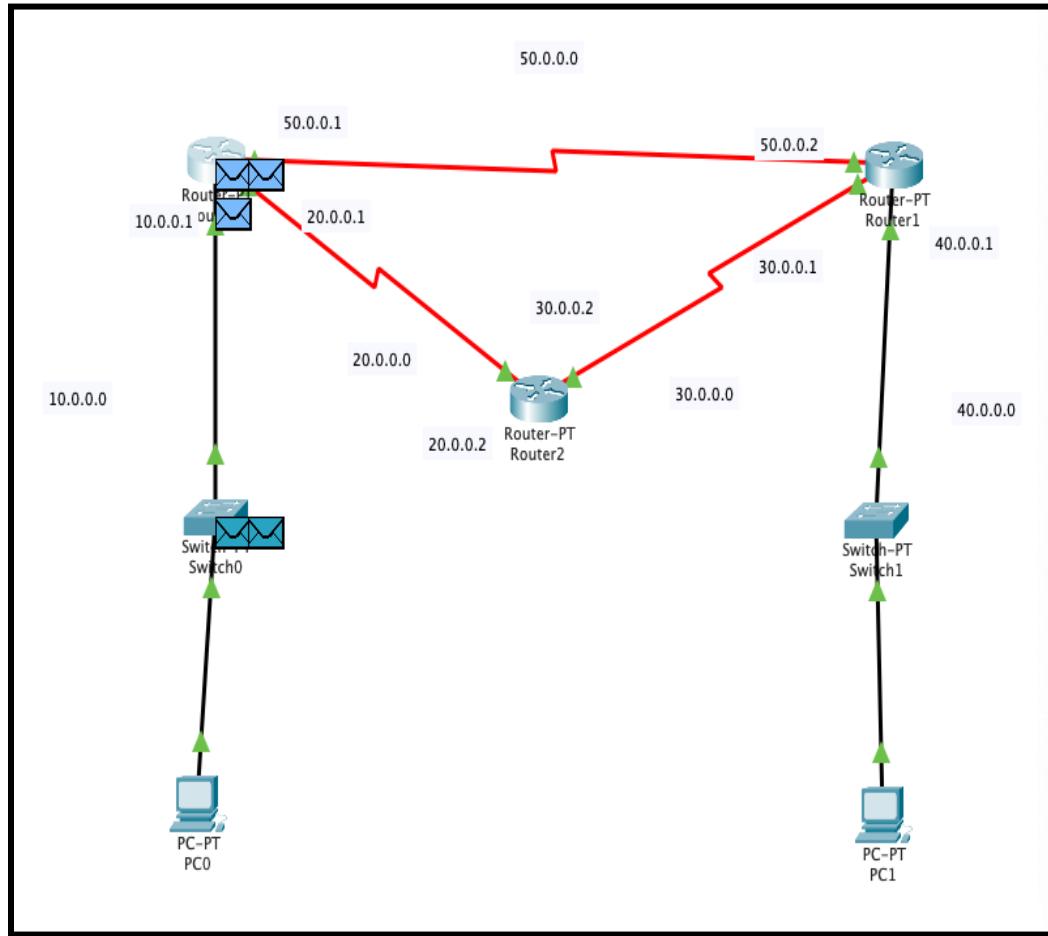
Output:



Practical - 4

Aim: To implement OSPF(Open Shortest Path First) Routing protocol using Cisco Packet Tracer.

Input:



Output:

Router0

Physical Config CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

INTERFACE

FastEthernet0/0

FastEthernet1/0

Serial2/0

Serial3/0

FastEthernet4/0

FastEthernet5/0

FastEthernet0/0

Port Status On

Bandwidth 100 Mbps 10 Mbps Auto

Duplex Half Duplex Full Duplex Auto

MAC Address 0040.0B70.B8A7

IP Configuration

IP Address 10.0.0.1

Subnet Mask 255.0.0.0

Tx Ring Limit 10

Equivalent IOS Commands

```
Router(config-router)#network 20.0.0.0 0.255.255.255 area 0
Router(config-router)#network 30.0.0.0 0.255.255.255 area 0
Router(config-router)#network 50.0.0.0 0.255.255.255 area 0
Router(config-router)#network 40.0.0.0 0.255.255.255 area 0
Router(config-router)#
Router(config-router)#end
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#+
```

Router0

Physical Config CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

INTERFACE

FastEthernet0/0

FastEthernet1/0

Serial2/0

Serial3/0

FastEthernet4/0

FastEthernet5/0

Serial2/0

Port Status On

Duplex Full Duplex

Clock Rate 2000000

IP Configuration

IP Address 20.0.0.1

Subnet Mask 255.0.0.0

Tx Ring Limit 10

Equivalent IOS Commands

```
Router(config-router)#network 50.0.0.0 0.255.255.255 area 0
Router(config-router)#network 40.0.0.0 0.255.255.255 area 0
Router(config-router)#
Router(config-router)#end
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#+
```

Router0

Physical Config CLI Attributes

GLOBAL

- Settings
- Algorithm Settings
- ROUTING**
 - Static
 - RIP
- INTERFACE**
 - FastEthernet0/0
 - FastEthernet1/0
 - Serial2/0
 - Serial3/0**
 - FastEthernet4/0
 - FastEthernet5/0

Serial3/0

Port Status On

Duplex Full Duplex

Clock Rate 2000000

IP Configuration

IP Address	50.0.0.1
Subnet Mask	255.0.0.0

Tx Ring Limit 10

Equivalent IOS Commands

```

Router(config-router)#end
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial3/0
Router(config-if)#

```

PC0

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

DHCP Static

IP Address	10.0.0.2
Subnet Mask	255.0.0.0
Default Gateway	10.0.0.1
DNS Server	0.0.0.0

IPv6 Configuration

DHCP Auto Config Static

IPv6 Address	/
Link Local Address	FE80::20B:BEFF:FE7E:7477
IPv6 Gateway	
IPv6 DNS Server	

802.1X

Router0

Physical Config **CLI** Attributes

IOS Command Line Interface

```

Router con0 is now available

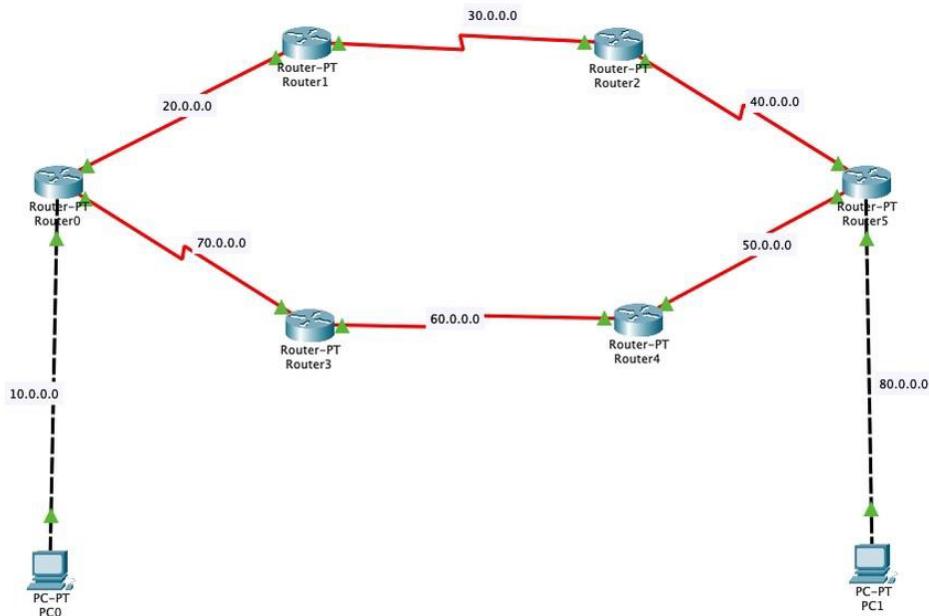
Press RETURN to get started.

Router>en
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router ospf 1
Router(config-router)#network 10.0.0.0 0.255.255.255 area 0
Router(config-router)#network 20.0.0.0 0.255.255.255 area 0
% Invalid input detected at '^' marker.

Router(config-router)#network 20.0.0.0 0.255.255.255 area 0
Router(config-router)#network 30.0.0.0 0.255.255.255 area 0
Router(config-router)#network 50.0.0.0 0.255.255.255 area 0
Router(config-router)#network 40.0.0.0 0.255.255.255 area 0
Router(config-router)#

```

Command+F6 to exit CLI focus



Router0

Physical Config **CLI** Attributes

IOS Command Line Interface

```
Router(config-if)#no shutdown
Router(config-if)#ip address 20.0.0.1 255.0.0.0
Router(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

Router(config-if)#exit
Router(config)#interface Serial3/0
Router(config-if)#ip address 70.0.0.2 255.0.0.0
Router(config-if)#ip address 70.0.0.2 255.0.0.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface Serial3/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up

Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#exit
Router(config)#en
% Ambiguous command: "en"
Router(config)#configure terminal
^
% Invalid input detected at '^' marker.

Router(config)#configure terminal
^
% Invalid input detected at '^' marker.

Router(config)#router ospf 1
Router(config-router)#network 10.0.0.0 0.255.255.255 area 0
^
% Invalid input detected at '^' marker.

Router(config-router)#
Router(config-router)#network 10.0.0.0 0.255.255.255 area 0
Router(config-router)#network 20.0.0.0 0.255.255.255 area 0
Router(config-router)#network 70.0.0.0 0.255.255.255 area 0
Router(config-router)#

```

PC1

Physical Config **Desktop** Programming Attributes

Command Prompt X

```
Packet Tracer PC Command Line 1.0.
C:\>ping 80.0.0.2

Pinging 80.0.0.2 with 32 bytes of data:
Reply from 80.0.0.2: bytes=32 time=4ms TTL=255
Reply from 80.0.0.2: bytes=32 time=2ms TTL=255
Reply from 80.0.0.2: bytes=32 time=2ms TTL=255
Reply from 80.0.0.2: bytes=32 time=2ms TTL=255

Ping statistics for 80.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 4ms, Average = 2ms

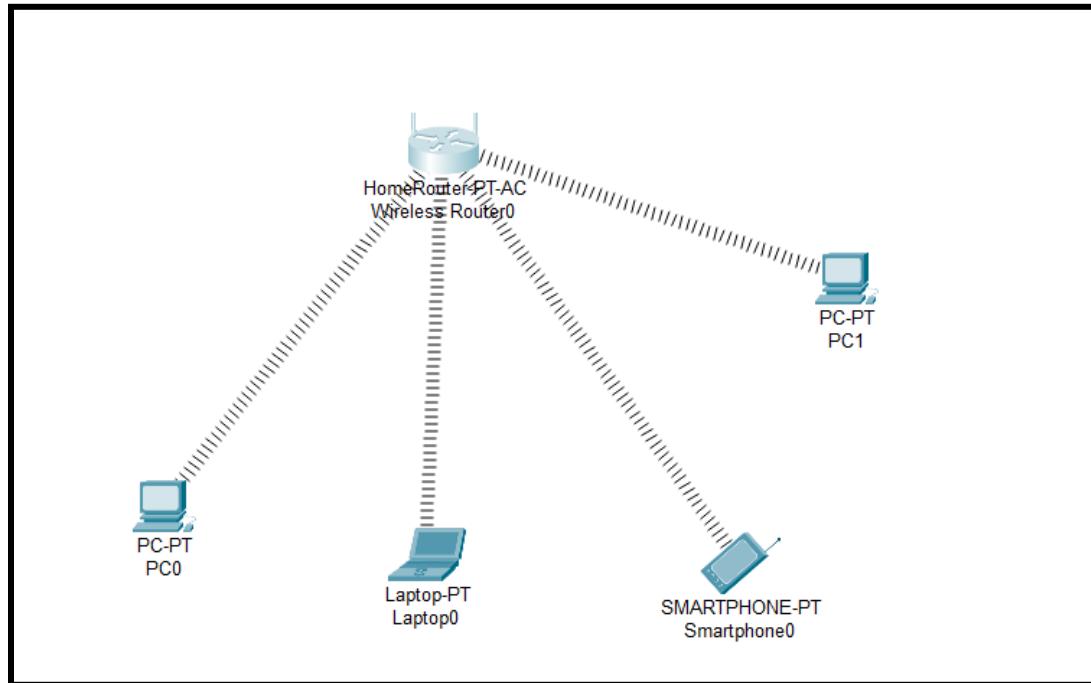
C:\>
```

Practical - 5

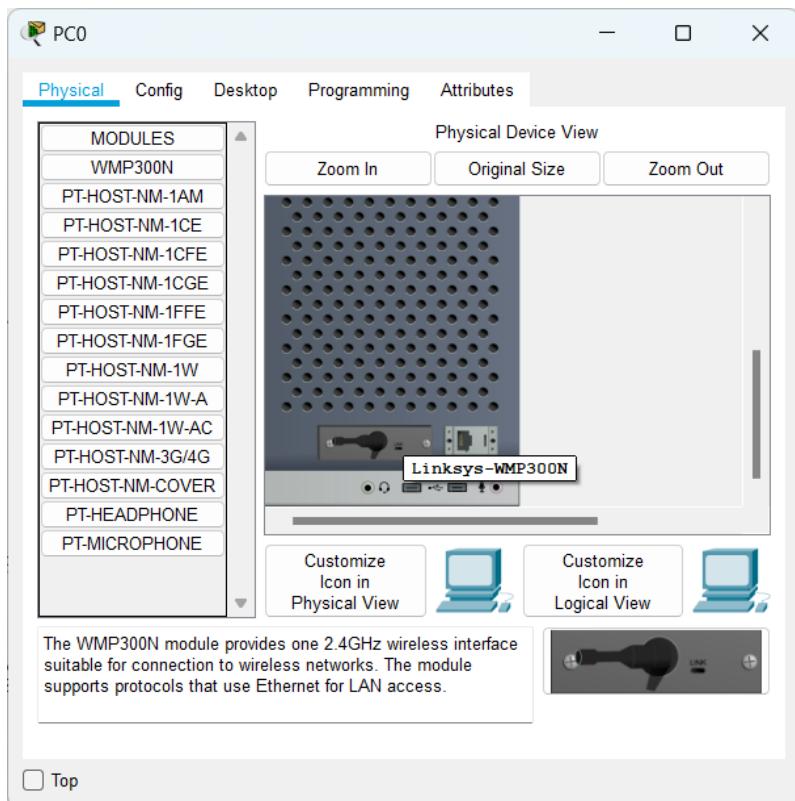
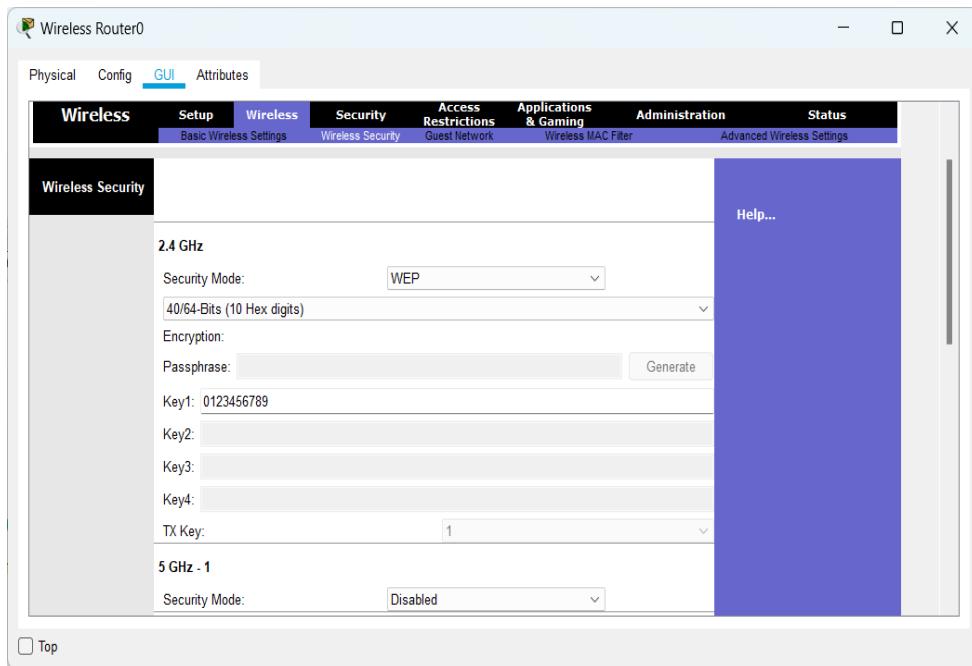
AIM: Using Packet Tracer, create a basic network of server and two computers and two mobile/movable devices using appropriate network wire. Also verify the connectivity.

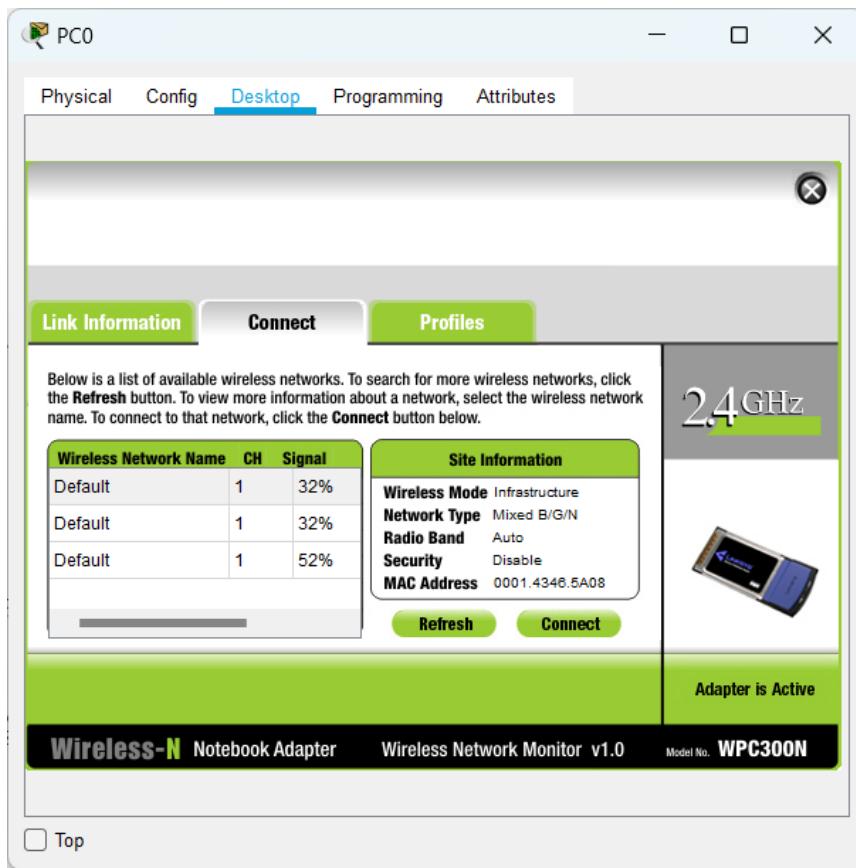
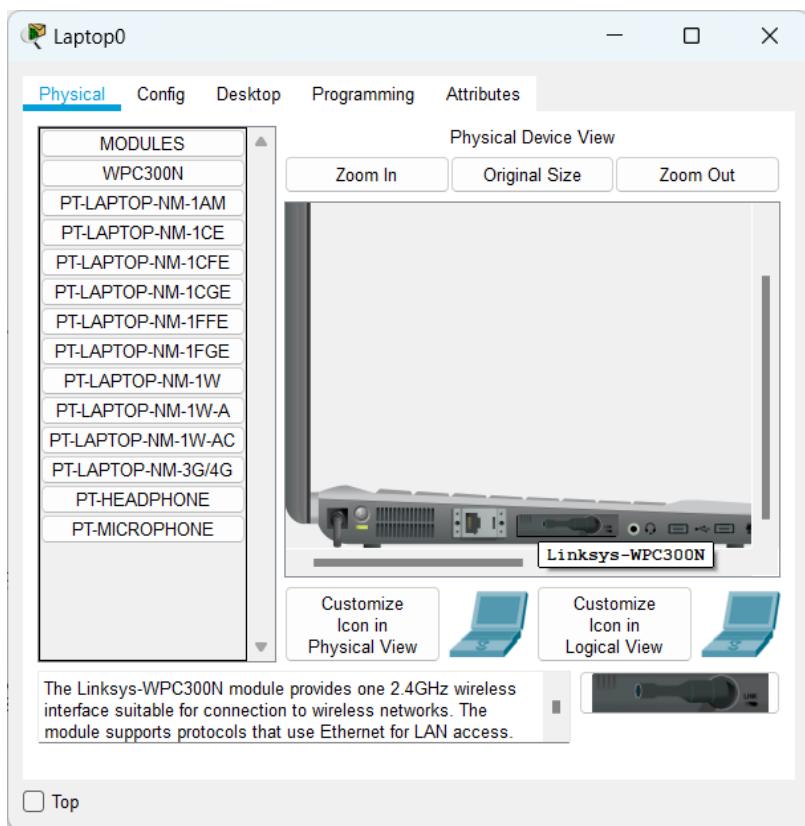
Theory: A wireless access point(WAP) is a networking device that enables wireless devices to connect to a wired network. It acts as a central hub of wireless devices, allowing them to communicate with each other and with devices on the wired network.

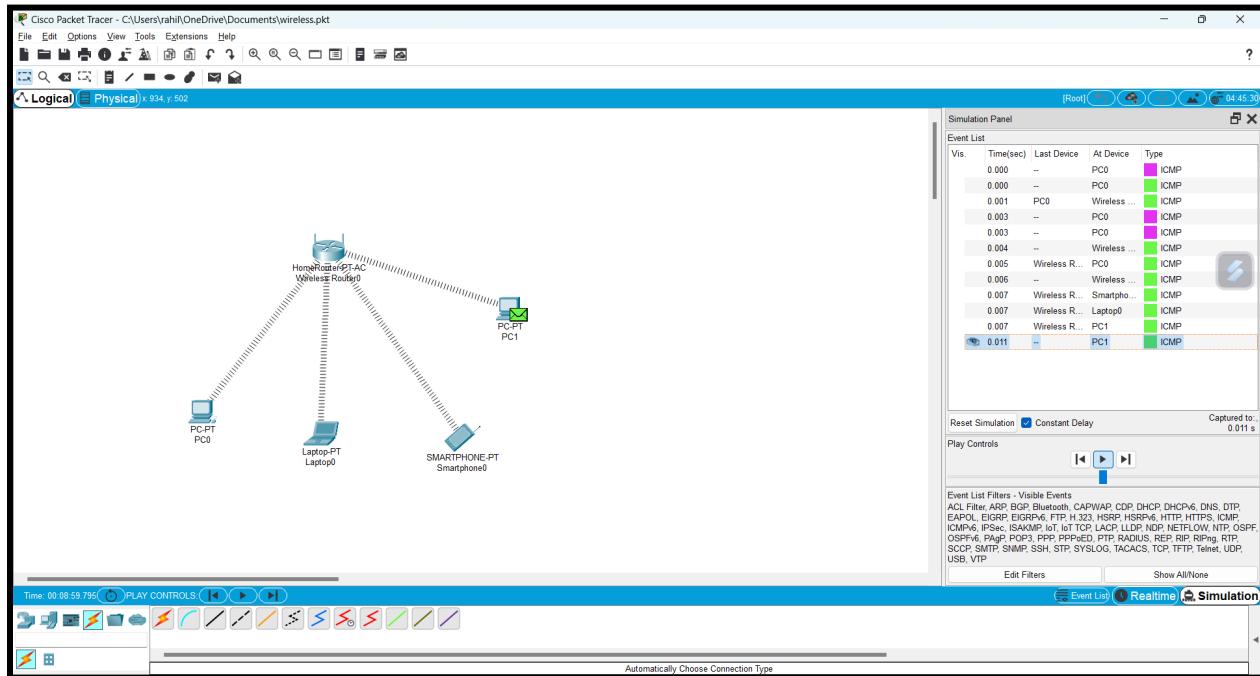
Input:



Output:



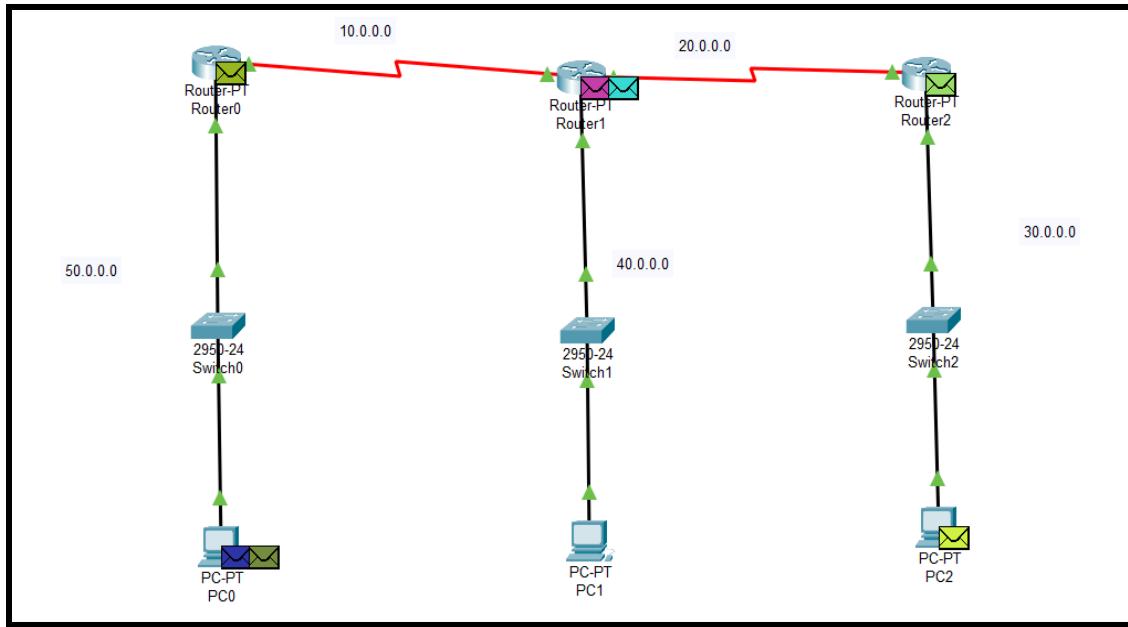




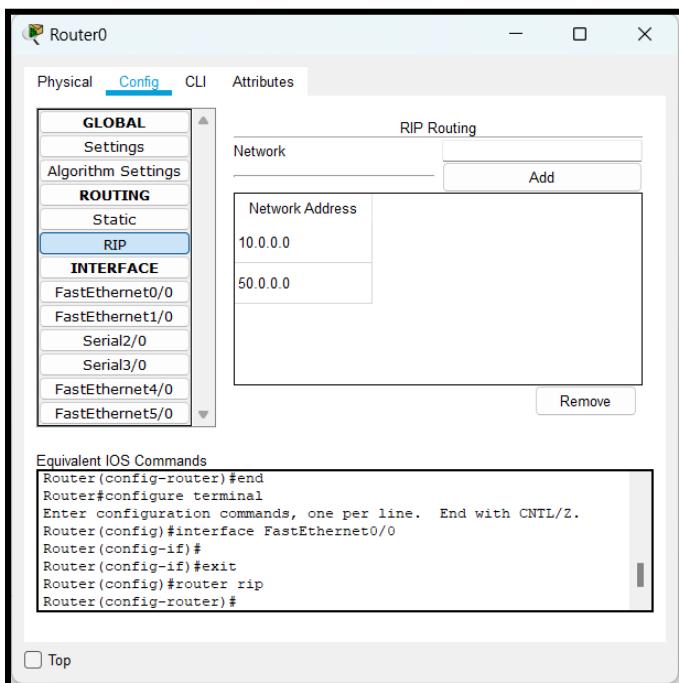
Practical - 6

Aim: To implement RIP(Routing Information Protocol) using cisco packet tracer.

Input:



Output:



Simulation Panel				
Event List				
Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC0	ICMP
	0.000	--	PC1	ICMP
	0.000	--	PC2	ICMP
	0.001	PC0	Switch0	ICMP
	0.001	PC1	Switch1	ICMP
	0.001	PC2	Switch2	ICMP
	0.002	Switch0	Router0	ICMP
	0.002	Switch1	Router1	ICMP
	0.002	Switch2	Router2	ICMP
Visible	0.003	Router0	Switch0	ICMP
Visible	0.003	Router1	Switch1	ICMP
Visible	0.003	Router2	Switch2	ICMP

PC0

Physical Config Desktop Programming Attributes

Command Prompt X

```
Packet Tracer PC Command Line 1.0
C:\>ping 10.0.0.1

Pinging 10.0.0.1 with 32 bytes of data:

Reply from 10.0.0.1: bytes=32 time=4ms TTL=255

Ping statistics for 10.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 4ms, Maximum = 4ms, Average = 4ms

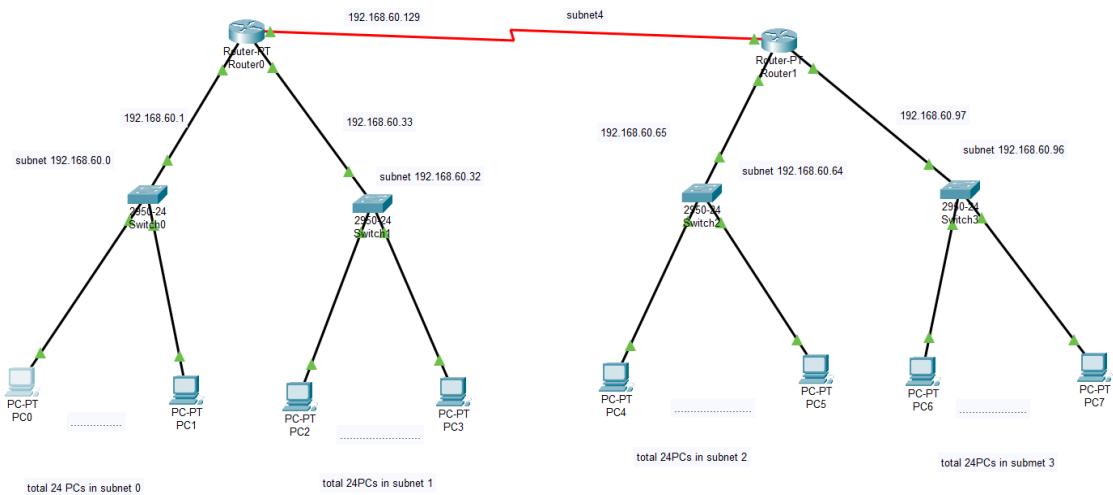
C:\>
```

Top

Practical - 7

Aim: You are given a network address of 192.168.60.0/24 to subnet and provide the ip address for the network shown in the topology. Each router is connected to two LANs and a WAN link. Each LAN should have a minimum 24 addresses for the PCs.

Input:



Output:

Screenshot of the Cisco IOS Command Line Interface (CLI) for Router0. The window title is "Router0". The tab bar shows "Physical", "Config" (which is selected), and "Attributes". The main area displays the configuration commands:

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#en
* Ambiguous command: "en"
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
en
Router#en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 192.168.60.96 255.255.255.224 192.168.60.30
Router(config)#ip route 192.168.60.64 255.255.255.224 192.168.60.130
Router(config)#ip route 192.168.60.96 255.255.255.224 192.168.60.130
Router(config)#
Ctrl+F6 to exit CLI focus
```

Buttons at the bottom include "Copy" and "Paste". A checkbox "Top" is located at the bottom left.

Router1

Physical Config **CLI** Attributes

IOS Command Line Interface

```
Router>en
Router#ip route 192.168.60.0 255.255.255.224 192.168.60.129
^
% Invalid input detected at '^' marker.

Router#en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 192.168.60.0 255.255.255.224
192.168.60.129
Router(config)#ip route 192.168.60.32 255.255.255.224
192.168.60.129
Router(config)#
Ctrl+F6 to exit CLI focus
```

Top

PC0

Physical Config **Desktop** Programming Attributes

Command Prompt

```
Pinging 192.168.60.99 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Reply from 192.168.60.99: bytes=32 time=lms TTL=126

Ping statistics for 192.168.60.99:
    Packets: Sent = 4, Received = 1, Lost = 3 (75% loss),
    Approximate round trip times in milli-seconds:
        Minimum = lms, Maximum = lms, Average = lms

C:\>ping 192.168.60.97

Pinging 192.168.60.97 with 32 bytes of data:
Request timed out.
Reply from 192.168.60.97: bytes=32 time=lms TTL=254
Request timed out.
Reply from 192.168.60.97: bytes=32 time=2ms TTL=254

Ping statistics for 192.168.60.97:
    Packets: Sent = 4, Received = 2 (50% loss),
    Approximate round trip times in milli-seconds:
        Minimum = lms, Maximum = 2ms, Average = lms

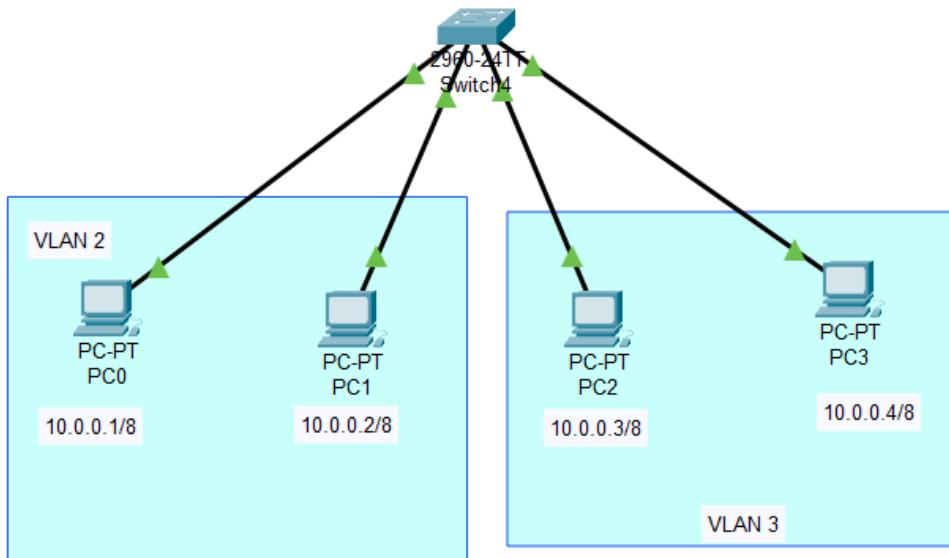
C:\>
```

Top

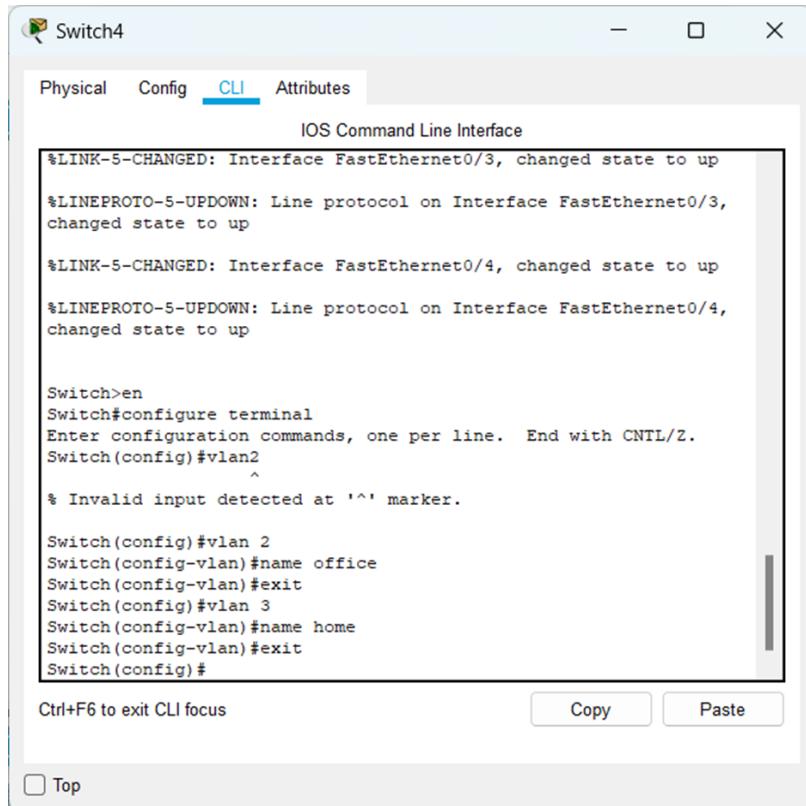
Practical - 8

Aim: Create Virtual Lan Connection SetUp.

Input:



Output:



Switch4

Physical Config **CLI** Attributes

IOS Command Line Interface

```
%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3,
changed state to up

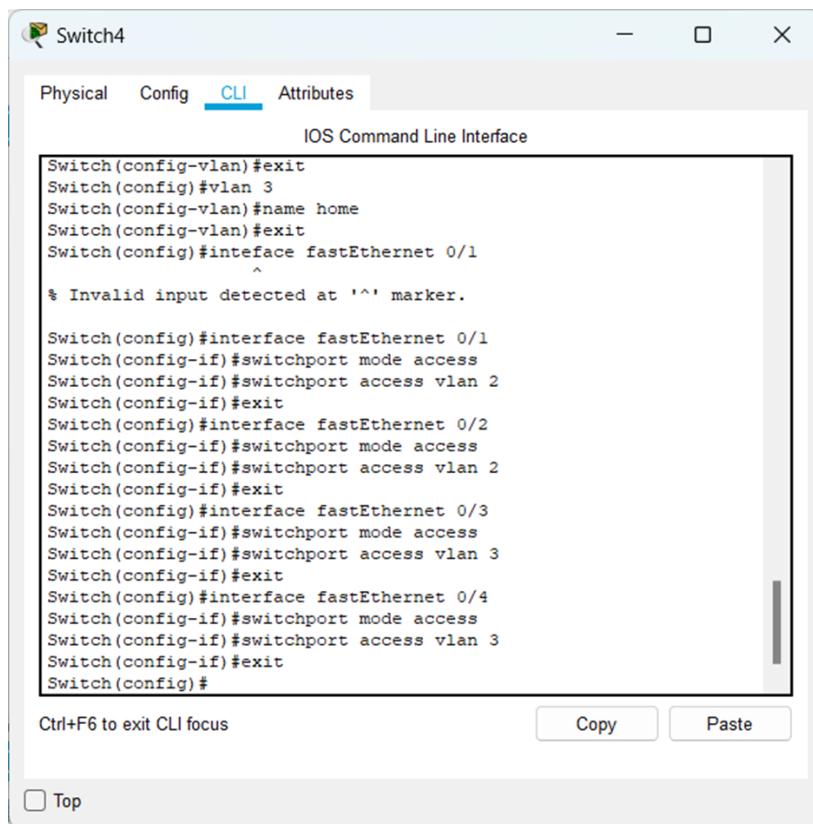
%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4,
changed state to up

Switch>en
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan2
^
% Invalid input detected at '^' marker.

Switch(config)#vlan 2
Switch(config-vlan)#name office
Switch(config-vlan)#exit
Switch(config)#vlan 3
Switch(config-vlan)#name home
Switch(config-vlan)#exit
Switch(config)#
```

Ctrl+F6 to exit CLI focus Copy Paste

Top



Switch4

Physical Config **CLI** Attributes

IOS Command Line Interface

```
Switch(config-vlan)#exit
Switch(config)#vlan 3
Switch(config-vlan)#name home
Switch(config-vlan)#exit
Switch(config)#inteface fastEthernet 0/1
^
% Invalid input detected at '^' marker.

Switch(config)#interface fastEthernet 0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 2
Switch(config-if)#exit
Switch(config)#interface fastEthernet 0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 2
Switch(config-if)#exit
Switch(config)#interface fastEthernet 0/3
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 3
Switch(config-if)#exit
Switch(config)#interface fastEthernet 0/4
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 3
Switch(config-if)#exit
Switch(config)#
```

Ctrl+F6 to exit CLI focus Copy Paste

Top

PC0

Physical Config Desktop Programming Attributes

Command Prompt X

```
C:\>ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

Reply from 10.0.0.2: bytes=32 time=2ms TTL=128
Reply from 10.0.0.2: bytes=32 time<1ms TTL=128
Reply from 10.0.0.2: bytes=32 time<1ms TTL=128
Reply from 10.0.0.2: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 0ms

C:\>ping 10.0.0.3

Pinging 10.0.0.3 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 10.0.0.3:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

Top