



NND (Network and Networking Devices Workshop)

NAME - KHUSHI

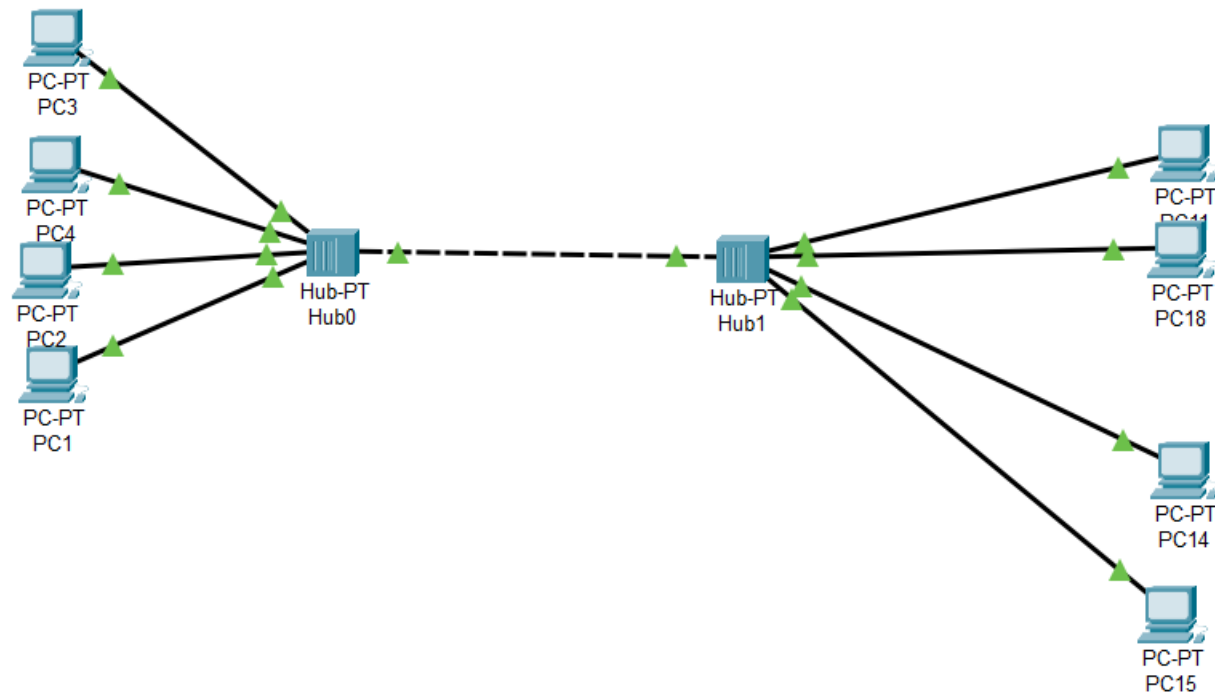
ROLL NO. - 2021UIT3046

BRANCH/SEC - IT-1

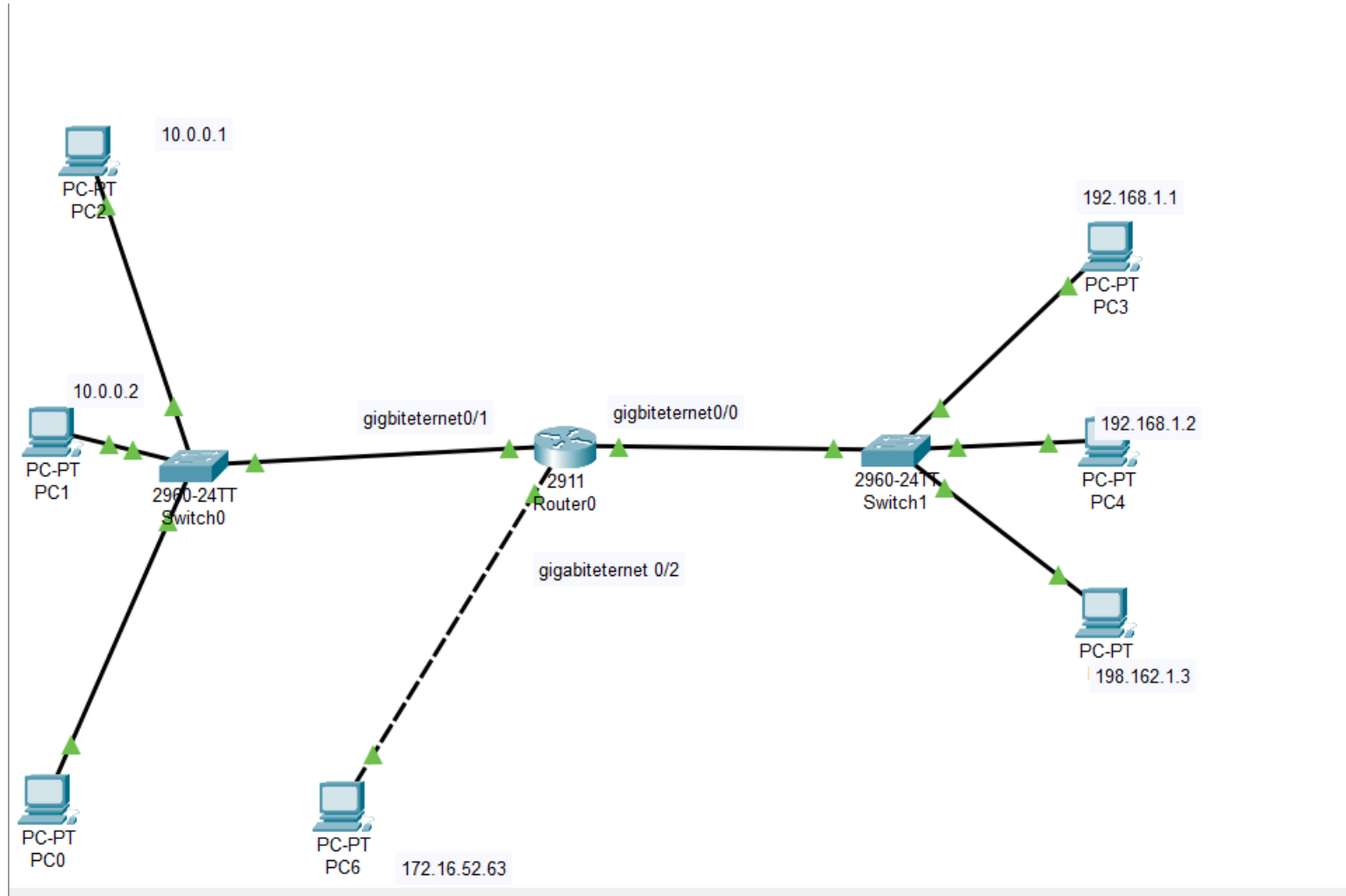
PRACTICAL 1:

PRACTICAL 2: STRAIGHT LAN CONFIGURATION USING :-

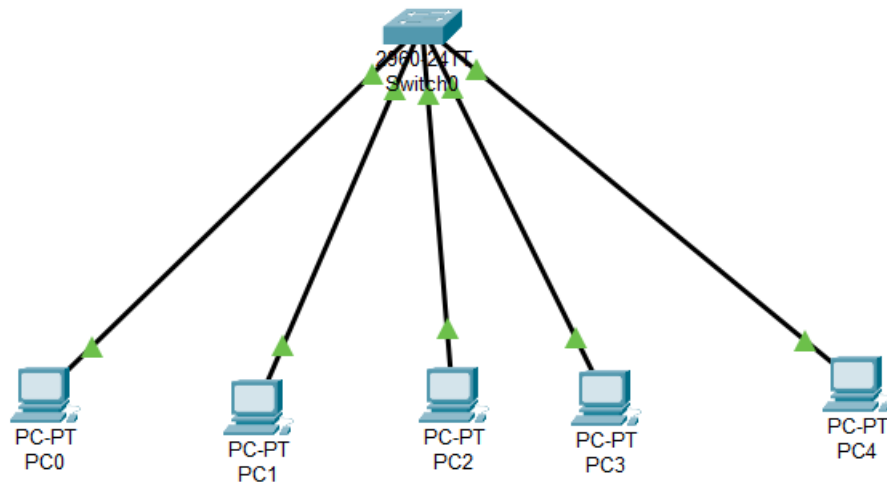
i. HUB:



ii. ROUTER:



iii. SWITCH:

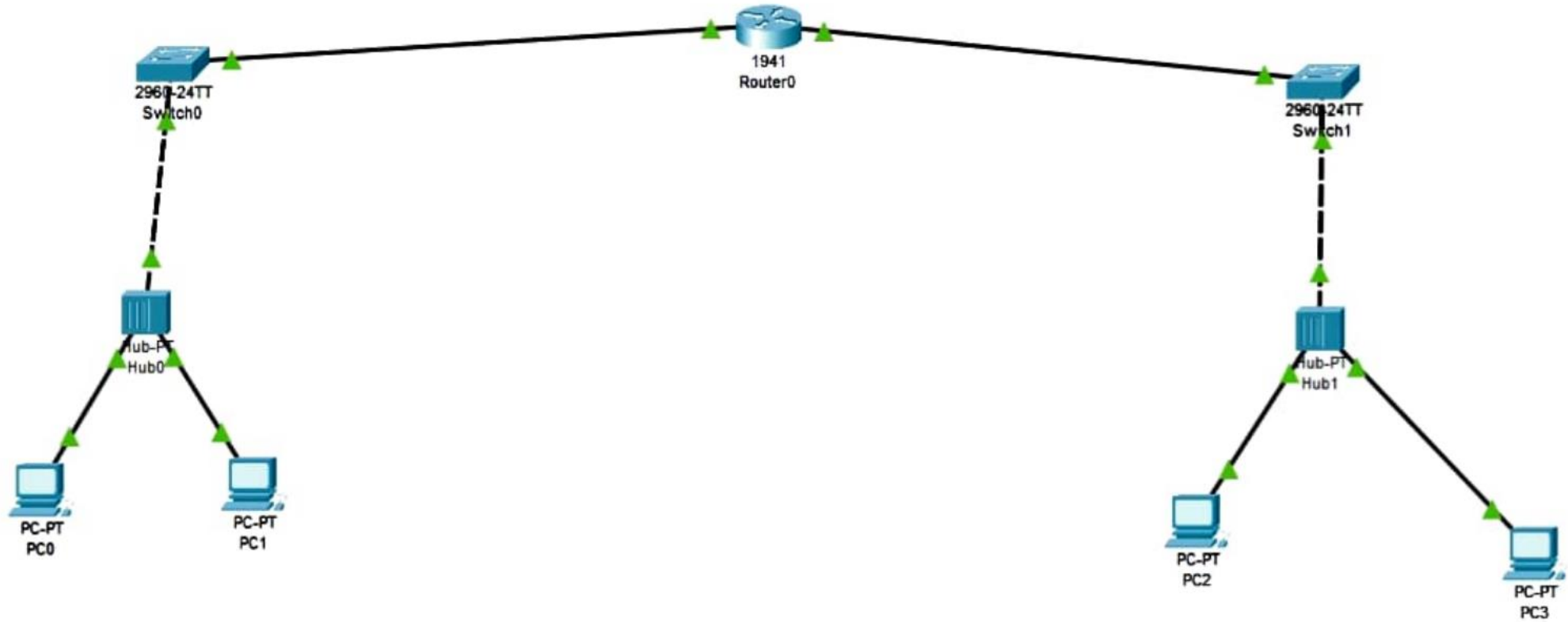








Device Name: Switch0
Custom Device Model: 2960 IOS15
Hostname: Switch

Port	Link	VLAN	IP Address	MAC Address
FastEthernet0/1	Up	1	--	0001.436E.B401
FastEthernet0/2	Up	1	--	0001.436E.B402
FastEthernet0/3	Up	1	--	0001.436E.B403
FastEthernet0/4	Up	1	--	0001.436E.B404
FastEthernet0/5	Up	1	--	0001.436E.B405
FastEthernet0/6	Down	1	--	0001.436E.B406
FastEthernet0/7	Down	1	--	0001.436E.B407
FastEthernet0/8	Down	1	--	0001.436E.B408
FastEthernet0/9	Down	1	--	0001.436E.B409
FastEthernet0/10	Down	1	--	0001.436E.B40A
FastEthernet0/11	Down	1	--	0001.436E.B40B
FastEthernet0/12	Down	1	--	0001.436E.B40C
FastEthernet0/13	Down	1	--	0001.436E.B40D
FastEthernet0/14	Down	1	--	0001.436E.B40E
FastEthernet0/15	Down	1	--	0001.436E.B40F
FastEthernet0/16	Down	1	--	0001.436E.B410
FastEthernet0/17	Down	1	--	0001.436E.B411
FastEthernet0/18	Down	1	--	0001.436E.B412
FastEthernet0/19	Down	1	--	0001.436E.B413
FastEthernet0/20	Down	1	--	0001.436E.B414
FastEthernet0/21	Down	1	--	0001.436E.B415
FastEthernet0/22	Down	1	--	0001.436E.B416
FastEthernet0/23	Down	1	--	0001.436E.B417
FastEthernet0/24	Down	1	--	0001.436E.B418
GigabitEthernet0/1	Down	1	--	0001.436E.B419
GigabitEthernet0/2	Down	1	--	0001.436E.B41A
Vlan1	Down	1	<not set>	0009.7C85.27A6

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > Switch0

3.Document a basic network using hub, switch and router in one network:



Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC0	PC1	ICMP		0.000	N	0	(edit)	(delete)
	Successful	PC2	PC3	ICMP		0.000	N	1	(edit)	(delete)
	Successful	PC1	PC2	ICMP		0.000	N	2	(edit)	(delete)

PC3

Physical
Config
Desktop
Programming
Attributes

IP Configuration

Interface
FastEthernet0

IP Configuration

☐ DHCP
☒ Static
This address is already used in the network.

IPv4 Address
192.168.5.2

Subnet Mask
255.255.255.0

Default Gateway
192.168.5.3

DNS Server
0.0.0.0

IPv6 Configuration

☐ Automatic
☒ Static

IPv6 Address
/

Link Local Address
FE80::290:21FF:FE5E:E2DE

Default Gateway

DNS Server

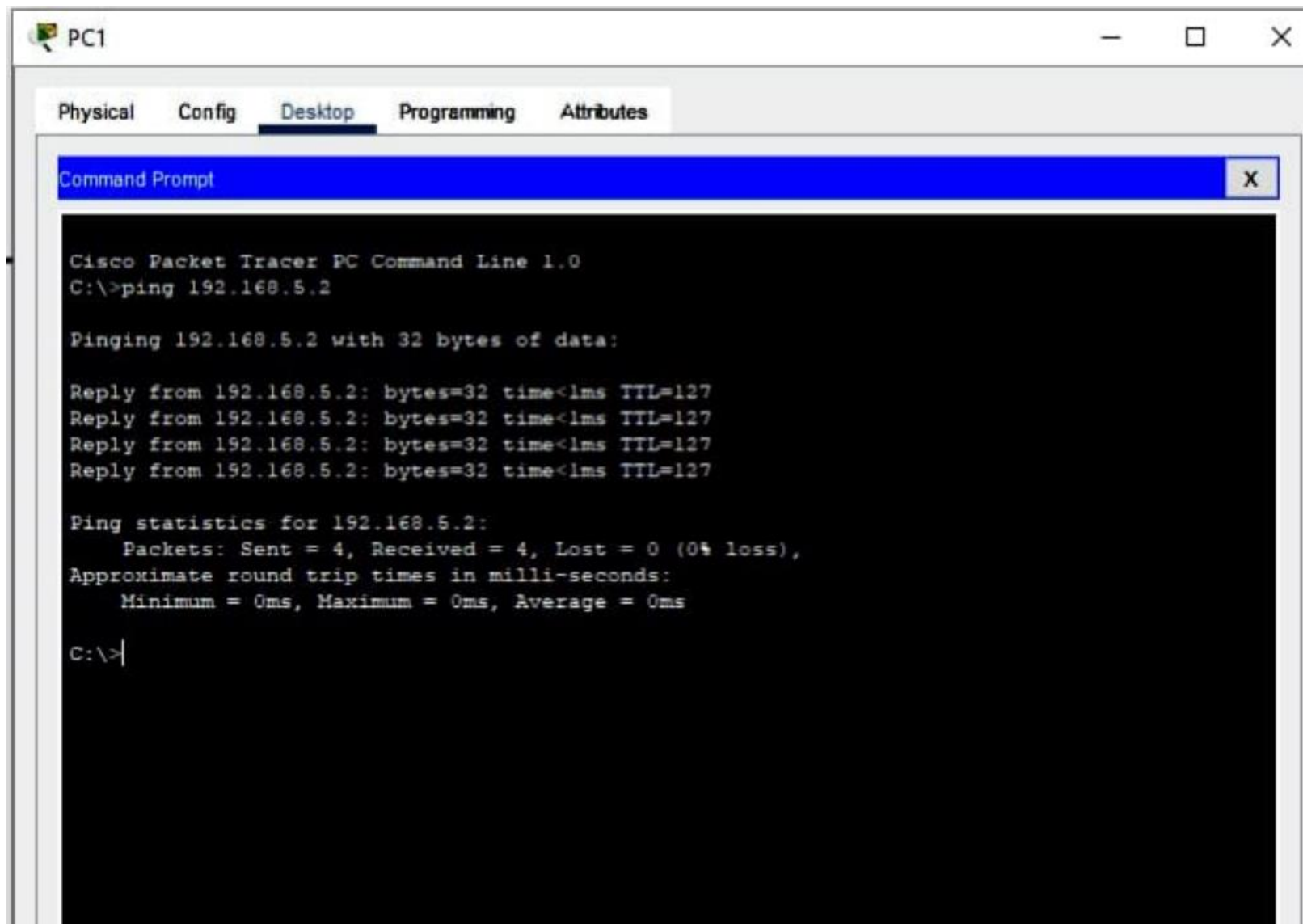
802.1X

☐ Use 802.1X Security

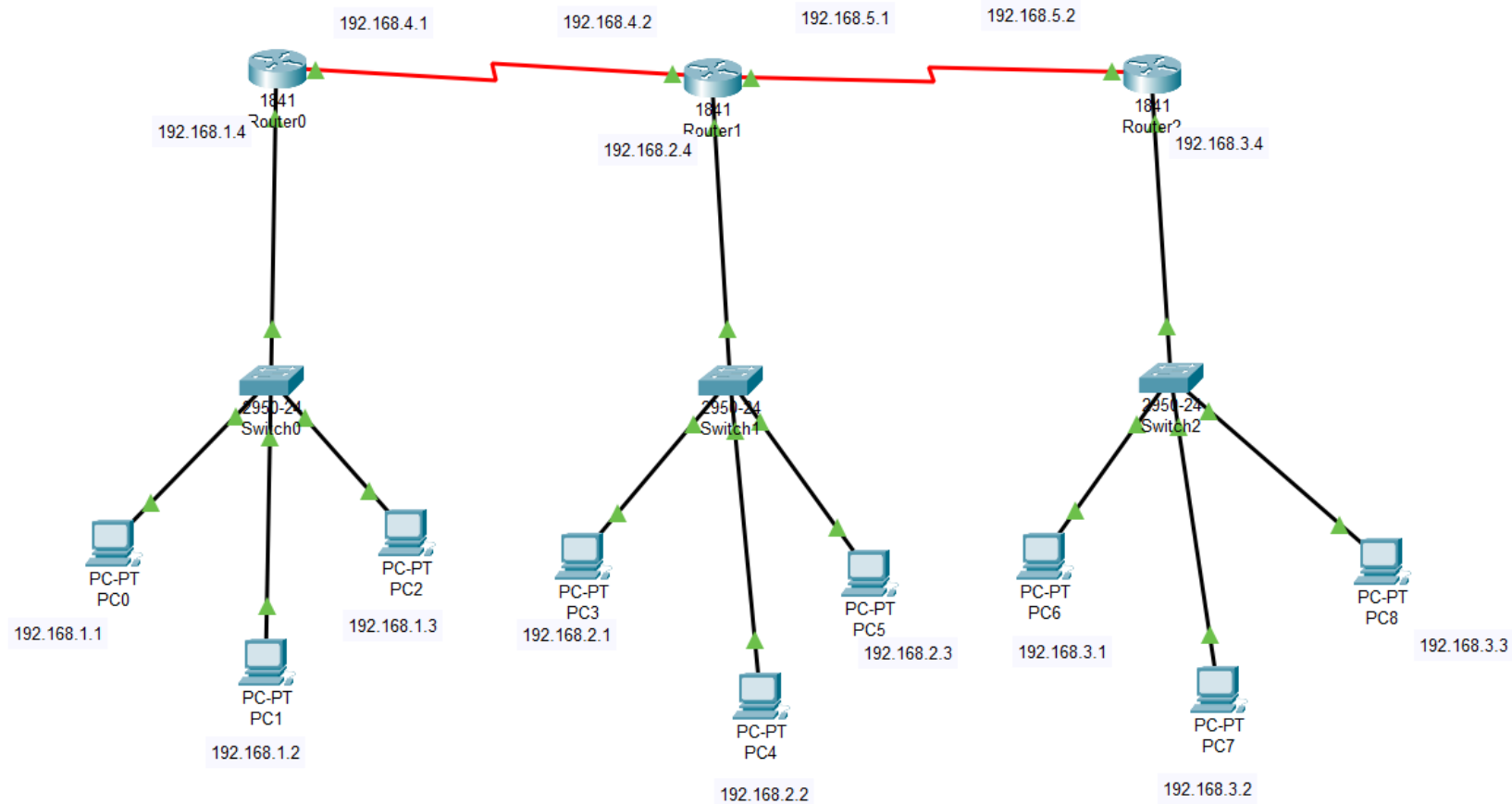
Authentication
MD5

Username

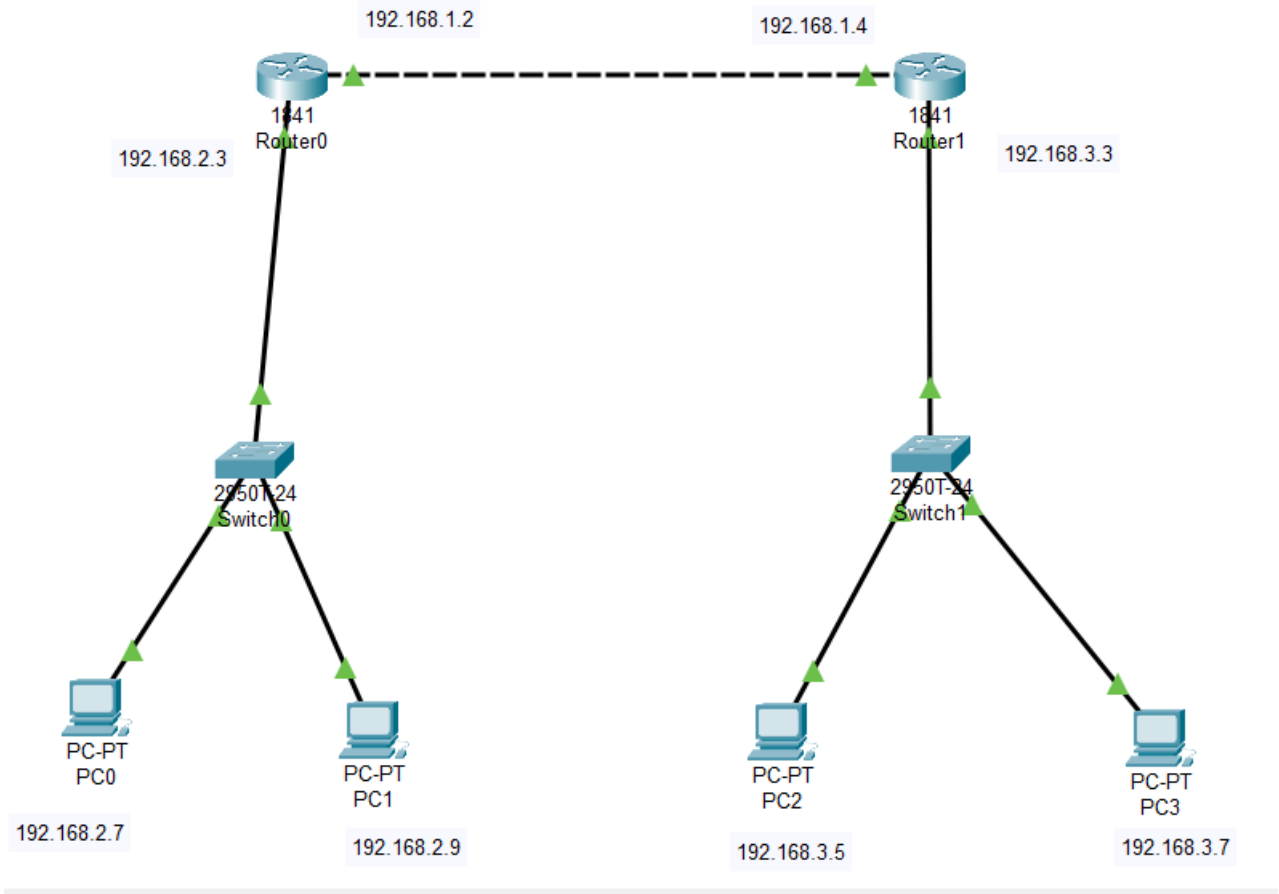
Password



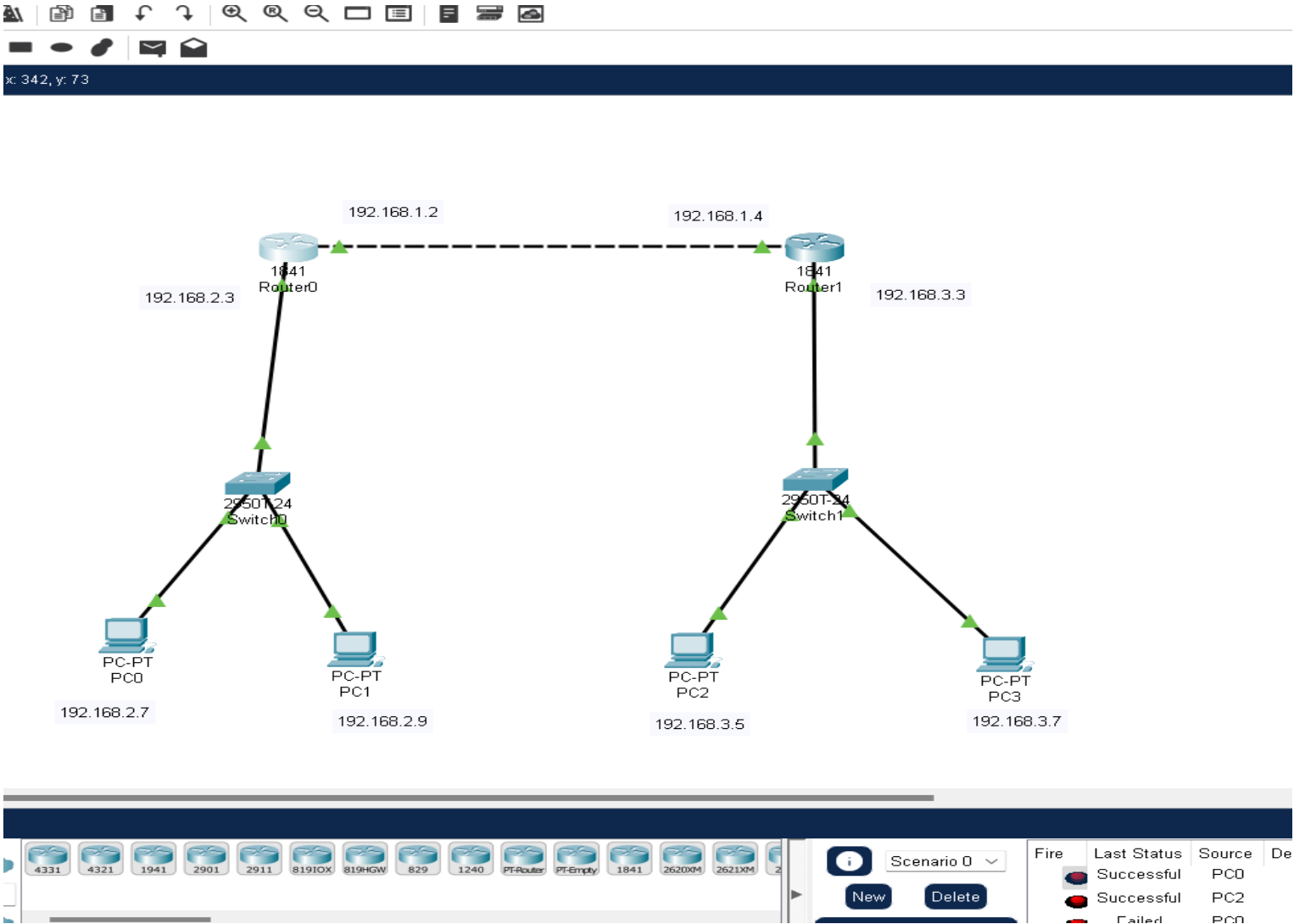
4. Document a basic network using 3 routers in a LAN configuration:



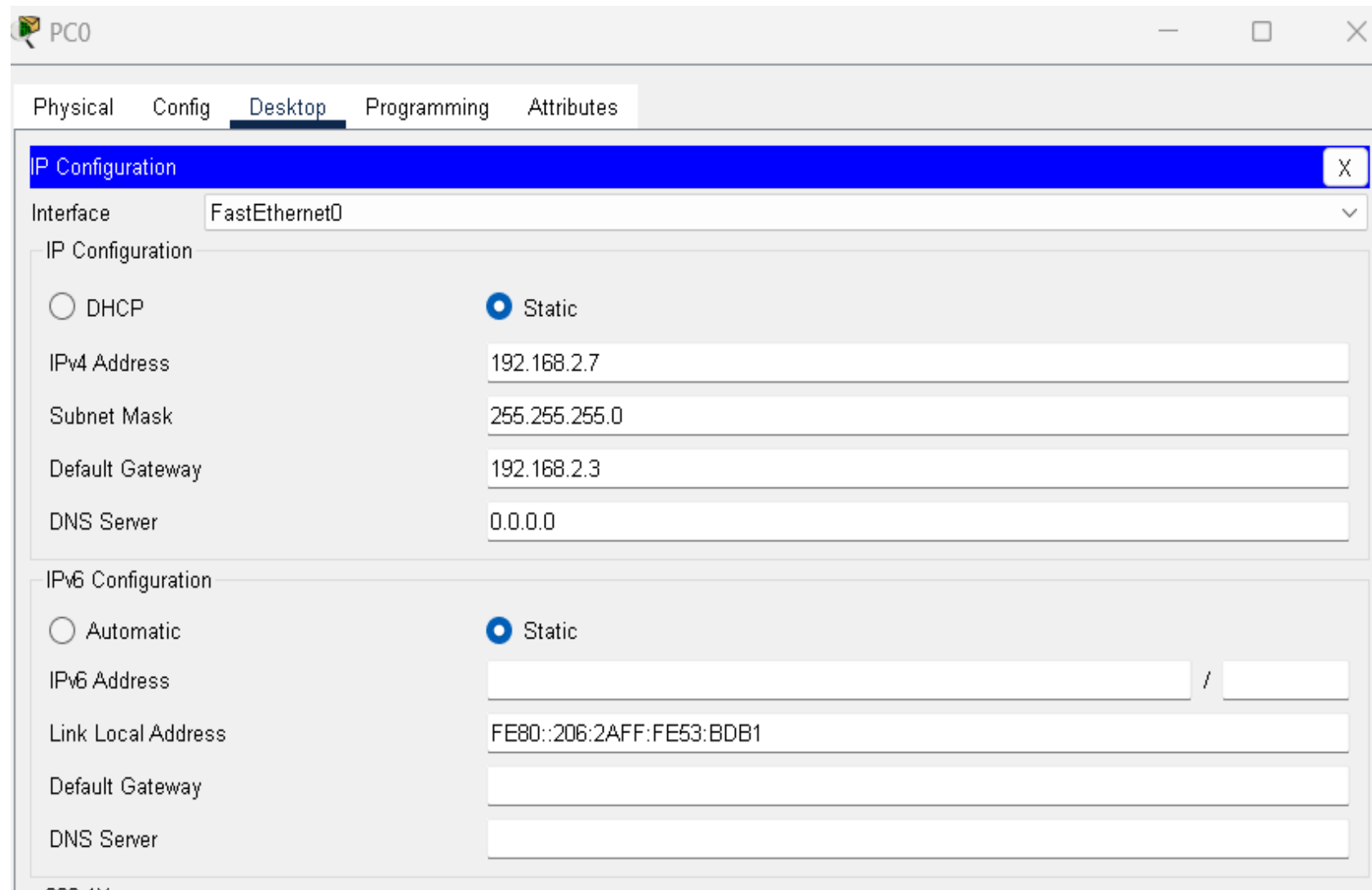
5. Implement static routing in a network:



6. Implement dynamic routing in a network:



1. Configure IP address and subnet mask and default gateway for all PC's



The screenshot shows a window titled "PC0" with a standard Windows-style title bar (minimize, maximize, close buttons). Inside the window, there are five tabs: "Physical", "Config", "Desktop" (which is selected and highlighted with a blue underline), "Programming", and "Attributes". Below the tabs, there is a blue header bar for the "IP Configuration" section, which includes a close button (X). Under this header, the "Interface" is set to "FastEthernet0". The "IP Configuration" section is expanded, showing two sub-sections: "IP Configuration" and "IPv6 Configuration". In the "IP Configuration" sub-section, the "Static" radio button is selected. The fields for "IPv4 Address", "Subnet Mask", "Default Gateway", and "DNS Server" are filled with the values "192.168.2.7", "255.255.255.0", "192.168.2.3", and "0.0.0.0" respectively. In the "IPv6 Configuration" sub-section, the "Static" radio button is also selected. The "IPv6 Address" field is empty, followed by a "/" separator and another empty field. The "Link Local Address" field is filled with "FE80::206:2AFF:FE53:BDB1". The "Default Gateway" and "DNS Server" fields in the IPv6 section are empty.

Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.168.2.7
Subnet Mask	255.255.255.0
Default Gateway	192.168.2.3
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	/
Link Local Address	FE80::206:2AFF:FE53:BDB1
Default Gateway	
DNS Server	

2.Configure routers with IP adress and subnet mask

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 0002.175A.1501

IP Configuration

IPv4 Address 192.168.1.6

Subnet Mask 255.255.255.0

Tx Ring Limit 10

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 0002.175A.1502

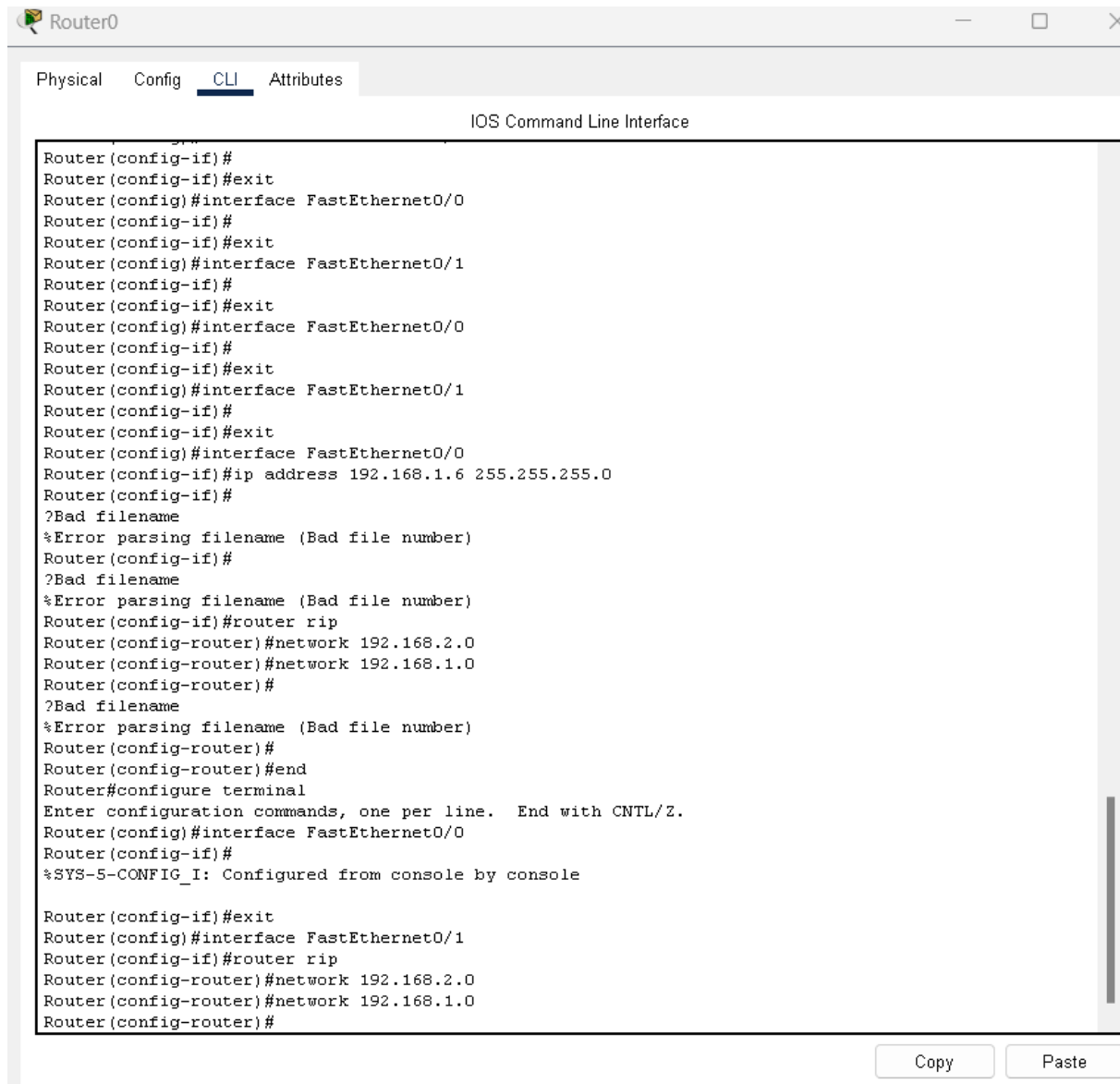
IP Configuration

IPv4 Address 192.168.2.3

Subnet Mask 255.255.255.0

Tx Ring Limit 10

3.Configure RIP routing algorithm for routers



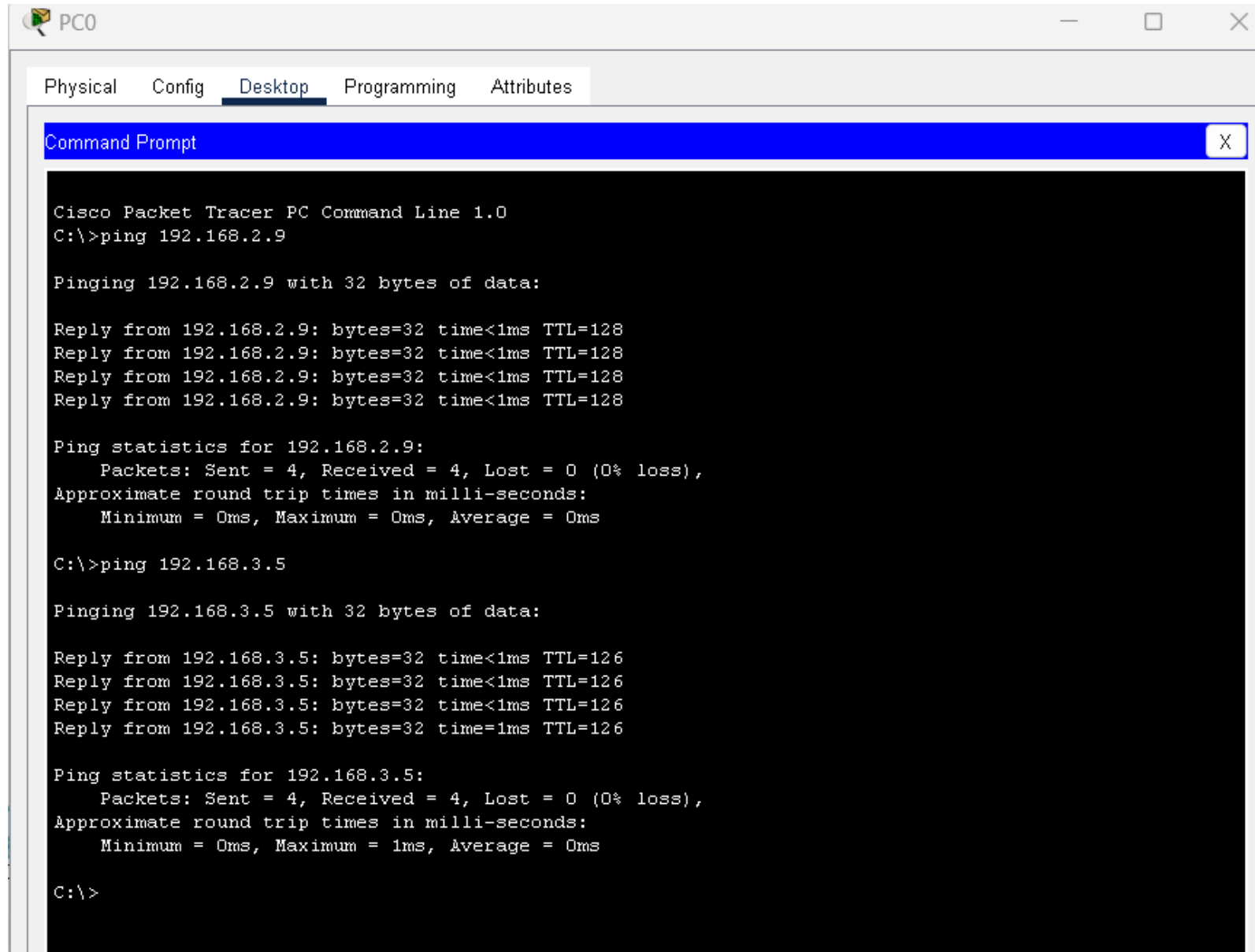
```
Router0
Physical Config CLI Attributes
IOS Command Line Interface

Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 192.168.1.6 255.255.255.0
Router(config-if)#
?Bad filename
%Error parsing filename (Bad file number)
Router(config-if)#
?Bad filename
%Error parsing filename (Bad file number)
Router(config-if)#router rip
Router(config-router)#network 192.168.2.0
Router(config-router)#network 192.168.1.0
Router(config-router)#
?Bad filename
%Error parsing filename (Bad file number)
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)#
%SYS-5-CONFIG_I: Configured from console by console

Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#router rip
Router(config-router)#network 192.168.2.0
Router(config-router)#network 192.168.1.0
Router(config-router)#
```

Copy Paste

4. TEST (1)Ping in same network (2)Ping in different network



The screenshot shows a Cisco Packet Tracer interface with a PC named 'PC0'. The 'Desktop' tab is selected, displaying a 'Command Prompt' window. The command prompt shows the execution of two ping commands. The first command is 'ping 192.168.2.9', which results in four successful replies with 32 bytes of data, a time of less than 1ms, and a TTL of 128. The statistics show 4 packets sent, 4 received, and 0% loss. The second command is 'ping 192.168.3.5', which also results in four successful replies with 32 bytes of data, a time of less than 1ms, and a TTL of 126. The statistics show 4 packets sent, 4 received, and 0% loss.

```
PC0
Physical Config Desktop Programming Attributes
Command Prompt X

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.2.9

Pinging 192.168.2.9 with 32 bytes of data:

Reply from 192.168.2.9: bytes=32 time<1ms TTL=128
Reply from 192.168.2.9: bytes=32 time<1ms TTL=128
Reply from 192.168.2.9: bytes=32 time<1ms TTL=128
Reply from 192.168.2.9: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.2.9:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.3.5

Pinging 192.168.3.5 with 32 bytes of data:

Reply from 192.168.3.5: bytes=32 time<1ms TTL=126
Reply from 192.168.3.5: bytes=32 time<1ms TTL=126
Reply from 192.168.3.5: bytes=32 time<1ms TTL=126
Reply from 192.168.3.5: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.3.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

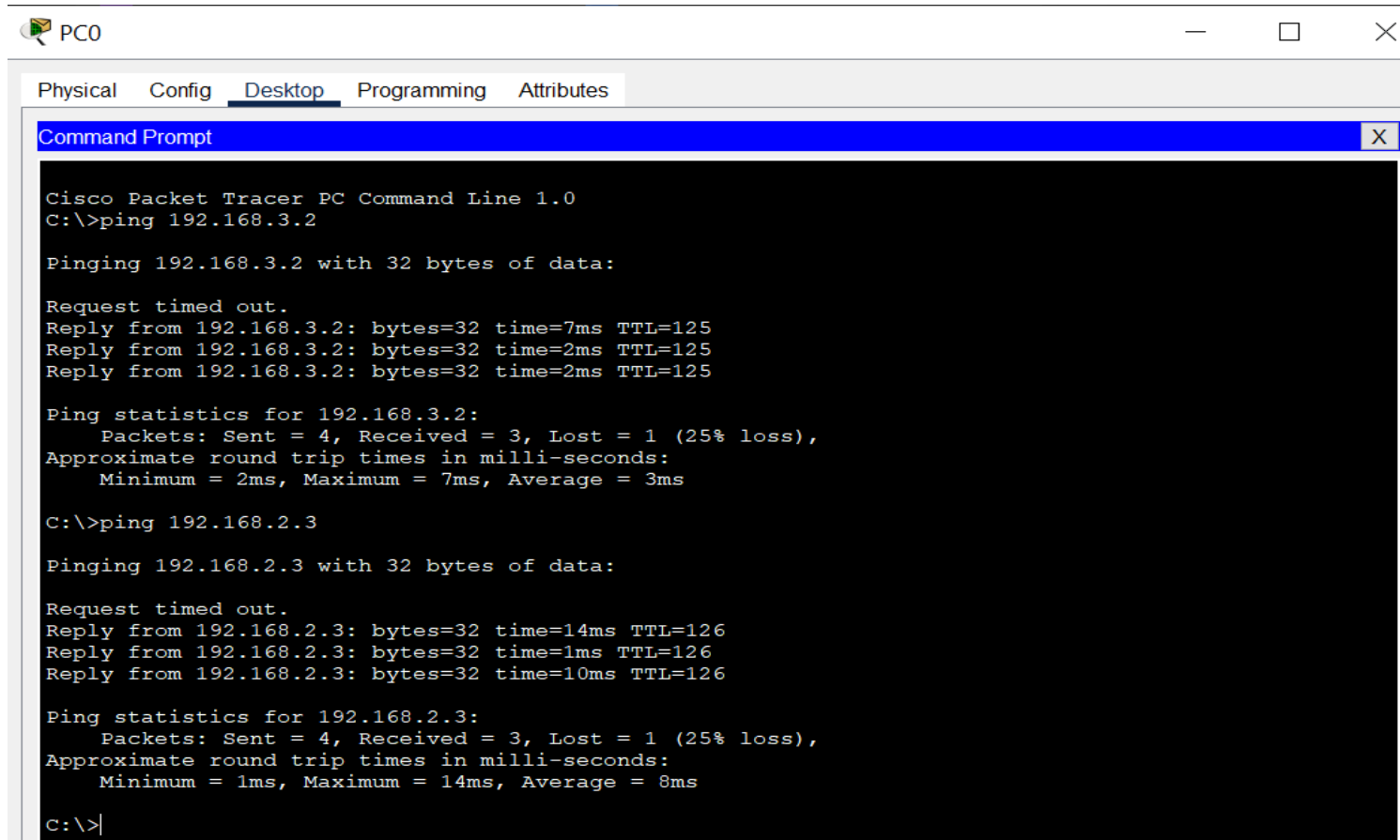
7. Implement dynamic routing in a network:



1. Ping Command

The ping command is a very common method used to troubleshoot accessibility of devices. It uses a series of Internet Control Message Protocol (ICMP) Echo messages to determine:

- Whether a remote host is active or inactive.
- The round-trip delay used to communicate with the host.
- Packet loss.



```
PC0
Physical Config Desktop Programming Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.3.2

Pinging 192.168.3.2 with 32 bytes of data:

Request timed out.
Reply from 192.168.3.2: bytes=32 time=7ms TTL=125
Reply from 192.168.3.2: bytes=32 time=2ms TTL=125
Reply from 192.168.3.2: bytes=32 time=2ms TTL=125

Ping statistics for 192.168.3.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 7ms, Average = 3ms

C:\>ping 192.168.2.3

Pinging 192.168.2.3 with 32 bytes of data:

Request timed out.
Reply from 192.168.2.3: bytes=32 time=14ms TTL=126
Reply from 192.168.2.3: bytes=32 time=1ms TTL=126
Reply from 192.168.2.3: bytes=32 time=10ms TTL=126

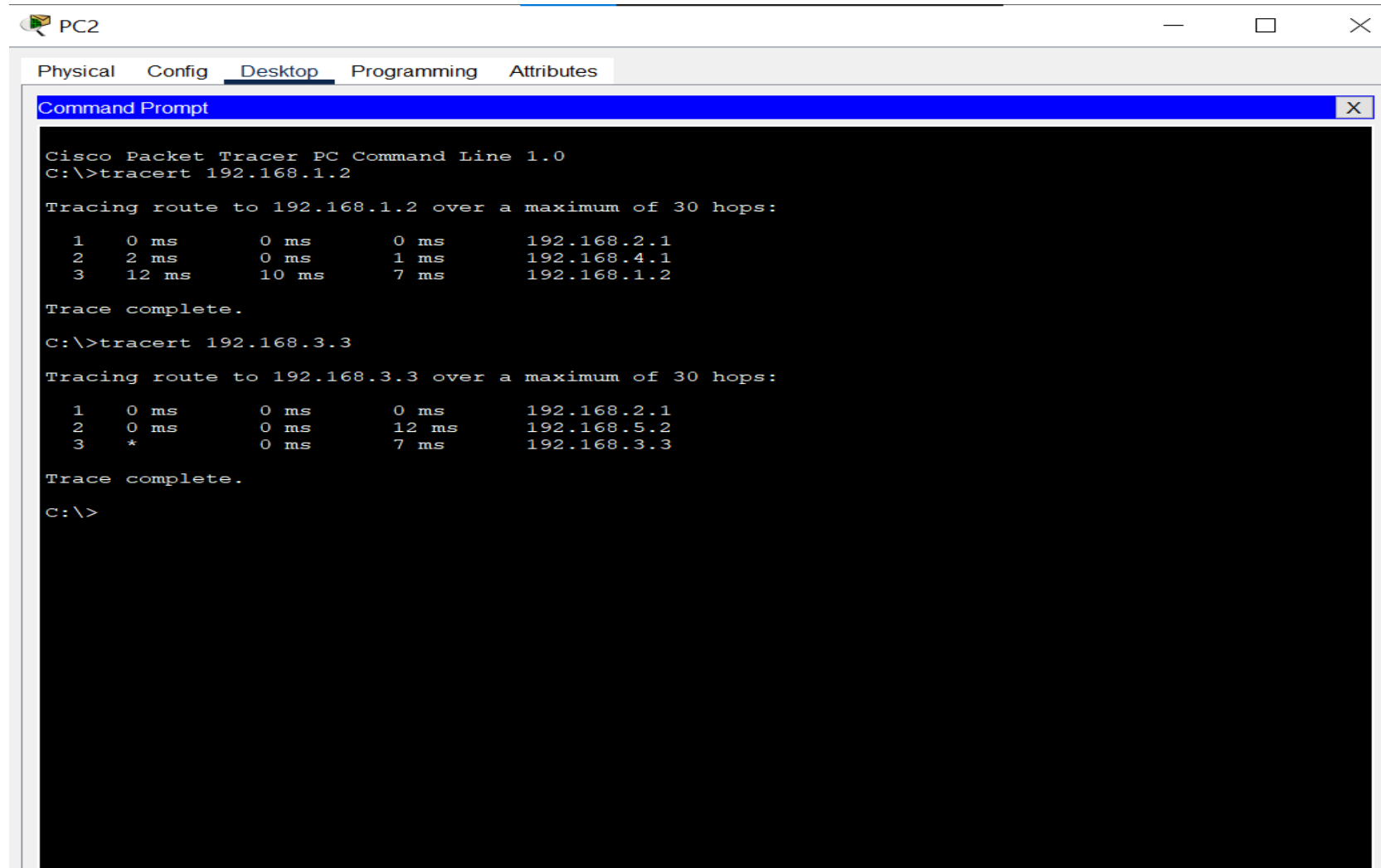
Ping statistics for 192.168.2.3:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 14ms, Average = 8ms

C:\>
```

2.Trace route:

‘Tracert’ command in Cisco.

The traceroute command is used to discover the routes that packets actually take when they travel to their destination.



The screenshot shows a Cisco Packet Tracer PC Command Line window for PC2. The window has tabs for Physical, Config, Desktop, Programming, and Attributes. The Desktop tab is active, displaying a Command Prompt window. The Command Prompt shows the execution of the 'tracert' command to reach 192.168.1.2 and 192.168.3.3, displaying the path taken and the time taken at each hop.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>tracert 192.168.1.2

Tracing route to 192.168.1.2 over a maximum of 30 hops:

  1  0 ms      0 ms      0 ms      192.168.2.1
  2  2 ms      0 ms      1 ms      192.168.4.1
  3 12 ms     10 ms      7 ms      192.168.1.2

Trace complete.

C:\>tracert 192.168.3.3

Tracing route to 192.168.3.3 over a maximum of 30 hops:

  1  0 ms      0 ms      0 ms      192.168.2.1
  2  0 ms      0 ms     12 ms     192.168.5.2
  3  *         0 ms      7 ms      192.168.3.3

Trace complete.

C:\>
```

