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Batch: B

Roll No.: 23

CEL 51, DCCN, Monsoon 2020

Lab 4: Prototyping a Network

Objective:

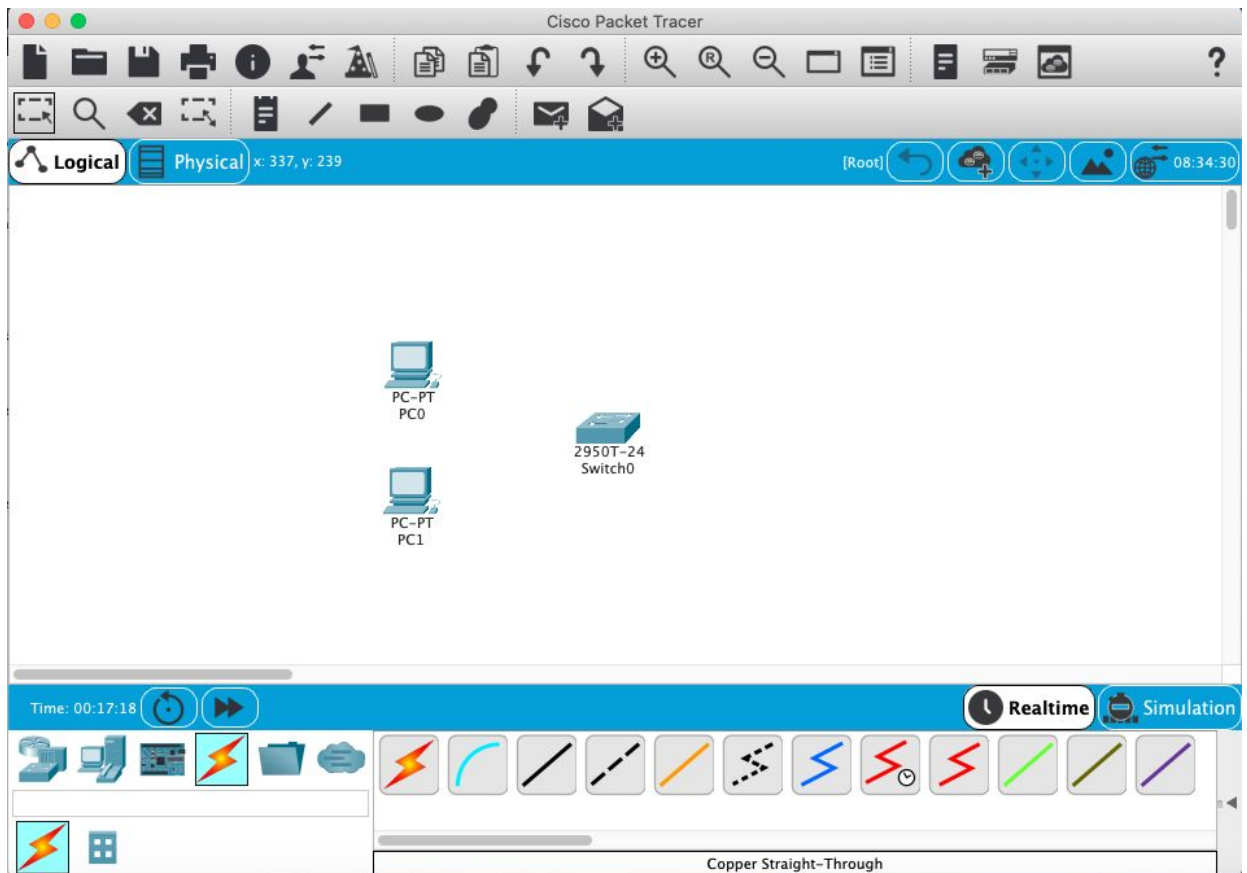
Prototype a network using Packet Tracer

Background

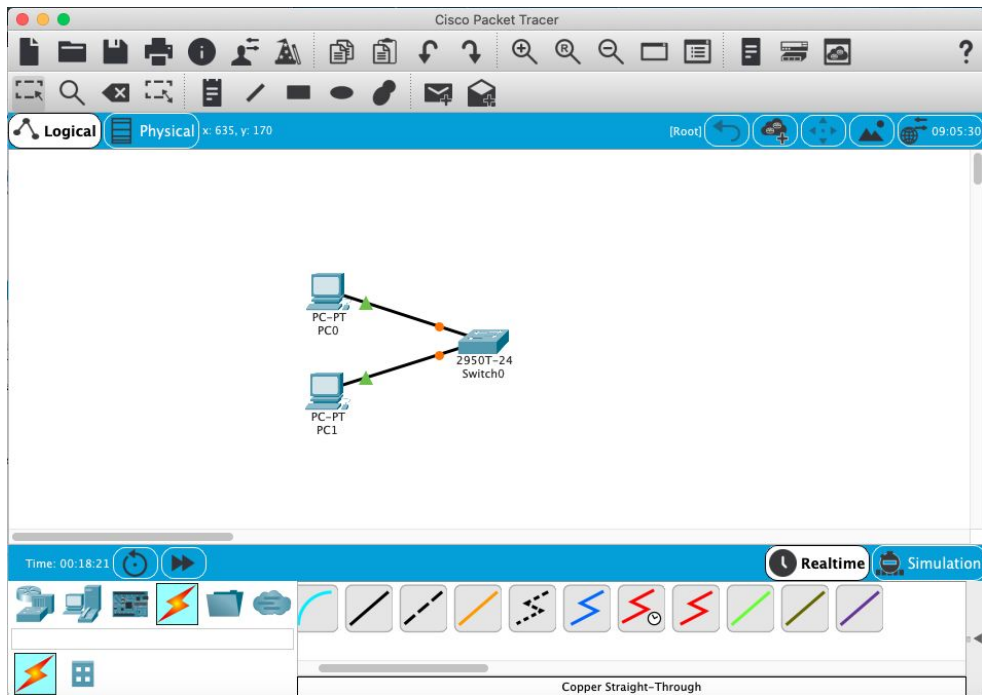
A client has requested that you set up a simple network with two PCs connected to a switch. Verify that the hardware, along with the given configurations, meet the requirements of the client.

Step 1: Set up the network topology

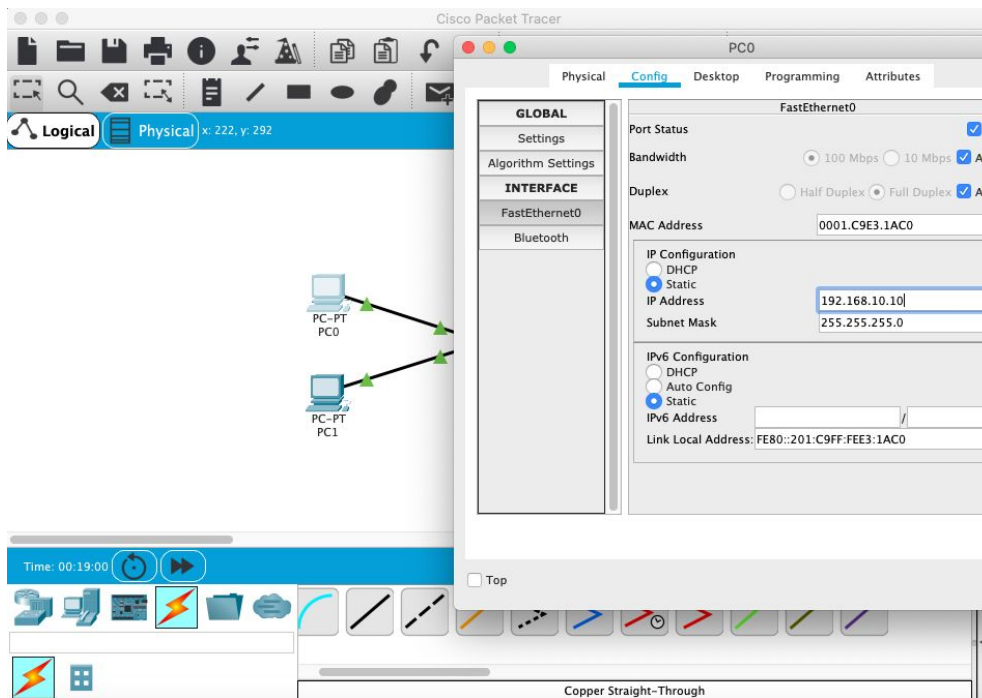
- a) Add two PCs and a Cisco 2950T switch



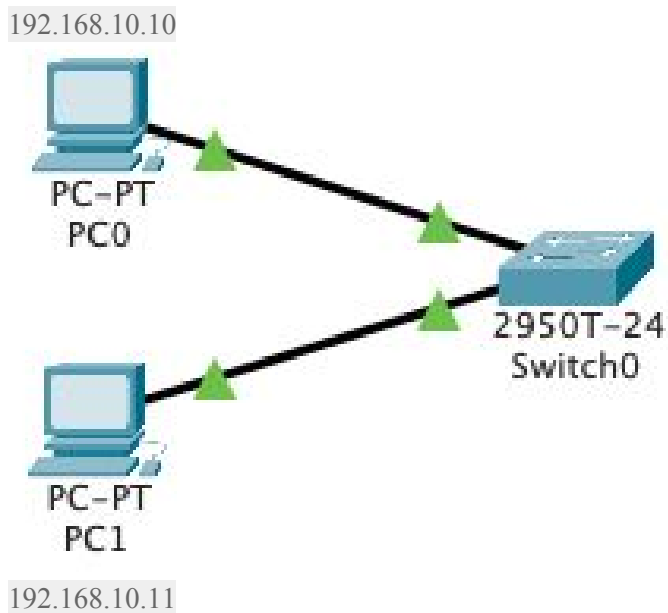
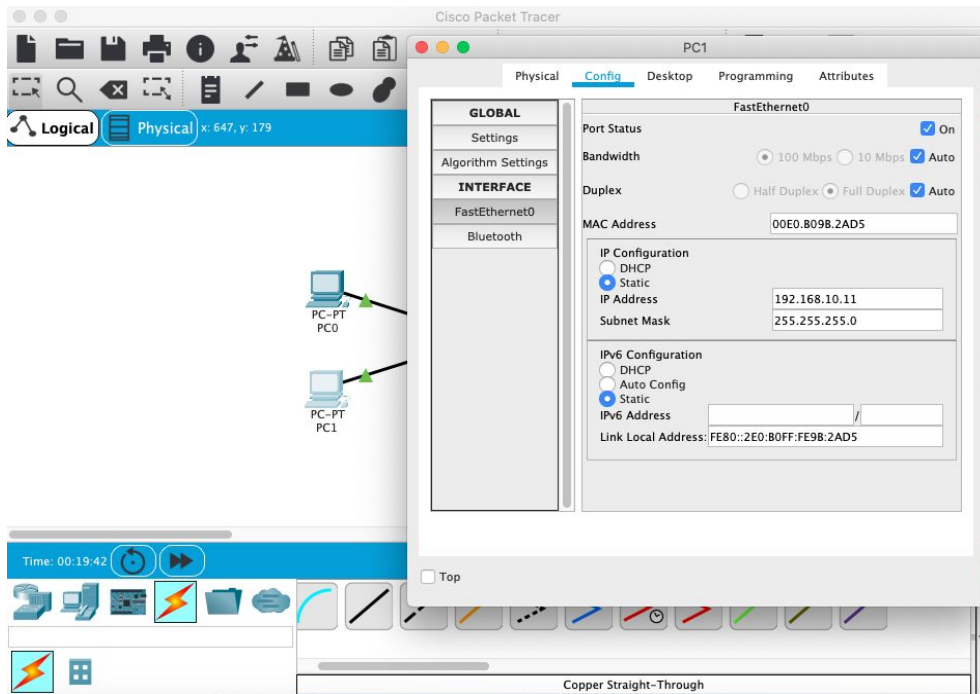
- b) Using straight-through cables, connect **PC0** to interface **Fa0/1** on **Switch0** and **PC1** to interface **Fa0/2** on **Switch0**.



- c) Configure PC0 using the **Config** tab in the PC0 configuration window:
 - a. IP address: 192.168.10.10
 - b. Subnet Mask 255.255.255.0

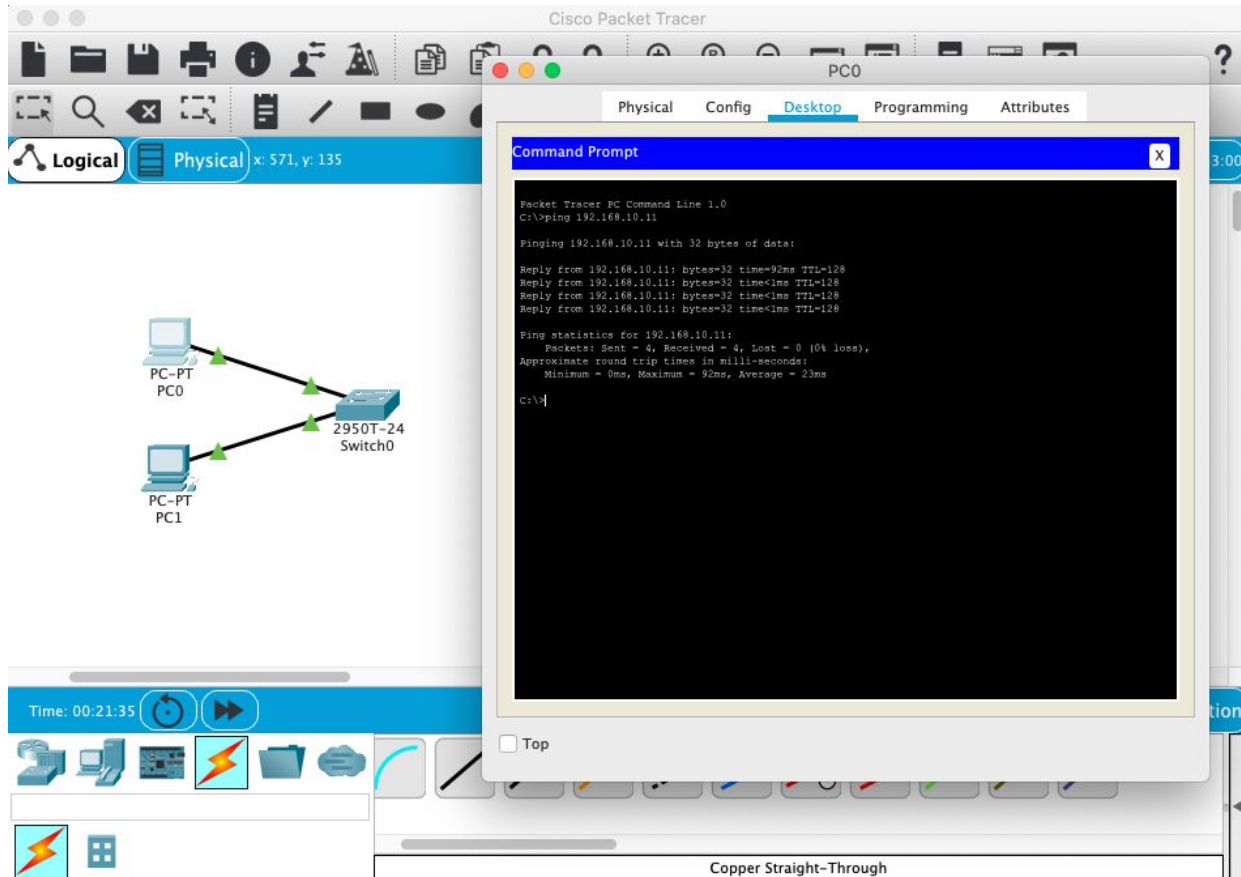


- d) Configure PC1 using the **Config** tab in the PC1 configuration window
- IP address: 192.168.10.11
 - Subnet Mask 255.255.255.0

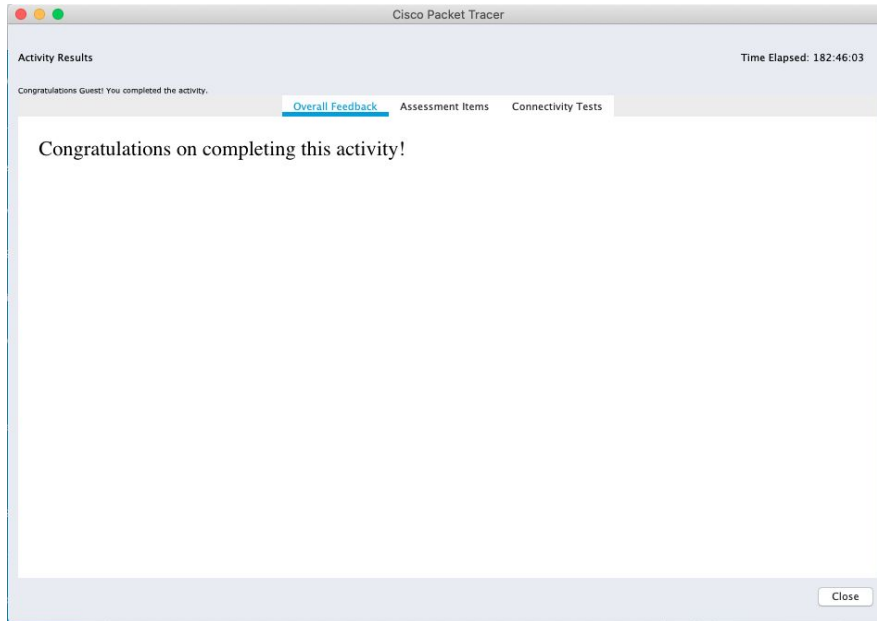


Step 2: Test connectivity from PC0 to PC1

- a) Use the **ping** command to test connectivity.
 - a. Click PC0.
 - b. Choose the **Desktop** tab.
 - c. Choose **Command Prompt**.
 - d. Type: **ping 192.168.10.11** and press *enter*.
- b) A successful **ping** indicates the network was configured correctly and the prototype validates the hardware and software configurations. A successful ping should resemble the below output:



- c) Close the configuration window.
- d) Click the **Check Results** button at the bottom of the instruction window to check your work..

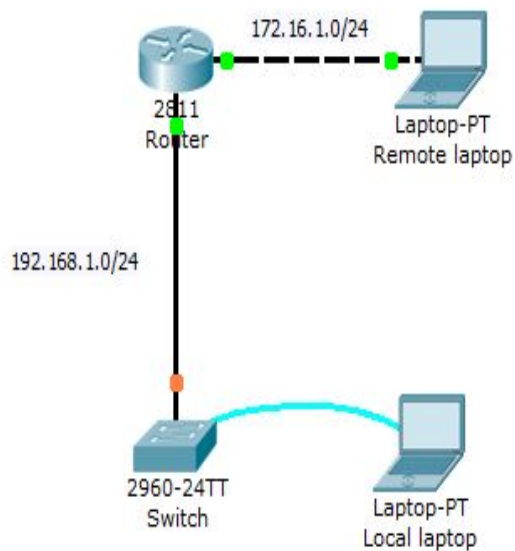


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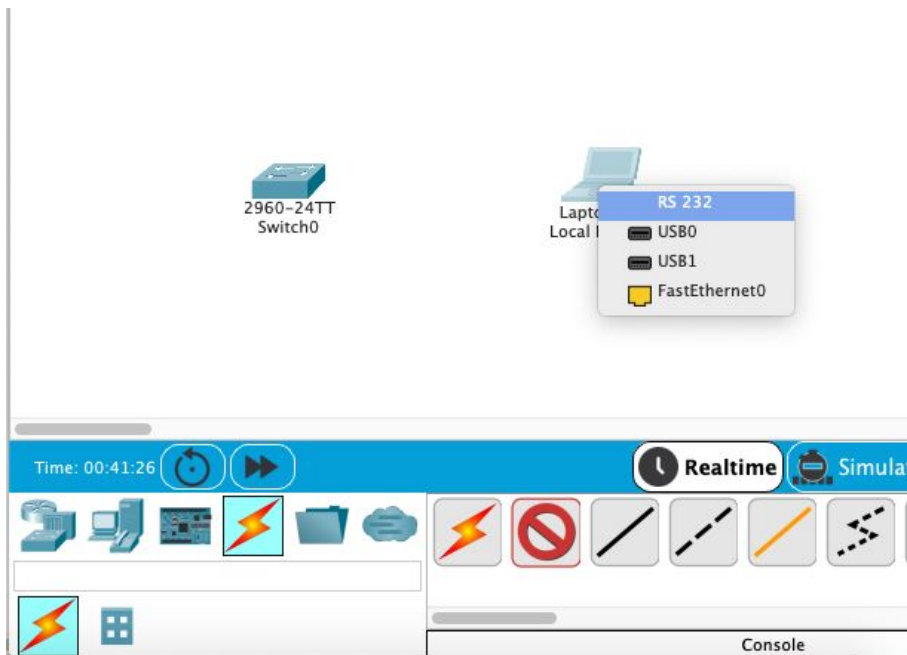
Lab 4.1: Basic configuration - hostname, motd banner, passwd etc

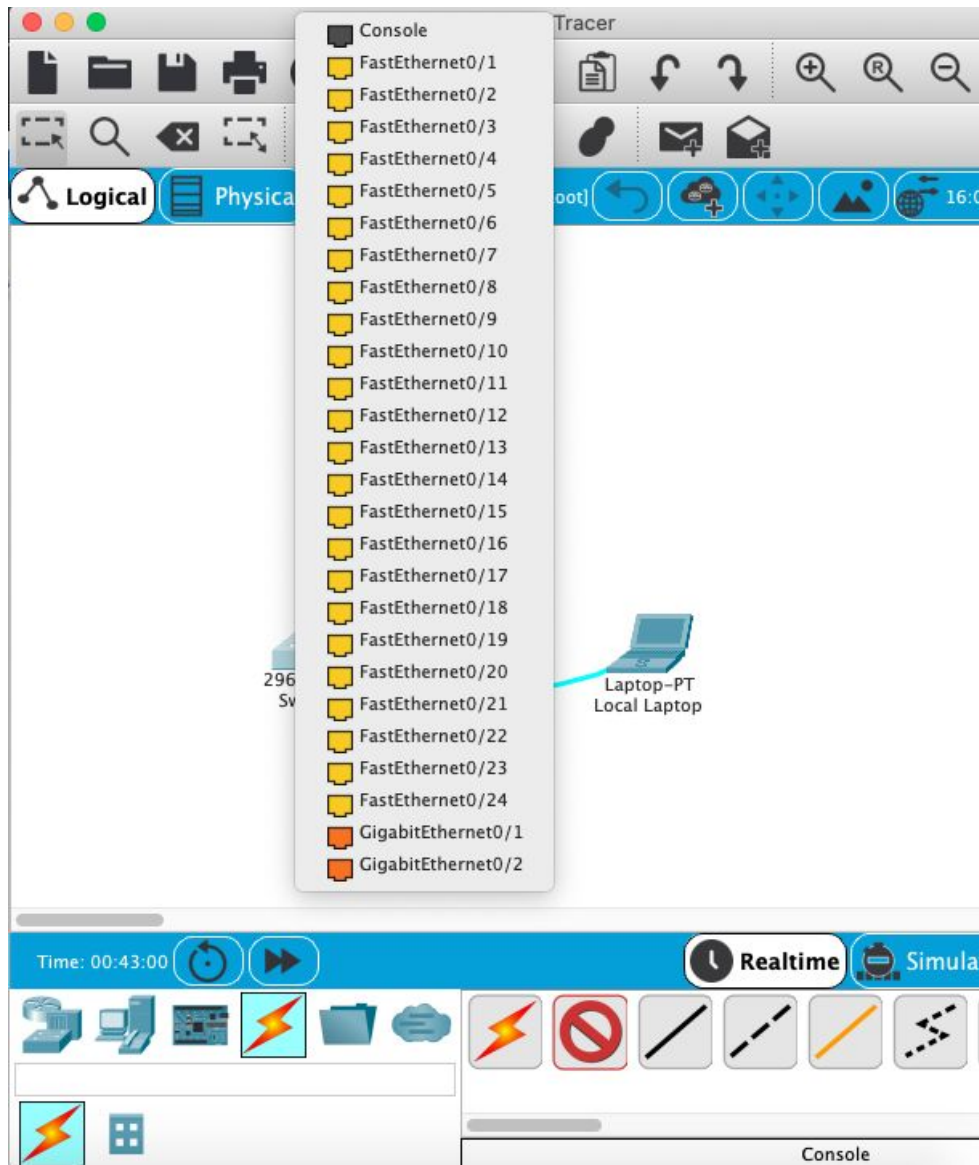
Objective:

This lab will test your ability to configure basic settings such as hostname, motd banner, encrypted passwords, and terminal options on a Packet Tracer 6.2 simulated Cisco Catalyst switch.



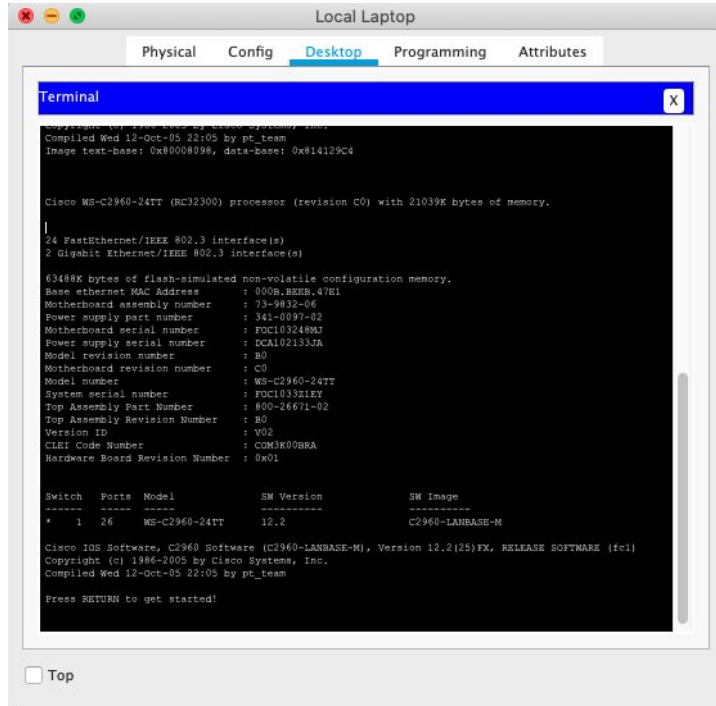
1. Use the local laptop to connect to the switch console.



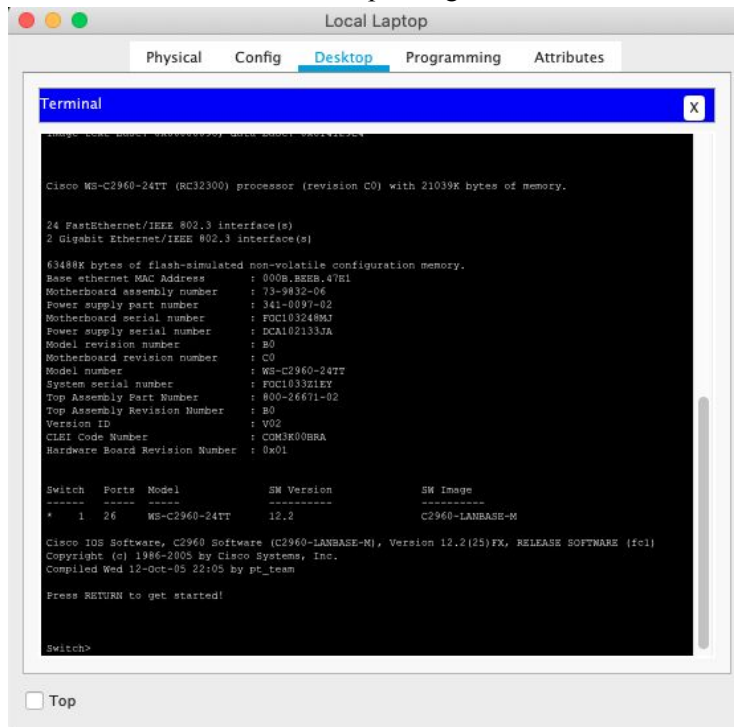


2. Configure Switch hostname as LOCAL-SWITCH

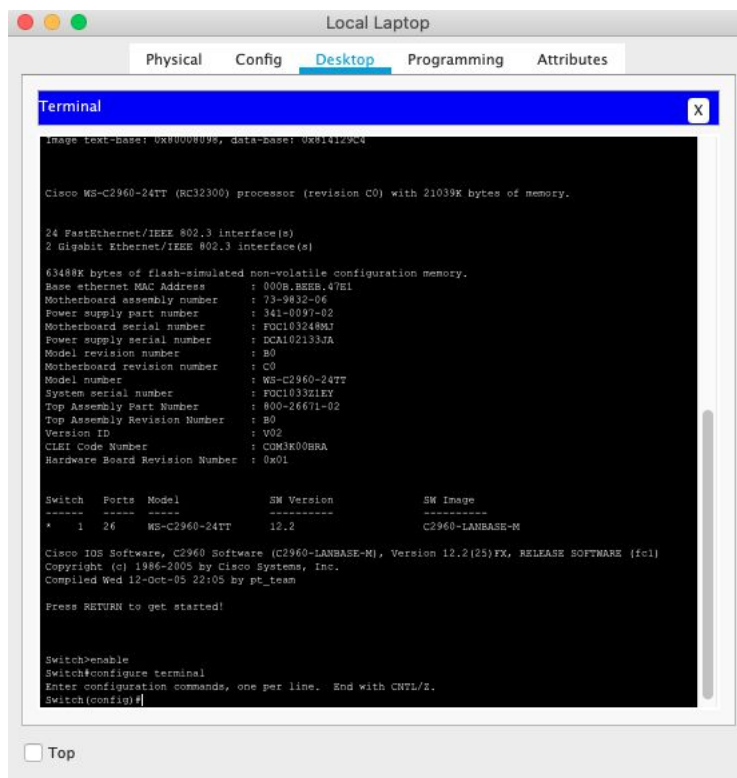
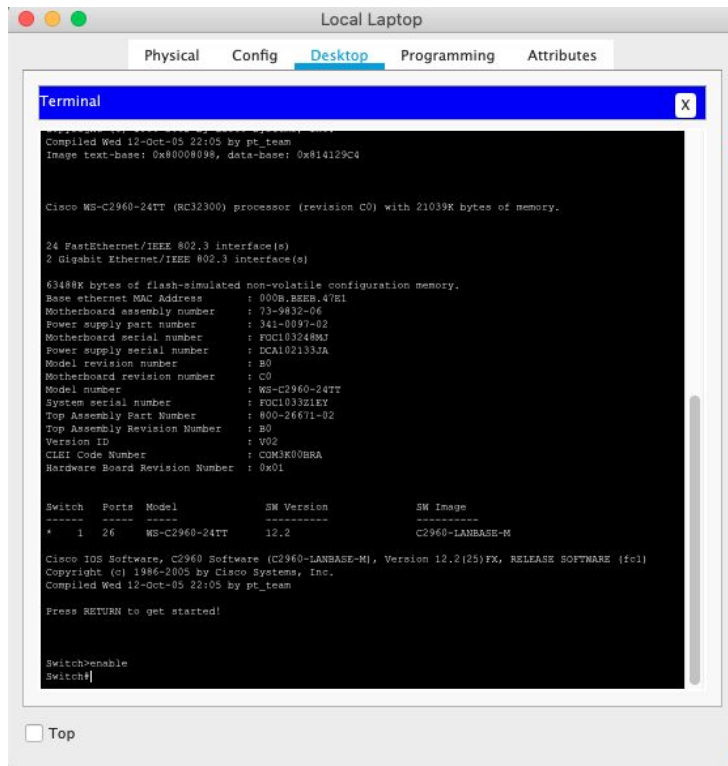
Open terminal of local laptop



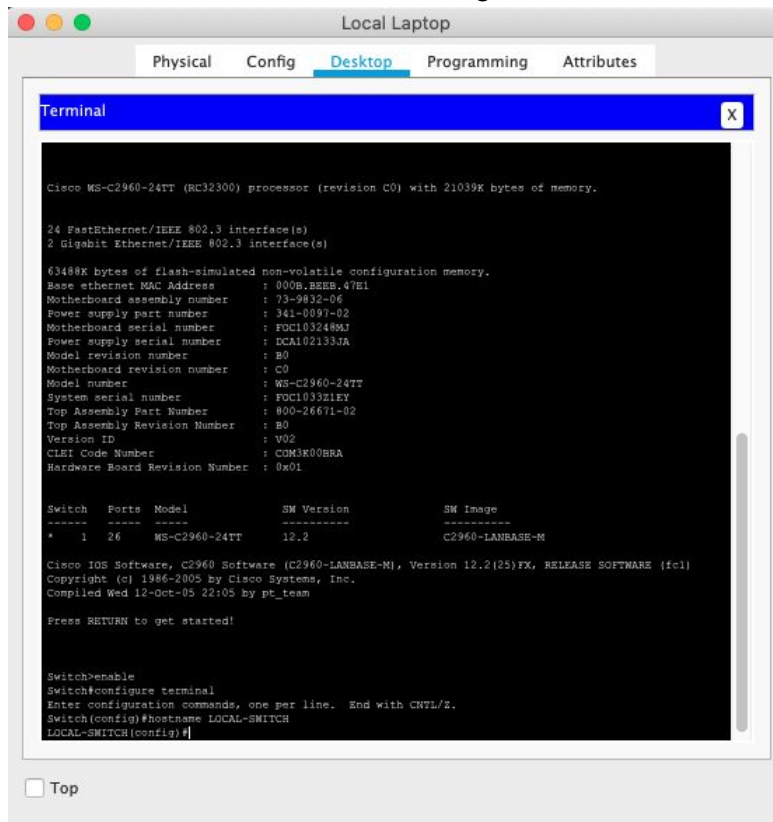
Enable command - To enter in privilege exec mode



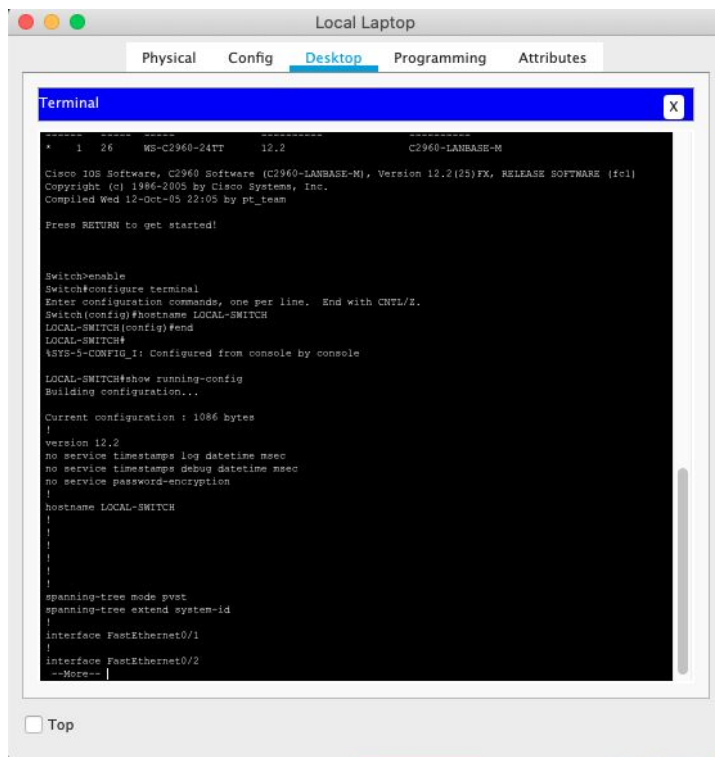
Enter configuration mode Use the configure privileged EXEC command to enter global configuration mode.



Set hostname as LOCAL-SWITCH using hostname LOCAL-SWITCH command



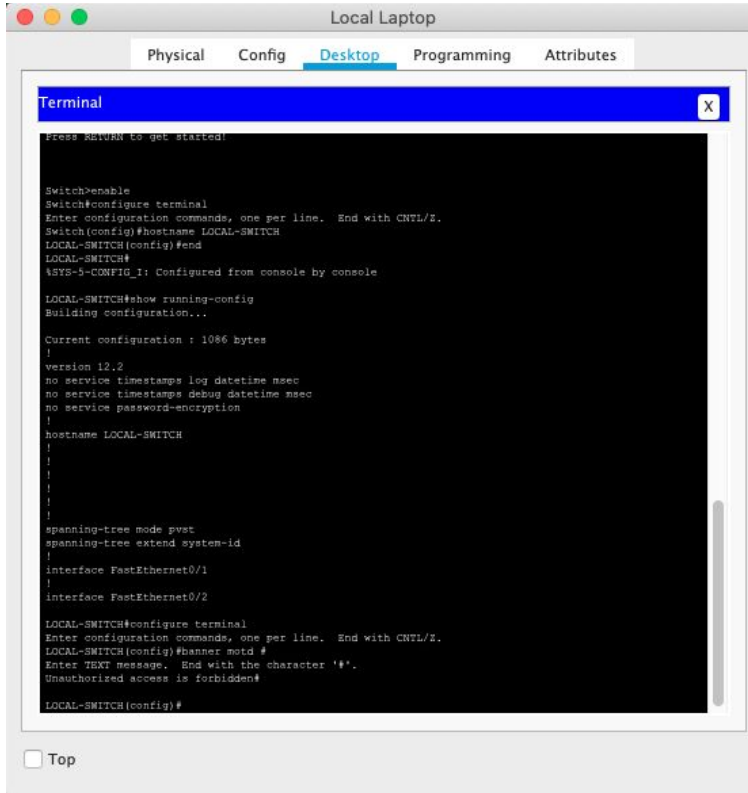
Run show running-config command to check the hostname



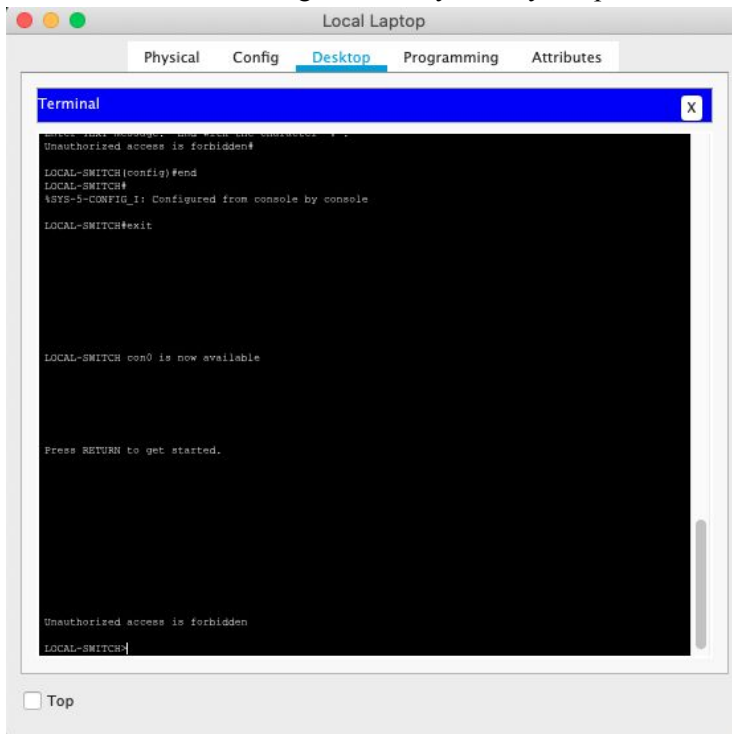
3. Configure the message of the day as "Unauthorized access is forbidden"

Use command banner motd #

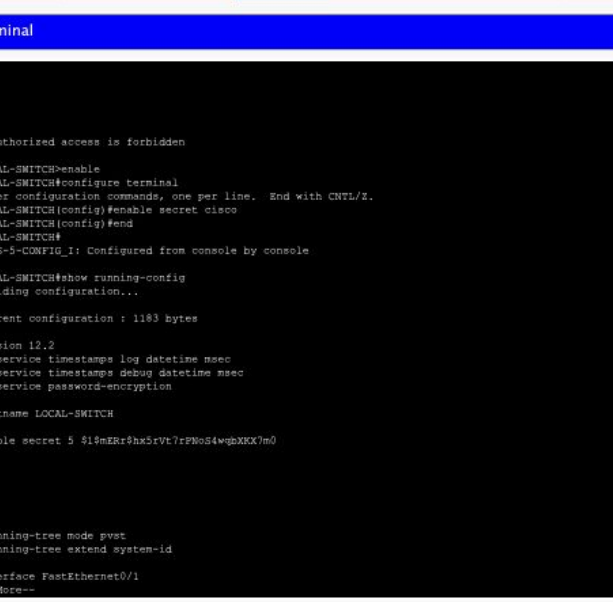
Type the message and add # at the end.



You can check the message of the day when you open the terminal for accessing switch again.



A screenshot of a 'Local Laptop' window with a terminal application open. The terminal has a blue title bar labeled 'Terminal' with a close button. The main area is black with white text. The text shows a series of commands and system messages: an invalid input error, a successful exit command, a console connection message, a return key prompt, an unauthorized access message, and a series of configuration commands (enable, configure terminal, enable secret cisco) that are partially cut off at the bottom. A vertical scrollbar is on the right side of the terminal window.



```
Local Laptop
Physical  Config  Desktop  Programming  Attributes

Terminal [X]

Unauthorized access is forbidden

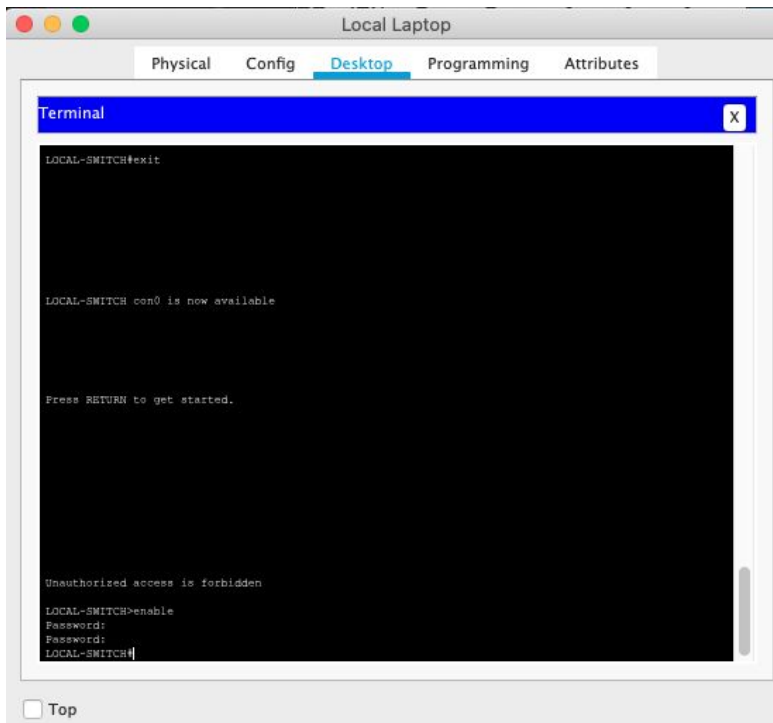
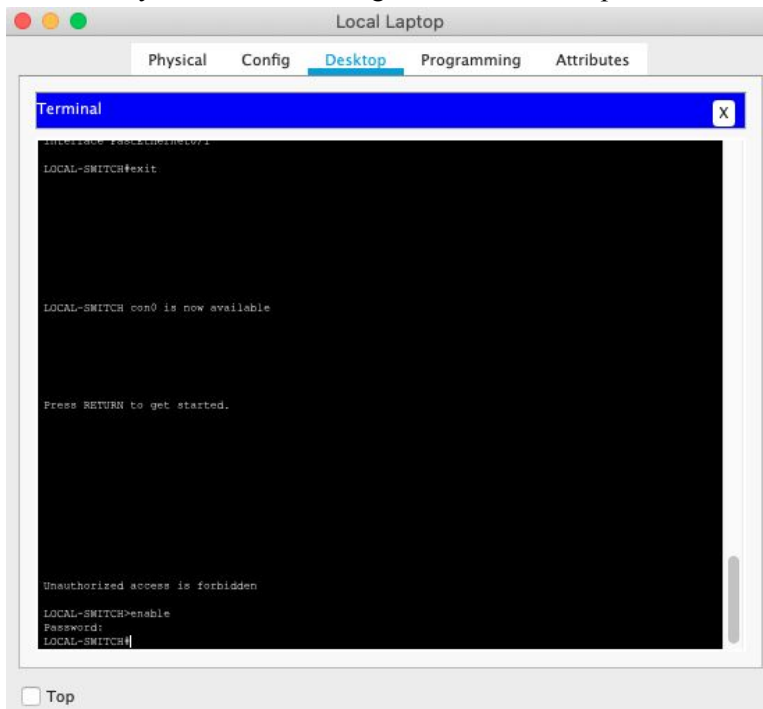
LOCAL-SWITCH#enable
LOCAL-SWITCH#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
LOCAL-SWITCH(config)#enable secret cisco
LOCAL-SWITCH(config)#end
LOCAL-SWITCH#
%SYS-5-CONFIG_I: Configured from console by console

LOCAL-SWITCH#show running-config
Building configuration...

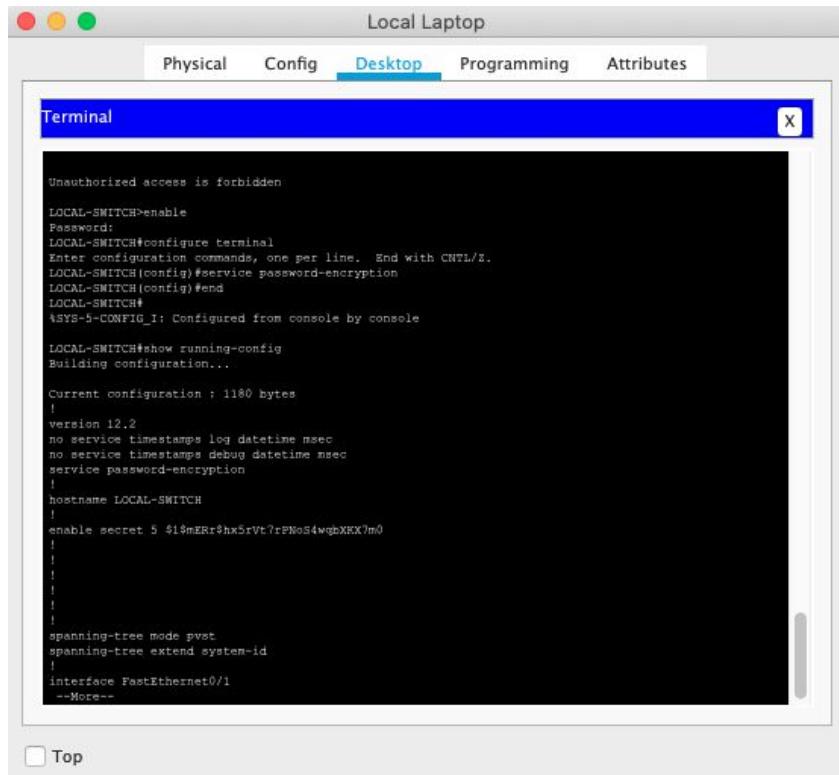
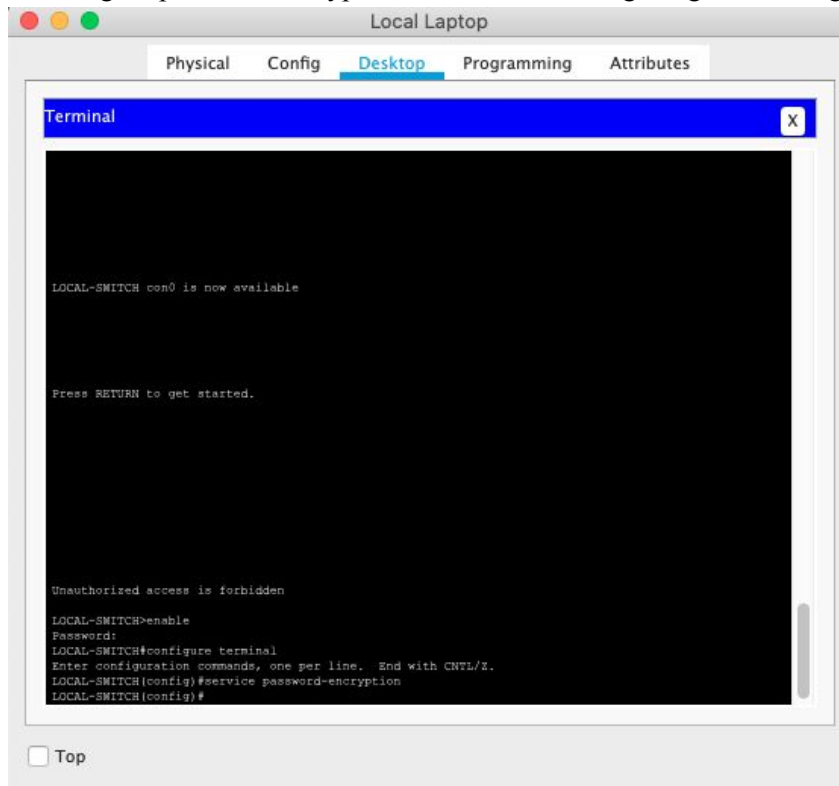
Current configuration : 1183 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname LOCAL-SWITCH
!
enable secret 5 $1$mER$hh5rV7rPWoS4wgbKXX7m0
!
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
--More--
```

☐ Top

When we try to enable switch again, it will ask for password.

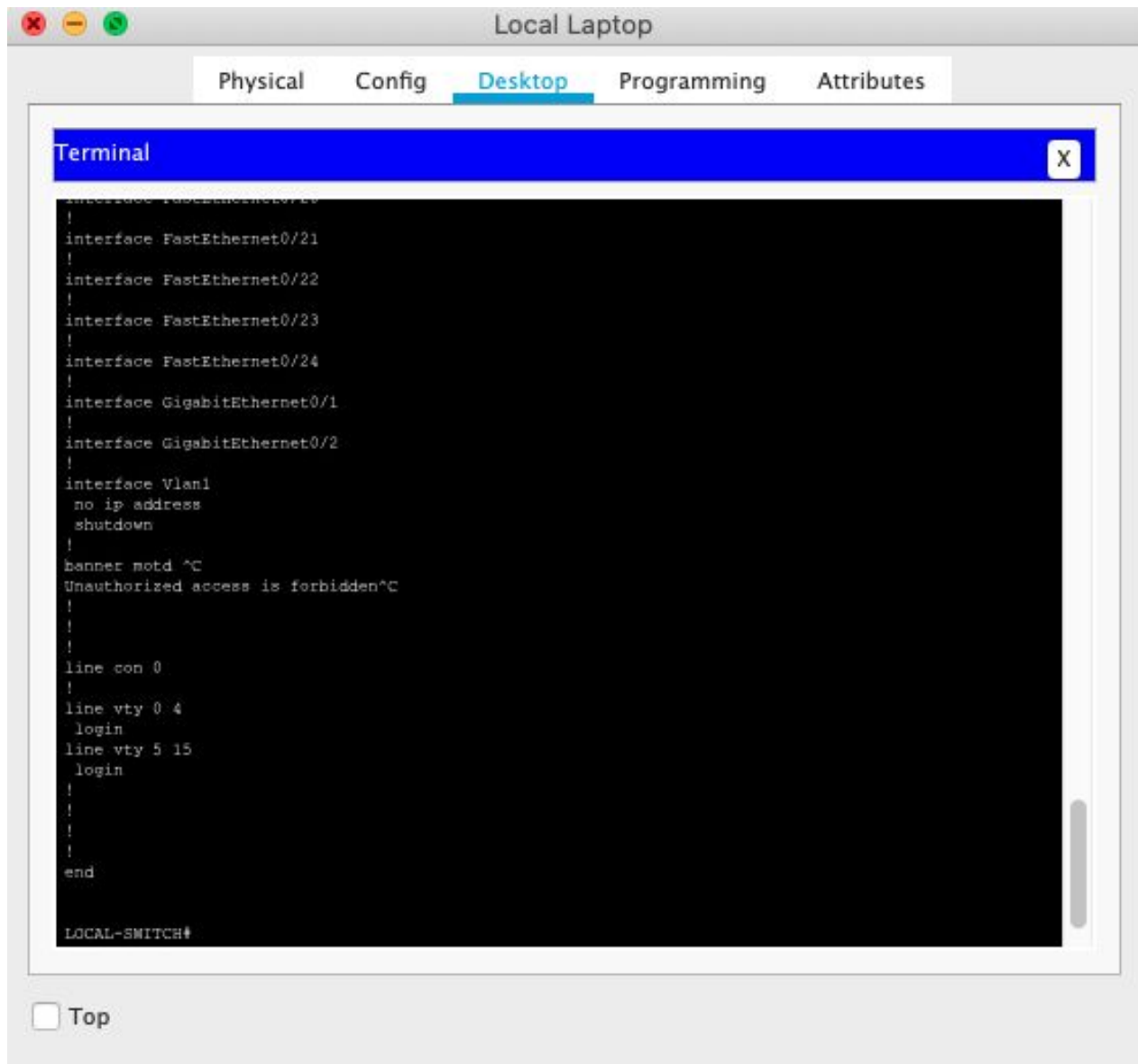


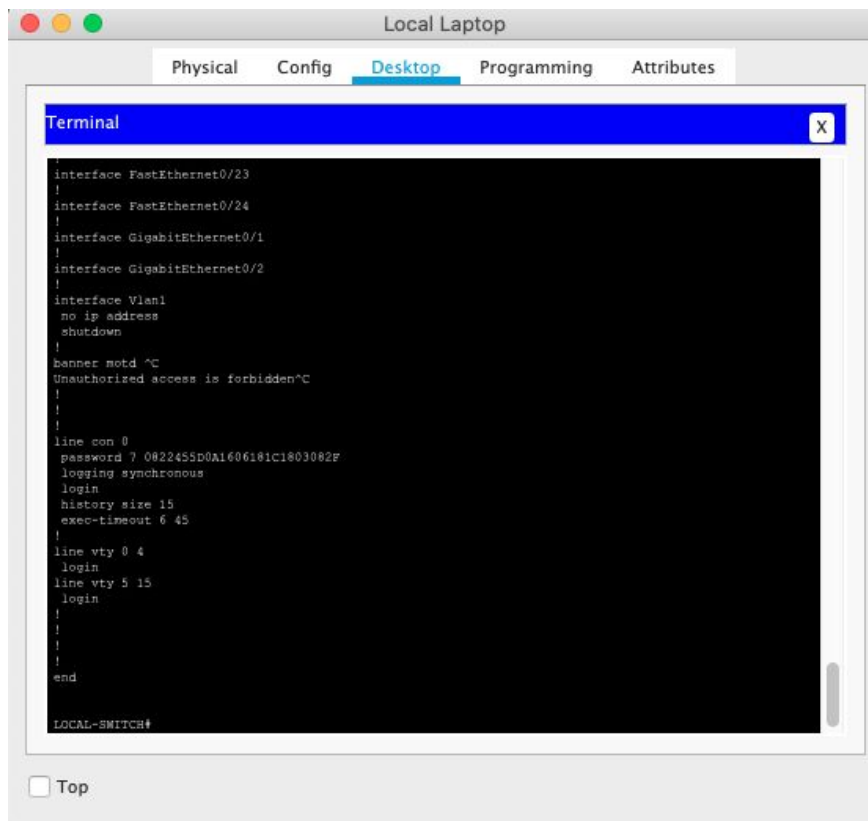
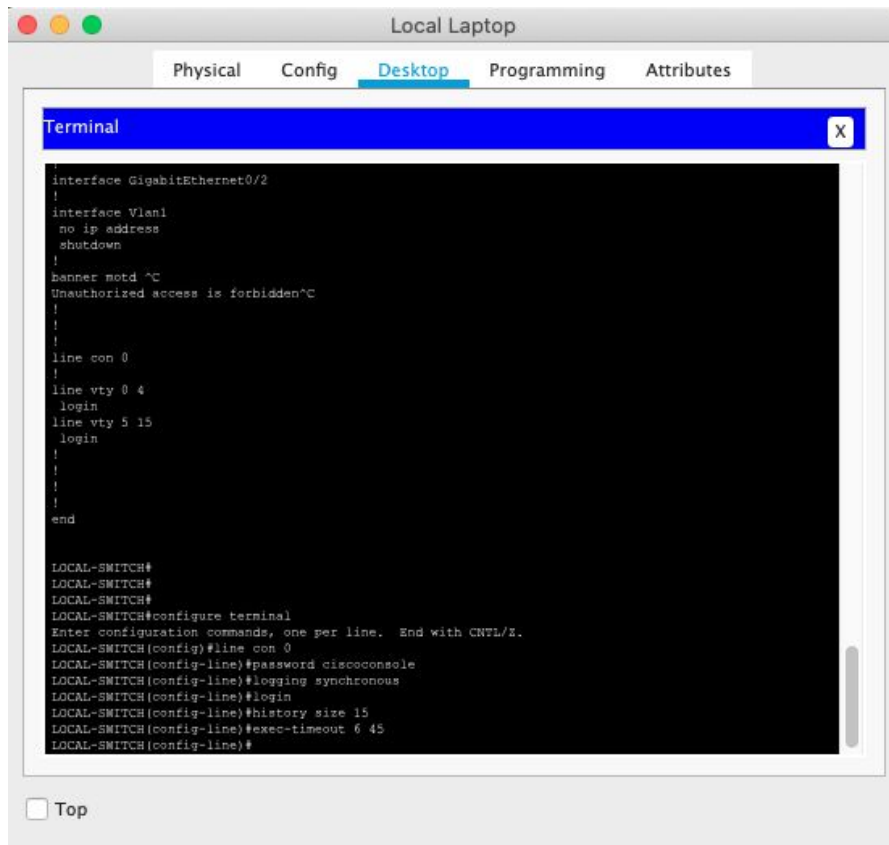
5. Configure password encryption on the switch using the global configuration command



6. Configure CONSOLE access with the following settings :

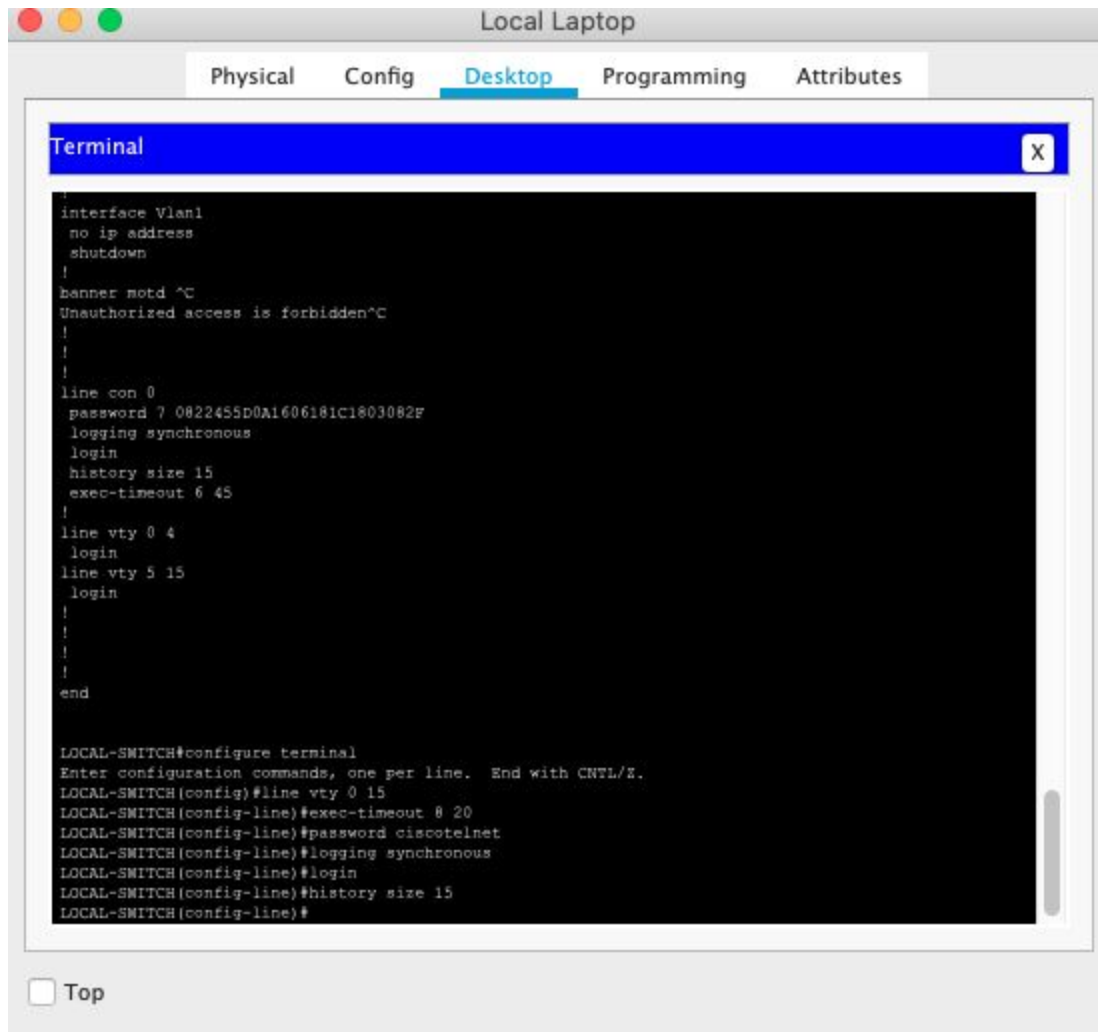
- Login enabled
- Password : whatever you like
- History size : 15 commands
- Timeout : 6'45"
- Synchronous logging

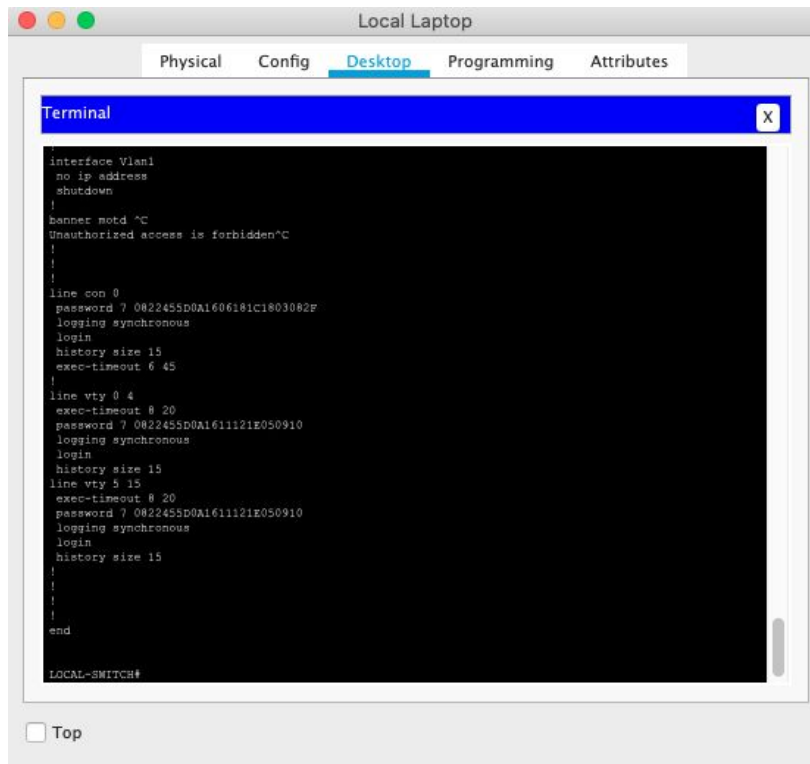




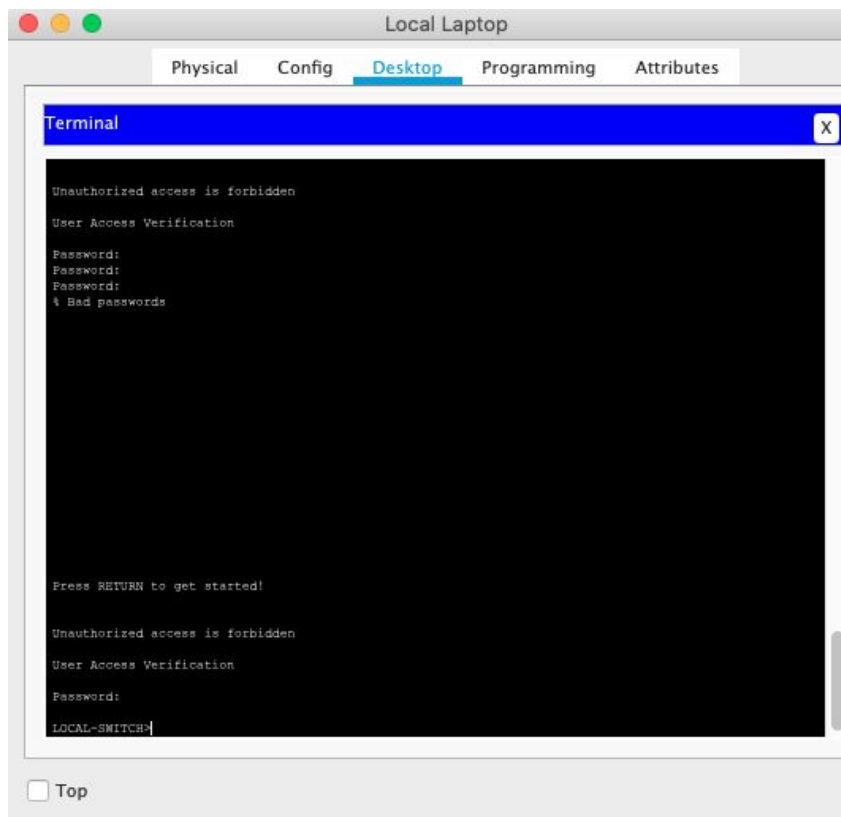
6. Configure TELNET access with the following settings :

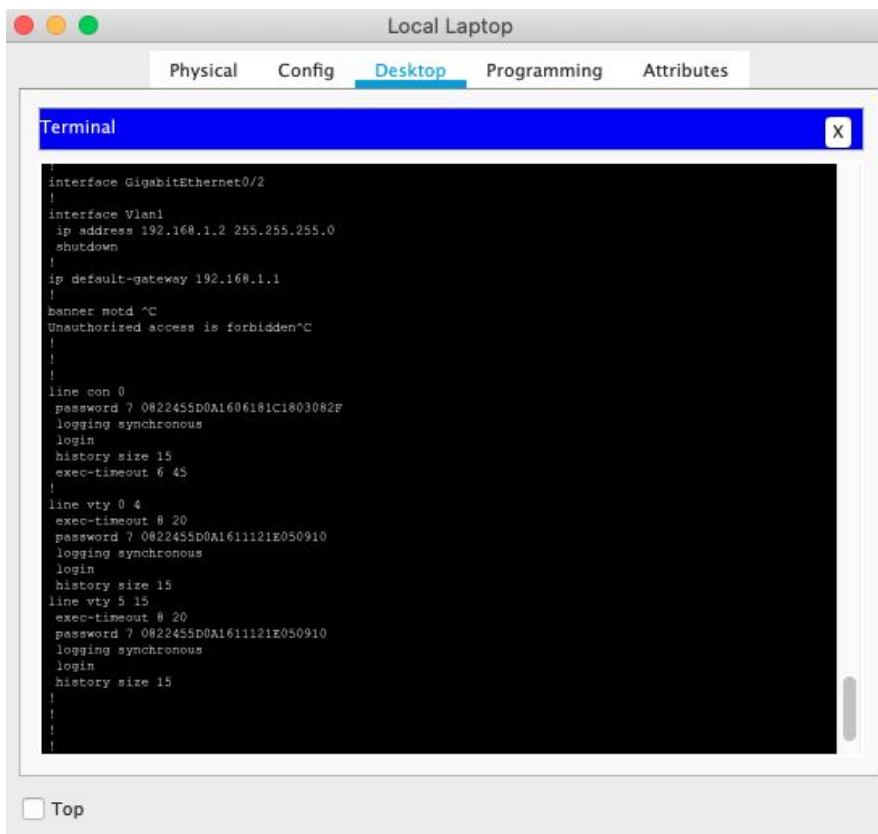
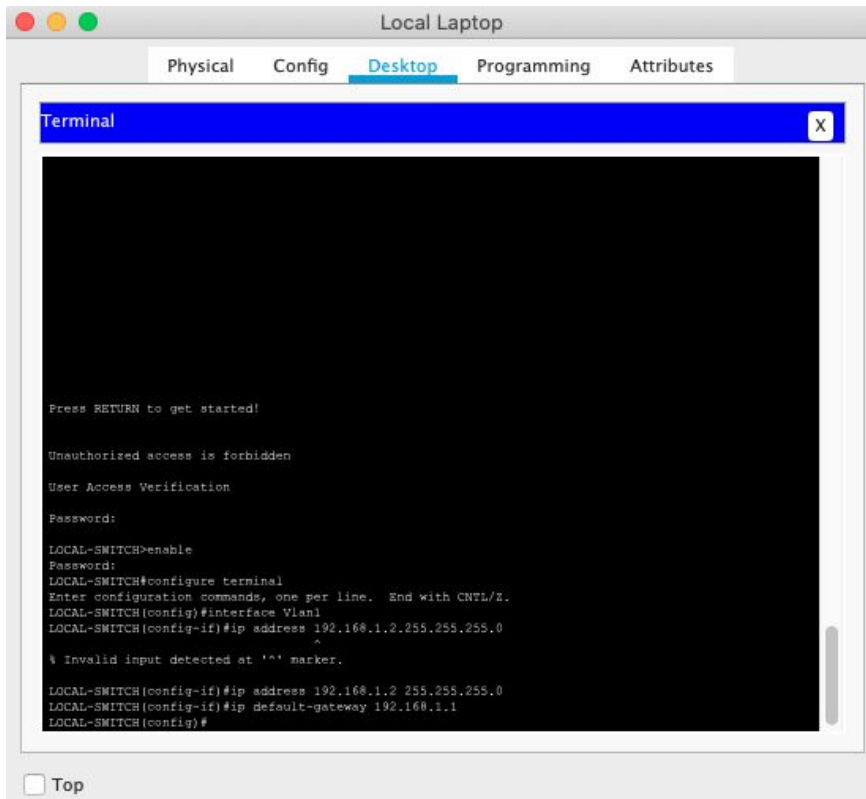
- Login enabled
- Password : whatever you like
- History size : 15 commands
- Timeout : 8'20"
- Synchronous logging

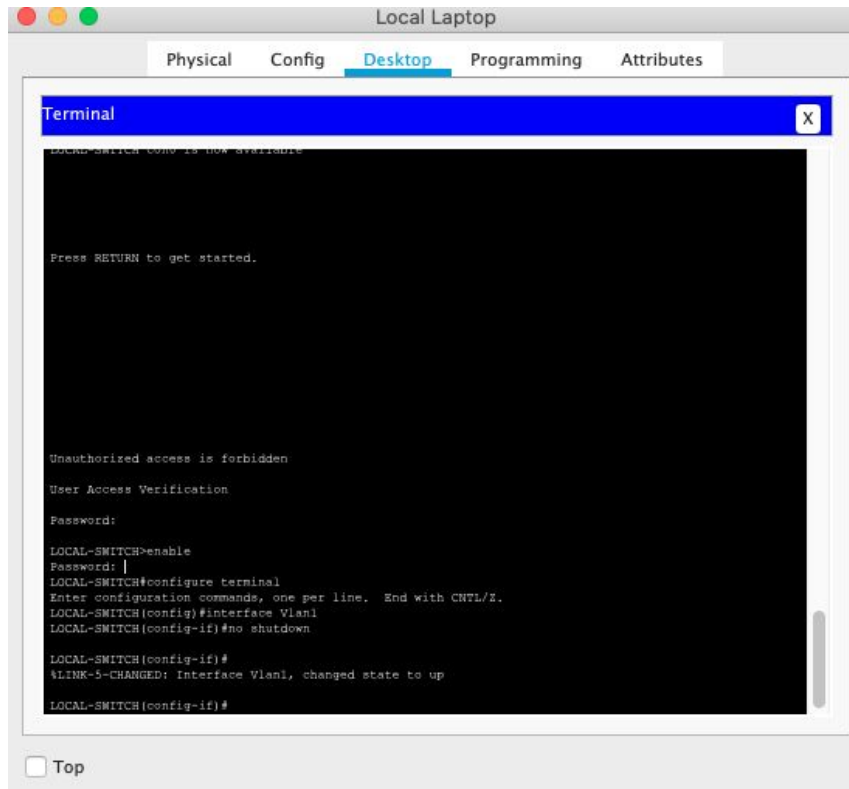




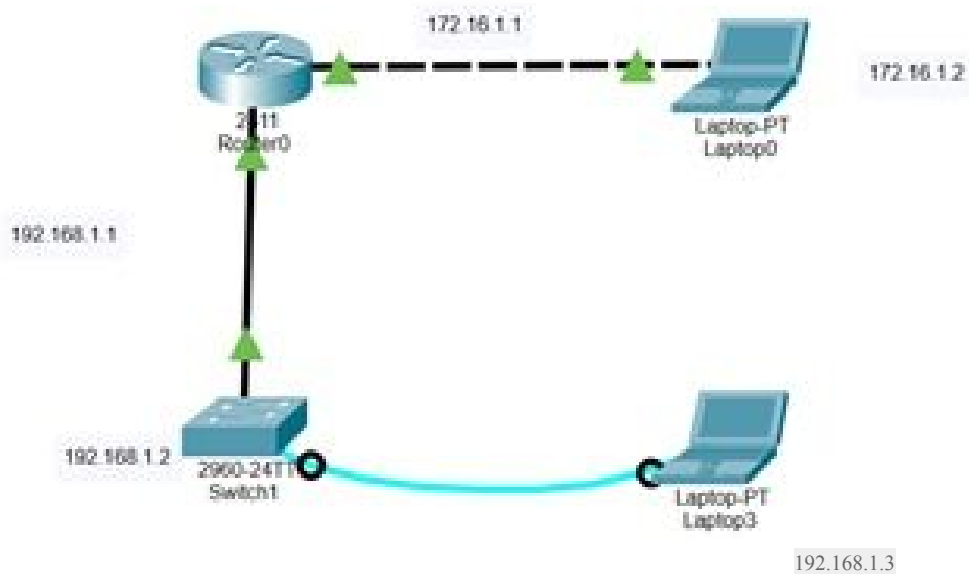
7. Configure the IP address of the switch as 192.168.1.2/24 and its default gateway IP (192.168.1.1).



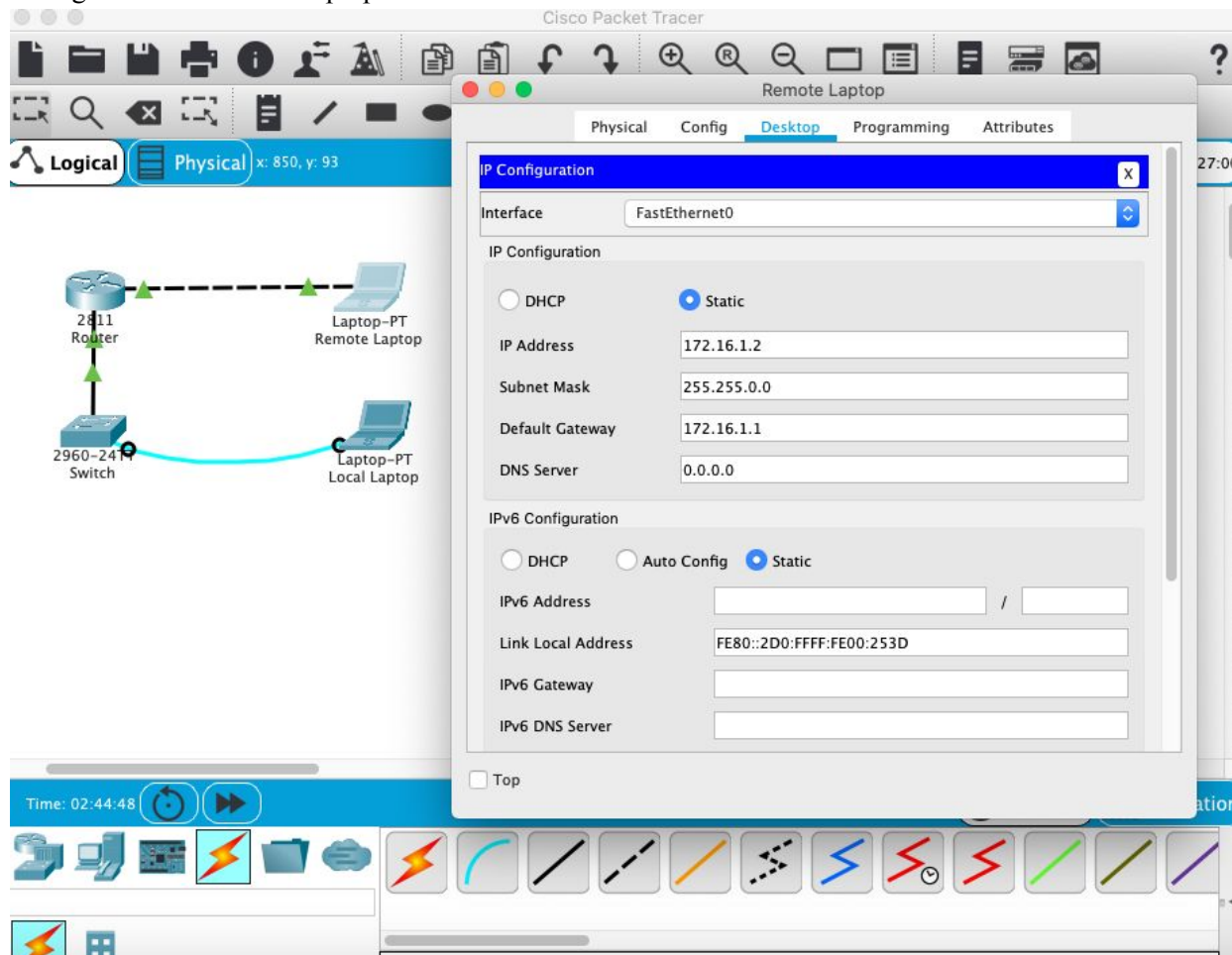




8. Test telnet connectivity from the Remote Laptop using the telnet client.



Configuration of Remote laptop



Configuration of Router

The screenshot shows the Cisco Packet Tracer interface with a network diagram on the left and a configuration window for a 2811 Router on the right. The network diagram includes a 2811 Router connected to a 2960-24 Switch0, which is connected to two laptops: 'Laptop-PT Remote Laptop' and 'Laptop-PT Local Laptop'. The configuration window is open to the 'Config' tab for the 'FastEthernet0/0' interface. The settings are as follows:

- Port Status:** On (checked)
- Bandwidth:** 100 Mbps (selected), 10 Mbps (unselected), Auto (checked)
- Duplex:** Half Duplex (unselected), Full Duplex (selected), Auto (checked)
- MAC Address:** 0001.C7D8.7E01
- IP Configuration:** IP Address: 172.16.1.1, Subnet Mask: 255.255.0.0
- Tx Ring Limit:** 10

The 'Equivalent IOS Commands' section shows the following commands:

```
Router(config)#interface FastEthernet0/1
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 172.16.1.1 255.255.0.0
Router(config-if)#
```


The screenshot shows the Cisco Packet Tracer interface with the same network diagram as above. The configuration window is now open to the 'Config' tab for the 'FastEthernet0/1' interface. The settings are as follows:

- Port Status:** On (checked)
- Bandwidth:** 100 Mbps (selected), 10 Mbps (unselected), Auto (checked)
- Duplex:** Half Duplex (unselected), Full Duplex (selected), Auto (checked)
- MAC Address:** 0001.C7D8.7E02
- IP Configuration:** IP Address: 192.168.1.1, Subnet Mask: 255.255.255.0
- Tx Ring Limit:** 10

The 'Equivalent IOS Commands' section shows the following commands:

```
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 172.16.1.1 255.255.0.0
Router(config-if)#ip address 192.168.1.1 255.255.0.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#ip address 192.168.1.1 255.255.0.0
Router(config-if)#
```

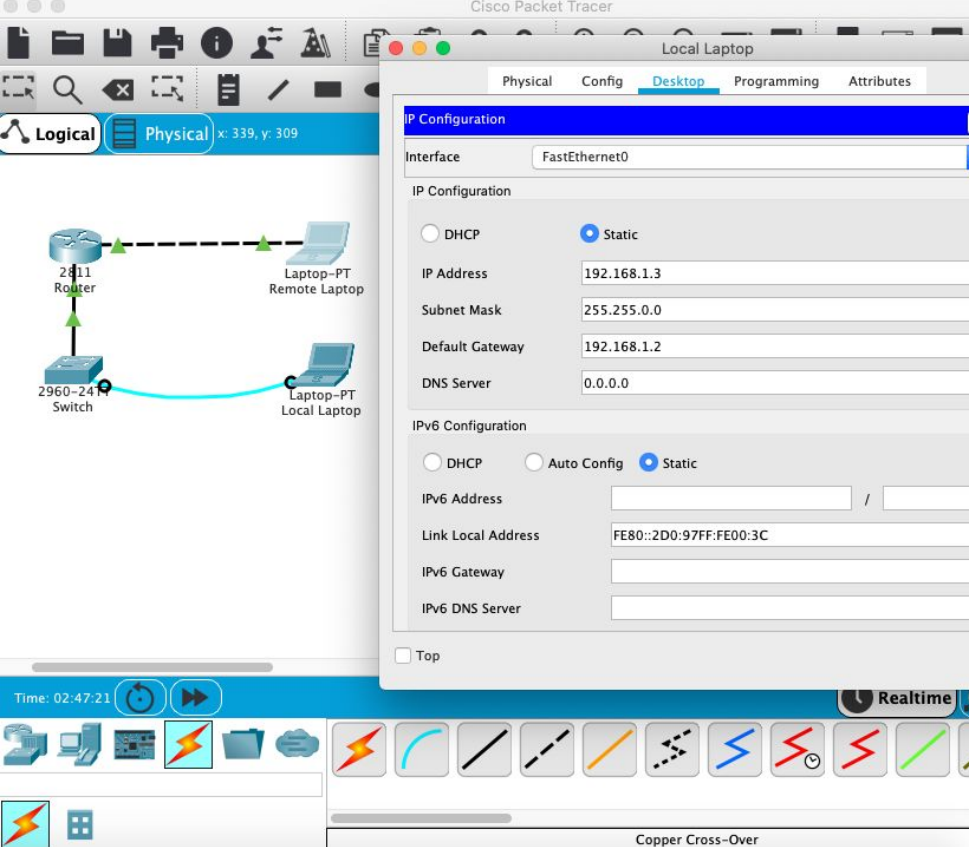
Configuration of Switch



Port	Link	VLAN	IP Address	MAC Address
FastEthernet0/1	Up	1	--	0002.4A47.7401
FastEthernet0/2	Down	1	--	0002.4A47.7402
FastEthernet0/3	Down	1	--	0002.4A47.7403
FastEthernet0/4	Down	1	--	0002.4A47.7404
FastEthernet0/5	Down	1	--	0002.4A47.7405
FastEthernet0/6	Down	1	--	0002.4A47.7406
FastEthernet0/7	Down	1	--	0002.4A47.7407
FastEthernet0/8	Down	1	--	0002.4A47.7408
FastEthernet0/9	Down	1	--	0002.4A47.7409
FastEthernet0/10	Down	1	--	0002.4A47.740A
FastEthernet0/11	Down	1	--	0002.4A47.740B
FastEthernet0/12	Down	1	--	0002.4A47.740C
FastEthernet0/13	Down	1	--	0002.4A47.740D
FastEthernet0/14	Down	1	--	0002.4A47.740E
FastEthernet0/15	Down	1	--	0002.4A47.740F
FastEthernet0/16	Down	1	--	0002.4A47.7410
FastEthernet0/17	Down	1	--	0002.4A47.7411
FastEthernet0/18	Down	1	--	0002.4A47.7412
FastEthernet0/19	Down	1	--	0002.4A47.7413
FastEthernet0/20	Down	1	--	0002.4A47.7414
FastEthernet0/21	Down	1	--	0002.4A47.7415
FastEthernet0/22	Down	1	--	0002.4A47.7416
FastEthernet0/23	Down	1	--	0002.4A47.7417
FastEthernet0/24	Down	1	--	0002.4A47.7418
GigabitEthernet0/1	Down	1	--	0002.4A47.7419
GigabitEthernet0/2	Down	1	--	0002.4A47.741A
Vlan1	Up	1	192.168.1.2/24	0002.1741.2E98

Hostname: LOCAL-SWITCH
Physical Location: Intercity, Home City, Corporate Office, Main Wiring Closet

Configuration of Remote Laptop



Local Laptop

Physical Config Desktop Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IP Address: 192.168.1.3

Subnet Mask: 255.255.0.0

Default Gateway: 192.168.1.2

DNS Server: 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address: /

Link Local Address: FE80::2D0:97FF:FE00:3C

IPv6 Gateway:

IPv6 DNS Server:

☐ Top

Time: 02:47:21

Realtime

Copper Cross-Over

Pinging Router from Remote Laptop

The image shows a Cisco Packet Tracer network simulation. The network topology includes a 2811 Router connected to a 2960-24T Switch. The 2811 Router is connected to a Laptop-PT Remote Laptop. The 2960-24T Switch is connected to a Laptop-PT Local Laptop. A Command Prompt window is open on the Remote Laptop, showing the output of a ping command to the router's IP address (172.16.1.1).

Network Diagram:

- 2811 Router
- 2960-24T Switch
- Laptop-PT Remote Laptop
- Laptop-PT Local Laptop

Command Prompt Output:

```
Packet Tracer PC Command Line 1.0
C:\>ping 172.16.1.1

Pinging 172.16.1.1 with 32 bytes of data:

Reply from 172.16.1.1: bytes=32 time=145ms TTL=255
Reply from 172.16.1.1: bytes=32 time<1ms TTL=255
Reply from 172.16.1.1: bytes=32 time<1ms TTL=255
Reply from 172.16.1.1: bytes=32 time<1ms TTL=255

Ping statistics for 172.16.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 145ms, Average = 36ms

C:\>
```


Cisco Packet Tracer

Logical Physical x: 122, y: 161

2811 Router

2960-24 Switch

Laptop-PT Remote Laptop

Laptop-PT Local Laptop

Remote Laptop

Physical Config Desktop Programming Attributes

Command Prompt

```
Packet Tracer PC Command Line 1.0
C:\>ping 172.16.1.1

Pinging 172.16.1.1 with 32 bytes of data:

Reply from 172.16.1.1: bytes=32 time=143ms TTL=255
Reply from 172.16.1.1: bytes=32 time<1ms TTL=255
Reply from 172.16.1.1: bytes=32 time<1ms TTL=255
Reply from 172.16.1.1: bytes=32 time<1ms TTL=255

Ping statistics for 172.16.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 143ms, Average = 36ms

C:\>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

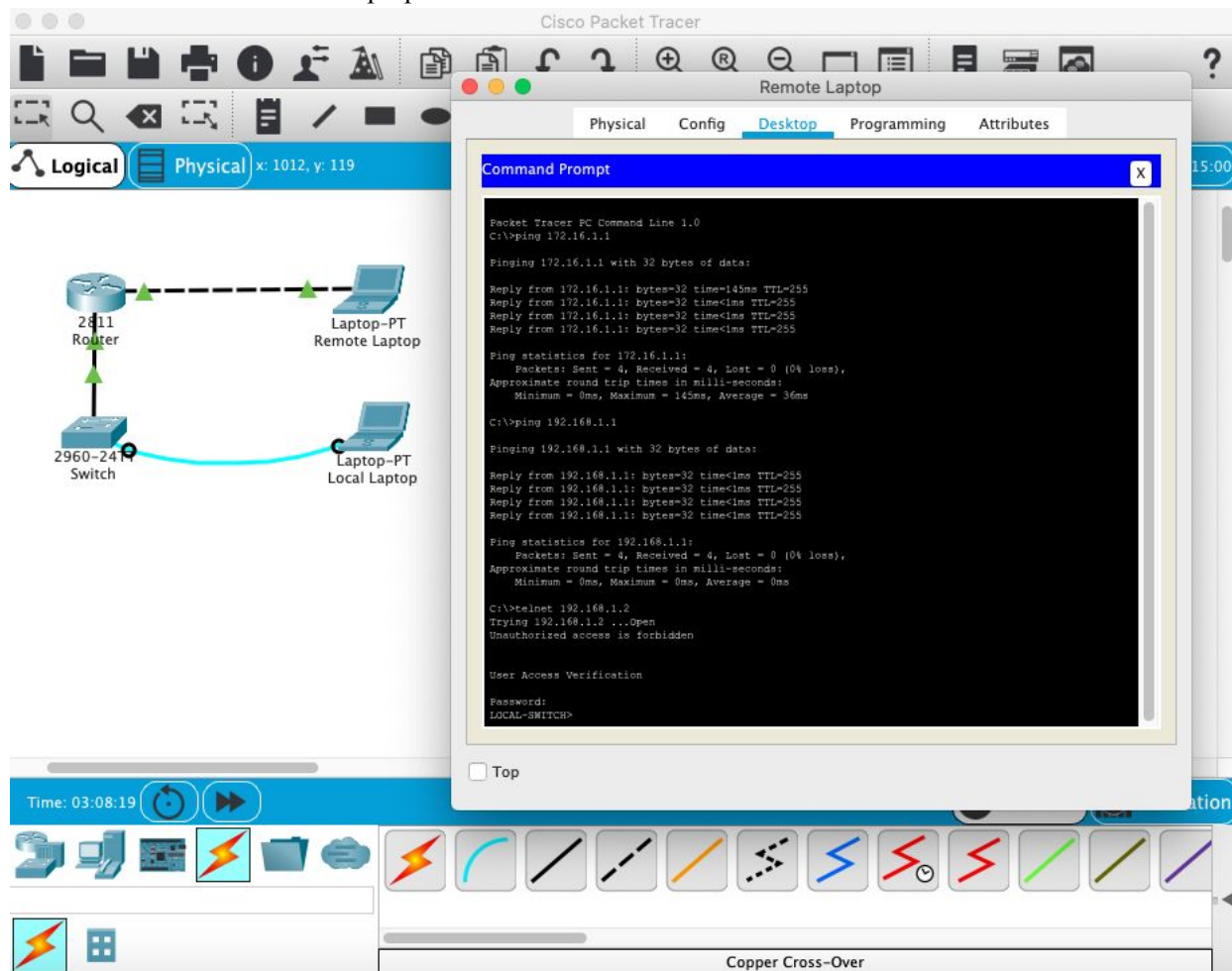
C:\>
```

Time: 03:07:19

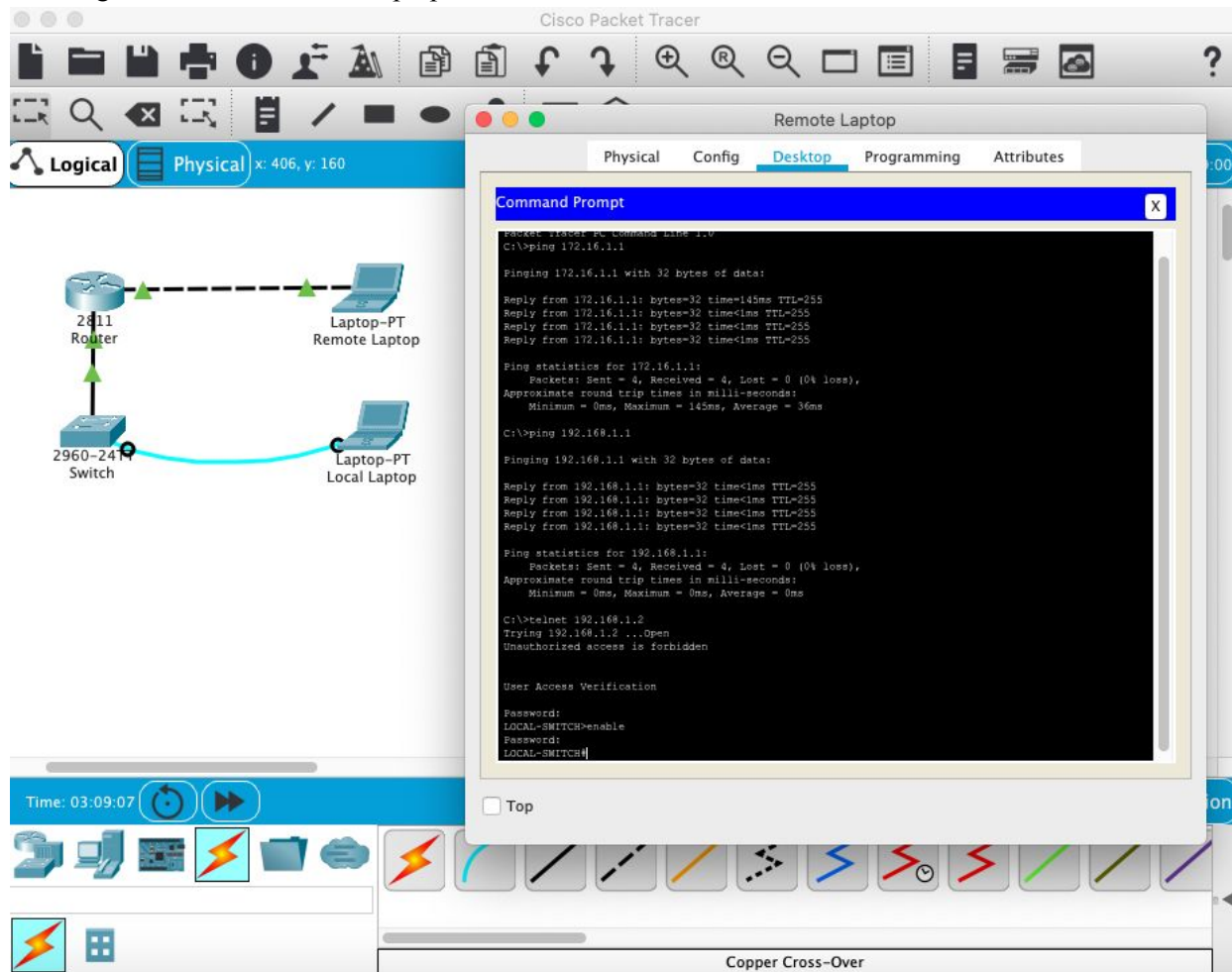
Realtime Simulation

Copper Cross-Over

Telnet Switch from Remote Laptop



Enabling switch from Remote Laptop



Conclusion:

1. In this experiment, I learned about setting up a network with Router and Switch.
2. I learned to configure Switch using the console. I understood how to configure the terminal.
3. I configured telnet for switch and checked its connectivity from remote laptop.