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TE COMPS

Batch B

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CEL 51, DCCN, Monsoon 2020

Lab 4: Prototyping a Network

Objective:

Prototype a network using Packet Tracer

Background

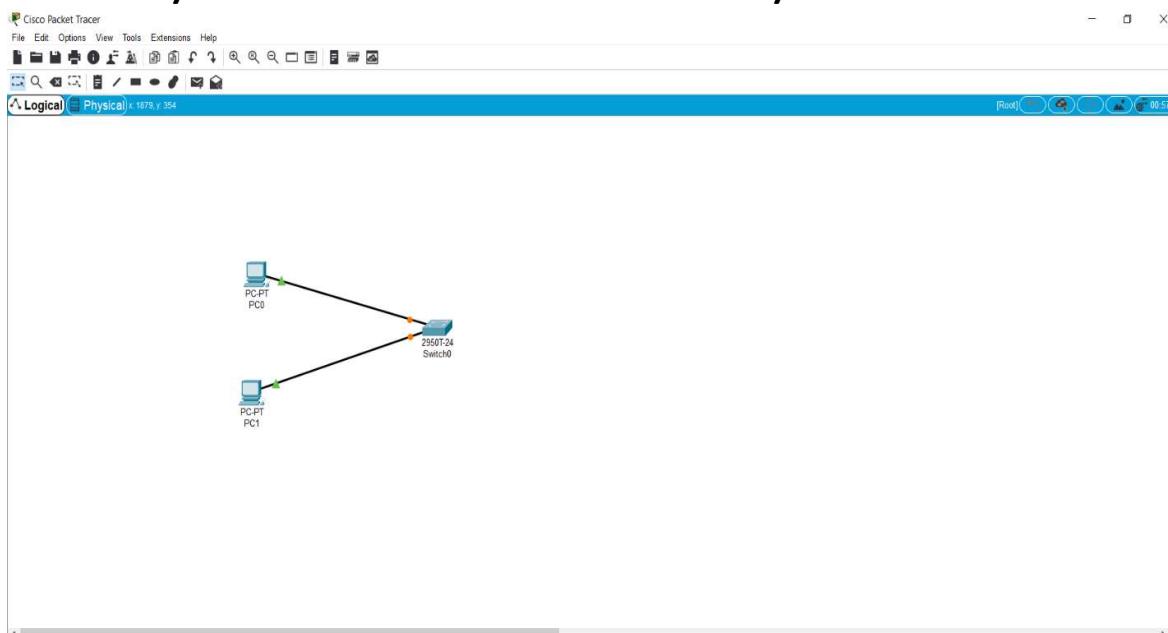
A client has requested that you set up a simple network with two PCs connected to a switch. Verify that the hardware, along with the given configurations, meet the requirements of the client.

Switches facilitate the sharing of resources by connecting together all the devices, including computers, printers, and servers, in a small business network. It connects devices on a computer network by using packet switching to receive and forward data to the destination device. A network switch is a multiport network bridge that uses MAC addresses to forward data at the data link layer of the OSI model.

Router connects multiple switches, and their respective networks, to form an even larger network. It works as a dispatcher, directing traffic and choosing the most efficient route for information, in the form of data packets, to travel across a network.

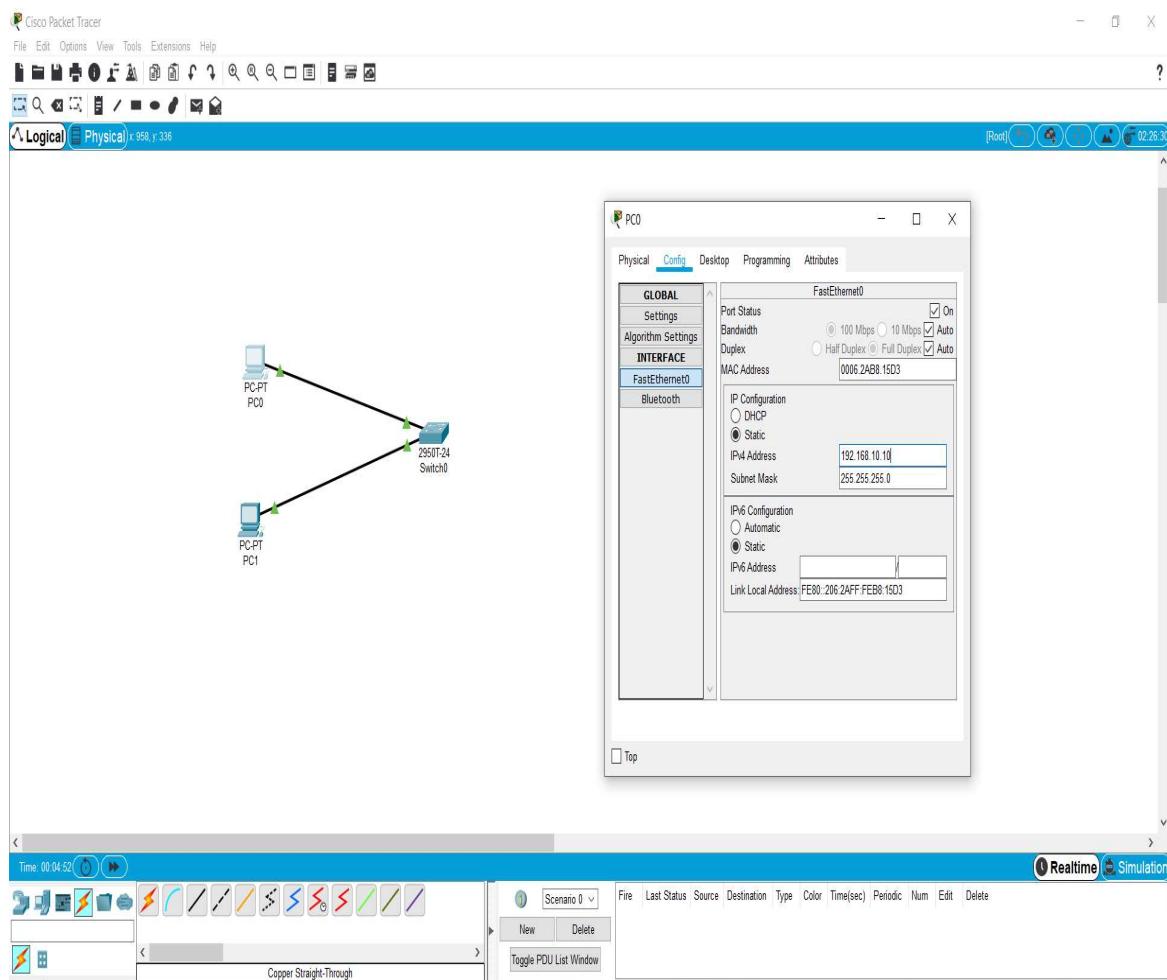
Step 1: Set up the network topology

- 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**.



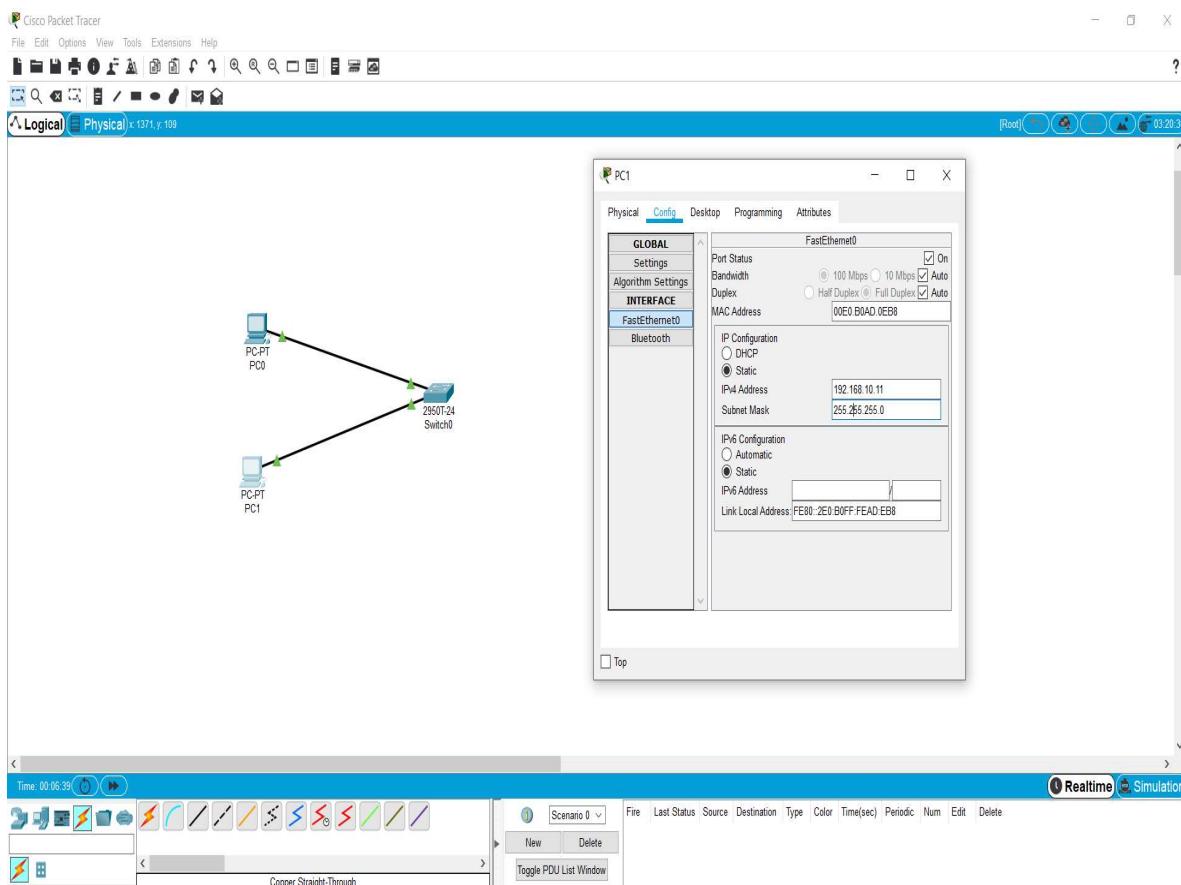
c) Configure PC0 using the **Config** tab in the PC0 configuration window:

- 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

- a. IP address: 192.168.10.11
- b. 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:

@ PCD

Physical Config Desktop Programming Attributes

Command Prompt X

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.11

Pinging 192.168.10.11 with 32 bytes of data:

Reply from 192.168.10.11: bytes=32 time=23ms TTL=128
Reply from 192.168.10.11: bytes=32 time=1ms TTL=128
Reply from 192.168.10.11: bytes=32 time=18ms TTL=128
Reply from 192.168.10.11: bytes=32 time=8ms TTL=128

Ping statistics for 192.168.10.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 23ms, Average = 12ms

C:\>
```

@ Top

Physical Config Desktop Programming Attributes

Command Prompt X

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.10

Pinging 192.168.10.10 with 32 bytes of data:

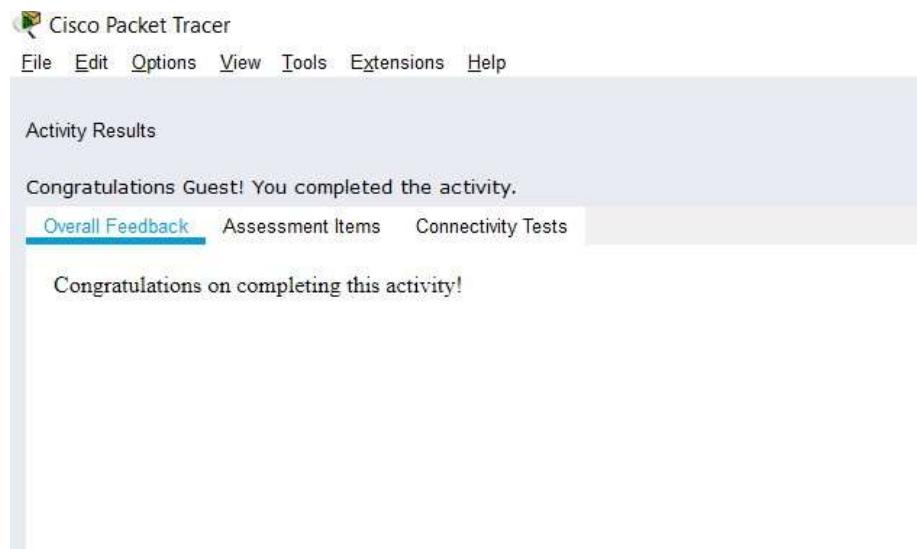
Reply from 192.168.10.10: bytes=32 time=29ms TTL=128
Reply from 192.168.10.10: bytes=32 time<1ms TTL=128
Reply from 192.168.10.10: bytes=32 time<1ms TTL=128
Reply from 192.168.10.10: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 29ms, Average = 7ms

C:\>
```

Top

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



The screenshot shows the Cisco Packet Tracer application window titled "Cisco Packet Tracer". The menu bar includes File, Edit, Options, View, Tools, Extensions, and Help. The main window title is "Activity Results". A message says "Congratulations Guest! You completed the activity." Below the message are three tabs: "Overall Feedback", "Assessment Items" (underlined), and "Connectivity Tests". Under the "Assessment Items" tab, there are two buttons: "Expand/Collapse All" and "Show Incorrect Items". A table displays assessment results:

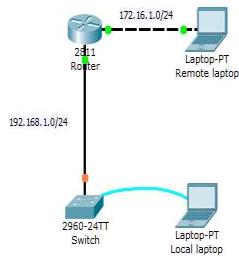
Assessment Item	Status	Points	Component(s)	Feedback
Network	Correct	0	Other	

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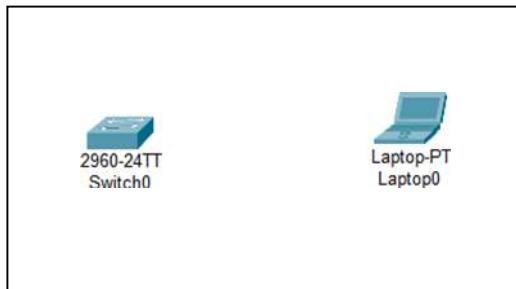
Lab 4.1: Basic configuration - hostname, motd banner, passwd etc

Objective:

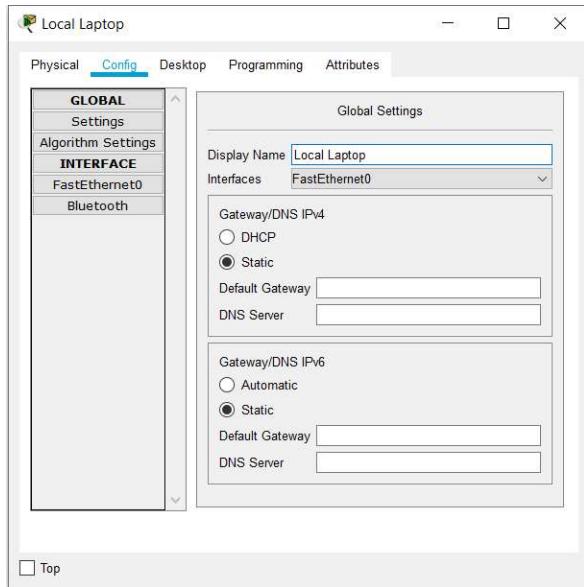
This lab will test your ability to configure basic settings such as hostname, motd banner, encrypted passwords, and terminal options on a Packet Tracer 6.2 simulated Cisco Catalyst switch.



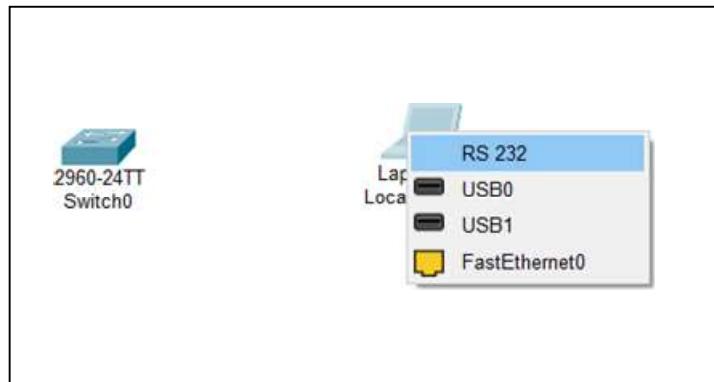
1. Use the local laptop connect to the switch console.



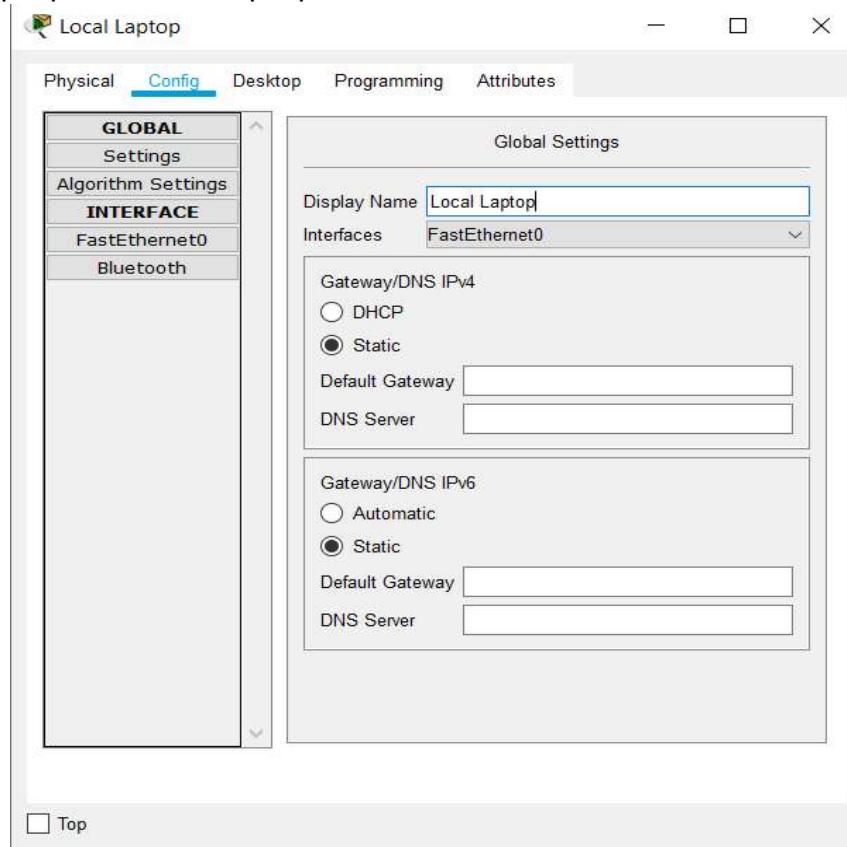
Rename Laptop0 → Local Laptop



Connect console connection to RS232 port of Local Laptop and Console port of Switch



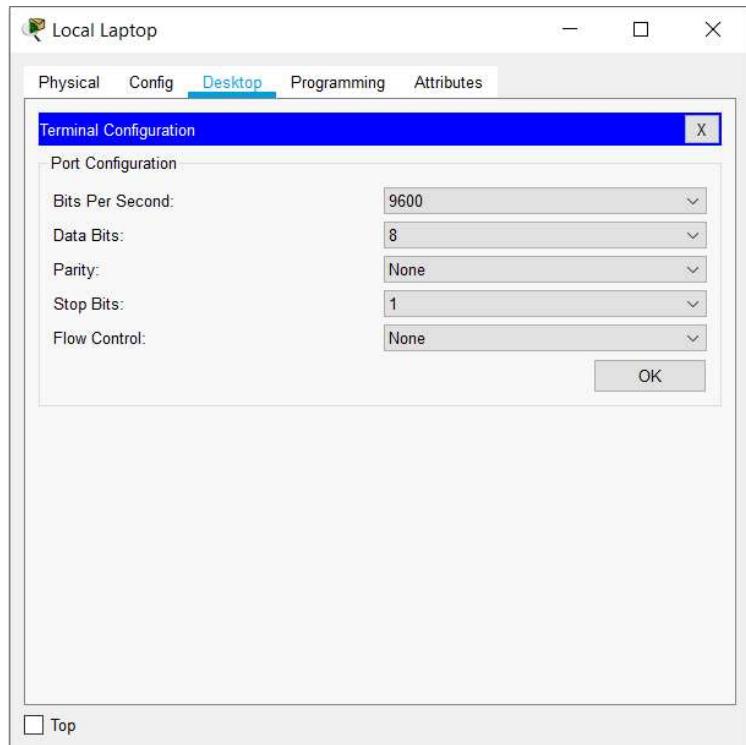
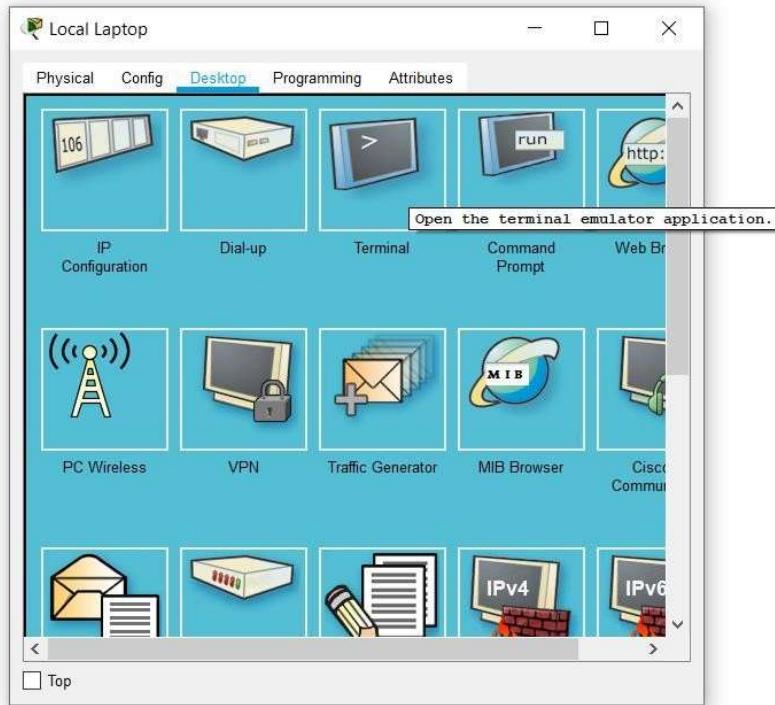
Rename Laptop0 → Local Laptop:



Connect console connection to RS232 port of Local Laptop and Console port of Switch:



Open terminal of local laptop



Local Laptop

Physical Config Desktop Programming Attributes

Terminal

```
Power supply serial number      : DCA102133JA
Model revision number          : B0
Motherboard revision number    : C0
Model number                   : WS-C2960-24TT
System serial number           : FOC1033ZIEY
Top Assembly Part Number       : 800-26671-02
Top Assembly Revision Number   : B0
Version ID                     : V02
CLEI Code Number               : COM3K00BRA
Hardware Board Revision Number : 0x01

Switch  Ports  Model           SW Version     SW
Image
-----
*   1     26    WS-C2960-24TT  12.2          C2960-
LANBASE-M

Cisco IOS Software, C2960 Software (C2960-LANBASE-M), Version
12.2(25)FX, RELEASE SOFTWARE (fcl)
Copyright (c) 1986-2005 by Cisco Systems, Inc.
Compiled Wed 12-Oct-05 22:05 by pt_team

Press RETURN to get started!
```

Top

Local Laptop

Physical Config Desktop Programming Attributes

Terminal

```
Motherboard revision number    : C0
Model number                   : WS-C2960-24TT
System serial number           : FOC1033ZIEY
Top Assembly Part Number       : 800-26671-02
Top Assembly Revision Number   : B0
Version ID                     : V02
CLEI Code Number               : COM3K00BRA
Hardware Board Revision Number : 0x01

Switch  Ports  Model           SW Version     SW
Image
-----
*   1     26    WS-C2960-24TT  12.2          C2960-
LANBASE-M

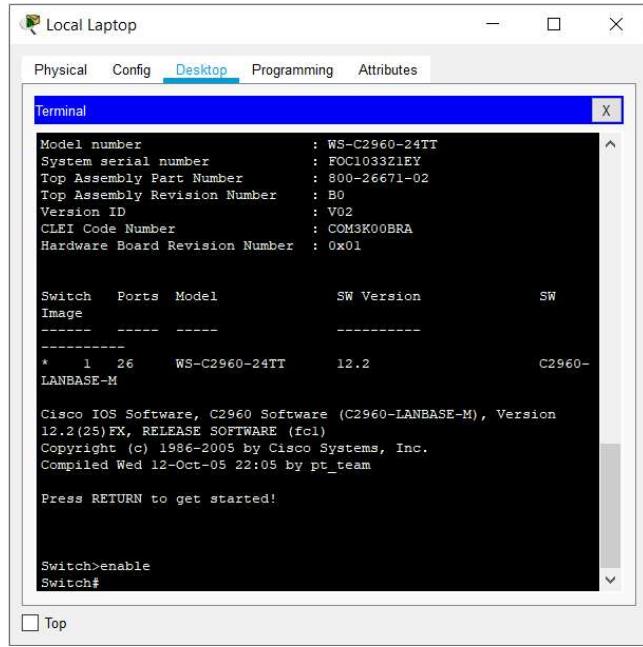
Cisco IOS Software, C2960 Software (C2960-LANBASE-M), Version
12.2(25)FX, RELEASE SOFTWARE (fcl)
Copyright (c) 1986-2005 by Cisco Systems, Inc.
Compiled Wed 12-Oct-05 22:05 by pt_team

Press RETURN to get started!
```

Switch>

Top

Enable command - To enter in privilege exec mode



```
Model number : WS-C2960-24TT
System serial number : FOC1033ZLEY
Top Assembly Part Number : 800-266671-02
Top Assembly Revision Number : B0
Version ID : V02
CLEI Code Number : COM3K00BRA
Hardware Board Revision Number : 0x01

Switch Ports Model SW Version SW
Image
-----
* 1 26 WS-C2960-24TT 12.2 C2960-
LANBASE-M

Cisco IOS Software, C2960 Software (C2960-LANBASE-M), Version
12.2(25)FX, RELEASE SOFTWARE (fc1)
Copyright (c) 1986-2005 by Cisco Systems, Inc.
Compiled Wed 12-Oct-05 22:05 by pt_team

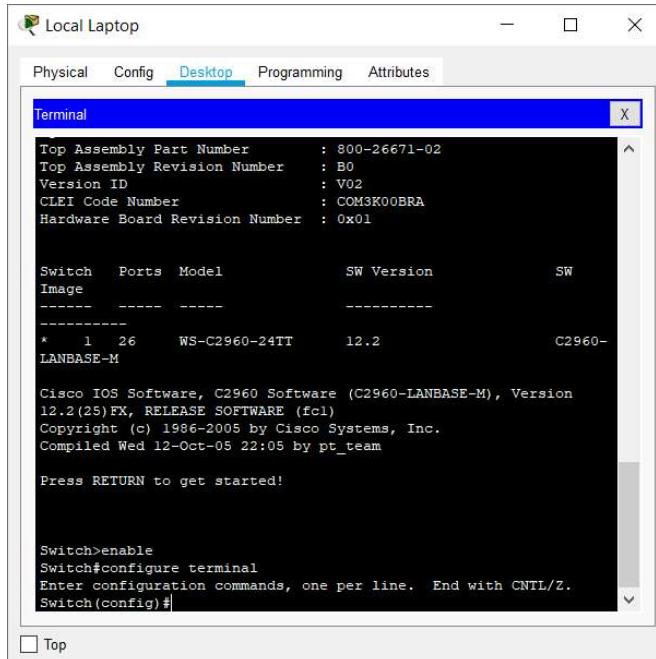
Press RETURN to get started!

Switch>enable
Switch#
```

2. Configure Switch hostname as LOCAL-SWITCH

Enter configuration mode

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



```
Top Assembly Part Number : 800-266671-02
Top Assembly Revision Number : B0
Version ID : V02
CLEI Code Number : COM3K00BRA
Hardware Board Revision Number : 0x01

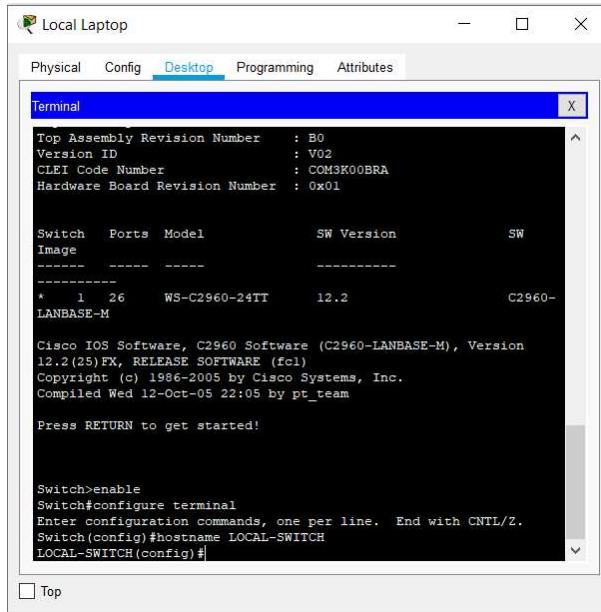
Switch Ports Model SW Version SW
Image
-----
* 1 26 WS-C2960-24TT 12.2 C2960-
LANBASE-M

Cisco IOS Software, C2960 Software (C2960-LANBASE-M), Version
12.2(25)FX, RELEASE SOFTWARE (fc1)
Copyright (c) 1986-2005 by Cisco Systems, Inc.
Compiled Wed 12-Oct-05 22:05 by pt_team

Press RETURN to get started!

Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#
```

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



The screenshot shows a terminal window titled "Terminal" within a "Local Laptop" interface. The window has tabs for Physical, Config, Desktop (which is selected), Programming, and Attributes. The terminal output displays the following information:

```
Top Assembly Revision Number : B0
Version ID                  : V02
CLEI Code Number             : COM3K00BRA
Hardware Board Revision Number : 0x01

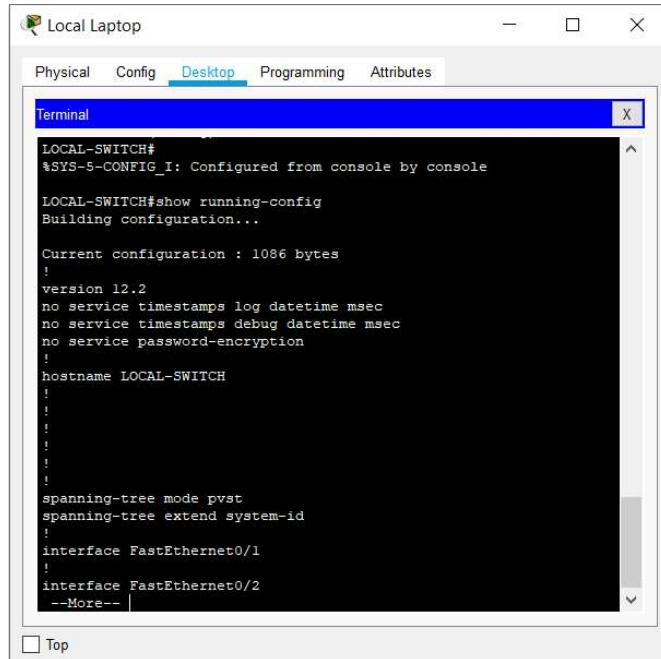
Switch Ports Model           SW Version      SW
Image
-----
*   1    26    WS-C2960-24TT     12.2          C2960-
LANBASE-M

Cisco IOS Software, C2960 Software (C2960-LANBASE-M), Version
12.2 (25) FX, RELEASE SOFTWARE (fc1)
Copyright (c) 1996-2005 by Cisco Systems, Inc.
Compiled Wed 12-Oct-05 22:05 by pt_team

Press RETURN to get started!

Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname LOCAL-SWITCH
LOCAL-SWITCH(config)#
```

Run show running-config command to check the hostname.



The screenshot shows a terminal window titled "Terminal" within a "Local Laptop" interface. The window has tabs for Physical, Config, Desktop (selected), Programming, and Attributes. The terminal output displays the following configuration:

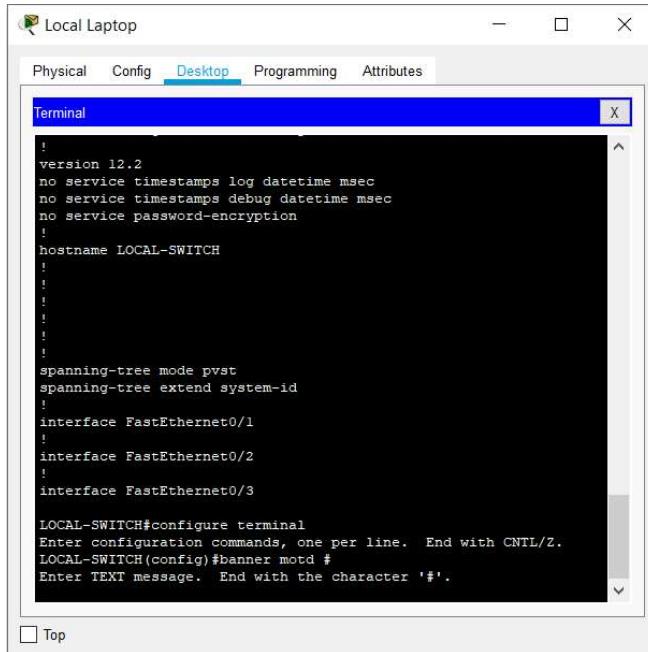
```
LOCAL-SWITCH#
%SYS-5-CONFIG_I: Configured from console by console

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

Current configuration : 1086 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname LOCAL-SWITCH
!
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
!
interface FastEthernet0/2
--More-- |
```

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

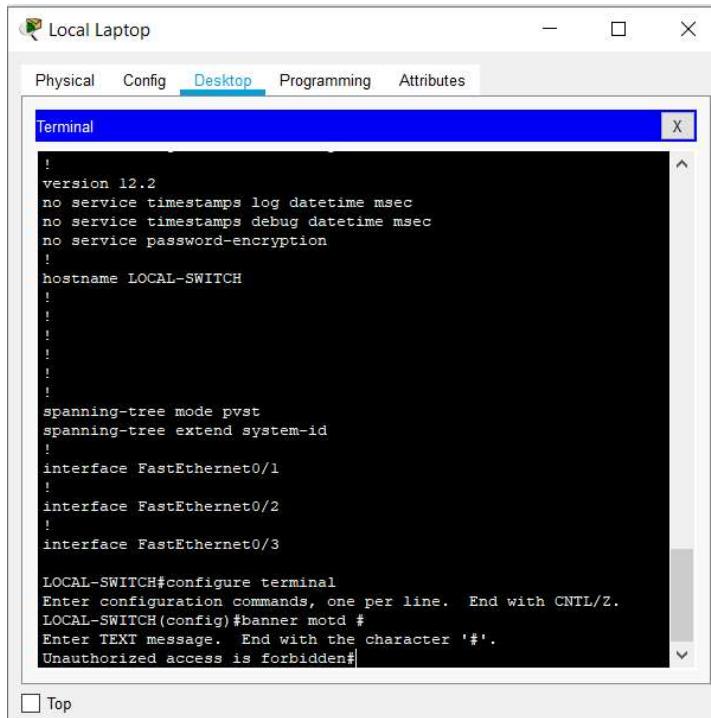
Use command **banner motd #**



```
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname LOCAL-SWITCH
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
!
interface FastEthernet0/2
!
interface FastEthernet0/3

LOCAL-SWITCH#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
LOCAL-SWITCH(config)#banner motd #
Enter TEXT message. End with the character '#'.
Unauthorized access is forbidden#
```

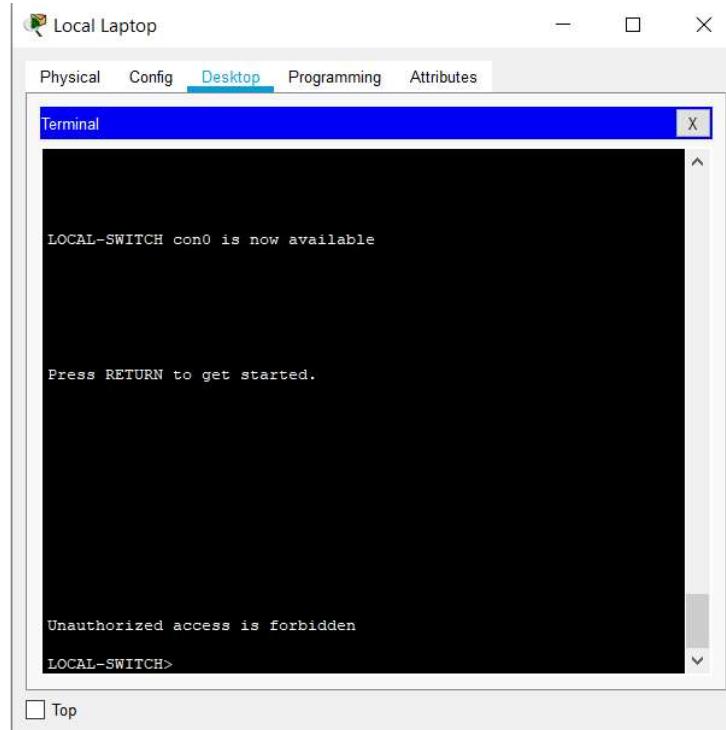
Type the message and add # at the end.



```
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname LOCAL-SWITCH
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
!
interface FastEthernet0/2
!
interface FastEthernet0/3

LOCAL-SWITCH#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
LOCAL-SWITCH(config)#banner motd #
Enter TEXT message. End with the character '#'.
Unauthorized access is forbidden#
```

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



4. Configure the password for privileged mode access as "cisco". The password must be md5 encrypted

Use command **enable secret cisco**

Local Laptop

Physical Config Desktop Programming Attributes

Terminal X

```
LOCAL-SWITCH con0 is now available

Press RETURN to get started.

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
```

Top

Local Laptop

Physical Config Desktop Programming Attributes

Terminal X

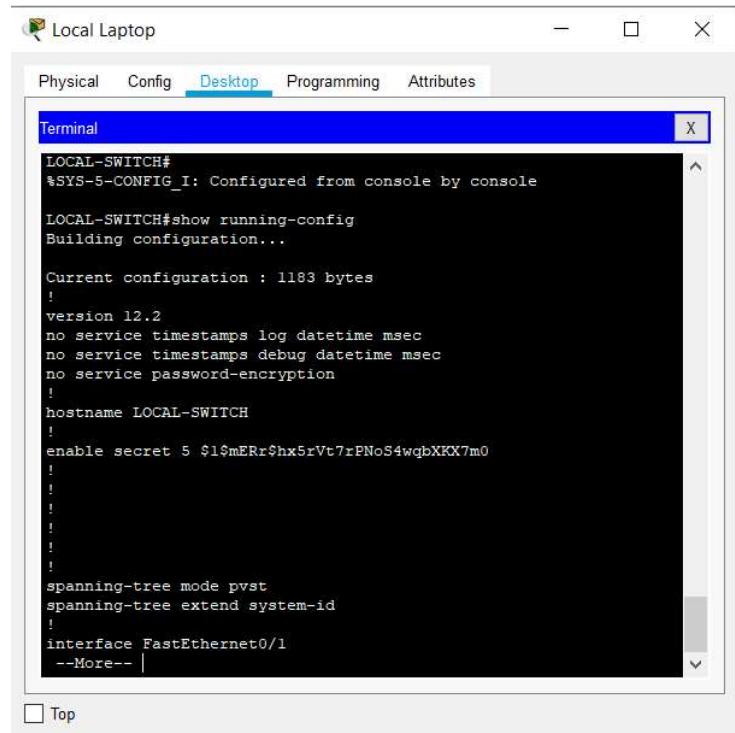
```
LOCAL-SWITCH con0 is now available

Press RETURN to get started.

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)@
```

@ Top

In running-config it displays as enable secret.

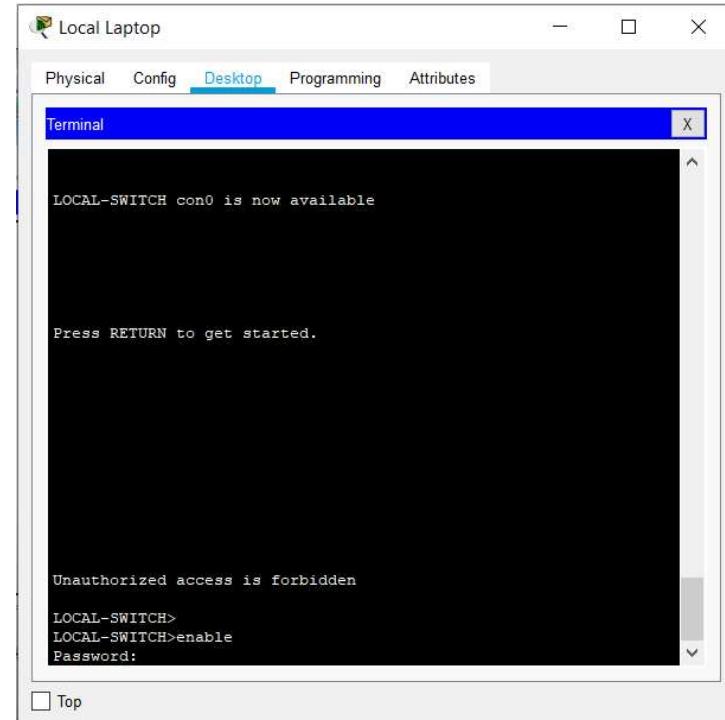


```
LOCAL-SWITCH#
%SYS-5-CONFIG_I: Configured from console by console

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 $1$mERr$hx5rVt7rPNoS4wqbXKX7m0
!
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
--More-- |
```

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



```
LOCAL-SWITCH con0 is now available

Press RETURN to get started.

Unauthorized access is forbidden

LOCAL-SWITCH>
LOCAL-SWITCH>enable
Password:
```

The screenshot shows a terminal window titled "Local Laptop" with the "Desktop" tab selected. The window title bar includes icons for minimize, maximize, and close. Below the title bar is a menu bar with tabs: Physical, Config, Desktop (which is highlighted in blue), Programming, and Attributes. The main area of the window is a terminal window titled "Terminal". The terminal output is as follows:

```
LOCAL-SWITCH con0 is now available

Press RETURN to get started.

Unauthorized access is forbidden
LOCAL-SWITCH>
LOCAL-SWITCH>enable
Password:
LOCAL-SWITCH#
```

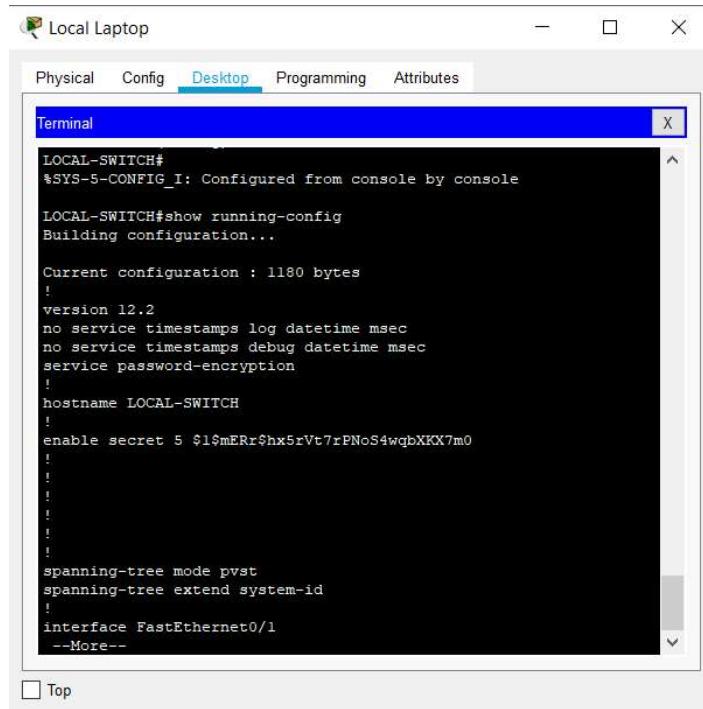
5. Configure password encryption on the switch using the global configuration command

The screenshot shows a terminal window titled "Local Laptop" with the "Desktop" tab selected. The window title bar includes icons for minimize, maximize, and close. Below the title bar is a menu bar with tabs: Physical, Config, Desktop (which is highlighted in blue), Programming, and Attributes. The main area of the window is a terminal window titled "Terminal". The terminal output is as follows:

```
Press RETURN to get started.

Unauthorized access is forbidden
LOCAL-SWITCH>enable
Password:
LOCAL-SWITCH#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
LOCAL-SWITCH(config)#service password-encryption
LOCAL-SWITCH(config)#
```

In running-config, service password-encryption is displayed.



```
LOCAL-SWITCH#
%SYS-5-CONFIG_I: Configured from console by console

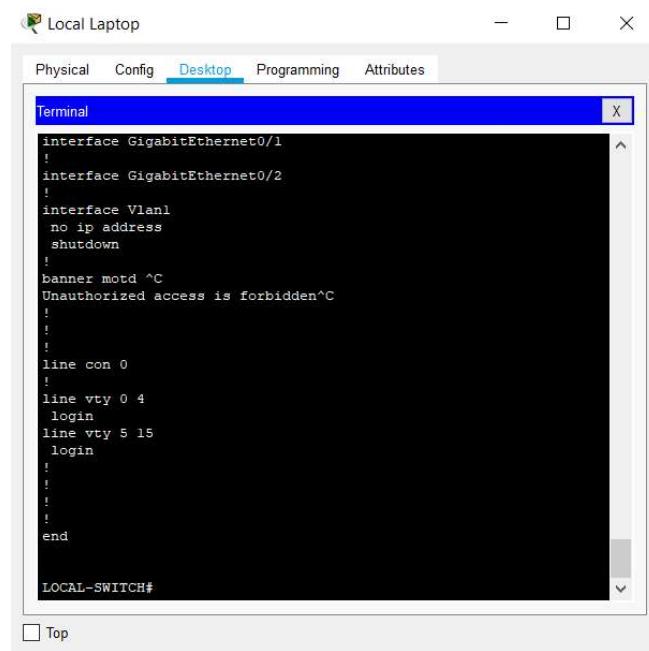
LOCAL-SWITCH#show running-config
Building configuration...

Current configuration : 1180 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname LOCAL-SWITCH
!
enable secret 5 $1$mERr$hx5rVt7rPNoS4wqbXKX7m0
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
--More--
```

6. Configure CONSOLE access with the following settings:

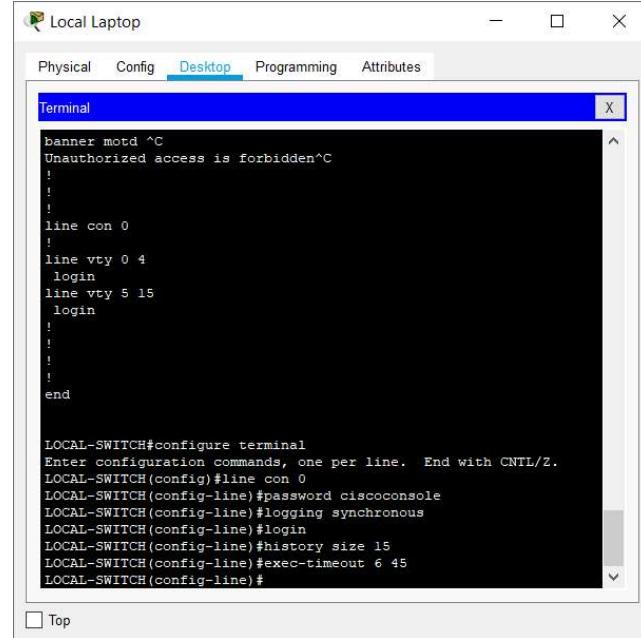
- Login enabled
- Password: whatever you like
- History size: 15 commands
- Timeout: 6'45"
- Synchronous logging

The con 0 configuration is empty in the beginning



```
Local Laptop Physical Config Desktop Programming Attributes Terminal X
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
  no ip address
  shutdown
!
banner motd ^C
Unauthorized access is forbidden^C
!
!
line con 0
!
line vty 0 4
  login
line vty 5 15
  login
!
!
!
end

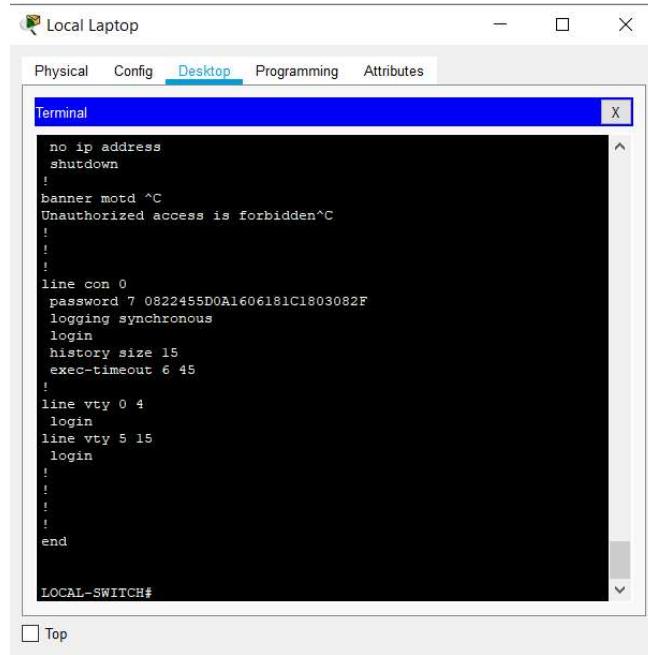
LOCAL-SWITCH#
```



```
Local Laptop Physical Config Desktop Programming Attributes Terminal X
banner motd ^C
Unauthorized access is forbidden^C
!
!
!
line con 0
!
line vty 0 4
  login
line vty 5 15
  login
!
!
!
end

LOCAL-SWITCH#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
LOCAL-SWITCH(config)#line con 0
LOCAL-SWITCH(config-line)#password ciscoconsole
LOCAL-SWITCH(config-line)#logging synchronous
LOCAL-SWITCH(config-line)#login
LOCAL-SWITCH(config-line)#history size 15
LOCAL-SWITCH(config-line)#exec-timeout 6 45
LOCAL-SWITCH(config-line)#
```

Line con 0 now shows the console configuration.

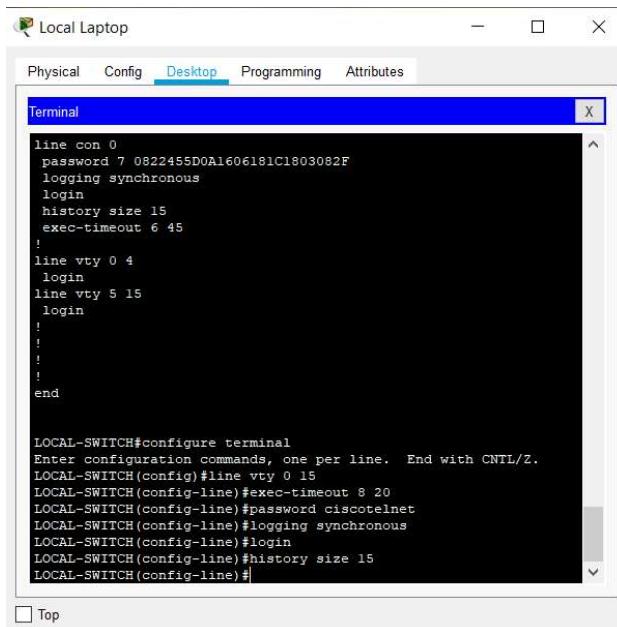


```
no ip address
shutdown
!
banner motd ^C
Unauthorized access is forbidden^C
!
!
line con 0
password 7 0822455D0A1606181C1803082F
logging synchronous
login
history size 15
exec-timeout 6 45
!
line vty 0 4
login
line vty 5 15
login
!
!
end

LOCAL-SWITCH#
```

6. Configure TELNET access with the following settings:

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



```
line con 0
password 7 0822455D0A1606181C1803082F
logging synchronous
login
history size 15
exec-timeout 6 45
!
line vty 0 4
login
line vty 5 15
login
!
!
end

LOCAL-SWITCH#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
LOCAL-SWITCH(config)#line vty 0 15
LOCAL-SWITCH(config-line)#exec-timeout 8 20
LOCAL-SWITCH(config-line)#password ciscotelnet
LOCAL-SWITCH(config-line)#logging synchronous
LOCAL-SWITCH(config-line)#login
LOCAL-SWITCH(config-line)#history size 15
LOCAL-SWITCH(config-line)#ae
```

```
line con 0
password 7 0822455D0A1606181C1803082F
logging synchronous
login
history size 15
exec-timeout 6 45
!
line vty 0 4
exec-timeout 8 20
password 7 0822455D0A1611121E050910
logging synchronous
login
history size 15
line vty 5 15
exec-timeout 8 20
password 7 0822455D0A1611121E050910
logging synchronous
login
history size 15
!
!
!
end

LOCAL-SWITCH#
```

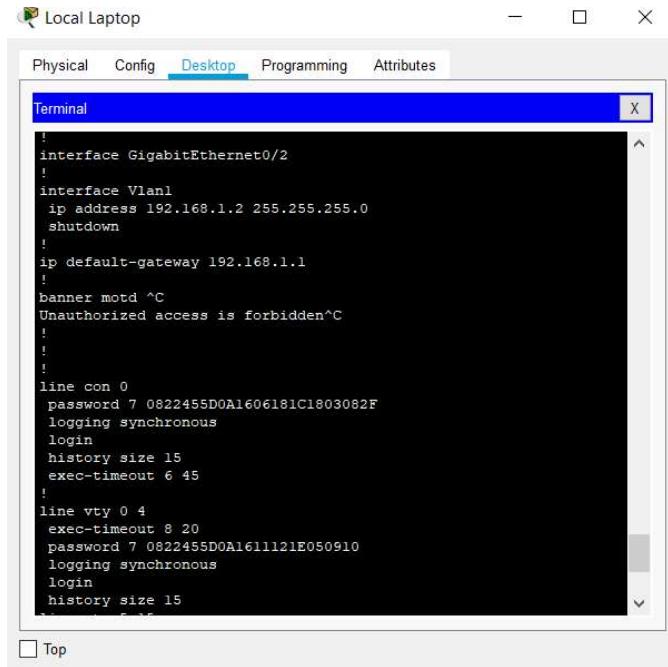
7. Configure the IP address of the switch as 192.168.1.2/24 and its default gateway IP (192.168.1.1).

```
Unauthorized access is forbidden
User Access Verification

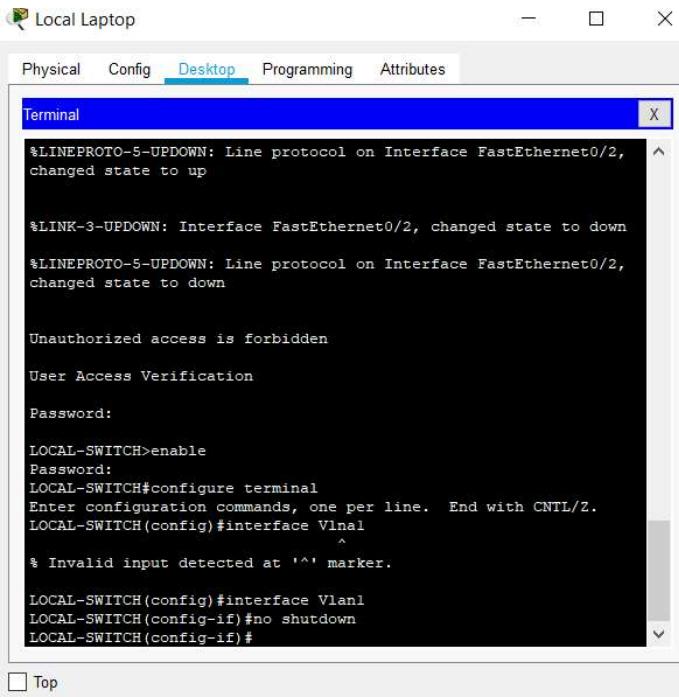
Password:
LOCAL-SWITCH>
LOCAL-SWITCH>
LOCAL-SWITCH>
LOCAL-SWITCH>enable
Password:
LOCAL-SWITCH#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
LOCAL-SWITCH(config)#interface Vlan1
LOCAL-SWITCH(config-if)#ip address 192.168.1.2 255.255.255.0
LOCAL-SWITCH(config-if)#ip default-gateway 192.168.1.1
LOCAL-SWITCH(config)#
```

Ip address and default gateway are now displayed in interface vlan

The default gateway address is the ip address of the router.



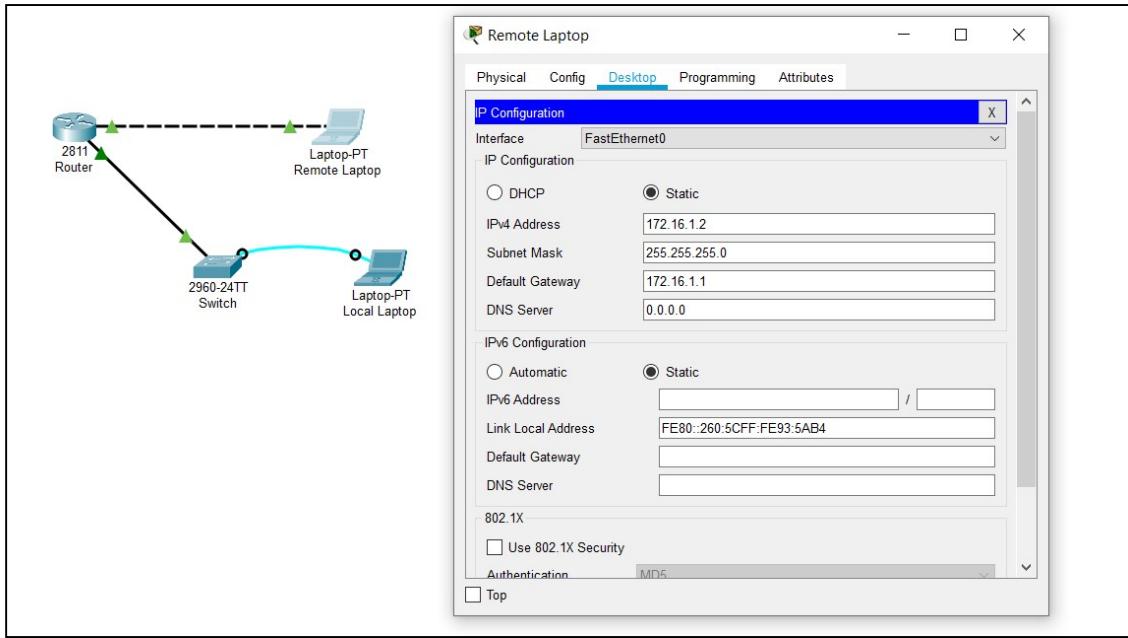
```
!  
interface GigabitEthernet0/2  
!  
interface Vlan1  
ip address 192.168.1.2 255.255.255.0  
shutdown  
!  
ip default-gateway 192.168.1.1  
!  
banner motd ^C  
Unauthorized access is forbidden^C  
!  
!  
line con 0  
password 7 0822455D0A1606181C1803082F  
logging synchronous  
login  
history size 15  
exec-timeout 6 45  
!  
line vty 0 4  
exec-timeout 8 20  
password 7 0822455D0A1611121E050910  
logging synchronous  
login  
history size 15
```



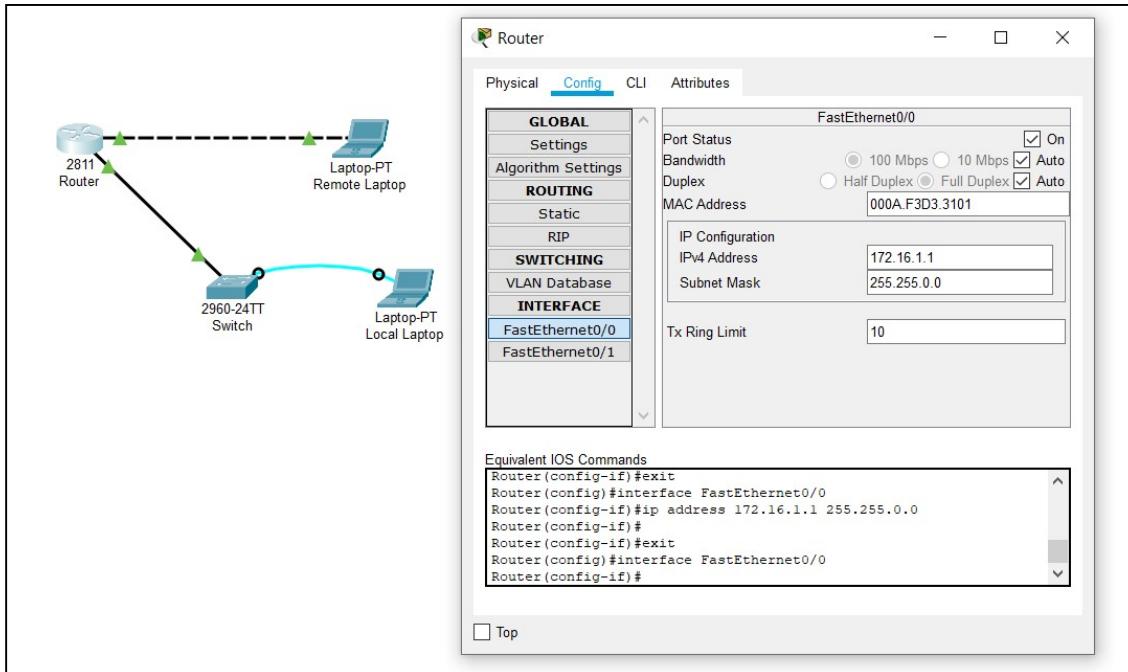
```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2,  
changed state to up  
  
%LINK-3-UPDOWN: Interface FastEthernet0/2, changed state to down  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2,  
changed state to down  
  
Unauthorized access is forbidden  
User Access Verification  
Password:  
LOCAL-SWITCH>enable  
Password:  
LOCAL-SWITCH#configure terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
LOCAL-SWITCH(config)#interface Vlan1  
^  
% Invalid input detected at '^' marker.  
LOCAL-SWITCH(config)#interface Vlan1  
LOCAL-SWITCH(config-if)#no shutdown  
LOCAL-SWITCH(config-if)#[
```

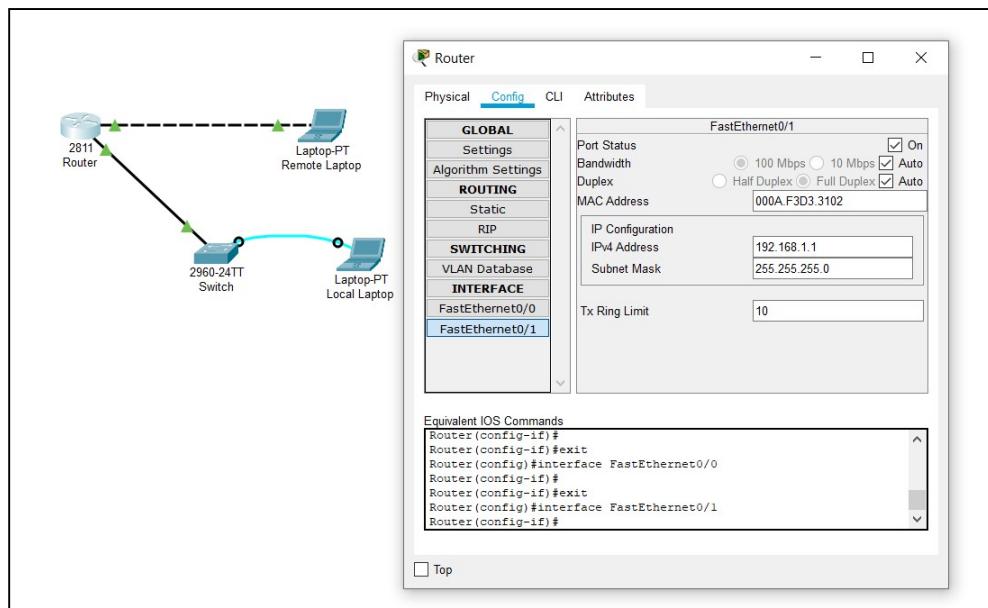
8. Test telnet connectivity from the Remote Laptop using the telnet client.

Configuration of Remote laptop



Configuration of Router





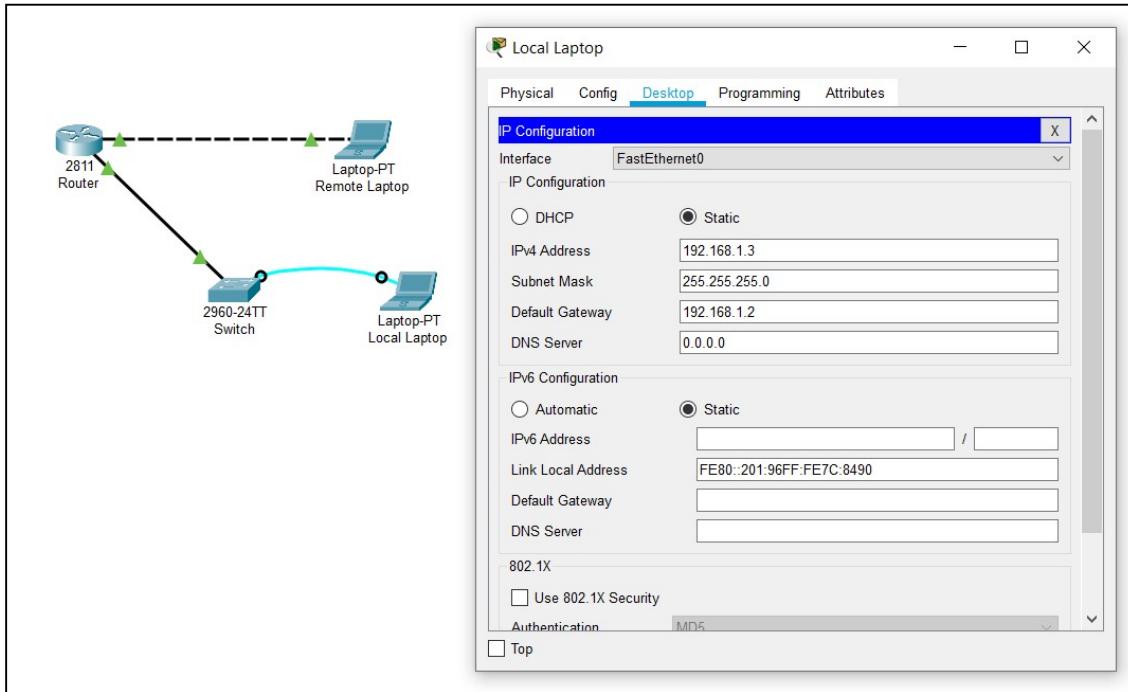
Configuration of Switch

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

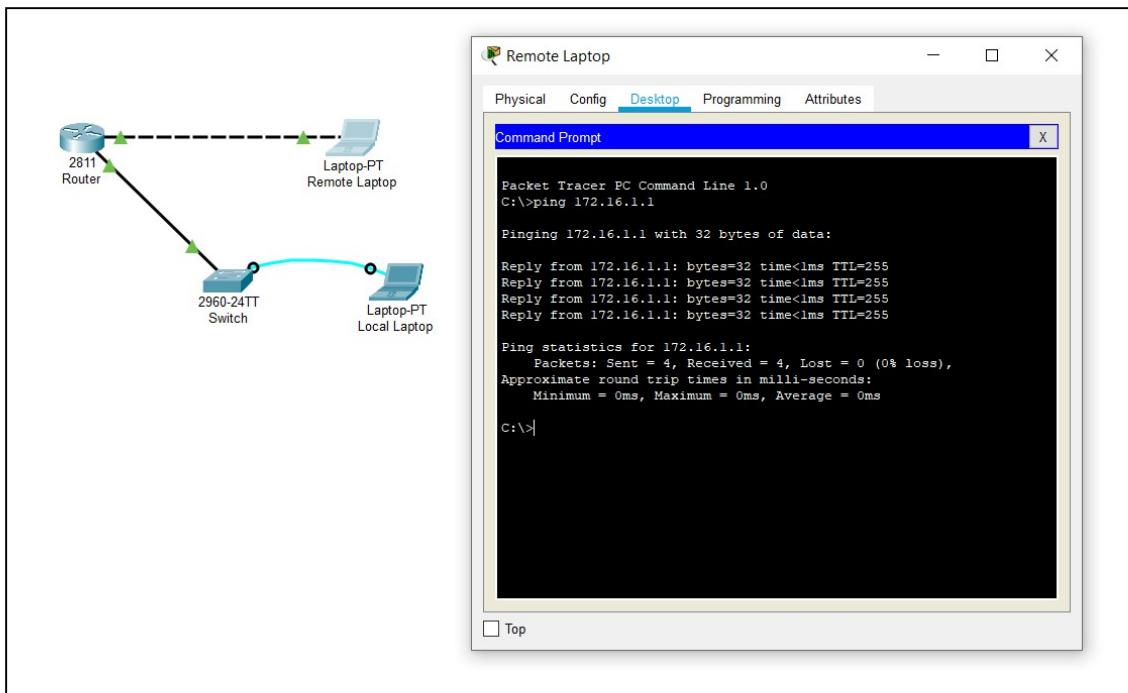
Hostname: LOCAL-SWITCH

Physical Location: Intercity, Home City, Corporate Office, Main Wiring Closet

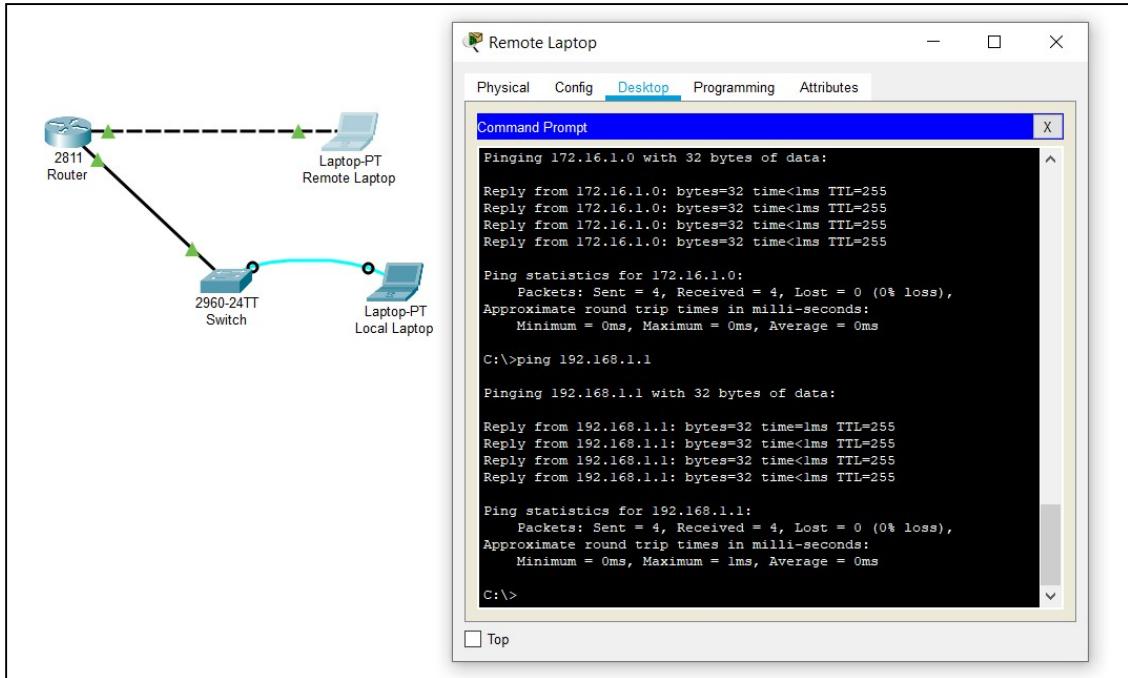
Configuration of Remote Laptop



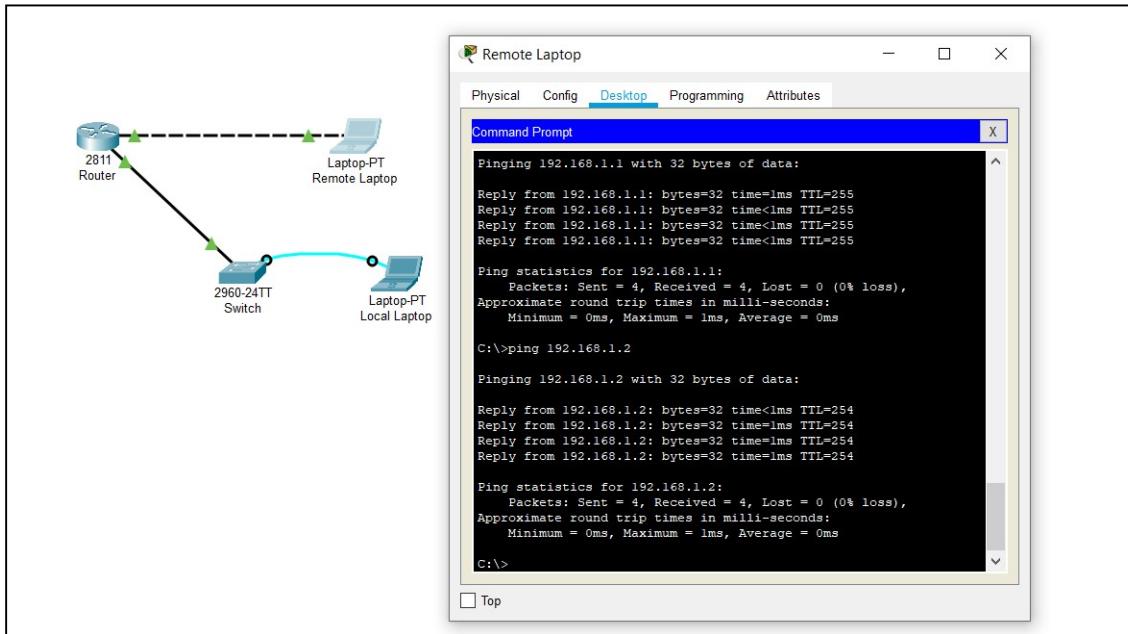
Pinging Router from Remote Laptop



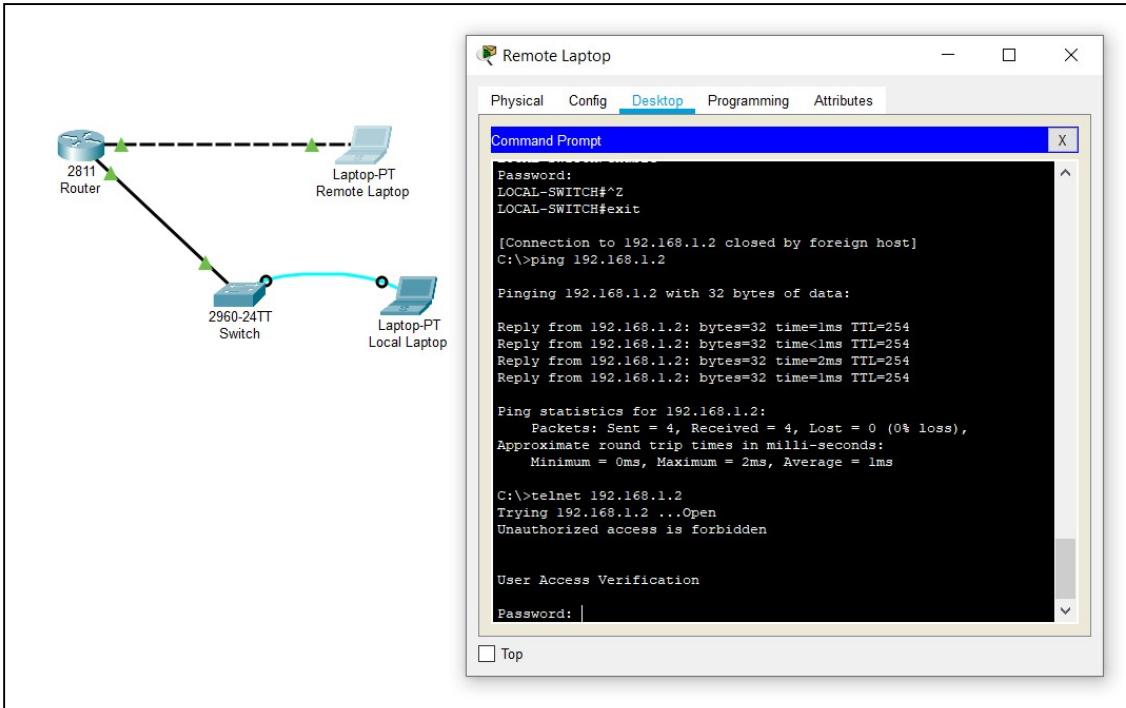
Pinging another Ethernet port of Router from Remote Laptop



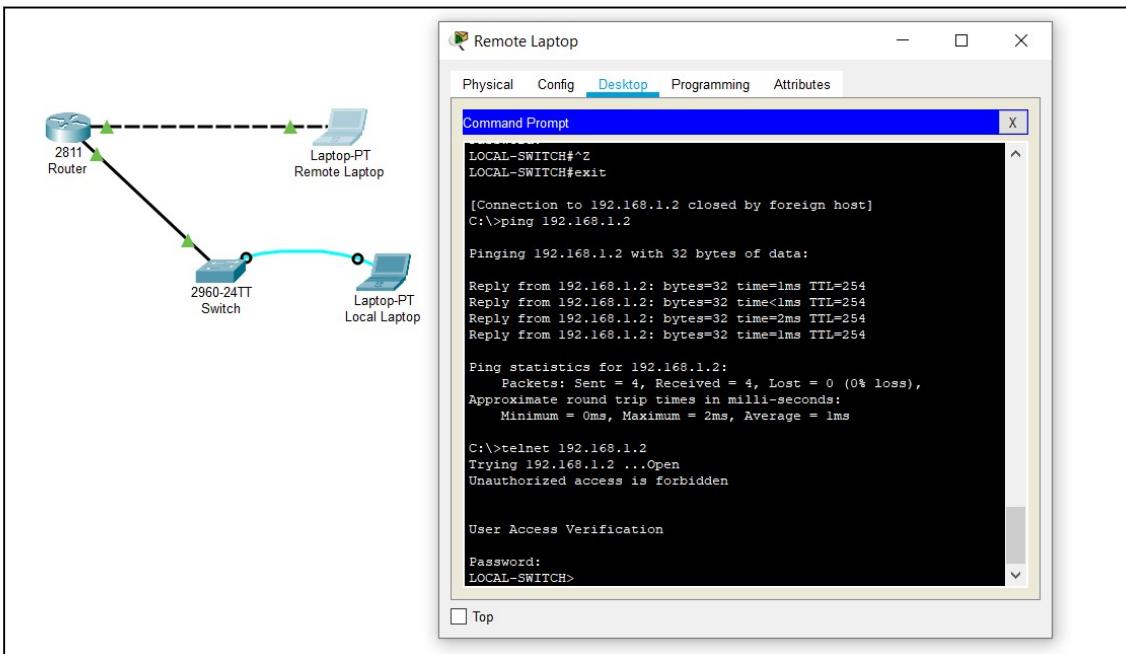
Pinging Switch from Remote Laptop



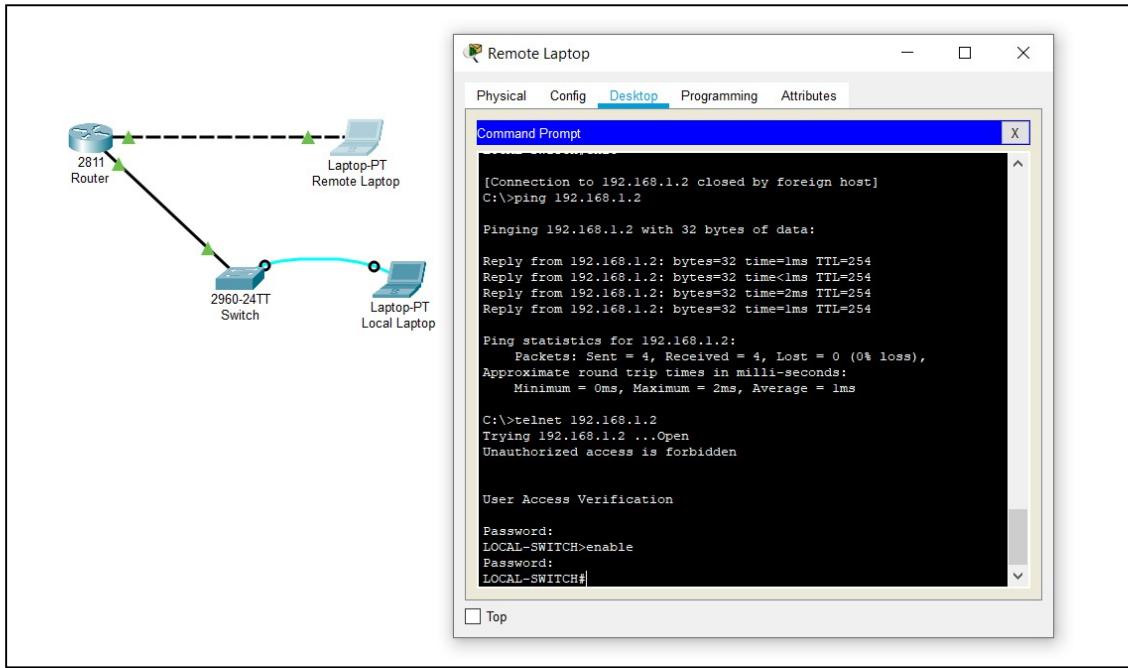
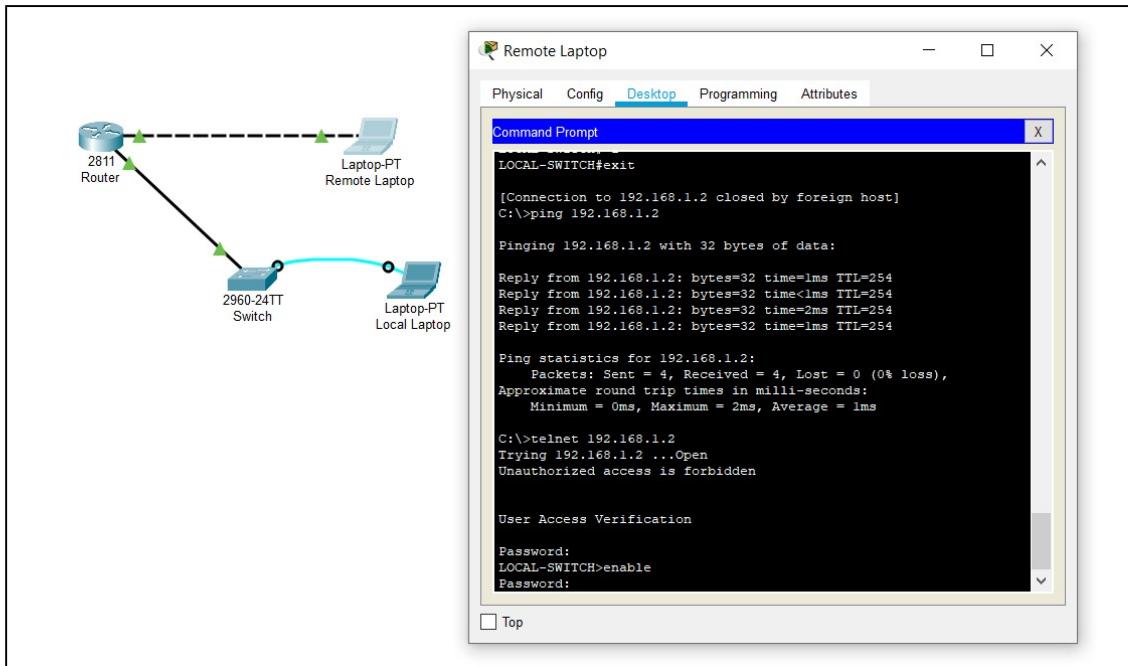
Telnet Switch from Remote Laptop



After entering password for telnet



Enabling switch from Remote Laptop



Conclusion:

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