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Roll no: 64
Batch : D

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.
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

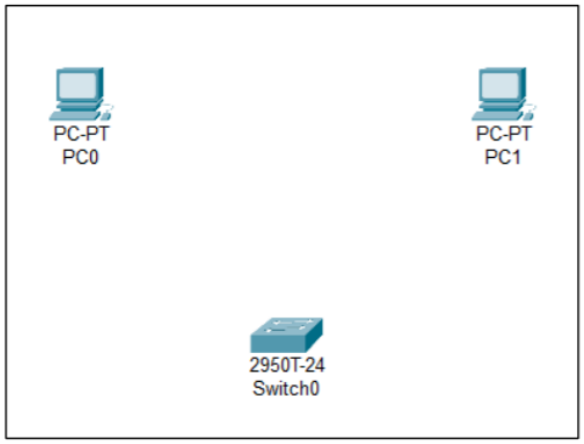

Fig4.1 Shows 2 PC's i.e. PC-1 and PC-2 and a switch 2950T

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

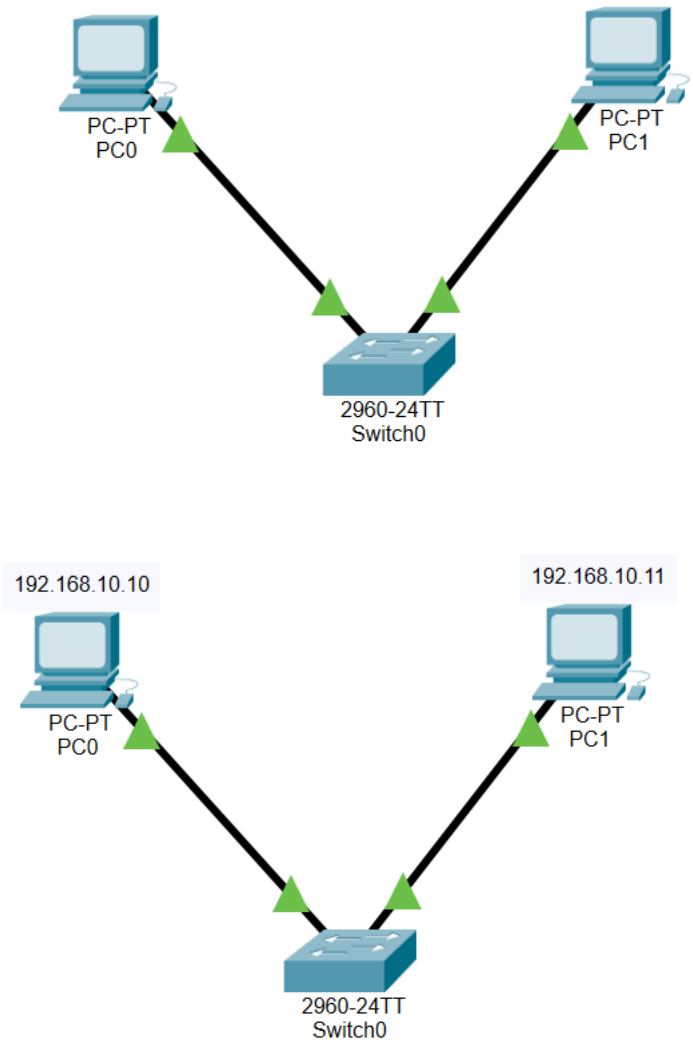

Fig4.2 Shows 2 PC's i.e. PC-1 and PC-2 connected to switch via copper straight-cable

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

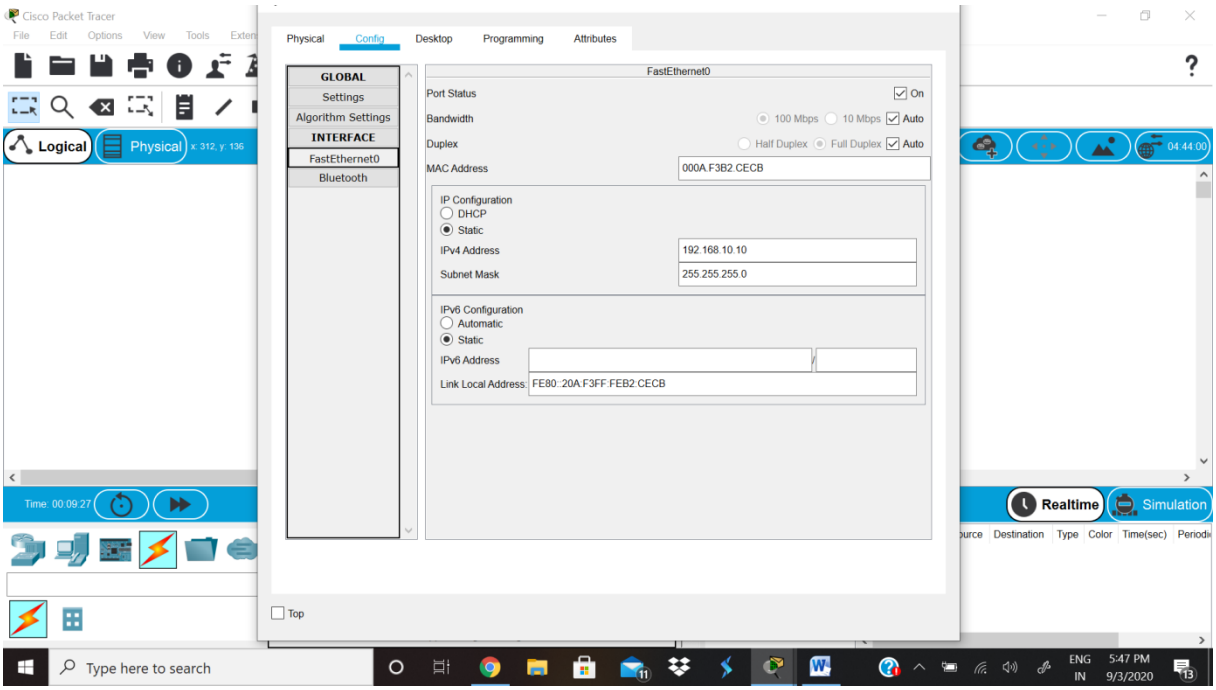

Fig 4.3 shows the config tab of PC-0 with fast ethernet settings.The ip address and subnet mask have been added as 192.168.10.10 and 255.255.255.0 respectively

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

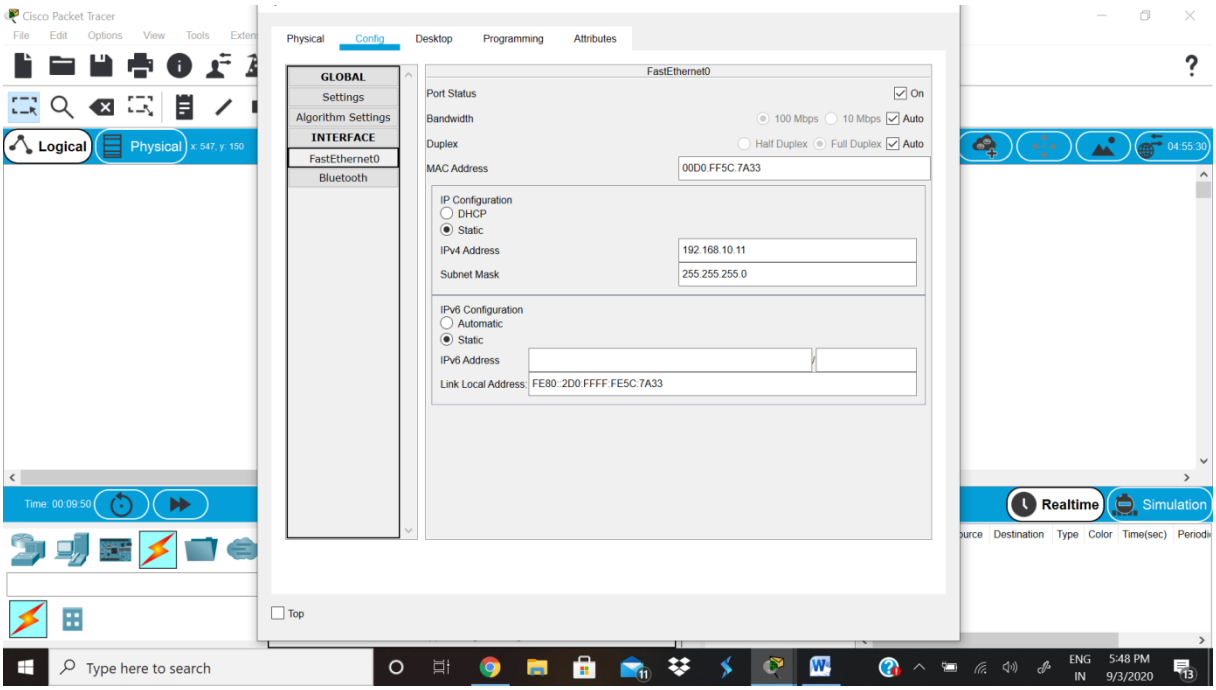

Fig 4.4 shows the config tab of PC-1 with fast ethernet settings.The ip address and subnet mask have been added as 192.168.10.11 and 255.255.255.0 respectively

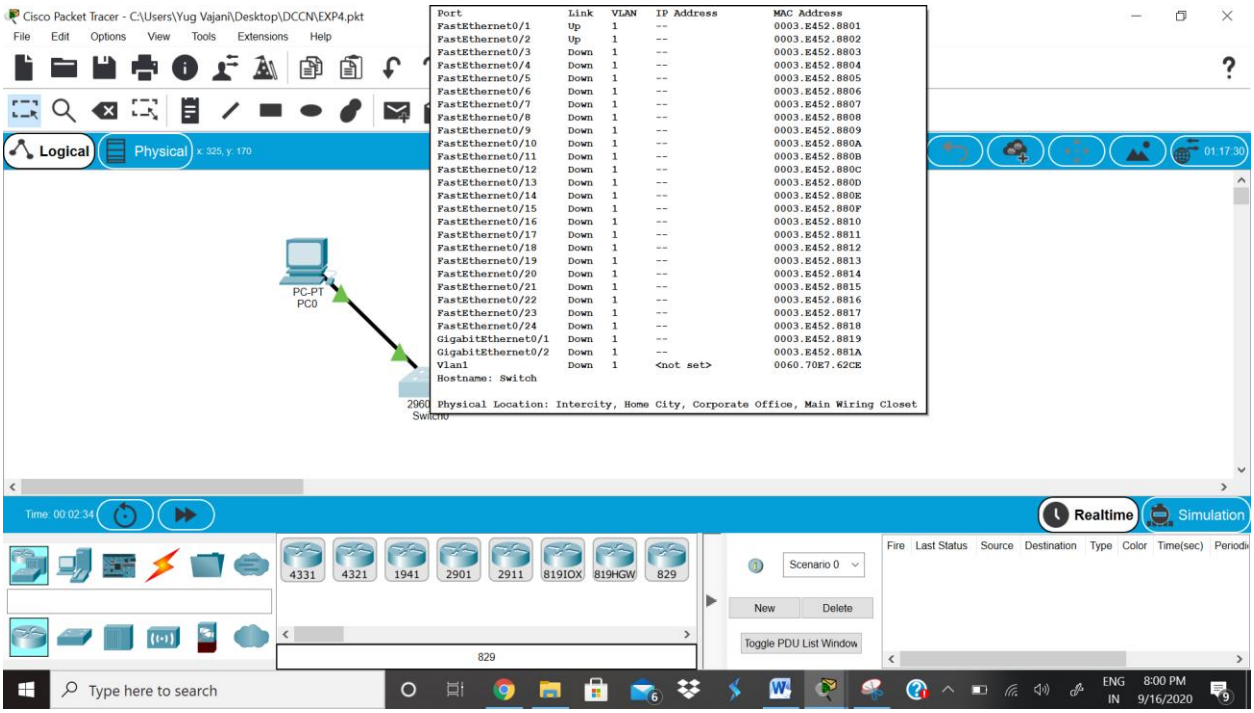

Fig 4.5 Shows the configuration of switch

Step 2: Test connectivity from PC0 to PC1

a) Use the **ping** command to test connectivity.
   a. Click PC0.
   b. Choose the **Desktop** tab.

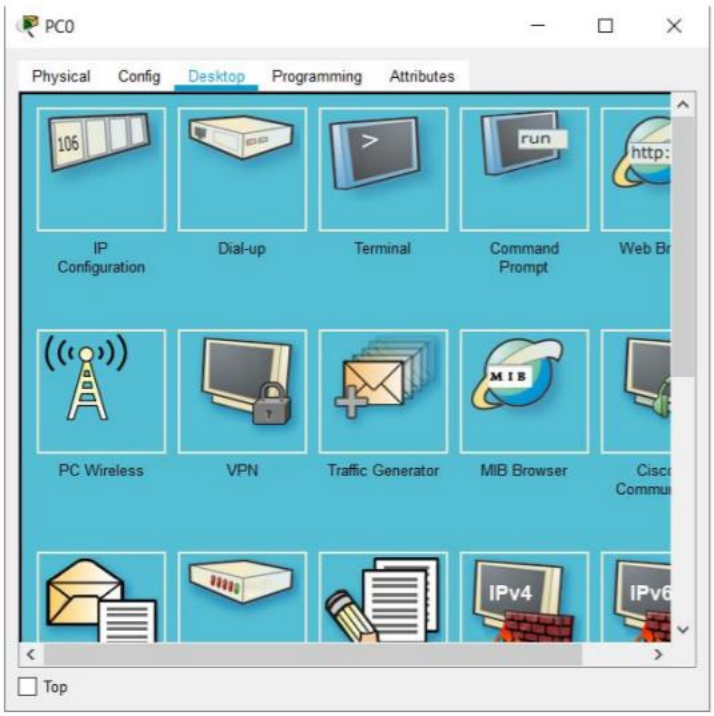

Fig 4.6 Shows the Desktop tab of PC-0

c. Choose **Command Prompt**.
d. Type: **ping 192.168.10.11** and press *enter*.

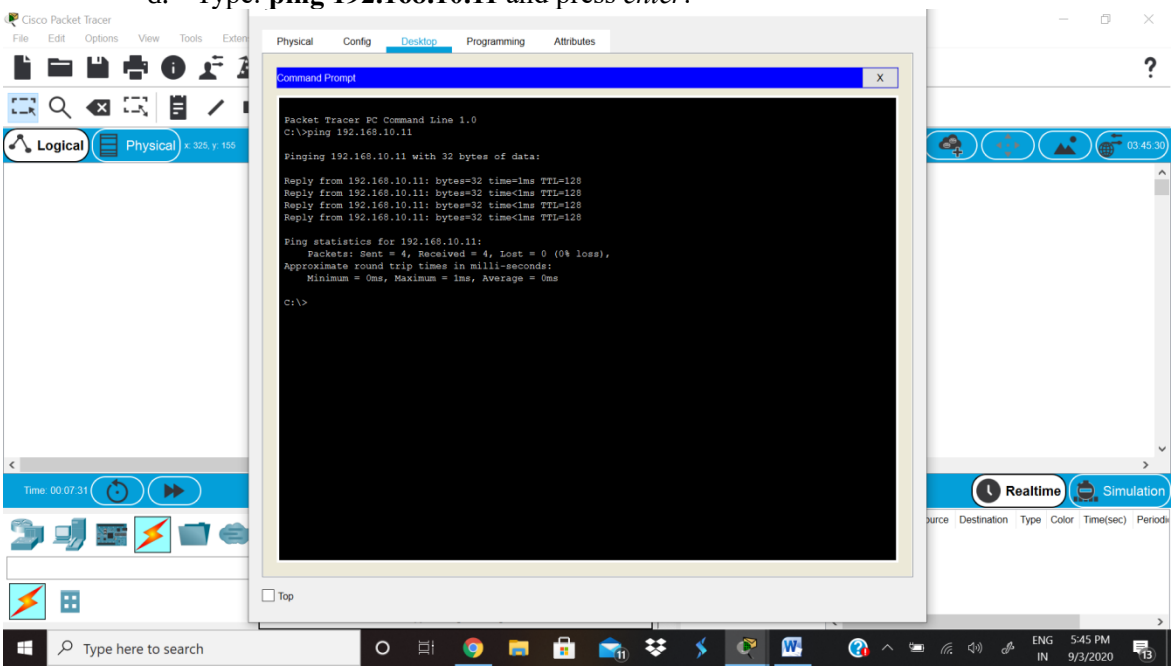

Fig 4.7 Shows the ping command on ip address 192.168.10.11

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:

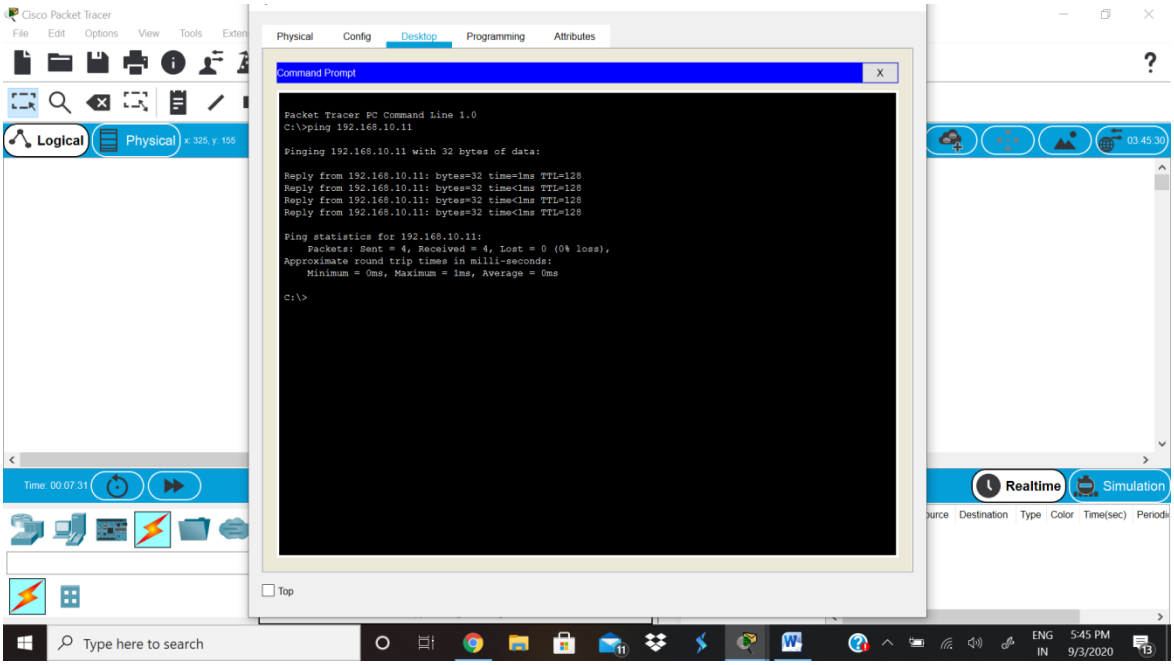

Fig 4.8 Shows the successful ping result on ip address 192.168.10.11

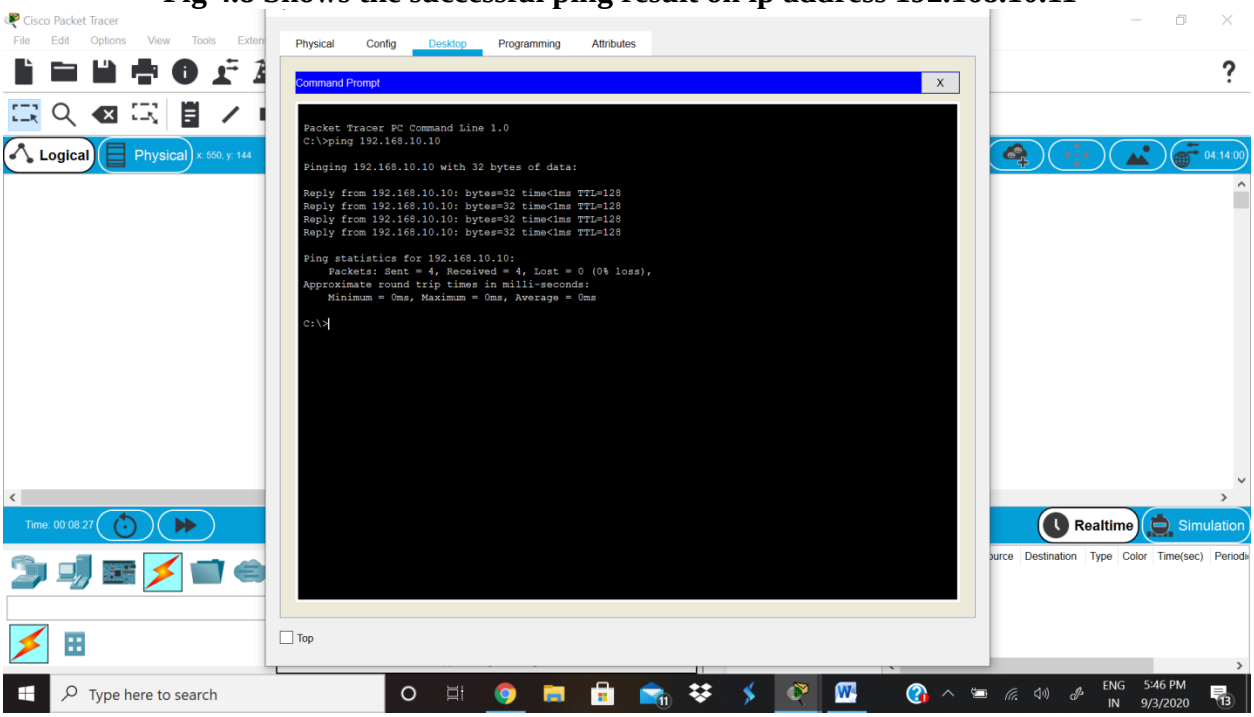

Fig 4.9 Shows the successful ping result on ip address 192.168.10.10

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

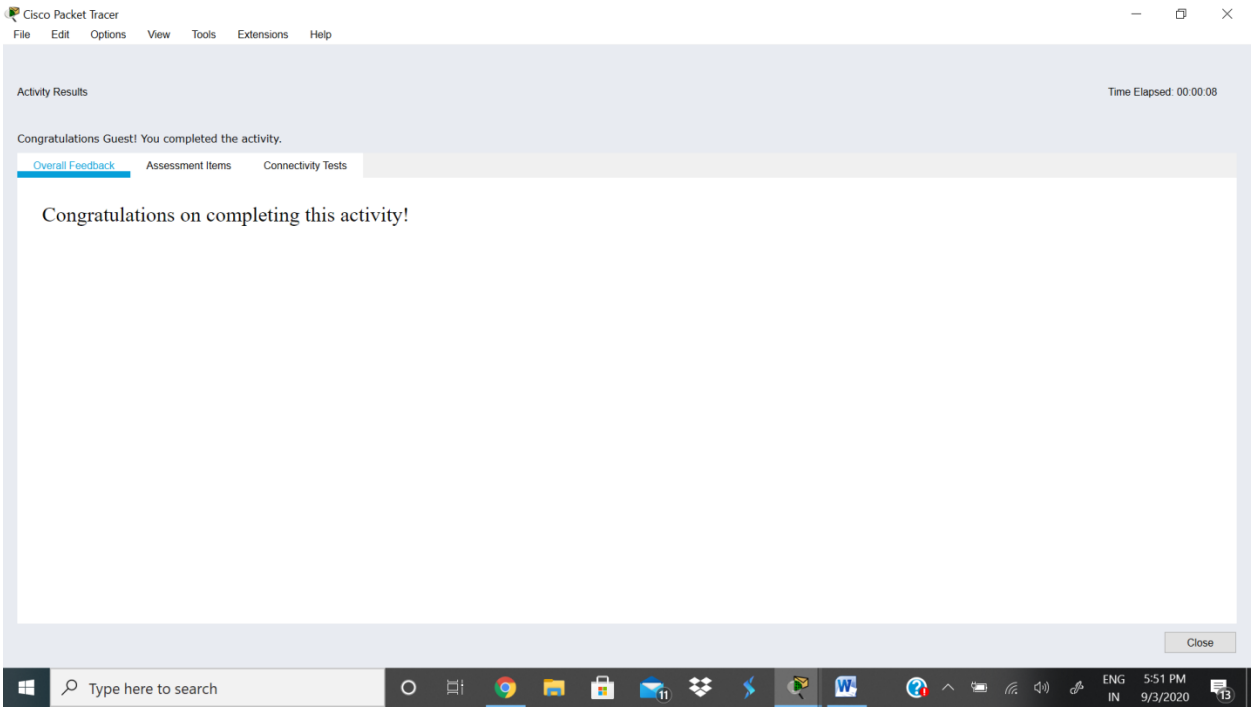

Fig 4.10 Shows the check result tab to check our work

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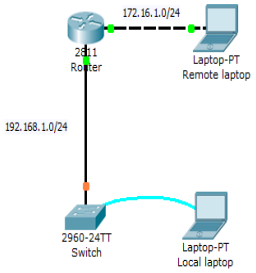
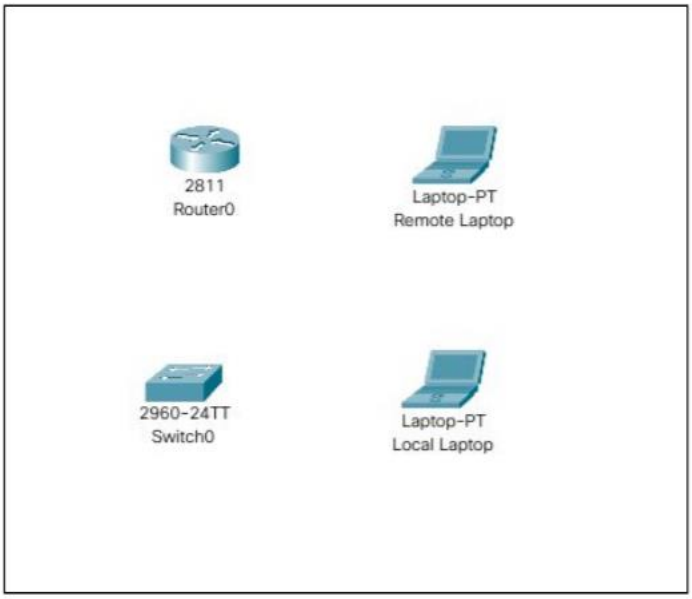
Lab 4.1: Basic configuration - hostname, motd banner, passwd etc

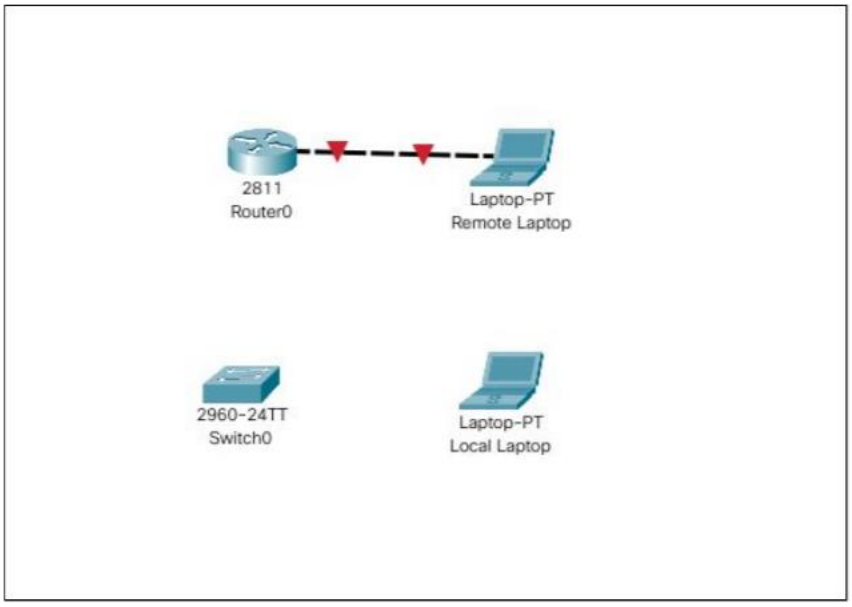
Objective:
This lab will test your ability to configure basic settings such as hostname, motd banner, encrypted passwords, and terminal options on a Packet Tracer 6.2 simulated Cisco Catalyst switch.



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

Rename Laptop0 –> Local Laptop
Rename Laop1 -> Remote Laptop


2811
Router0
Laptop-PT
Remote Laptop
2960-24TT
Switch0
Laptop-PT
Local Laptop


2811
Router0
Laptop-PT
Remote Laptop
2960-24TT
Switch0
Laptop-PT
Local Laptop

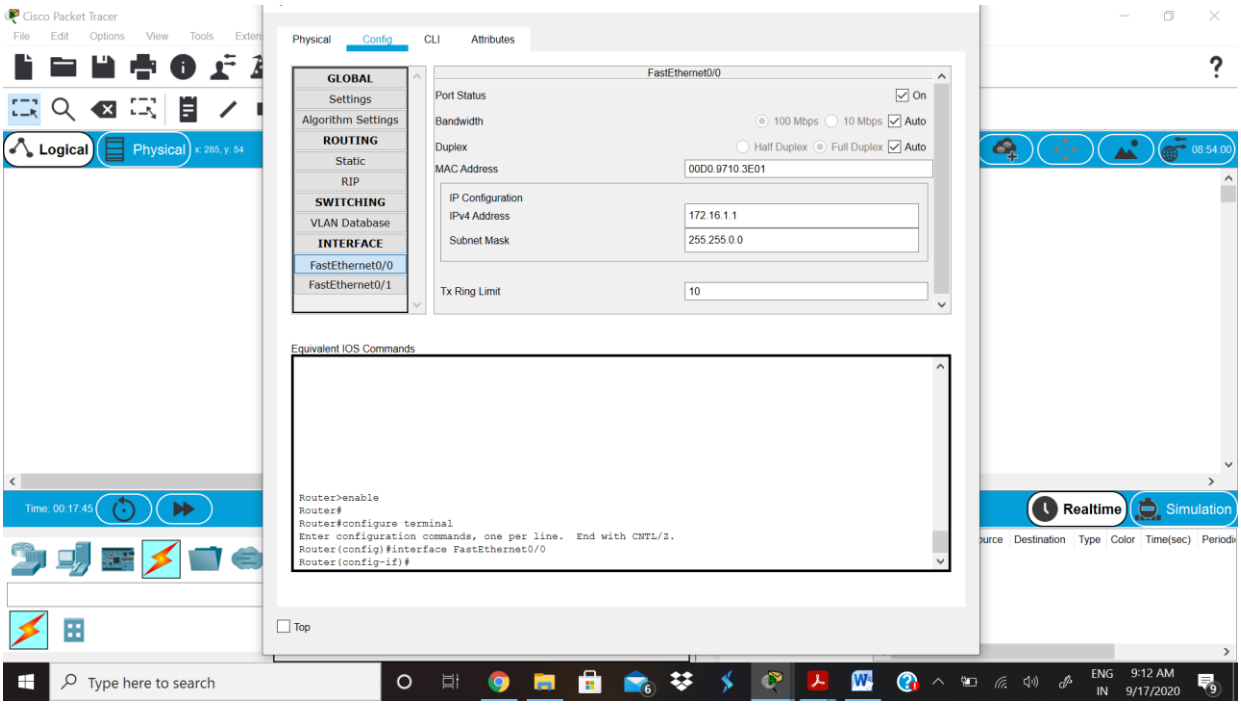
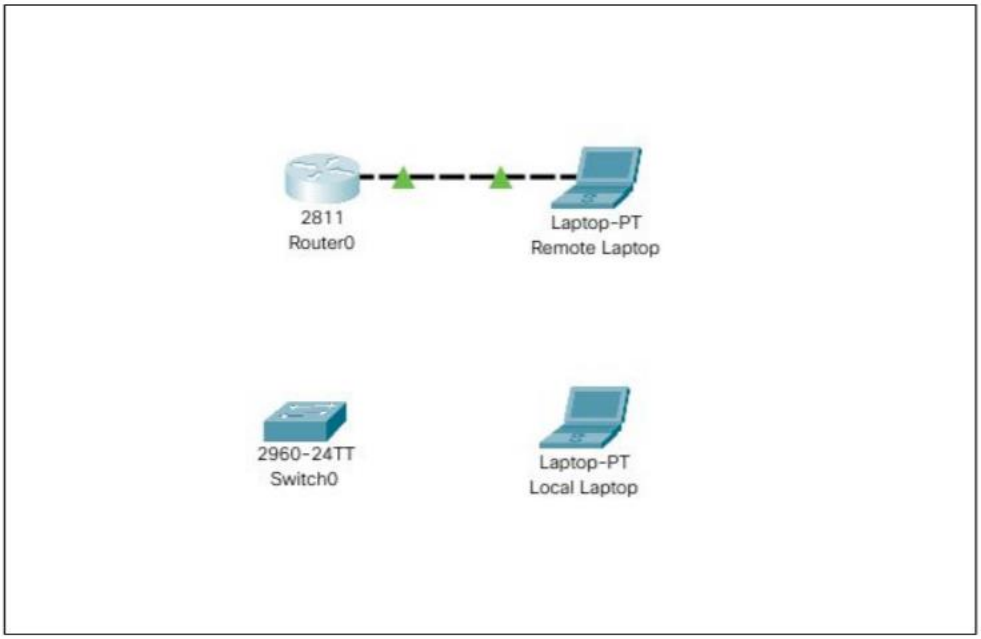
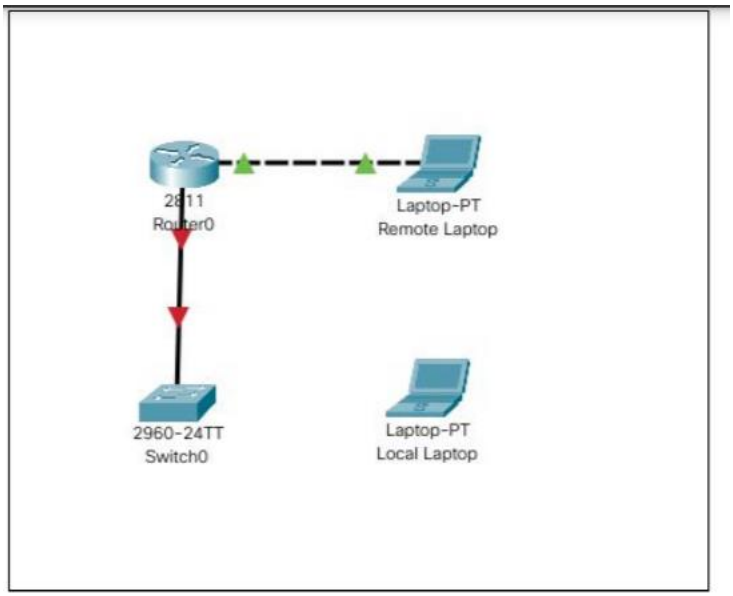


Fig 4.1.1 Shows the Fast ethernet Settings of Router connecting the Remote Laptop where we turn the Post Status to ON





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: 000C.CF5D.8802

IP Configuration
IPv4 Address: 192.168.1.1
Subnet Mask: 255.255.255.0

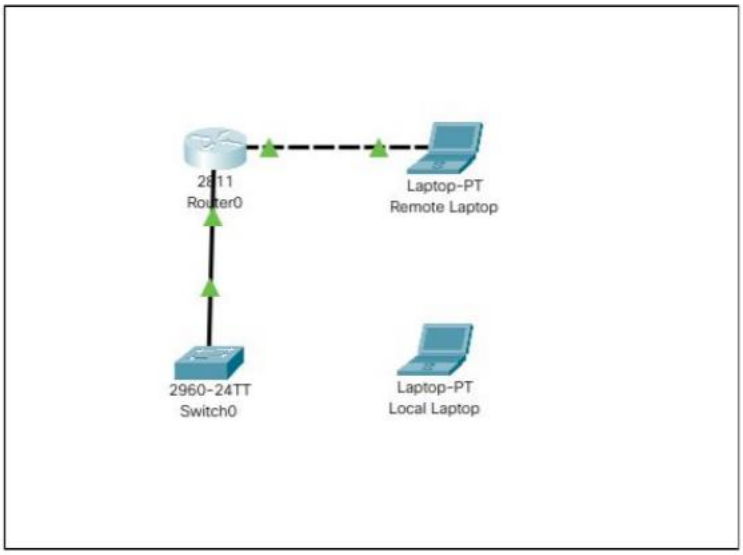
Tx Ring Limit: 10

Equivalent IOS Commands

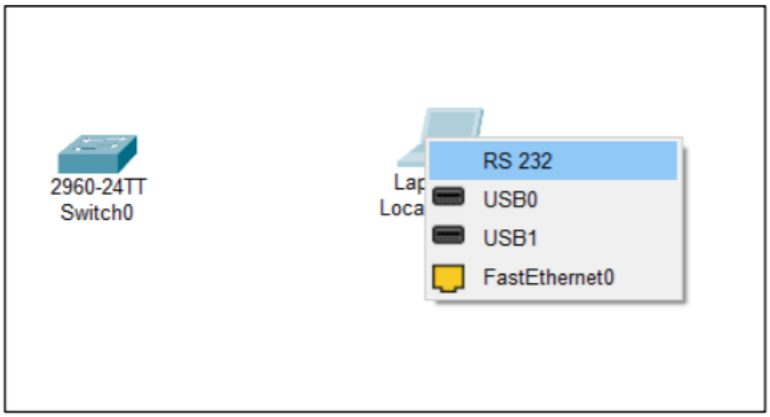
```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
ip address
% Incomplete command.
Router(config-if)#no ip address
Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config-if)#
```

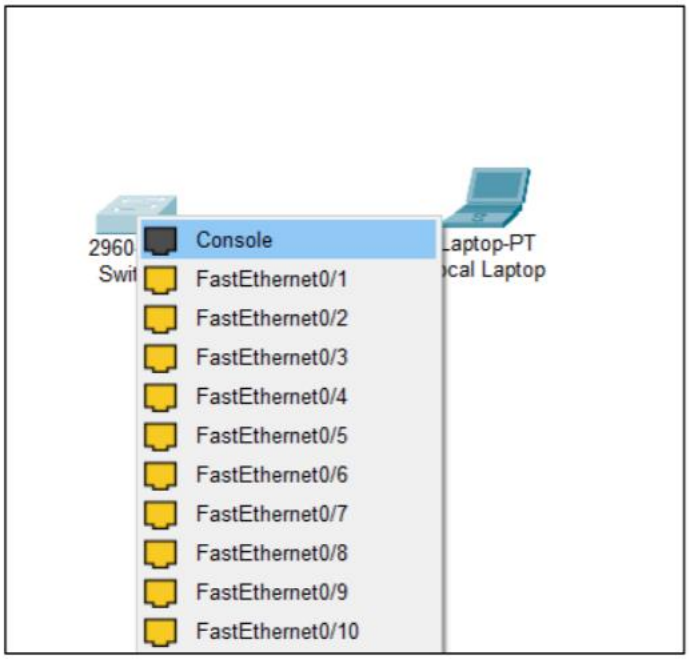
☐ Top

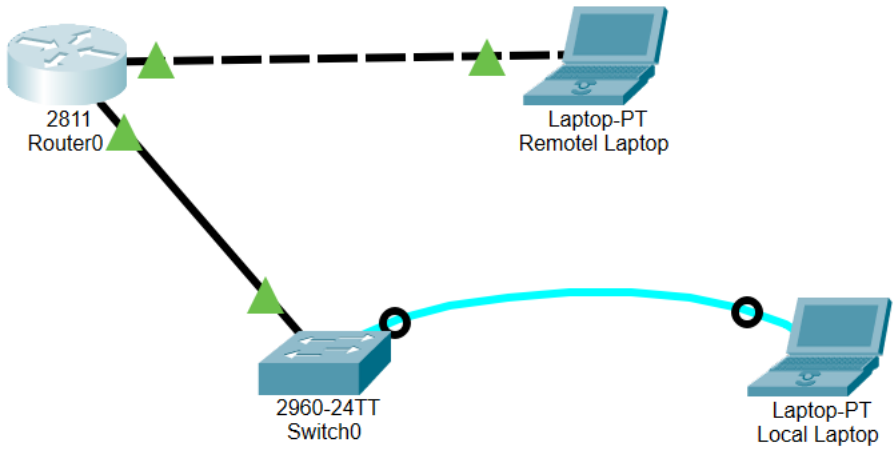
Fig 4.1.2 Shows the Fast ethernet Settings of Router connecting the switch where we turn the Post Status to ON



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




2960
Swit
Laptop-PT
ocal Laptop
Console
FastEthernet0/1
FastEthernet0/2
FastEthernet0/3
FastEthernet0/4
FastEthernet0/5
FastEthernet0/6
FastEthernet0/7
FastEthernet0/8
FastEthernet0/9
FastEthernet0/10


2811
Router0
Laptop-PT
Remotel Laptop
2960-24TT
Switch0
Laptop-PT
Local Laptop

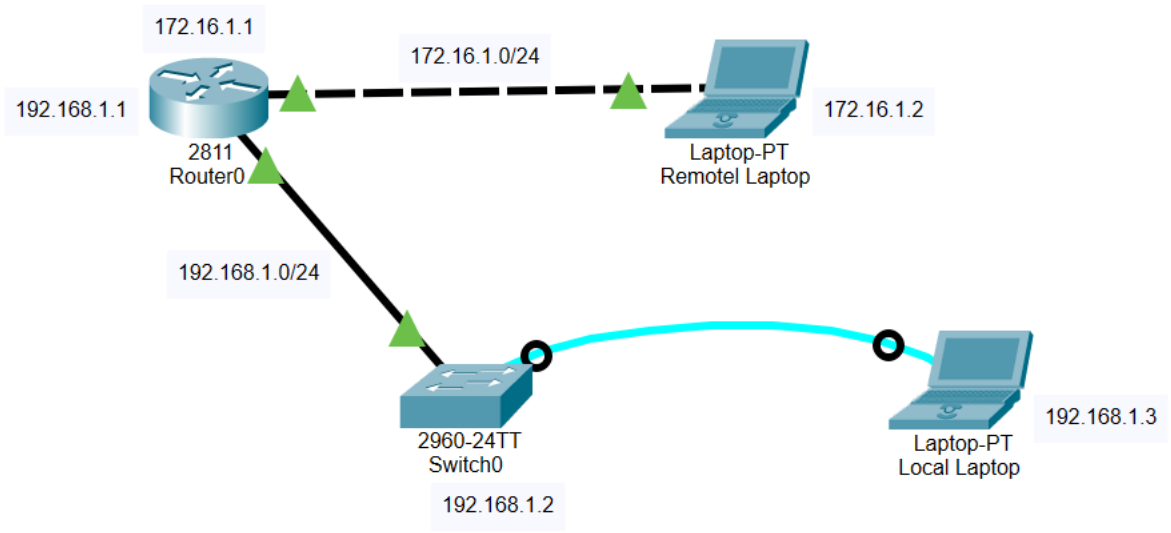


Fig 4.1.1 Shows 2 Laptops ,Remote Laptop connected to router via copper cross-over wire ,Local Laptop connnected to Switch via console and router is connected to switch via copper straight wire

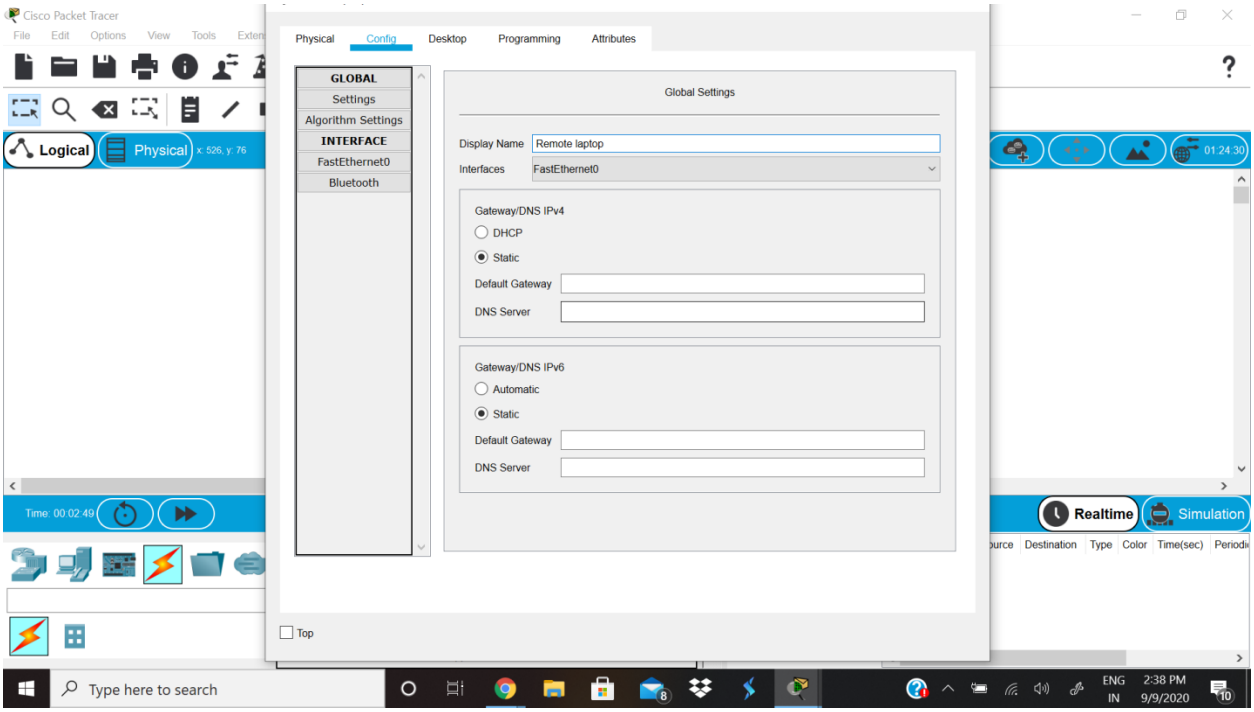


Fig 4.1.3 Shows the config tab of Remote Laptop

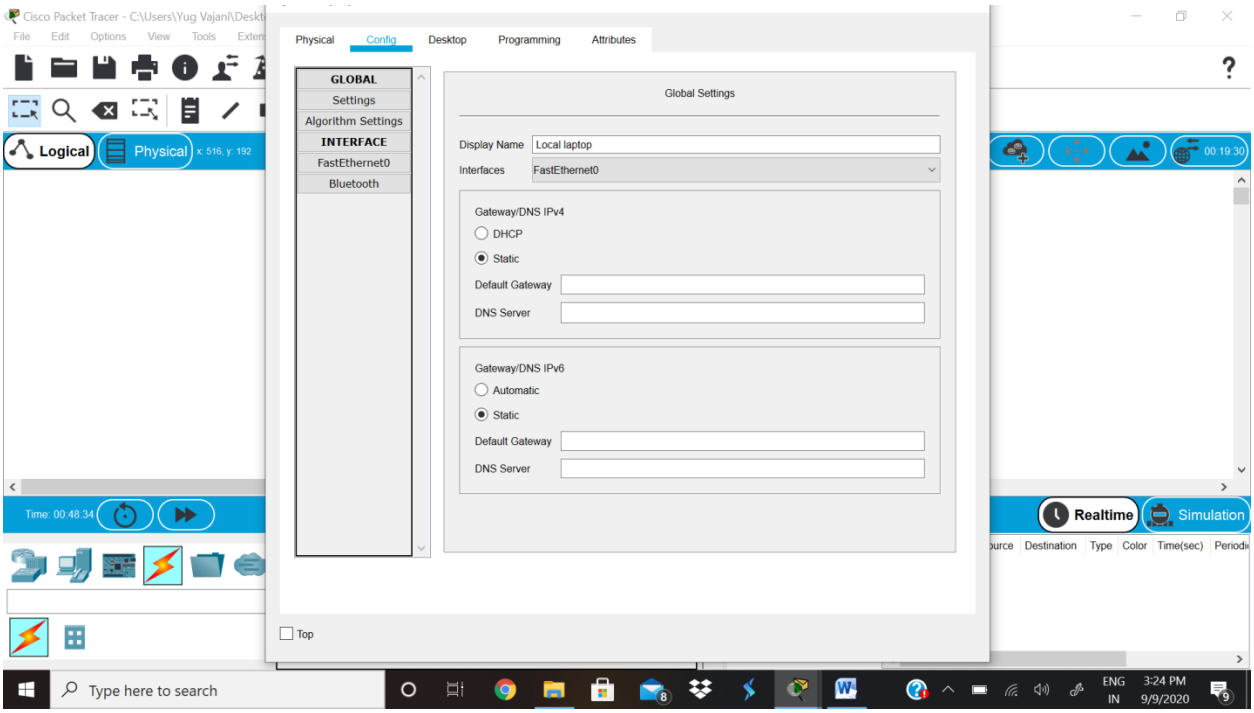


Fig 4.1.3 Shows the config tab of Local Laptop

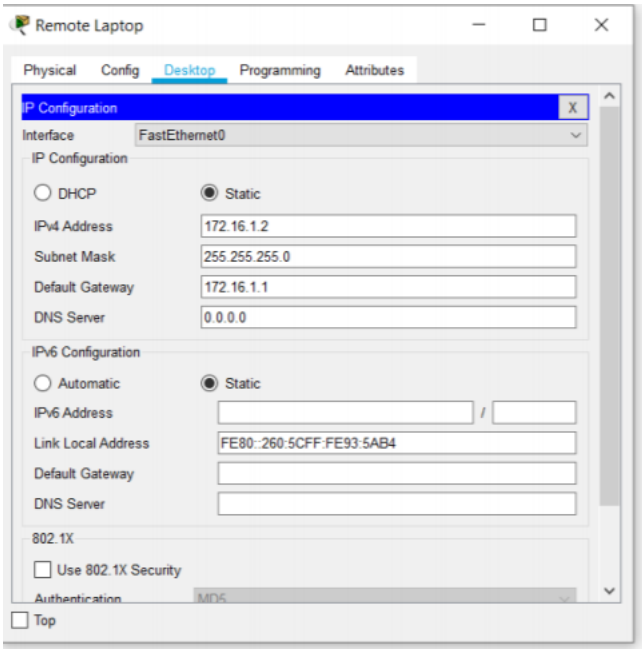


Fig 4.1.4 Shows the IP configuration of remote laptop where IP address is 172.16.1.2 and Default Gateway is 172.16.1.1

2. Configure Switch hostname as LOCAL-SWITCH

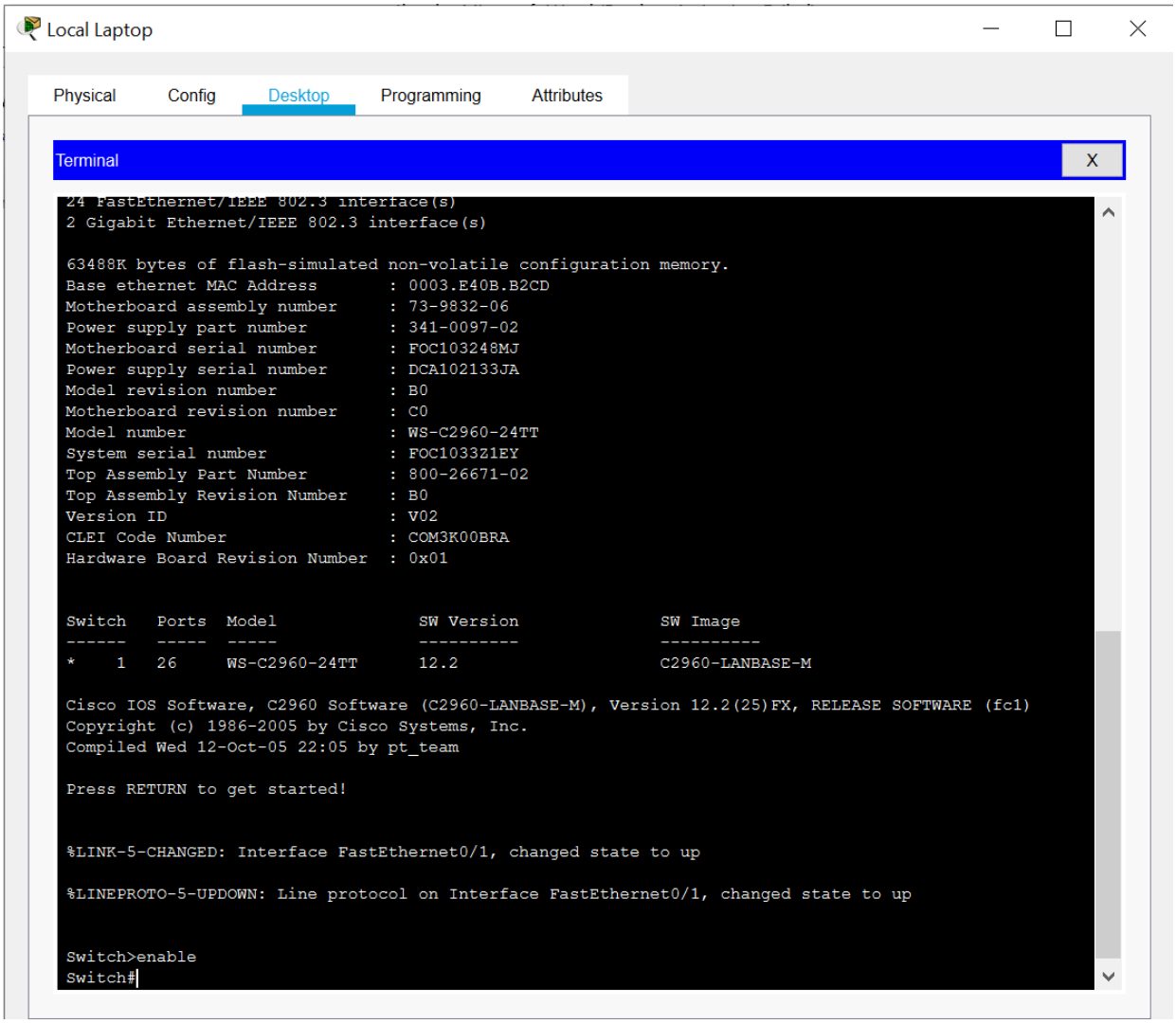


Fig 4.1.5 Shows that we enter the enable command to enter the privileged exec mode

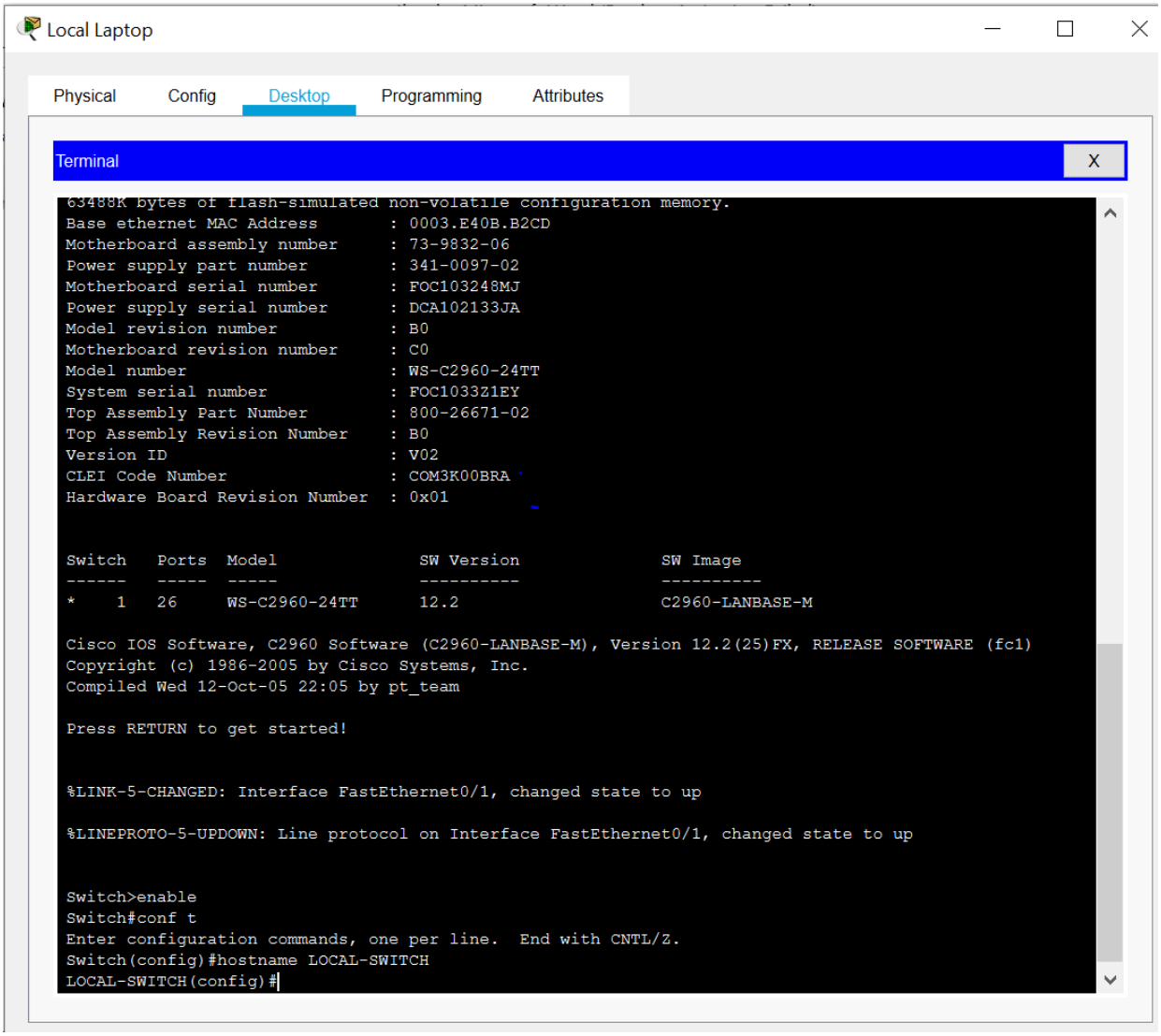


Fig 4.1.6 Shows the terminal where we configure switch hostname as LOCAL-SWITCH

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

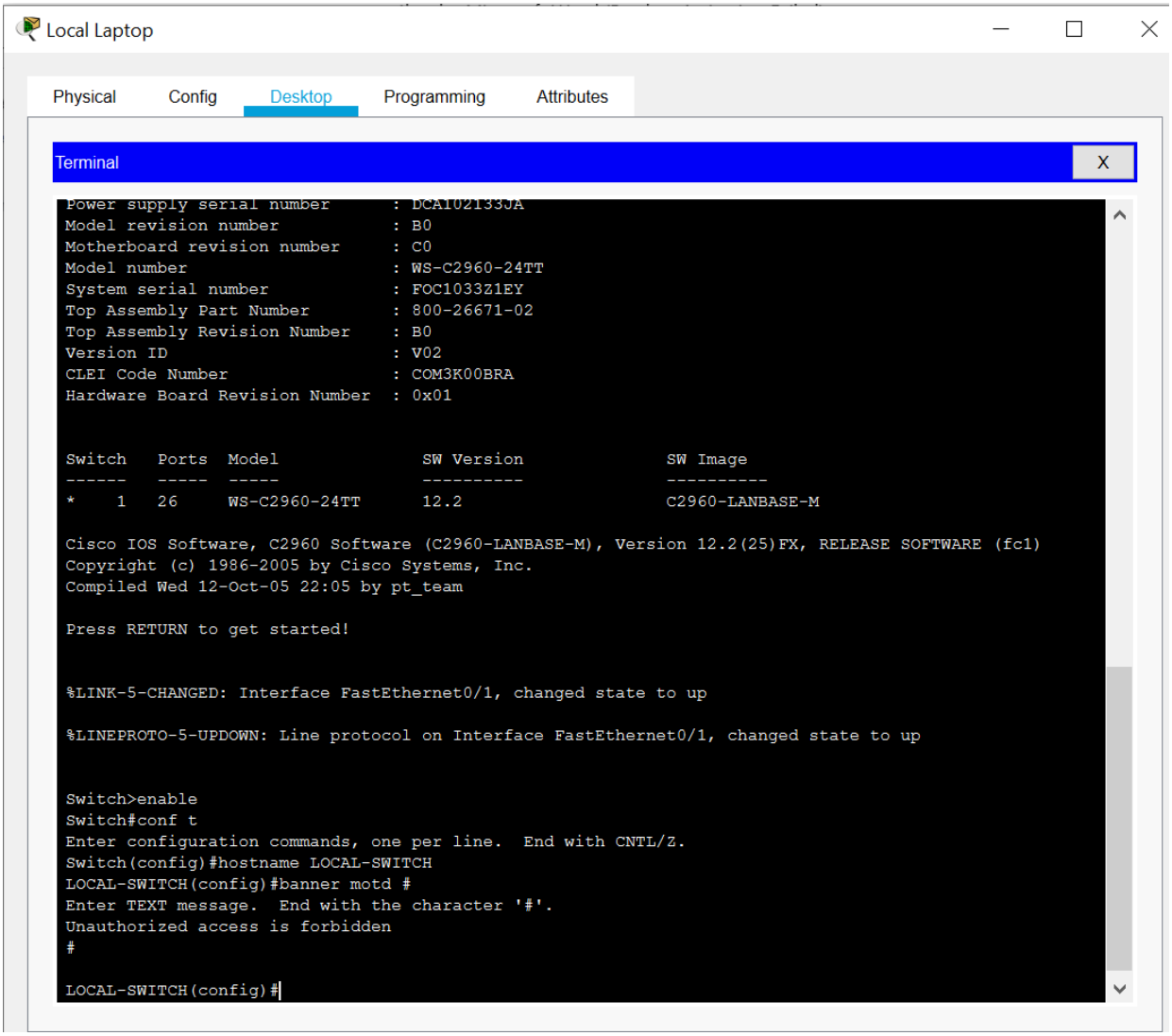


Fig 4.1.7 Shows the terminal to configure the message of the day as Unauthorized access is forbidden

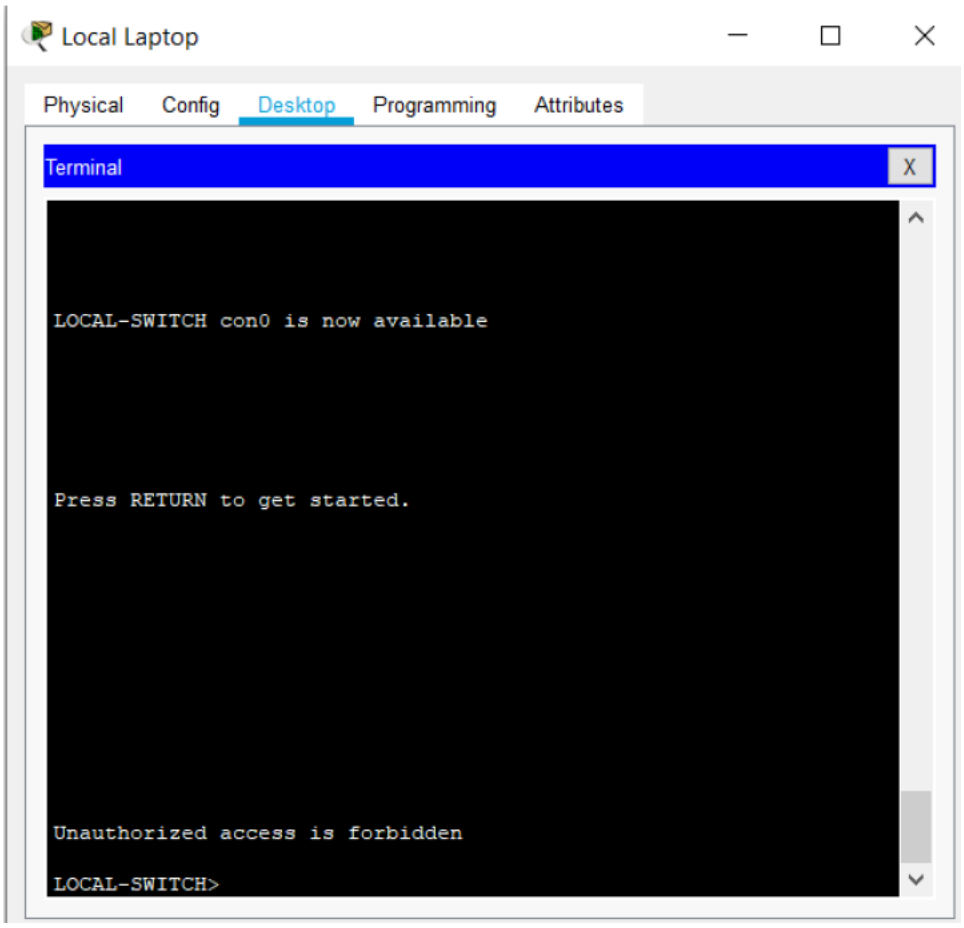
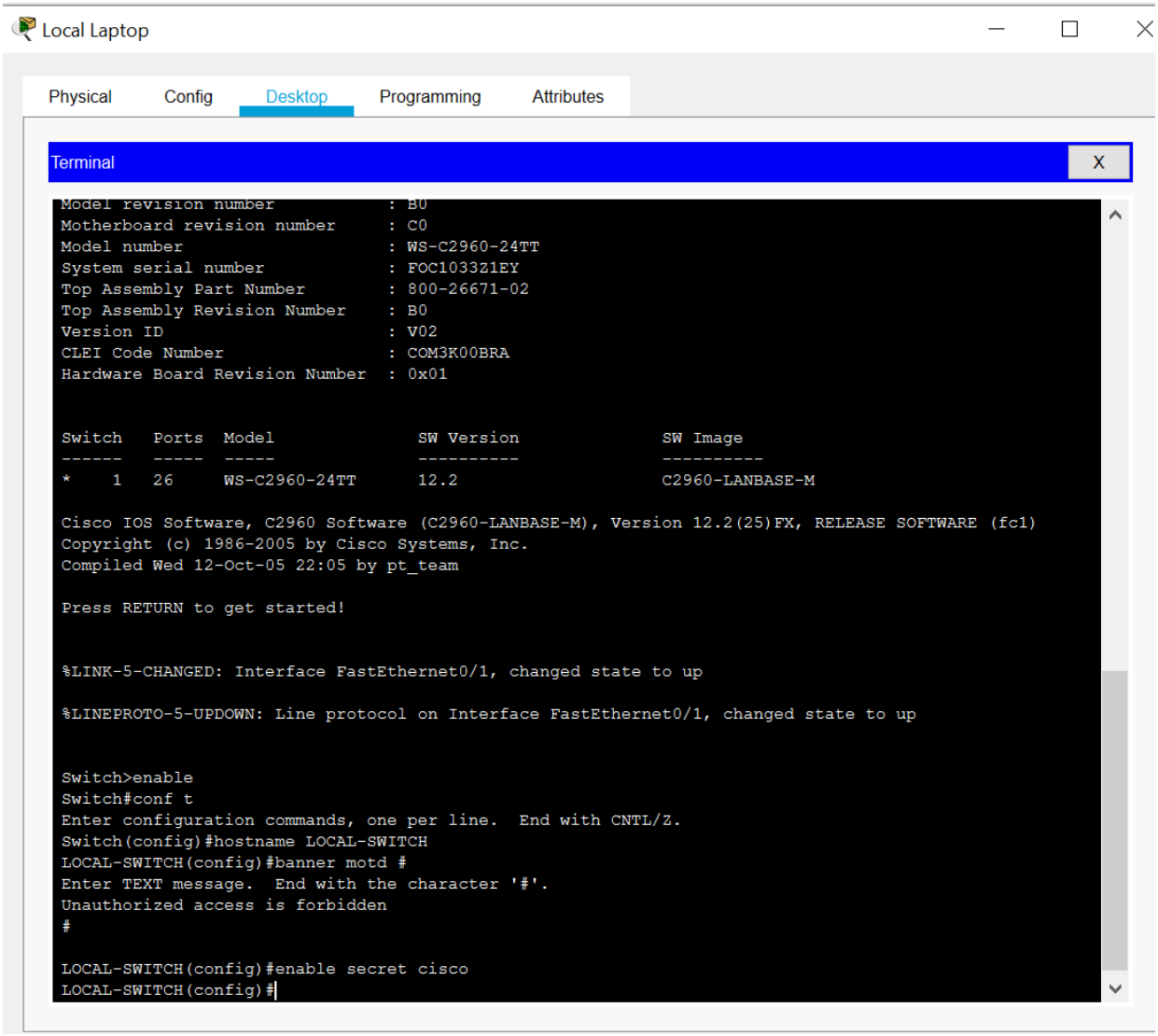


Fig 4.1.8 Shows the Message on using the show run command

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


Local Laptop
Physical
Config
Desktop
Programming
Attributes
Terminal
X
Model revision number : B0
Motherboard revision number : C0
Model number : WS-C2960-24TT
System serial number : FOC1033Z1EY
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 (fc1)
Copyright (c) 1986-2005 by Cisco Systems, Inc.
Compiled Wed 12-Oct-05 22:05 by pt_team
Press RETURN to get started!
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
Switch>enable
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname LOCAL-SWITCH
LOCAL-SWITCH(config)#banner motd #
Enter TEXT message. End with the character '#'.
Unauthorized access is forbidden
#
LOCAL-SWITCH(config)#enable secret cisco
LOCAL-SWITCH(config)#

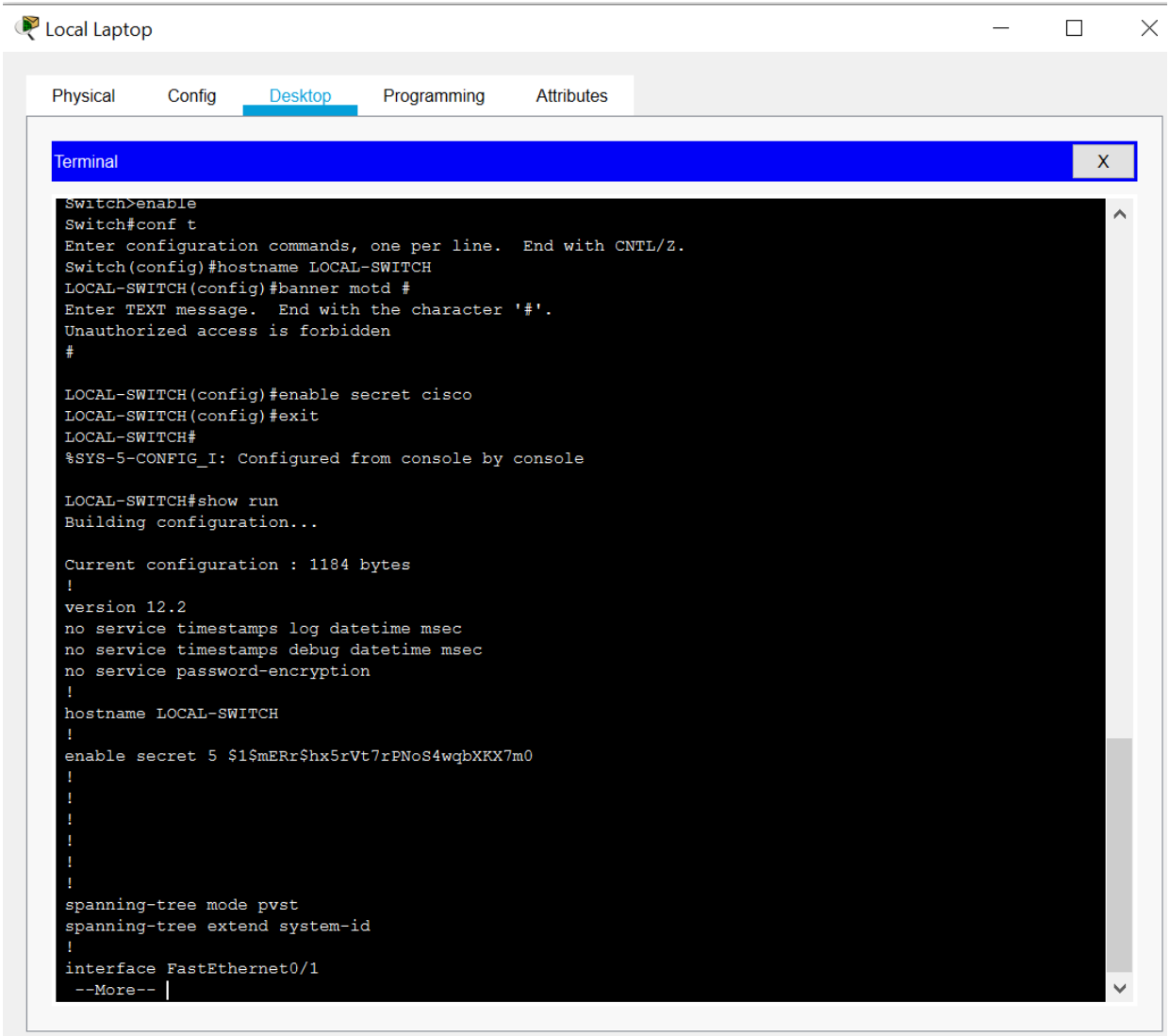


Fig 4.1.9 Shows the password on running the show run command

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

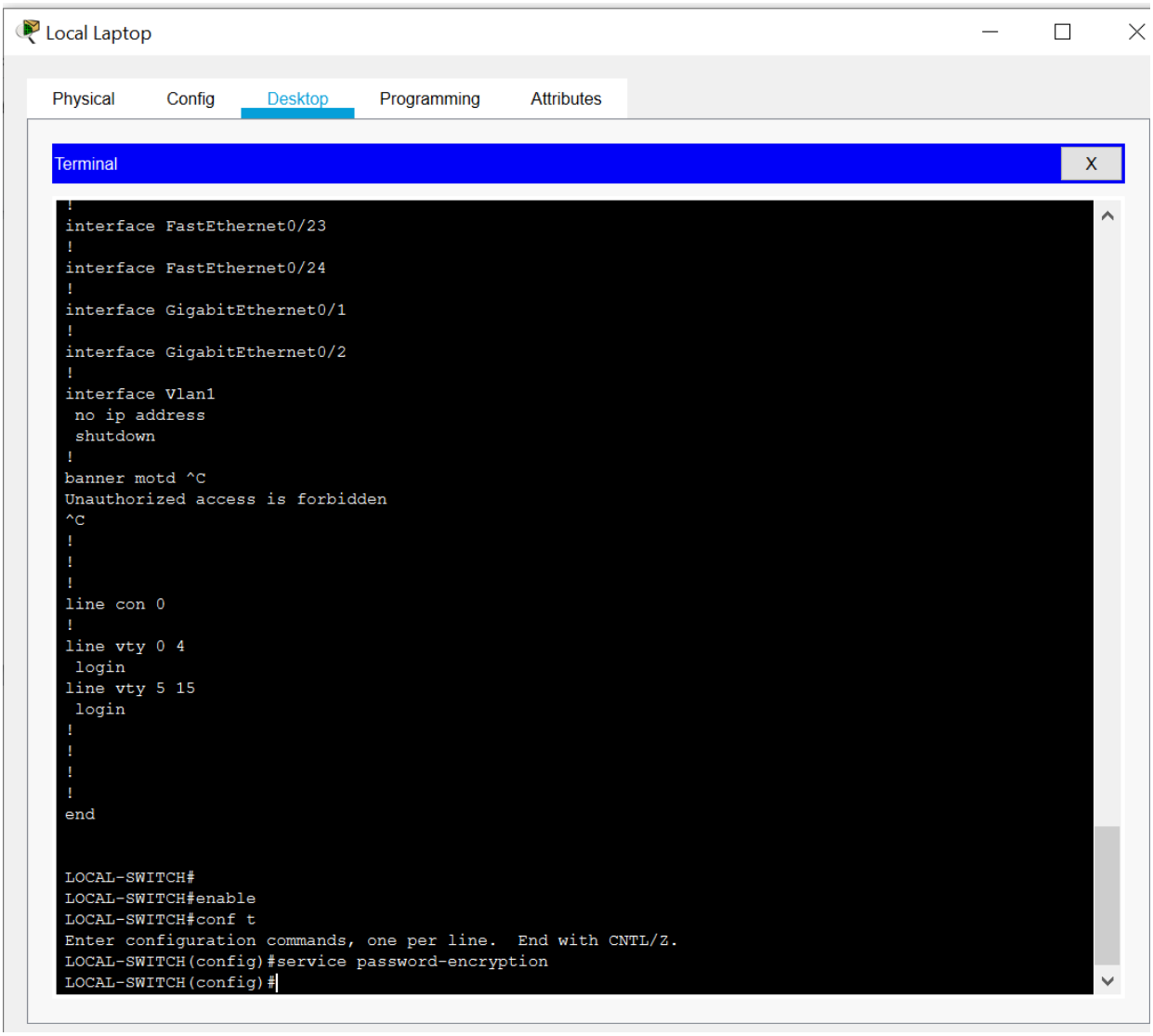


Fig 4.1.10 Shows the terminal to configure password encryption on the switch

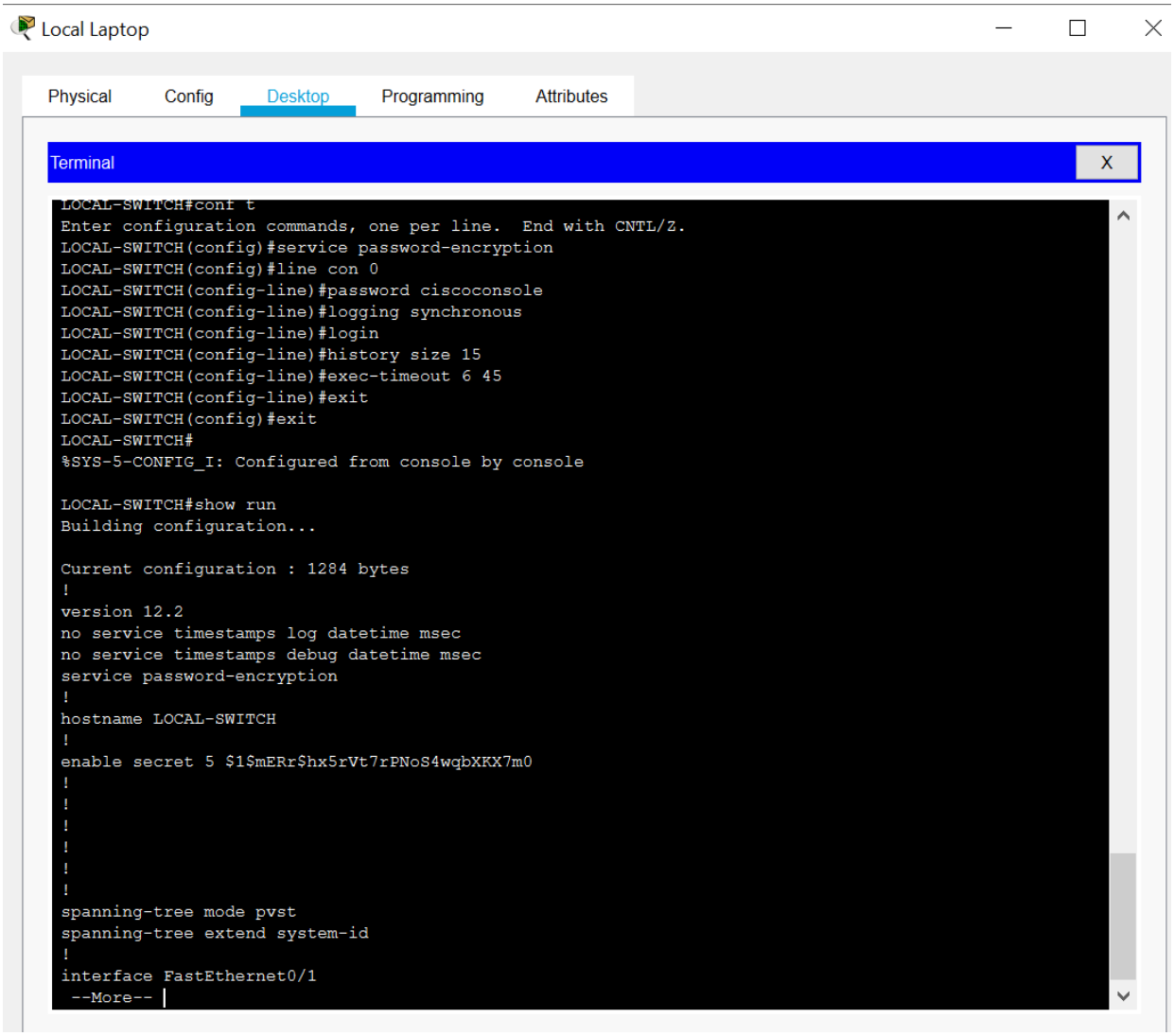


Fig 4.1.11 Shows the encrypted password when I use the show run command

6. Configure CONSOLE access with the following settings :
- Login enabled
- Password : whatever you like
- History size : 15 commands
- Timeout : 6'45"
- Synchronous logging

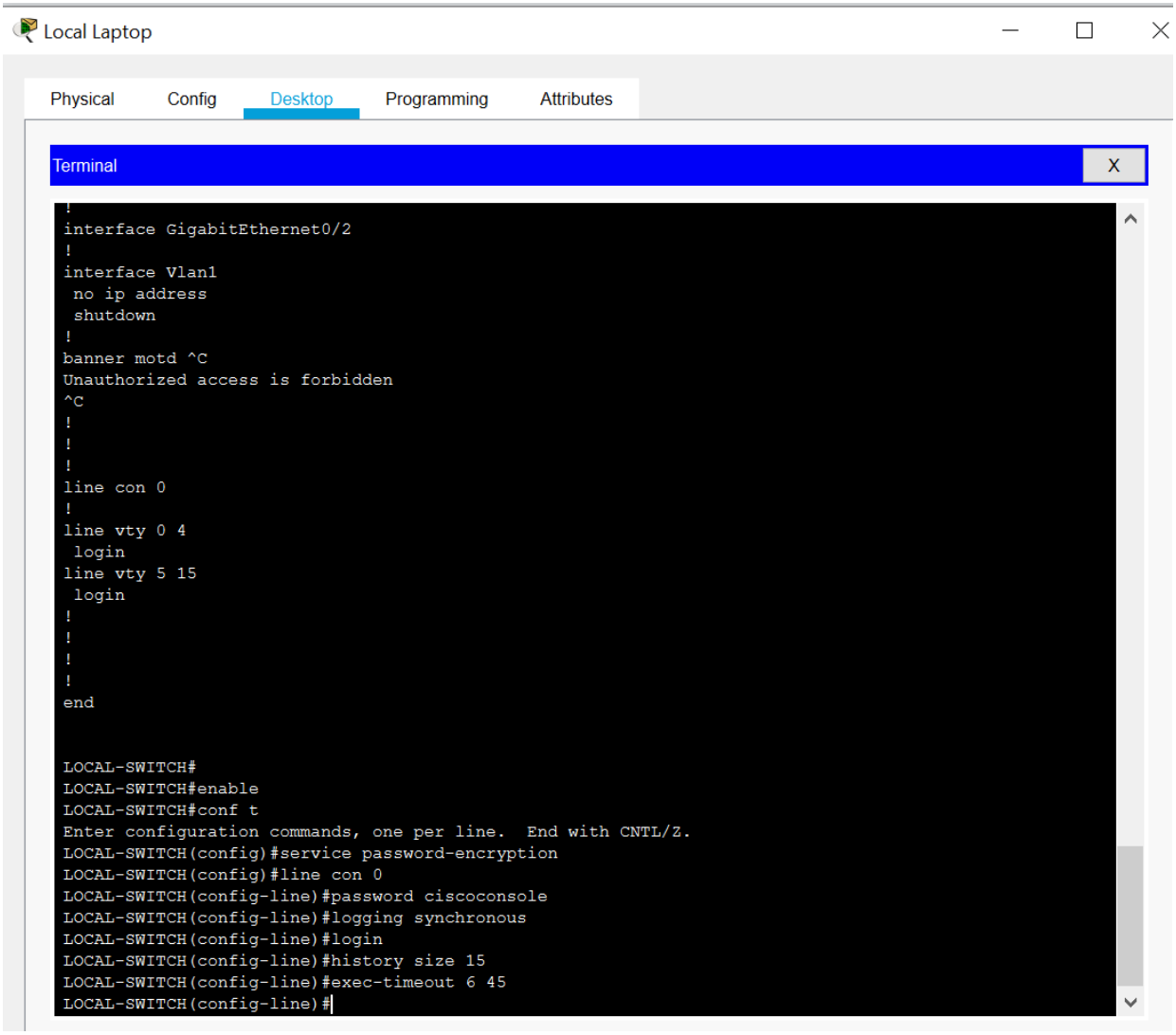


Fig 4.1.12 Shows to configure console access with following settings- Login enabled, Password : whatever you like,History size : 15 commands,Timeout : 6'45'',Synchronous logging

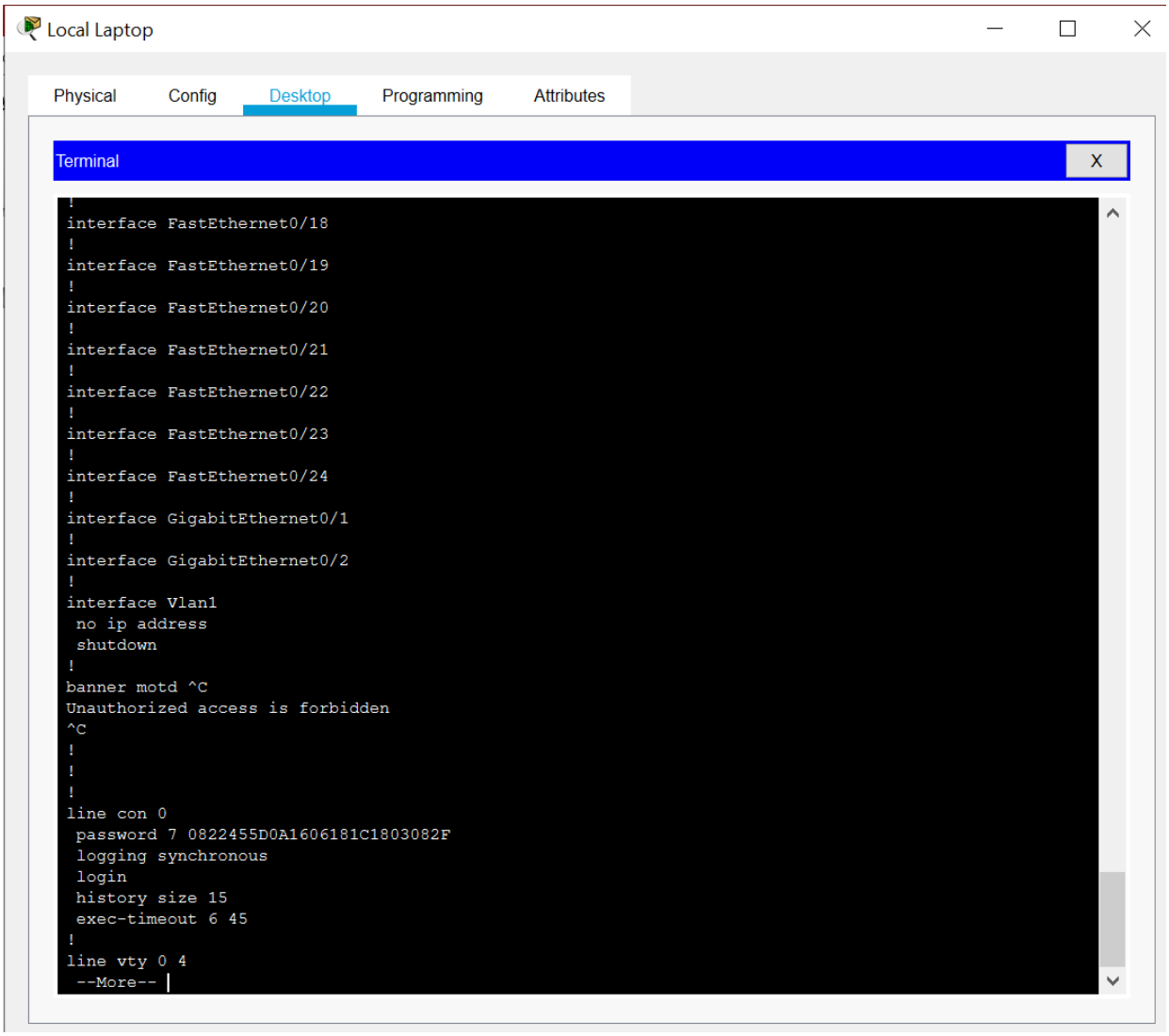


Fig 4.1.13 Line con 0 now shows the configuration

6. Configure TELNET access with the following settings :
- Login enabled
- Password : whatever you like
- History size : 15 commands
- Timeout : 8'20"
- Synchronous logging

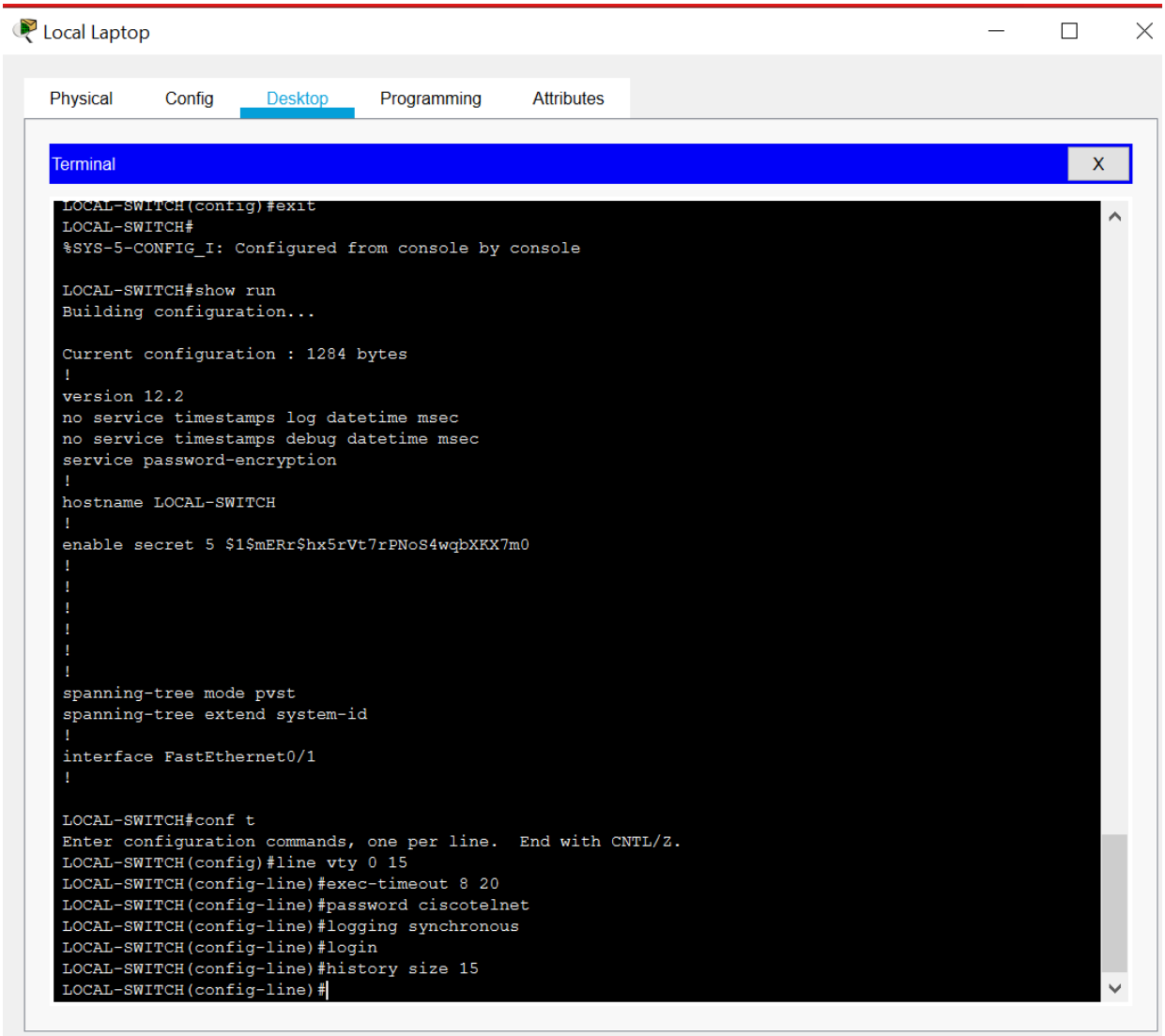
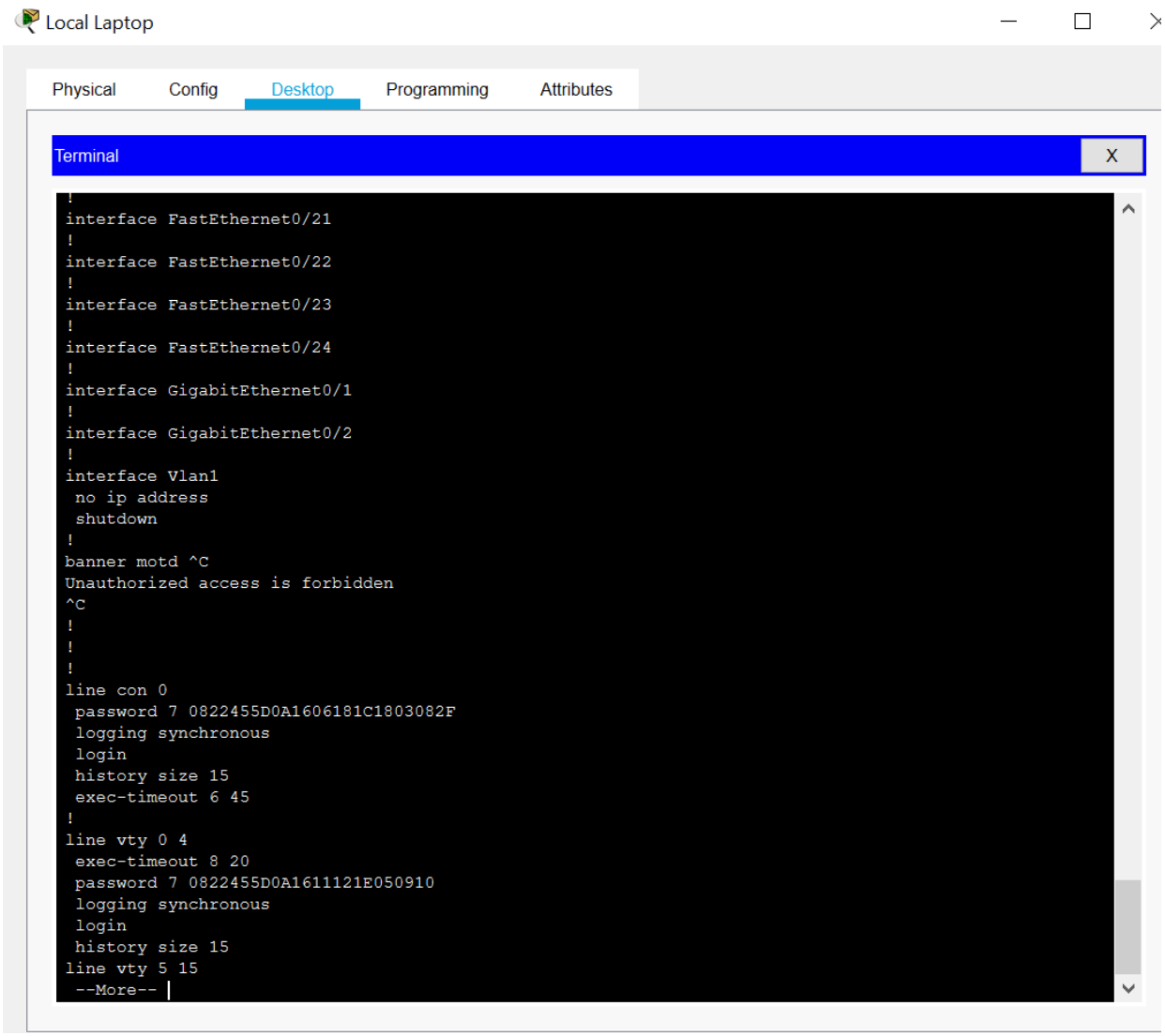


Fig 4.1.14 Shows to configure Telnet access with following settings- Login enabled, Password : whatever you like, History size : 15 commands, Timeout : 8'20'',Synchronous logging


Local Laptop
Physical
Config
Desktop
Programming
Attributes
Terminal
X
!
interface FastEthernet0/21
!
interface FastEthernet0/22
!
interface FastEthernet0/23
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 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
 exec-timeout 8 20
 password 7 0822455D0A1611121E050910
 logging synchronous
 login
 history size 15
line vty 5 15
 --More--

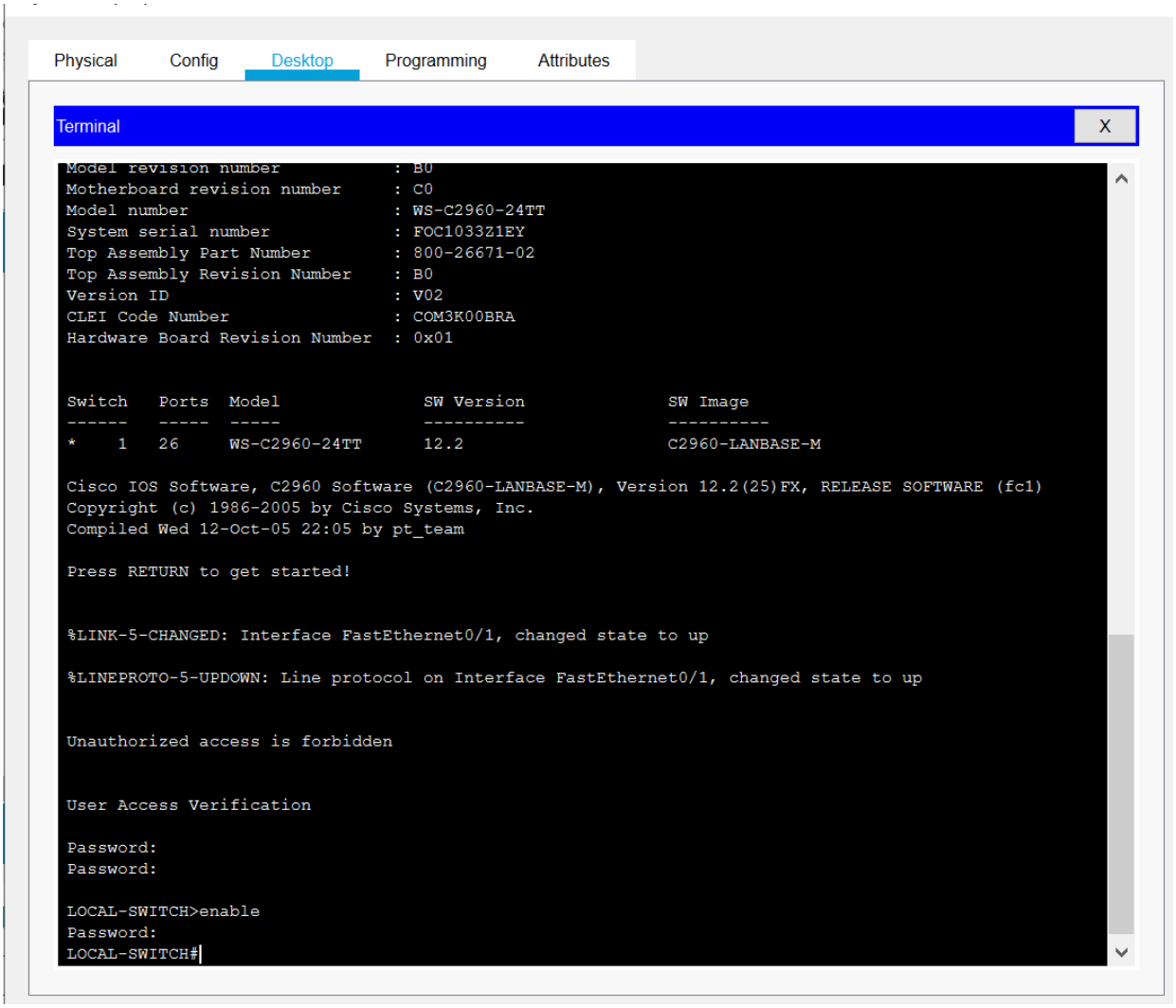


Fig 4.1.15 Shows that the terminal asks for password while entering the console as well as the privilege exec mode

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

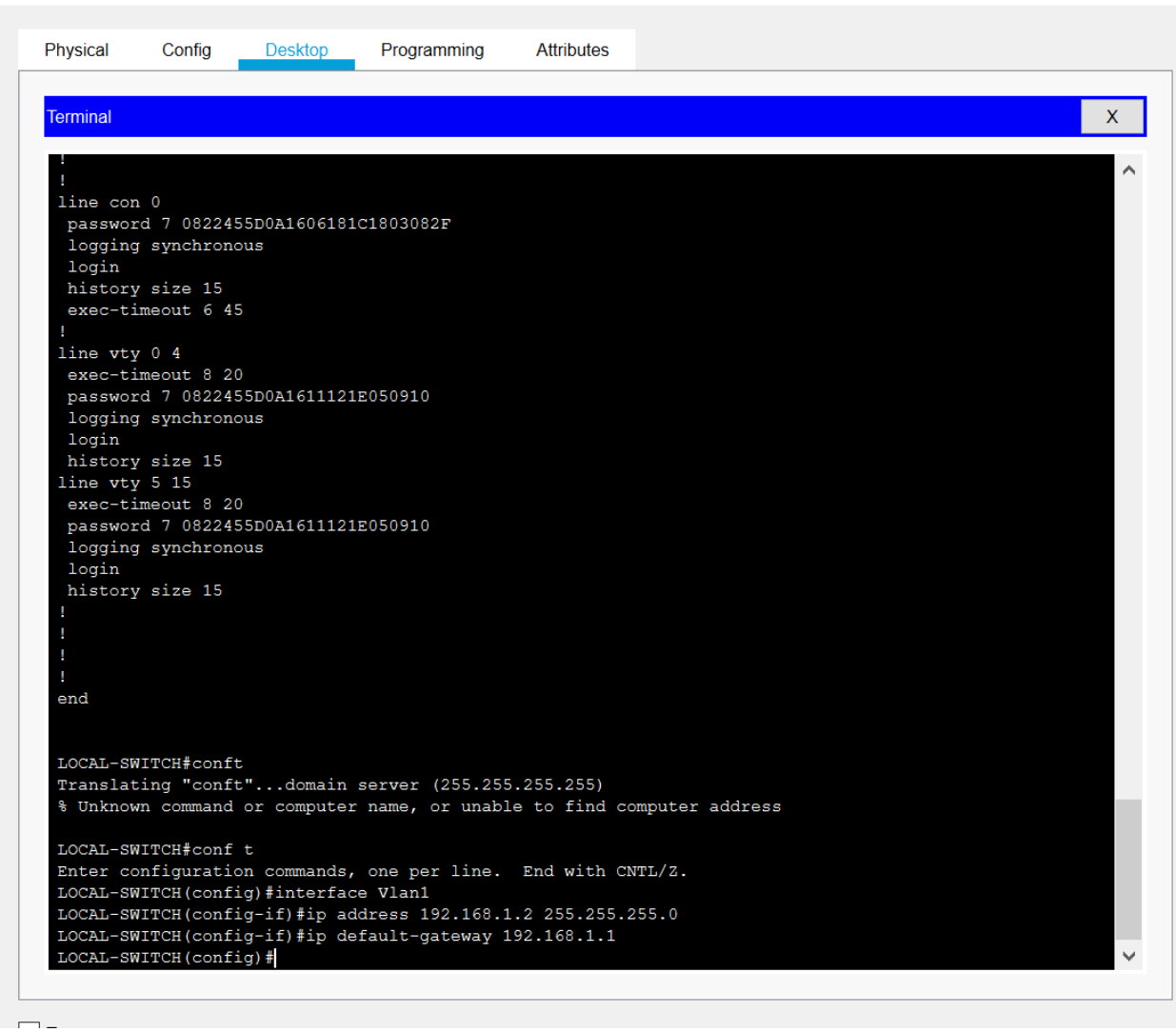
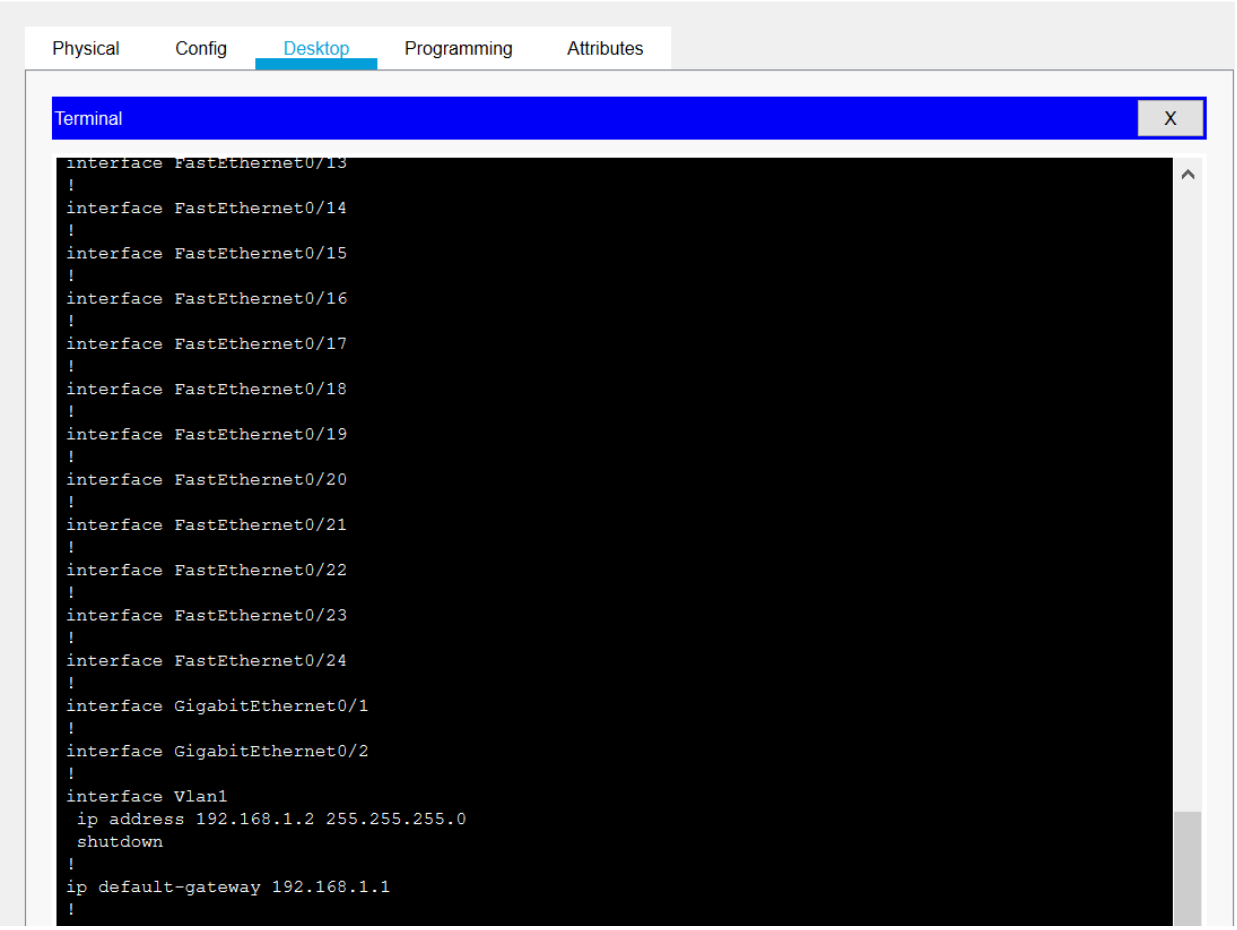


Fig 4.1.16 Shows the terminal to configure the IP address of the switch as 192.168.1.2/24 and it's default gateway IP (192.168.1.1).



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

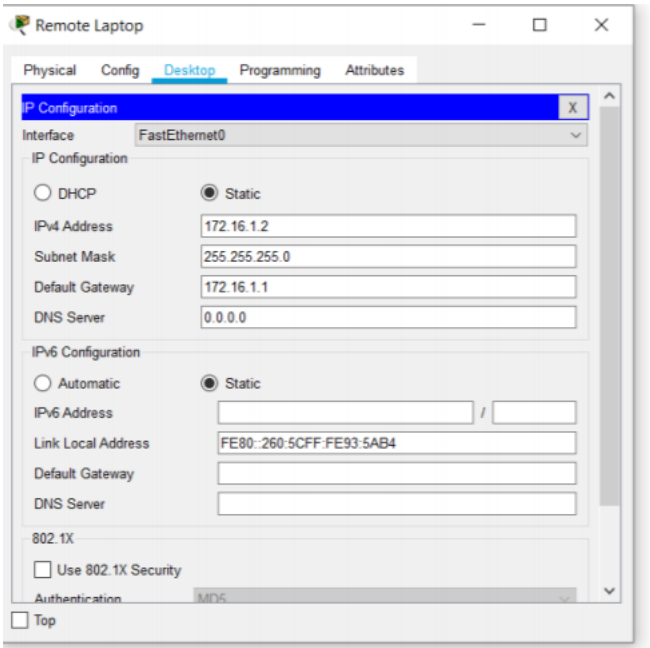


Fig 4.1.17 Shows configuration of Remote Laptop

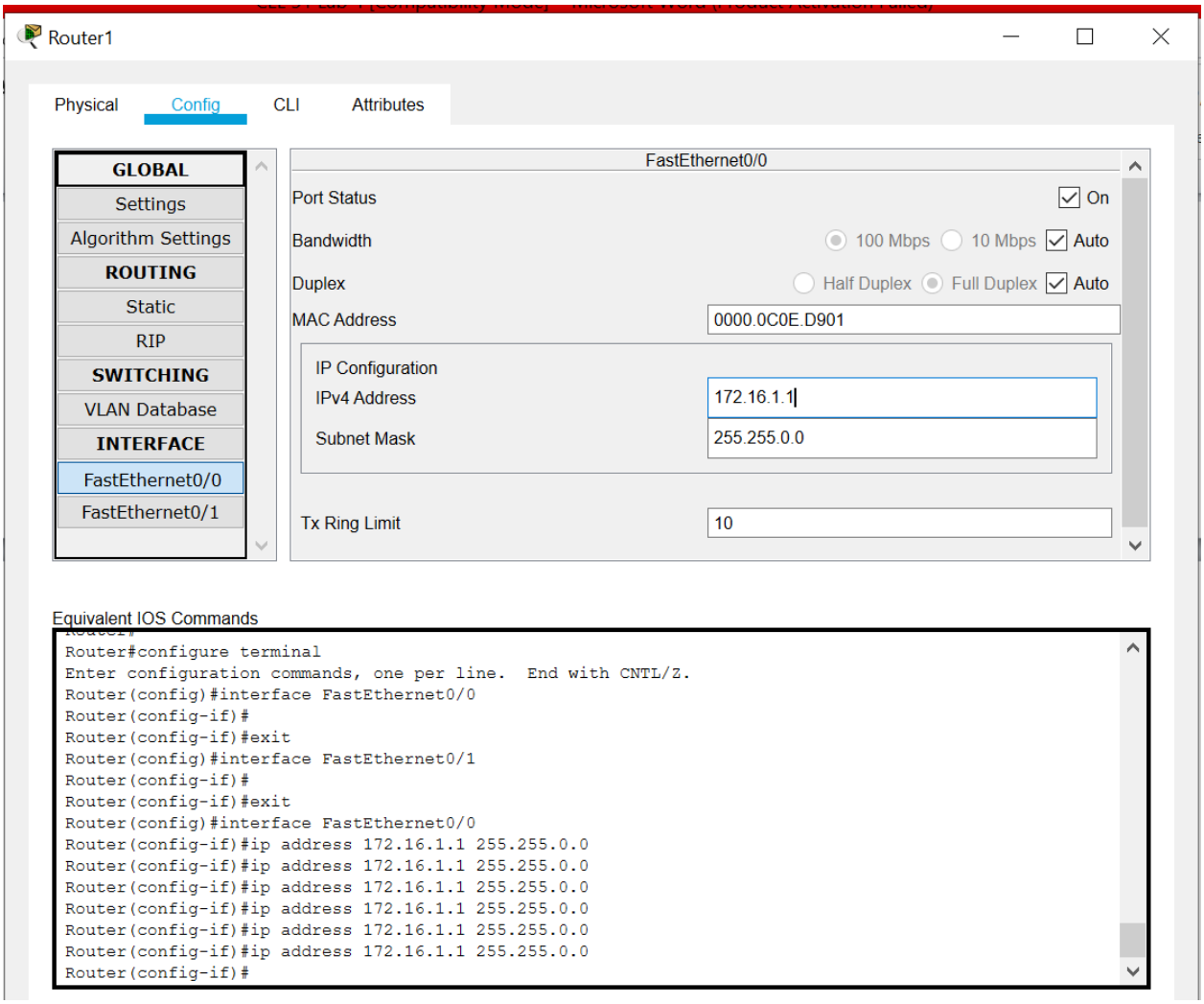


Fig 4.1.18 Shows Configuration of Router

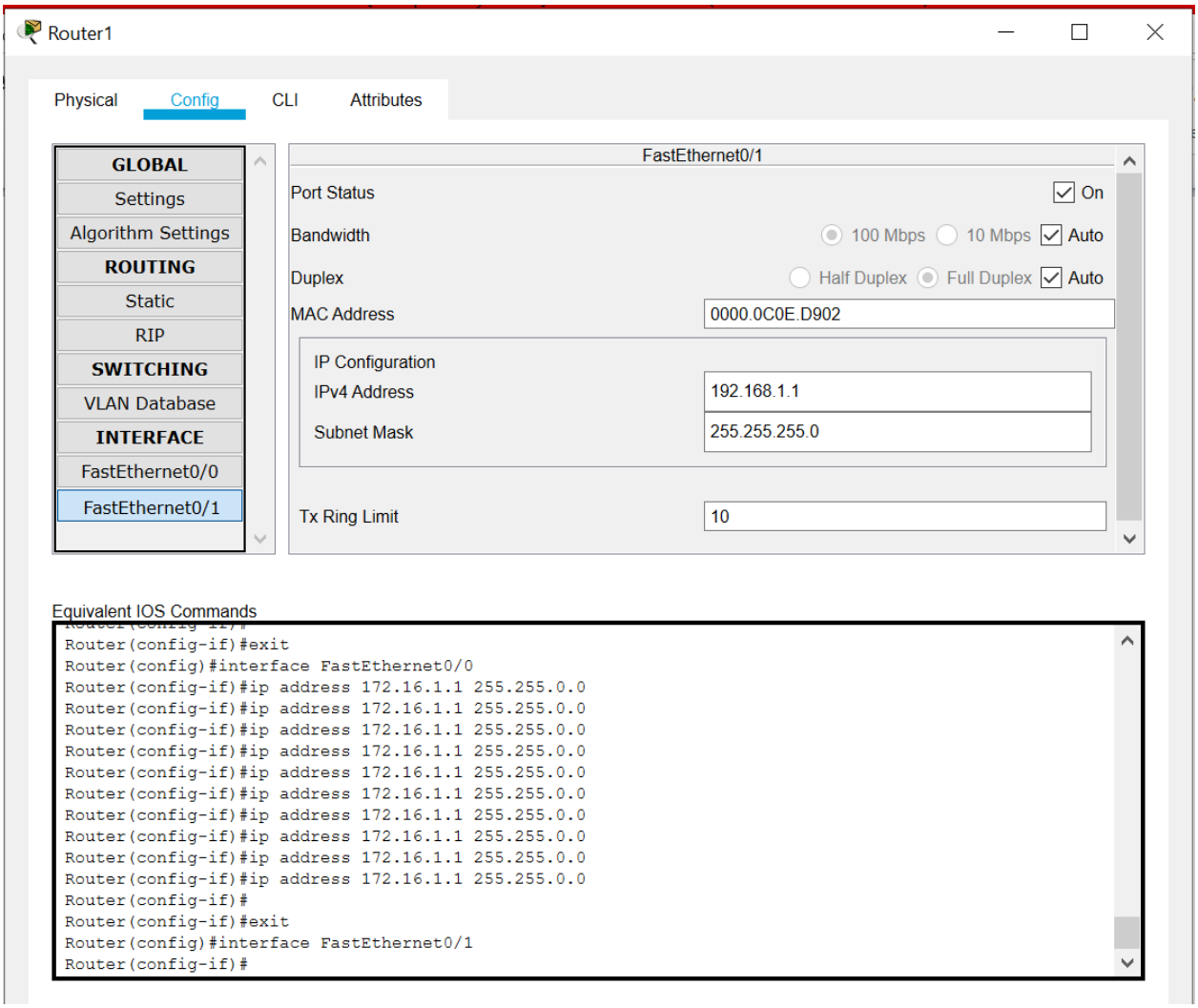


Fig 4.1.19 Shows Configuration of Router

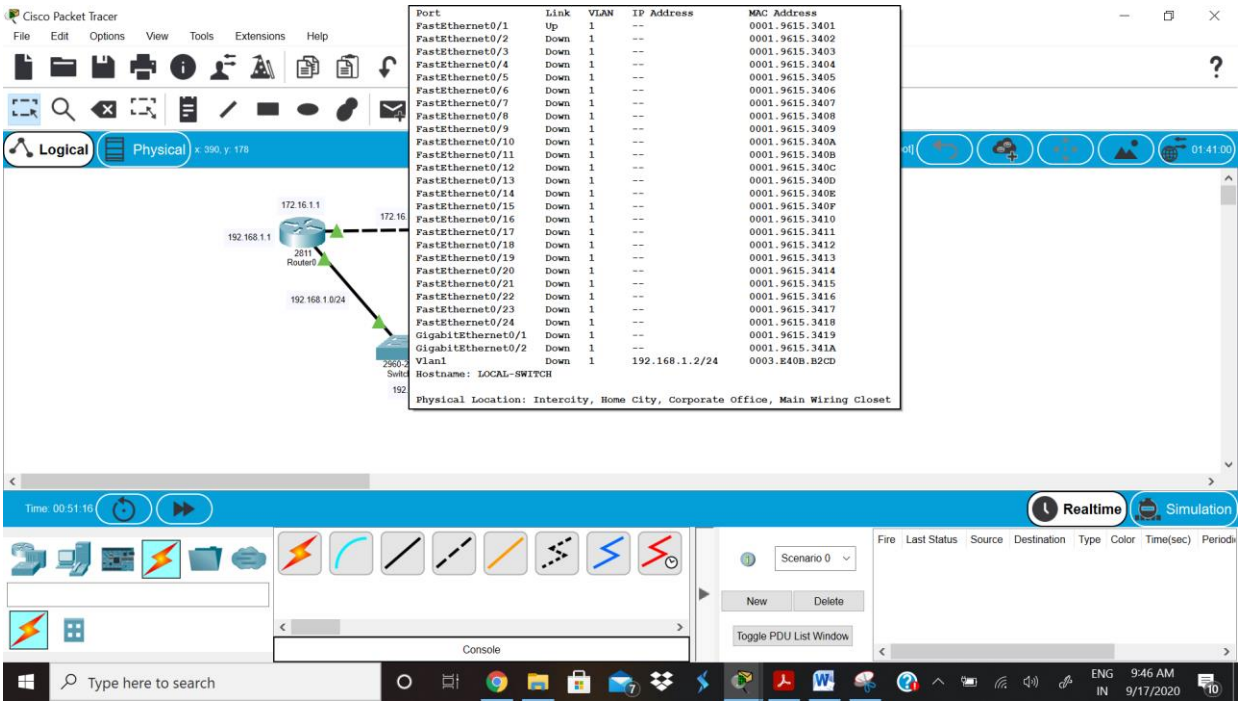


Fig 4.1.20 Shows Configuration of Switch

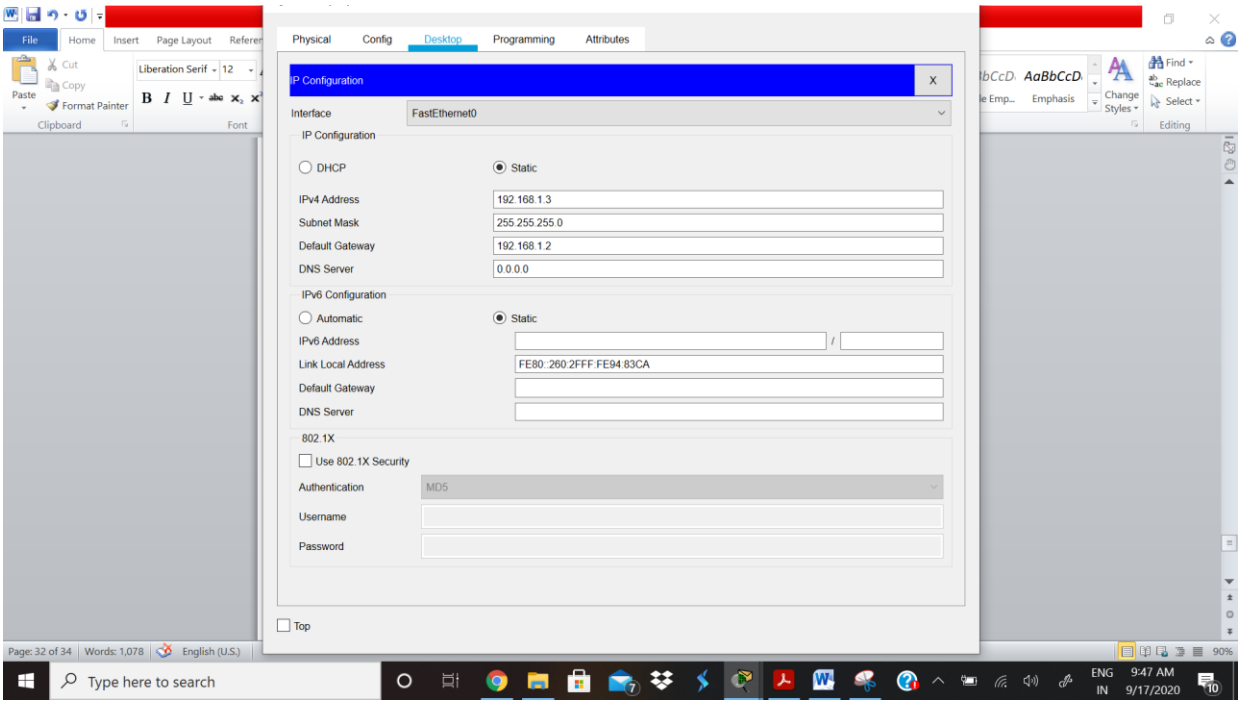


Fig 4.1.21 Shows Configuration of Local Laptop

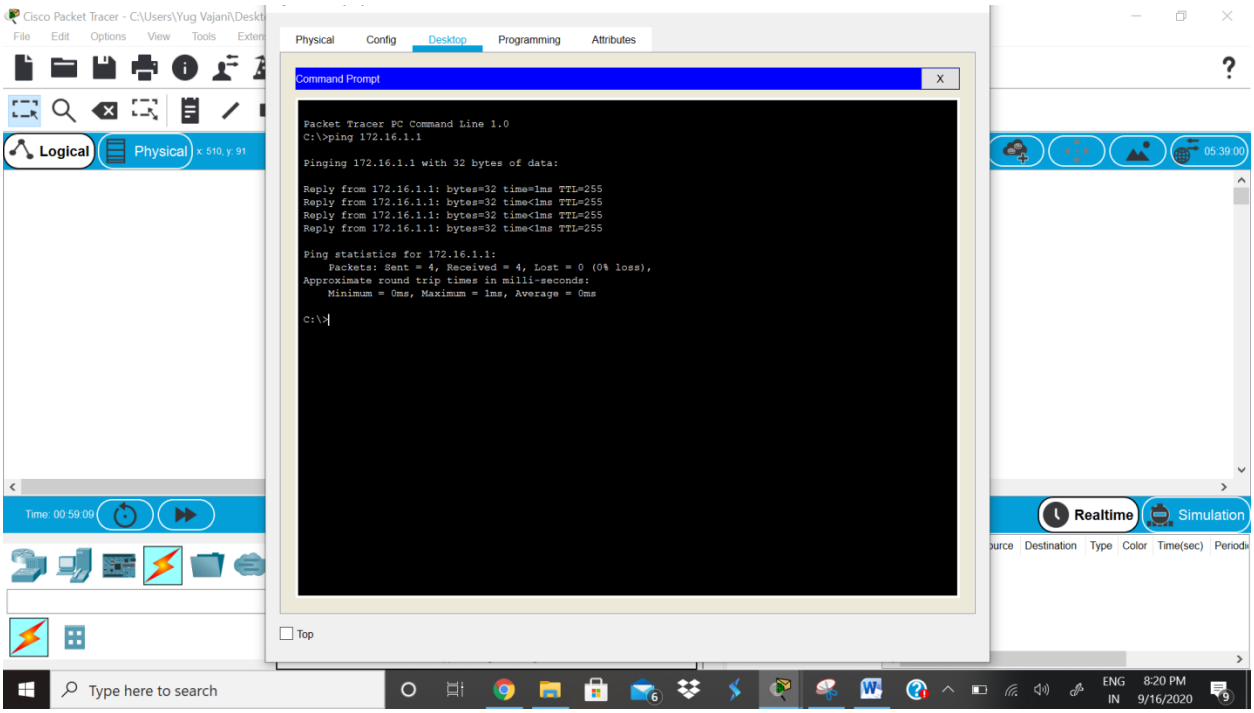


Fig 4.1.22 Shows Pinging Router from Remote Laptop

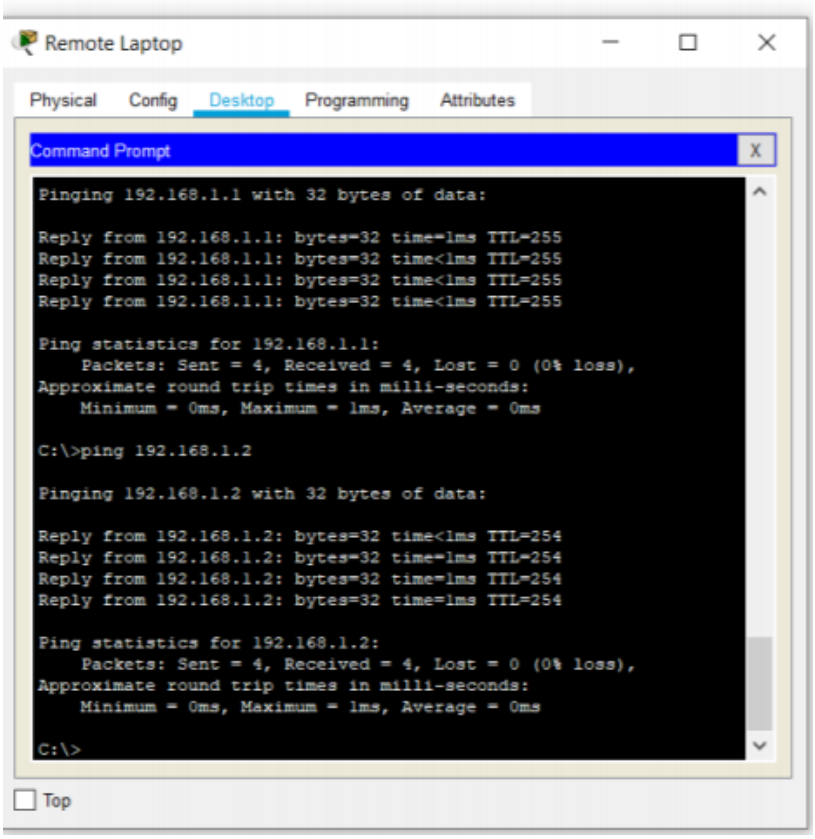


Fig 4.1.23 Shows Pinging Switch from Remote Laptop

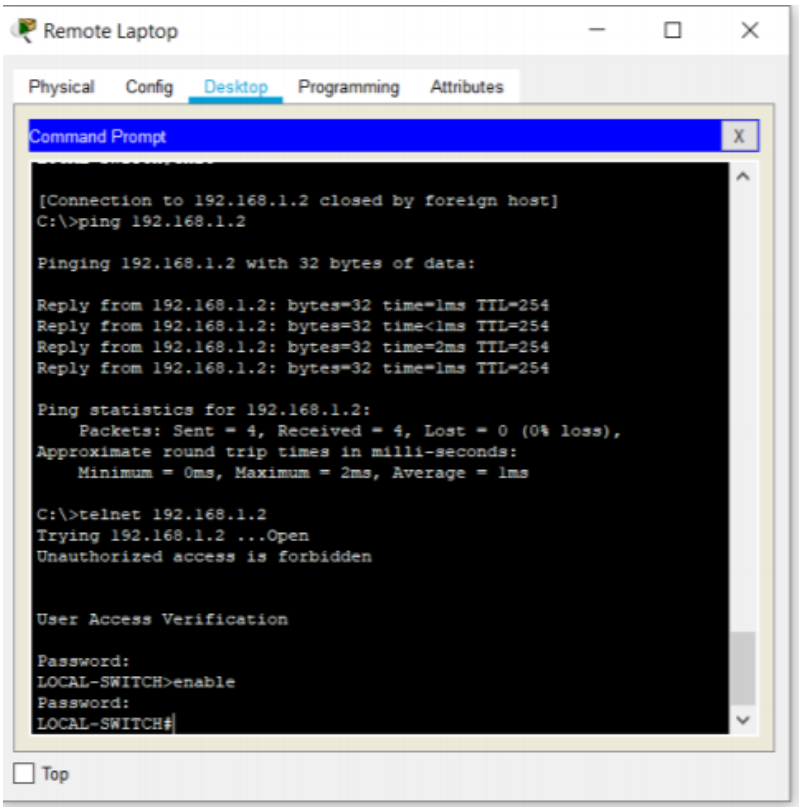
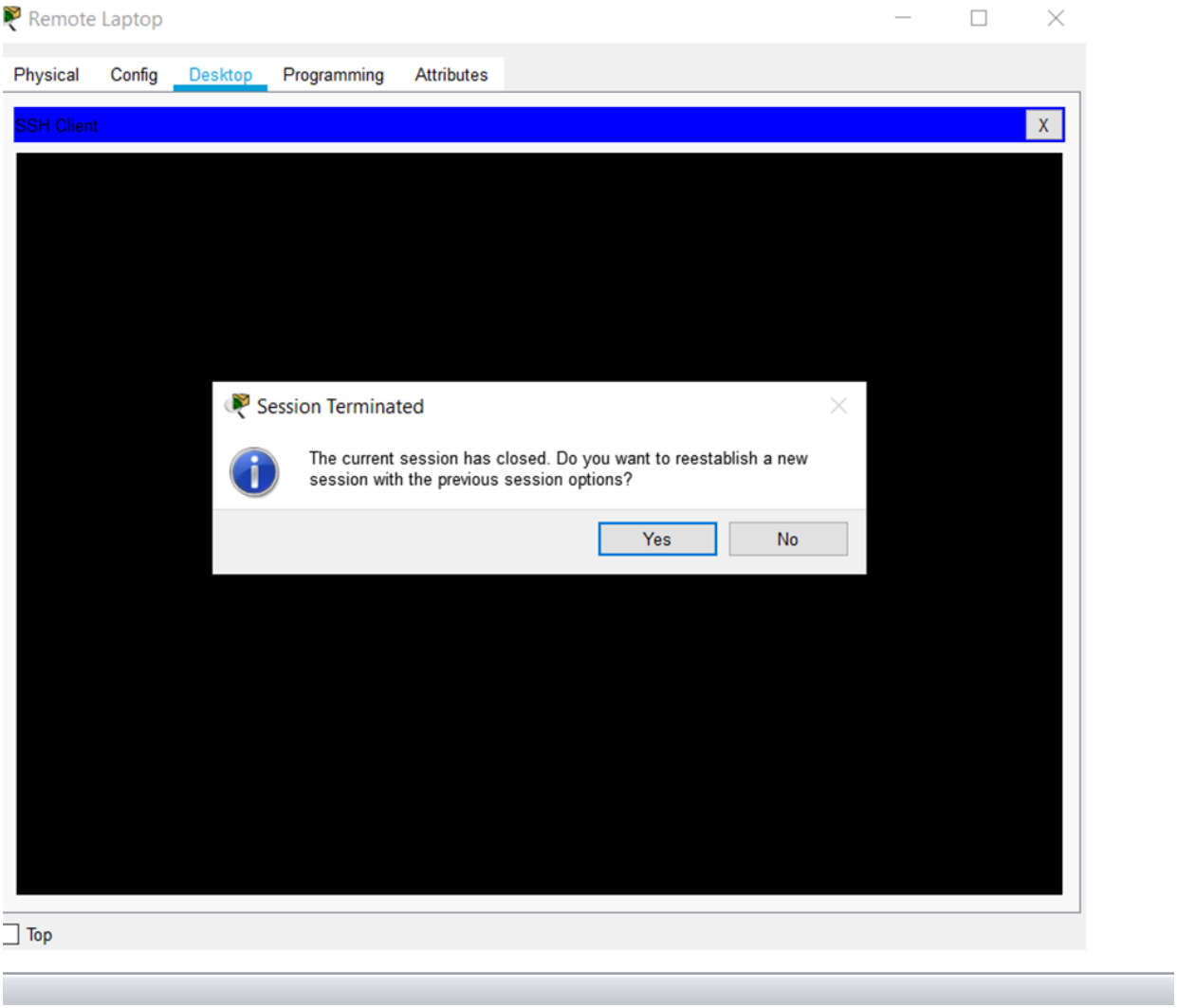


Fig 4.1.24 Telnet Switch from Remote Laptop after entering the password for telnet and enabling switch from Remote Laptop



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