Batch: A2	Roll No.: 16010121045
Experiment / assignment / tutorial No 7	
Grade: AA / AB / BB / BC / CC / CD /DD	
Signature of the Staff In-charge with date	

Experiment No.:7

TITLE: Study Cisco Switch Router Configuration Command using Cisco packet tracer

AIM: To study basic Cisco Switch & Router configuration Commands and configure

i. Virtual LAN (VLAN).

ii. Static Routing

Expected Outcome of Experiment:

CO:

Books/ Journals/ Websites referred:

1. S. Tanenbaum, “Computer Networks”, Pearson Education, Fourth Edition
2. Forouzan, “Data Communications and Networking”, TMH, Fourth Edition

Pre Lab/ Prior Concepts: Basics of Routing and Cisco Packet Tracer

New Concepts to be learned: Different Modes of Operation of Cisco router

Cisco IOS Modes of Operation:

- The Cisco IOS software provides access to several different command modes. Each command mode provides a different group of related commands.
- For security purposes, the Cisco IOS software provides two levels of access to commands:
  - User mode
  - Privileged mode
- The unprivileged user mode is called user EXEC mode. The privileged mode is called privileged EXEC mode and requires a password. The commands available in user EXEC mode are a subset of the commands available in privileged EXEC mode.
- The following table describes some of the most commonly used modes, how to enter the modes, and the resulting prompts. The prompt helps you identify which mode you are in and, therefore, which commands are available to you

Modes of Operation	Usage	How to enter the mode	Prompt
User EXEC	Change terminal settings on a temporary basis, perform basic tests, and list system information.	First level accessed.	Router>
Privileged EXEC	System administration, set operating parameters.	From user EXEC mode, enter enable password command	Router#
Global Config	Modify configuration that affect the system as a whole.	From privileged EXEC, enter configure terminal.	Router(config)#
Interface Config	Modify the operation of an interface.	From global mode, enter interface type number.	Router(config-if)#
Setup	Create the initial configuration.	From privileged EXEC mode, enter command setup.	Prompted dialog

User EXEC Mode:

When you are connected to the router, you are started in user EXEC mode. The user EXEC commands are a subset of the privileged EXEC commands.

Privileged EXEC Mode:

Privileged commands include the following:

- Configure – Changes the software configuration.
- Debug – Display process and hardware event messages.
- Setup – Enter configuration information at the prompts.

Enter the command disable to exit from the privileged EXEC mode and return to user EXEC mode.

Configuration Mode:

Configuration mode has a set of sub-modes that you use for modifying interface settings, routing protocol settings, line settings, and so forth. Use caution with configuration mode because all changes you enter take effect immediately.

To enter configuration mode, enter the command configure terminal and exit by pressing Ctrl-Z.

Note: Almost every configuration command also has a no form. In general, use the no form to disable a feature or function. Use the command without the keyword no to re-enable a disabled feature or to enable a feature that is disabled by default. For example, IP routing is enabled by default. To disable IP routing, enter the no IP routing command and enter IP routing to re-enable it.

i. Virtual LAN (VLAN):

A virtual local area network (VLAN) is a LAN which is not configured by physical wiring but it is configured by software. A VLAN is logical group of network devices that appear to be on same LAN despite their geographical distribution. A VLAN is implemented so that network administrators can connect a group of host in the same domain inspite of their physical location to achieve scalability and improve security features.

To subdivide a network into virtual LANs, one configures a network switch or router. Simpler network devices can partition only per physical port (if at all) , in which case each VLAN is connected with a dedicated network cable (and VLAN connectivity is limited by the number of hardware ports available) More sophisticated devices can mark packets through tagging, so that a single interconnect (trunk) may be used to transport data for multiple VLANs. VLAN can greatly simplify network design and deployment, because VLAN membership can be configured through software.

Stepwise-Procedure:

A. Creating a simple LAN network using packet tracer:

Step 1: Select 12 PCs from the end devices and one fast ethernet switch (2950/24 ports)

Step 2: Connect PCs and switch via copper cable from the panel. Connection can be verified by appearance of all green dots on the links.

Step 3: For PCs to communicate click on PC0.

- Dialog box for PC0 appears.
- Click on desktop applications by packet tracer.
- Go to IP configuration.
- Enter IP address to identify host i.e., PC0 (for example: 192.168.1.1)
- Subnet mask-by default already set one can change it as per his/her specification.

Step 4: Repeat step 3 for PC1

Step 5: Ping the PCs and check their working status.

Step 6: Simple PDU (Protocol Data Unit) to simulate network traffic by sending ICMP PDU to assess the network traffic. View simulation in simulation mode

Step 7: Configure two VLAN in a switch in 6 verticals.

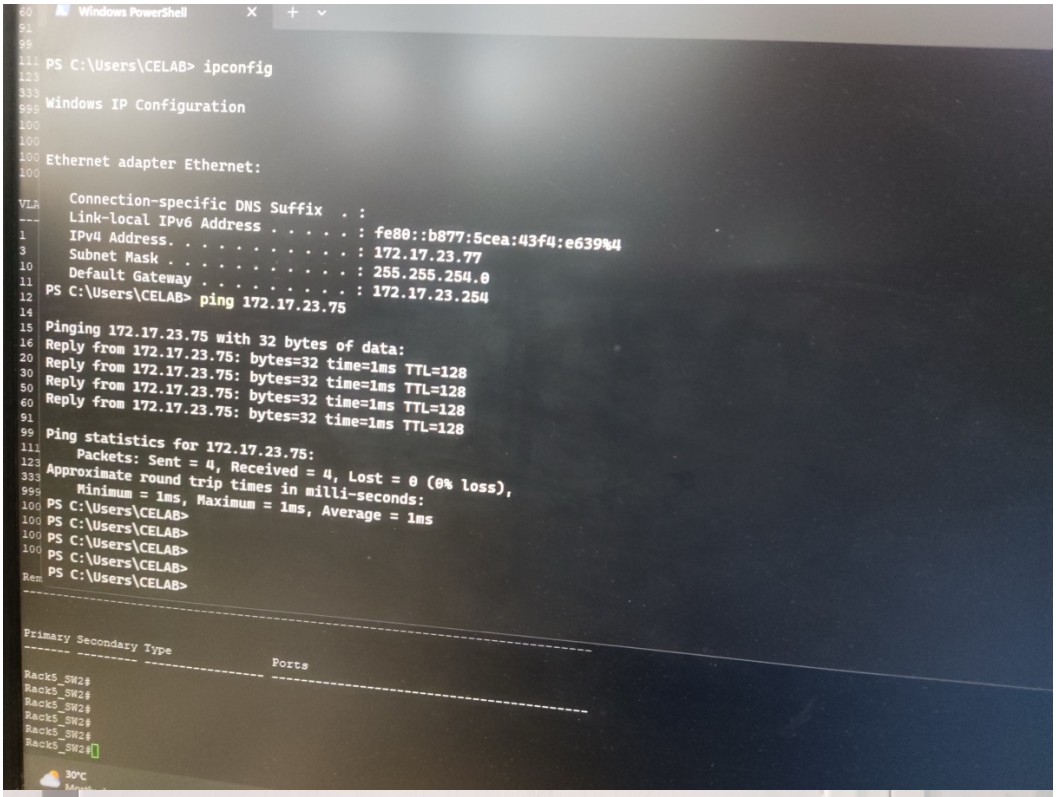
Step 8: As per design, assign membership of VLAN to port using following command.

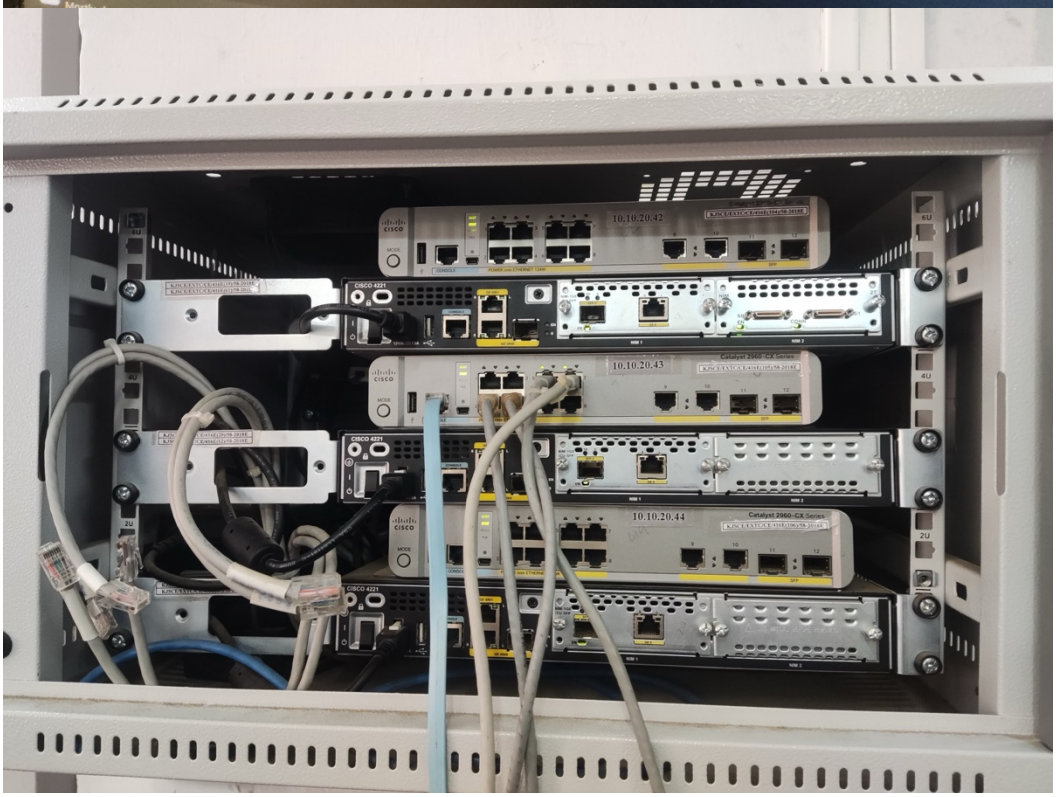
```
# switch port access vlan2 or vlan3
```

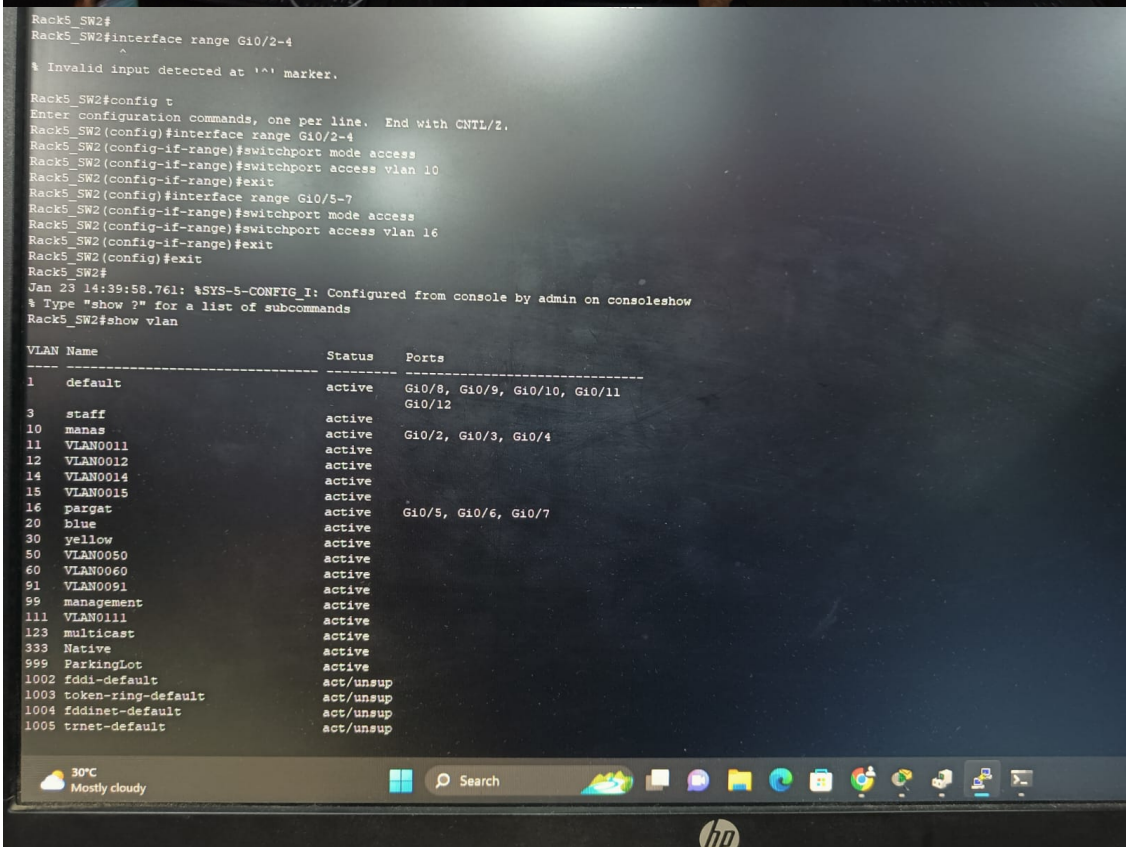
Step 9: Check the status of VLAN.

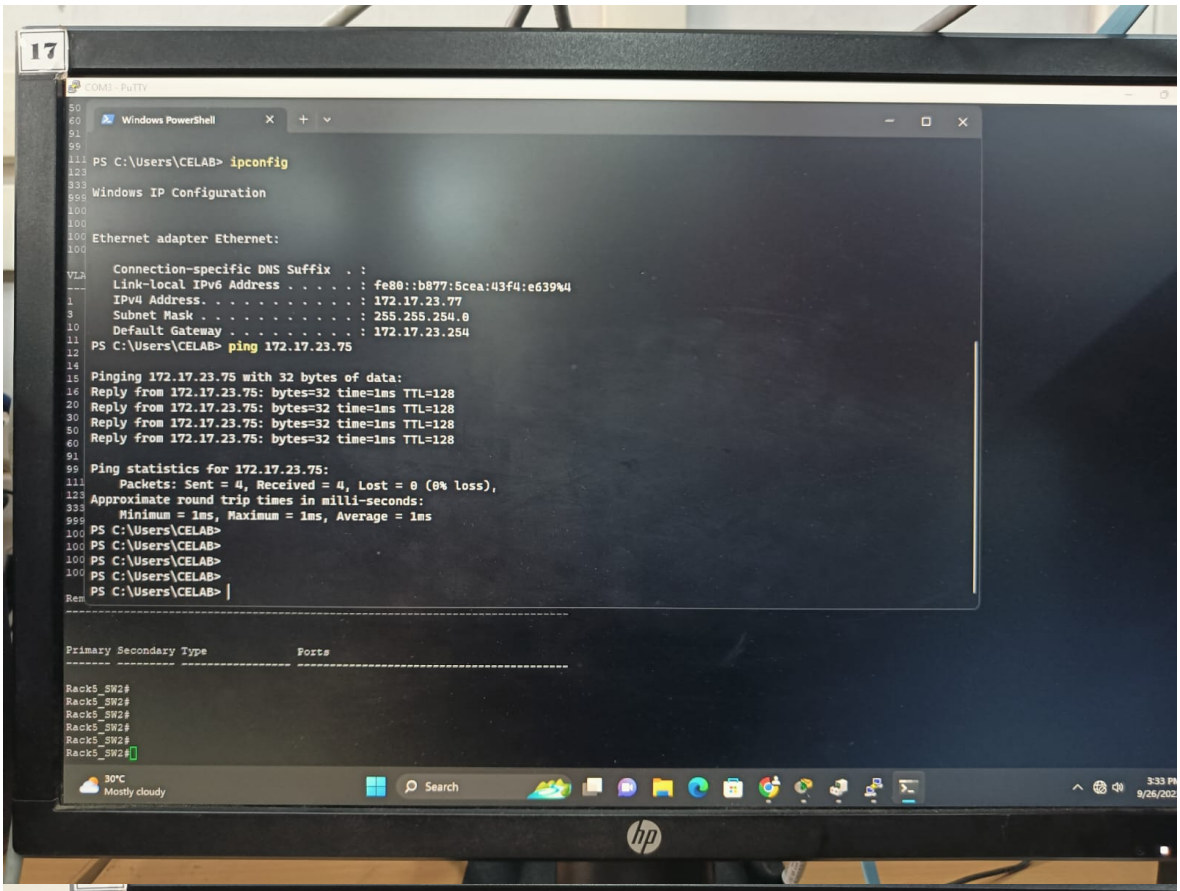
ii. Static Routing Configuration

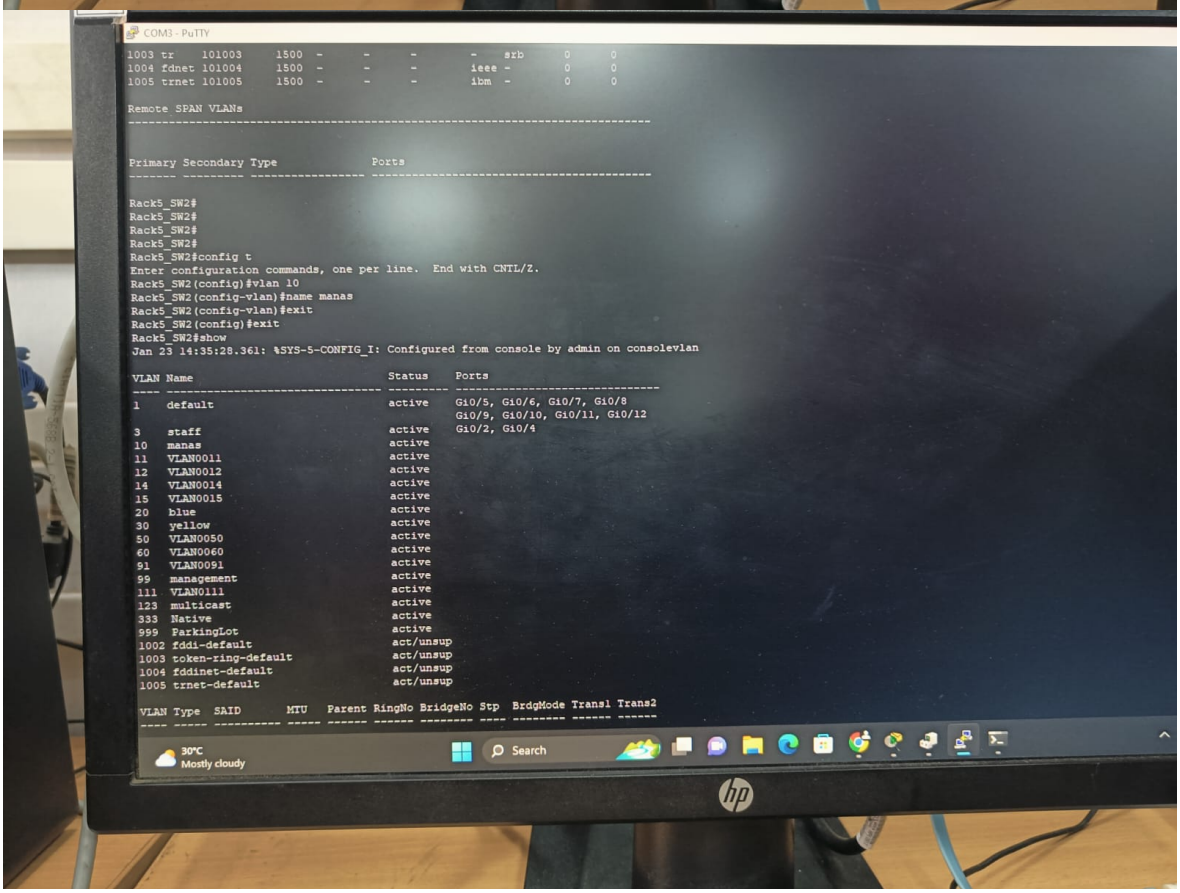
IMPLEMENTATION: (printout of code)

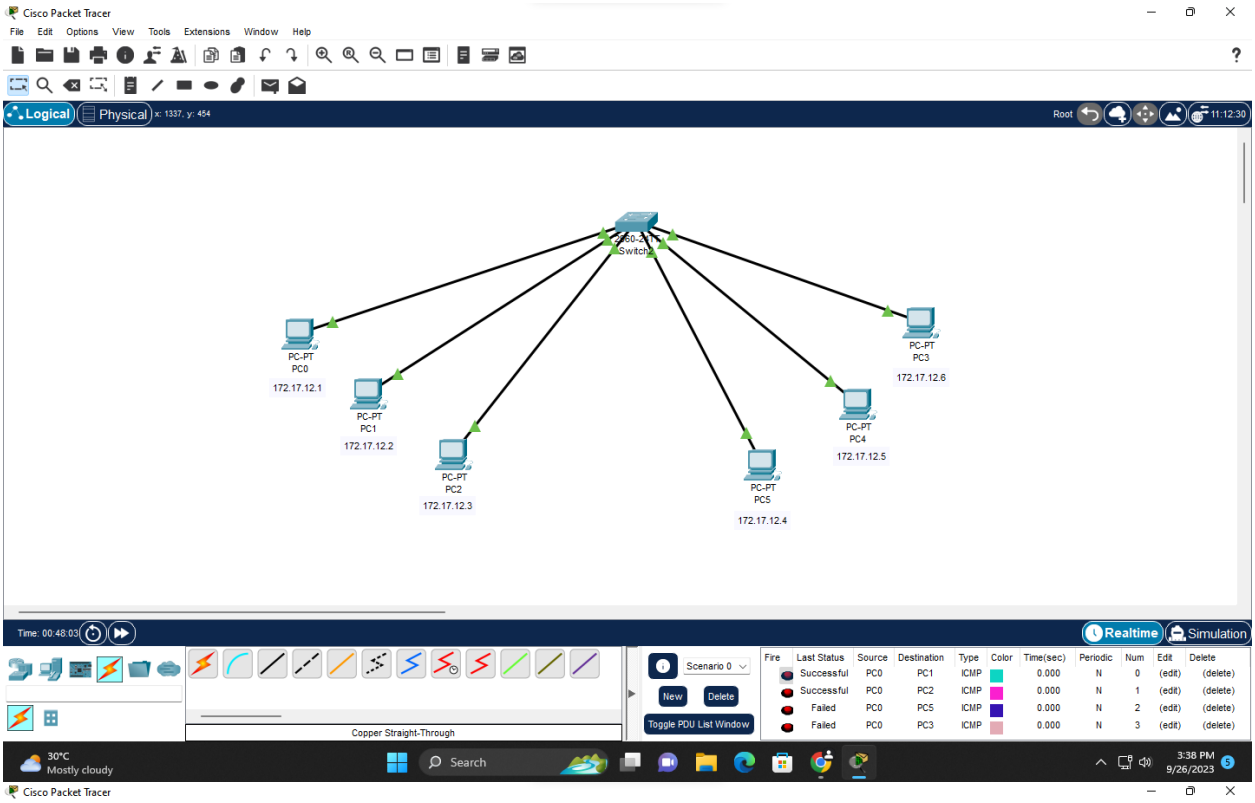


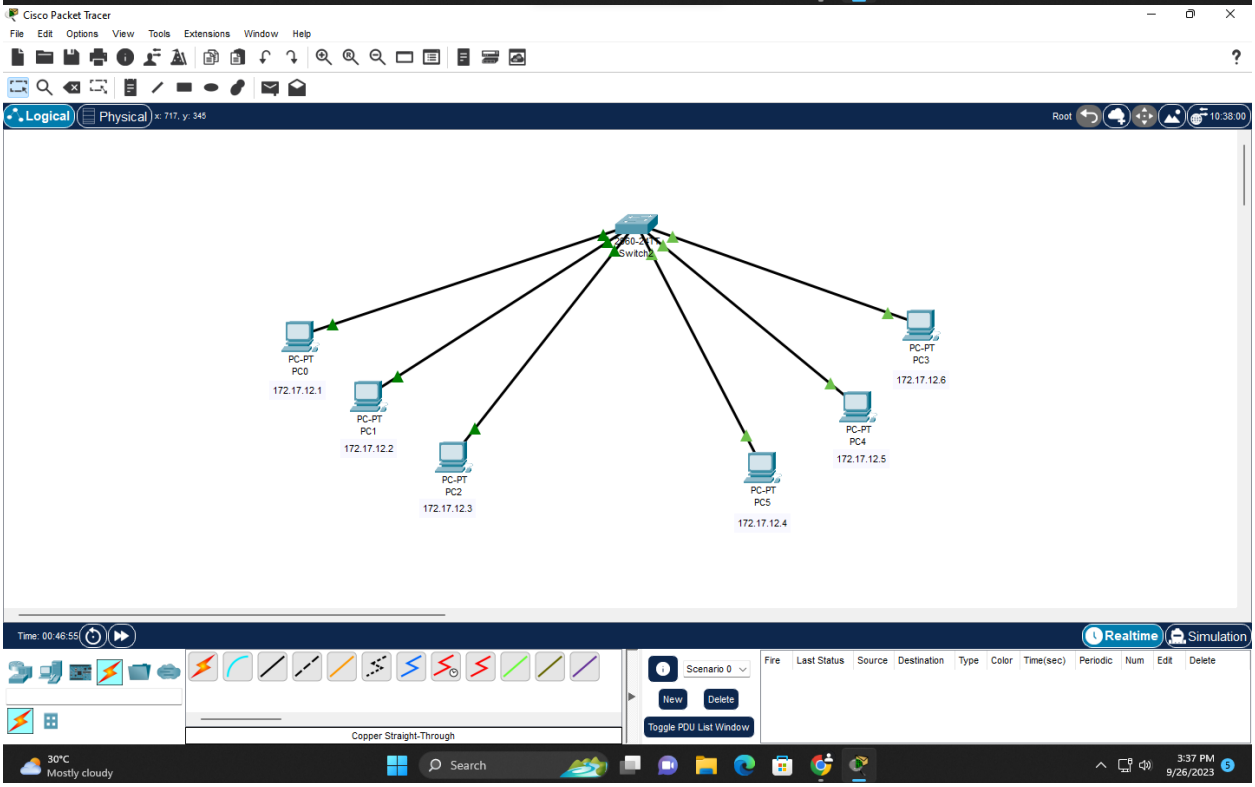


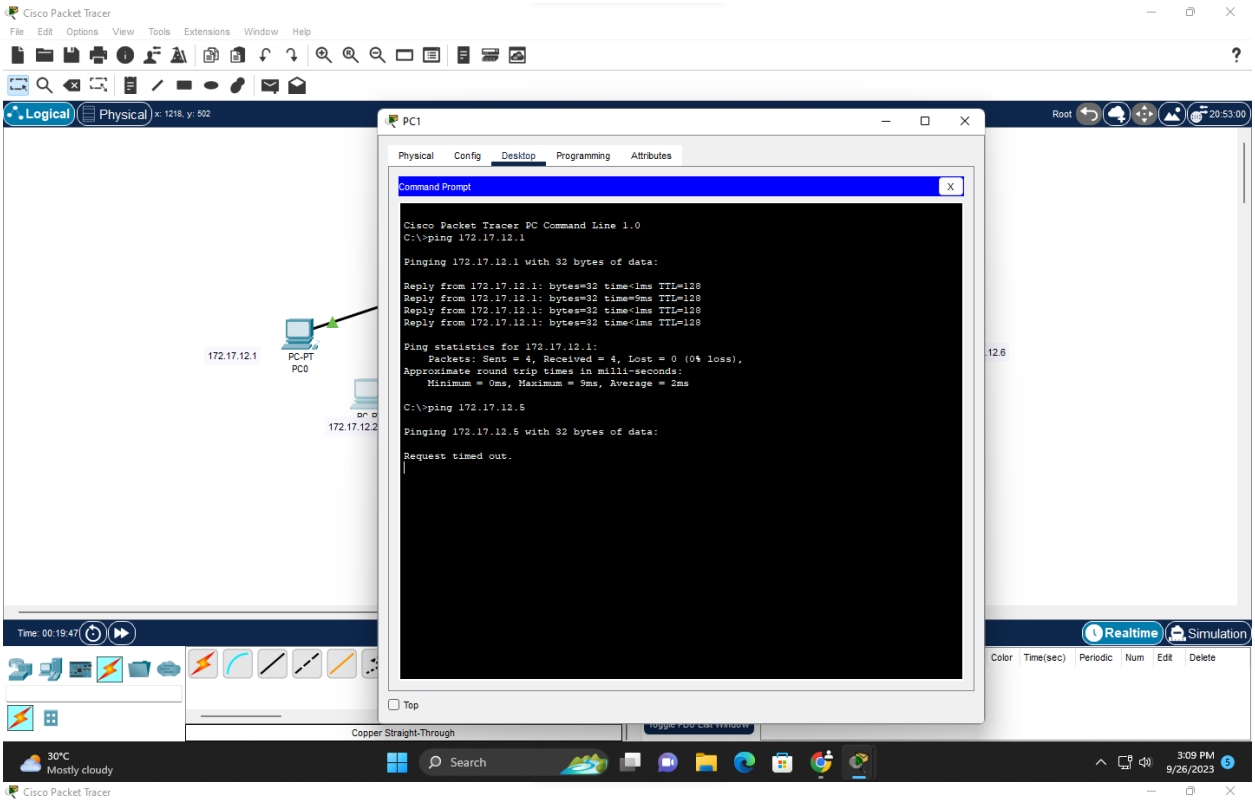

Rack5_SW2#
Rack5_SW2#interface range Gi0/2-4
^
% Invalid input detected at '^' marker.
Rack5_SW2#config t
Enter configuration commands, one per line. End with CNTL/Z.
Rack5_SW2(config)#interface range Gi0/2-4
Rack5_SW2(config-if-range)#switchport mode access
Rack5_SW2(config-if-range)#switchport access vlan 10
Rack5_SW2(config-if-range)#exit
Rack5_SW2(config)#interface range Gi0/5-7
Rack5_SW2(config-if-range)#switchport mode access
Rack5_SW2(config-if-range)#switchport access vlan 16
Rack5_SW2(config-if-range)#exit
Rack5_SW2(config)#exit
Rack5_SW2#
Jan 23 14:39:58.761: %SYS-5-CONFIG_I: Configured from console by admin on consoleshow
% Type "show ?" for a list of subcommands
Rack5_SW2#show vlan
VLAN Name Status Ports
1 default active Gi0/8, Gi0/9, Gi0/10, Gi0/11
Gi0/12
3 staff active
10 manas active Gi0/2, Gi0/3, Gi0/4
11 VLAN0011 active
12 VLAN0012 active
14 VLAN0014 active
15 VLAN0015 active
16 pargat active Gi0/5, Gi0/6, Gi0/7
20 blue active
30 yellow active
50 VLAN0050 active
60 VLAN0060 active
91 VLAN0091 active
99 management active
111 VLAN0111 active
123 multicast active
333 Native active
999 ParkingLot active
1002 fddi-default act/unsup
1003 token-ring-default act/unsup
1004 fddinet-default act/unsup
1005 trnet-default act/unsup
30°C
Mostly cloudy
Search

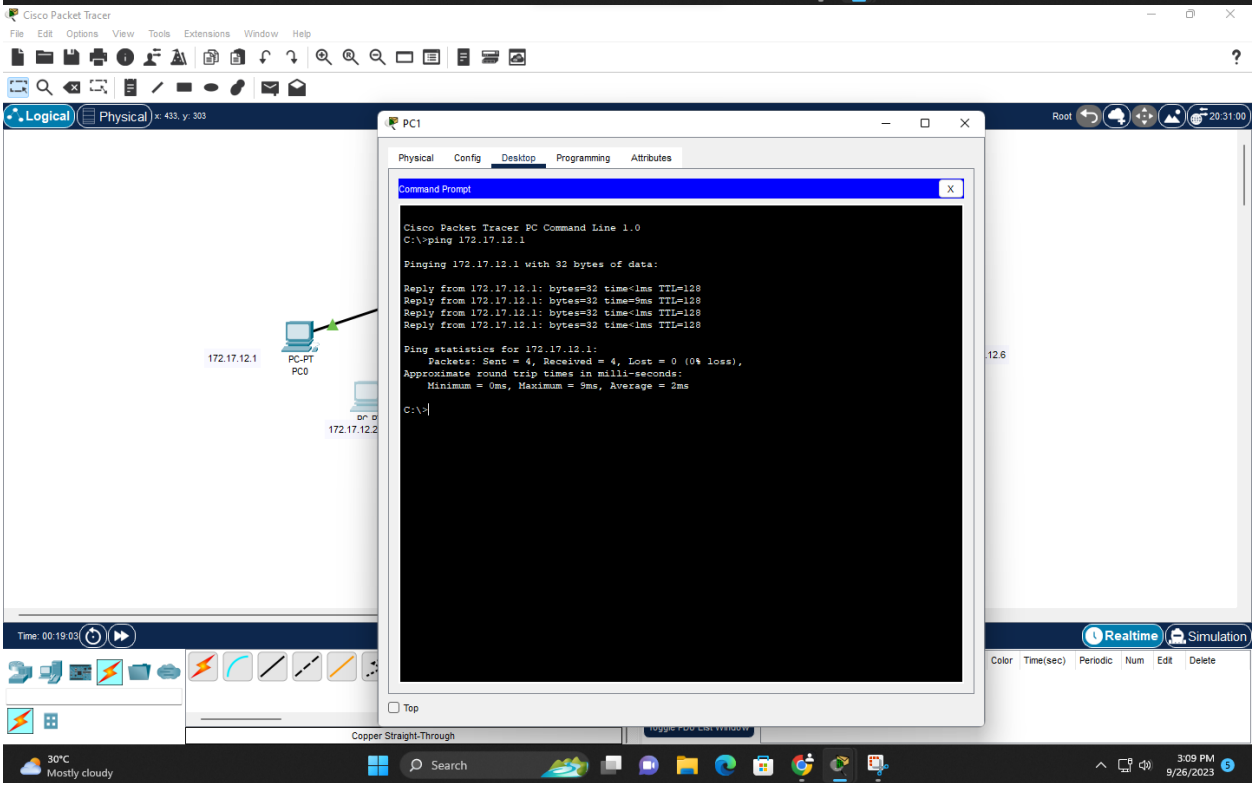

17
Windows PowerShell
PS C:\Users\CELAB> ipconfig
Windows IP Configuration
Ethernet adapter Ethernet:
Connection-specific DNS Suffix . :
Link-local IPv6 Address . . . . . : fe80::b877:5cea:43f4:e639%4
IPv4 Address. . . . . : 172.17.23.77
Subnet Mask . . . . . : 255.255.254.0
Default Gateway . . . . . : 172.17.23.254
PS C:\Users\CELAB> ping 172.17.23.75
Pinging 172.17.23.75 with 32 bytes of data:
Reply from 172.17.23.75: bytes=32 time=1ms TTL=128
Reply from 172.17.23.75: bytes=32 time=1ms TTL=128
Reply from 172.17.23.75: bytes=32 time=1ms TTL=128
Reply from 172.17.23.75: bytes=32 time=1ms TTL=128
Ping statistics for 172.17.23.75:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 1ms, Average = 1ms
PS C:\Users\CELAB>
PS C:\Users\CELAB>
PS C:\Users\CELAB>
PS C:\Users\CELAB>
PS C:\Users\CELAB>
Primary Secondary Type Ports
Rack5_SW2#
Rack5_SW2#
Rack5_SW2#
Rack5_SW2#
Rack5_SW2#
Rack5_SW2#
30°C
Mostly cloudy
Search

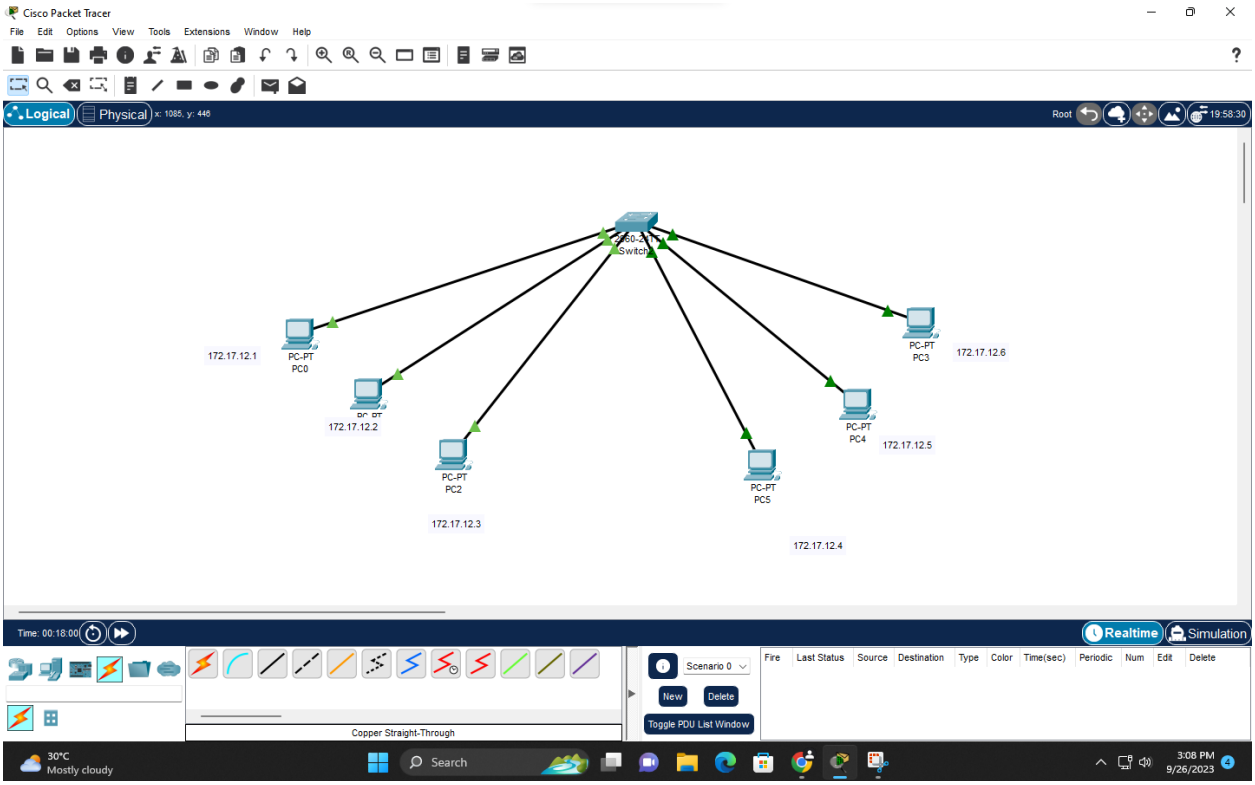

COM3 - PuTTY
1003 tr 101003 1500 - - - - srb 0 0
1004 fdnet 101004 1500 - - - ieee - 0 0
1005 trnet 101005 1500 - - - ibm - 0 0
Remote SPAN VLANs
Primary Secondary Type Ports
Rack5_SW2#
Rack5_SW2#
Rack5_SW2#
Rack5_SW2#
Rack5_SW2#config t
Enter configuration commands, one per line. End with CNTL/Z.
Rack5_SW2(config)#vlan 10
Rack5_SW2(config-vlan)#name manas
Rack5_SW2(config-vlan)#exit
Rack5_SW2(config)#exit
Rack5_SW2#show
Jan 23 14:35:28.361: %SYS-5-CONFIG_I: Configured from console by admin on consolevlan
VLAN Name Status Ports
1 default active Gi0/5, Gi0/6, Gi0/7, Gi0/8
Gi0/9, Gi0/10, Gi0/11, Gi0/12
3 staff active Gi0/2, Gi0/4
10 manas active
11 VLAN0011 active
12 VLAN0012 active
14 VLAN0014 active
15 VLAN0015 active
20 blue active
30 yellow active
50 VLAN0050 active
60 VLAN0060 active
91 VLAN0091 active
99 management active
111 VLAN0111 active
123 multicast active
333 Native active
999 ParkingLot active
1002 fddi-default act/unsup
1003 token-ring-default act/unsup
1004 fddinet-default act/unsup
1005 trnet-default act/unsup
VLAN Type SAID MTU Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
30°C
Mostly cloudy
Search


Cisco Packet Tracer
File Edit Options View Tools Extensions Window Help
Logical Physical
Root
PC-PT PC0 172.17.12.1
PC-PT PC1 172.17.12.2
PC-PT PC2 172.17.12.3
PC-PT PC3 172.17.12.6
PC-PT PC4 172.17.12.5
PC-PT PC5 172.17.12.4
Realtime Simulation
Scenario 0
New Delete
Toggle PDU List Window
Copper Straight-Through
Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete
Successful PC0 PC1 ICMP 0.000 N 0 (edit) (delete)
Successful PC0 PC2 ICMP 0.000 N 1 (edit) (delete)
Failed PC0 PC5 ICMP 0.000 N 2 (edit) (delete)
Failed PC0 PC3 ICMP 0.000 N 3 (edit) (delete)
30°C Mostly cloudy
Search
3:38 PM 9/26/2023


Cisco Packet Tracer
File Edit Options View Tools Extensions Window Help
Logical Physical
Root
PC-PT PC0 172.17.12.1
PC-PT PC1 172.17.12.2
PC-PT PC2 172.17.12.3
PC-PT PC3 172.17.12.6
PC-PT PC4 172.17.12.5
PC-PT PC5 172.17.12.4
Realtime Simulation
Scenario 0
New Delete
Toggle PDU List Window
Copper Straight-Through
30°C Mostly cloudy
Search
3:37 PM 9/26/2023


Cisco Packet Tracer
PC1
Physical
Config
Desktop
Programming
Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 172.17.12.1
Pinging 172.17.12.1 with 32 bytes of data:
Reply from 172.17.12.1: bytes=32 time<1ms TTL=128
Reply from 172.17.12.1: bytes=32 time=9ms TTL=128
Reply from 172.17.12.1: bytes=32 time<1ms TTL=128
Reply from 172.17.12.1: bytes=32 time<1ms TTL=128
Ping statistics for 172.17.12.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 9ms, Average = 2ms
C:\>ping 172.17.12.5
Pinging 172.17.12.5 with 32 bytes of data:
Request timed out.
Top
Logical
Physical
Realtime
Simulation
Copper Straight-Through
Search


Cisco Packet Tracer
PC1
Physical
Config
Desktop
Programming
Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 172.17.12.1
Pinging 172.17.12.1 with 32 bytes of data:
Reply from 172.17.12.1: bytes=32 time<1ms TTL=128
Reply from 172.17.12.1: bytes=32 time=9ms TTL=128
Reply from 172.17.12.1: bytes=32 time<1ms TTL=128
Reply from 172.17.12.1: bytes=32 time<1ms TTL=128
Ping statistics for 172.17.12.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 9ms, Average = 2ms
C:\>
Top
Logical
Physical
Realtime
Simulation
Copper Straight-Through
Search



CONCLUSION:

With the help of this experiment we were able to learn, understand and implement the following details

- ✓ basic Cisco Router configuration Commands
- ✓ Implemented Static Routing using Cisco Packet Tracer

Date: _____ **Signature of faculty in-charge**