Exercise 5: IP Subnetting [Configure IP Addresses and Unique Subnets]

Objective: To IP Subnetting [Configure IP Addresses and Unique Subnets]

Components:

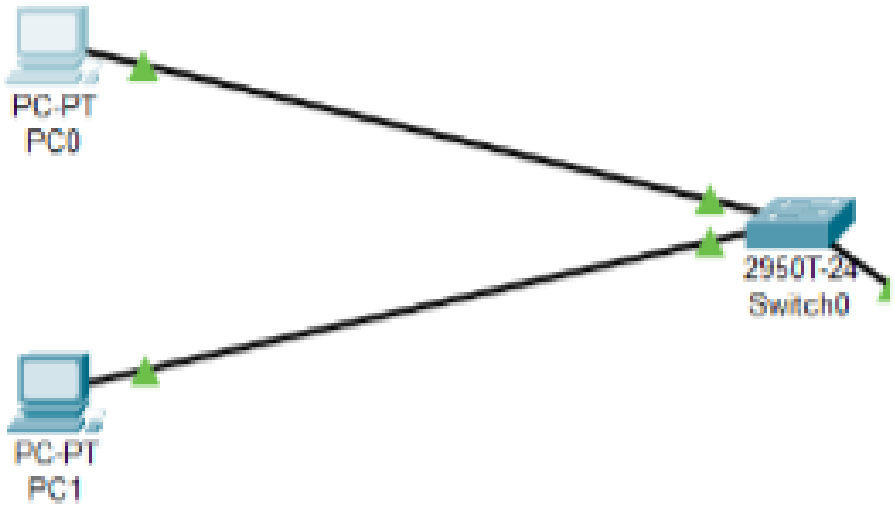
S.No.	Device	Model	Qty
1	PC	pc	6
2	Switch	PT-Switch	3
3	Router	PT-Router	3

Addressing Table:

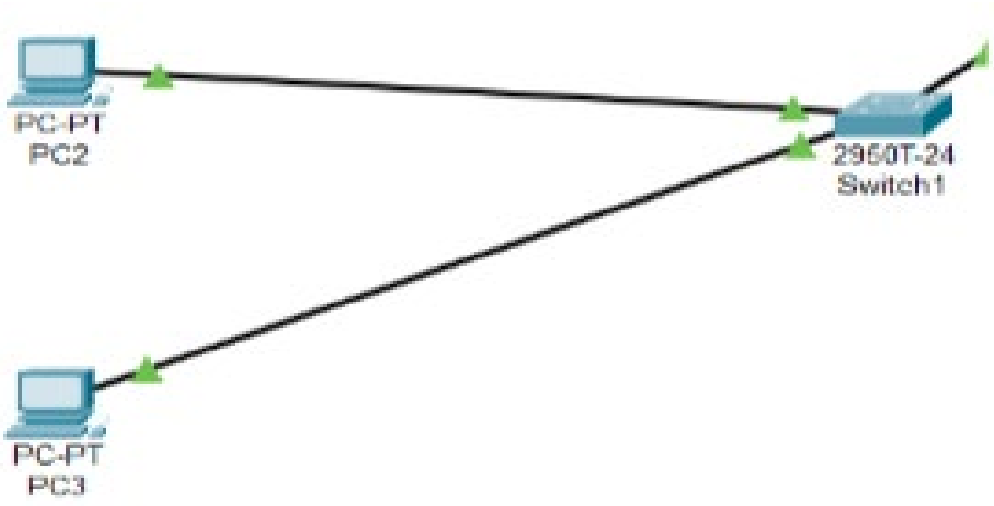
Device	Interface	IP Address	Subnet Mask	Default Gateway
R1	G0/0	192.168.100.1	255.255.255.224	N/A
	G0/1	192.168.100.33	255.255.255.224	N/A
	S0/0/0	192.168.100.129	255.255.255.224	N/A
R2	G0/0	192.168.100.65	255.255.255.224	N/A
	G0/1	192.168.100.97	255.255.255.224	N/A
	S0/0/0	192.168.100.158	255.255.255.224	N/A
S1	VLAN 1	192.168.100.2	255.255.255.224	192.168.100.1
S2	VLAN 1	192.168.100.34	255.255.255.224	192.168.100.33
S3	VLAN 1	192.168.100.66	255.255.255.224	192.168.100.65
S4	VLAN 1	192.168.100.98	255.255.255.224	192.168.100.97
PC1	NIC	192.168.100.30	255.255.255.224	192.168.100.1
PC2	NIC	192.168.100.62	255.255.255.224	192.168.100.33
PC3	NIC	192.168.100.94	255.255.255.224	192.168.100.65
PC4	NIC	192.168.100.126	255.255.255.224	192.168.100.97

Procedure:

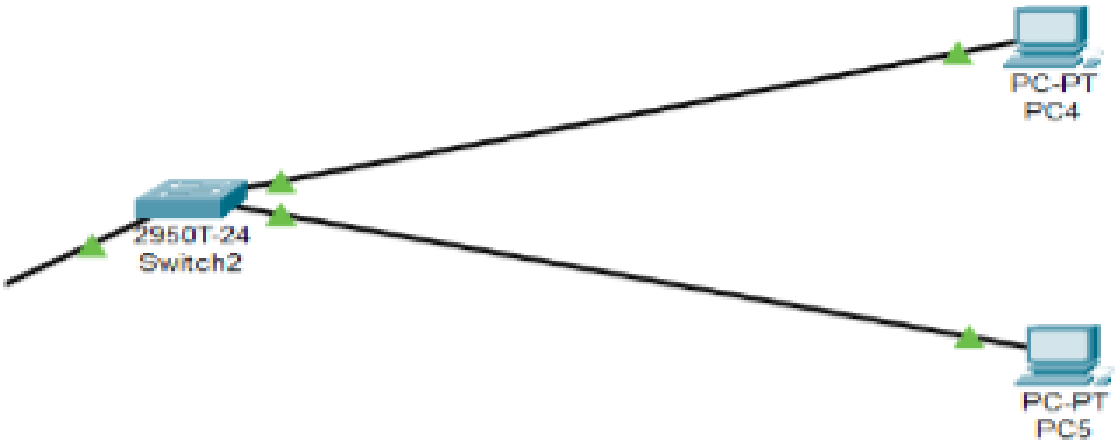
Step 1: Create a basic setup with 2 pc connected to a switch



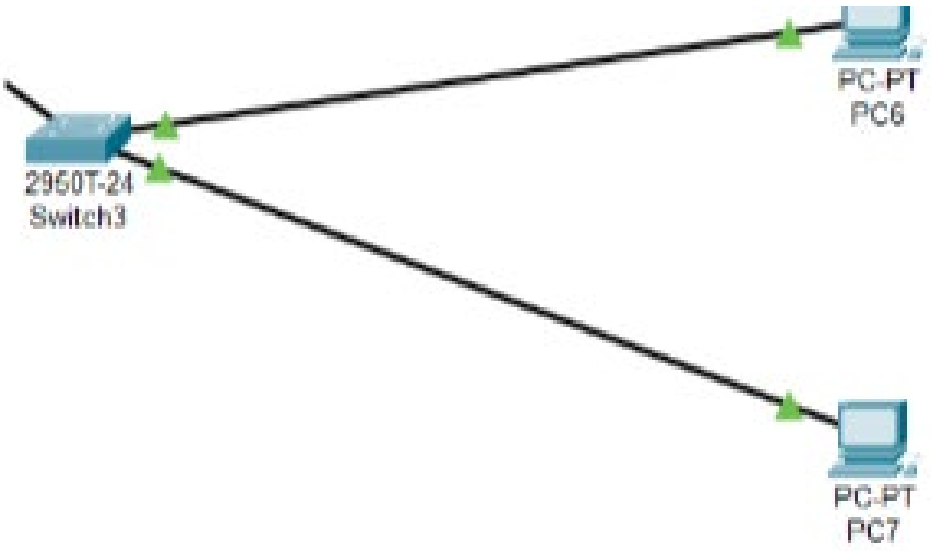
Step 2: Make another setup like step1



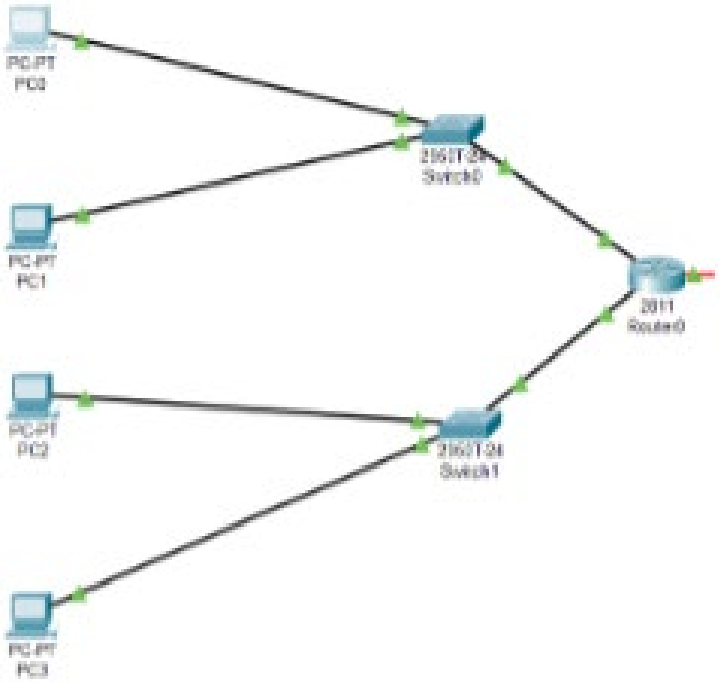
Step 3: Follow Step1



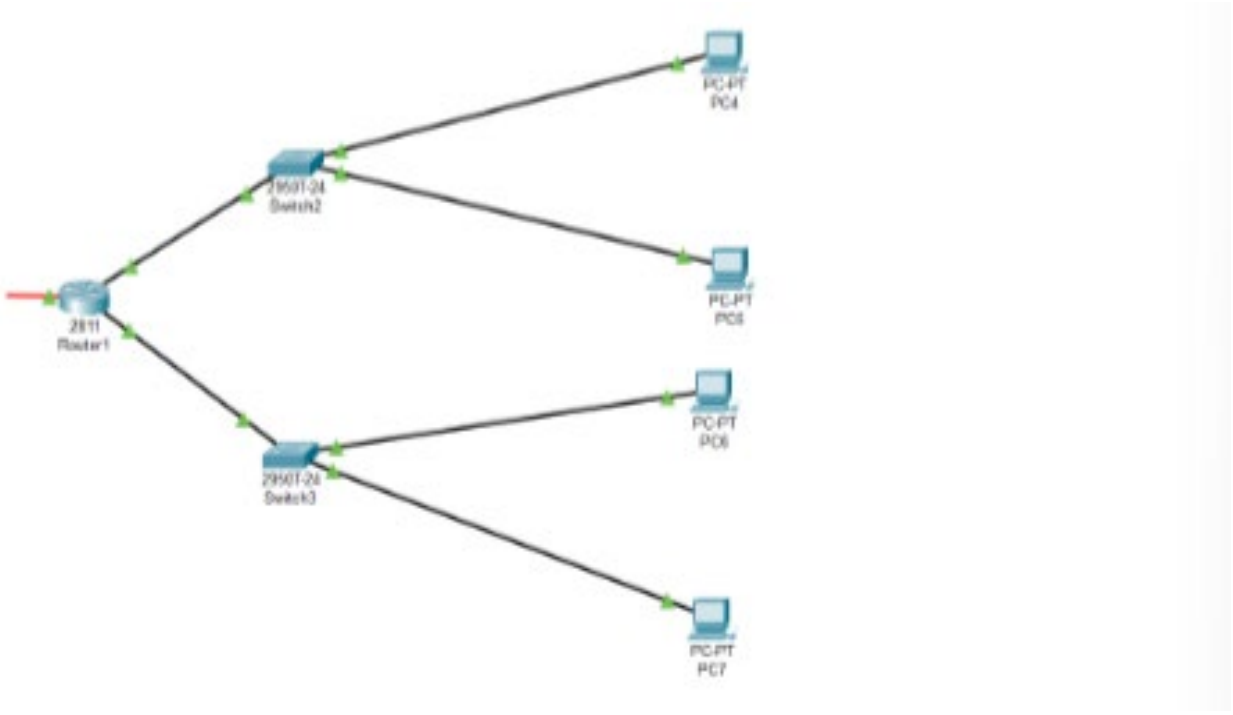
Step 4: Follow step1



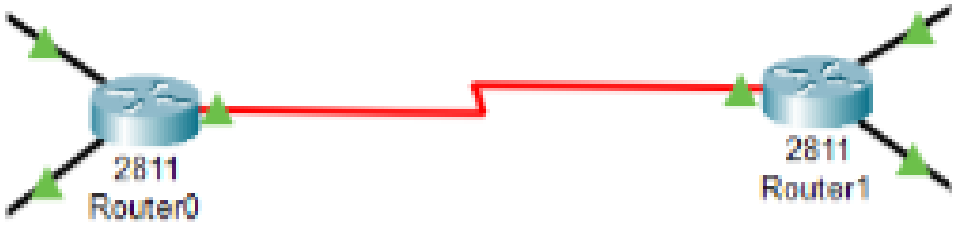
Step 5: Connect the first two switch to a router



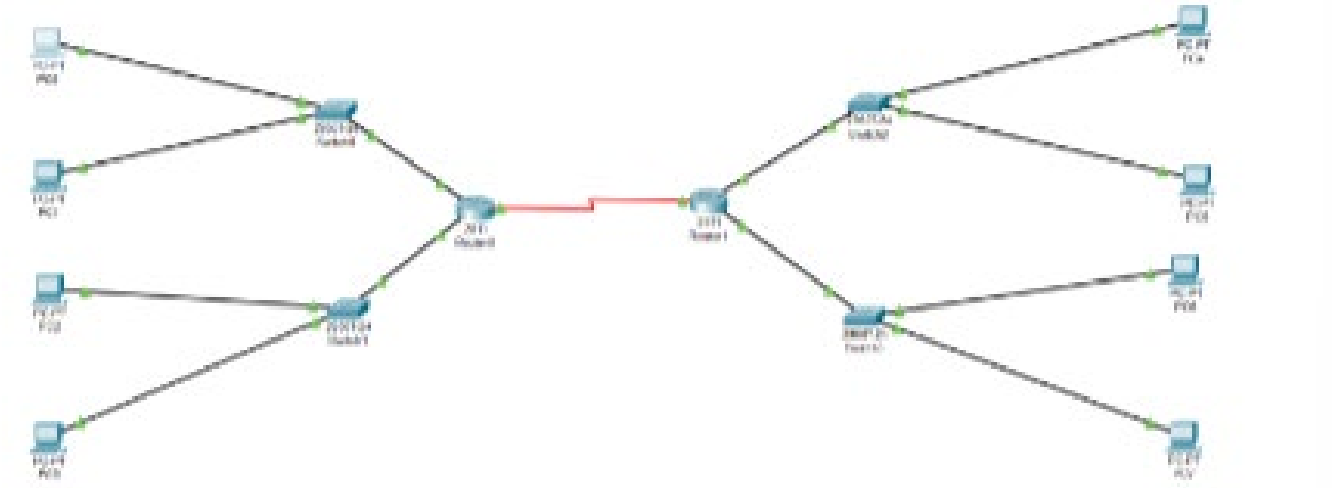
Step 6: Follow Step 5 for the remaining 2 setups.



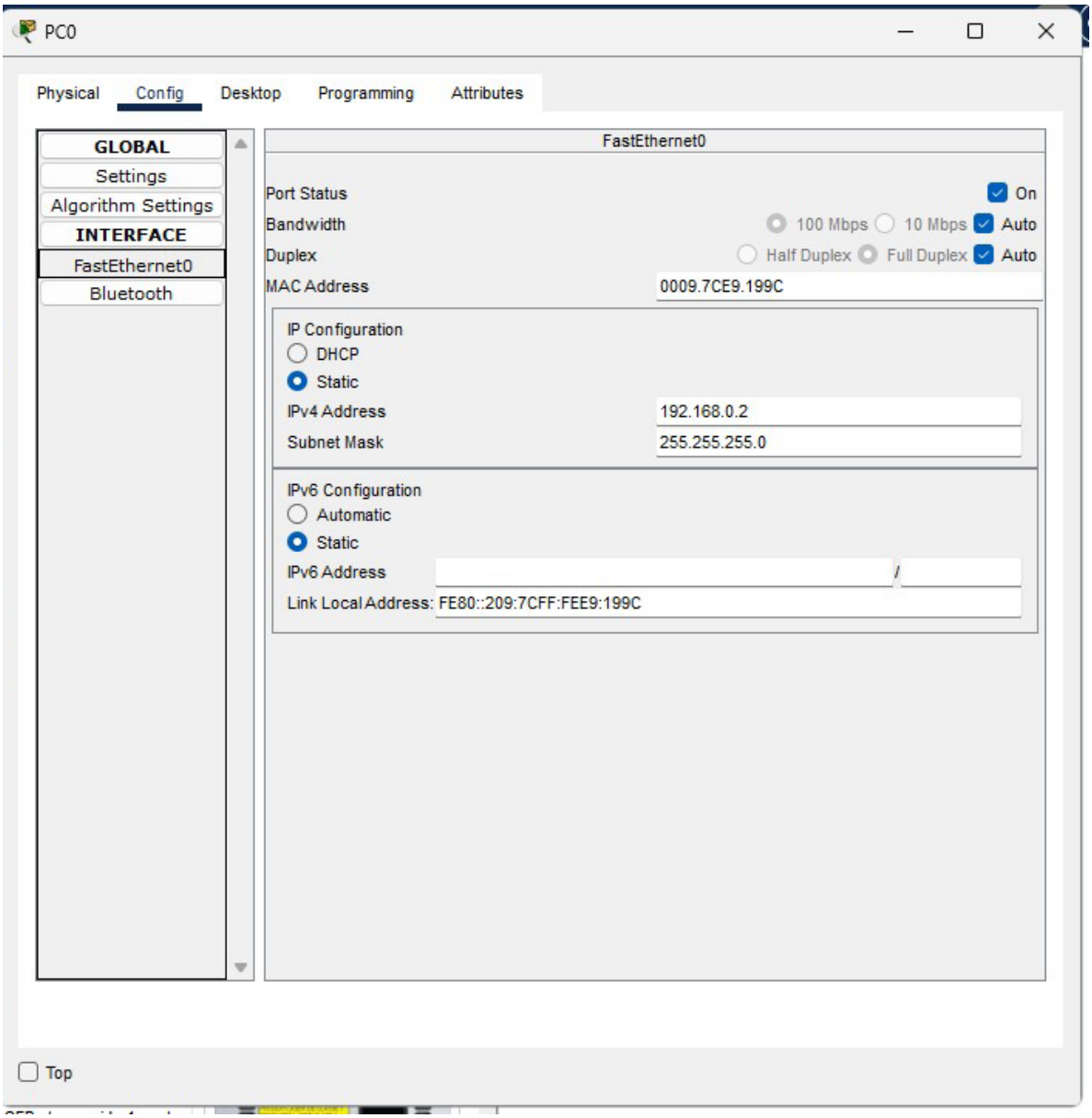
Step 7: Connect the two router with serial DCE To establish logical connectivity,

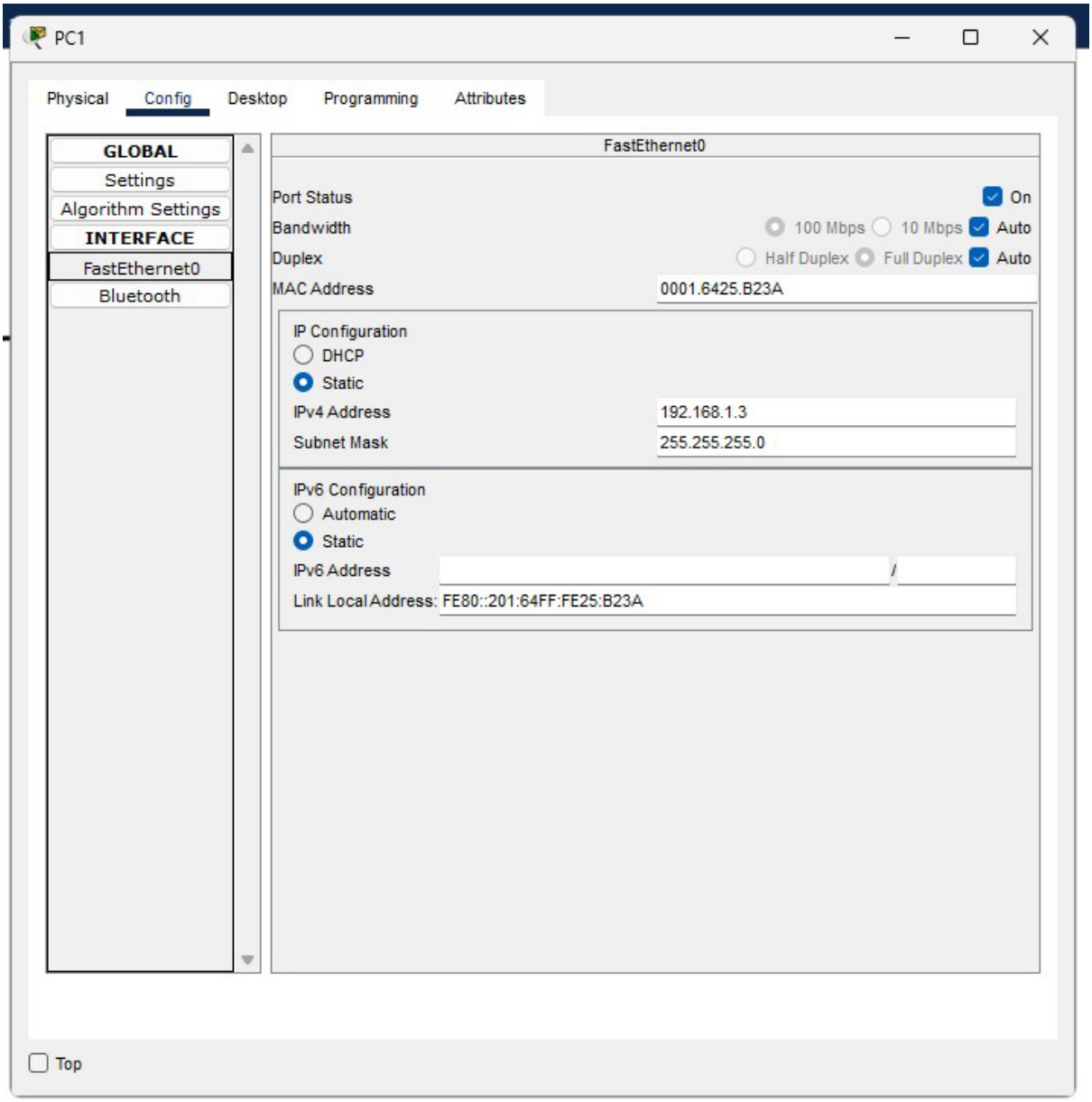


Step 8: In final the setup should look like this



Step 9: Now Configure All the PC with given IP-address , subnet and default gateway as shown below





Step 10: Router configuration

- Click on Router0 and select CLI.
- Press ENTER to start configuring Router1.
- Type enable to activate the privileged mode.
- Type config t(configure terminal) to access the configuration menu.
- Configure interfaces of Router1:
- Type interface FastEthernet0/0 to access FastEthernet0/0 and Configure the FastEthernet0/0 interface with the IP address 192.168.10.1 and Subnet mask 255.255.255.0.
- Type interface FastEthernet0/1 to access GigabitEthernet0/0 and Configure the FastEthernet0/1 interface with IP address 192.168.20.1 and Subnet mask 255.255.255.0.
- Type no shutdown to finish.

Step 11: Switch Configuraon

1. Console into the switch and enable privileged EXEC mode.

Switch> **enable**

2. Enter configuraon mode.

Switch# **config terminal**

3. Assign a device name to the switch.

Switch(config)# **hostname S1**

4. Configure and acvate the VLAN interface on the switch S1.

S1(config)# **interface vlan 1**

S1(config-if)# **ip address 192.168.1.2 255.255.255.0**

S1(config-if)# **no shutdown** S1(config-if)# **exit**

5. Configure the default gateway for the switch S1.

S1(config)# **ip default-gateway 192.168.1.1**

S1(config-if)# **exit**


Switch0
Physical
Config
CLI
Attributes
Processor board ID FOC1010X104
Last reset from power-on
1 Virtual Ethernet interface
24 FastEthernet interfaces
2 Gigabit Ethernet interfaces
The password-recovery mechanism is enabled.
64K bytes of flash-simulated non-volatile configuration memory.
Base ethernet MAC Address : 00:0A:F3:50:6A:5C
Motherboard assembly number : 73-10390-03
Power supply part number : 341-0097-02
Motherboard serial number : FOC10093R12
Power supply serial number : AZS1007032H
Model revision number : B0
Motherboard revision number : B0
Model number : WS-C2960-24TT-L
System serial number : FOC1010X104
Top Assembly Part Number : 800-27221-02
Top Assembly Revision Number : A0
Version ID : V02
CLEI Code Number : COM3L00BRA
Hardware Board Revision Number : 0x01
Switch Ports Model SW Version SW Image
* 1 26 WS-C2960-24TT-L 15.0(2)SE4 C2960-LANBASEK9-M
Cisco IOS Software, C2960 Software (C2960-LANBASEK9-M), Version 15.0(2)SE4, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2013 by Cisco Systems, Inc.
Compiled Wed 26-Jun-13 02:49 by mnguyen
Press RETURN to get started!
%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/6, changed state to up
S1>
S1>
S1>
S1>
S1>enable
S1#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
S1(config)#hostname S1
S1(config)#interface vlan1
S1(config-if)#ip address 192.168.1.2 255.255.255.0
S1(config-if)#no shutdown
S1(config-if)#exit
S1(config)#ip default-gateway 192.168.1.1
S1(config)#exit
S1#
%SYS-5-CONFIG_I: Configured from console by console
Top

Step 12: Now both the PCs are physically and logically connected. To check the logical connectivity,

- Click on PC1.
- Select Desktop tab.
- Click on Command Prompt icon.
- Type ping 192.168.0.2 to fetch the output as follows

```
C:\>ping 192.168.2.2

Pinging 192.168.2.2 with 32 bytes of data:

Reply from 192.168.2.2: bytes=32 time<1ms TTL=127
Reply from 192.168.2.2: bytes=32 time<1ms TTL=127
Reply from 192.168.2.2: bytes=32 time=1ms TTL=127
Reply from 192.168.2.2: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.2.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```