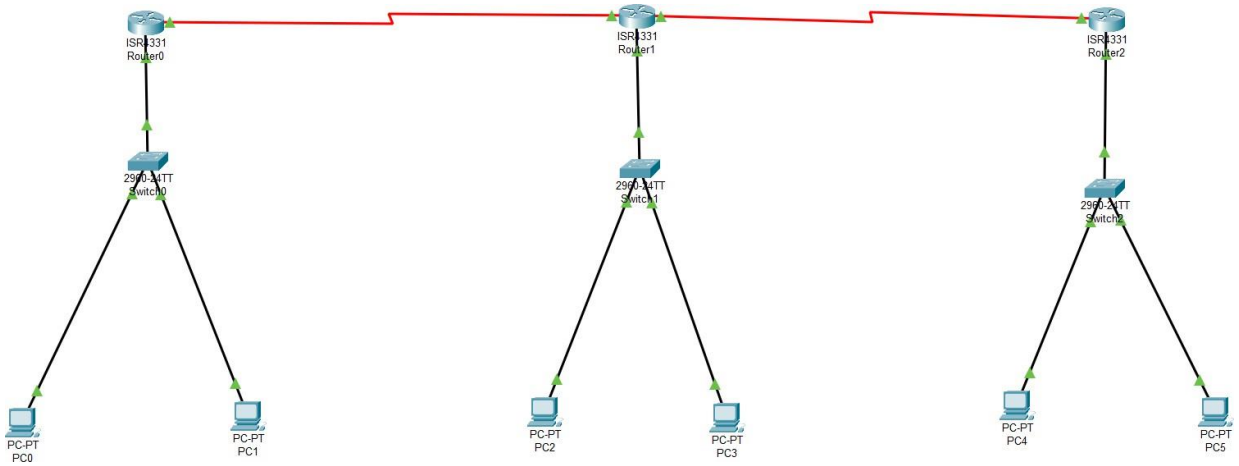
Marwadi University Marwadi Chandarana Group	**Marwadi University** **Faculty of Engineering and Technology** **Department of Information and Communication Technology**	
Subject: Computer Networks (01CT0503)	**Aim: Perform static routing protocol and analyze the results.**	
Experiment No: 05	**Date: 01-08-2024**	**Enrolment No: 92200133029**

Aim: Perform static routing protocol and analyze the results.

Connect three switches to three routers using copper straight cables. Then, link the routers to each other using serial cables. To achieve this, we need to install the NIM-T2 module, which provides the necessary serial ports since the routers don't have them built-in. Finally, connect PCs to the switches. After completing these connections, the network setup will be as described.



Next, we need to assign IP addresses to each networking device in the topology, which consists of a total of five networks. This includes three networks for the PCs and two networks for the router connections. Each port on the routers represents a separate network, so we will allocate IP addresses accordingly.

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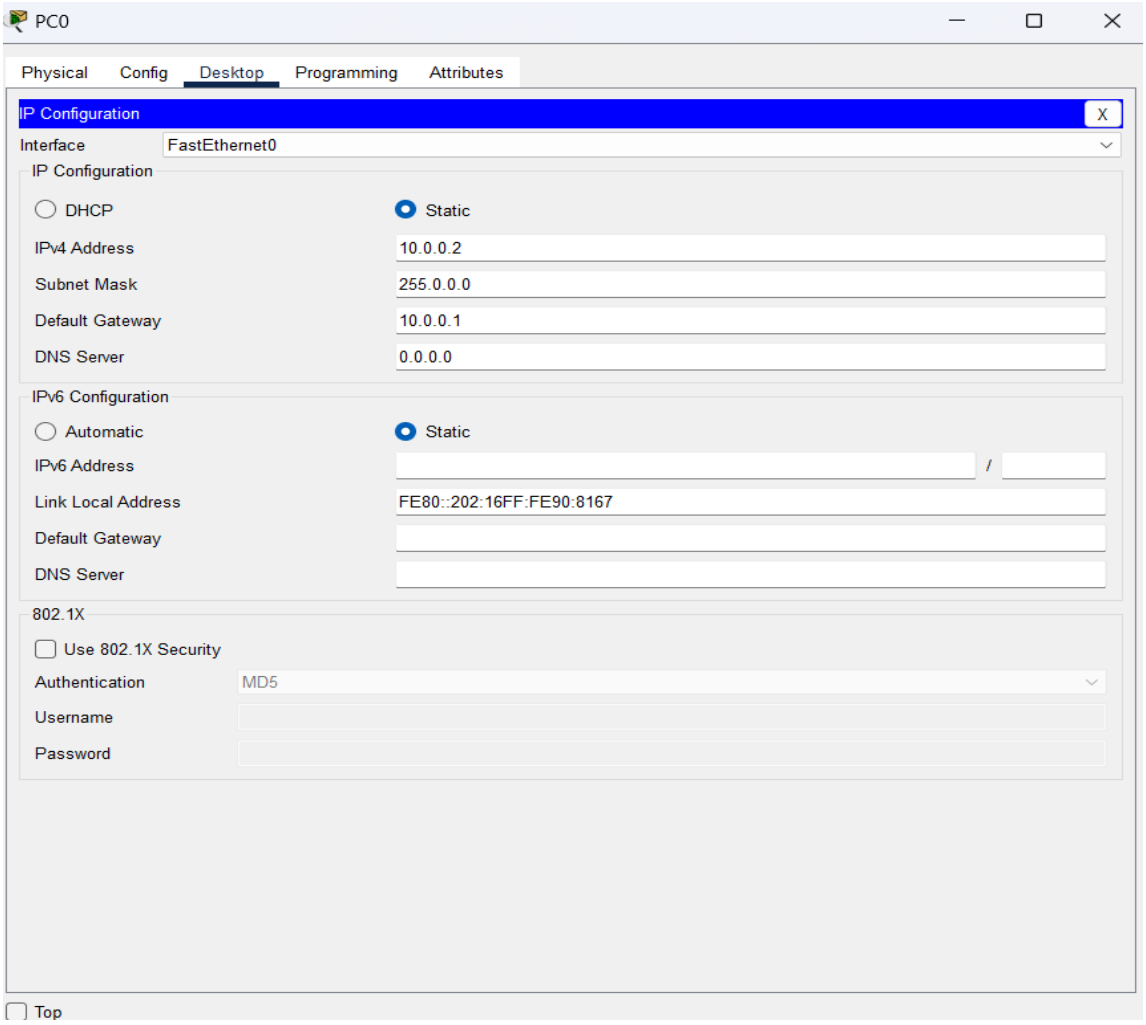
Give the Ip add to the PC.



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In command Line of router Use command enable then config terminal to go to prevailed mode then to the config mode now we can add the ip to the router.

```
Router>enable
Router#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int g0/0/0
Router(config-if)#ip add 10.0.0.1 255.255.255.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/0, changed
state to up

Router(config-if)#exit
Router(config)#
```

We select the interface that connects the router to the switch (Gigabit Ethernet 0/0/0) by entering interface g0/0/0 or interface <interfaceName>. Then, we assign an IP address using the command ip address <IP address> <subnet mask>. Finally, we activate the interface with the command no shutdown to apply the changes.

Same way we do this to all the routers that connect with switches.

Now we need to give ip to networks that connects the routers.

```
Router>
Router>en
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int s0/0/0
%Invalid interface type and number
Router(config)#int s0/1/0
Router(config-if)#ip add 13.0.0.1
% Incomplete command.
Router(config-if)#ip add 13.0.0.1 255.0.0.0
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down
Router(config-if)#exit
Router(config)#
```

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The last step is to set up static routing. To do this, we will use the command: ip route <network ID/IP> <subnet mask> <next hop router IP> <exit interface>. This command directs the router on how to reach other networks. Using the router IP address

```
Router>
Router>en
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int s0/0/0
%Invalid interface type and number
Router(config)#int s0/1/0
Router(config-if)#ip add 13.0.0.1
% Incomplete command.
Router(config-if)#ip add 13.0.0.1 255.0.0.0
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down
Router(config-if)#exit
Router(config)#A
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to
up

% Ambiguous command: "A"
Router(config)#ip route 12.0.0.0 255.0.0.0 13.0.0.2
Router(config)#
```

Copy Paste

Using the network Interface/Port

Router3(1)

Physical Config CLI Attributes

IOS Command Line Interface

```
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#en
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#ip route 10.0.0.0 255.0.0.0 s0/1/0
%Default route without gateway, if not a point-to-point interface, may impact
performance
```

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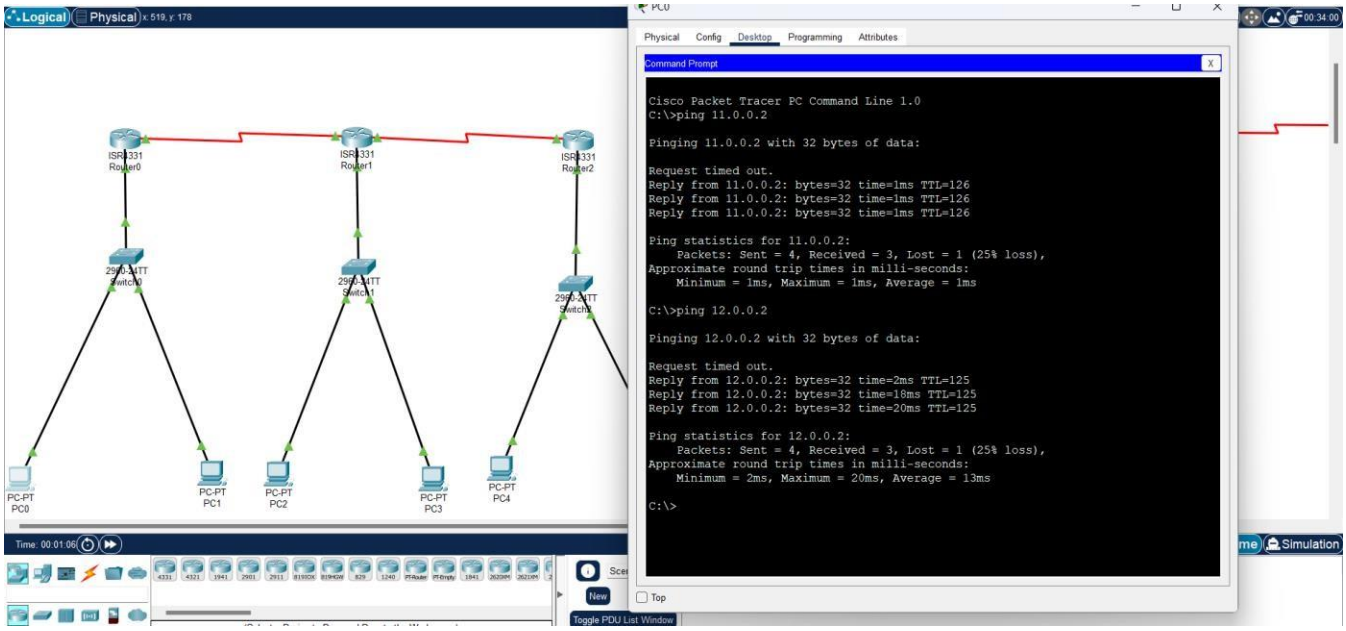
Now we can see that all the networks are connected with each other.



Conclusion: This method allows you to connect different networks and set up static routing. However, connecting networks can be quite tedious, and if the steps aren't followed carefully, it leaves a lot of room for errors that can be difficult to troubleshoot.