Experiment No. 7
To design and simulate the environment for Static routing using Cisco packet tracer
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Aim: To design a network with two routers and two PCs and simulate static routing using Cisco Packet Tracer.

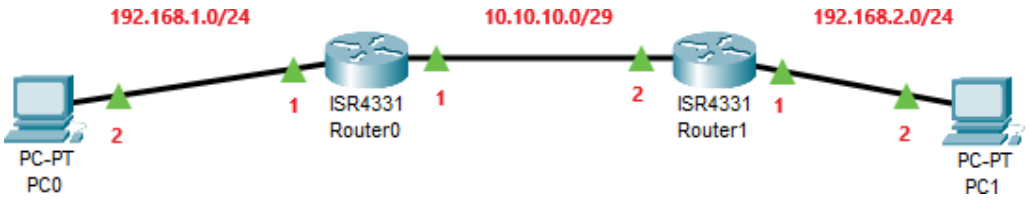
Objective:

To configure static routes on routers for communication between two different networks

To test end-to-end connectivity between PCs using ping command

Requirement:
Cisco Packet Tracer software
Theory:
Routing is a process of choosing the best route for delivering data to its destination. It is required when data needs to be delivered to a network that is not directly connected to the sender.

Static routing is a type of routing where the administrator manually adds routes to the routing table of each router. It is simple and efficient for small networks but difficult to maintain in large networks.

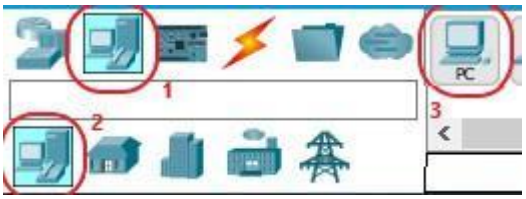


Procedure:

Step 1: Place the routers
Open Cisco Packet Tracer and drag two routers (for example Router-4331) from the bottom panel to the workspace.

Step 2: Place the PCs

Drag two PCs from End Devices > PC and place them on the workspace.



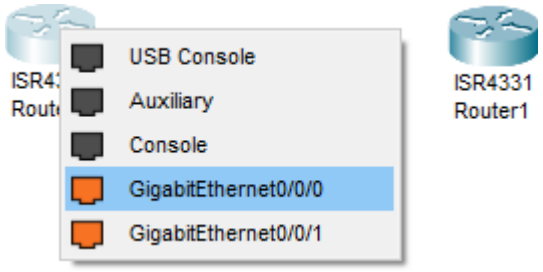
Step 3: Connect all devices

Use copper straight-through cables to connect:

Next, click on one of the hosts, and choose one of the available ethernet ports. Then click on the another host while we see the cable being dragged.

Choosing physical port.

Repeat the similar steps for connecting a PC and one of the routers.



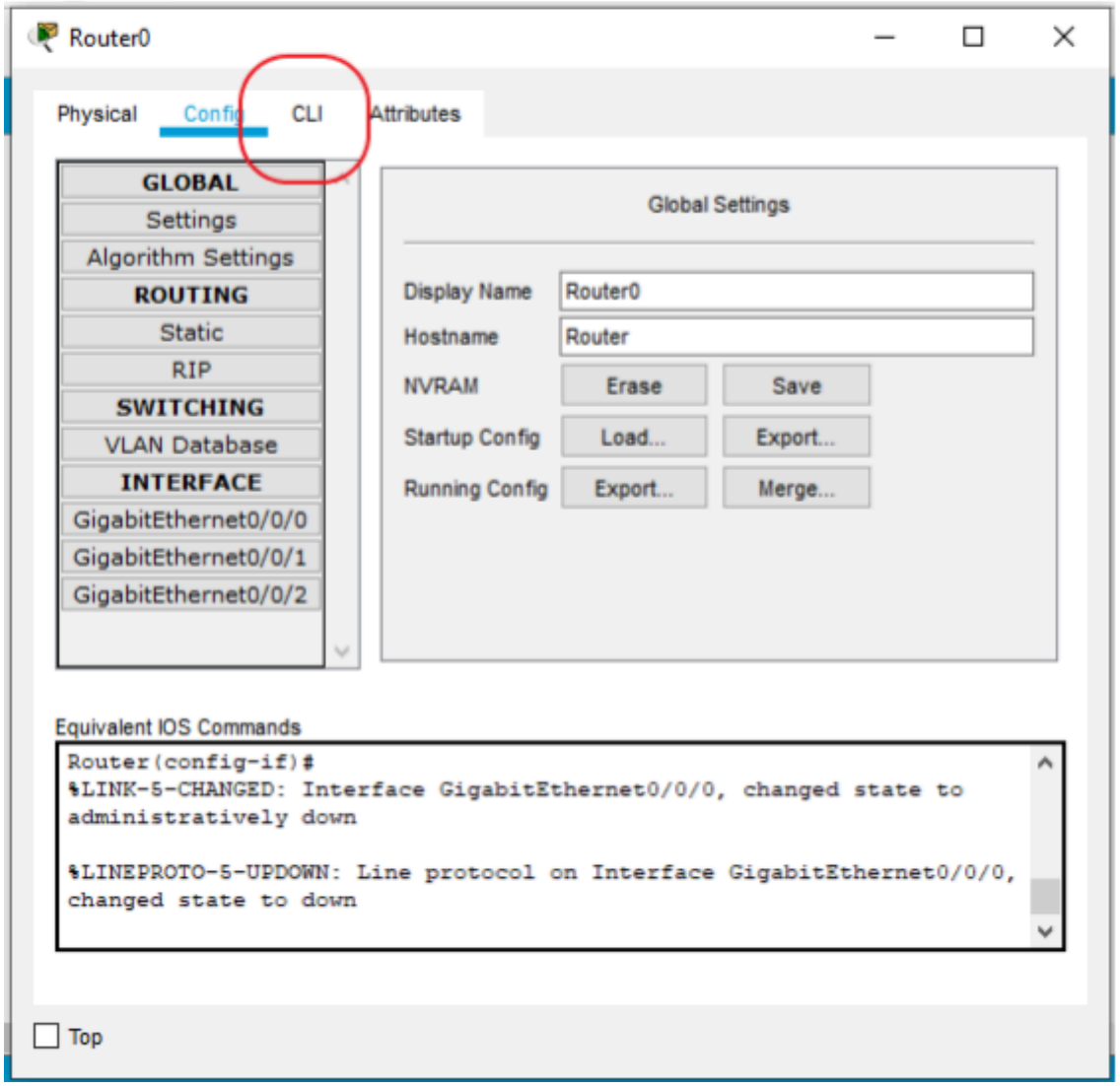
PC0 to Router0

Router0 to Router1

Router1 to PC1

Step 4: Configure Router0

Click Router0 → CLI tab → enter the following commands:



In Router0 CLI, paste the following script.

```
en
 conf t
int gi0/0/0
ip address 10.10.10.1 255.255.255.248
no shutdown
 exit
int gi0/0/1
ip address 192.168.1.1 255.255.255.0
no shutdown
 exit
ip route 192.168.2.0 255.255.255.0 10.10.10.2
```

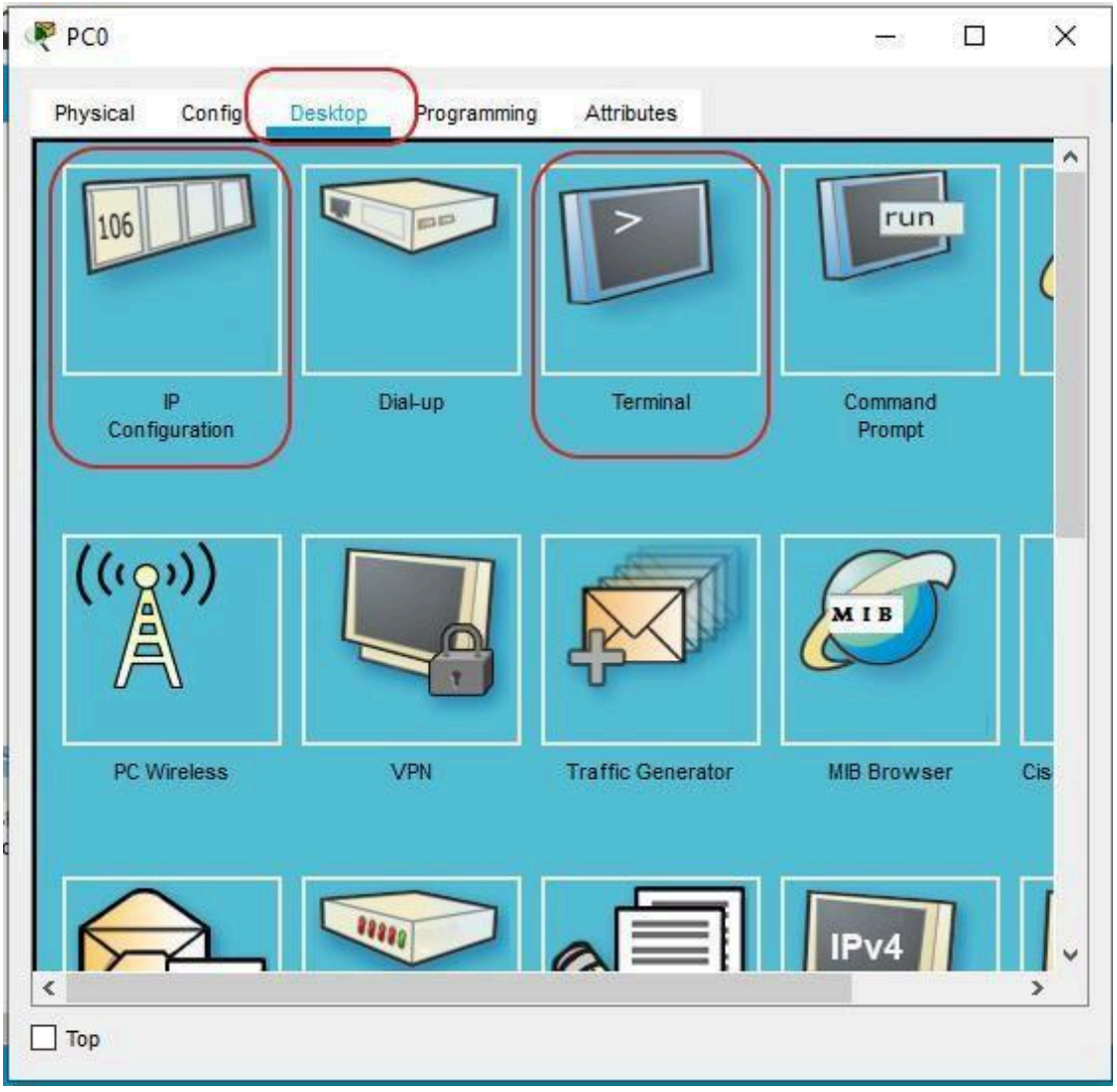
Step 5: Configure Router1

Click Router1 → CLI tab → enter the following commands:

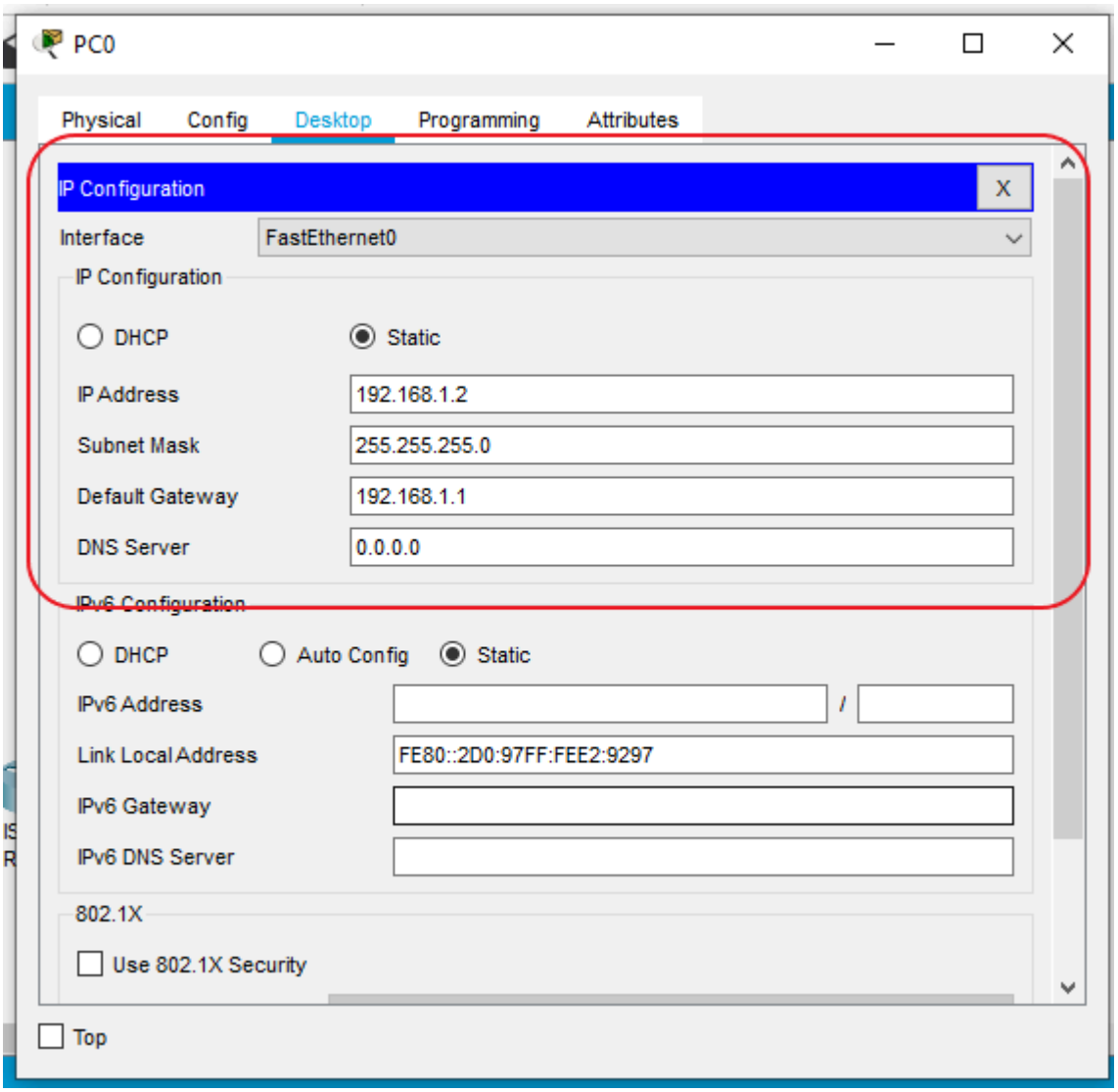
```
en
```

```
conf t
int gi0/0/0
ip address 10.10.10.2 255.255.255.248
no shutdown
 exit
int gi0/0/1
ip address 192.168.2.1 255.255.255.0
no shutdown
 exit
ip route 192.168.1.0 255.255.255.0 10.10.10.1
```

Step 6: Configure PCs
PC0 → Desktop → IP Configuration → enter:
IP Address: 192.168.1.2
Subnet Mask: 255.255.255.0
Gateway: 192.168.1.1



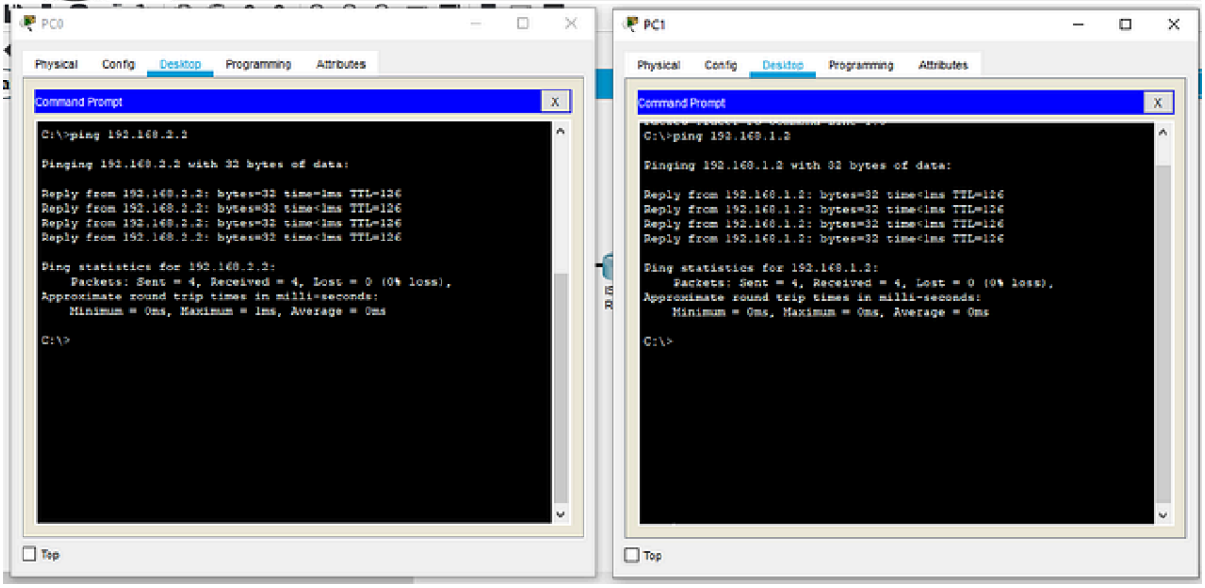
PC1 → Desktop → IP Configuration → enter:
IP Address: 192.168.2.2
Subnet Mask: 255.255.255.0
Gateway: 192.168.2.1



Step 7: Test connectivity
Open Command Prompt in PC0 and type:
ping 192.168.2.2

Open Command Prompt in PC1 and type:
ping 192.168.1.2

Output:
The ping command shows successful replies between PC0 and PC1, proving that static routing is configured correctly.



Conclusion:

Static routing enables reliable communication between two or more PCs connected through different routers by manually defining network paths. This experiment demonstrates the step-by-step process of configuring IP addresses, setting up default gateways, and adding static routes to achieve end-to-end connectivity across multiple networks. Through Cisco Packet Tracer, the experiment provides practical insight into how routers forward data packets based on predefined routes rather than relying on automatic routing protocols. This not only helps in understanding the flow of data in a network but also builds foundational knowledge of network design, troubleshooting, and route optimization in real-world networking environments.