**EX:7**                                    <u>**Dynamic Routing Using Cisco Packet TRACER**</u>
**AIM:**

   To Design and simulate an environment for dynamic routing using Cisco Packet Tracer.

**SOFTWARE REQUIRED:**

   Cisco Packet Tracer,Ubuntu OS.

**THEORY:**

   Cisco Packet Tracer is a network simulation tool that allows users to design, configure, and troubleshoot networks in a virtual environment. It's a popular educational tool, particularly for those studying networking, and allows users to experiment with different network topologies and configurations without needing physical hardware.

Key features and benefits of Cisco Packet Tracer:
   ● Network Simulation
   ● Configuration and Troubleshooting
   ● Visual Interface
   ● Educational Tool
   ● Hands-on Practice
   ● Cost-effective

   Routing is a vital communication mechanism that governs how data packets travel from source to destination. Effective routing ensures that data is transferred across networks in an efficient, reliable, and timely manner. There are two main forms of routing: static and dynamic. In this article, we will discuss the differences between static and dynamic routing.
Static Routing is also known as non-adaptive routing which doesn't change the routing table unless the network administrator changes or modifies them manually. Static routing does not use complex routing algorithms and It provides higher or more security than dynamic routing.
Dynamic routing is also known as adaptive routing which changes the routing table according to the change in topology. Dynamic routing uses complex routing algorithms and it does not provide high security like static routing. When the network change(topology) occurs, it sends the message to the router to ensure that changes then the routes are recalculated for sending updated routing information.

# Steps to Perform in Cisco Packet Tracer

## 1. Launch Packet Tracer
   ● Open Cisco Packet Tracer on your system.Create a new workspace.

## 2. Add Network Devices
   ● **Routers**: Drag at least **two or three routers** into the workspace (e.g., 2911 or 1941).

- **Switches**: Add a switch for each router's LAN side.

- **End Devices**: Add PCs or laptops for each network.

- **Cables**: Use the **Copper Straight-Through** cable for PC–Switch and Switch–Router connections, and **Serial DCE/DTE** cable or **Cross-Over** cable for Router–Router connections (depending on interface type).

## 3. Assign IP Addresses

1. Decide an **IP addressing scheme** for all networks.

**4.Enable interfaces .**
**5. Configure Dynamic Routing Protocol (Example: RIP).**
## 6. Verify Connectivity

- From one PC, **ping** another PC in a different network:

```
 PC> ping <destination_IP>
```
**7. Save the Configuration.**

**Conclusion:**

    Thus a dynamic routing environment was successfully designed and simulated using Cisco Packet Tracer.The Experiment not only reinforced theoretical knowledge of routing concepts but also provided practical experience in configuring and troubleshooting real-world networking scenarios.
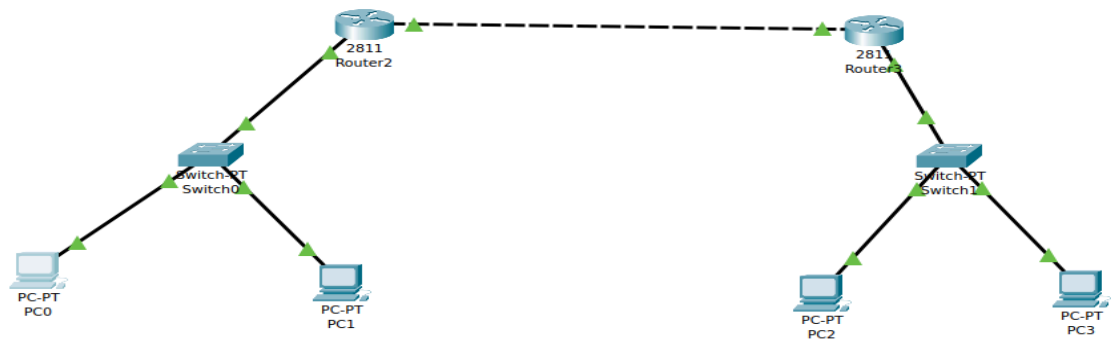
**OUTPUT:**

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.3.2

Pinging 192.168.3.2 with 32 bytes of data:

Reply from 192.168.3.2: bytes=32 time<1ms TTL=126
Reply from 192.168.3.2: bytes=32 time<1ms TTL=126
Reply from 192.168.3.2: bytes=32 time<1ms TTL=126
Reply from 192.168.3.2: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.3.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>