Exp No: 07 **Date:03/09/2024**

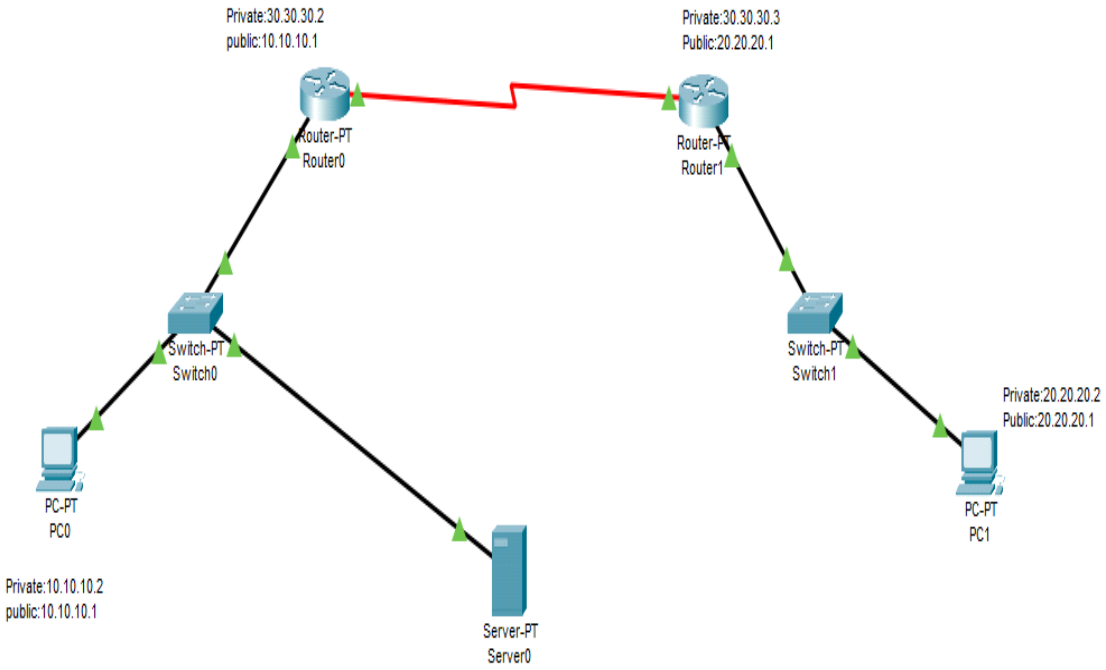
231901010 **Hemanth kumar.A**

Examining Network Address Translation (NAT) using Cisco Packet Tracer

Aim : Examining Network Address Translation (NAT) using Cisco Packet Tracer involves several steps. NAT is commonly used to allow multiple devices on a local network to share a single public IP address for accessing the internet. Here's how you can set up and examine NAT using Cisco Packet Tracer:

1. Setting Up the Network Topology

- **Devices Required:**
  - One or more PCs (for testing connectivity)
  - One router (to configure NAT)
  - One switch (to connect the PCs and the router)
  - One server (to simulate an external network, like the internet)
- **Steps:**
  - **Place the Devices:** Drag and drop the required devices onto the workspace.
  - **Connect the Devices:** Use the appropriate cables (copper straight-through for PCs to the switch, copper cross-over for switch to router) to connect the devices.
  - **Assign IP Addresses:**
    - Assign private IP addresses (e.g., 192.168.1.0/24) to the PCs and the router's internal interface.
    - Assign a public IP address (e.g., 200.0.0.1/30) to the router's external interface.
    - Assign an IP address to the server that simulates an external network (e.g., 200.0.0.2/30).



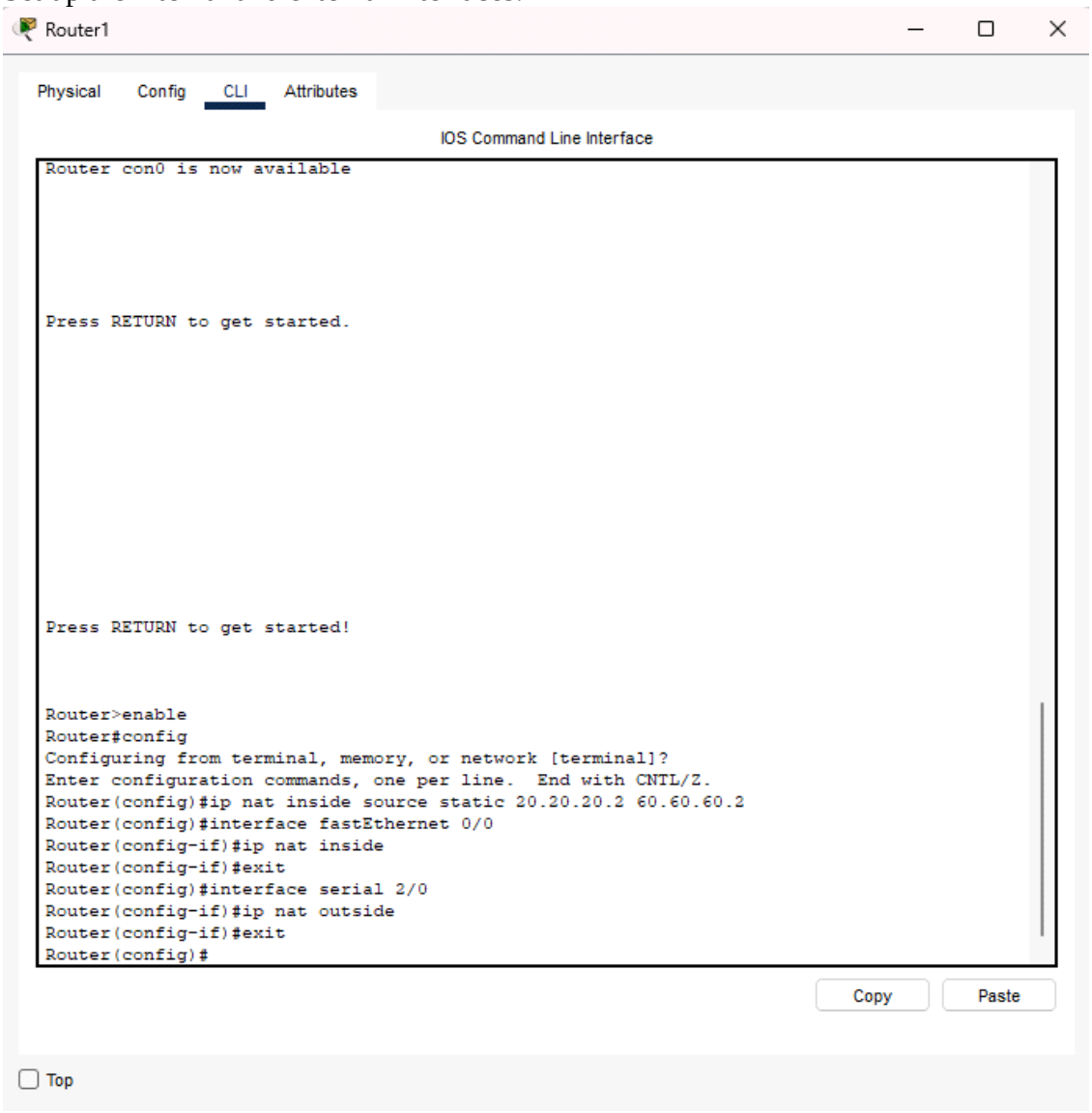
2. Configuring NAT on the Router

- **Steps:**
  - **Access the Router CLI:** Click on the router and go to the CLI tab.
  - **Enter Global Configuration Mode:**

```
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

C    20.0.0.0/8 is directly connected, FastEthernet0/0
C    30.0.0.0/8 is directly connected, Serial2/0
S    50.0.0.0/8 [1/0] via 30.30.30.1

Router#
```

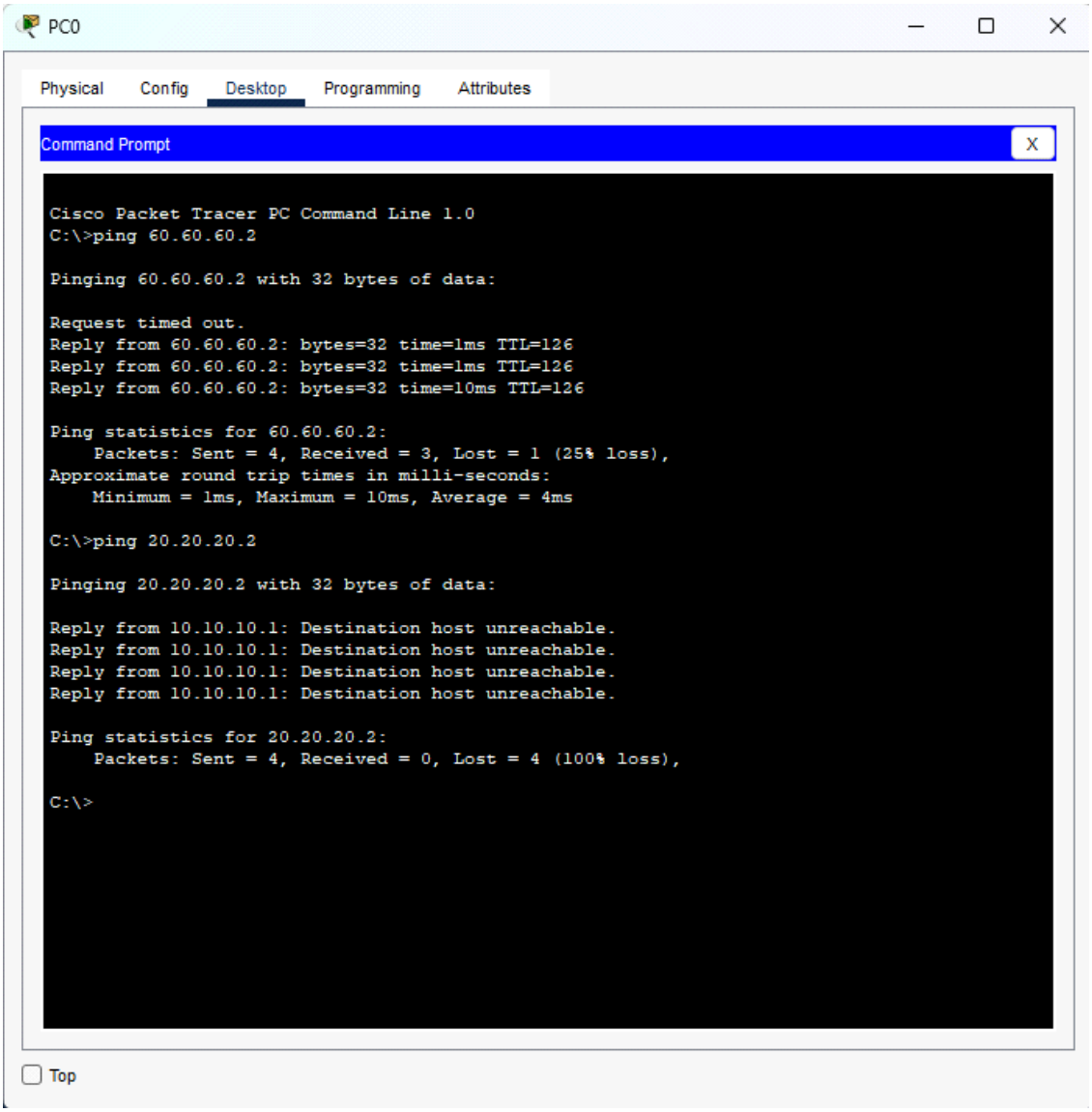
Configure Interfaces:

Set up the internal and external interfaces:



3. Testing NAT

- **Steps:**
  - **Ping from a PC to the External Network:**
    - From one of the PCs, open the command prompt and try to ping the external server (e.g., ping 200.0.0.2).

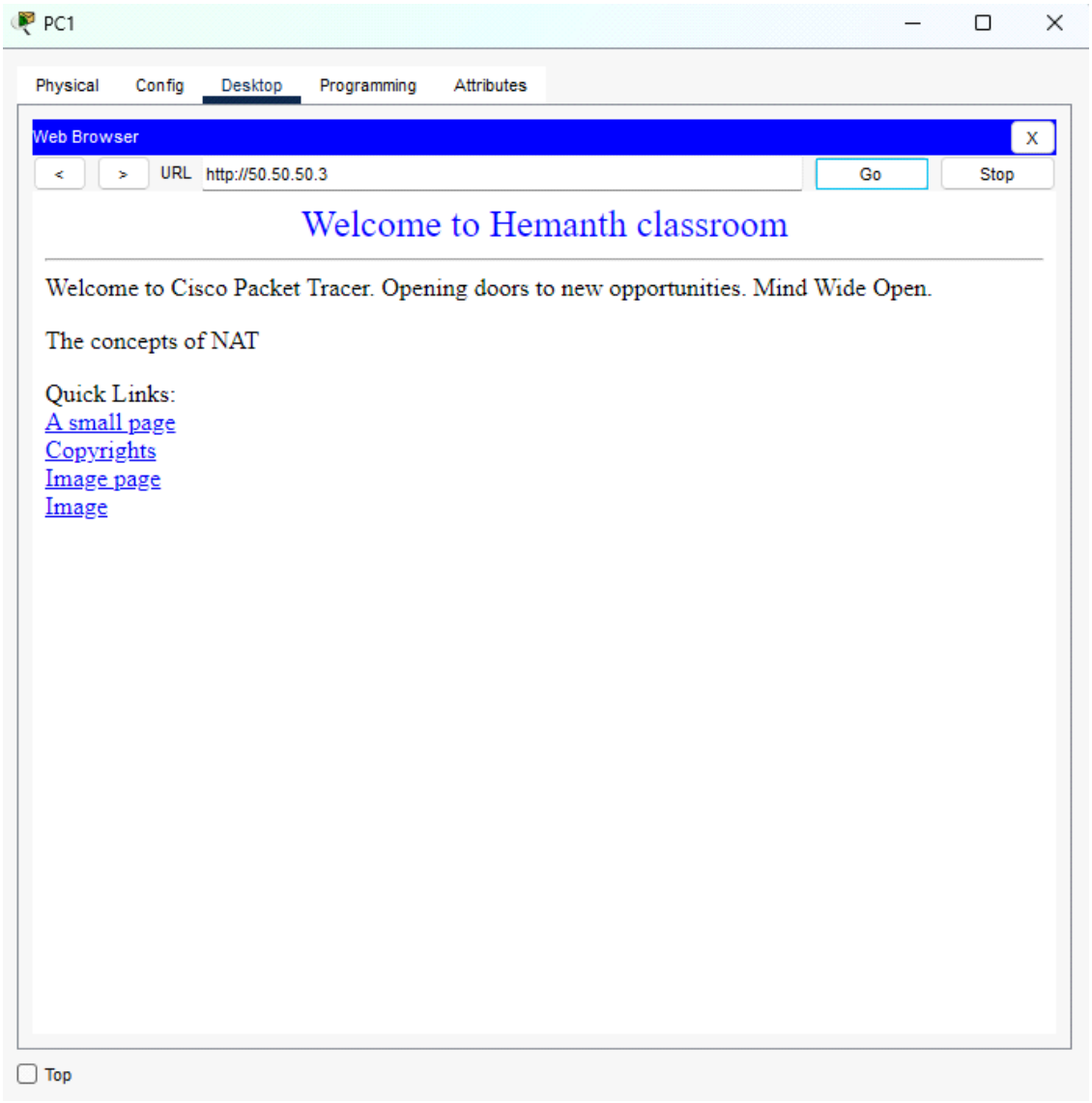


Observe the Output:
The NAT translation table should show the mapping of the internal private IP addresses to the external public IP.

4. Observing the Traffic

- Use the simulation mode in Packet Tracer to visually observe the NAT process as packets move from the internal network to the external network.

Final output:



Result: Network Address Translation (NAT) using Cisco Packet Tracer has been examined.