Exp 2 Execute the following networking commands like ipconfig, tracert, telnet, netsh, ping, nslookup and netstat in the command prompt with simple topology

Network Overview:
Server0 (ServerPT): Gateway 192.168.1.1, DNS 8.8.8.8
PC0 (PCPT): Connected via Switch0
PC1 (PCPT): Connected via Switch1
Router0 (ISR4331): Interconnects Switch0 and Switch1

Steps to Create the Network:

Step 1: Open Cisco Packet Tracer

1. Launch Cisco Packet Tracer on your machine.

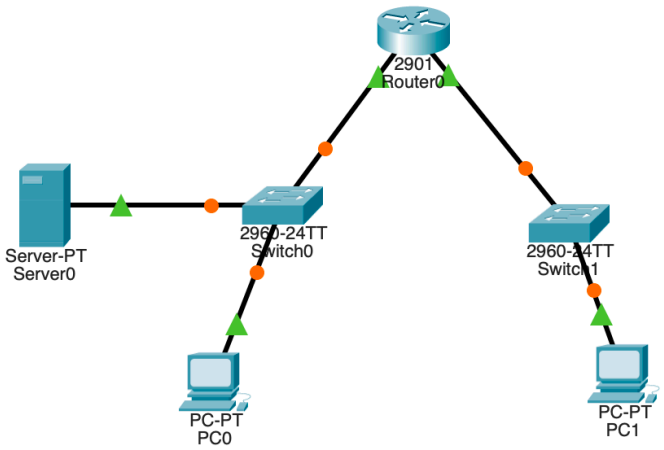
Step 2: Add Devices to the Workspace

1. Add a Server:
   Go to the End Devices section.
   Drag and drop 1 Server (ServerPT) onto the workspace.

2. Add 2 PCs:
   In the End Devices section, drag and drop 2 PCs (PCPT) onto the workspace.

3. Add 2 Switches:
   Go to the Switches section.
   Drag and drop 2 Switches (296024TT) onto the workspace.

4. Add a Router:
   Go to the Routers section.
   Drag and drop 1 Router (ISR4331) onto the workspace.



Step 3: Connect Devices

1. Connect Server0 to Switch0:
   Click on the Connections icon (lightning bolt) in the toolbar.
   Select Copper StraightThrough Cable.
   Click on Server0 and connect it to Switch0 on interface FastEthernet0/1.

2. Connect PC0 to Switch0:
   Use the Copper StraightThrough Cable and connect PC0 to Switch0 on FastEthernet0/2.

3. Connect Switch0 to Router0:
   Use the Copper StraightThrough Cable and connect Switch0 to Router0 on GigabitEthernet0/0.

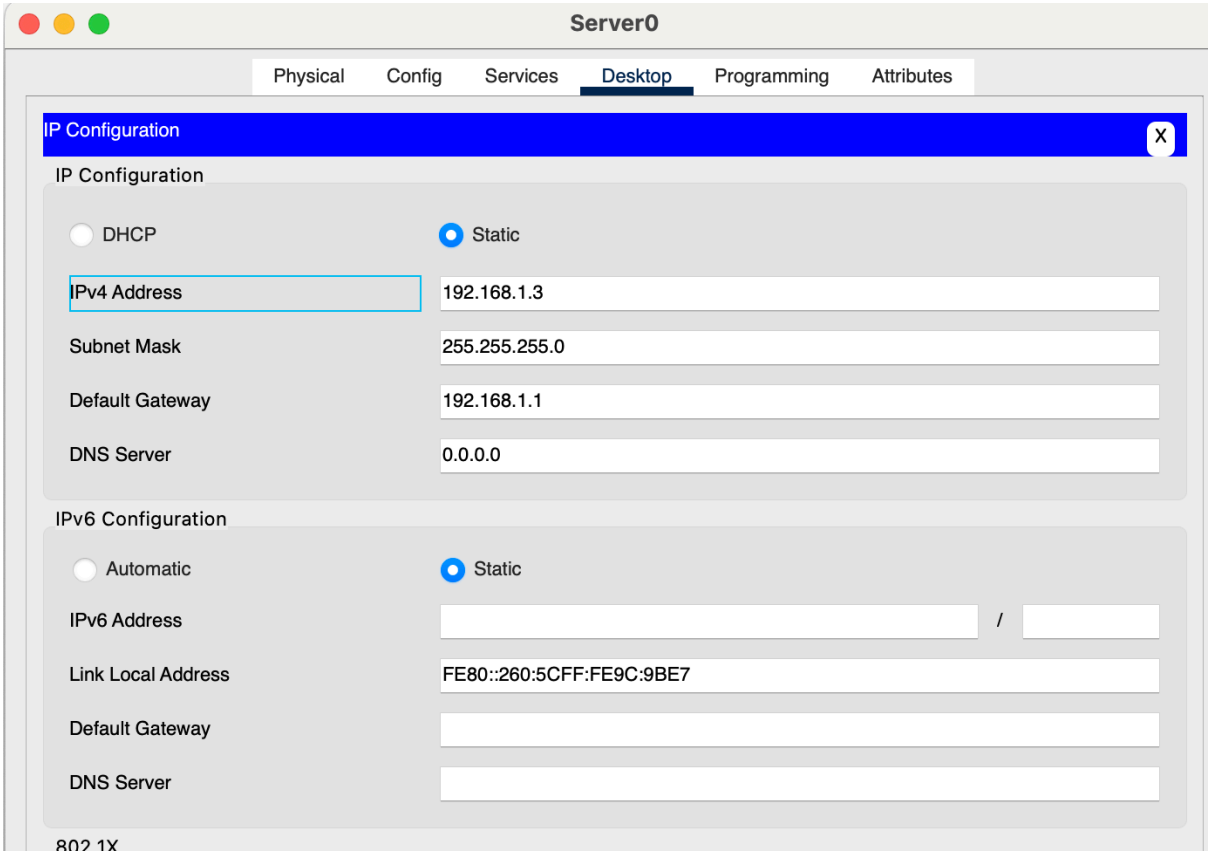
4. Connect Switch1 to Router0:
   Use the Copper StraightThrough Cable and connect Switch1 to Router0 on GigabitEthernet0/1.

5. Connect PC1 to Switch1:
   Use the Copper StraightThrough Cable and connect PC1 to Switch1 on FastEthernet0/1.

Step 4: Configure IP Addresses

1. Server0 Configuration:
   Click on Server0.
   Select the Desktop tab.
   Click IP Configuration.

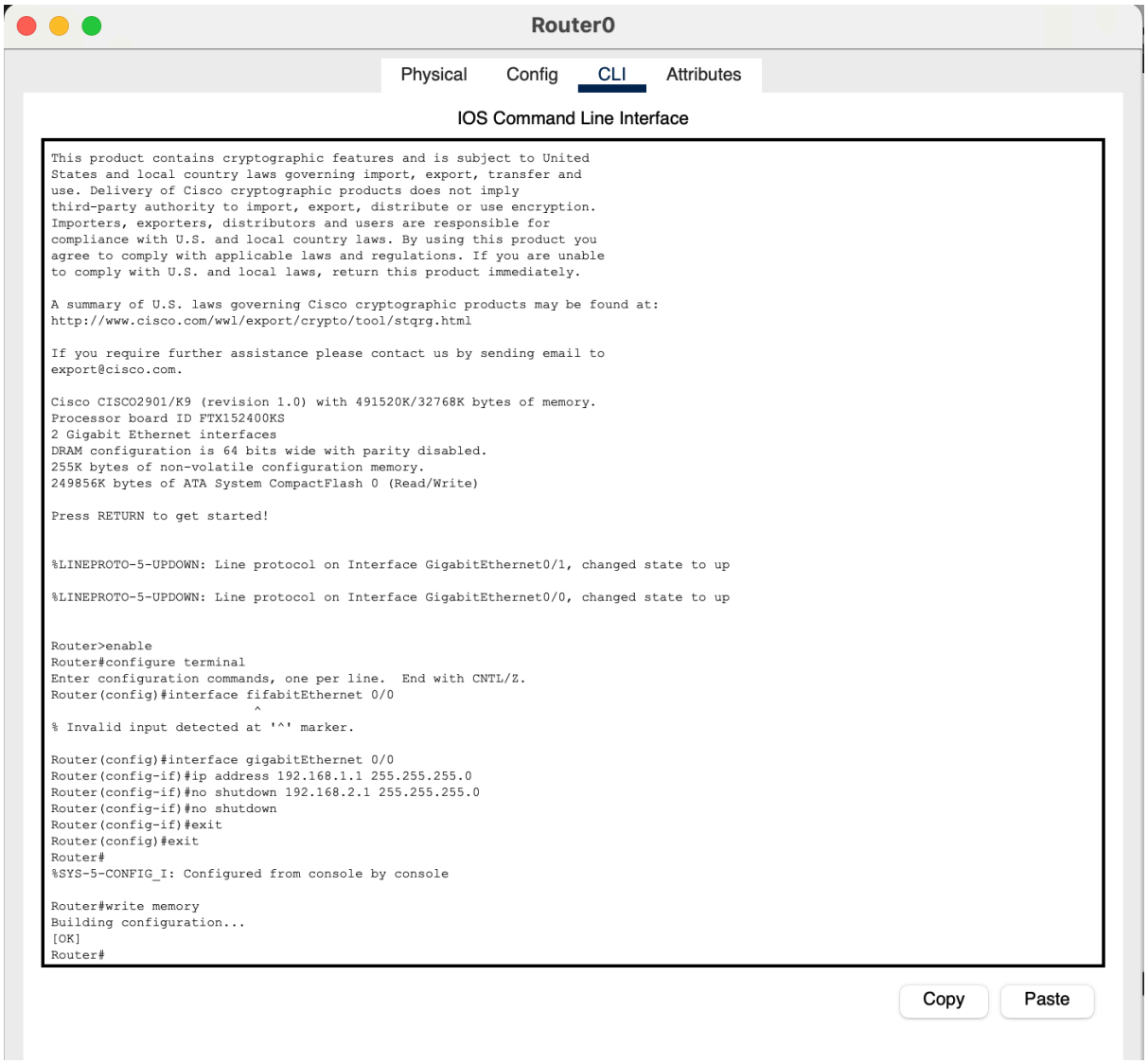
Set the following:
IP Address: 192.168.1.3
Subnet Mask: 255.255.255.0 (default).
Gateway: 192.168.1.1
Close the window.



2. Router0 Configuration:

Click on Router0.
Select the CLI tab.
Enter the following commands to configure the interfaces:

```
Router> enable
Router configure terminal
Router(config) interface gigabitEthernet 0/0
Router(configif) ip address 192.168.1.1 255.255.255.0
Router(configif) no shutdown
Router(configif) exit
Router(config) interface gigabitEthernet 0/1
Router(configif) ip address 192.168.2.1 255.255.255.0
Router(configif) no shutdown
Router(configif) exit
Router(config) exit
Router write memory
```



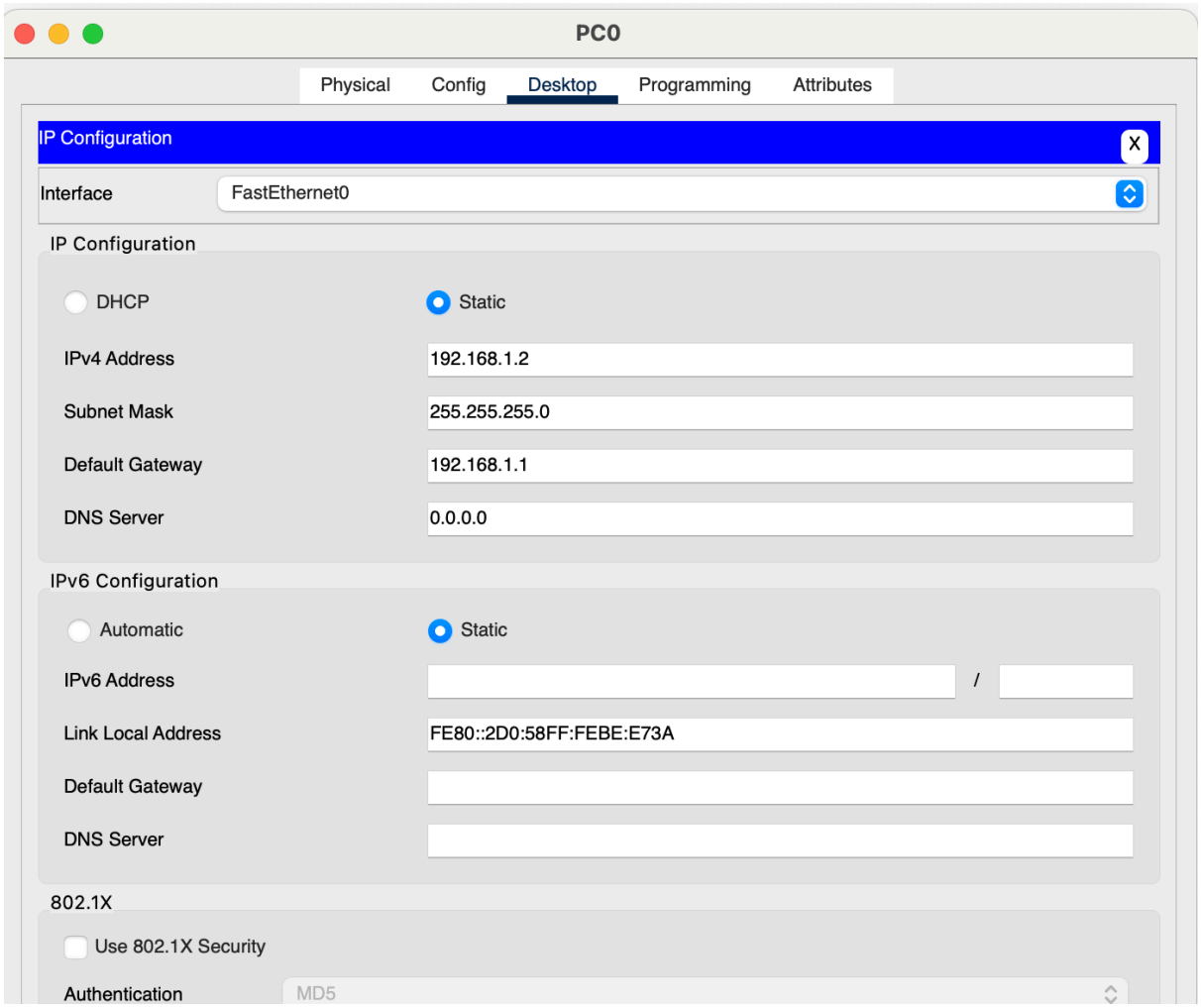
3. PC0 Configuration:

Click on PC0.
Select the Desktop tab.
Click IP Configuration.
Set the following:
IP Address: 192.168.1.3
Subnet Mask: 255.255.255.0
Gateway: 192.168.1.1
DNS Server: 8.8.8.8
Close the window.

4. PC1 Configuration:

Click on PC1.
Select the Desktop tab.
Click IP Configuration.
Set the following:
IP Address: 192.168.2.3

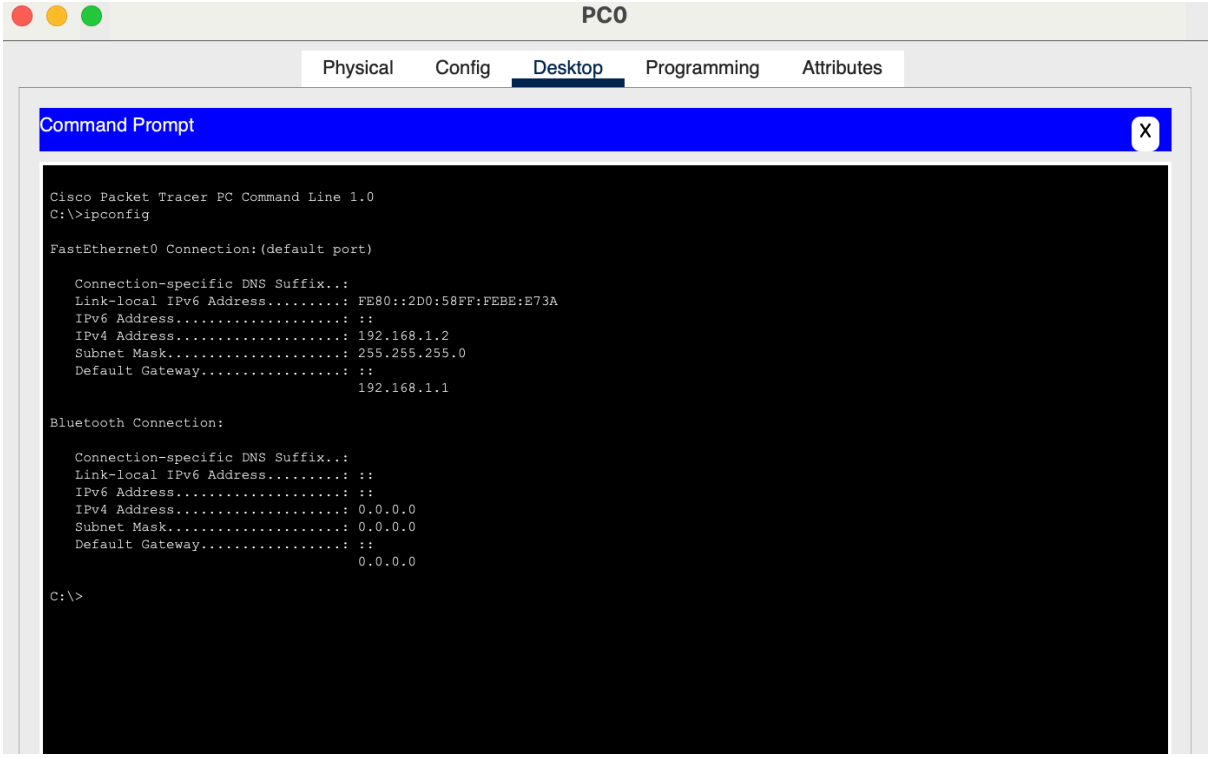
Subnet Mask: 255.255.255.0
Gateway: 192.168.2.1
DNS Server: 8.8.8.8
Close the window.



Step 5: Execute Networking Commands

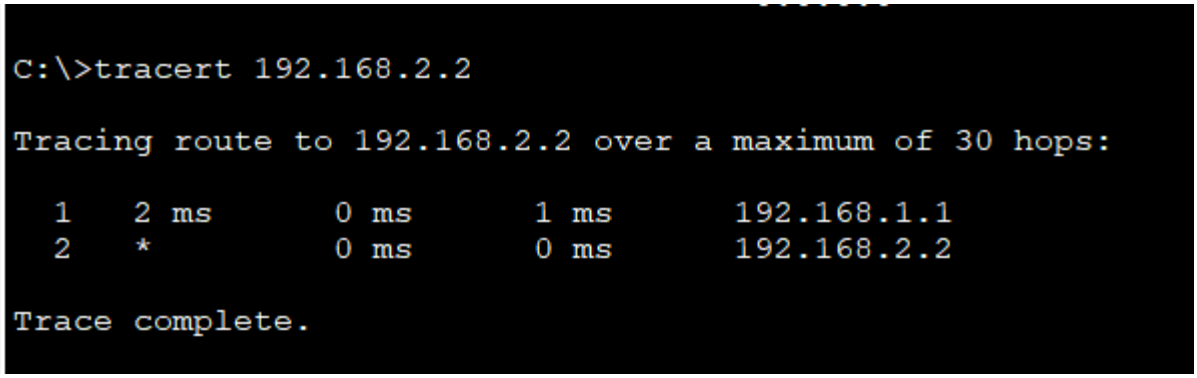
1. ipconfig:

This command displays all current TCP/IP network configuration values and refreshes DHCP and DNS settings.



2.tracert:

This command traces the path taken to a destination by sending ICMP Echo Request messages.



3. telnet:

This command is used for interactive communication with another host using the Telnet protocol.

telnet <destination IP> <port>

Configure the Router

1. **Assign IP Address**:
   - Click on the router.
   - Go to the **Config** tab.
   - Select the interface connected to the switch (e.g., G0/0).
   - Assign IP address: `192.168.1.1`, Subnet Mask: `255.255.255.0`

Router>enable

```
Router>configure terminal
Router(config-if)#line vty 0 4
Router(config-line)#password cisco
Router(config-line)#login
Router(config-line)#exit
Router(config)#end
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#write memory
Building configuration...
[OK]
```

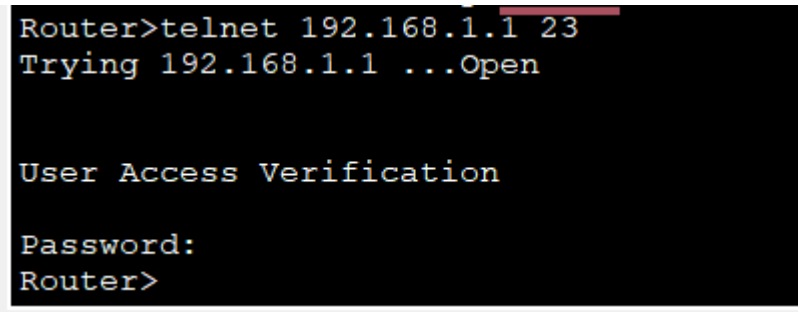
```
Router(config-if)#line vty 0 4
Router(config-line)#password cisco
Router(config-line)#login
Router(config-line)#exit
Router(config)#end
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#write memory
Building configuration...
[OK]
Router#enable
```

Telnet from PC to Router

1. **Open Command Prompt**:
   - On the PC0, go to the **Desktop** tab and open the **Command Prompt**.
2. **Execute Telnet Command**:

telnet <destination IP> <port>



- **Telnet Security**: Telnet is an unencrypted protocol and is not secure. For real-world applications, consider using SSH for secure remote connections.
- **Enabling Telnet on a Real Router**: If using real equipment, make sure Telnet is enabled and the device is configured to accept Telnet connections.

1. Router configuration and Brief Ip Interface

   This command is a scripting utility that allows you to display or modify the network configuration of a computer.

```
Router#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0     192.168.1.1     YES manual up                    up
GigabitEthernet0/1     192.168.2.1     YES manual up                    up
Vlan1                  unassigned      YES unset  administratively down down
Router#
```

2. **Ping 192.168.2.2**
   ICMP Echo

```
C:\>ping 192.168.2.2

Pinging 192.168.2.2 with 32 bytes of data:

Request timed out.
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 = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

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=8ms 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 = 8ms, Average = 2ms

C:\>
```

3. **nslookup**
   nslookup **www.google.com**

- This command queries the DNS to obtain domain name or IP address mapping.
  To use the `nslookup` command to resolve a domain name to an IP address in Cisco Packet Tracer, you'll need to ensure that the DNS server is properly configured in your network topology.

1. Add one server (to act as a DNS server).

2. Connect both PCs and the server to the switch using copper straight-through cables.

Configure the DNS Server

1. **Assign IP Address**:
   - Click on the server.
   - Go to the **Config** tab and select the **FastEthernet0** interface.
   - Assign IP address: `192.168.1.3`, Subnet Mask: `255.255.255.0`, Default Gateway: `192.168.1.1`.

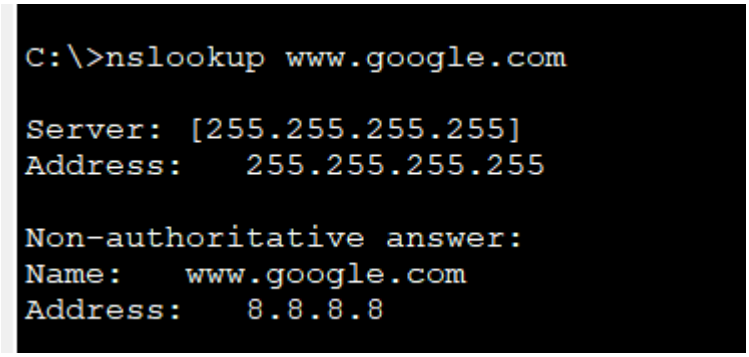
Configure DNS Service:

- Go to the **Services** tab on the server.
- Select **DNS** and turn the service **On**.
- Add an entry for `www.google.com` with an IP address (e.g., `8.8.8.8`).

Use the `nslookup` Command

1. **Open Command Prompt on PC0**:
   - Go to the **Desktop** tab on PC0.
   - Open the **Command Prompt**.
2. **Execute the `nslookup` Command**:
3.

```
nslookup www.google.com
```



This indicates that the PC successfully queried the DNS server and resolved the domain name `www.google.com` to the IP address `8.8.8.8`.

- **DNS Server Configuration**: Ensure that the DNS server is correctly configured and running.
- **DNS Entries**: The DNS entry for `www.google.com` should be added to the DNS server with an IP address.

- **Network Configuration**: Ensure that all devices are correctly connected and configured with appropriate IP addresses, subnet masks, and default gateways.

4. Netstat

   This command displays network connections for the Transmission Control Protocol (TCP), routing tables, and a number of network interface and network protocol statistics.
   The `netstat` command is used to display network connections, routing tables, interface statistics, masquerade connections, and multicast memberships.