

## Network Assignment 6

Name: - Santanu Mandal

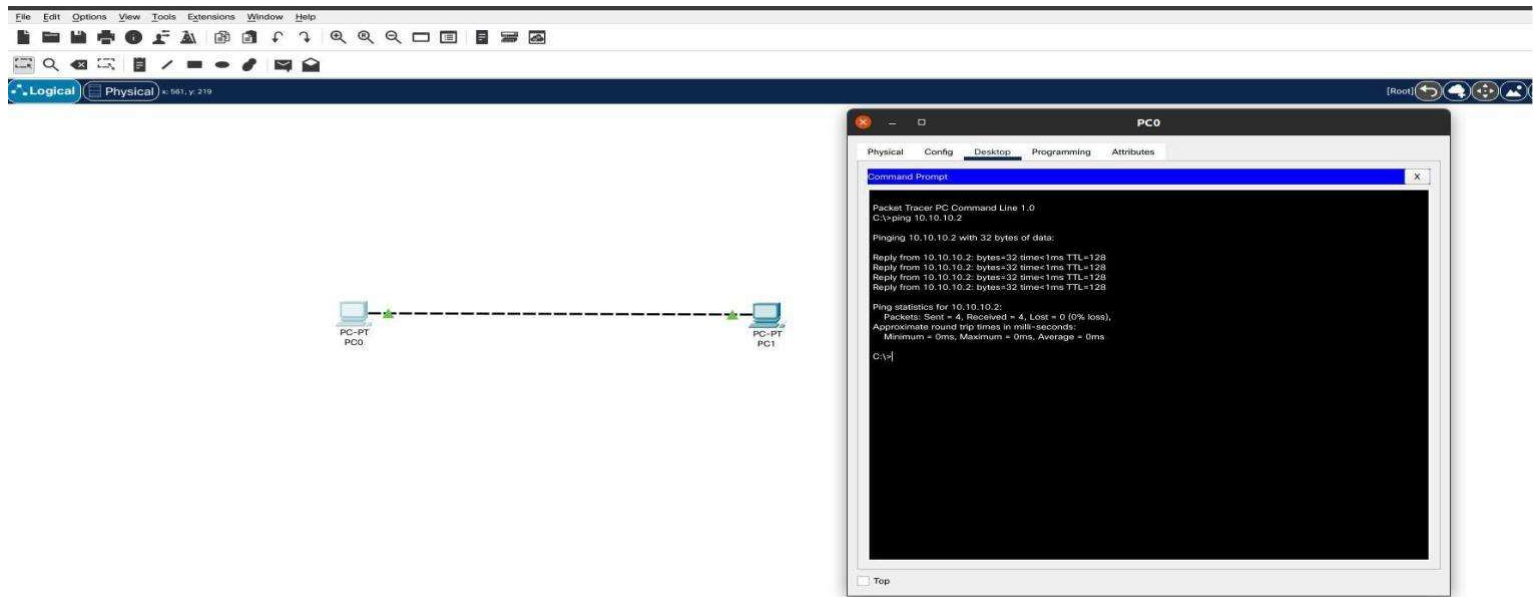
Roll: - 002010501102

### Overview:

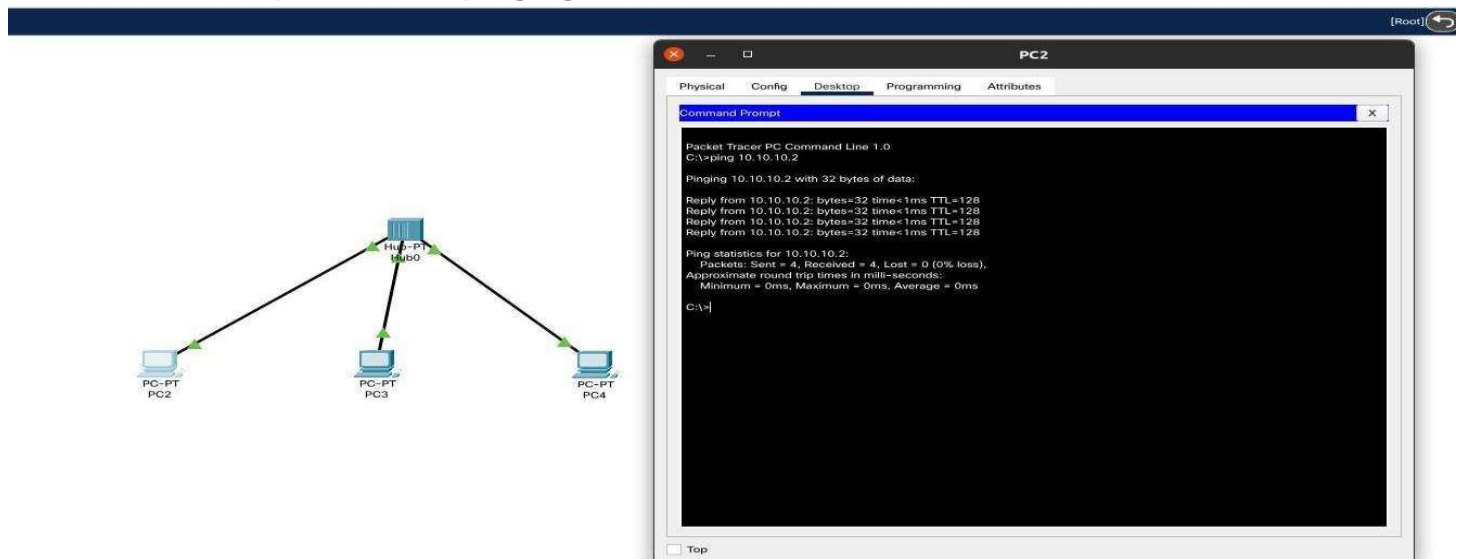
This entire assignment has been done using the CISCO Packet tracer tool.

System: Linux (Ubuntu 22.04), hp, (i3 5 th gen octa core processor)

Connect two hosts back-to-back with a crossover cable. Assign IP addresses, and see whether they are able to ping each other.



1. Create a LAN (named LAN-A) with 3 hosts using a hub. Ping each pair of nodes. host with ip 10.10.10.1 pinging to 10.10.10.2



host with ip 10.10.10.2 pinging to 10.10.10.3

```

graph TD
    Hub0[Hub0] --- PC2[PC-PT PC2]
    Hub0 --- PC3[PC-PT PC3]
    Hub0 --- PC4[PC-PT PC4]
  
```

PC3

Command Prompt

Packet Tracer PC Command Line 1.0  
 C:\>ping 10.10.10.3  
  
 Pinging 10.10.10.3 with 32 bytes of data:  
  
 Reply from 10.10.10.3: bytes=32 time<1ms TTL=128  
 Reply from 10.10.10.3: bytes=32 time<1ms TTL=128  
 Reply from 10.10.10.3: bytes=32 time<1ms TTL=128  
 Reply from 10.10.10.3: bytes=32 time<1ms TTL=128  
  
 Ping statistics for 10.10.10.3:  
     Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
     Approximate round trip times in milli-seconds:  
         Minimum = 0ms, Maximum = 1ms, Average = 0ms  
  
 C:\>

host with ip 10.10.10.3 pinging to 10.10.10.1

```

graph TD
    Hub0[Hub0] --- PC2[PC-PT PC2]
    Hub0 --- PC3[PC-PT PC3]
    Hub0 --- PC4[PC-PT PC4]
  
```

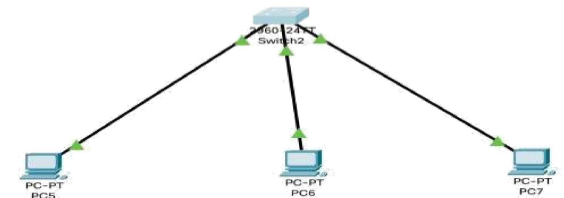
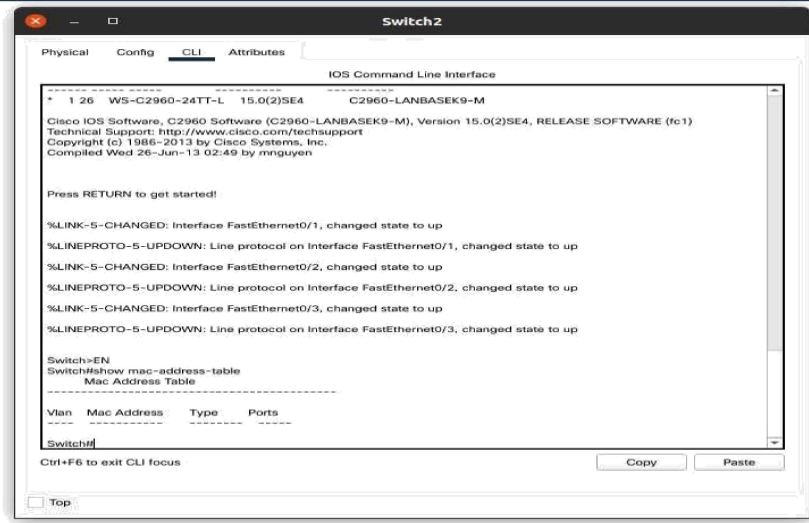
PC4

Command Prompt

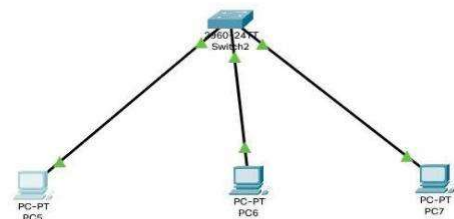
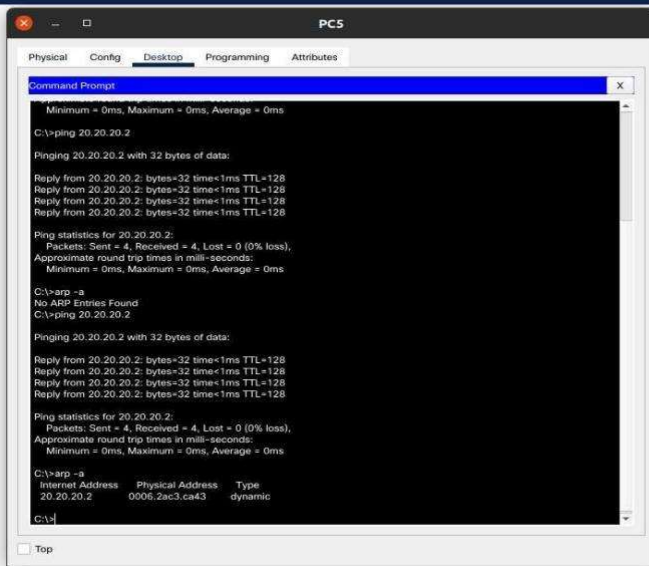
Packet Tracer PC Command Line 1.0  
 C:\>ping 10.10.10.1  
  
 Pinging 10.10.10.1 with 32 bytes of data:  
  
 Reply from 10.10.10.1: bytes=32 time<1ms TTL=128  
 Reply from 10.10.10.1: bytes=32 time<1ms TTL=128  
 Reply from 10.10.10.1: bytes=32 time<1ms TTL=128  
 Reply from 10.10.10.1: bytes=32 time<1ms TTL=128  
  
 Ping statistics for 10.10.10.1:  
     Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
     Approximate round trip times in milli-seconds:  
         Minimum = 0ms, Maximum = 0ms, Average = 0ms  
  
 C:\>

2. Create a LAN (named LAN-B) with 3 hosts using a switch. Record contents of the ARP Table of end hosts and the MAC Forwarding Table of the switch. Ping each pair of nodes. Now record the contents of the ARP Table of end hosts and the MAC Forwarding Table of the switch again.

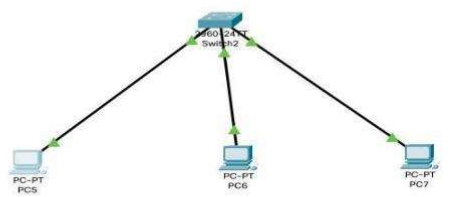
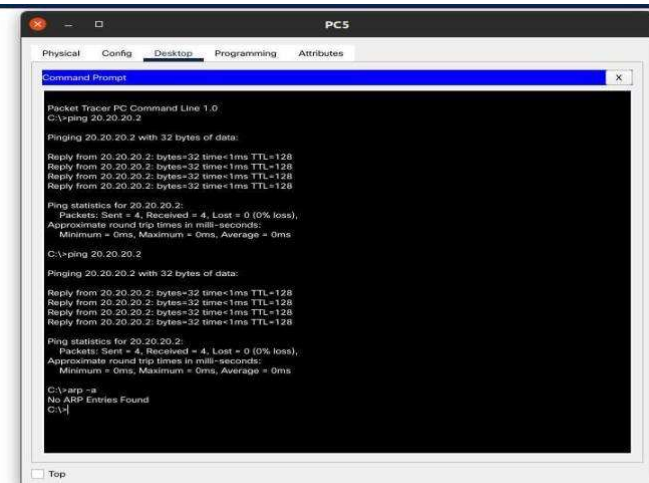
Initial contents of the MAC Address table for the switch



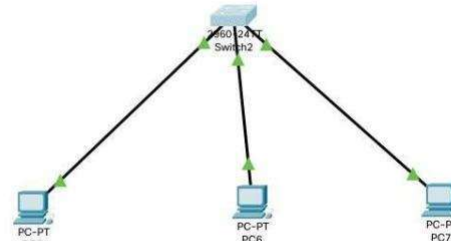
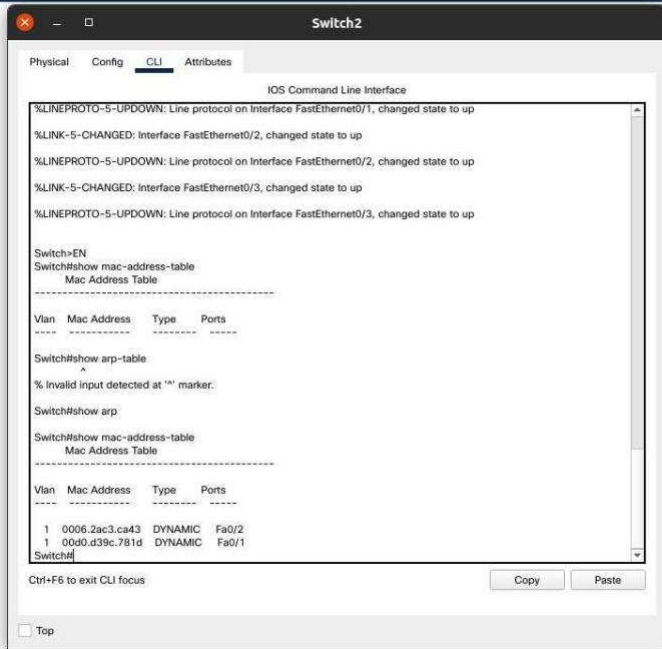
## ARP Record of host 1 before sending



## ARP Record of host 1 after pinging host 2

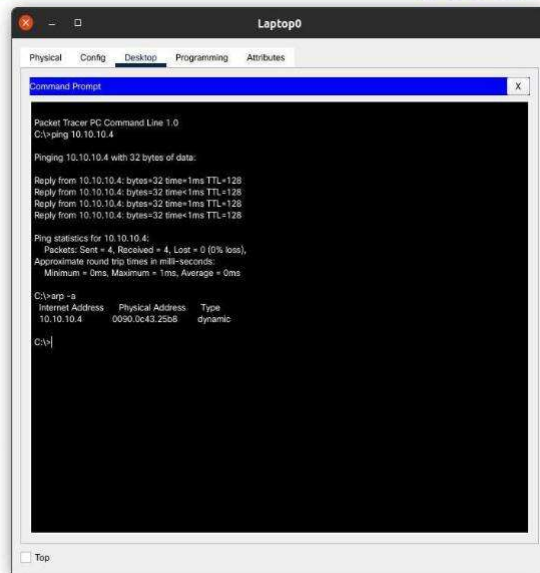
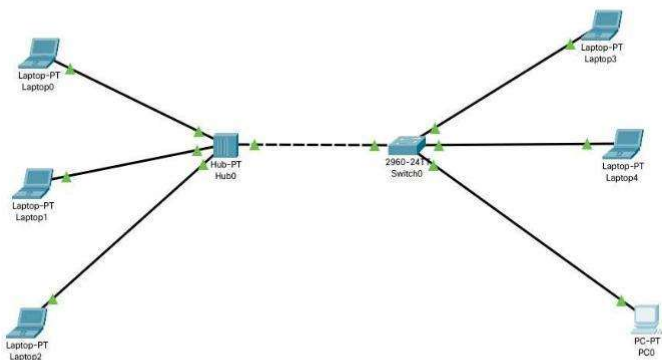


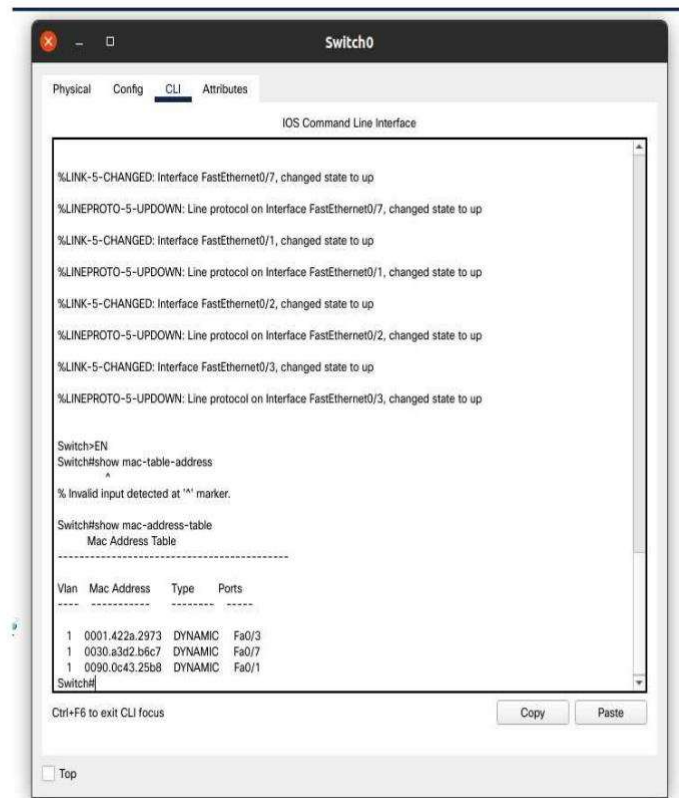
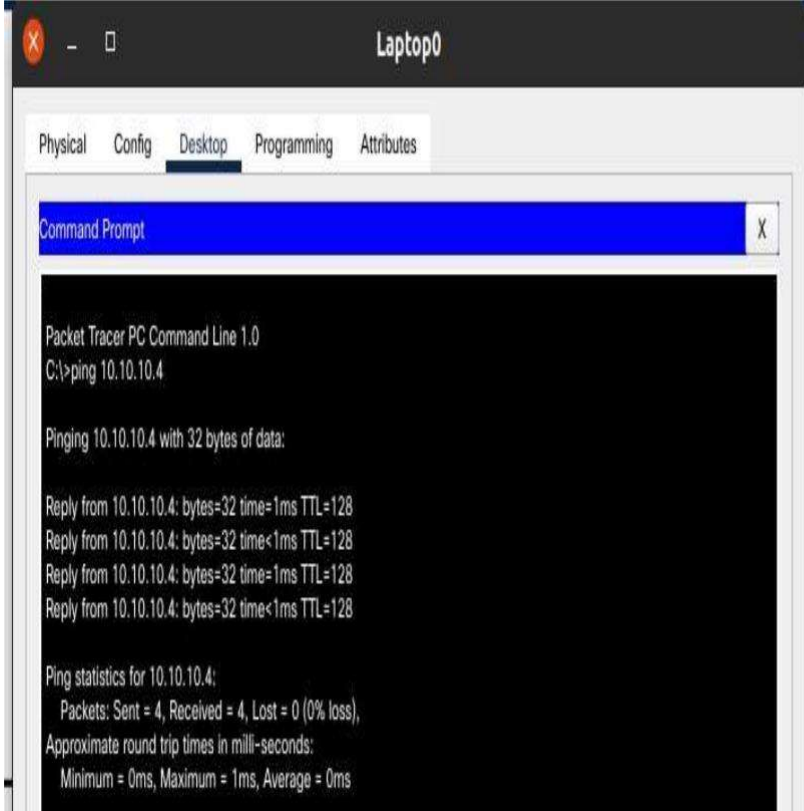
## MAC Address Table of the switch after a ping operation from host1 -> host2



3. Connect LAN-A and LAN-B by connecting the hub and switch using a crossover cable. Ping between each pair of hosts of LAN-A and LAN-B. Now record the contents of the ARP Table of end hosts and the MAC Forwarding Table of the switch again.

## ARP Table after connecting LAN A and LAN B



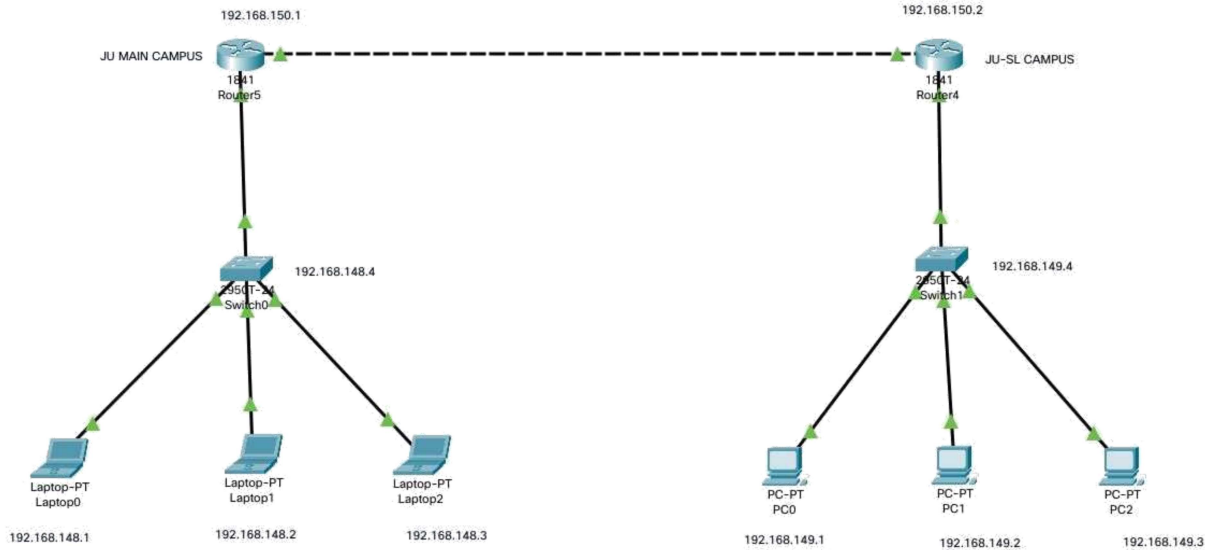


MAC Forwarding Table of the switch in LAN B

4. Create a LAN (named JU-Main) with three hosts connected via a layer-2 switch(Cisco 2950 switch PC-LAB1-Switch). Connect the switch to a router (Cisco 1818). Assign IP addresses to all the hosts and the router interface connected to this LAN from network 192.168.148.0/24. Configure the default gateway of each host as the IP address of the interface of the router which is connected to the LAN. Create another

LAN (named JU-SL) with three hosts connected via a layer-2 switch (Cisco 2950 switch PC-LAB2-Switch). Connect this switch to another router (Cisco 1818). Assign IP addresses to all the hosts and the router interface connected to this LAN from network 192.168.149.0/24. Configure the default gateway of each host as the IP address of the interface of the router which is connected to the LAN. Connect the two routers through appropriate WAN interfaces. Assign IP addresses to the WAN interfaces from network 192.168.150.0/24. Add static route in both of the routers to route packets between two LANs.

## Network Layout



Pinging a host (192.168.149.2, JU-SL Campus) from a host (192.168.148.2, JU-MAIN Campus) using static routing.

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.149.2

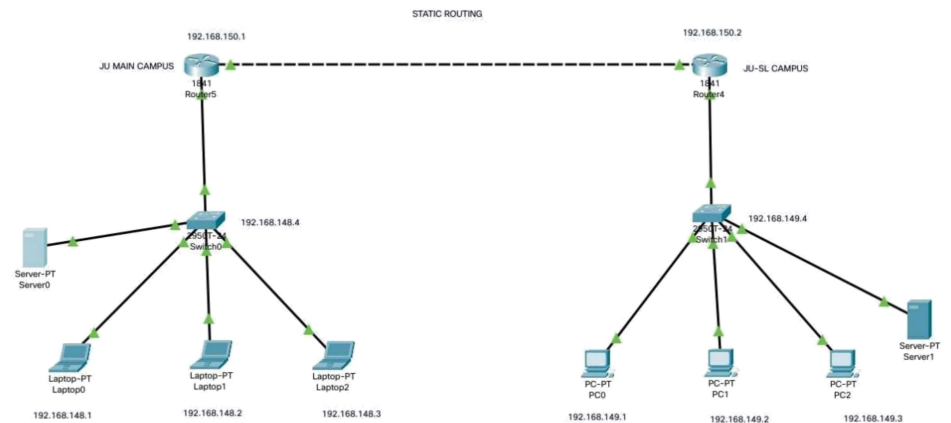
Pinging 192.168.149.2 with 32 bytes of data:

Request timed out.
Reply from 192.168.149.2: bytes=32 time<1ms TTL=126
Reply from 192.168.149.2: bytes=32 time=1ms TTL=126
Reply from 192.168.149.2: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.149.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

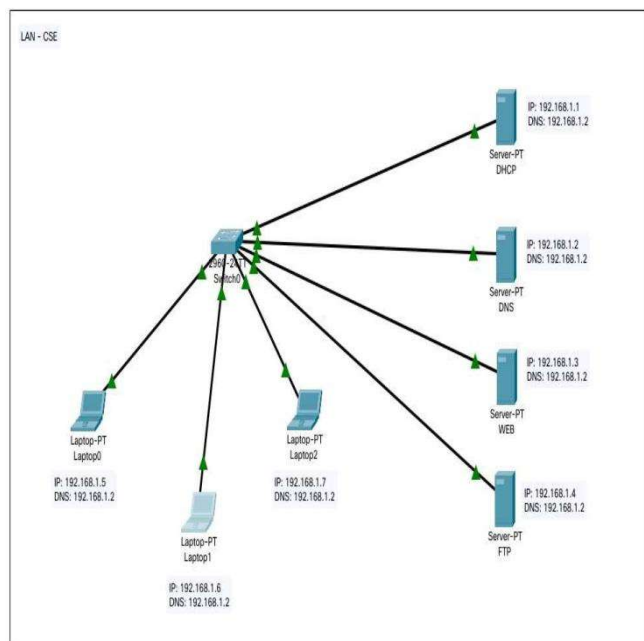
C:\>
```

5. Add servers to the individual LANs (in problem 5) and configure them as a DHCPserver. Configure the hosts in the individual LAN to obtain IP addresses and address of the default gateway via this DHCP ser

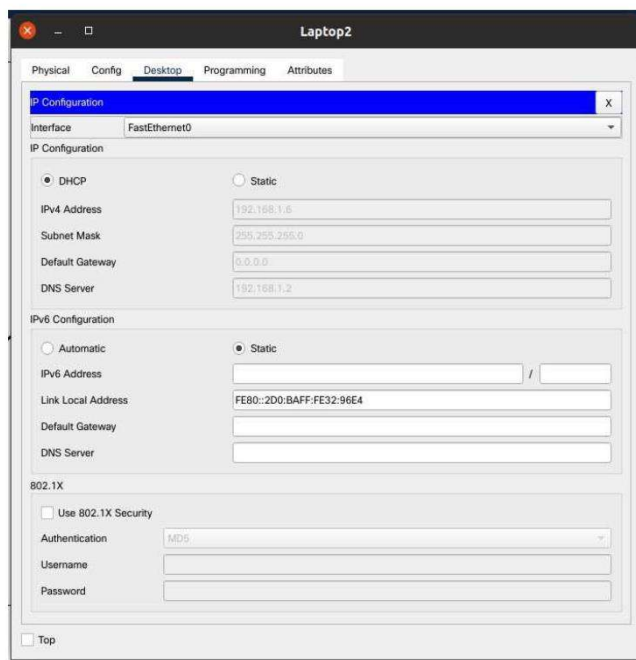


6. Create a LAN (CSE) with three hosts connected via a layer-2 switch (Cisco 2950 switch CSE-Switch). Also add a web server and a ftp server to this LAN. The hosts dynamically get their IP addresses from a local DHCP server. Servers are assigned fixed IP addresses. Configure the individual hosts to use the local DNS server for name resolution. Add a Domain Name Server (DNS) to this LAN. Create appropriate records in the DNS server for the individual servers in the LAN. The domain name of the LAN is cse.myuniv.edu. Configure the individual hosts to use the local DNS server for name resolution.

## Network Layout



## IP Configuration of a Laptop



## Comments:

The CISCO packet tracer is actually a pretty useful tool in simulating the Network Layout. It can help to plan the architecture, simulate events and then deploy it in real life so that we can be aware about the performance of the network in production. Further it helps experience a practical knowledge of how elements of an entire work are when deployed in an integrated fashion. Hoping to get more of such assignments to that learning becomes fun and not stressful.

