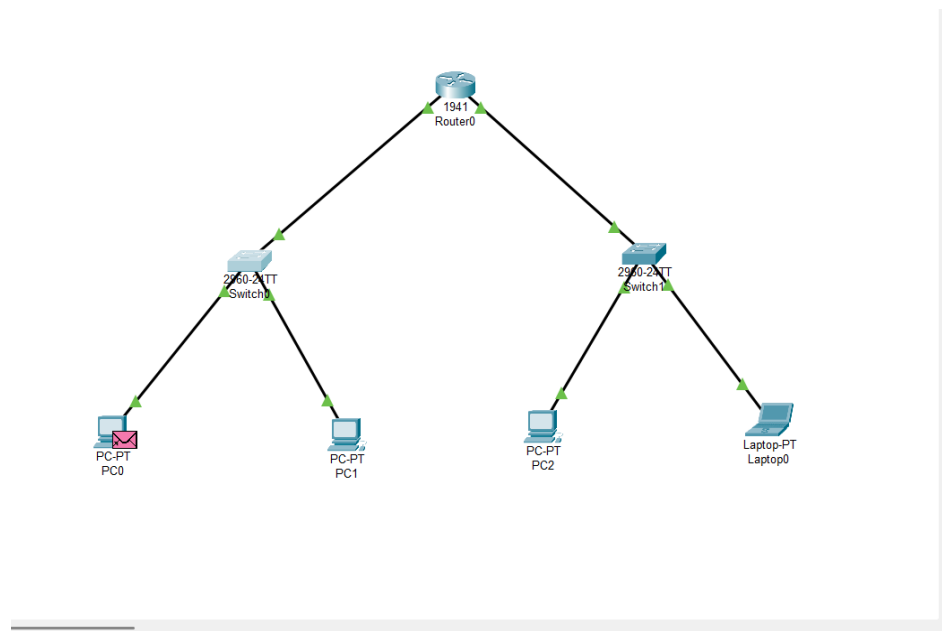


### Question-1:

**Simulate a small network with switches and multiple devices. Use ping to generate traffic and observe the MAC address table of the switch. Capture packets using Wireshark to analyze Ethernet frames and MAC addressing.**

This is a network model that I have designed to simulate a small network with multiple devices and switches. The purpose of this simulation is to observe how devices communicate, analyze the MAC address table of switches, and capture packets to study Ethernet frames and MAC addressing.



### Configuring the Devices:

Assigned static IP addresses to all devices

Configured the router interfaces with respective IP addresses

### IP Addressing Scheme:

**PC0:** 192.168.1.10

**Switch0 Side:** 192.168.1.1

**PC1:** 192.168.1.11

**Switch1 Side:** 192.168.2.1

**PC2:** 192.168.2.10

**Laptop0:** 192.168.2.11

## Generating Traffic:

Used **ping** commands to test connectivity between devices

## Switch0 mac address table:

**PDU Information at Device: Router0**

At Device: Router0  
Source: PC0  
Destination: PC2

**In Layers**

- Layer7
- Layer6
- Layer5
- Layer4
- Layer3: IP Header Src. IP: 192.168.2.10, Dest. IP: 192.168.1.10 ICMP Message Type: 0
- Layer2: Ethernet II Header 0001.C710.099D >> 0007.EC78.BB02
- Layer1: Port GigabitEthernet0/1

**Out Layers**

- Layer7
- Layer6
- Layer5
- Layer4
- Layer3: IP Header Src. IP: 192.168.2.10, Dest. IP: 192.168.1.10 ICMP Message Type: 0
- Layer2: Ethernet II Header 0007.EC78.BB01 >> 00D0.9735.E54A
- Layer1: Port(s): GigabitEthernet0/0

1. GigabitEthernet0/1 receives the frame.

**Simulation Panel**

Event List

Vis.	Time(sec)	Last Device	At Device
	0.000	--	PC0
	0.001	PC0	Switch0
	0.002	Switch0	Router0
	0.003	Router0	Switch1
	0.004	Switch1	PC2
	0.005	PC2	Switch1
	0.006	Switch1	Router0
Visible	0.007	Router0	Switch0

Reset Simulation ☒ Constant Delay Captured to: 0.007 s

Play Controls

Event List Filters - Visible Events

ACL Filter, ARP, BGP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPSec, ISAKMP, IoT, IoT TCP, LACP, LLDP, Meraki, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, PPP, PPPoE, PTP, RADIUS, REP, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP

Edit Filters Show All/None

Event List Realtime Simulation

## Switch1 mac address table:

**PDU Information at Device: Switch0**

At Device: Switch0  
Source: PC0  
Destination: PC2

**In Layers**

- Layer7
- Layer6
- Layer5
- Layer4
- Layer3
- Layer2: Ethernet II Header 00D0.9735.E54A >> 0007.EC78.BB01
- Layer1: Port FastEthernet0/1

**Out Layers**

- Layer7
- Layer6
- Layer5
- Layer4
- Layer3
- Layer2: Ethernet II Header 00D0.9735.E54A >> 0007.EC78.BB01
- Layer1: Port(s): GigabitEthernet0/1

1. FastEthernet0/1 receives the frame.

**Simulation Panel**

Event List

Vis.	Time(sec)	Last Device	At Device
	0.000	--	PC0
	0.001	PC0	Switch0
Visible	0.002	Switch0	Router0

Reset Simulation ☒ Constant Delay Captured to: 0.002 s

Play Controls

Event List Filters - Visible Events

ACL Filter, ARP, BGP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPSec, ISAKMP, IoT, IoT TCP, LACP, LLDP, Meraki, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, PPP, PPPoE, PTP, RADIUS, REP, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP

Edit Filters Show All/None

Event List Realtime Simulation

## Ethernet frames:

Transmitted a simple PDU from PC0 to the router:

