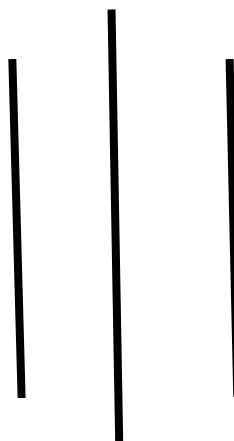


# **INSTITUTE OF ENGINEERING**

**ADVANCED COLLEGE OF ENGINEERING AND MANAGEMENT**

**Kupondole, Lalitpur**

**(AFFILIATED TO TRIBHUVAN UNIVERSITY)**



**Lab no:1**

**Subject: Computer Network**

**Submitted By:**

Name: Sameep Dhakal

Roll no: ACE074BCT063

**Submitted To:**

Department of Computer

and

Electronics Engineering

## Title: Network wiring and LAN setup

### Objective:

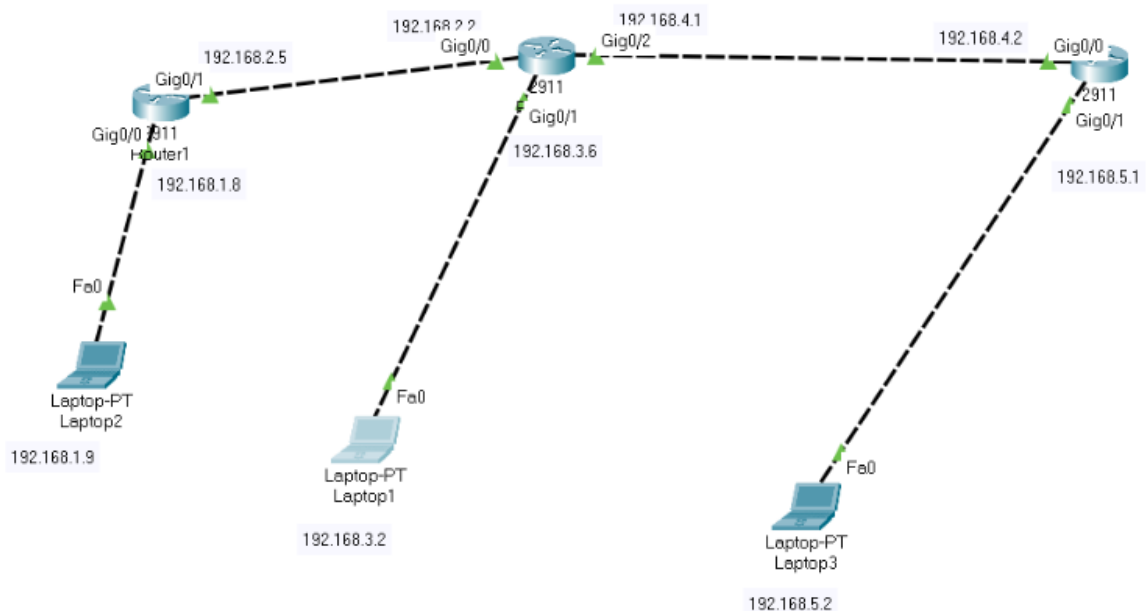
To learn about the setup and connection between different devices and routers

### Introduction:

Network wiring is the process of interconnecting various components of a network. Depending on the type of device being connected and the type of connection being used various methods have to be followed in order to ensure proper communication between the devices.

LAN (Local Area Network) is a computer network that interconnects computers within a limited area. The setup of a LAN depends on various factors like type of connection, distance between communicating components and available resources among others. So, it is important to learn about the setup of a LAN in various types of situations.

### Design:



Three different laptops are connected using three different routers. The 2911 routers are used for the connection.

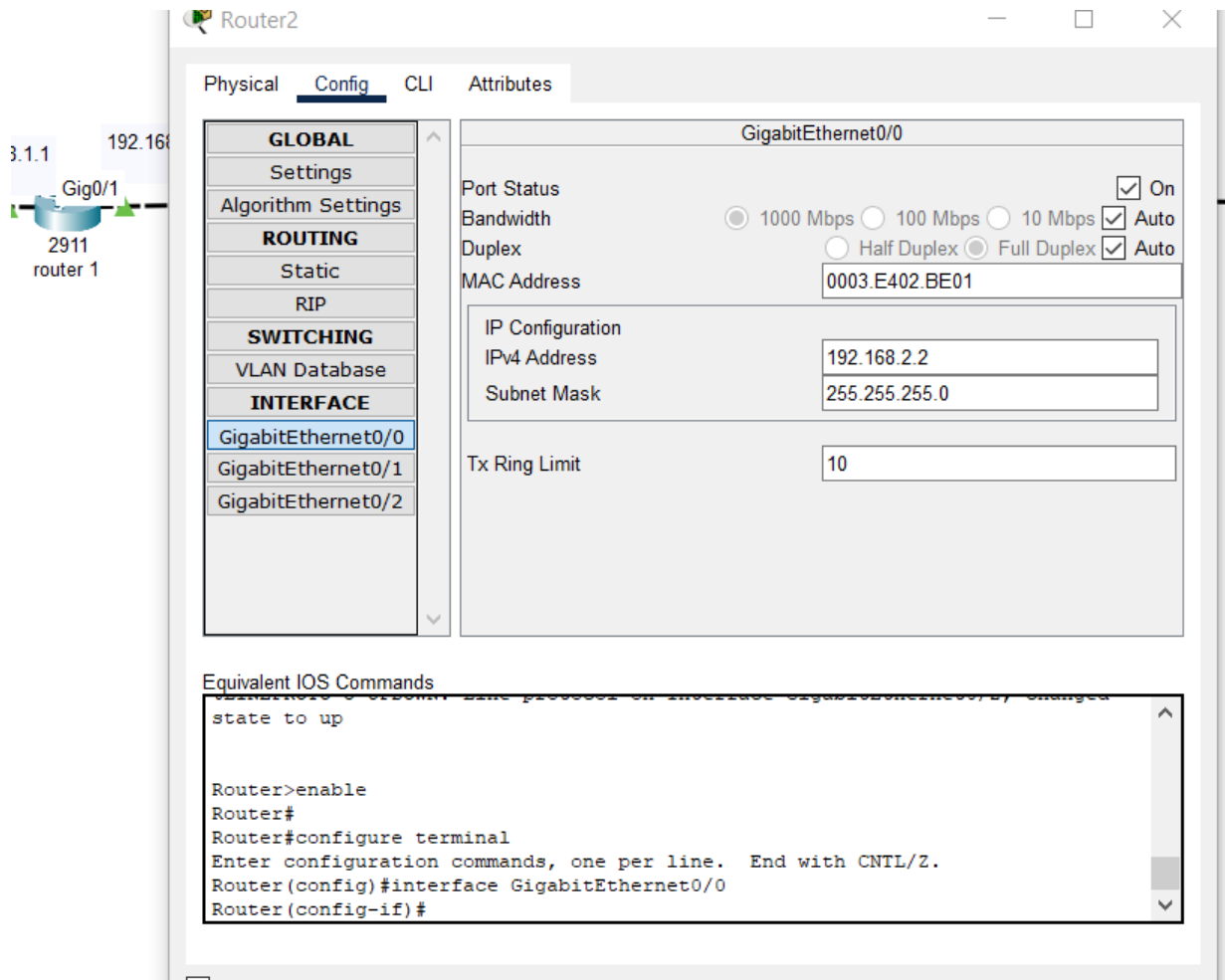
### Procedure:

1. First the required tools were selected.
2. The required ports of the routers were turned on.
3. Then the IP and subnet mask for each Laptop and router ports was set
  - a. For laptops this was done by going to the desktop and ip configurations

The screenshot shows the configuration window for a FastEthernet0 interface in Cisco Packet Tracer. The window has tabs for Physical, Config, Desktop, Programming, and Attributes, with 'Config' selected. On the left, a sidebar shows a tree view with 'GLOBAL' (containing 'Settings' and 'Algorithm Settings') and 'INTERFACE' (containing 'FastEthernet0' and 'Bluetooth'). 'FastEthernet0' is selected. The main area displays the configuration for 'FastEthernet0'. It includes 'Port Status' (checked 'On'), 'Bandwidth' (radio buttons for 100 Mbps and 10 Mbps, with 'Auto' checked), 'Duplex' (radio buttons for Half Duplex and Full Duplex, with 'Auto' checked), and 'MAC Address' (0090.0C60.A882). Below these are 'IP Configuration' and 'IPv6 Configuration' sections. In 'IP Configuration', 'Static' is selected, with 'IPv4 Address' set to 192.168.3.5 and 'Subnet Mask' set to 255.255.255.0. In 'IPv6 Configuration', 'Static' is selected, with 'IPv6 Address' set to FE80::290:CFF:FE60:A882 and 'Link Local Address' set to FE80::290:CFF:FE60:A882.

Tab	Section	Item	Value/Status
Config	GLOBAL	Settings	
		Algorithm Settings	
		INTERFACE	
	FastEthernet0	Port Status	<input checked="" type="checkbox"/> On
		Bandwidth	<input checked="" type="radio"/> 100 Mbps <input type="radio"/> 10 Mbps <input checked="" type="checkbox"/> Auto
	Duplex	<input type="radio"/> Half Duplex <input checked="" type="radio"/> Full Duplex <input checked="" type="checkbox"/> Auto	
	MAC Address	0090.0C60.A882	
	IP Configuration	<input type="radio"/> DHCP	
		<input checked="" type="radio"/> Static	
		IPv4 Address	192.168.3.5
Subnet Mask		255.255.255.0	
IPv6 Configuration	<input type="radio"/> Automatic		
	<input checked="" type="radio"/> Static		
	IPv6 Address	FE80::290:CFF:FE60:A882	
Link Local Address	FE80::290:CFF:FE60:A882		

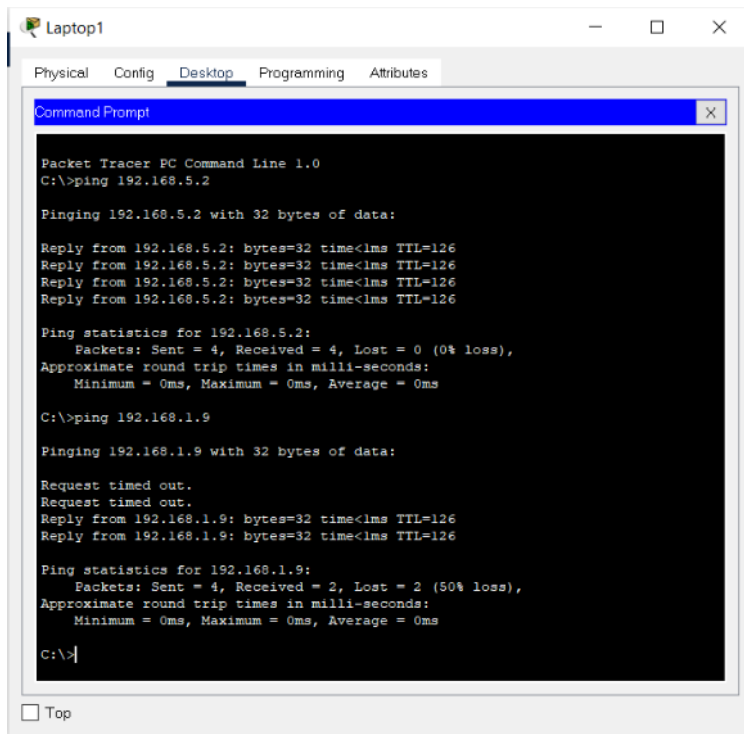
- b. For routers this was done by going to the configuration and selecting the required port



4. Required connections were made between the routers and laptops.
5. Then the routing information was given to each router through the routing option in the config tab.

## Output

Ping from laptop 1 to laptop 2:



The screenshot shows a Packet Tracer window titled 'Laptop1' with tabs for Physical, Config, Desktop, Programming, and Attributes. The 'Desktop' tab is active, displaying a 'Command Prompt' window. The command prompt shows the execution of two ping commands. The first command, 'C:\>ping 192.168.5.2', results in four successful replies from 192.168.5.2 with 32 bytes of data, a time of less than 1ms, and a TTL of 126. The statistics for 192.168.5.2 show 4 packets sent, 4 received, 0 lost (0% loss), and approximate round trip times of 0ms. The second command, 'C:\>ping 192.168.1.9', results in two successful replies and two request timeouts. The statistics for 192.168.1.9 show 4 packets sent, 2 received, 2 lost (50% loss), and approximate round trip times of 0ms.

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.5.2

Pinging 192.168.5.2 with 32 bytes of data:

Reply from 192.168.5.2: bytes=32 time<1ms TTL=126
Reply from 192.168.5.2: bytes=32 time<1ms TTL=126
Reply from 192.168.5.2: bytes=32 time<1ms TTL=126
Reply from 192.168.5.2: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.5.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.1.9

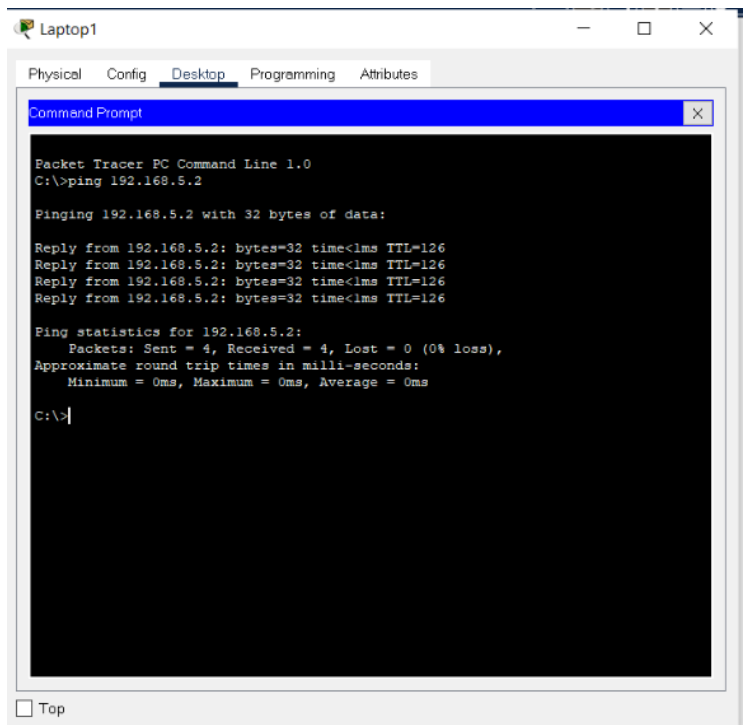
Pinging 192.168.1.9 with 32 bytes of data:

Request timed out.
Request timed out.
Reply from 192.168.1.9: bytes=32 time<1ms TTL=126
Reply from 192.168.1.9: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.1.9:
    Packets: Sent = 4, Received = 2, Lost = 2 (50% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>|
```

Ping from laptop 1 to laptop 3:



The screenshot shows a Packet Tracer window titled 'Laptop1' with tabs for Physical, Config, Desktop, Programming, and Attributes. The 'Desktop' tab is active, displaying a 'Command Prompt' window. The command prompt shows the execution of a ping command. The command, 'C:\>ping 192.168.5.2', results in four successful replies from 192.168.5.2 with 32 bytes of data, a time of less than 1ms, and a TTL of 126. The statistics for 192.168.5.2 show 4 packets sent, 4 received, 0 lost (0% loss), and approximate round trip times of 0ms.

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.5.2

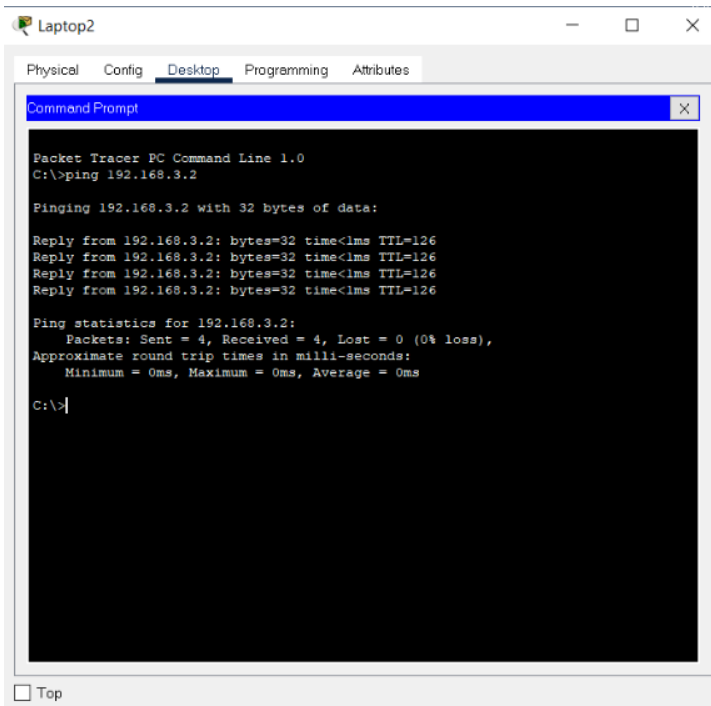
Pinging 192.168.5.2 with 32 bytes of data:

Reply from 192.168.5.2: bytes=32 time<1ms TTL=126
Reply from 192.168.5.2: bytes=32 time<1ms TTL=126
Reply from 192.168.5.2: bytes=32 time<1ms TTL=126
Reply from 192.168.5.2: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.5.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>|
```

Ping from laptop 2 to laptop 1:



The screenshot shows a Packet Tracer PC Command Line window for Laptop2. The Command Prompt displays the command 'C:\>ping 192.168.3.2'. The output shows four successful replies from 192.168.3.2 with 32 bytes of data, all with a time of 0ms and TTL of 126. The ping statistics show 4 packets sent, 4 received, and 0% loss.

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

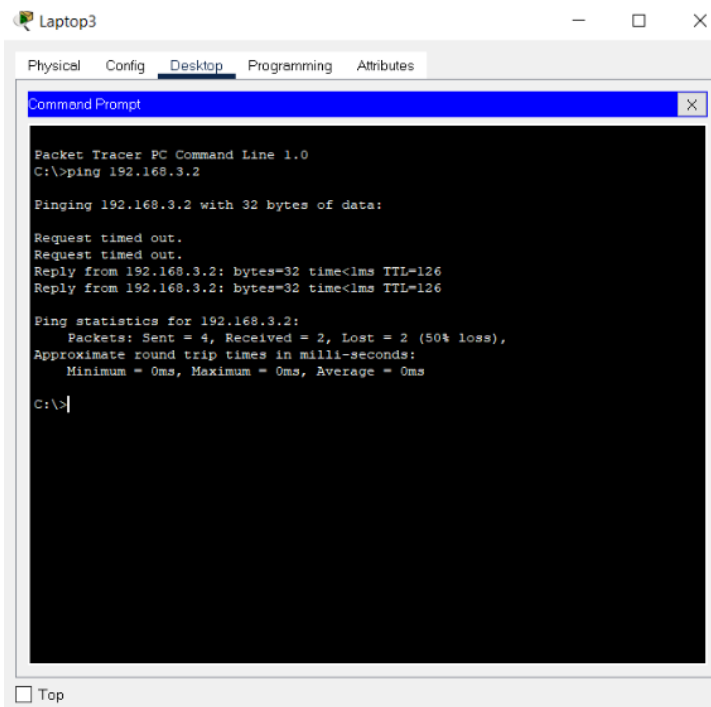
Pinging 192.168.3.2 with 32 bytes of data:

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:\>
```

Ping from laptop 3 to laptop 1:



The screenshot shows a Packet Tracer PC Command Line window for Laptop3. The Command Prompt displays the command 'C:\>ping 192.168.3.2'. The output shows two 'Request timed out.' messages followed by two successful replies from 192.168.3.2 with 32 bytes of data, all with a time of 0ms and TTL of 126. The ping statistics show 4 packets sent, 2 received, and 50% loss.

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

Pinging 192.168.3.2 with 32 bytes of data:

Request timed out.
Request timed out.
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 = 2, Lost = 2 (50% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

## **Result and Conclusion**

In this lab we created a simple LAN consisting of 3 laptops and 3 routers. Hence we learned how to establish a simple LAN connection through ethernet cables.