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EX.NO : 01

DATE :

FAMILIARIZING WITH WINDOWS NETWORK COMMANDS

AIM :

To familiarize with windows network commands and their outputs.

PROCEDURE :

1. Open the Command prompt by typing “CMD” in the Run Dialogue.
2. Once the Command prompt opens type the commands.

COMMAND DESCRIPTION :

Sl.NO	COMMAND	USE
1)	Ipconfig	This command can be utilized to verify a network connection as well as verify your network settings.
2)	Netstat	Displays active a TCP connections, ports on which the computer is listening, Ethernet statistics, the IP routing table etc...
3)	Tracert	The tracert command is used to visually see a network packet being sent and received and the amount of hops required for that packet to get to its destination.
4)	Ping	Helps in determining TCP/IP networks ip address as well as determine issues with the network and assists in resolving them.
5)	Pathping	Provides information about network latency and network loss at intermediate hops between a source and destination pathping sends.

6)	Nslookup	Displays information that you can use to diagnose Domain Name System (DNS) infrastructure.
7)	Nbtstat	MS_DOS utility that displays protocol statistics & current TCP/IP connections using NBT.
8)	Getmac	DOS command used to show both local & remote MAC addresses when run with no parameters (i.e getmac) it displays MAC addresses for the local system. When run with the /s parameter (Eg. Getmac /s \\too> it displays MAC address for the remote computer).

OUTPUT :

Ipconfig

```

C:\Windows\system32\cmd.e  X  +  v
C:\Users\MSD>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 1:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix  . :
    IPv6 Address. . . . . : 2401:4900:2325:1cd1:bf17:7e12:afed:6a20
    Temporary IPv6 Address. . . . . : 2401:4900:2325:1cd1:f47a:5620:6663:c43f
    Link-local IPv6 Address . . . . . : fe80::3d7d:8789:4d20:4a40%16
    IPv4 Address. . . . . : 192.168.153.172
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : fe80::c022:3dff:fe0c:fe56%16
                                192.168.153.211

Ethernet adapter Bluetooth Network Connection:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

```

Netstat

```
C:\Windows\system32\cmd.e: X + v
Microsoft Windows [Version 10.0.22621.3155]
(c) Microsoft Corporation. All rights reserved.

C:\Users\MSD>netstat

Active Connections

Proto Local Address           Foreign Address         State
TCP    192.168.153.172:50729    20.198.119.84:https     ESTABLISHED
TCP    192.168.153.172:50807    152.195.38.76:http      TIME_WAIT
TCP    192.168.153.172:50809    152.195.38.76:http      TIME_WAIT
TCP    [2401:4900:2325:1cd1:f47a:5620:6663:c43f]:50797 g2600-140f-f400-0000-0000-1730-e221:http TIME_WAIT
TCP    [2401:4900:2325:1cd1:f47a:5620:6663:c43f]:50798 g2600-140f-f400-0000-0000-1730-e221:http TIME_WAIT
TCP    [2401:4900:2325:1cd1:f47a:5620:6663:c43f]:50800 g2600-140f-f400-0000-0000-1730-e221:http TIME_WAIT
```

Tracert

```
C:\Windows\system32\cmd.e: X + v
C:\Users\MSD>tracert www.srmist.edu.in

Tracing route to srmist-alb-630144276.ap-south-1.elb.amazonaws.com [35.154.166.26]
over a maximum of 30 hops:

 1    3 ms    3 ms    3 ms  192.168.153.211
 2    *      *      *      Request timed out.
 3    *      *      *      Request timed out.
 4   46 ms   30 ms   22 ms  10.50.221.46
 5   59 ms   40 ms   22 ms  125.19.176.89
 6   74 ms   29 ms   66 ms  182.79.239.197
 7    *      *      *      Request timed out.
 8    *      *      *      Request timed out.
 9  162 ms   82 ms   81 ms  52.95.64.170
10   86 ms   94 ms   76 ms  52.95.64.167
11  103 ms   70 ms   73 ms  52.95.66.127
12   84 ms   74 ms   79 ms  52.95.65.133
13    *      *      *      Request timed out.
14    *      *      *      Request timed out.
15    *      *      *      Request timed out.
16    *      *      *      Request timed out.
17    *      *      *      Request timed out.
18    *      *      *      Request timed out.
19    *      *      *      Request timed out.
20    *      *      *      Request timed out.
21    *      *      *      Request timed out.
22    *      *      *      Request timed out.
23    *      *      *      Request timed out.
24    *      *      *      Request timed out.
25    *      *      *      Request timed out.
26    *      *      *      Request timed out.
27    *      *      *      Request timed out.
28    *      *      *      Request timed out.
29    *      *      *      Request timed out.
30    *      *      *      Request timed out.

Trace complete.
```

Ping

```
C:\Windows\system32\cmd.e: X + v
Microsoft Windows [Version 10.0.22621.3155]
(c) Microsoft Corporation. All rights reserved.

C:\Users\MSD>ping 1.1.1.7

Pinging 1.1.1.7 with 32 bytes of data:
Reply from 1.1.1.7: bytes=32 time=279ms TTL=56
Reply from 1.1.1.7: bytes=32 time=44ms TTL=56
Reply from 1.1.1.7: bytes=32 time=84ms TTL=56
Reply from 1.1.1.7: bytes=32 time=73ms TTL=56

Ping statistics for 1.1.1.7:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 44ms, Maximum = 279ms, Average = 120ms
```

Pathping

```
C:\Users\MSD>pathping www.srmist.edu.in

Tracing route to srmist-alb-630144276.ap-south-1.elb.amazonaws.com [13.127.51.112]
over a maximum of 30 hops:
  0  MSD-K67DBKG [192.168.153.172]
  1  192.168.153.211
  2  * * *
Computing statistics for 25 seconds...
Hop  RTT      Source to Here   This Node/Link   Address
  0                               Lost/Sent = Pct  Lost/Sent = Pct
  0                               0/ 100 = 0%      0/ 100 = 0%      MSD-K67DBKG [192.168.153.172]
  1    7ms      0/ 100 = 0%      0/ 100 = 0%      192.168.153.211
Trace complete.
```

Nslookup

```
C:\Users\MSD>nslookup www.srmist.edu.in
Server: UnKnown
Address: 192.168.153.211

Non-authoritative answer:
Name: srmist-alb-630144276.ap-south-1.elb.amazonaws.com
Addresses: 13.127.51.112
           35.154.166.26
Aliases: www.srmist.edu.in
```

Nbtstat

```
C:\Windows\system32\cmd.e: X + v
Microsoft Windows [Version 10.0.22621.3155]
(c) Microsoft Corporation. All rights reserved.

C:\Users\MSD>nbtstat

Displays protocol statistics and current TCP/IP connections using NBT
(NetBIOS over TCP/IP).

NBTSTAT [ [-a RemoteName] [-A IP address] [-c] [-n]
          [-r] [-R] [-RR] [-s] [-S] [interval] ]

-a (adapter status) Lists the remote machine's name table given its name
-A (Adapter status) Lists the remote machine's name table given its
                      IP address.
-c (cache)           Lists NBT's cache of remote [machine] names and their IP addresses
-n (names)           Lists local NetBIOS names.
-r (resolved)        Lists names resolved by broadcast and via WINS
-R (Reload)          Purges and reloads the remote cache name table
-S (Sessions)        Lists sessions table with the destination IP addresses
-s (sessions)        Lists sessions table converting destination IP
                      addresses to computer NETBIOS names.
-RR (ReleaseRefresh) Sends Name Release packets to WINS and then, starts Refresh

RemoteName  Remote host machine name.
IP address  Dotted decimal representation of the IP address.
interval    Redisplays selected statistics, pausing interval seconds
             between each display. Press Ctrl+C to stop redisplaying
             statistics.
```

```
C:\Users\MSD>nbtstat -n

Ethernet:
Node IpAddress: [0.0.0.0] Scope Id: []

    No names in cache

Bluetooth Network Connection:
Node IpAddress: [0.0.0.0] Scope Id: []

    No names in cache

Wi-Fi:
Node IpAddress: [192.168.153.172] Scope Id: []

    NetBIOS Local Name Table

    Name                Type                Status
    -----
    MSD-K67DBKG          <20>    UNIQUE          Registered
    MSD-K67DBKG          <00>    UNIQUE          Registered
    WORKGROUP             <00>    GROUP           Registered

Local Area Connection* 1:
Node IpAddress: [0.0.0.0] Scope Id: []

    No names in cache

Local Area Connection* 2:
Node IpAddress: [0.0.0.0] Scope Id: []

    No names in cache
```

Getmac

```
C:\Windows\system32\cmd.e: X + v
Microsoft Windows [Version 10.0.22621.3155]
(c) Microsoft Corporation. All rights reserved.

C:\Users\MSD>getmac

Physical Address      Transport Name
=====
3C-91-80-54-6C-9F     \Device\Tcpip_{97E7618B-4E96-47F3-BFE3-AB234CAED9EB}
9C-5A-44-40-C4-ED     Disconnected
3C-91-80-54-6C-A0     Media disconnected
```

RESULT :

Thus, the various network commands are executed and the output is verified.

EX.NO : 02

DATE :

**ANALYZING THE PERFORMANCE OF VARIOUS
CONFIGURATIONS AND PROTOCOLS OF LAN ESTABLISHING A
LOCAL AREA NETWORK (LAN)**

AIM :

To set up a Local Area Network using Cisco Packet Tracer.

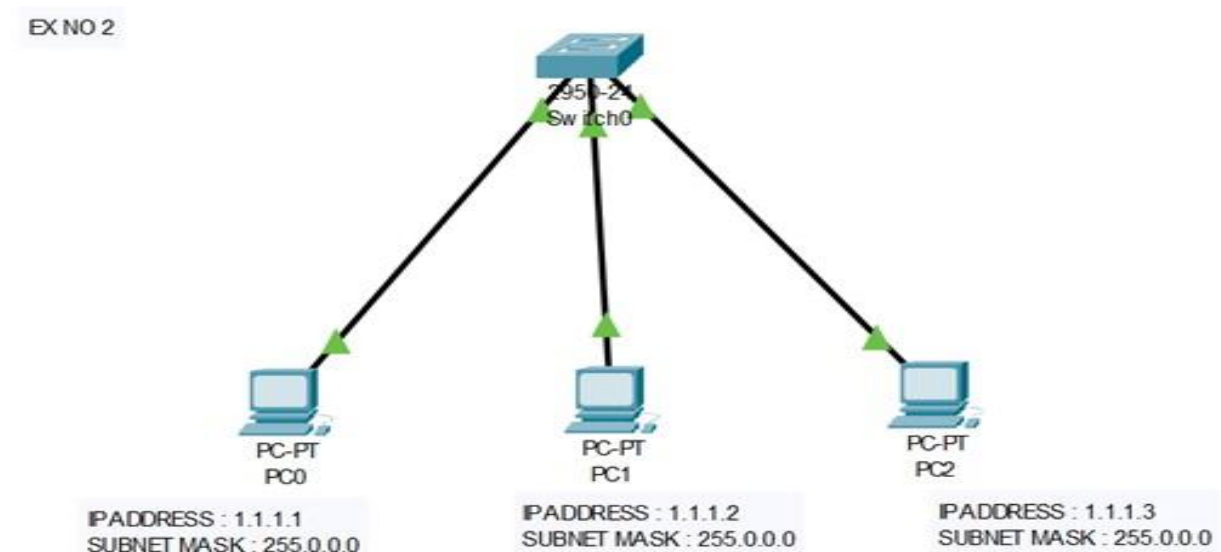
REQUIREMENTS :

- Three Windows PC.
- One Switch(2950-24) or One Hub.
- Three Straight Line LAN Cables.
- Cisco Packet Tracer.

PROCEDURES :

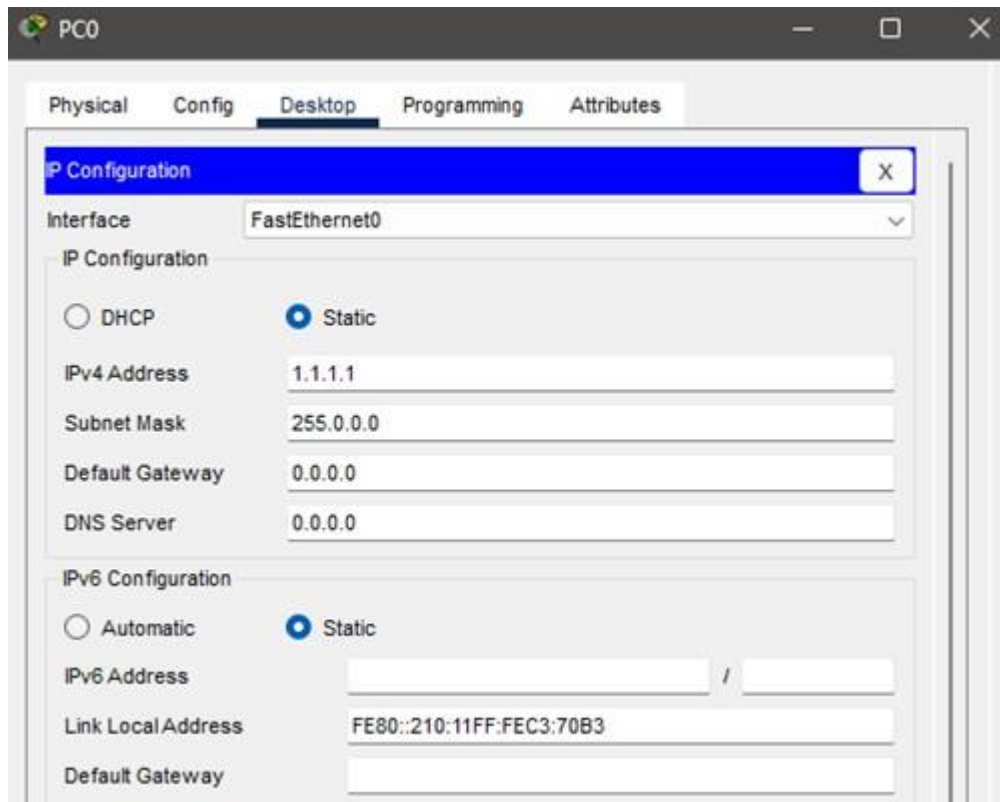
- Open CISCO PACKET TRACER software.
- Draw the Three PC using END Device Icons.
- Draw the Cisco 24 Port Switch Using Switch icon lists.
- Make the Connections using Copper-Straight-Through Ethernet Cables.
- Enter the IP Address To Each Machine.
- Check the Network Connections using Add Simple PDU(P).

NETWORK TOPOLOGY :



HOST IP ADDRESS :

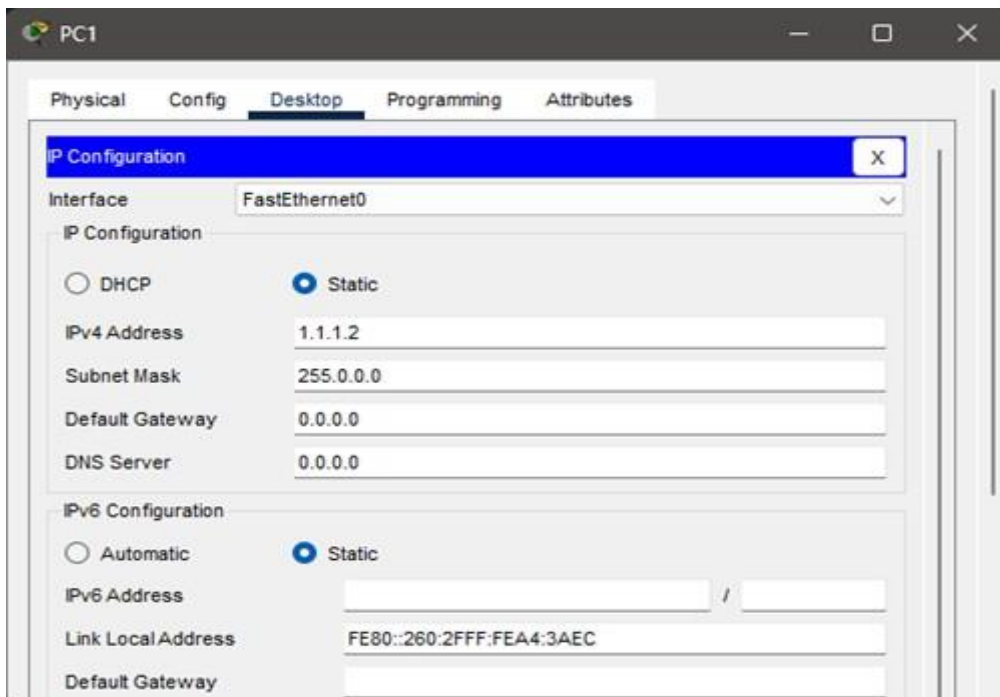
PC0 IP CONFIGURATION



The screenshot shows the 'PC0' configuration window with the 'Desktop' tab selected. The 'IP Configuration' sub-window is open, showing the 'FastEthernet0' interface. The 'IP Configuration' section has 'Static' selected. The 'IPv4 Address' is set to '1.1.1.1', 'Subnet Mask' to '255.0.0.0', 'Default Gateway' to '0.0.0.0', and 'DNS Server' to '0.0.0.0'. The 'IPv6 Configuration' section has 'Static' selected, with 'IPv6 Address' as an empty field, 'Link Local Address' as 'FE80::210:11FF:FEC3:70B3', and 'Default Gateway' as an empty field.

Field	Value
Interface	FastEthernet0
IP Configuration	Static
IPv4 Address	1.1.1.1
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	Static
IPv6 Address	
Link Local Address	FE80::210:11FF:FEC3:70B3
Default Gateway	

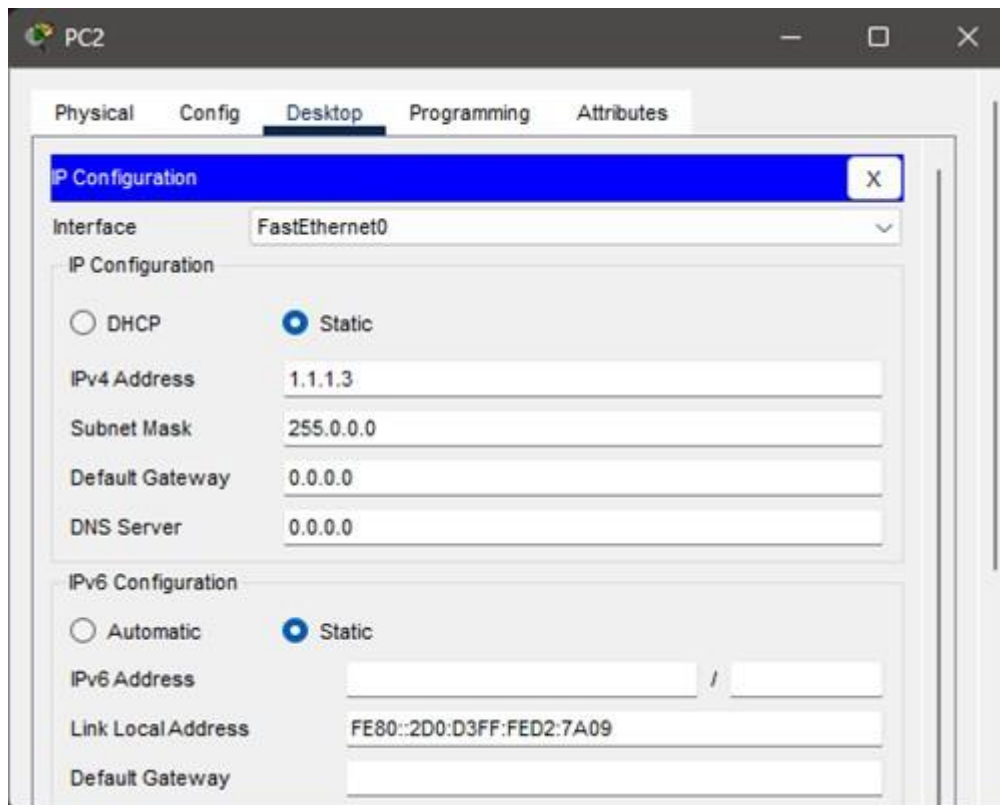
PC1 IP CONFIGURATION



The screenshot shows the 'PC1' configuration window with the 'Desktop' tab selected. The 'IP Configuration' sub-window is open, showing the 'FastEthernet0' interface. The 'IP Configuration' section has 'Static' selected. The 'IPv4 Address' is set to '1.1.1.2', 'Subnet Mask' to '255.0.0.0', 'Default Gateway' to '0.0.0.0', and 'DNS Server' to '0.0.0.0'. The 'IPv6 Configuration' section has 'Static' selected, with 'IPv6 Address' as an empty field, 'Link Local Address' as 'FE80::260:2FFF:FEA4:3AEC', and 'Default Gateway' as an empty field.

Field	Value
Interface	FastEthernet0
IP Configuration	Static
IPv4 Address	1.1.1.2
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	Static
IPv6 Address	
Link Local Address	FE80::260:2FFF:FEA4:3AEC
Default Gateway	

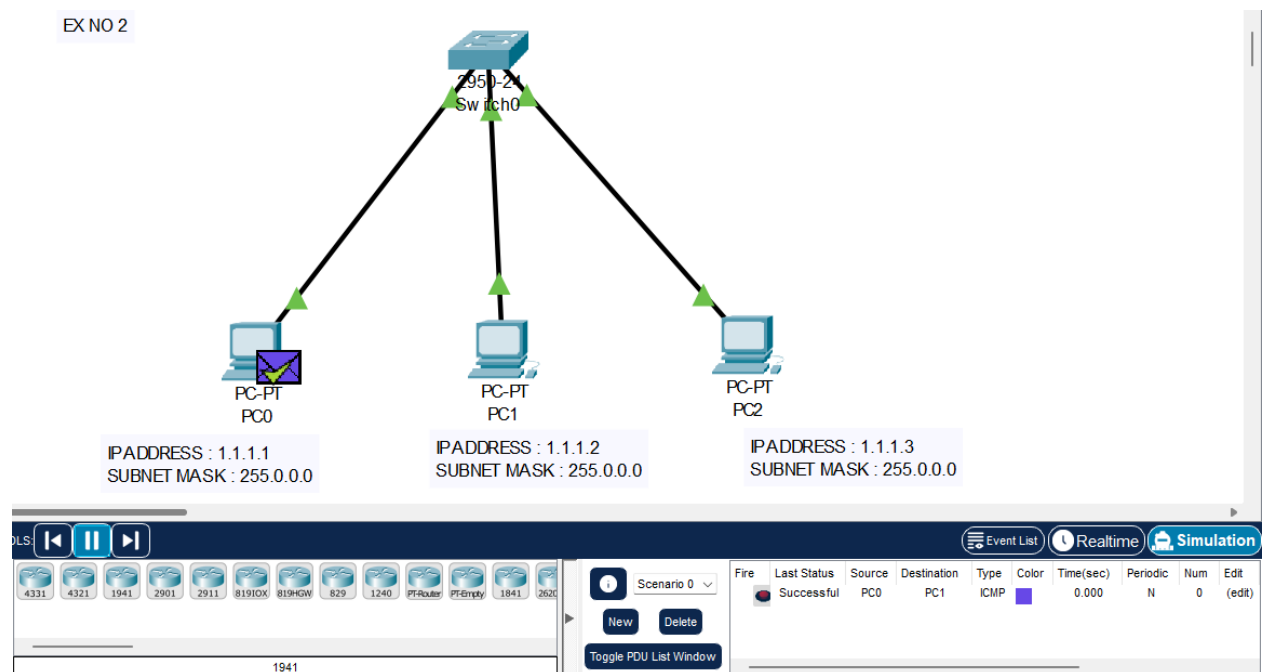
PC2 IP CONFIGURATION



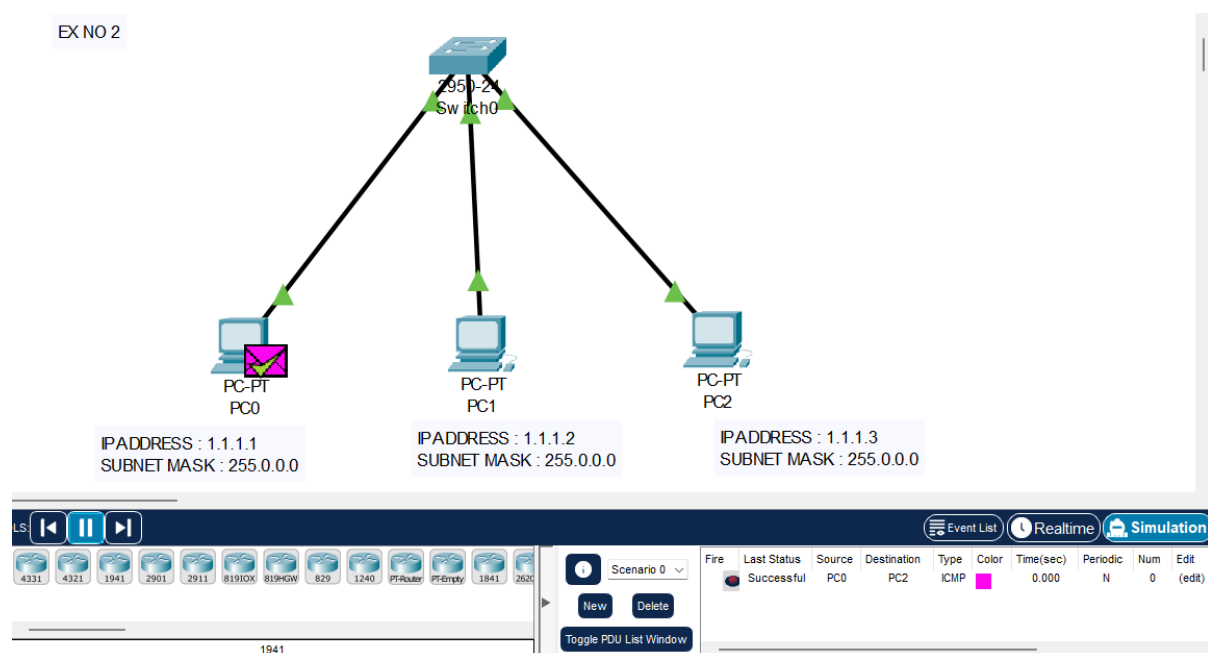
VERIFY LAN NETWORK CONNECTIVITY :

Using Add Simple PDU(p), Click the mail icon and then drop one mail to PC0 and another mail to PC1. If the resultant window shows the successful delivery, then network connectivity is successful.

HOST PC0 TO PC1



HOST PC1 TO PC2



RESULT :

Thus, the LAN connection is established, hosts are configured, the communications among the machines are verified and manipulated successfully.

EX.NO : 03

DATE :

**ANALYZING THE PERFORMANCE OF VARIOUS
CONFIGURATIONS AND PROTOCOLS IN LAN CONNECTING TWO
LANs USING ROUTER WITH STATIC ROUTER**

AIM :

To establish connection between two LANs by extending routing connection using router.

REQUIREMENTS :

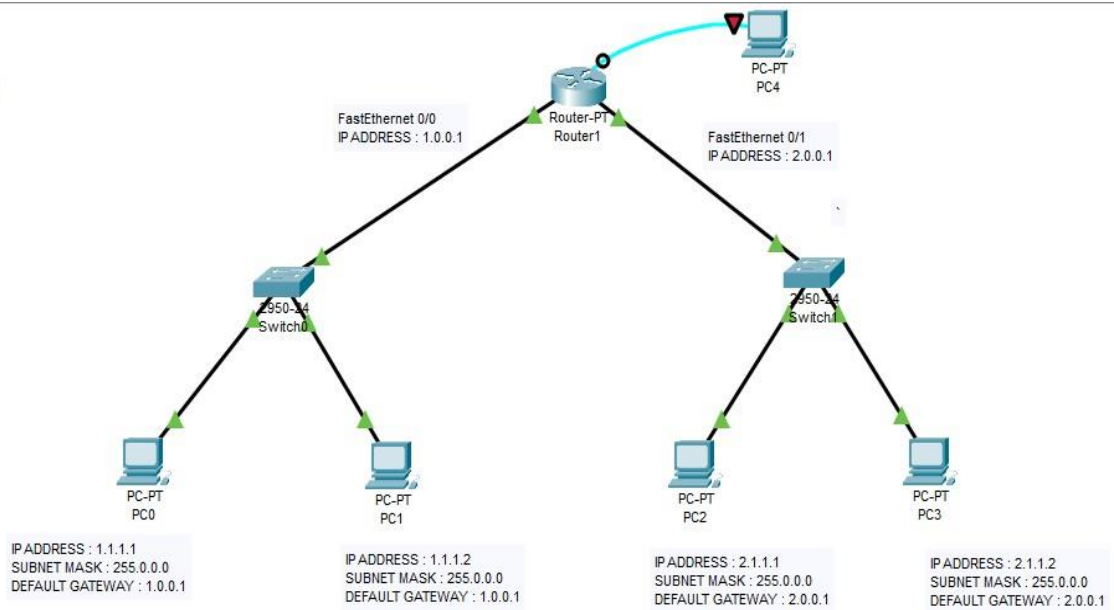
- Five windows PC.
- Two Switch (2950-24).
- Six Straight Line LAN Cables.
- One Router (Router PT).
- One console connection of router with PC to configure router.
- Cisco Packet Tracer.

PROCEDURES :

- Open CISCO PACKET TRACER software.
- Draw the Five PC using END Device Icons.
- Draw the Cisco 24 Port Switch Using Switch icon lists.
- Draw the Cisco Generic Routers using Router icon lists.
- Make the Connections using Copper-Straight-Through Ethernet Cables.
- Enter the IP Address To Each Machine.
- Configure Router PT – 0.
- Check the Network Connections using Add Simple PDU(P).

NETWORK TOPOLOGY :

EX_NO : 03



HOST PC IP ADDRESS :

PC0 IP CONFIGURATION

PC0

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 1.1.1.1

Subnet Mask 255.0.0.0

Default Gateway 1.0.0.1

DNS Server 0.0.0.0

IPv6 Configuration

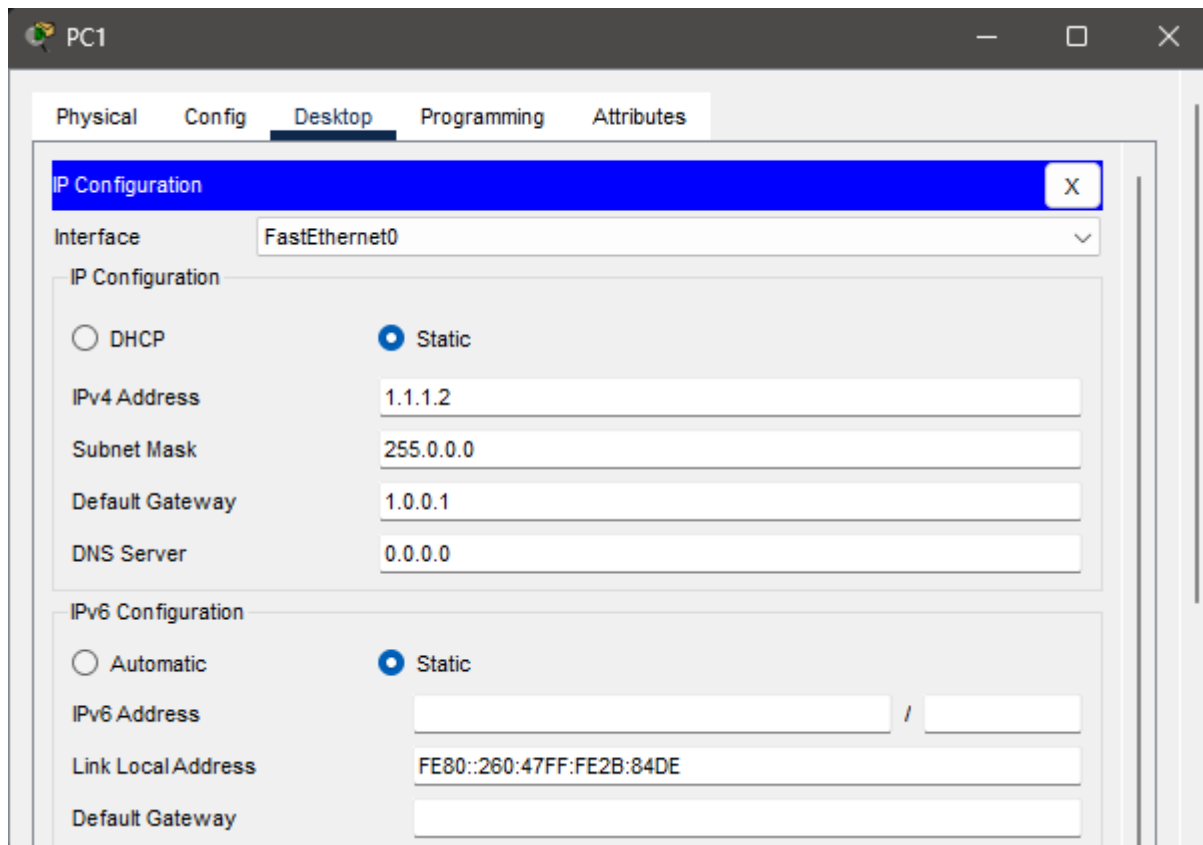
☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::290:2BFF:FE77:CC8

Default Gateway

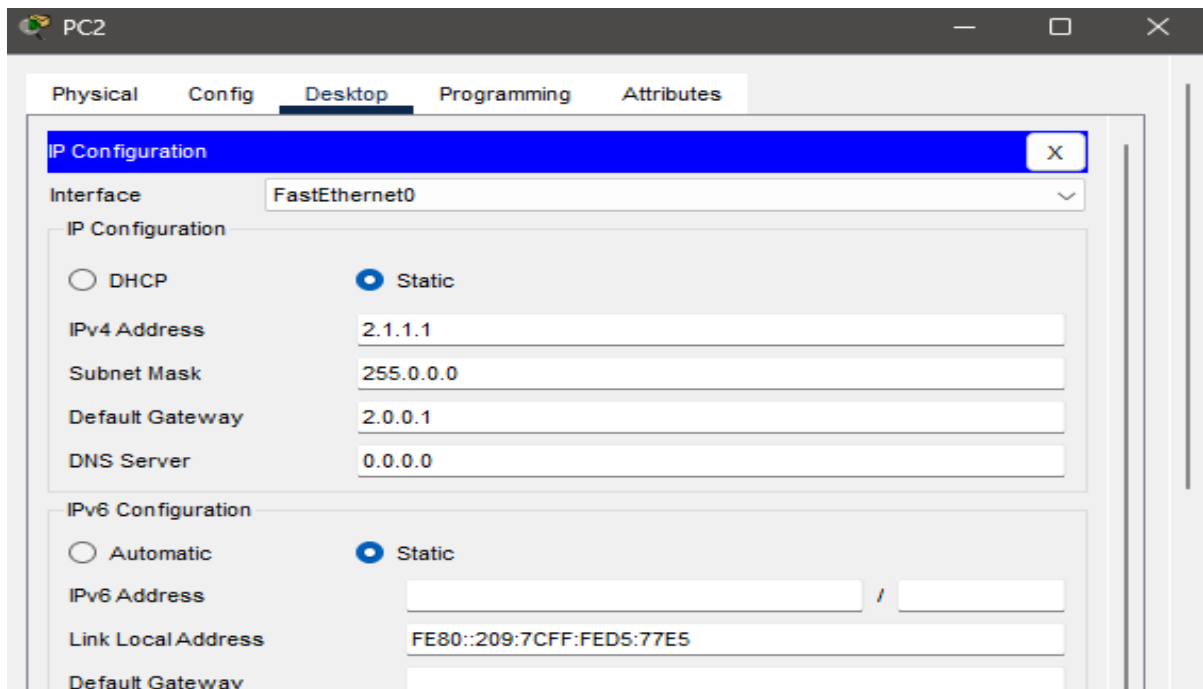
PC1 IP CONFIGURATION :



The screenshot shows the 'PC1' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted in blue. The 'Interface' dropdown is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The fields are filled with: IPv4 Address: 1.1.1.2, Subnet Mask: 255.0.0.0, Default Gateway: 1.0.0.1, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', the 'Static' radio button is also selected. The fields are: IPv6 Address (empty), Link Local Address: FE80::260:47FF:FE2B:84DE, and Default Gateway (empty).

IP Configuration	
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.2
Subnet Mask	255.0.0.0
Default Gateway	1.0.0.1
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::260:47FF:FE2B:84DE
Default Gateway	

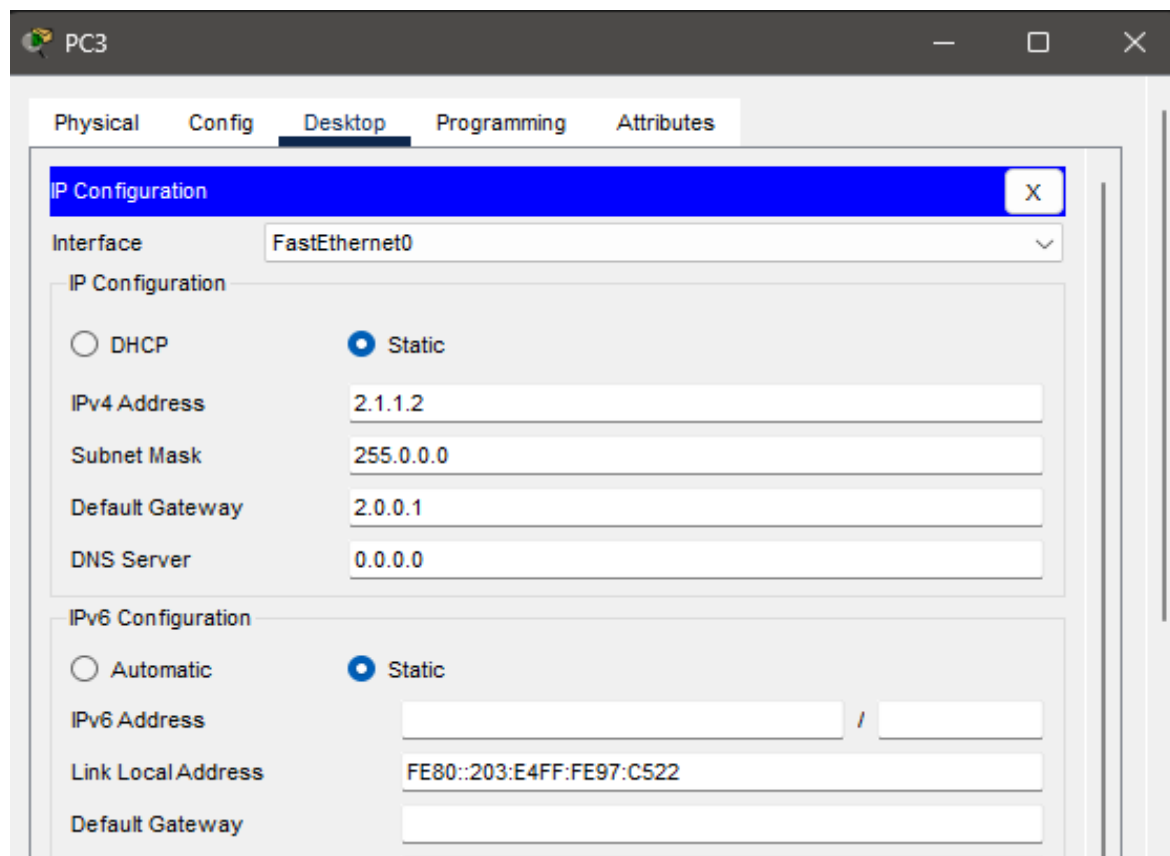
PC2 IP CONFIGURATION :



The screenshot shows the 'PC2' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted in blue. The 'Interface' dropdown is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The fields are filled with: IPv4 Address: 2.1.1.1, Subnet Mask: 255.0.0.0, Default Gateway: 2.0.0.1, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', the 'Static' radio button is also selected. The fields are: IPv6 Address (empty), Link Local Address: FE80::209:7CFF:FED5:77E5, and Default Gateway (empty).

IP Configuration	
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	2.1.1.1
Subnet Mask	255.0.0.0
Default Gateway	2.0.0.1
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::209:7CFF:FED5:77E5
Default Gateway	

PC3 IP CONFIGURATION :

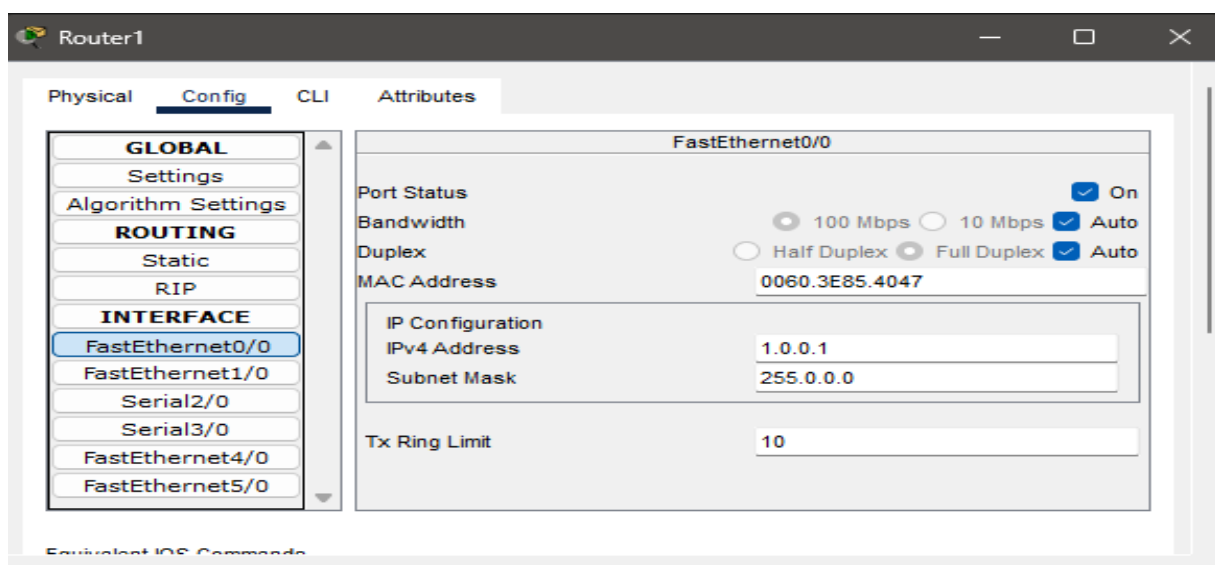


The screenshot shows the 'PC3' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted in blue. The 'Interface' dropdown is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The fields are filled with: IPv4 Address: 2.1.1.2, Subnet Mask: 255.0.0.0, Default Gateway: 2.0.0.1, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', the 'Static' radio button is also selected. The fields are: IPv6 Address (empty), Link Local Address: FE80::203:E4FF:FE97:C522, and Default Gateway (empty).

Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	2.1.1.2
Subnet Mask	255.0.0.0
Default Gateway	2.0.0.1
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::203:E4FF:FE97:C522
Default Gateway	

ROUTER 0 CONFIGURATION :

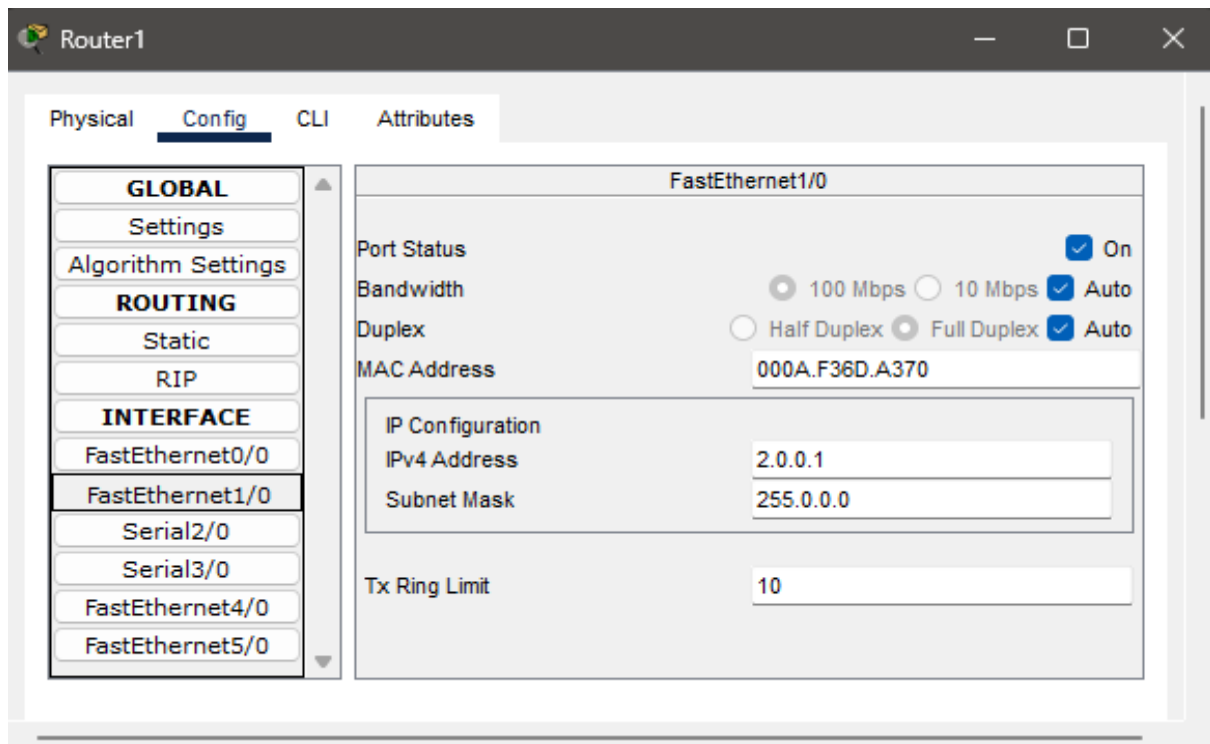
FASTETHERNET 0/0 CONFIGURATION



The screenshot shows the 'Router1' configuration window with the 'Config' tab selected. The 'FastEthernet0/0' interface is selected in the left sidebar. The 'FastEthernet0/0' configuration panel shows: Port Status: On (checked), Bandwidth: 100 Mbps (selected), 10 Mbps (unselected), Duplex: Full Duplex (selected), Half Duplex (unselected), MAC Address: 0060.3E85.4047, IP Configuration: IPv4 Address: 1.0.0.1, Subnet Mask: 255.0.0.0, and Tx Ring Limit: 10.

FastEthernet0/0	
Port Status	<input checked="" type="checkbox"/> On
Bandwidth	<input checked="" type="radio"/> 100 Mbps <input type="radio"/> 10 Mbps
Duplex	<input type="radio"/> Half Duplex <input checked="" type="radio"/> Full Duplex
MAC Address	0060.3E85.4047
IP Configuration	
IPv4 Address	1.0.0.1
Subnet Mask	255.0.0.0
Tx Ring Limit	10

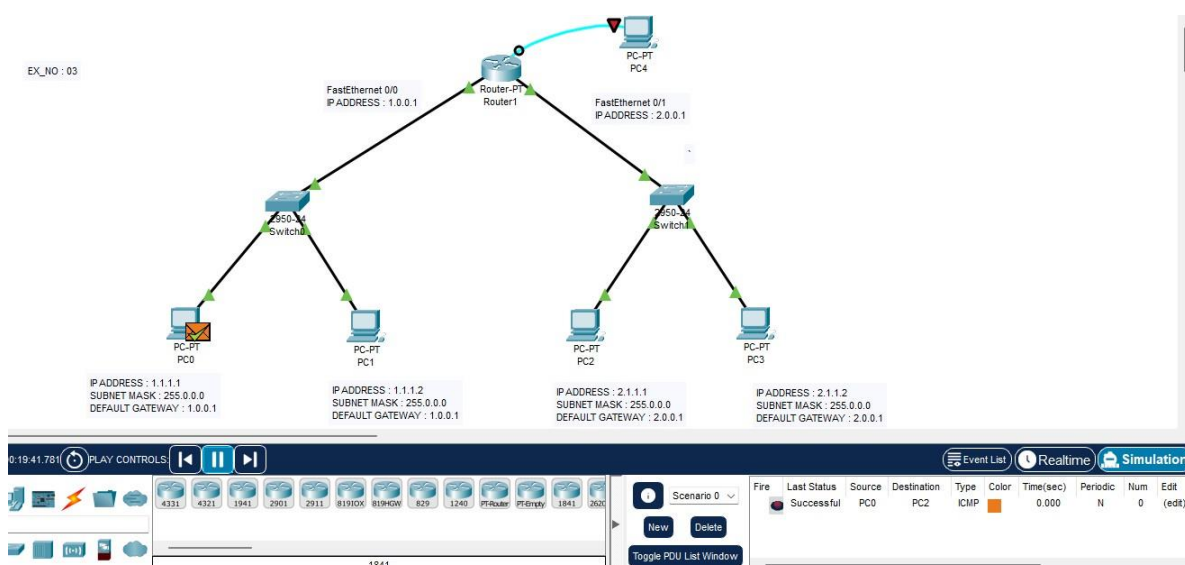
FASTETHERNET 1/0 CONFIGURATION



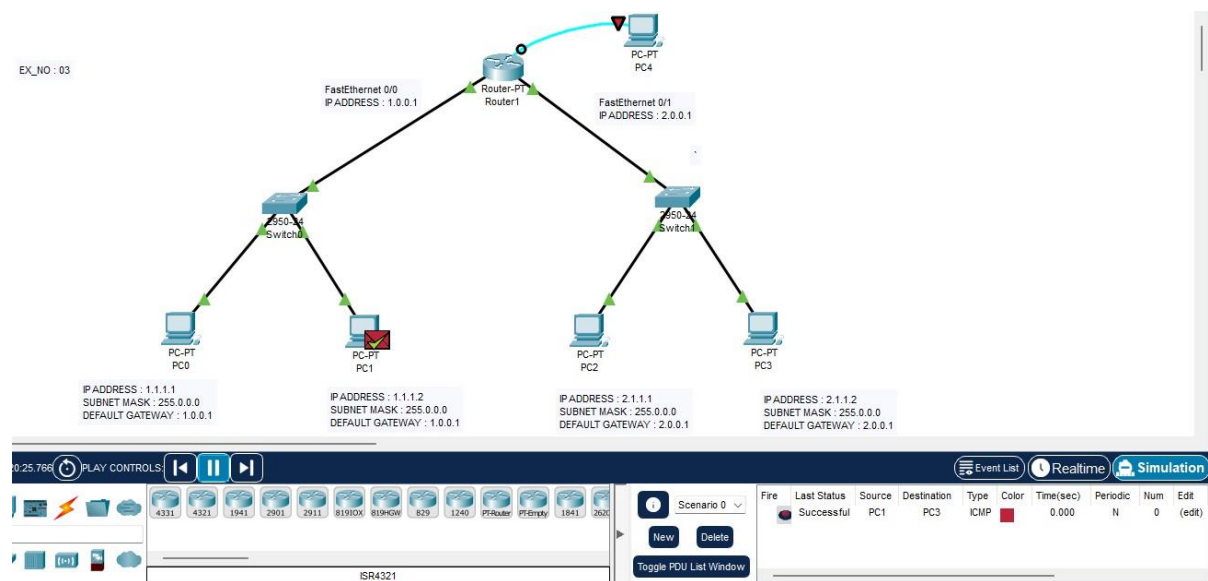
VERIFY LAN NETWORK CONNECTIVITY :

Using Add Simple PDU(p), Click the mail icon and then drop one mail to one of the PC in first lan and another mail to PC in another lan. If the resultant window shows the successful delivery, then network connectivity is successful.

HOST PC0 TO PC2



HOST PC1 TO PC3



RESULT :

Thus, two LANs are connected using router with static router and the communication between LANs is checked successfully.

EX.NO : 04

DATE :

**ANALYZING THE PERFORMANCE OF VARIOUS
CONFIGURATIONS AND PROTOCOLS IN LAN MULTI-ROUTING
CONNECTION**

AIM :

To establish connection between two LANs by extending multi-routing connection.

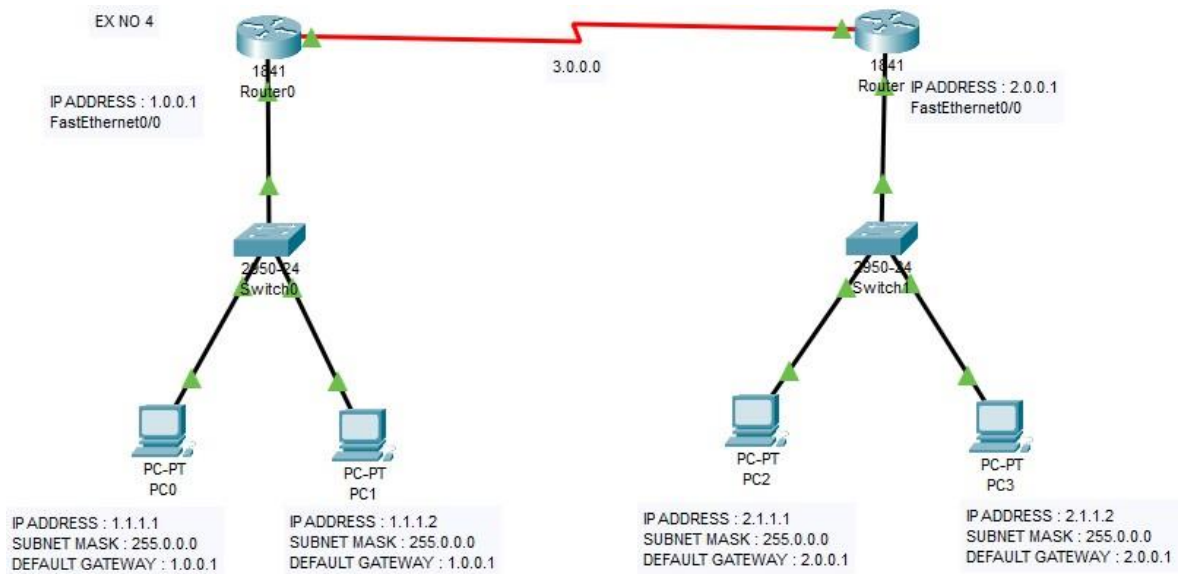
REQUIREMENTS :

- Four windows PC.
- Two Switch (2950-24).
- Six Straight Line LAN Cables.
- Two Router (1841).
- One Serial DTE Cable.
- Cisco Packet Tracer.

PROCEDURES :

- Open CISCO PACKET TRACER software.
- Draw the Four PC using END Device Icons.
- Draw the Cisco 24 Port Switch Using Switch icon lists.
- Draw the Cisco 1841 Routers using Router icon lists.
- Make the Connections using Copper-Straight-Through Ethernet Cables and Serial DTE Cables.
- Enter the IP Address To Each Machine.
- Configure Routers 0,1 and Serial 0/0 for 2Routers.
- Check the Network Connections using Add Simple PDU(P).

NETWORK TOPOLOGY :



HOST PC IP ADDRESS :

PC0 IP CONFIGURATION

PC0

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 1.1.1.1

Subnet Mask: 255.0.0.0

Default Gateway: 1.0.0.1

DNS Server: 0.0.0.0

IPv6 Configuration

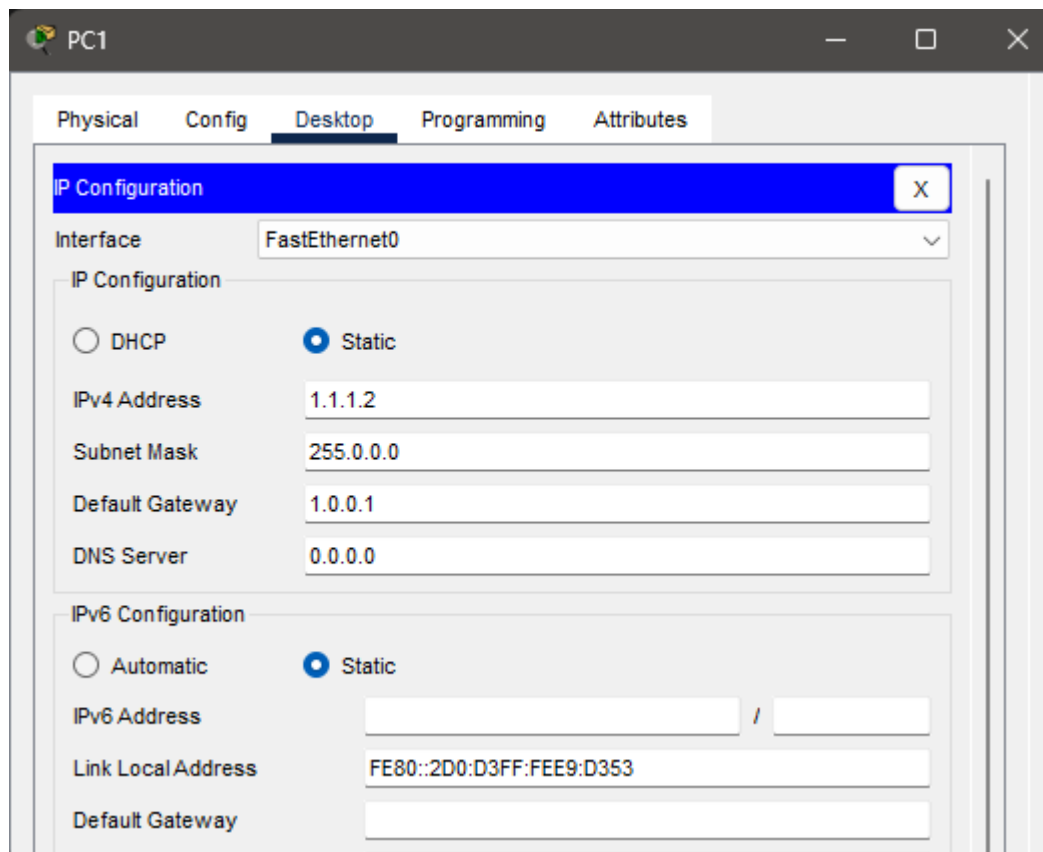
☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::201:97FF:FEEC:9E19

Default Gateway:

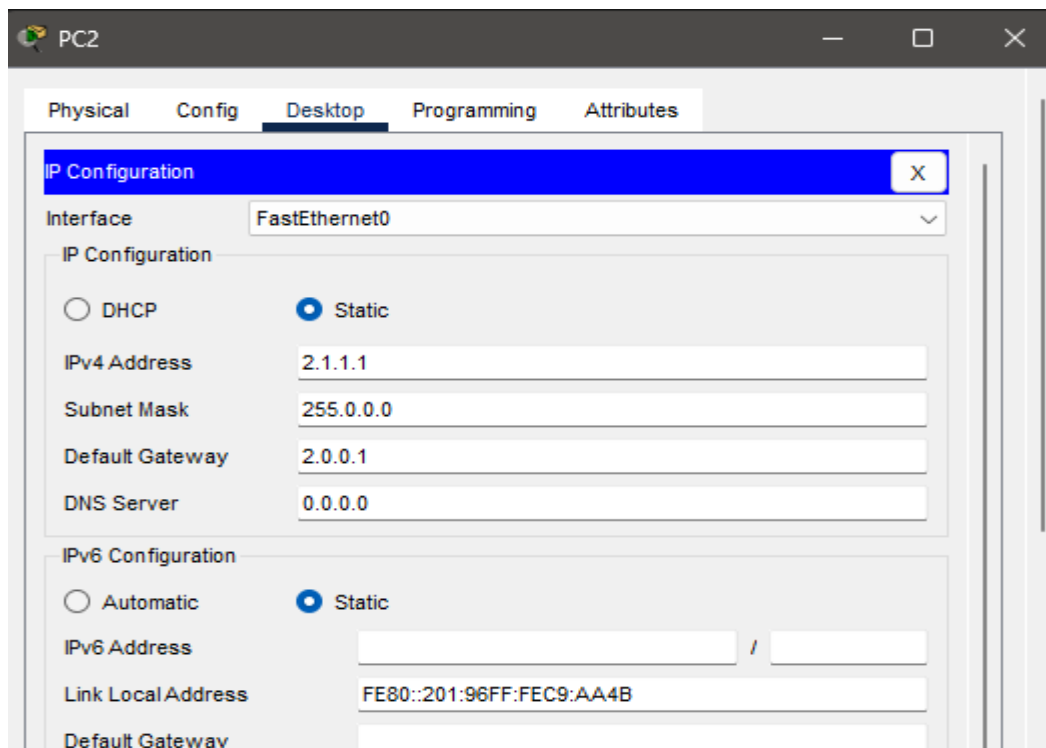
PC1 IP CONFIGURATION



The screenshot shows the 'PC1' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted in blue. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The fields are filled with: IPv4 Address: 1.1.1.2, Subnet Mask: 255.0.0.0, Default Gateway: 1.0.0.1, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', the 'Static' radio button is also selected. The fields are: IPv6 Address (empty), Link Local Address: FE80::2D0:D3FF:FEE9:D353, and Default Gateway (empty).

Section	Field	Value
IP Configuration	Interface	FastEthernet0
	Configuration Type	Static
	IPv4 Address	1.1.1.2
	Subnet Mask	255.0.0.0
IPv6 Configuration	Configuration Type	Static
	IPv6 Address	
	Link Local Address	FE80::2D0:D3FF:FEE9:D353
	Default Gateway	

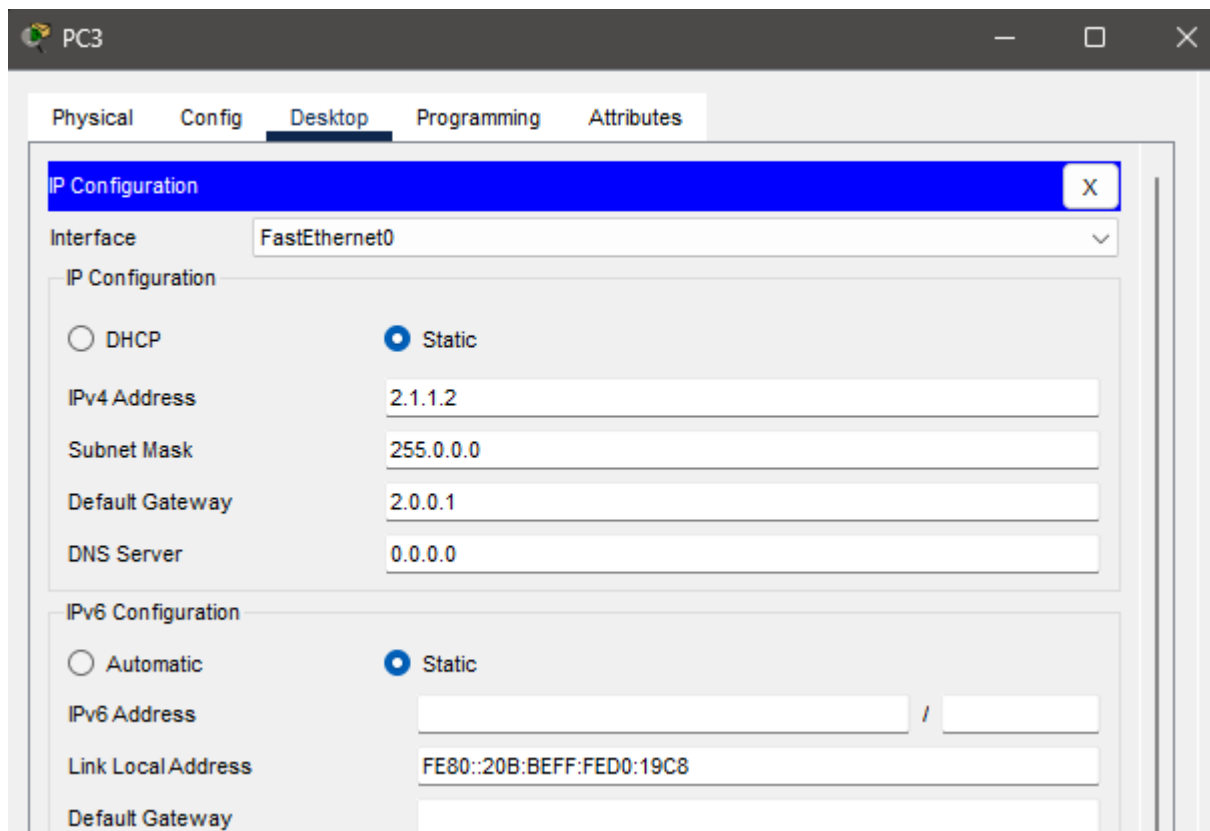
PC2 IP CONFIGURATION



The screenshot shows the 'PC2' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted in blue. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The fields are filled with: IPv4 Address: 2.1.1.1, Subnet Mask: 255.0.0.0, Default Gateway: 2.0.0.1, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', the 'Static' radio button is also selected. The fields are: IPv6 Address (empty), Link Local Address: FE80::201:96FF:FEC9:AA4B, and Default Gateway (empty).

Section	Field	Value
IP Configuration	Interface	FastEthernet0
	Configuration Type	Static
	IPv4 Address	2.1.1.1
	Subnet Mask	255.0.0.0
IPv6 Configuration	Configuration Type	Static
	IPv6 Address	
	Link Local Address	FE80::201:96FF:FEC9:AA4B
	Default Gateway	

PC3 IP CONFIGURATION



The image shows a window titled "PC3" with a dark header bar. Below the header are five tabs: "Physical", "Config", "Desktop", "Programming", and "Attributes". The "Desktop" tab is selected. Inside the "Desktop" tab, there is a sub-window titled "IP Configuration" with a blue header and a close button (X). The "Interface" dropdown menu is set to "FastEthernet0". Under "IP Configuration", the "Static" radio button is selected. The fields are: IPv4 Address: 2.1.1.2, Subnet Mask: 255.0.0.0, Default Gateway: 2.0.0.1, and DNS Server: 0.0.0.0. Under "IPv6 Configuration", the "Static" radio button is selected. The fields are: IPv6 Address: (empty), Link Local Address: FE80::20B:BEFF:FED0:19C8, and Default Gateway: (empty).

PC3

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 2.1.1.2

Subnet Mask 255.0.0.0

Default Gateway 2.0.0.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

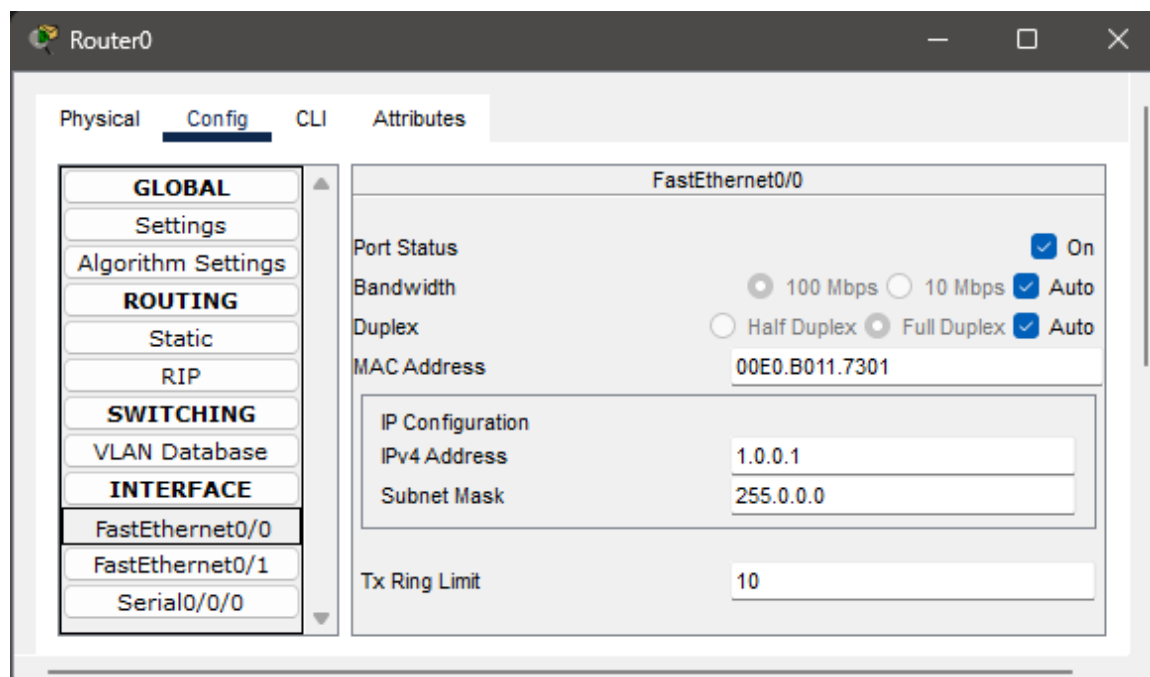
IPv6 Address /

Link Local Address FE80::20B:BEFF:FED0:19C8

Default Gateway

ROUTERS CONFIGURATION :

ROUTER 0 CONFIGURATION



The image shows a window titled "Router0" with a dark header bar. Below the header are four tabs: "Physical", "Config", "CLI", and "Attributes". The "Config" tab is selected. On the left side of the "Config" tab is a sidebar with a tree view. The tree view has four main categories: "GLOBAL", "ROUTING", "SWITCHING", and "INTERFACE". Under "INTERFACE", "FastEthernet0/0" is selected. The main area of the window shows the configuration for "FastEthernet0/0". The "Port Status" is "On" (checked). The "Bandwidth" is "100 Mbps" (selected). The "Duplex" is "Full Duplex" (selected). The "MAC Address" is "00E0.B011.7301". Under "IP Configuration", the "IPv4 Address" is "1.0.0.1" and the "Subnet Mask" is "255.0.0.0". The "Tx Ring Limit" is "10".

Router0

Physical **Config** CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

FastEthernet0/0

FastEthernet0/1

Serial0/0/0

FastEthernet0/0

Port Status ☒ On

Bandwidth ☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

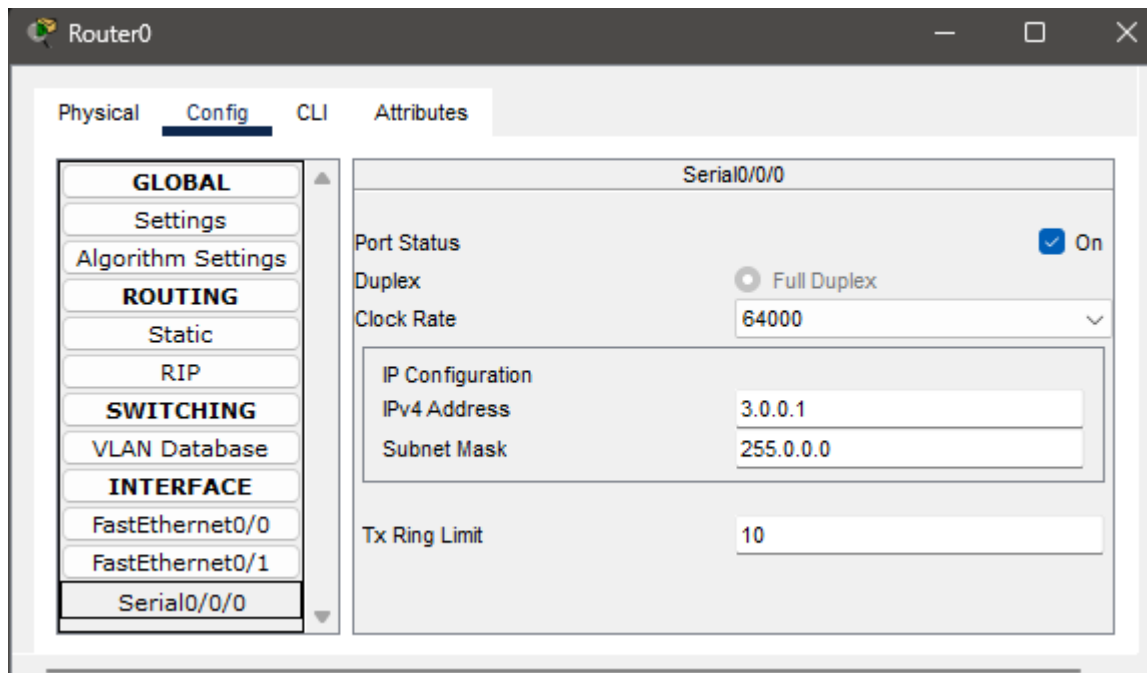
MAC Address 00E0.B011.7301

IP Configuration

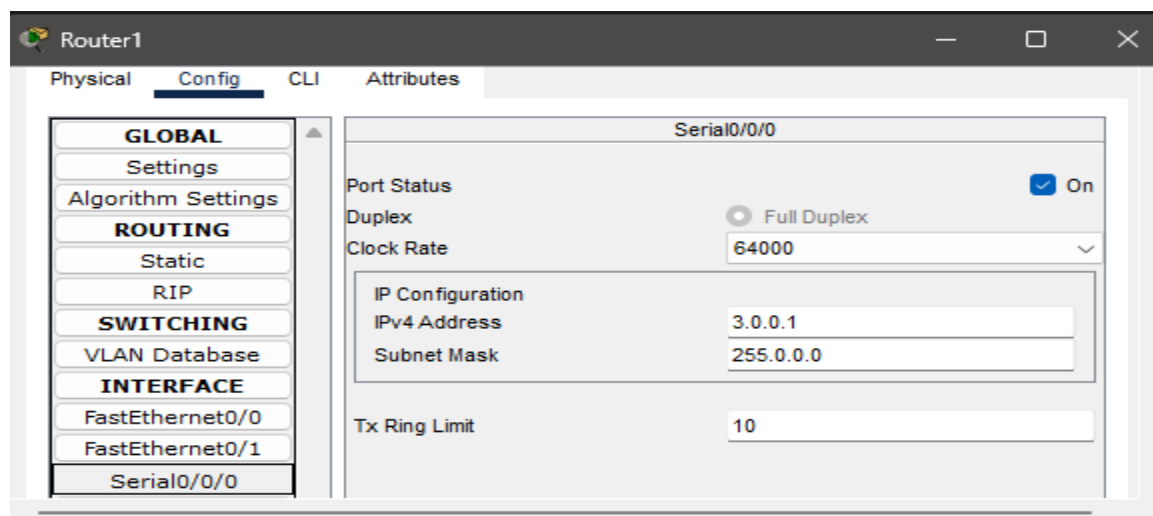
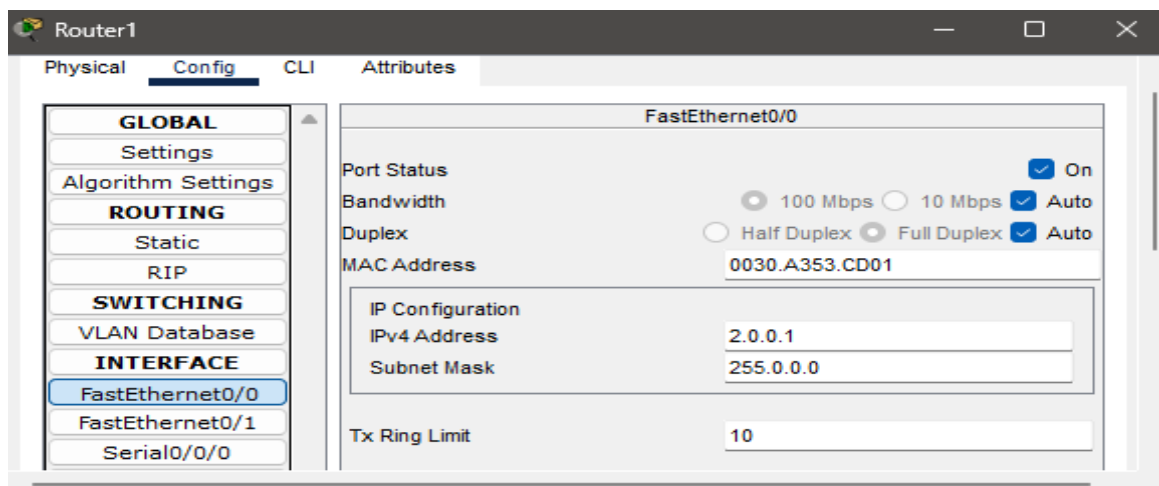
IPv4 Address 1.0.0.1

Subnet Mask 255.0.0.0

Tx Ring Limit 10



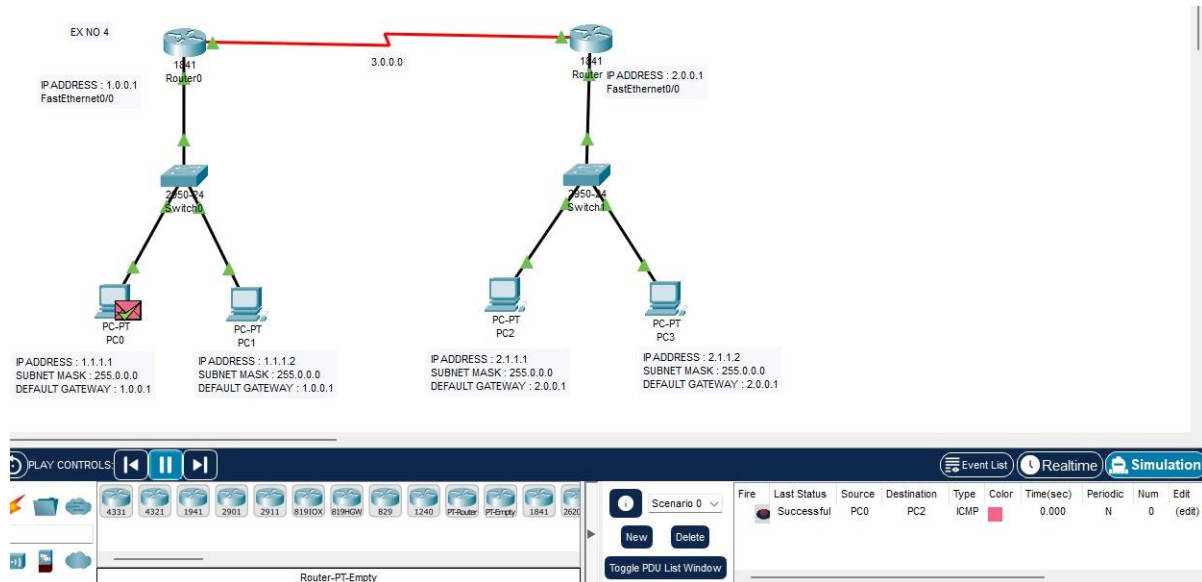
ROUTER 1 CONFIGURATION :



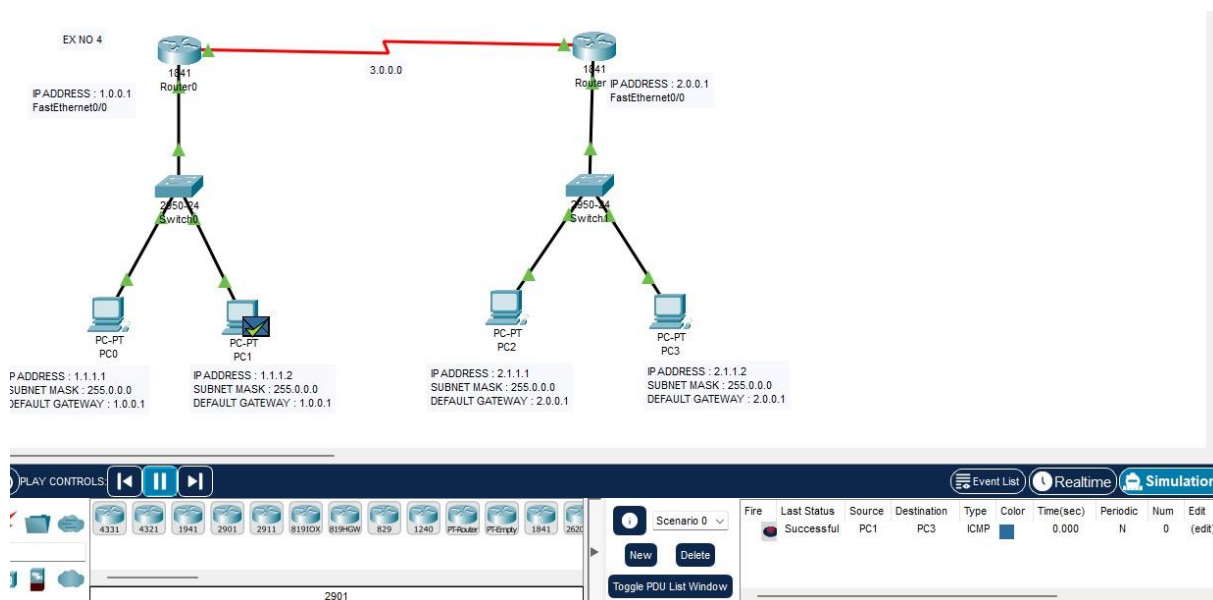
VERIFY LAN NETWORK CONNECTIVITY :

Using Add Simple PDU(p), Click the mail icon and then drop one mail to one of the PC in first lan and another mail to PC in another lan. If the resultant window shows the successful delivery, then network connectivity is successful.

HOST PC0 TO PC2



HOST PC1 TO PC3



RESULT :

Thus, two LANs are connected using multiple routers and the communication between LANs is checked successfully.

EX.NO : 05

DATE :

CONNECTING TWO LANs USING BRIDGE

AIM :

To establish connection between two LANs by using Bridge.

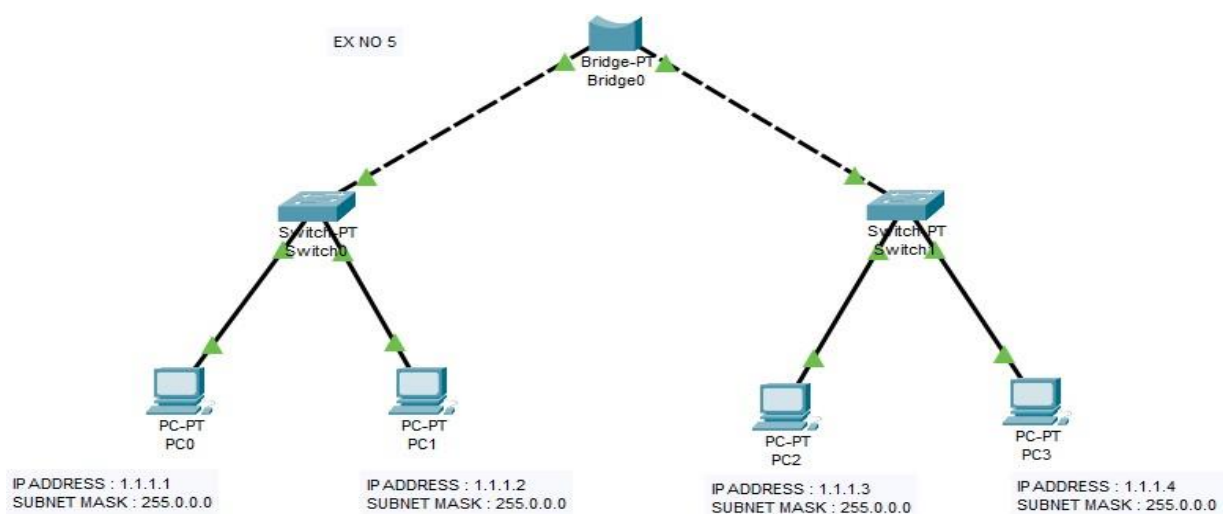
REQUIREMENTS :

- Four windows PC.
- Two Switch (PT).
- Six Straight Line LAN Cables.
- One Bridge (PT).
- Cisco Packet Tracer.

PROCEDURES :

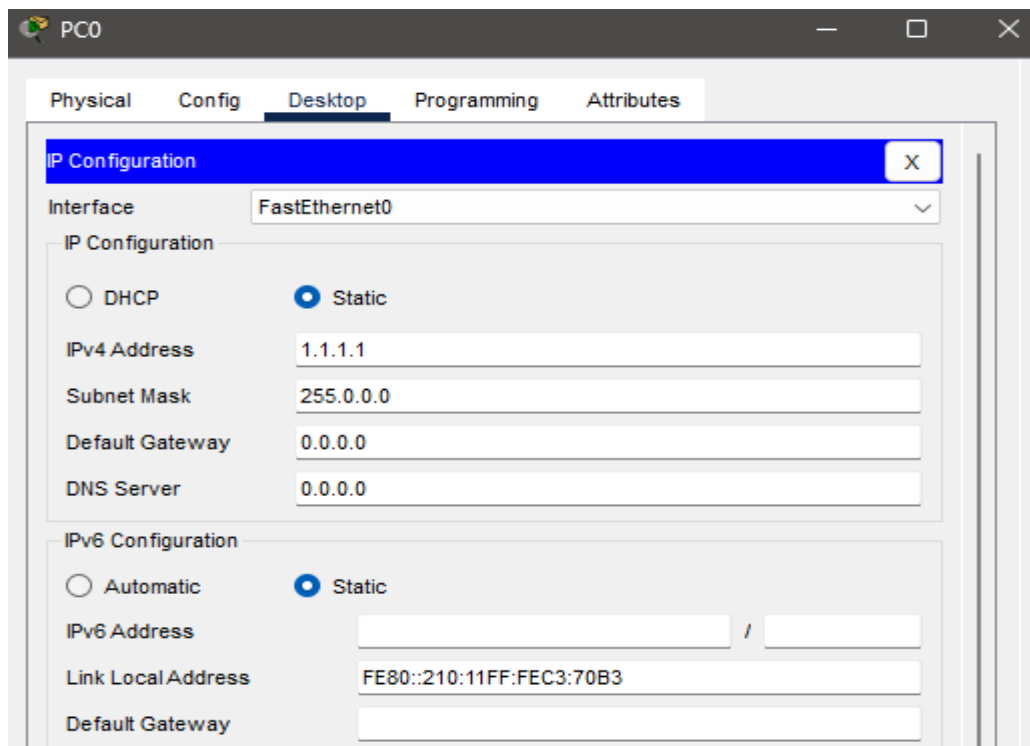
- Open CISCO PACKET TRACER software.
- Draw the Four PC using END Device Icons.
- Draw the Cisco PT Port Switch Using Switch icon lists.
- Draw the Cisco PT Bridge.
- Make the Connections using Copper-Straight-Through Ethernet Cables.
- Enter the IP Address To Each Machine.
- Check the Network Connections using Add Simple PDU(P).

NETWORK TOPOLOGY



HOST PC IP ADDRESS :

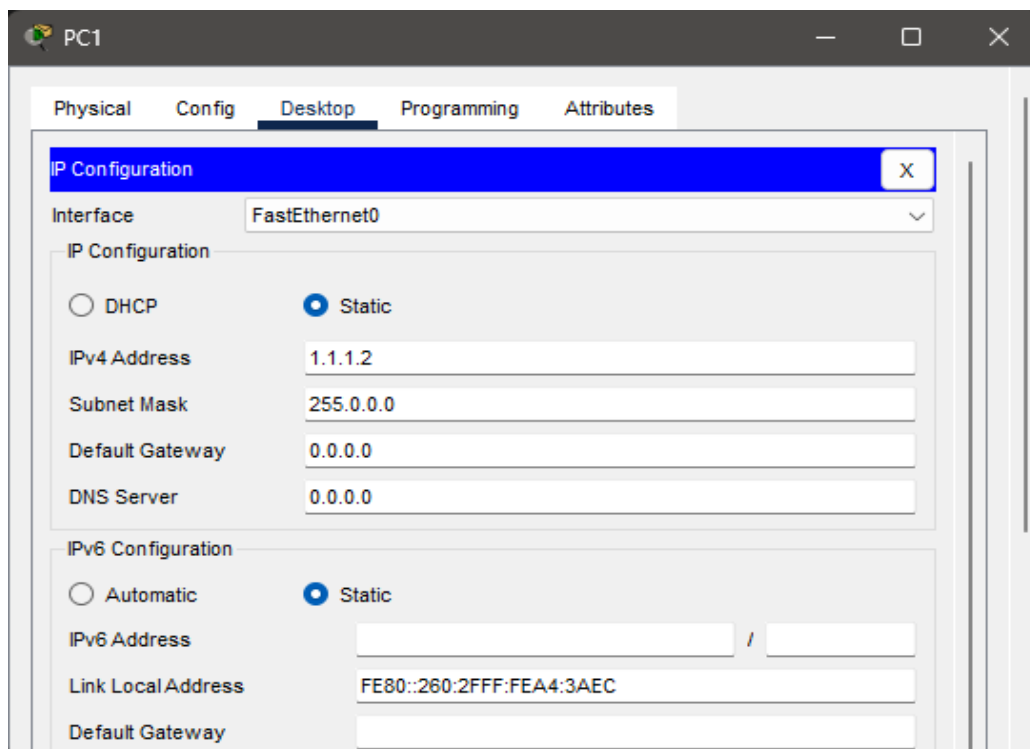
PC0 IP CONFIGURATION



The screenshot shows the 'PC0' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted in blue. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The 'IPv4 Address' is '1.1.1.1', 'Subnet Mask' is '255.0.0.0', 'Default Gateway' is '0.0.0.0', and 'DNS Server' is '0.0.0.0'. Under 'IPv6 Configuration', the 'Static' radio button is selected. The 'IPv6 Address' field is empty, 'Link Local Address' is 'FE80::210:11FF:FEC3:70B3', and 'Default Gateway' is empty.

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	
<input checked="" type="radio"/> Static	
IPv4 Address	1.1.1.1
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	
<input checked="" type="radio"/> Static	
IPv6 Address	
Link Local Address	FE80::210:11FF:FEC3:70B3
Default Gateway	

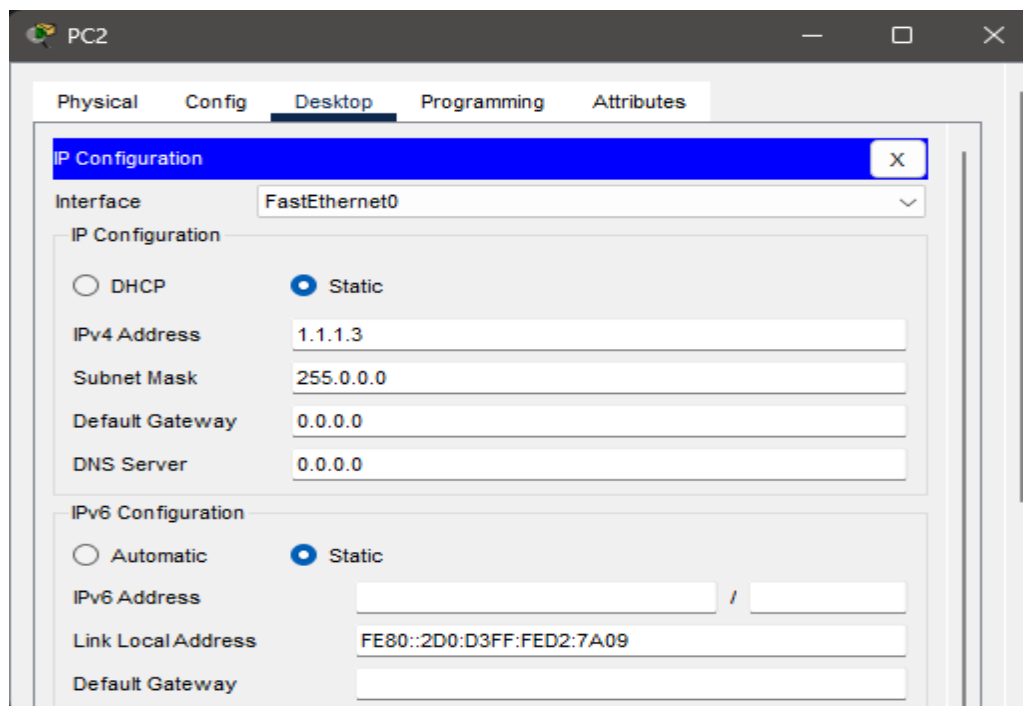
PC1 IP CONFIGURATION



The screenshot shows the 'PC1' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted in blue. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The 'IPv4 Address' is '1.1.1.2', 'Subnet Mask' is '255.0.0.0', 'Default Gateway' is '0.0.0.0', and 'DNS Server' is '0.0.0.0'. Under 'IPv6 Configuration', the 'Static' radio button is selected. The 'IPv6 Address' field is empty, 'Link Local Address' is 'FE80::260:2FFF:FEA4:3AEC', and 'Default Gateway' is empty.

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	
<input checked="" type="radio"/> Static	
IPv4 Address	1.1.1.2
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	
<input checked="" type="radio"/> Static	
IPv6 Address	
Link Local Address	FE80::260:2FFF:FEA4:3AEC
Default Gateway	

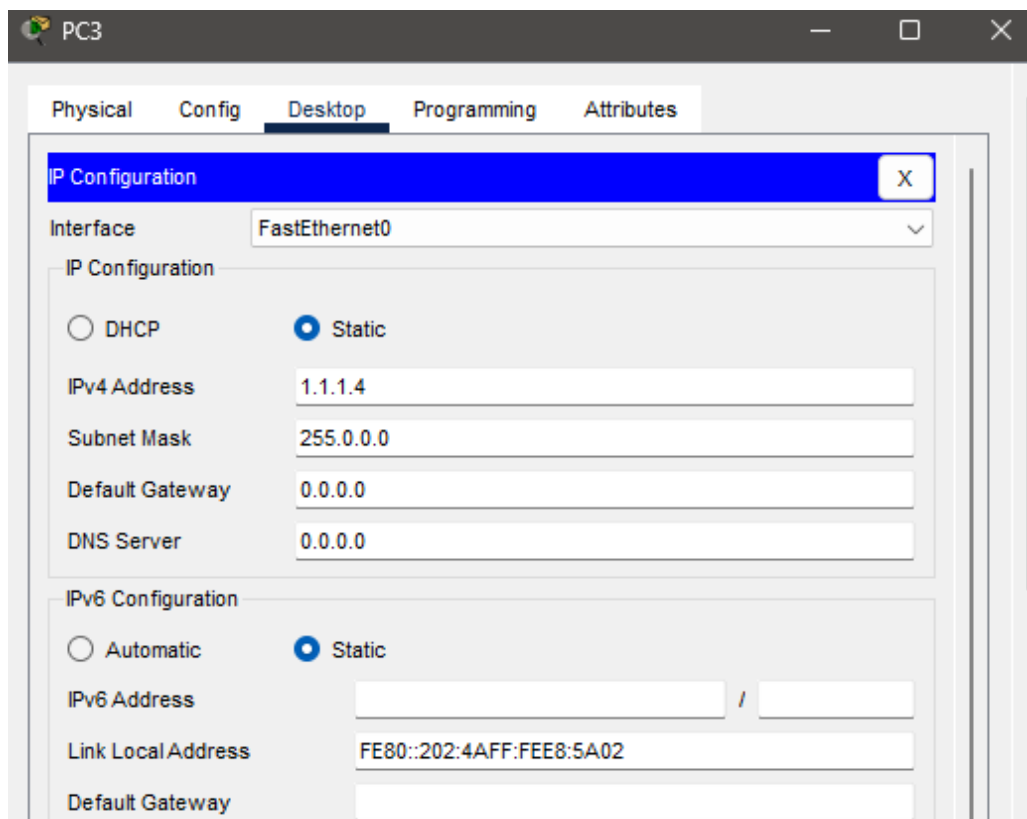
PC2 IP CONFIGURATION



The screenshot shows the 'PC2' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted in blue. The 'Interface' dropdown is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The IPv4 fields are filled with: IPv4 Address: 1.1.1.3, Subnet Mask: 255.0.0.0, Default Gateway: 0.0.0.0, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', the 'Static' radio button is also selected. The IPv6 fields are: IPv6 Address (empty), Link Local Address: FE80::2D0:D3FF:FED2:7A09, and Default Gateway (empty).

IP Configuration	
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.3
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::2D0:D3FF:FED2:7A09
Default Gateway	

PC3 IP CONFIGURATION



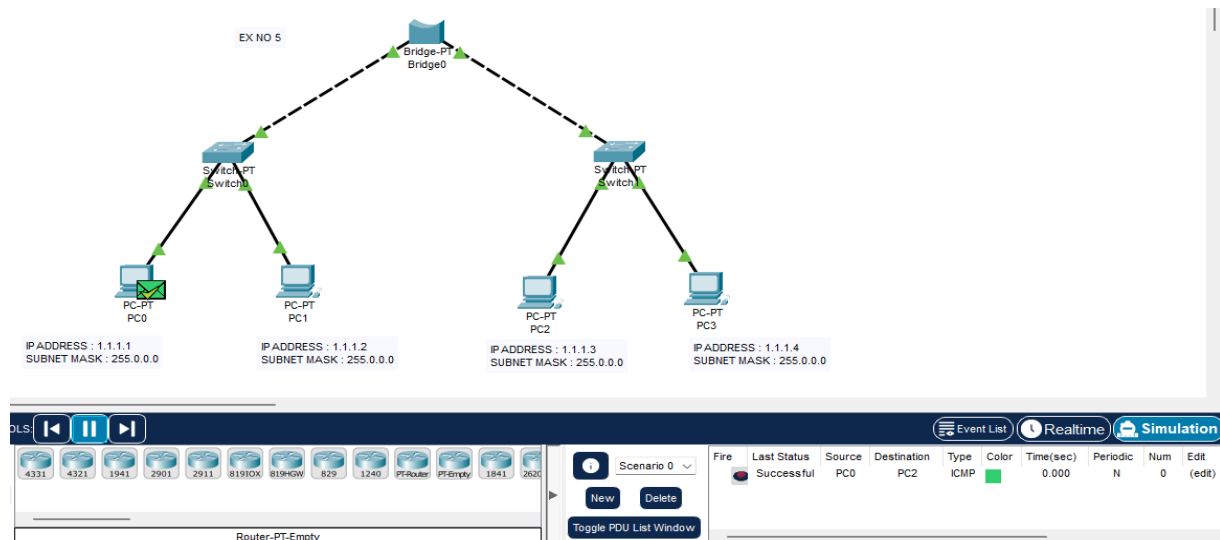
The screenshot shows the 'PC3' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted in blue. The 'Interface' dropdown is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The IPv4 fields are filled with: IPv4 Address: 1.1.1.4, Subnet Mask: 255.0.0.0, Default Gateway: 0.0.0.0, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', the 'Static' radio button is also selected. The IPv6 fields are: IPv6 Address (empty), Link Local Address: FE80::202:4AFF:FEE8:5A02, and Default Gateway (empty).

IP Configuration	
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.4
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::202:4AFF:FEE8:5A02
Default Gateway	

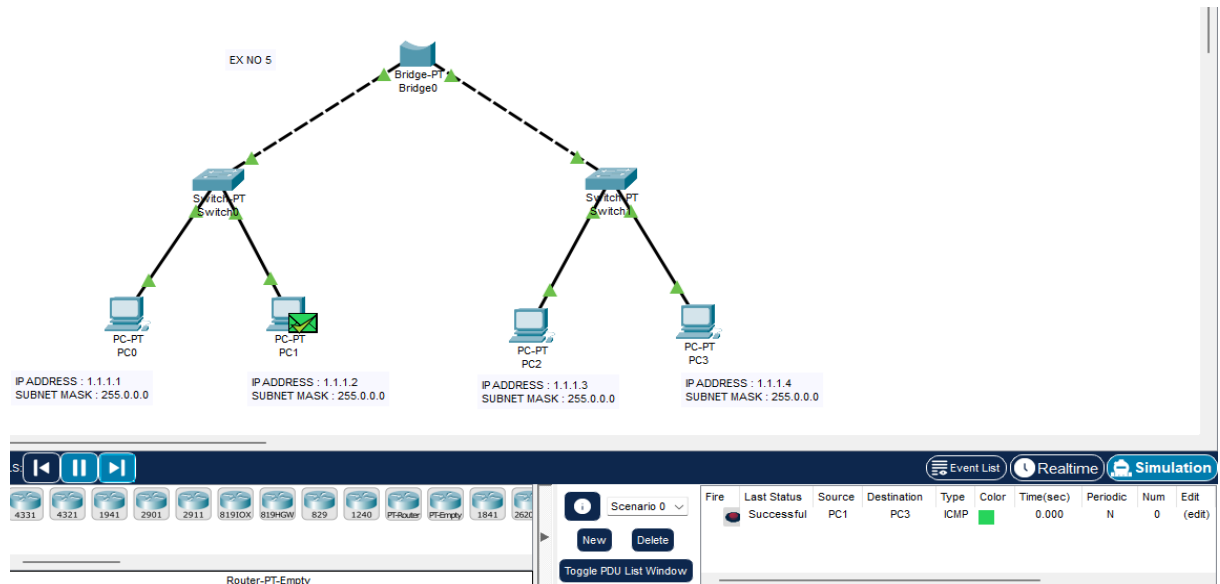
VERIFY LAN NETWORK CONNECTIVITY :

Using Add Simple PDU(p), Click the mail icon and then drop one mail to one of the PC in first lan and another mail to PC in another lan. If the resultant window shows the successful delivery, then network connectivity is successful.

HOST PC0 TO PC2



HOST PC1 TO PC3



RESULT :

Thus, two LANs are connected using Bridges and the communication between LANs is checked successfully.

EX.NO : 06

DATE :

DESIGNING RING AND MESH TOPOLOGIES USING CISCO PACKET TRACER

AIM :

To Designing a Ring and Mesh topologies by using Cisco Packet Tracer.

REQUIREMENTS :

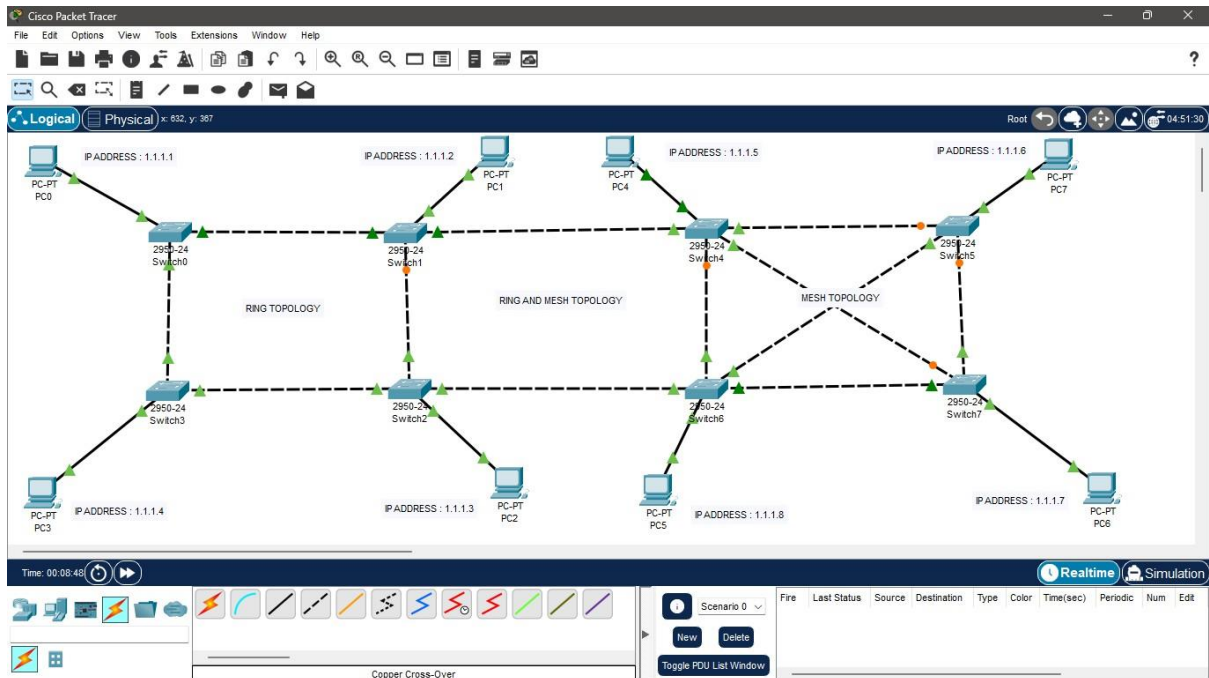
- 8 windows PC.
- 8 Switch (2950-24).
- 8 Straight Line LAN Cables.
- 12 Cross Over Cables.
- Cisco Packet Tracer.

PROCEDURES :

- Open CISCO PACKET TRACER software.
- Draw the 8 PC using END Device Icons.
- Draw the 8 Cisco 2950-24 Switch Using Switch icon lists.
- Make the Connections using Copper-Straight-Through Ethernet Cables.
- Make the Connections between Switches using Cross Overs Cables.
- Enter the IP Address To Each Machine.
- Check the Network Connections using Add Simple PDU(P).

NETWORK TOPOLOGY

RING AND MESH TOPOLOGY



HOST PC IP ADDRESS :

PC0 IP CONFIGURATION

PC0

Physical Config Desktop Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 1.1.1.1

Subnet Mask: 255.0.0.0

Default Gateway: 0.0.0.0

DNS Server: 0.0.0.0

IPv6 Configuration

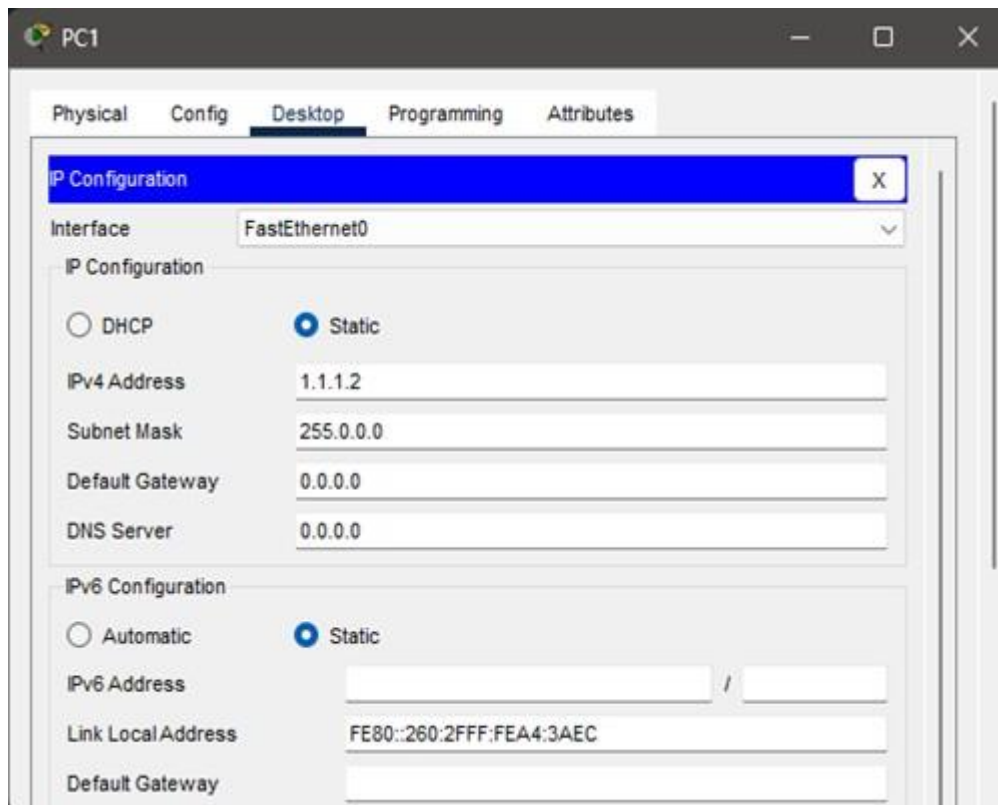
☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::210:11FF:FEC3:70B3

Default Gateway:

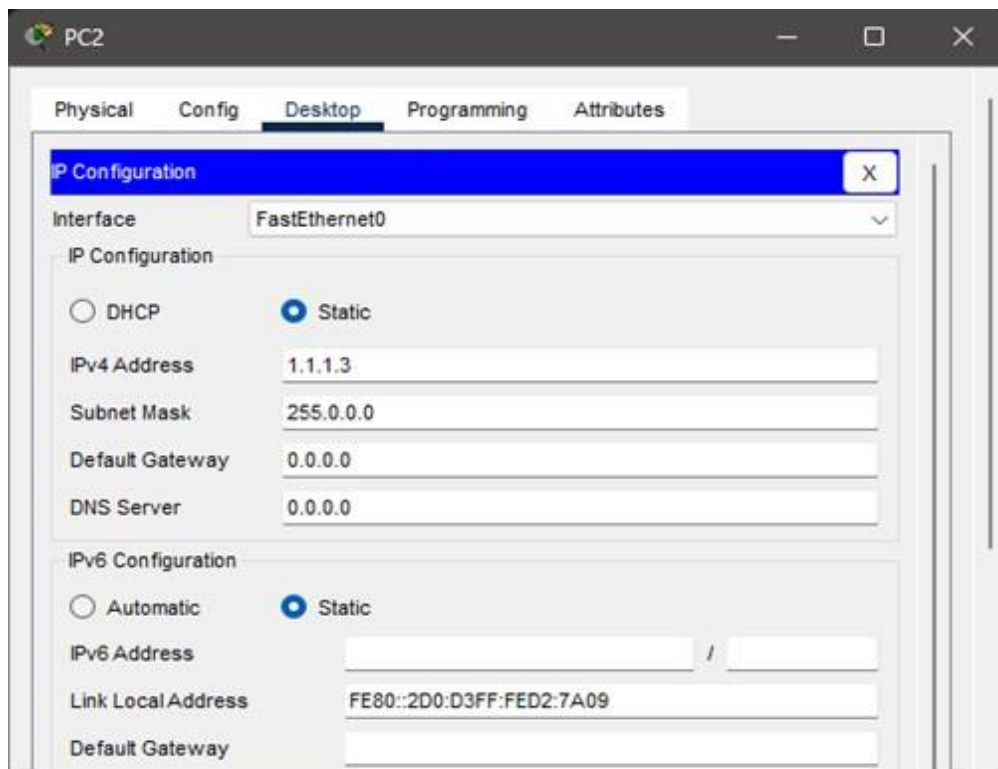
PC1 IP CONFIGURATION



The image shows a screenshot of the 'PC1' configuration window in a network simulator. The 'Desktop' tab is selected, and the 'IP Configuration' sub-tab is active. The 'Interface' dropdown is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The IPv4 fields are filled with: IPv4 Address: 1.1.1.2, Subnet Mask: 255.0.0.0, Default Gateway: 0.0.0.0, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', the 'Static' radio button is also selected. The IPv6 fields are: IPv6 Address (empty), Link Local Address: FE80::260:2FFF:FEA4:3AEC, and Default Gateway (empty).

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.2
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::260:2FFF:FEA4:3AEC
Default Gateway	

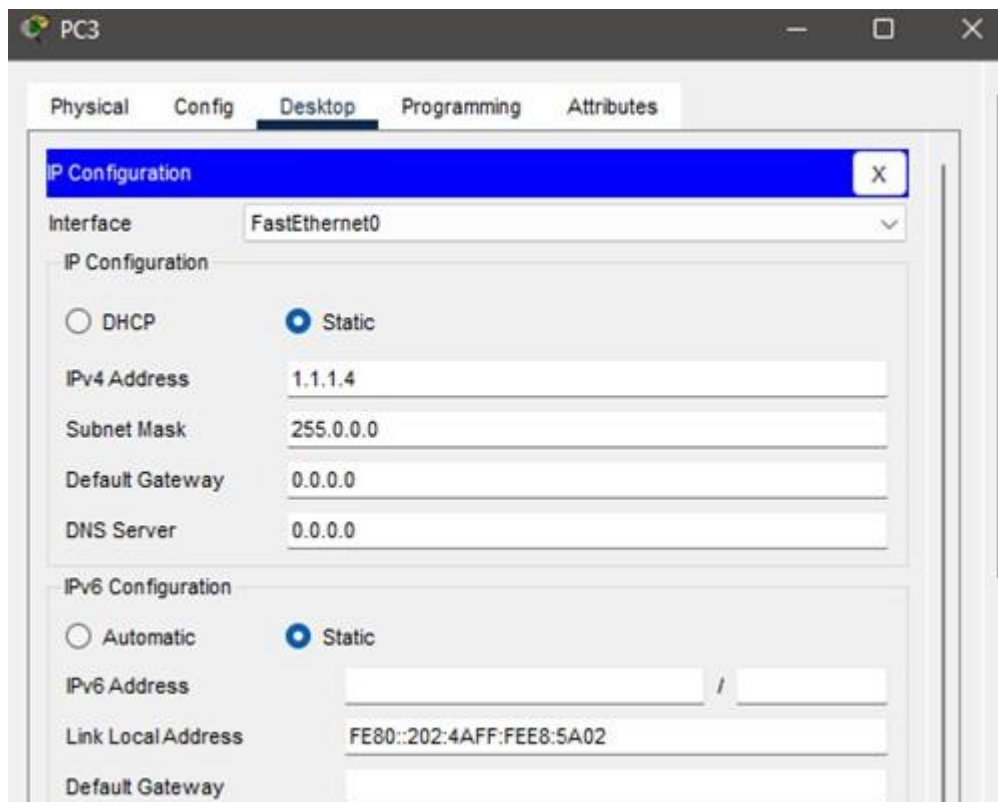
PC2 IP CONFIGURATION



The image shows a screenshot of the 'PC2' configuration window in a network simulator. The 'Desktop' tab is selected, and the 'IP Configuration' sub-tab is active. The 'Interface' dropdown is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The IPv4 fields are filled with: IPv4 Address: 1.1.1.3, Subnet Mask: 255.0.0.0, Default Gateway: 0.0.0.0, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', the 'Static' radio button is also selected. The IPv6 fields are: IPv6 Address (empty), Link Local Address: FE80::2D0:D3FF:FED2:7A09, and Default Gateway (empty).

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.3
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::2D0:D3FF:FED2:7A09
Default Gateway	

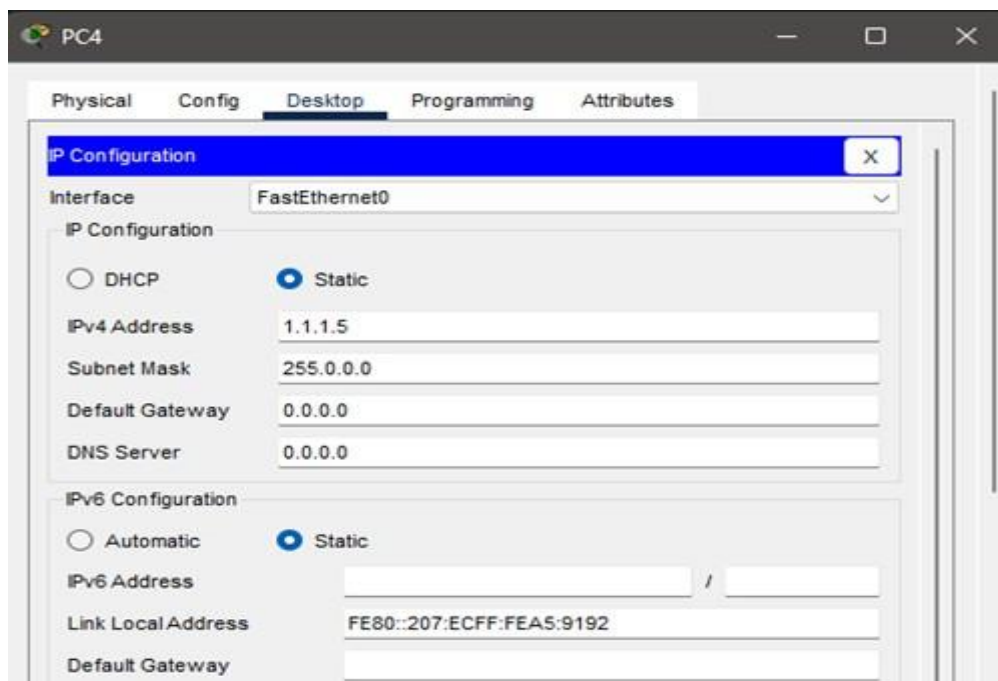
PC3 IP CONFIGURATION



The image shows the 'PC3' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted in blue. The 'Interface' dropdown is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The IPv4 settings are: IPv4 Address: 1.1.1.4, Subnet Mask: 255.0.0.0, Default Gateway: 0.0.0.0, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', the 'Static' radio button is selected. The IPv6 settings are: IPv6 Address: (empty), Link Local Address: FE80::202:4AFF:FEE8:5A02, and Default Gateway: (empty).

IP Configuration	
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.4
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::202:4AFF:FEE8:5A02
Default Gateway	

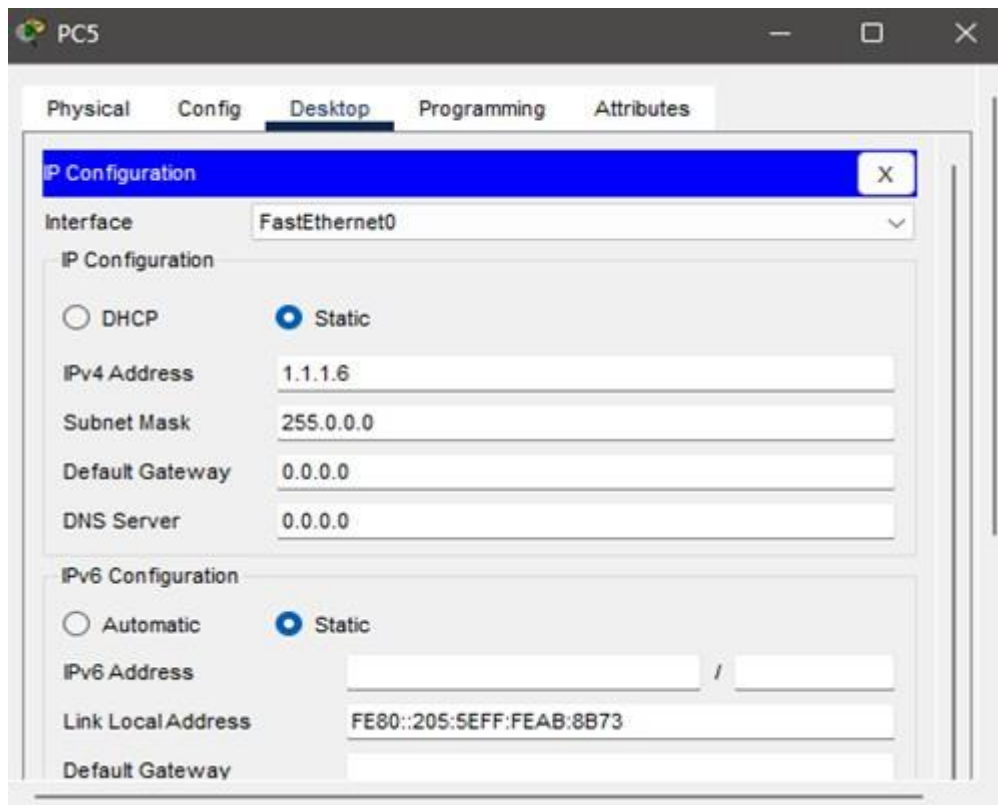
PC4 IP CONFIGURATION



The image shows the 'PC4' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted in blue. The 'Interface' dropdown is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The IPv4 settings are: IPv4 Address: 1.1.1.5, Subnet Mask: 255.0.0.0, Default Gateway: 0.0.0.0, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', the 'Static' radio button is selected. The IPv6 settings are: IPv6 Address: (empty), Link Local Address: FE80::207:ECFF:FEA5:9192, and Default Gateway: (empty).

IP Configuration	
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.5
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::207:ECFF:FEA5:9192
Default Gateway	

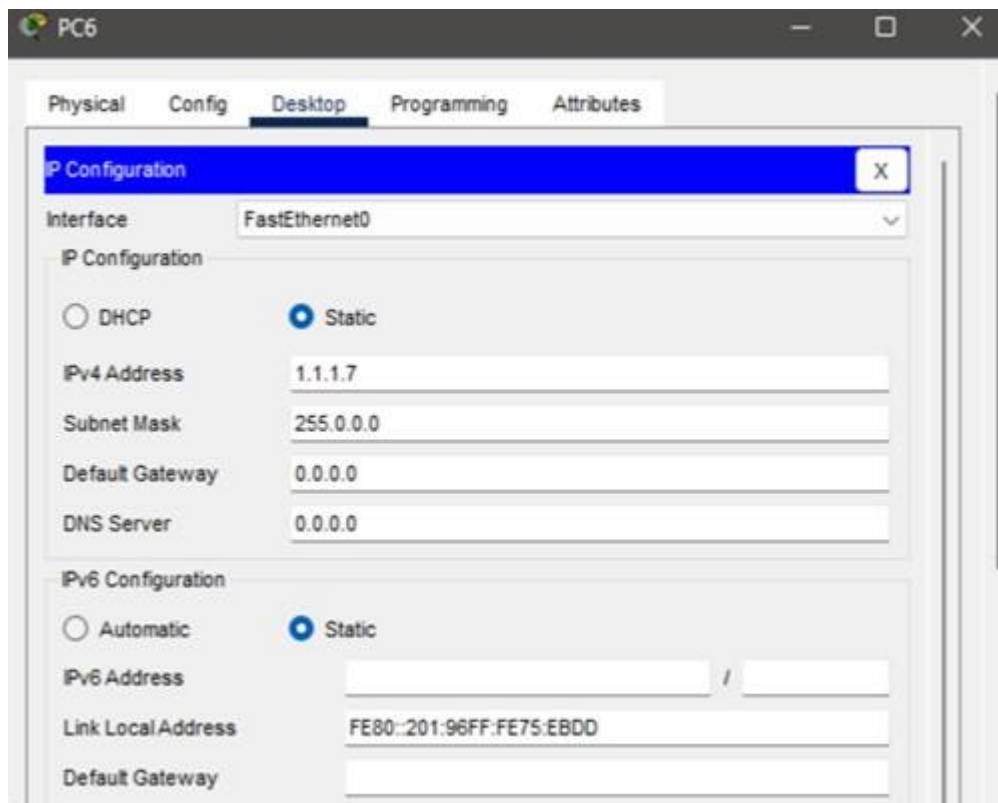
PC5 IP CONFIGURATION



The image shows the 'PC5' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', 'Static' is selected. The IPv4 Address is '1.1.1.6', Subnet Mask is '255.0.0.0', Default Gateway is '0.0.0.0', and DNS Server is '0.0.0.0'. Under 'IPv6 Configuration', 'Static' is selected. The IPv6 Address field is empty, the Link Local Address is 'FE80::205:5EFF:FEAB:8B73', and the Default Gateway is empty.

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.6
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::205:5EFF:FEAB:8B73
Default Gateway	

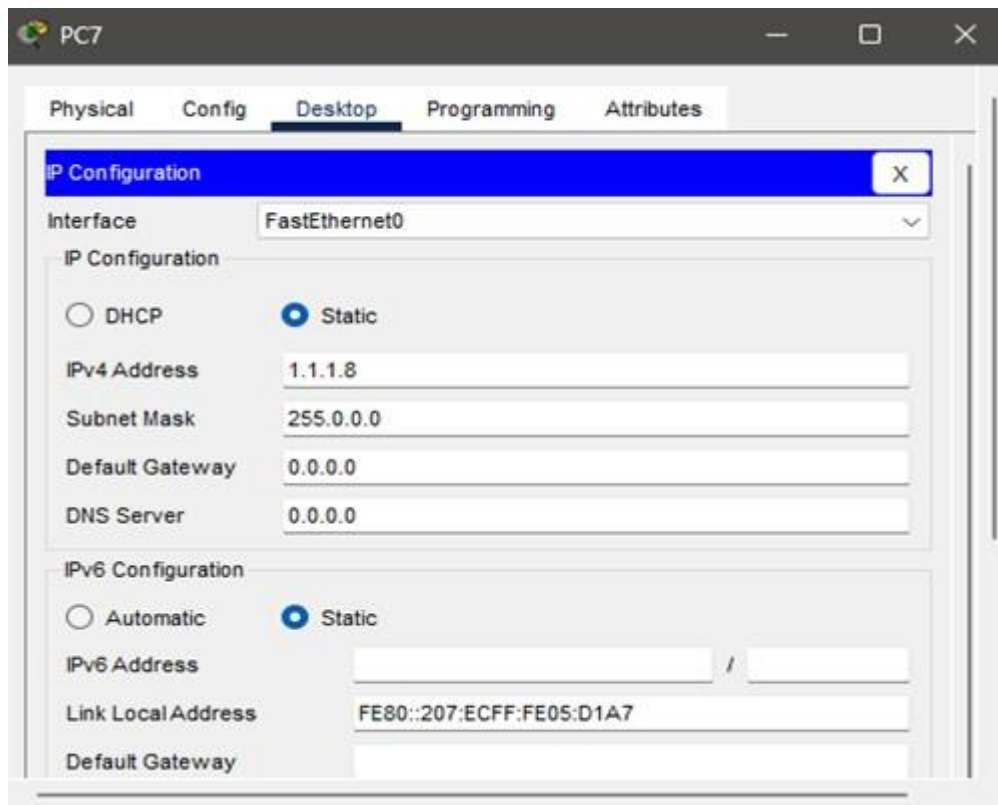
PC6 IP CONFIGURATION



The image shows the 'PC6' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', 'Static' is selected. The IPv4 Address is '1.1.1.7', Subnet Mask is '255.0.0.0', Default Gateway is '0.0.0.0', and DNS Server is '0.0.0.0'. Under 'IPv6 Configuration', 'Static' is selected. The IPv6 Address field is empty, the Link Local Address is 'FE80::201:96FF:FE75:EBDD', and the Default Gateway is empty.

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.7
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::201:96FF:FE75:EBDD
Default Gateway	

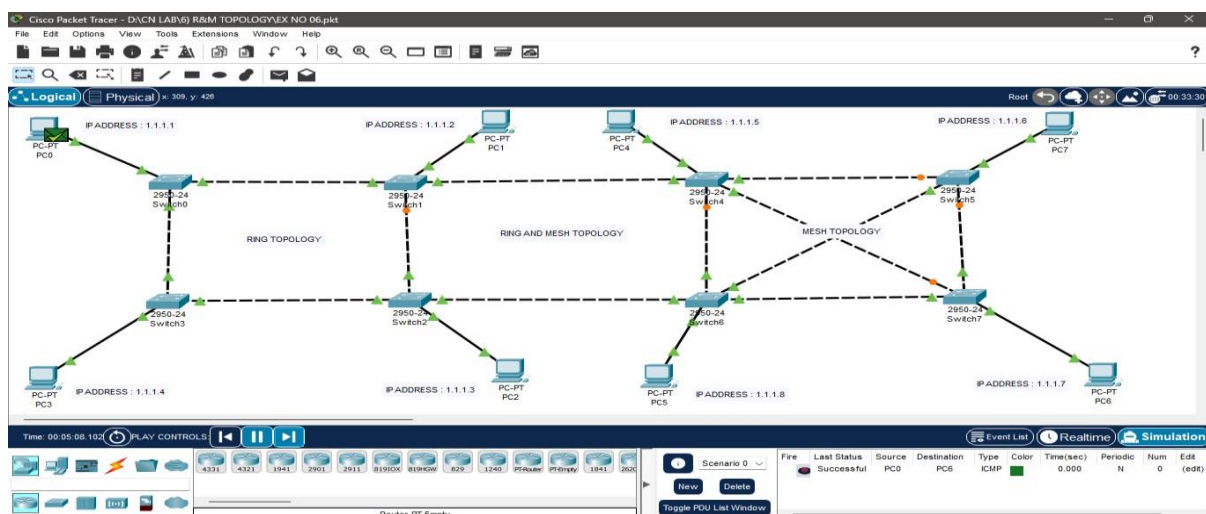
PC7 IP CONFIGURATION



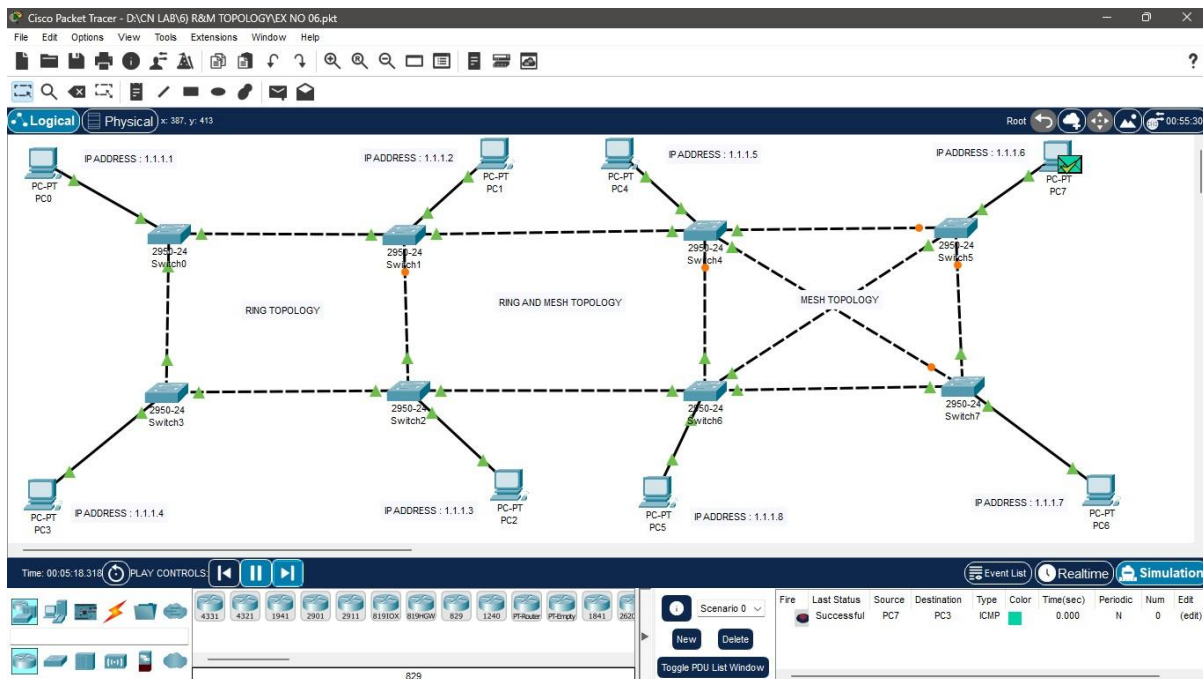
VERIFY LAN NETWORK CONNECTIVITY :

Using Add Simple PDU(p), Click the mail icon and then drop one mail to one of the PC in first lan and another mail to PC in another lan. If the resultant window shows the successful delivery, then network connectivity is successful.

HOST PC0 TO PC6



HOST PC7 TO PC3



RESULT :

Thus, Ring and Mesh topologies are designed using cisco packet tracer and the communication between Ring and Mesh topologies is checked successfully.

EX.NO : 07

DATE :

DESIGNING BUS AND STAR TOPOLOGIES USING CISCO PACKET TRACER

AIM :

To Designing a Bus and Star topologies by using Cisco Packet Tracer.

REQUIREMENTS :

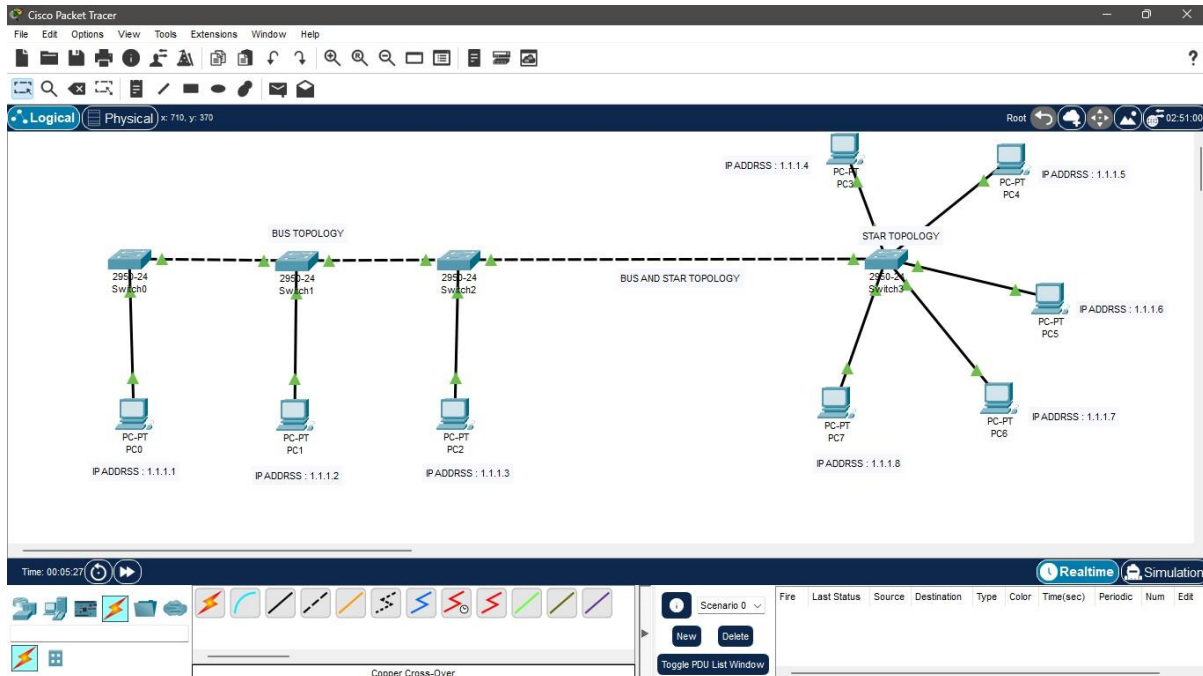
- 8 windows PC.
- 4 Switch (2950-24).
- 8 Straight Line LAN Cables.
- 3 Cross Over Cables.
- Cisco Packet Tracer.

PROCEDURES :

- Open CISCO PACKET TRACER software.
- Draw the 8 PC using END Device Icons.
- Draw the 4 Cisco 2950-24 Switch Using Switch icon lists.
- Make the Connections using Copper-Straight-Through Ethernet Cables.
- Make the Connections between Switches using Cross Overs Cables.
- Enter the IP Address To Each Machine.
- Check the Network Connections using Add Simple PDU(P).

NETWORK TOPOLOGY

BUS AND STAR TOPOLOGY

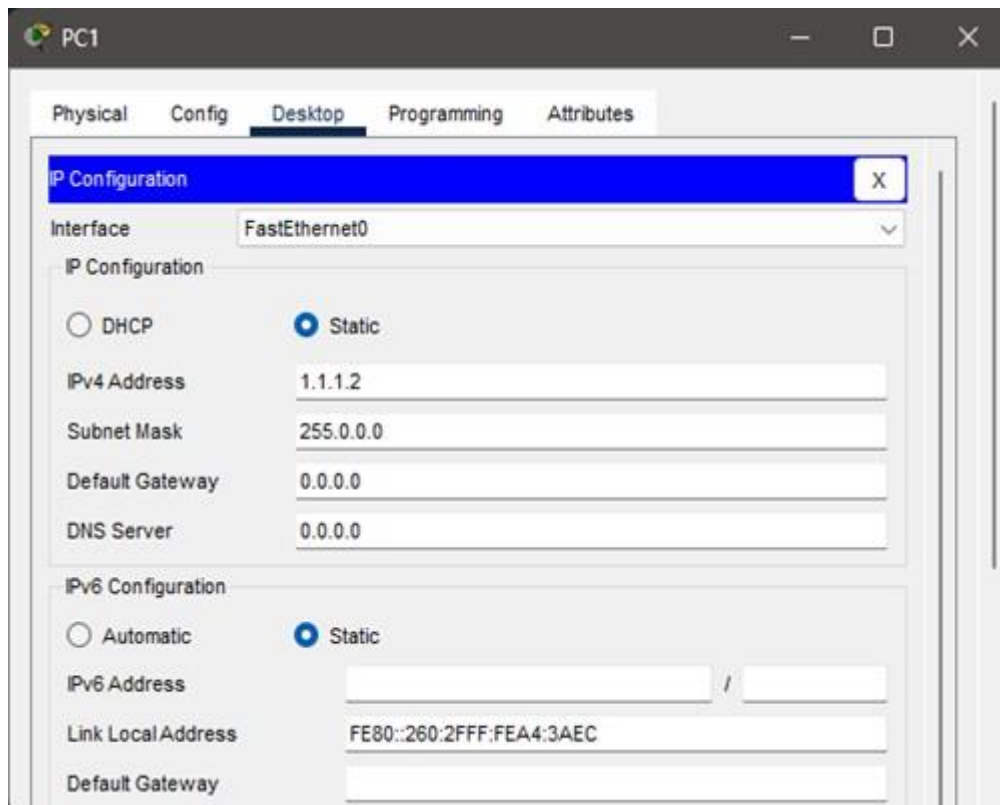


HOST PC IP ADDRESS :

PC0 IP CONFIGURATION

The screenshot shows the 'PC0' configuration window in Cisco Packet Tracer. The 'Desktop' tab is selected, and the 'IP Configuration' section is expanded. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The 'IPv4 Address' is set to '1.1.1.1', the 'Subnet Mask' is '255.0.0.0', the 'Default Gateway' is '0.0.0.0', and the 'DNS Server' is '0.0.0.0'. Under 'IPv6 Configuration', the 'Static' radio button is also selected. The 'IPv6 Address' is set to 'FE80::210:11FF:FEC3:70B3', the 'Link Local Address' is 'FE80::210:11FF:FEC3:70B3', and the 'Default Gateway' is empty.

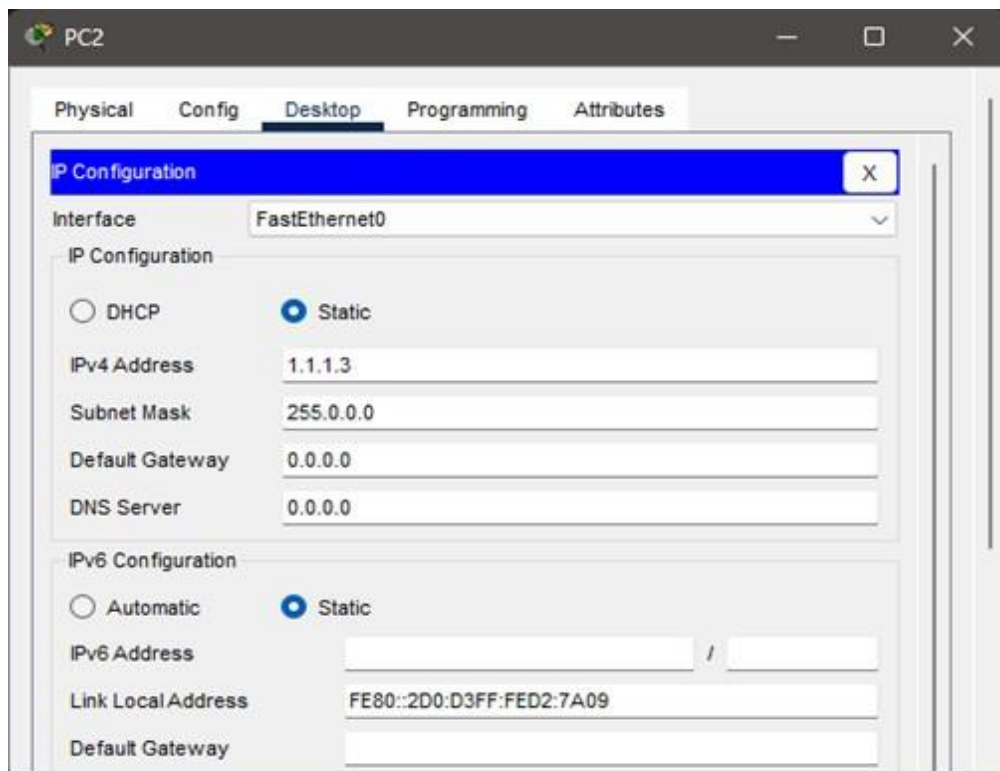
PC1 IP CONFIGURATION



The image shows the 'PC1' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The 'IPv4 Address' is '1.1.1.2', 'Subnet Mask' is '255.0.0.0', 'Default Gateway' is '0.0.0.0', and 'DNS Server' is '0.0.0.0'. Under 'IPv6 Configuration', the 'Static' radio button is selected. The 'IPv6 Address' field is empty, 'Link Local Address' is 'FE80::260:2FFF:FEA4:3AEC', and 'Default Gateway' is empty.

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	
<input checked="" type="radio"/> Static	
IPv4 Address	1.1.1.2
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	
<input checked="" type="radio"/> Static	
IPv6 Address	
Link Local Address	FE80::260:2FFF:FEA4:3AEC
Default Gateway	

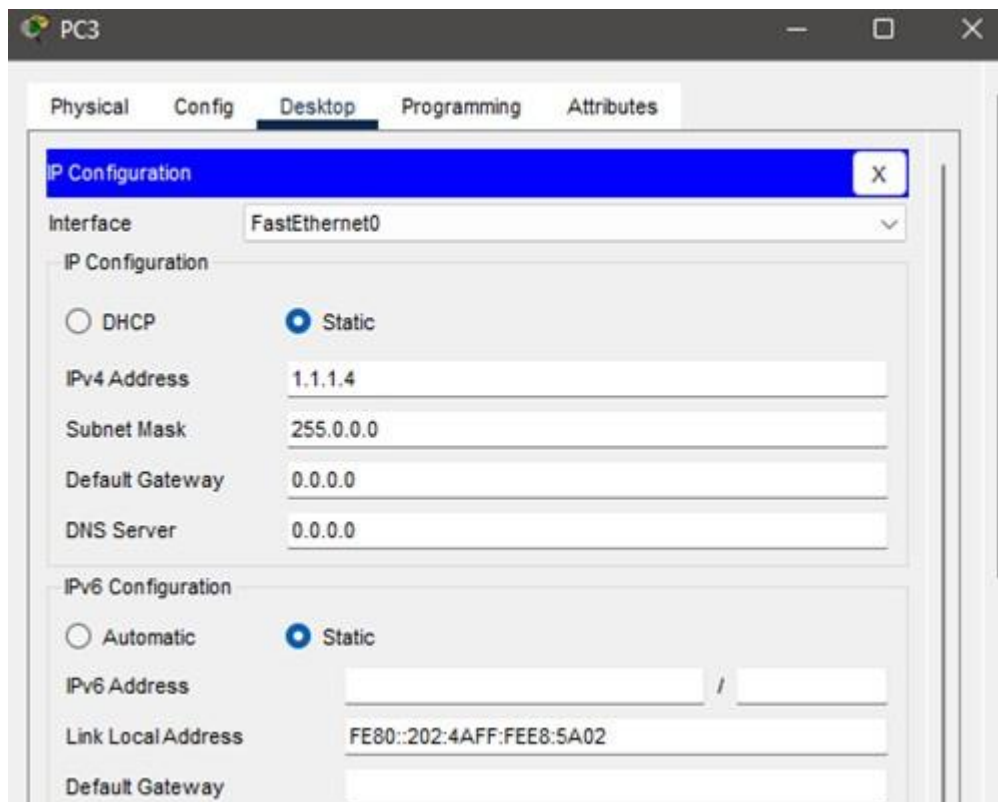
PC2 IP CONFIGURATION



The image shows the 'PC2' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The 'IPv4 Address' is '1.1.1.3', 'Subnet Mask' is '255.0.0.0', 'Default Gateway' is '0.0.0.0', and 'DNS Server' is '0.0.0.0'. Under 'IPv6 Configuration', the 'Static' radio button is selected. The 'IPv6 Address' field is empty, 'Link Local Address' is 'FE80::2D0:D3FF:FED2:7A09', and 'Default Gateway' is empty.

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	
<input checked="" type="radio"/> Static	
IPv4 Address	1.1.1.3
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	
<input checked="" type="radio"/> Static	
IPv6 Address	
Link Local Address	FE80::2D0:D3FF:FED2:7A09
Default Gateway	

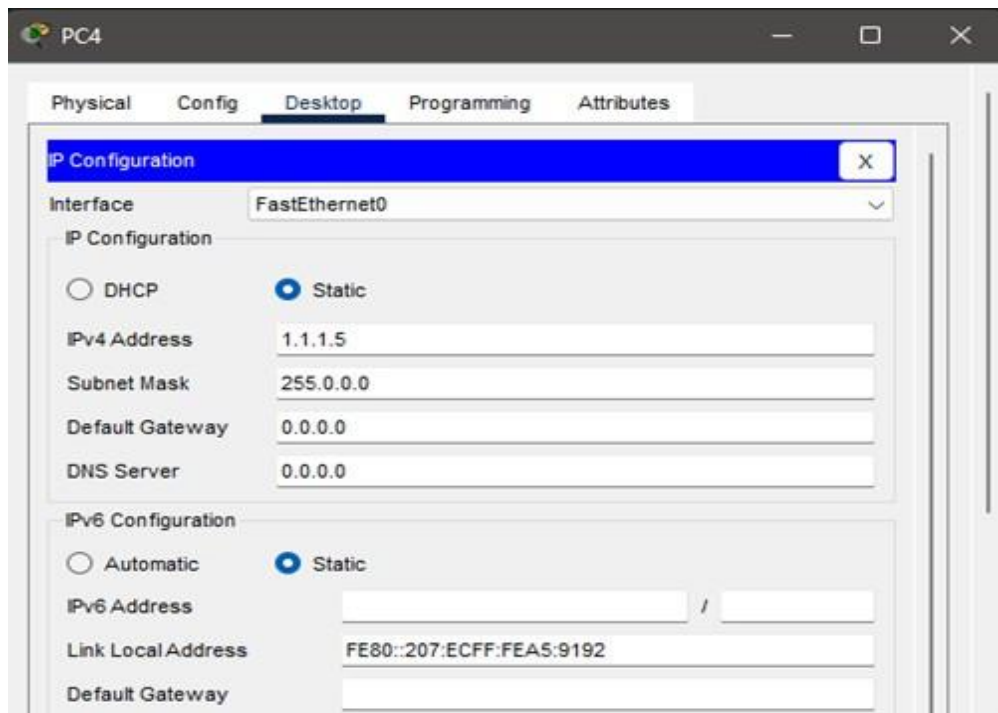
PC3 IP CONFIGURATION



The screenshot shows the 'IP Configuration' window for PC3. The 'Desktop' tab is selected. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', 'Static' is selected. The IPv4 settings are: IPv4 Address: 1.1.1.4, Subnet Mask: 255.0.0.0, Default Gateway: 0.0.0.0, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', 'Static' is selected. The IPv6 settings are: IPv6 Address: (empty), Link Local Address: FE80::202:4AFF:FEE8:5A02, and Default Gateway: (empty).

IP Configuration	
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.4
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::202:4AFF:FEE8:5A02
Default Gateway	

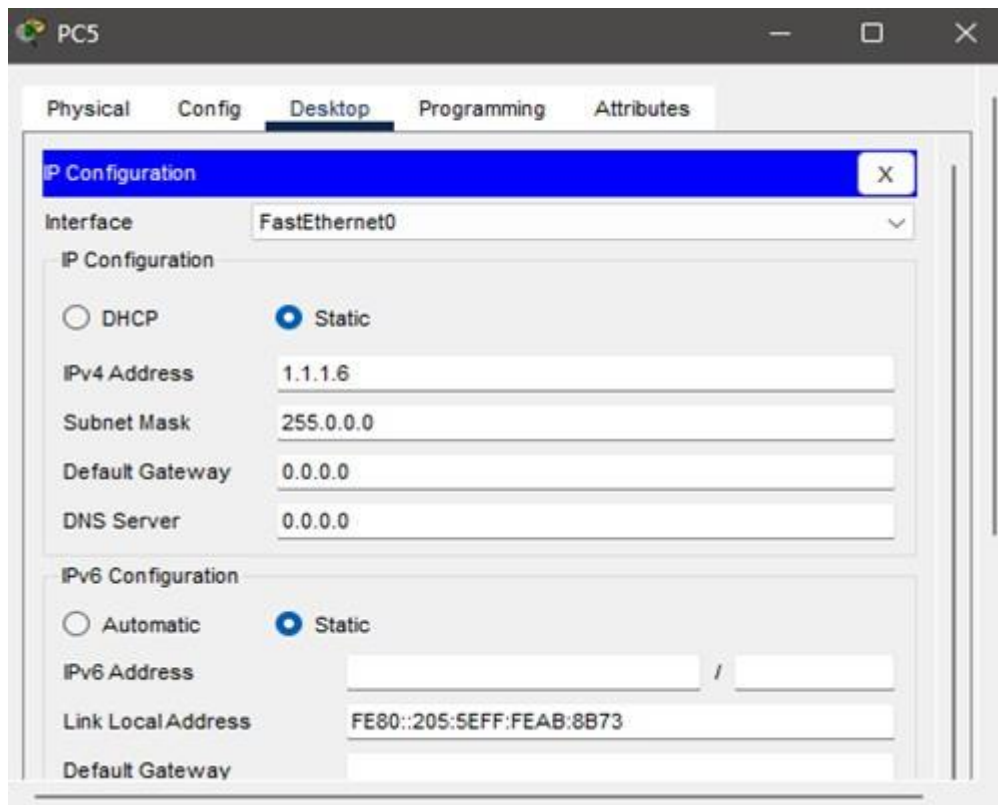
PC4 IP CONFIGURATION



The screenshot shows the 'IP Configuration' window for PC4. The 'Desktop' tab is selected. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', 'Static' is selected. The IPv4 settings are: IPv4 Address: 1.1.1.5, Subnet Mask: 255.0.0.0, Default Gateway: 0.0.0.0, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', 'Static' is selected. The IPv6 settings are: IPv6 Address: (empty), Link Local Address: FE80::207:ECFF:FEA5:9192, and Default Gateway: (empty).

IP Configuration	
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.5
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::207:ECFF:FEA5:9192
Default Gateway	

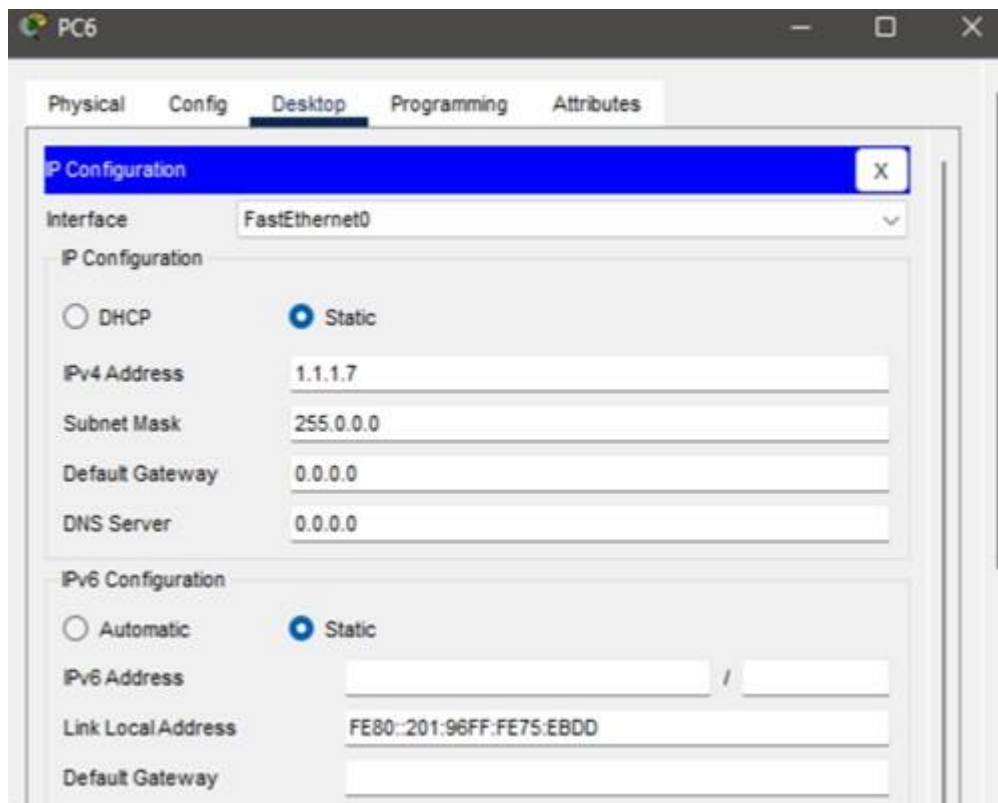
PC5 IP CONFIGURATION



The screenshot shows the 'PC5' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', 'Static' is selected. The IPv4 settings are: IPv4 Address: 1.1.1.6, Subnet Mask: 255.0.0.0, Default Gateway: 0.0.0.0, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', 'Static' is selected. The IPv6 settings are: IPv6 Address: (empty), Link Local Address: FE80::205:5EFF:FEAB:8B73, and Default Gateway: (empty).

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.6
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::205:5EFF:FEAB:8B73
Default Gateway	

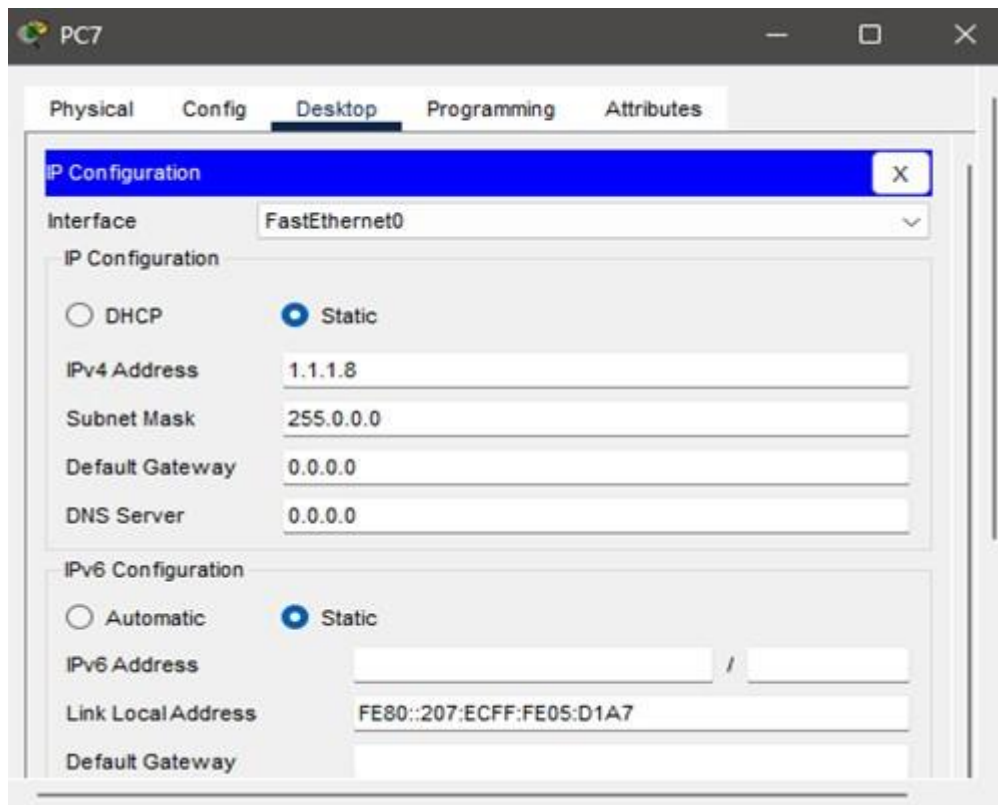
PC6 IP CONFIGURATION



The screenshot shows the 'PC6' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', 'Static' is selected. The IPv4 settings are: IPv4 Address: 1.1.1.7, Subnet Mask: 255.0.0.0, Default Gateway: 0.0.0.0, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', 'Static' is selected. The IPv6 settings are: IPv6 Address: (empty), Link Local Address: FE80::201:96FF:FE75:EBDD, and Default Gateway: (empty).

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.7
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::201:96FF:FE75:EBDD
Default Gateway	

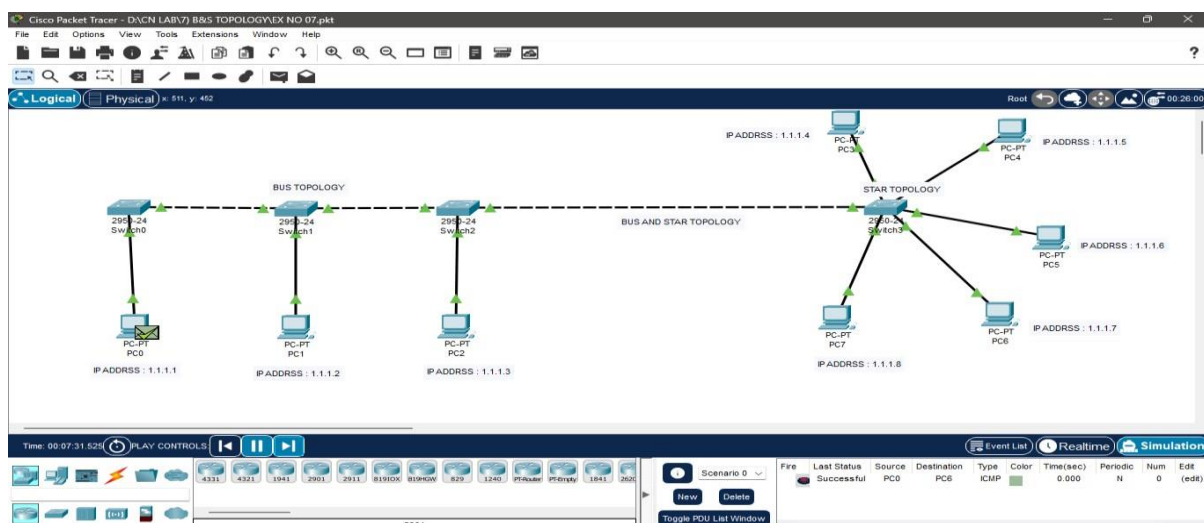
PC7 IP CONFIGURATION



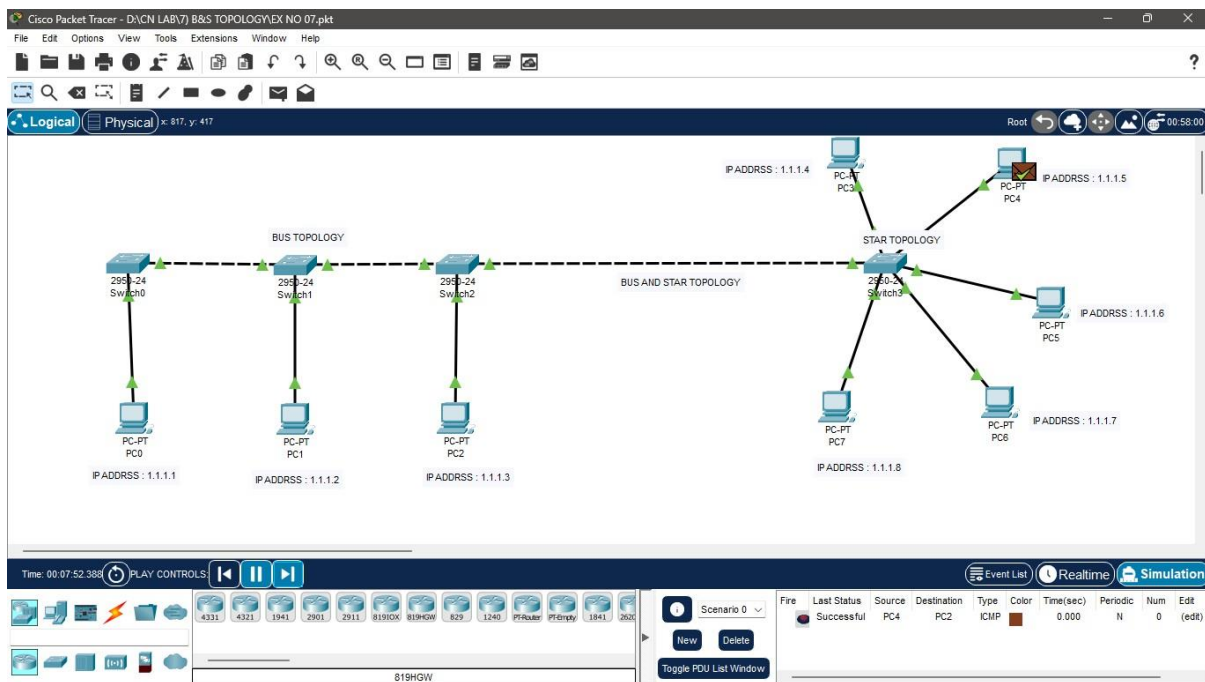
VERIFY LAN NETWORK CONNECTIVITY :

Using Add Simple PDU(p), Click the mail icon and then drop one mail to one of the PC in first lan and another mail to PC in another lan. If the resultant window shows the successful delivery, then network connectivity is successful.

HOST PC0 TO PC6



HOST PC4 TO PC2



RESULT :

Thus, Bus and Star topologies are designed using cisco packet tracer and the communication between Bus and Star topologies is checked successfully.

EX.NO : 08

DATE :

DESIGNING HYBRID TOPOLOGIES USING CISCO PACKET TRACER

AIM :

To Designing a Hybrid topologies by using Cisco Packet Tracer.

REQUIREMENTS :

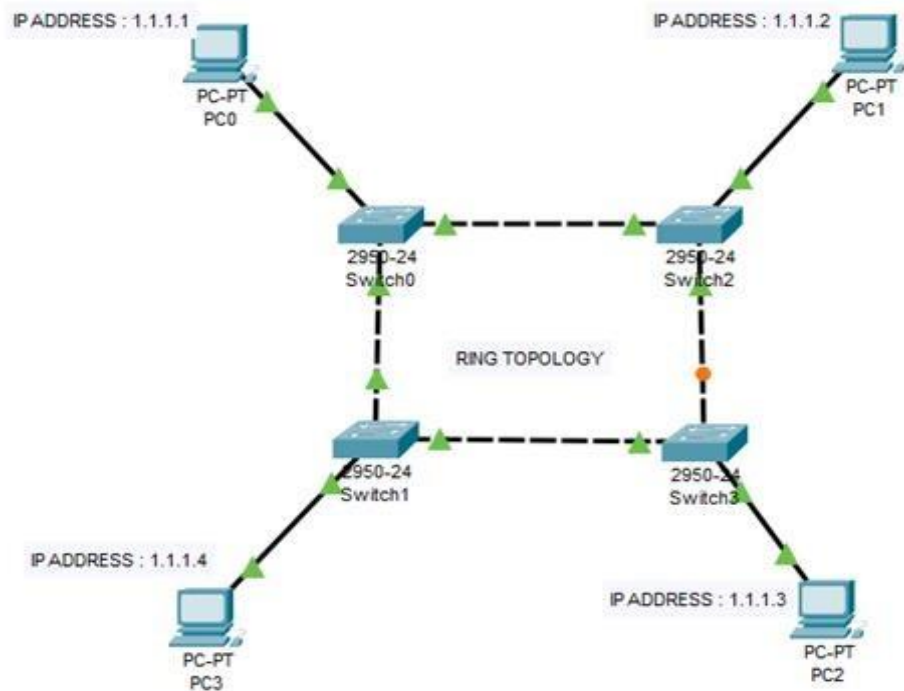
- 16 windows PC.
- 12 Switch (2950-24).
- 16 Straight Line LAN Cables.
- 13 Cross Over Cables.
- Cisco Packet Tracer.

PROCEDURES :

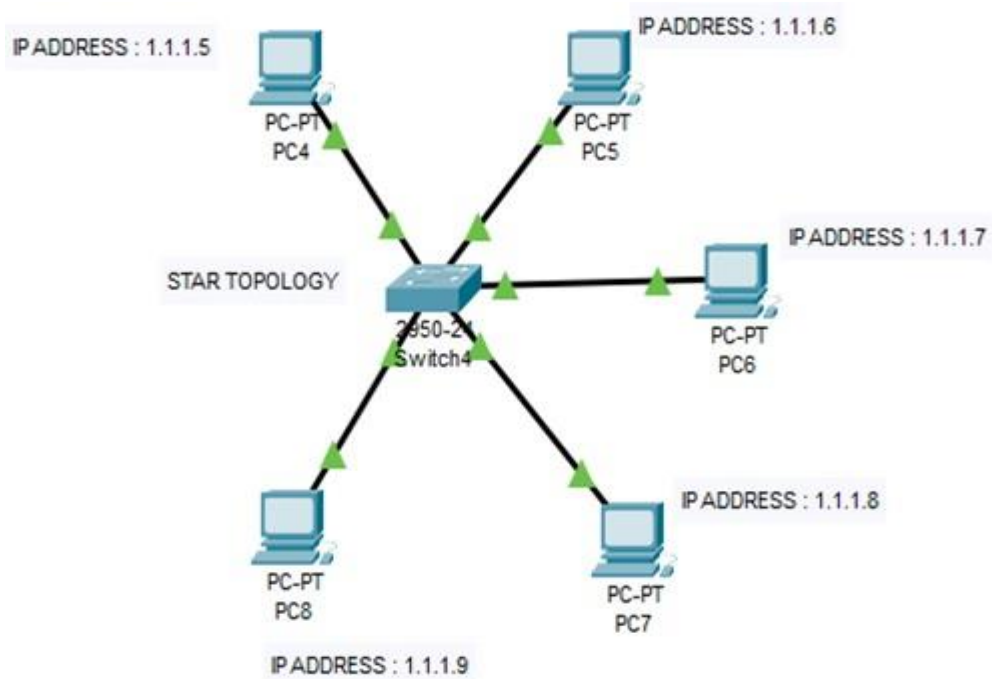
- Open CISCO PACKET TRACER software.
- Draw the 16 PC using END Device Icons.
- Draw the 12 Cisco 2950-24 Switch Using Switch icon lists.
- Make the Connections using Copper-Straight-Through Ethernet Cables.
- Make the Connections between Switches using Cross Overs Cables.
- Enter the IP Address To Each Machine.
- Check the Network Connections using Add Simple PDU(P).

NETWORK TOPOLOGY

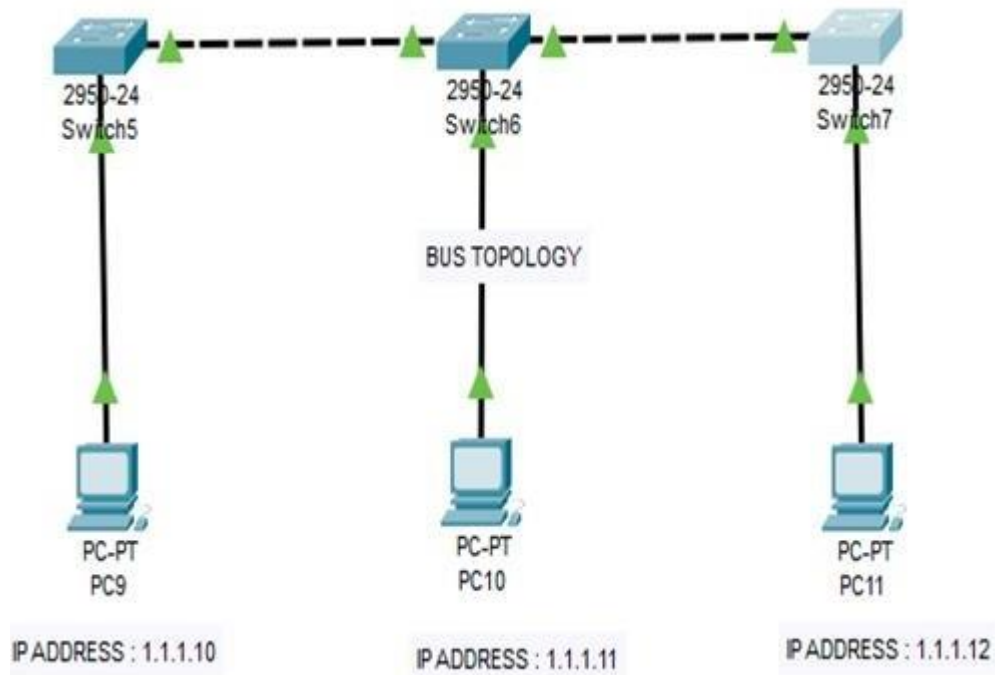
RING TOPOLOGY



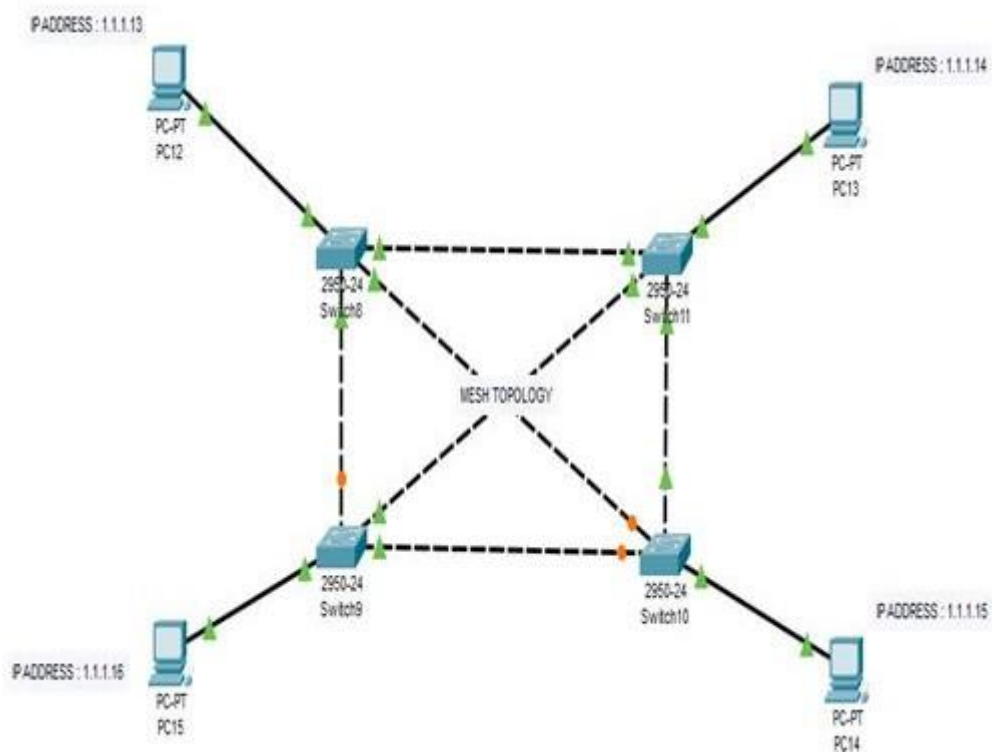
STAR TOPOLOGY



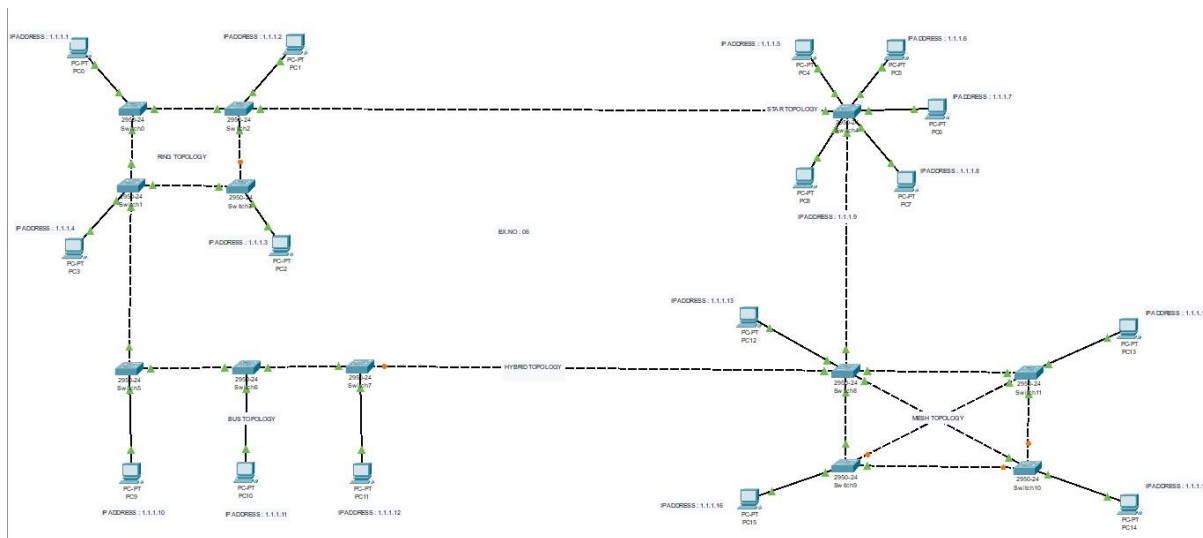
BUS TOPOLOGY



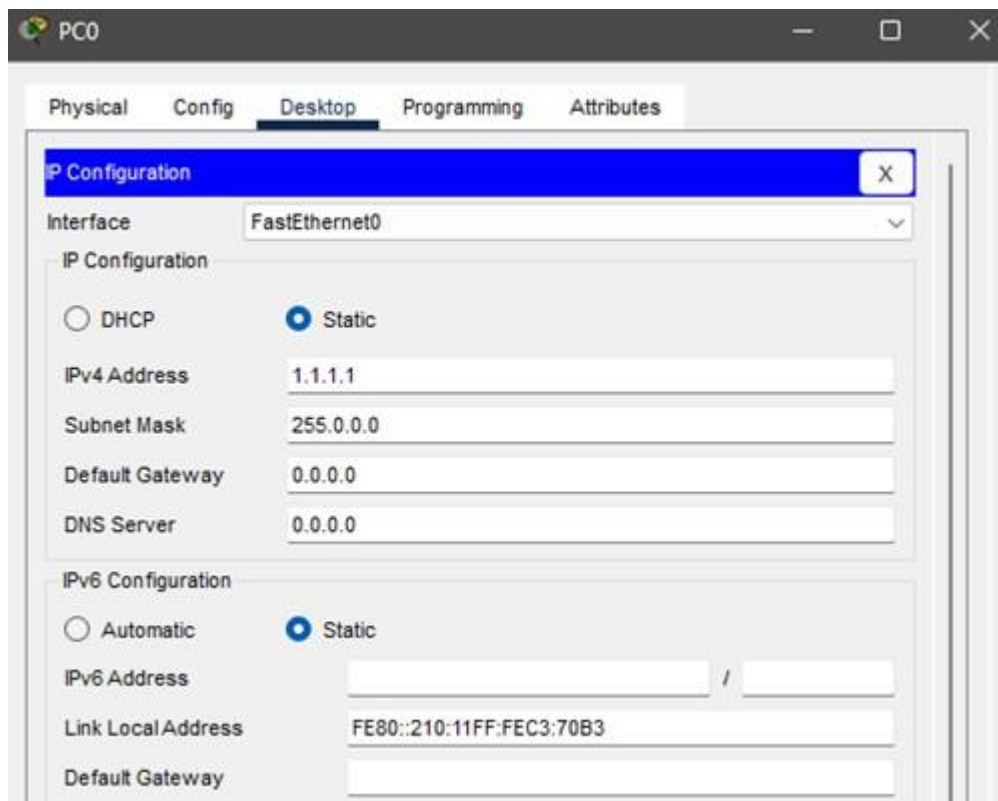
MESH TOPOLOGY



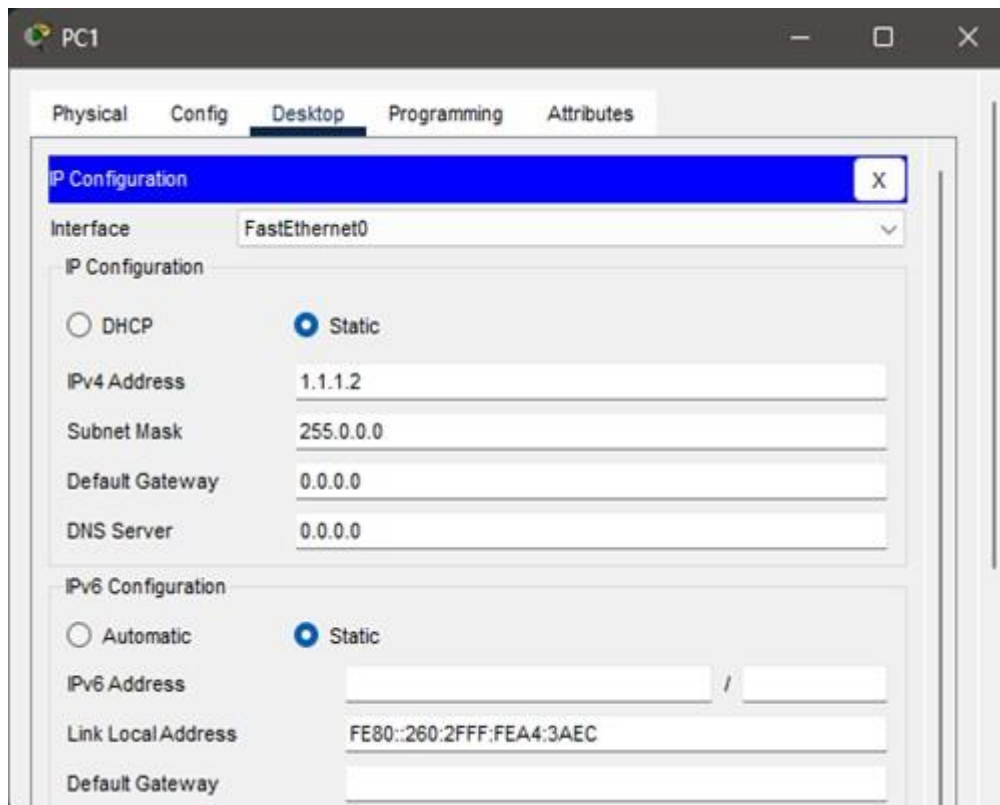
HYBRID TOPOLOGY

**HOST PC IP ADDRESS :**

PC0 IP CONFIGURATION



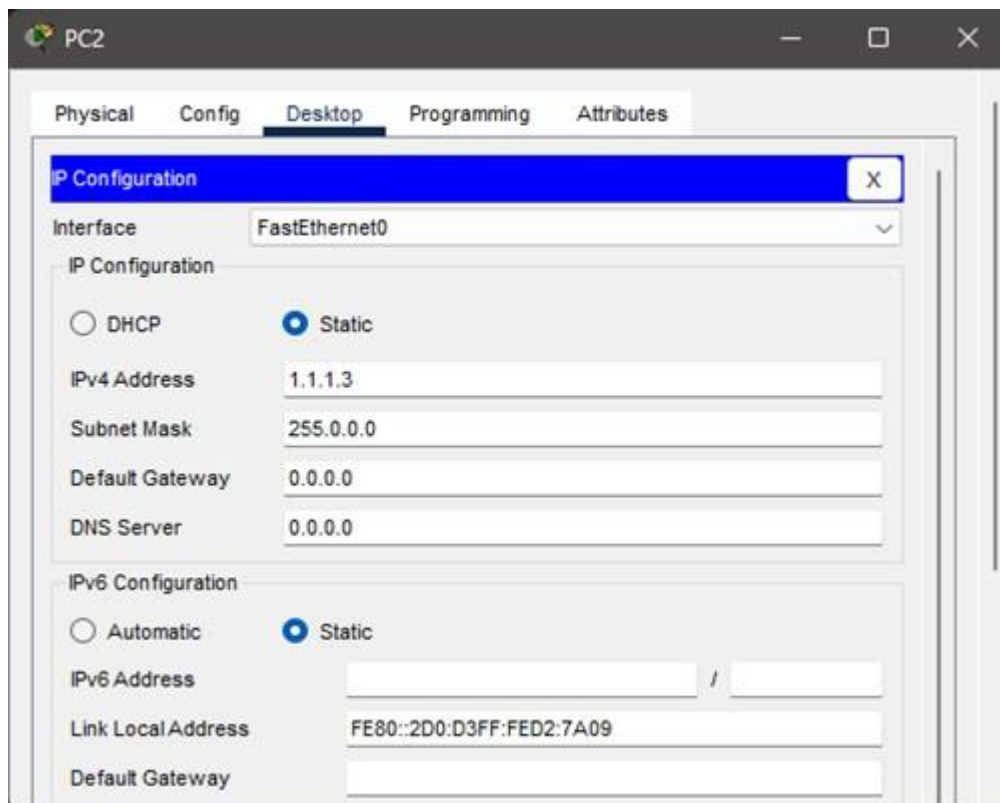
PC1 IP CONFIGURATION



The image shows the 'PC1' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The 'IPv4 Address' is '1.1.1.2', 'Subnet Mask' is '255.0.0.0', 'Default Gateway' is '0.0.0.0', and 'DNS Server' is '0.0.0.0'. Under 'IPv6 Configuration', the 'Static' radio button is selected. The 'IPv6 Address' field is empty, 'Link Local Address' is 'FE80::260:2FFF:FEA4:3AEC', and 'Default Gateway' is empty.

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	
<input checked="" type="radio"/> Static	
IPv4 Address	1.1.1.2
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	
<input checked="" type="radio"/> Static	
IPv6 Address	
Link Local Address	FE80::260:2FFF:FEA4:3AEC
Default Gateway	

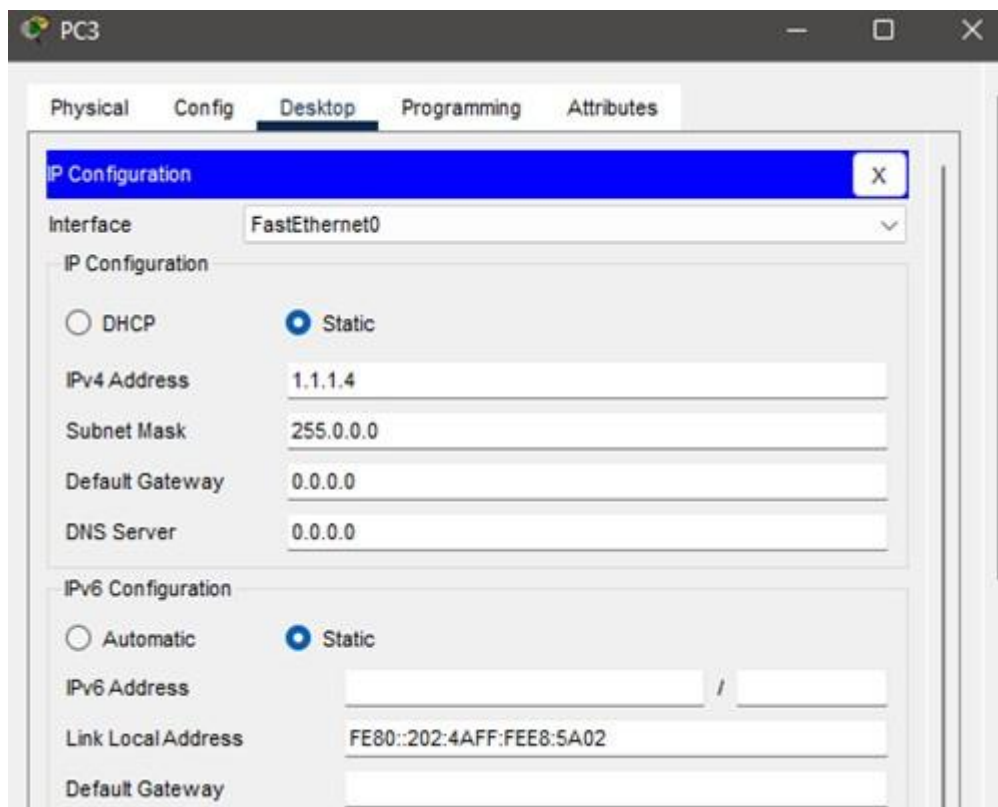
PC2 IP CONFIGURATION



The image shows the 'PC2' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The 'IPv4 Address' is '1.1.1.3', 'Subnet Mask' is '255.0.0.0', 'Default Gateway' is '0.0.0.0', and 'DNS Server' is '0.0.0.0'. Under 'IPv6 Configuration', the 'Static' radio button is selected. The 'IPv6 Address' field is empty, 'Link Local Address' is 'FE80::2D0:D3FF:FED2:7A09', and 'Default Gateway' is empty.

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	
<input checked="" type="radio"/> Static	
IPv4 Address	1.1.1.3
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	
<input checked="" type="radio"/> Static	
IPv6 Address	
Link Local Address	FE80::2D0:D3FF:FED2:7A09
Default Gateway	

PC3 IP CONFIGURATION

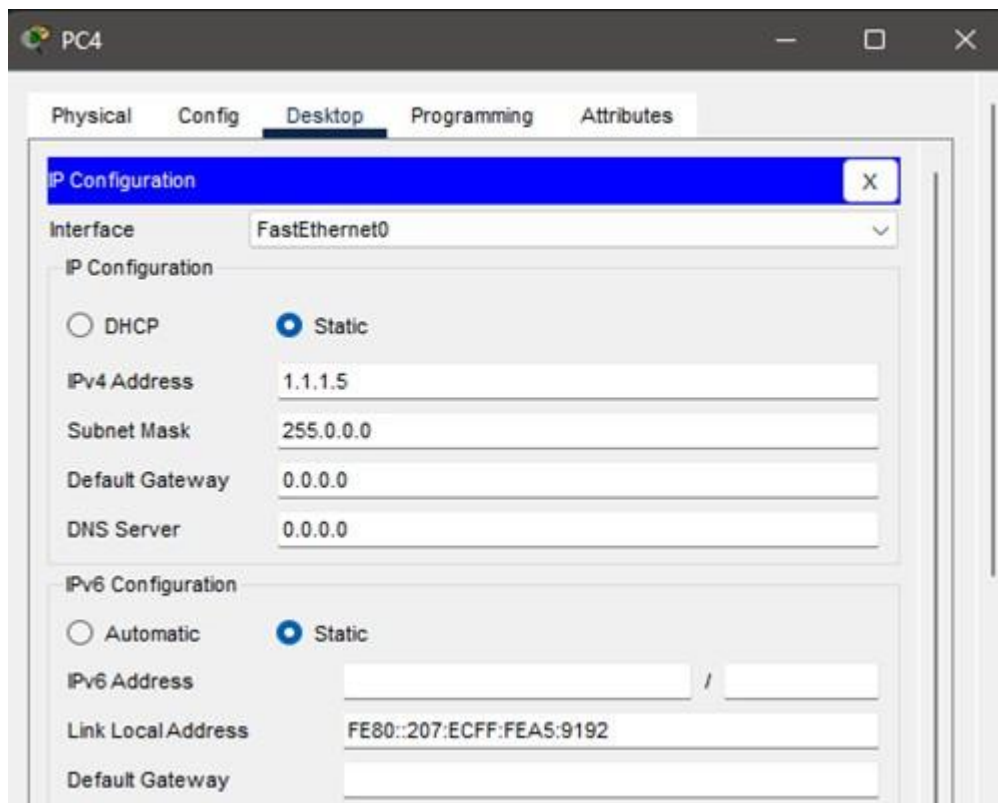


The image shows the 'PC3' configuration window with the 'Desktop' tab selected. The 'IP Configuration' sub-window is open, showing settings for the 'FastEthernet0' interface. The 'Static' radio button is selected for both IPv4 and IPv6 configurations.

IPv4 Configuration	
Interface	FastEthernet0
IP Configuration	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.4
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

IPv6 Configuration	
IP Configuration	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::202:4AFF:FEE8:5A02
Default Gateway	

PC4 IP CONFIGURATION

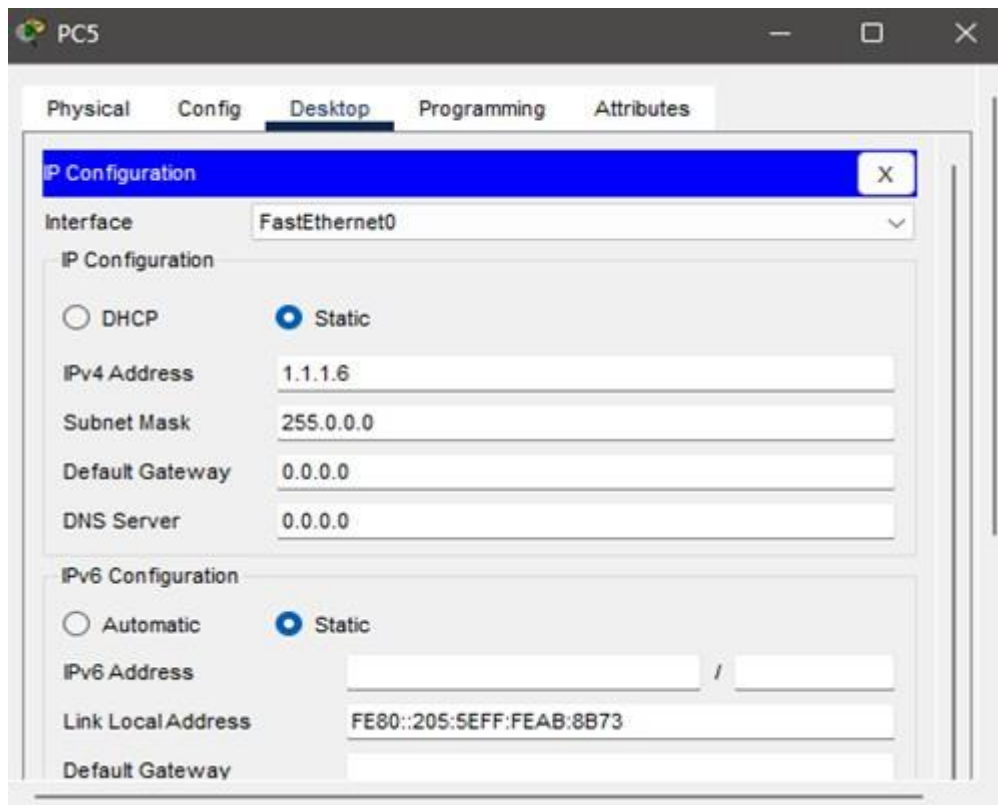


The image shows the 'PC4' configuration window with the 'Desktop' tab selected. The 'IP Configuration' sub-window is open, showing settings for the 'FastEthernet0' interface. The 'Static' radio button is selected for both IPv4 and IPv6 configurations.

IPv4 Configuration	
Interface	FastEthernet0
IP Configuration	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.5
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

IPv6 Configuration	
IP Configuration	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::207:ECFF:FEA5:9192
Default Gateway	

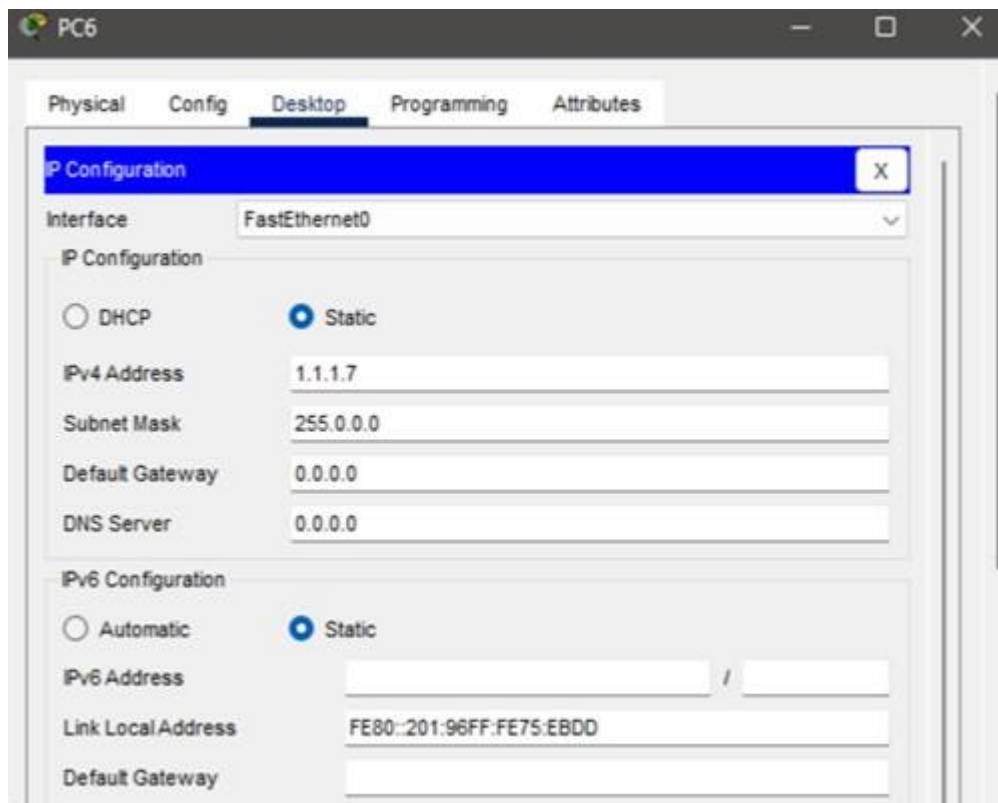
PC5 IP CONFIGURATION



The screenshot shows the 'PC5' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', 'Static' is selected. The IPv4 settings are: IPv4 Address: 1.1.1.6, Subnet Mask: 255.0.0.0, Default Gateway: 0.0.0.0, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', 'Static' is selected. The IPv6 settings are: IPv6 Address: (empty), Link Local Address: FE80::205:5EFF:FEAB:8B73, and Default Gateway: (empty).

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.6
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::205:5EFF:FEAB:8B73
Default Gateway	

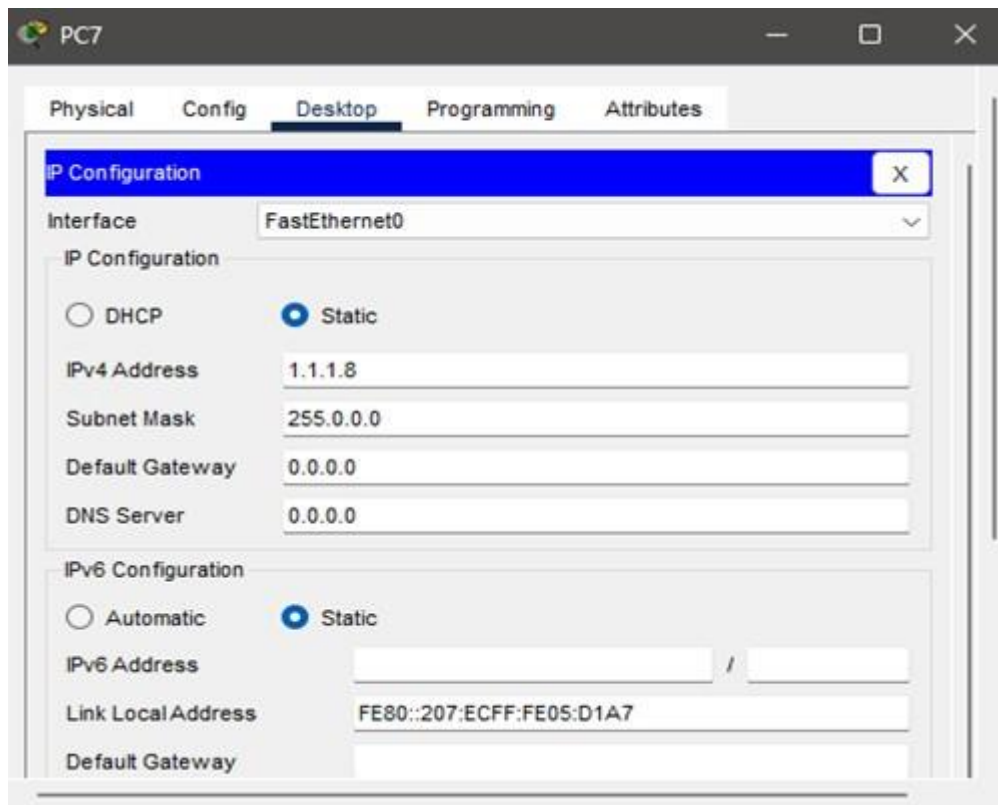
PC6 IP CONFIGURATION



The screenshot shows the 'PC6' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', 'Static' is selected. The IPv4 settings are: IPv4 Address: 1.1.1.7, Subnet Mask: 255.0.0.0, Default Gateway: 0.0.0.0, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', 'Static' is selected. The IPv6 settings are: IPv6 Address: (empty), Link Local Address: FE80::201:96FF:FE75:EBDD, and Default Gateway: (empty).

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.7
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::201:96FF:FE75:EBDD
Default Gateway	

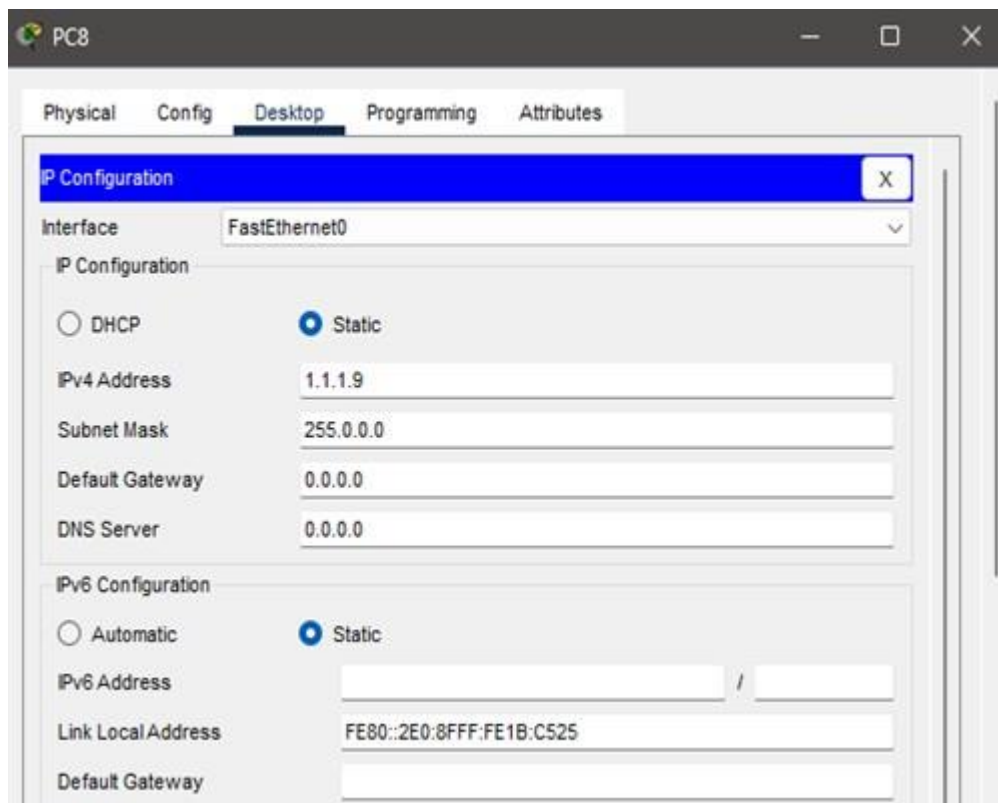
PC7 IP CONFIGURATION



The screenshot shows the 'IP Configuration' window for PC7. The 'Desktop' tab is selected. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', 'Static' is selected. The IPv4 Address is 1.1.1.8, Subnet Mask is 255.0.0.0, Default Gateway is 0.0.0.0, and DNS Server is 0.0.0.0. Under 'IPv6 Configuration', 'Static' is selected. The IPv6 Address field is empty, Link Local Address is FE80::207:ECFF:FE05:D1A7, and the Default Gateway is empty.

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.8
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::207:ECFF:FE05:D1A7
Default Gateway	

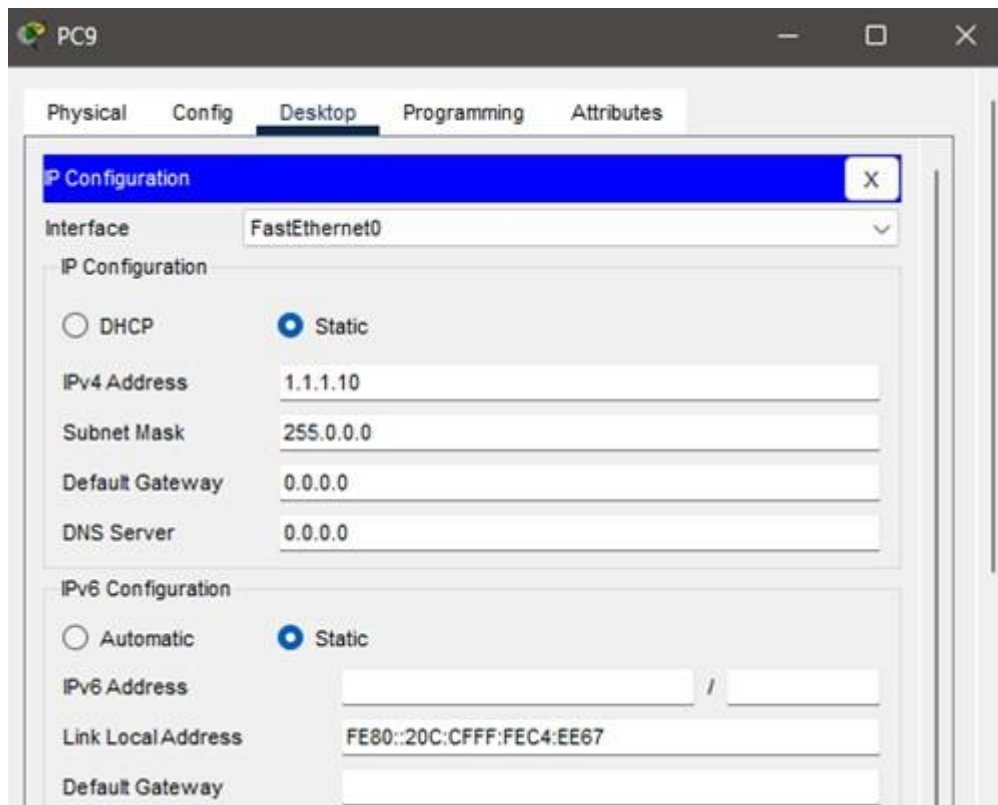
PC8 IP CONFIGURATION



The screenshot shows the 'IP Configuration' window for PC8. The 'Desktop' tab is selected. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', 'Static' is selected. The IPv4 Address is 1.1.1.9, Subnet Mask is 255.0.0.0, Default Gateway is 0.0.0.0, and DNS Server is 0.0.0.0. Under 'IPv6 Configuration', 'Static' is selected. The IPv6 Address field is empty, Link Local Address is FE80::2E0:8FFF:FE1B:C525, and the Default Gateway is empty.

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.9
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::2E0:8FFF:FE1B:C525
Default Gateway	

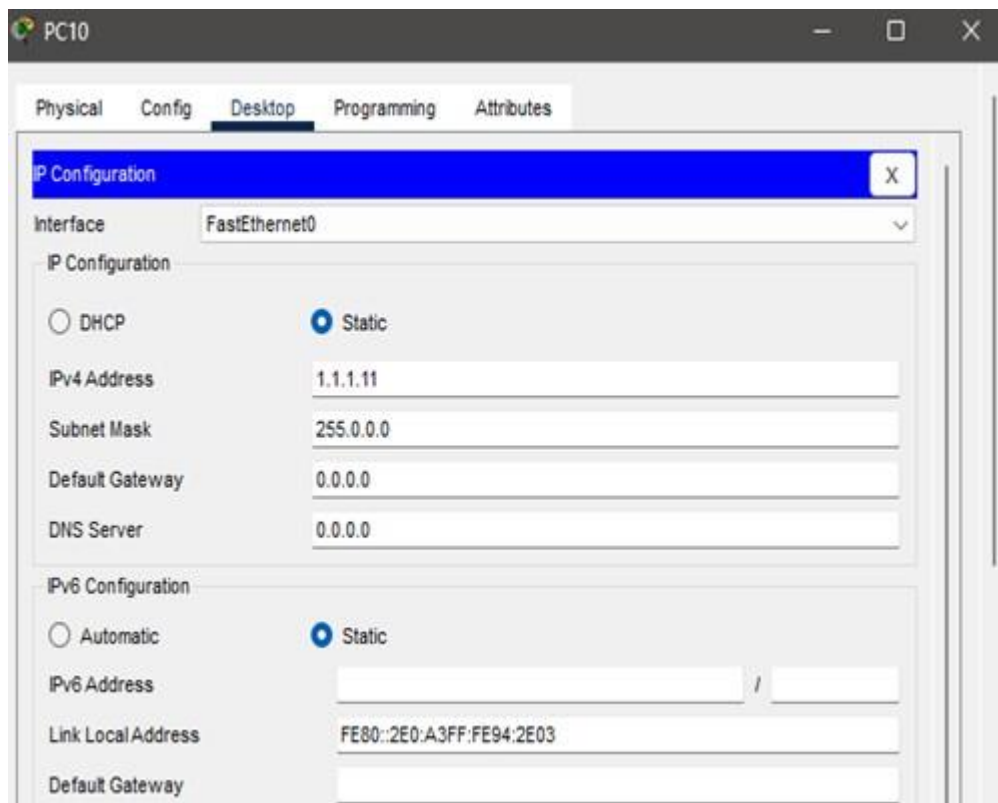
PC9 IP CONFIGURATION



The screenshot shows the 'PC9' window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', 'Static' is selected. The IPv4 settings are: IPv4 Address: 1.1.1.10, Subnet Mask: 255.0.0.0, Default Gateway: 0.0.0.0, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', 'Static' is selected. The IPv6 settings are: IPv6 Address: (empty), Link Local Address: FE80::20C:CFFF:FEC4:EE67, and Default Gateway: (empty).

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.10
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::20C:CFFF:FEC4:EE67
Default Gateway	

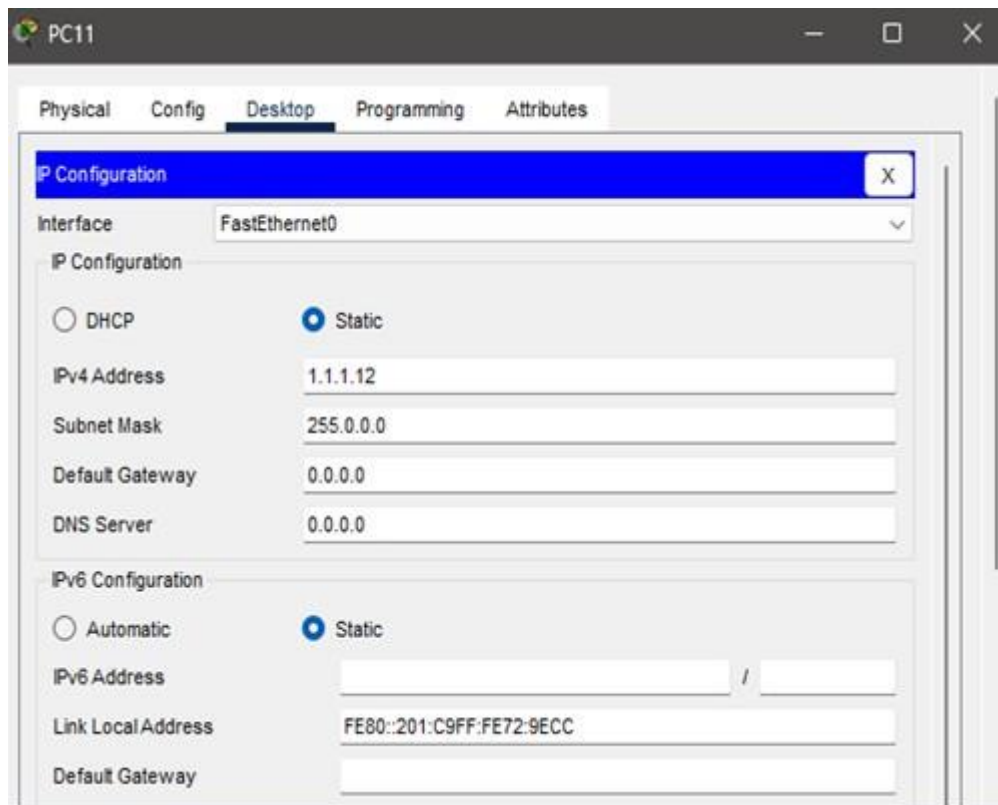
PC10 IP CONFIGURATION



The screenshot shows the 'PC10' window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', 'Static' is selected. The IPv4 settings are: IPv4 Address: 1.1.1.11, Subnet Mask: 255.0.0.0, Default Gateway: 0.0.0.0, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', 'Static' is selected. The IPv6 settings are: IPv6 Address: (empty), Link Local Address: FE80::2E0:A3FF:FE94:2E03, and Default Gateway: (empty).

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.11
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::2E0:A3FF:FE94:2E03
Default Gateway	

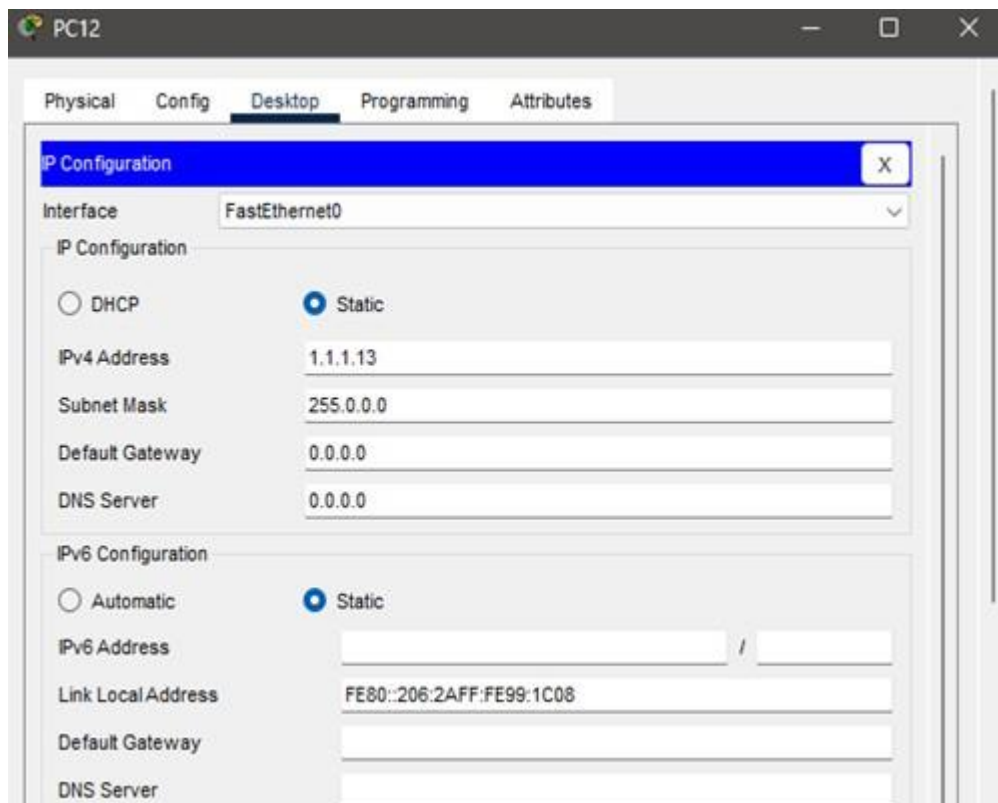
PC11 IP CONFIGURATION



The image shows the 'PC11' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted in blue. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The IPv4 settings are: IPv4 Address: 1.1.1.12, Subnet Mask: 255.0.0.0, Default Gateway: 0.0.0.0, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', the 'Static' radio button is selected. The IPv6 settings are: IPv6 Address: (empty), Link Local Address: FE80::201:C9FF:FE72:9ECC, and Default Gateway: (empty).

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.12
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::201:C9FF:FE72:9ECC
Default Gateway	

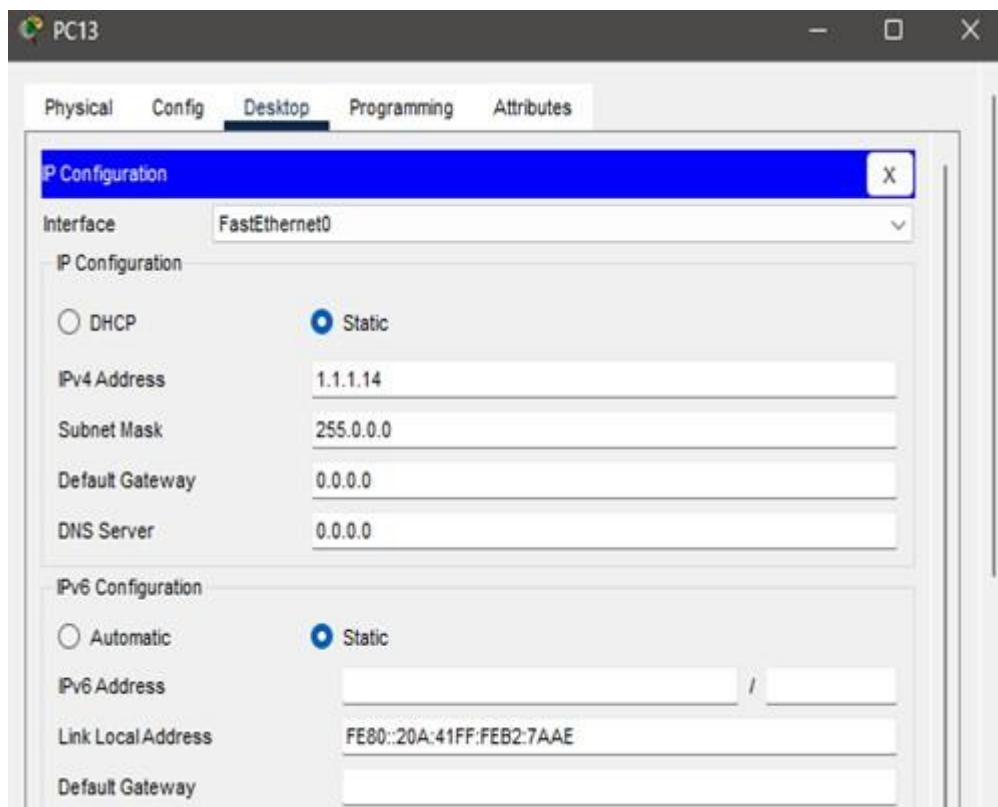
PC12 IP CONFIGURATION



The image shows the 'PC12' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted in blue. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The IPv4 settings are: IPv4 Address: 1.1.1.13, Subnet Mask: 255.0.0.0, Default Gateway: 0.0.0.0, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', the 'Static' radio button is selected. The IPv6 settings are: IPv6 Address: (empty), Link Local Address: FE80::206:2AFF:FE99:1C08, and Default Gateway: (empty).

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.13
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::206:2AFF:FE99:1C08
Default Gateway	
DNS Server	

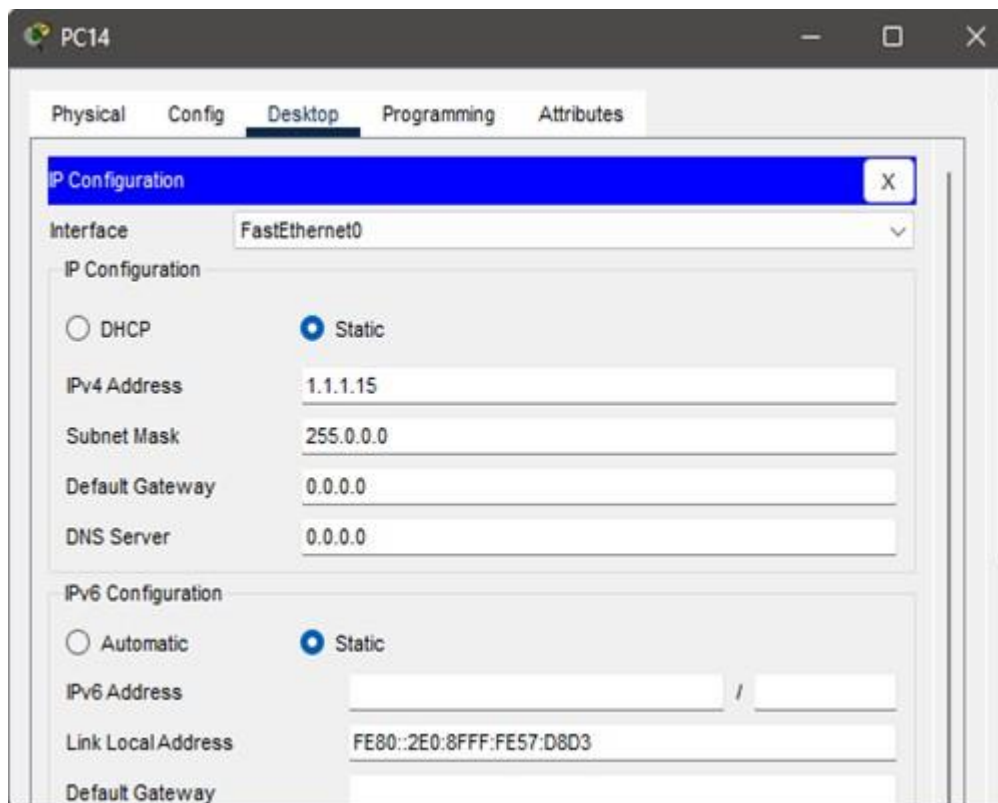
PC13 IP CONFIGURATION



The screenshot shows the 'IP Configuration' window for PC13. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The 'IPv4 Address' is '1.1.1.14', 'Subnet Mask' is '255.0.0.0', 'Default Gateway' is '0.0.0.0', and 'DNS Server' is '0.0.0.0'. Under 'IPv6 Configuration', the 'Static' radio button is selected. The 'IPv6 Address' field is empty, 'Link Local Address' is 'FE80::20A:41FF:FE82:7AAE', and 'Default Gateway' is empty.

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.14
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::20A:41FF:FE82:7AAE
Default Gateway	

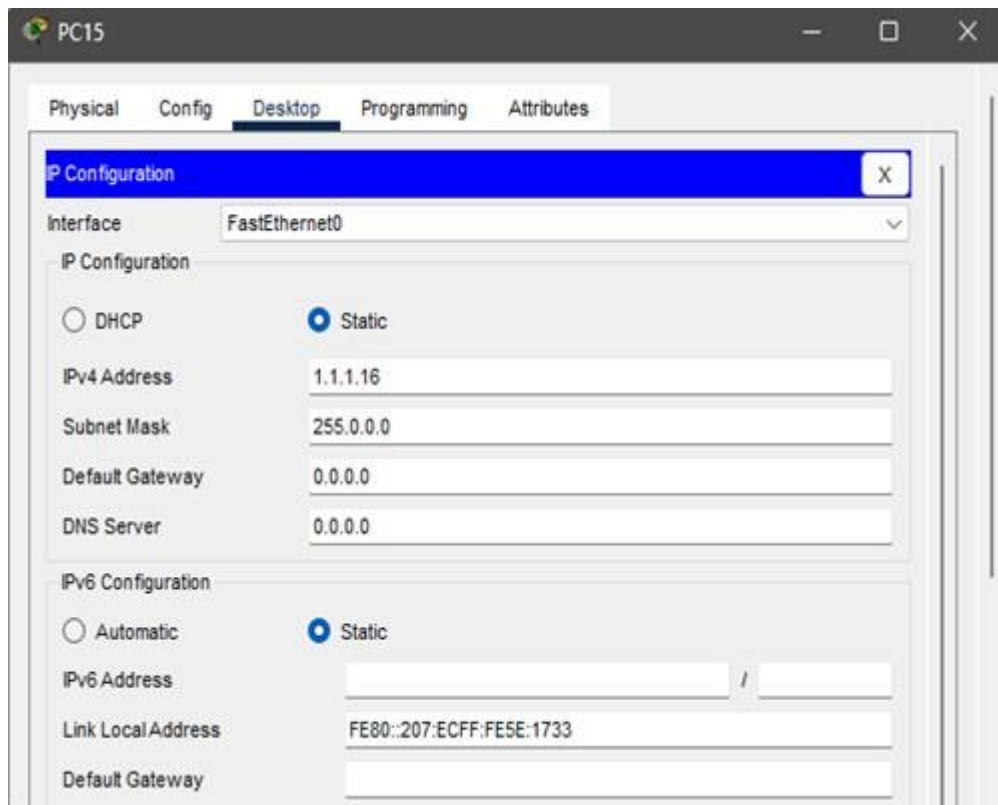
PC14 IP CONFIGURATION



The screenshot shows the 'IP Configuration' window for PC14. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The 'IPv4 Address' is '1.1.1.15', 'Subnet Mask' is '255.0.0.0', 'Default Gateway' is '0.0.0.0', and 'DNS Server' is '0.0.0.0'. Under 'IPv6 Configuration', the 'Static' radio button is selected. The 'IPv6 Address' field is empty, 'Link Local Address' is 'FE80::2E0:8FFF:FE57:D8D3', and 'Default Gateway' is empty.

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	1.1.1.15
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::2E0:8FFF:FE57:D8D3
Default Gateway	

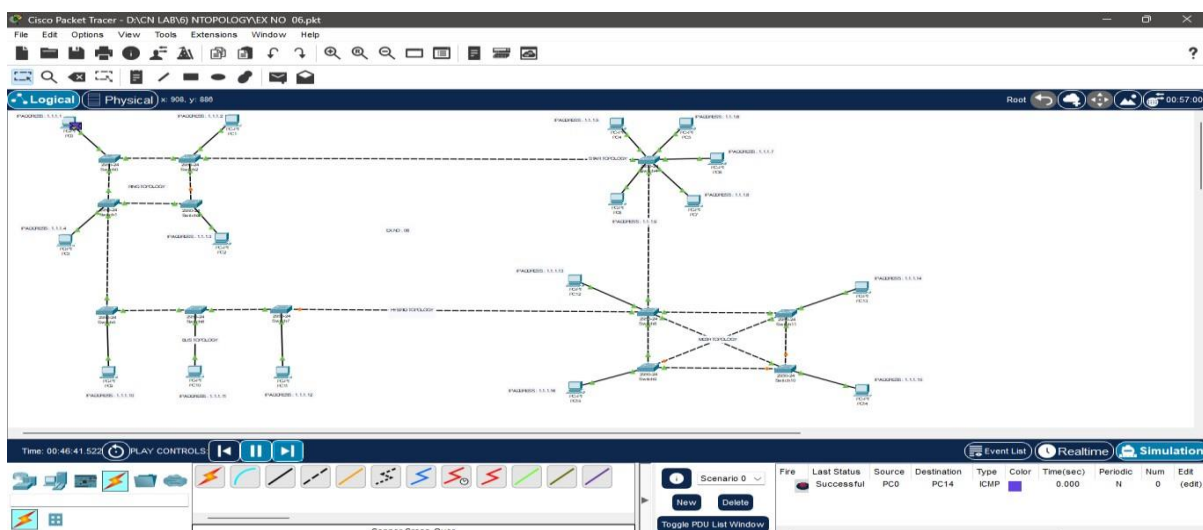
PC15 IP CONFIGURATION



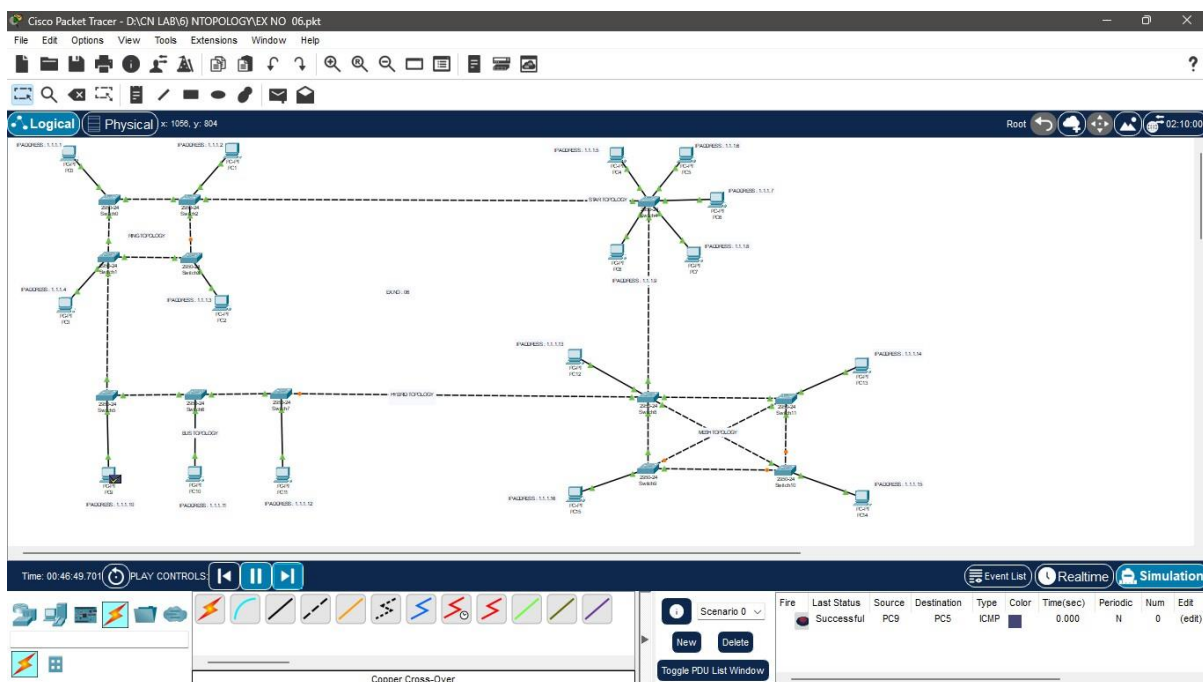
VERIFY LAN NETWORK CONNECTIVITY :

Using Add Simple PDU(p), Click the mail icon and then drop one mail to one of the PC in first lan and another mail to PC in another lan. If the resultant window shows the successful delivery, then network connectivity is successful.

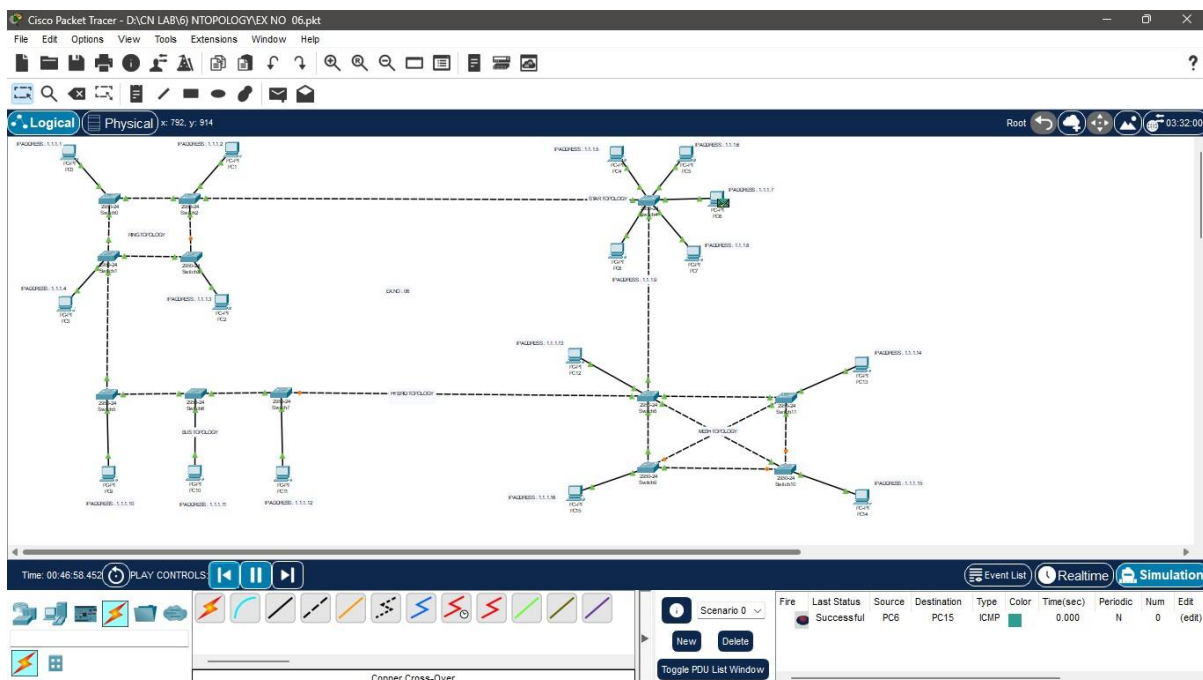
HOST PC0 TO PC14



HOST PC9 TO PC5



HOST PC6 TO PC15



RESULT :

Thus, Hybrid topologies are designed using cisco packet tracer and the communication between Hybrid topologies is checked successfully.

EX.NO : 09

DATE :

IMPLEMENTING ERROR DETECTING CODE USING PARITY CHECK

AIM :

To write a Java program for Error Detecting code using Parity Check.

ALGORITHM :

- 1) Start the program.
- 2) Input the size of the message.
- 3) Input the message as bits.
- 4) Calculate the parity bit based on the count of set bits in the message.
- 5) Output the modified message bits with the appended parity bit.
- 6) Stop the program.

PROGRAM :

```
import java.util.*;

class Parity
{
    public static void main(String[] args)
    {
        Scanner in = new Scanner(System.in);
        System.out.println("Enter the size");
        int size = in.nextInt();
        System.out.println("Enter the message as bits");
```



```

String mess = in.next();

int[] arr = new int[size + 1];

for (int i = 0; i < size; i++)
    {
        arr[i] = mess.charAt(i) - '0';
    }

int count = 0;

for (int i = 0; i < size; i++)
    {
        if (arr[i] == 1)
        {
            count++;
        }
    }

arr[size] = (count % 2 == 0) ? 0 : 1;

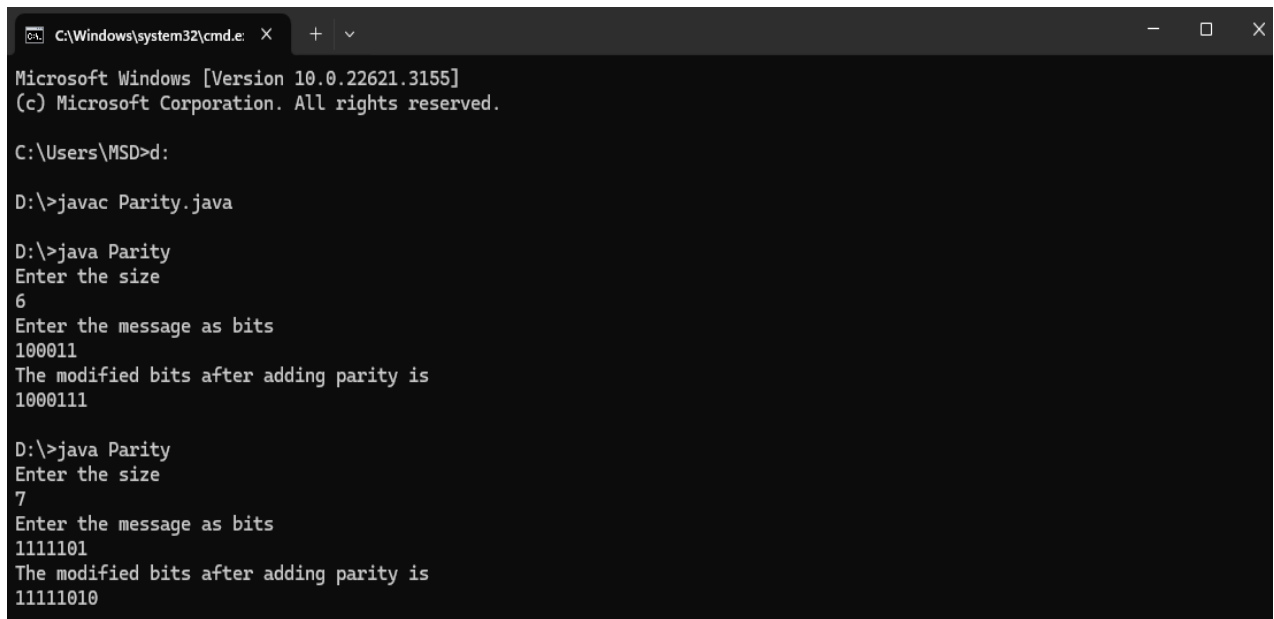
System.out.println("The modified bits after adding parity is");

for (int i = 0; i < size + 1; i++)
    {
        System.out.print(arr[i]);
    }

System.out.println();
}

```

OUTPUT :



```
C:\Windows\system32\cmd.exe X + v
Microsoft Windows [Version 10.0.22621.3155]
(c) Microsoft Corporation. All rights reserved.

C:\Users\MSD>d:

D:\>javac Parity.java

D:\>java Parity
Enter the size
6
Enter the message as bits
100011
The modified bits after adding parity is
1000111

D:\>java Parity
Enter the size
7
Enter the message as bits
1111101
The modified bits after adding parity is
11111010
```

RESULT :

Thus, the program for Error Detecting code using Parity Check is successfully executed and the output is verified.

EX.NO : 10

DATE :

IMPLEMENTING ERROR DETECTING CODE USING CHECKSUM

AIM :

To write a Java program for Error Detecting code using Checksum.

ALGORITHM :

- 1) Start the program.
- 2) Prompt the user for the number of data segments and the number of bits per segment.
- 3) Read and store the data segments.
- 4) Calculate the sender's checksum and its complement.
- 5) Validate the received checksum and print the conclusion.
- 6) Stop the program.

PROGRAM :

```
import java.util.Scanner;

public class Checksum
{
    static String complement(String sum, int m)
    {
        char bits[] = sum.toCharArray();
        for (int i = 0; i < m; i++)
        {
            if (bits[i] == '1')
```

```

        {
            bits[i] = '0';
        }
        else
        {
            bits[i] = '1';
        }
    }
    return new String(bits);
}

static String calChecksum(String data[], int k, int m)
{
    int a = Integer.parseInt(data[0], 2);
    int b = 0;
    int c = 0;
    for (int i = 1; i < k; i++)
    {
        b = Integer.parseInt(data[i], 2);
        c = a + b;
        String temp = Integer.toBinaryString(c);
        if (temp.length() > m)
        {
            temp = temp.substring(1);
            c = Integer.parseInt(temp, 2);
        }
    }
}

```

```

        c = c + 1;
    }
    a = c;
}

String sum = Integer.toBinaryString(c);
String t = sum;
if (sum.length() < m)
{
    int diff = m - sum.length();
    for (int i = 0; i < diff; i++)
        t = "0" + t;
}
sum = t;
return sum;
}

static boolean validateChecksum(String data[], int k, int m, String
senderChecksum)
{
    String sum = calChecksum(data, k, m);
    int s = Integer.parseInt(sum, 2);
    int sc = Integer.parseInt(senderChecksum, 2);
    s = s + sc;

    String finalSum = complement(Integer.toBinaryString(s), m);

    System.out.println("Receiver side sum: " +
Integer.toBinaryString(s));

```

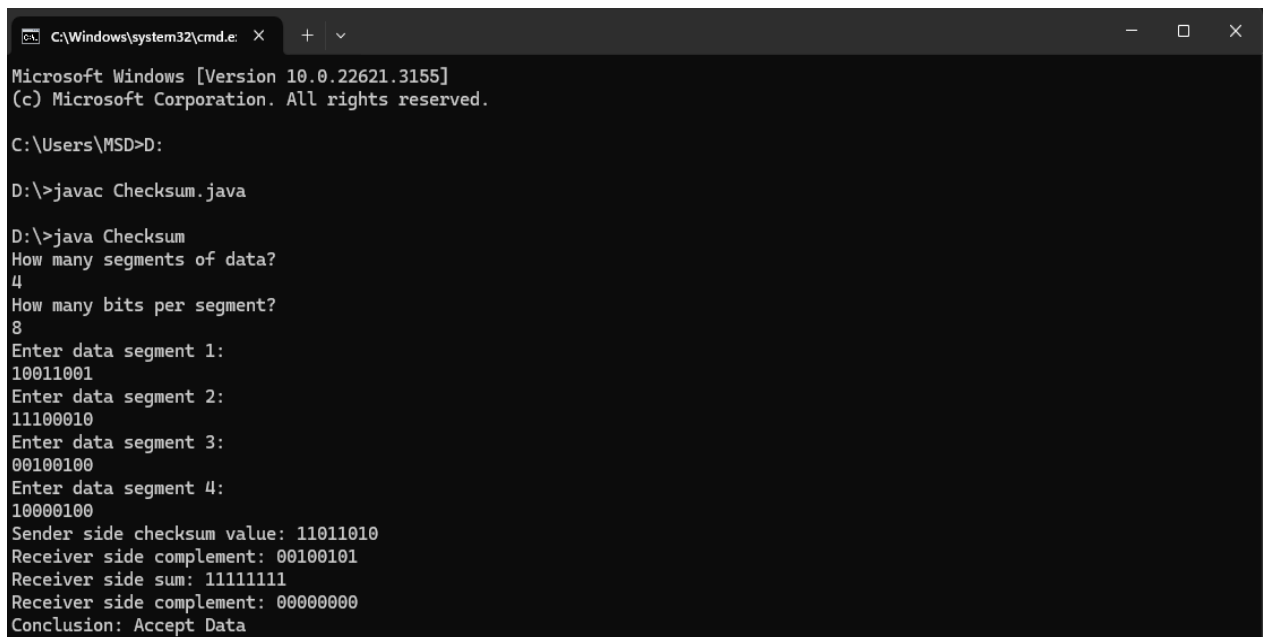
```

        System.out.println("Receiver side complement: " + finalSum);
        return finalSum.equals("000000000");
    }

    public static void main(String[] args)
    {
        System.out.println("How many segments of data? ");
        Scanner input = new Scanner(System.in);
        int k = input.nextInt();
        System.out.println("How many bits per segment? ");
        int m = input.nextInt();
        String data[] = new String[k];
        for (int i = 0; i < k; i++)
        {
            System.out.println("Enter data segment " + (i + 1) + ": ");
            data[i] = input.next();
        }
        String senderChecksum = complement(calChecksum(data, k, m), m);
        System.out.println("Sender side checksum value: " + senderChecksum);
        System.out.println("Receiver side complement: " +
        complement(senderChecksum, m));
        System.out.println("Conclusion: " + (validateChecksum(data, k, m,
        senderChecksum) ? "Accept Data" : "Reject Data"));
    }
}

```

OUTPUT :



```
C:\Windows\system32\cmd.exe X + v
Microsoft Windows [Version 10.0.22621.3155]
(c) Microsoft Corporation. All rights reserved.

C:\Users\MSD>D:

D:\>javac Checksum.java

D:\>java Checksum
How many segments of data?
4
How many bits per segment?
8
Enter data segment 1:
10011001
Enter data segment 2:
11100010
Enter data segment 3:
00100100
Enter data segment 4:
10000100
Sender side checksum value: 11011010
Receiver side complement: 00100101
Receiver side sum: 11111111
Receiver side complement: 00000000
Conclusion: Accept Data
```

RESULT :

Thus, the program for Error Detecting code using Checksum is successfully executed and the output is verified.

EX.NO : 11

DATE :

IMPLEMENTING ERROR DETECTING CODE USING CRC – CCITT

AIM :

To write a Java program for Error Detecting code using CRC – CCITT (16 bits).

ALGORITHM :

- 1) Start the program.
- 2) Read the message from the user.
- 3) Calculate and append the CRC remainder to the message.
- 4) Prompt the user to enter the received data and check its CRC remainder.
- 5) Print the result.
- 6) Stop the program.

PROGRAM :

```
import java.util.*;

public class Crc
{
    public static int n;

    public static void main(String[] args)
    {
        Scanner in=new Scanner(System.in);

        Crc ob=new Crc();

        String code, copy, rec,zero="0000000000000000";
```



```

        System.out.println("Enter message");
        code=in.nextLine();
        n=code.length();
        copy=code;
        code+=zero;
        code=ob.divide(code);
        System.out.println("Message="+copy);
        copy=copy.substring(0,n)+code.substring(n);
        System.out.println("CRC=");
        System.out.println(code.substring(n));
        System.out.println("transmitted frame is "+copy);
        System.out.println("Enter received data");
        rec=in.nextLine();
        if(zero.equals(ob.divide(rec).substring(n)))
            System.out.println("Correct bits received");
        else
            System.out.println("Received frame contains one or more
errors");
        in.close();
    }
    public String divide(String s)
    {
        int i,j;
        char x;

```

```

String div="100010000000100001";
for(i=0;i<n;i++)
{
    x=s.charAt(i);
    for(j=0;j<17;j++)
    {
        if(x=='1')
        {
            if(s.charAt(i+j)!=div.charAt(j))

s=s.substring(0,i+j)+"1"+s.substring(i+j+1);

            else

s=s.substring(0,i+j)+"0"+s.substring(i+j+1);

        }

    }

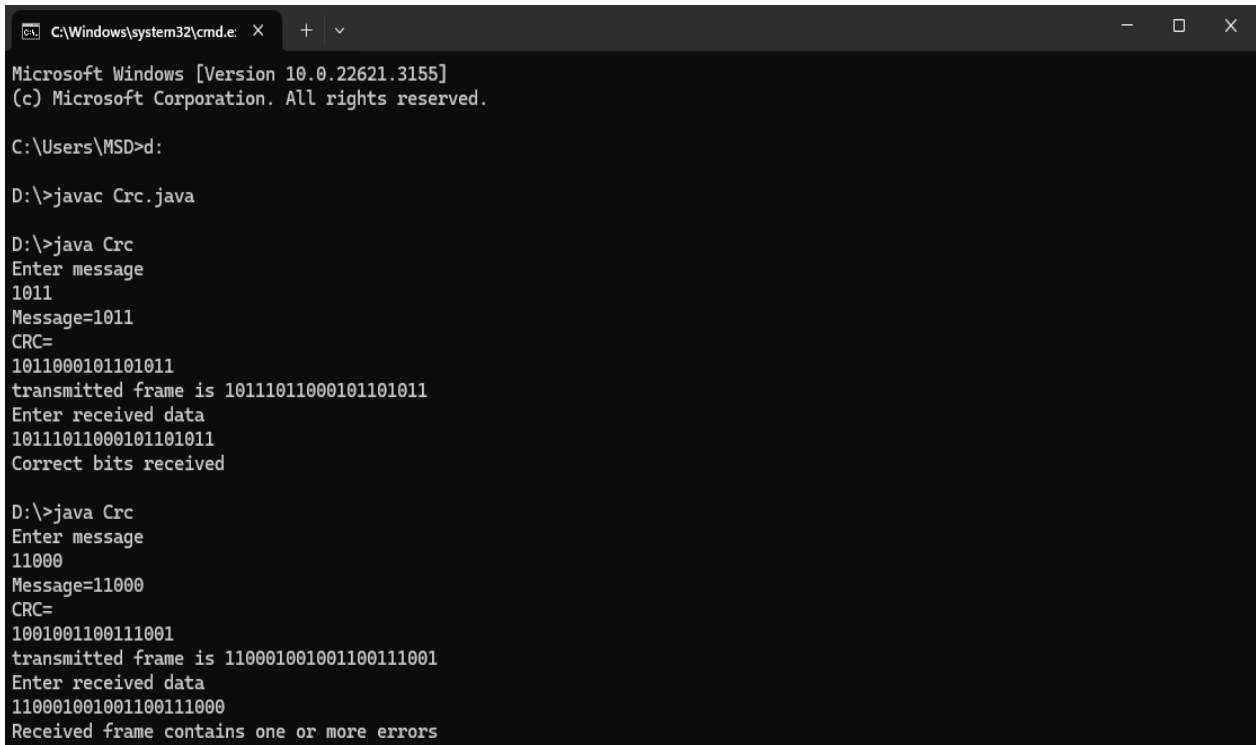
    return s;

}

}

```

OUTPUT :



```
C:\Windows\system32\cmd.exe X + v
Microsoft Windows [Version 10.0.22621.3155]
(c) Microsoft Corporation. All rights reserved.

C:\Users\MSD>d:

D:\>javac Crc.java

D:\>java Crc
Enter message
1011
Message=1011
CRC=
1011000101101011
transmitted frame is 10111011000101101011
Enter received data
10111011000101101011
Correct bits received

D:\>java Crc
Enter message
11000
Message=11000
CRC=
1001001100111001
transmitted frame is 110001001001100111001
Enter received data
110001001001100111000
Received frame contains one or more errors
```

RESULT :

Thus, the program for Error Detecting code using CRC – CCITT (16 Bits) is successfully executed and the output is verified.

EX.NO : 12

DATE :

IMPLEMENTATION OF GO BACK N PROTOCOL

AIM :

To write a Java program to perform a GoBackN Protocol.

ALGORITHM :

- 1) Start the program.
- 2) Prompt for the frame size.
- 3) Initialize sent to 0.
- 4) Transmit frames up to the frame size, printing each transmission.
- 5) Prompt for lost Acknowledgement.
- 6) If lost Acknowledgement equals frame size, stop; else, update sent and repeat transmission.
- 7) Stop the program.

PROGRAM :

```
import java.io.*;

public class GoBackN
{
    public static void main(String args[]) throws IOException
    {
        BufferedReader br = new BufferedReader(new
        InputStreamReader(System.in));

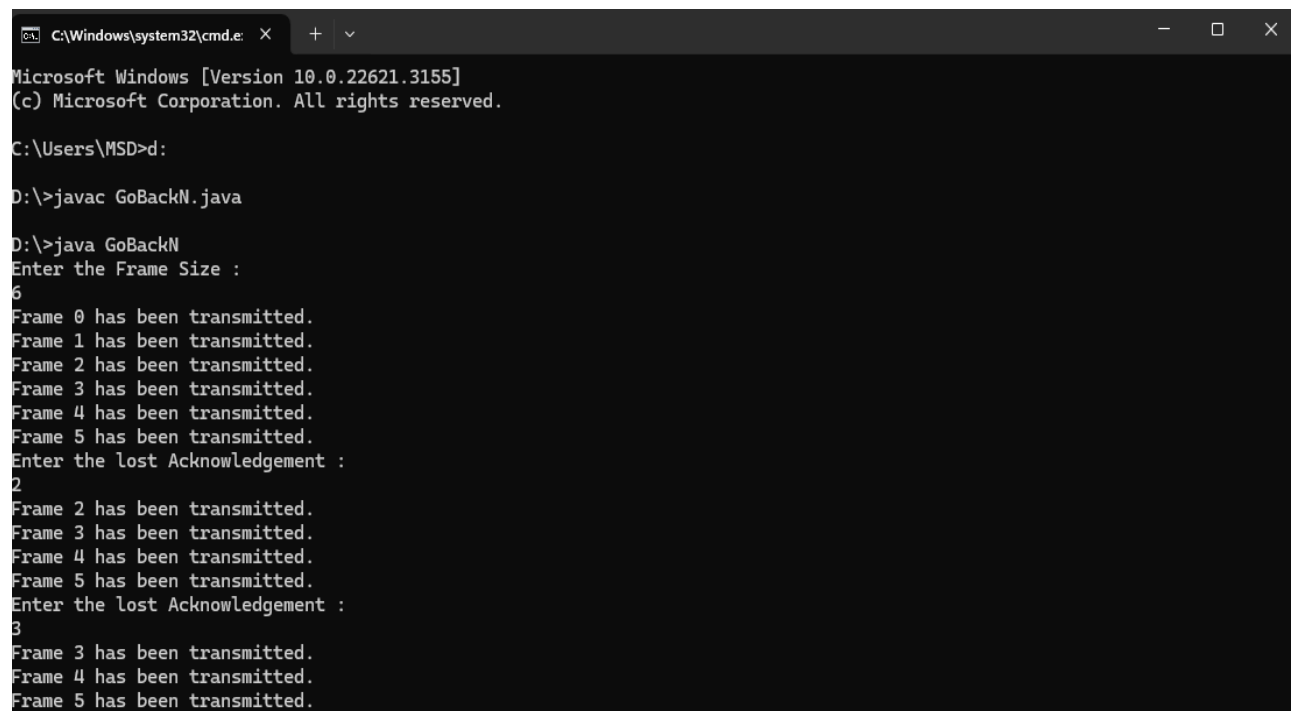
        System.out.println("Enter the Frame Size : ");
        int window = Integer.parseInt(br.readLine());
```

```

        boolean loop = true;
        int sent = 0;
        while(loop)
        {
            for(int i = 0; i < window; i++)
            {
                System.out.println("Frame " + sent + " has been
transmitted.");
                sent++;
                if(sent == window)
                    break;
            }
            System.out.println("Enter the lost Acknowledgement : ");
            int ack = Integer.parseInt(br.readLine());
            if(ack == window)
                loop = false;
            else
                sent = ack;
        }
    }
}

```

OUTPUT :



```
C:\Windows\system32\cmd.exe X + v
Microsoft Windows [Version 10.0.22621.3155]
(c) Microsoft Corporation. All rights reserved.

C:\Users\MSD>d:

D:\>javac GoBackN.java

D:\>java GoBackN
Enter the Frame Size :
6
Frame 0 has been transmitted.
Frame 1 has been transmitted.
Frame 2 has been transmitted.
Frame 3 has been transmitted.
Frame 4 has been transmitted.
Frame 5 has been transmitted.
Enter the lost Acknowledgement :
2
Frame 2 has been transmitted.
Frame 3 has been transmitted.
Frame 4 has been transmitted.
Frame 5 has been transmitted.
Enter the lost Acknowledgement :
3
Frame 3 has been transmitted.
Frame 4 has been transmitted.
Frame 5 has been transmitted.
```

RESULT :

Thus, the program for Implementing a GoBackN Protocol is successfully executed and the output is verified.

EX.NO : 13

DATE :

IMPLEMENTATION OF STOP AND WAIT PROTOCOL

AIM :

To write a Java program to perform a Stop and Wait Protocol.

ALGORITHM :

1. Start the program.
2. Run the server on a separate thread.
3. Connect the client to the server.
4. Exchange messages between client and server, repeating three times:
 - a. Client sends a message and waits for acknowledgment.
 - b. Server receives the message, prints it, and sends an acknowledgment.
5. Stop the program.

PROGRAM :

```
import java.io.*;
import java.net.*;

public class StopAndWait {
    private static final int PORT = 123;

    public static void main(String[] args) {
        new Thread(() -> {
            try {
                runServer();
            }
        }).start();
    }
}
```

```

        } catch (IOException e) {
            e.printStackTrace();
        }
    }).start();
    runClient();
}

private static void runServer() throws IOException {
    ServerSocket serverSocket = new ServerSocket(PORT);
    System.out.println("Server waiting for connection...");
    Socket socket = serverSocket.accept();
    System.out.println("Server connected to client");

    BufferedReader reader = new BufferedReader(new
InputStreamReader(socket.getInputStream()));

    PrintWriter writer = new PrintWriter(socket.getOutputStream(), true);

    String message;
    while ((message = reader.readLine()) != null) {
        System.out.println("Received from client: " + message);
        try {
            Thread.sleep(2000);
        } catch (InterruptedException e) {
            e.printStackTrace();
        }
        writer.println("ACK");
    }
}

```



```

        socket.close();

        serverSocket.close();
    }

    private static void runClient() {
        try {
            Socket socket = new Socket("localhost", PORT);

            BufferedReader reader = new BufferedReader(new
InputStreamReader(socket.getInputStream()));

            PrintWriter writer = new PrintWriter(socket.getOutputStream(), true);

            BufferedReader userInput = new BufferedReader(new
InputStreamReader(System.in));

            for (int i = 1; i <= 3; i++) {

                System.out.print("Enter message to send: ");

                String message = userInput.readLine();

                System.out.println("Sending to server: " + message);

                writer.println(message);

                String ack = reader.readLine();

                System.out.println("Received acknowledgment from server: " + ack);

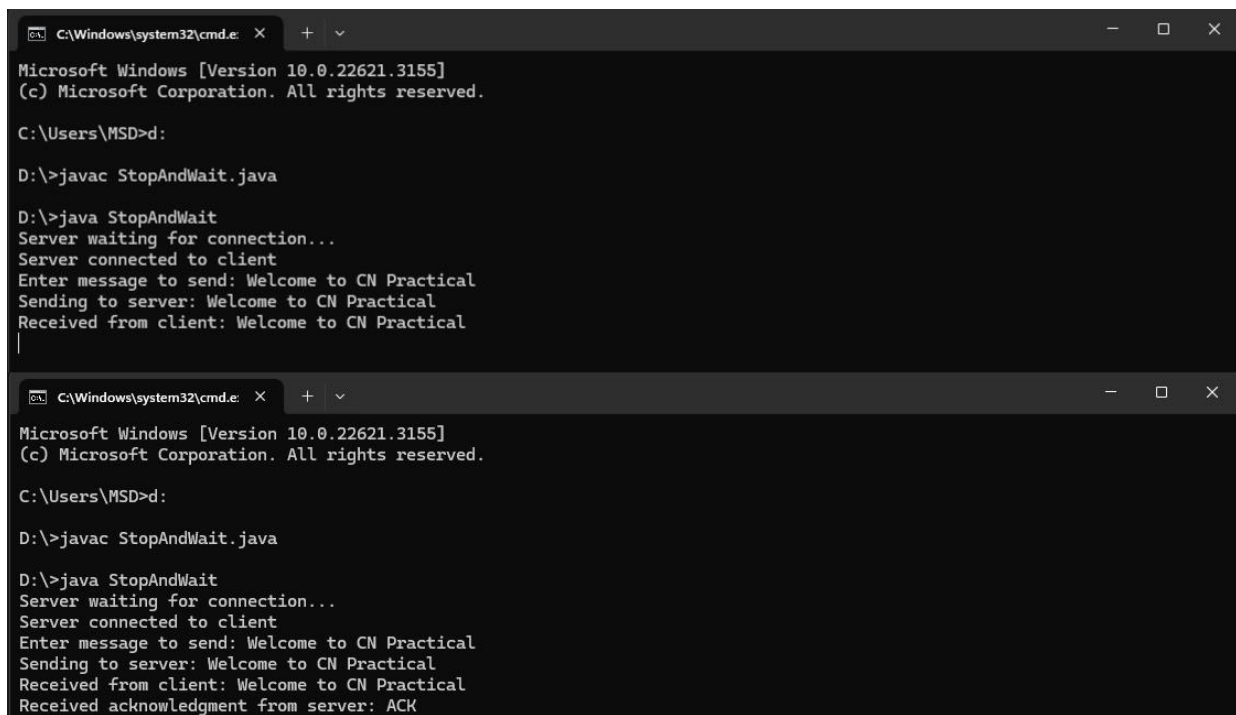
                try {
                    Thread.sleep(1000);
                } catch (InterruptedException e) {
                    e.printStackTrace();
                }
            }

            socket.close();

```

```
        } catch (IOException e) {  
            e.printStackTrace();  
        }  
    }  
}
```

OUTPUT :



```
C:\Windows\system32\cmd.exe X + v  
Microsoft Windows [Version 10.0.22621.3155]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\MSD>d:  
  
D:\>javac StopAndWait.java  
  
D:\>java StopAndWait  
Server waiting for connection...  
Server connected to client  
Enter message to send: Welcome to CN Practical  
Sending to server: Welcome to CN Practical  
Received from client: Welcome to CN Practical  
|  
  
C:\Windows\system32\cmd.exe X + v  
Microsoft Windows [Version 10.0.22621.3155]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\MSD>d:  
  
D:\>javac StopAndWait.java  
  
D:\>java StopAndWait  
Server waiting for connection...  
Server connected to client  
Enter message to send: Welcome to CN Practical  
Sending to server: Welcome to CN Practical  
Received from client: Welcome to CN Practical  
Received acknowledgment from server: ACK
```

RESULT :

Thus, the program for Implementing a Stop and Wait Protocol is successfully executed and the output is verified.

EX.NO : 14

DATE :

IMPLEMENTATION OF SELECTIVE REPEAT PROTOCOL

AIM :

To write a Java program to perform a Selective Repeat Protocol.

ALGORITHM :

1. Start program, prompt frame size.
2. Transmit frames, prompt lost Acknowledgement.
3. Print acknowledgment or retransmission message based on lost Acknowledgement.
4. Repeat until lost Acknowledgement equals frame size.
5. Stop program.

PROGRAM :

```
import java.io.*;

public class SelectiveRepeat
{
    public static void main(String args[]) throws IOException
    {
        BufferedReader br = new BufferedReader(new
        InputStreamReader(System.in));

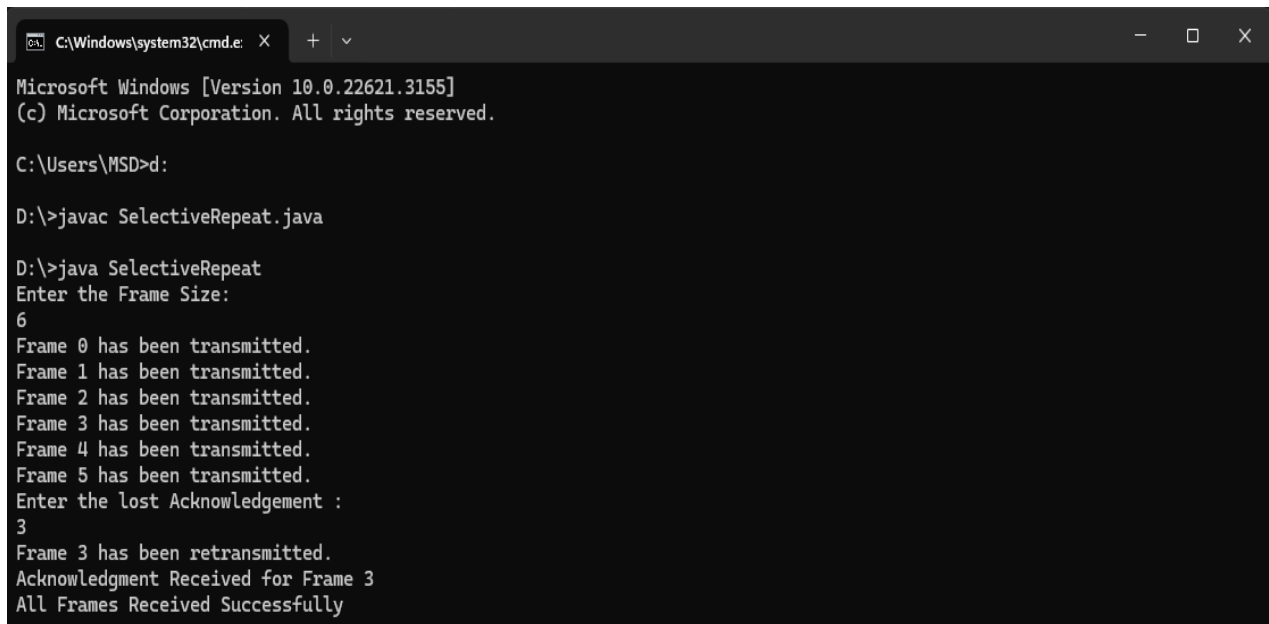
        System.out.println("Enter the Frame Size: ");
        int window = Integer.parseInt(br.readLine());
        for (int sent = 0; sent < window; sent++)
        {
```

```

        System.out.println("Frame " + sent + " has been transmitted.");
    }
    int ack;
    do
    {
        System.out.println("Enter the lost Acknowledgement : ");
        ack = Integer.parseInt(br.readLine());
        if (ack == window)
        {
            System.out.println("Acknowledgment Received for Frame "
+ (ack - 1));
        }
        else
        {
            System.out.println("Frame " + ack + " has been
retransmitted.");
            System.out.println("Acknowledgment Received for Frame "
+ ack);
            System.out.println("All      Frames      Received
Successfully");
        }
    }
    while (ack == window);
}

```

OUTPUT :



```
C:\Windows\system32\cmd.exe X + v
Microsoft Windows [Version 10.0.22621.3155]
(c) Microsoft Corporation. All rights reserved.

C:\Users\MSD>d:

D:\>javac SelectiveRepeat.java

D:\>java SelectiveRepeat
Enter the Frame Size:
6
Frame 0 has been transmitted.
Frame 1 has been transmitted.
Frame 2 has been transmitted.
Frame 3 has been transmitted.
Frame 4 has been transmitted.
Frame 5 has been transmitted.
Enter the lost Acknowledgement :
3
Frame 3 has been retransmitted.
Acknowledgment Received for Frame 3
All Frames Received Successfully
```

RESULT :

Thus, the program for Implementing a Selective Repeat Protocol is successfully executed and the output is verified.

EX.NO : 15

DATE :

IMPLEMENTATION OF WEB PROGRAMMING USING HTML

AIM :

To Implement a Search Engine Web Programming using Html.

PROCEDURE :

- Create a HTML File.
- In the html file create a form using the <form > tag.
- Set the action attribute of the <form> as <http://www.google.com/search>.
- Inside the form create a text box for entering the search parameter.
- Set the value of the “GoogleSearch”.
- Create two radio buttons with name as “sitesearch” and one with value as null and the other with value as “srmuniv.ac.in”.
- Save the file with .html or .htm extension.

HOW TO EXECUTE :

- ✓ Double click the file and open it using any available browser.

PROGRAM :

```
<html>

<body bgcolor="black">

<center><font size="36" color = "white" face="Arial"><b>SEARCH
ENGINE</b></font><br>

<br>

<form method="get" action ="http://www.google.com/search">
```

```

<input type="text" name="q" size="31" maxlength="255" value=""/>

<input type="Submit" value="Google Search"/>

<input type="radio" name="sitesearch" value=""/>

<font color="white">THE WEB</font>

<input type="radio" name="sitesearch" value="srmuniv.ac.in" checked
/><font color="white">SRM

UNIVERSITY</font><br>

</form></center>

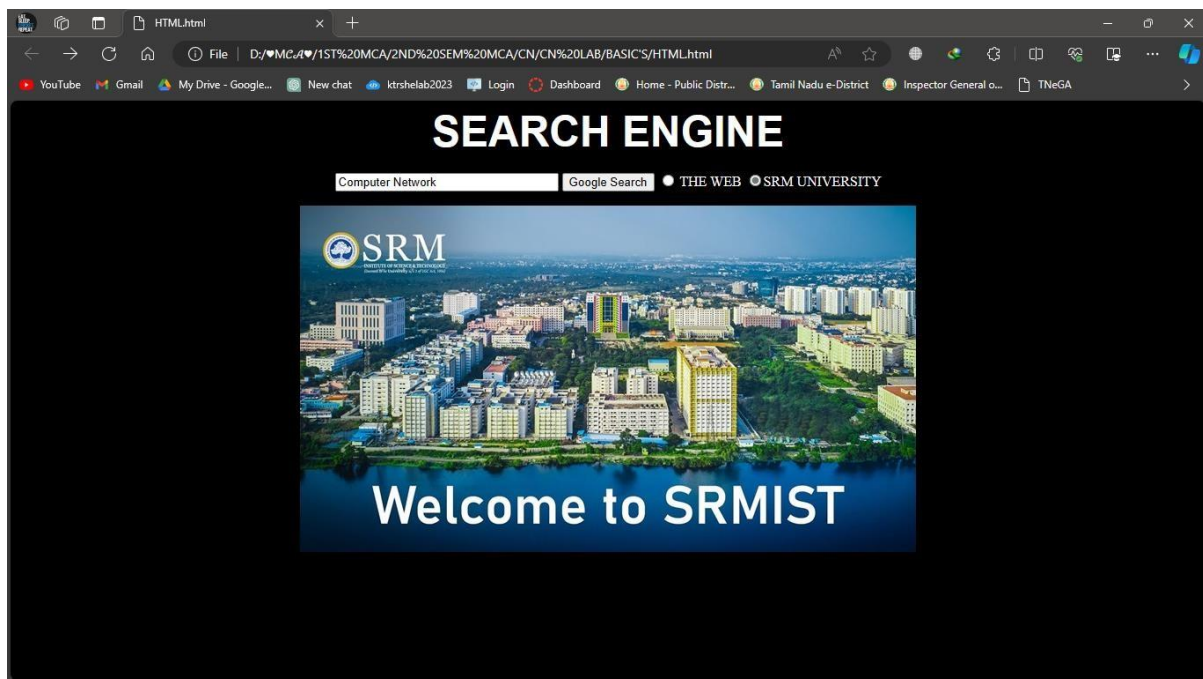
<center></center><center>

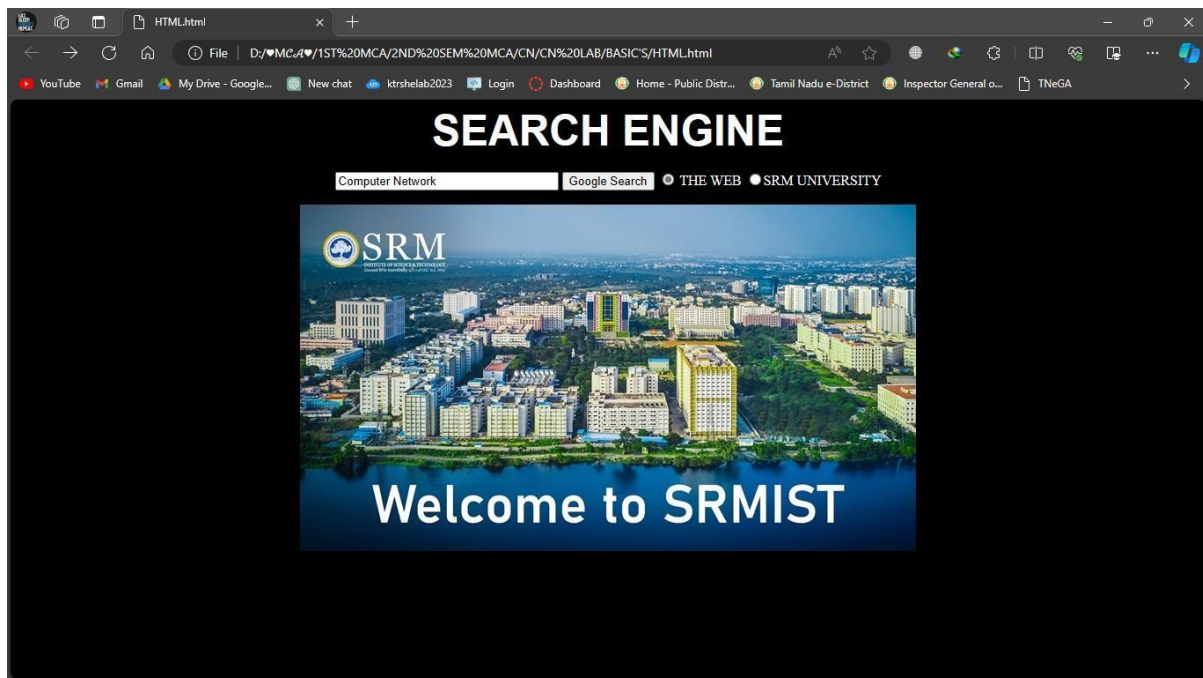
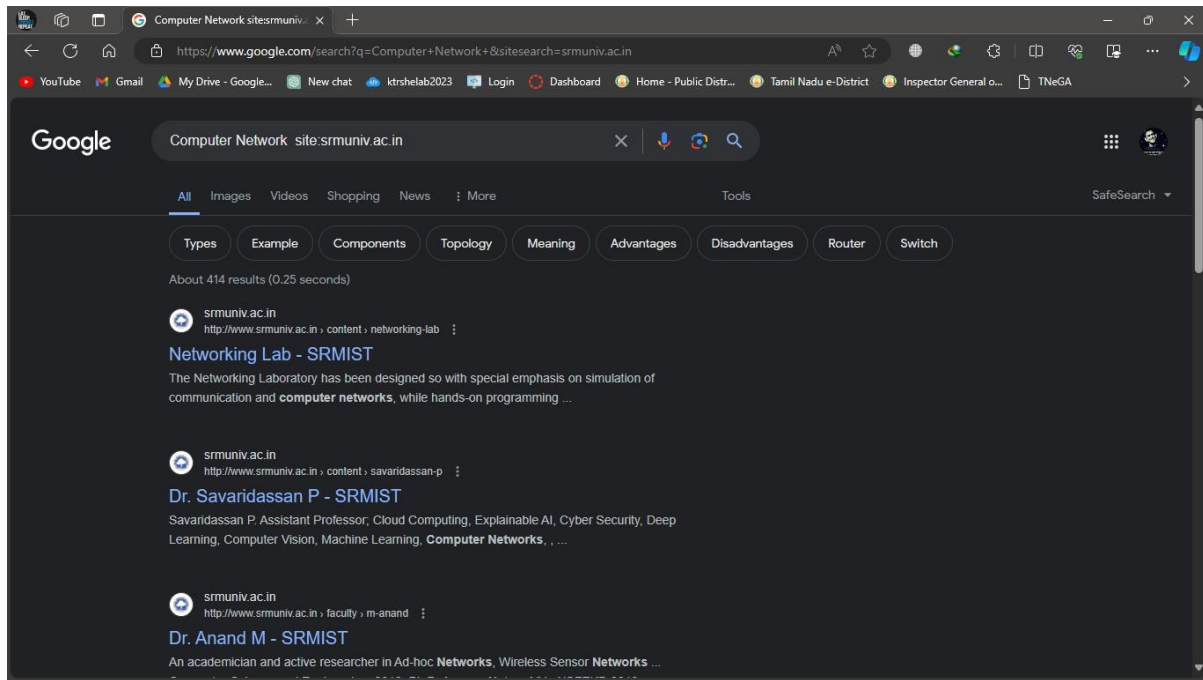
</body>

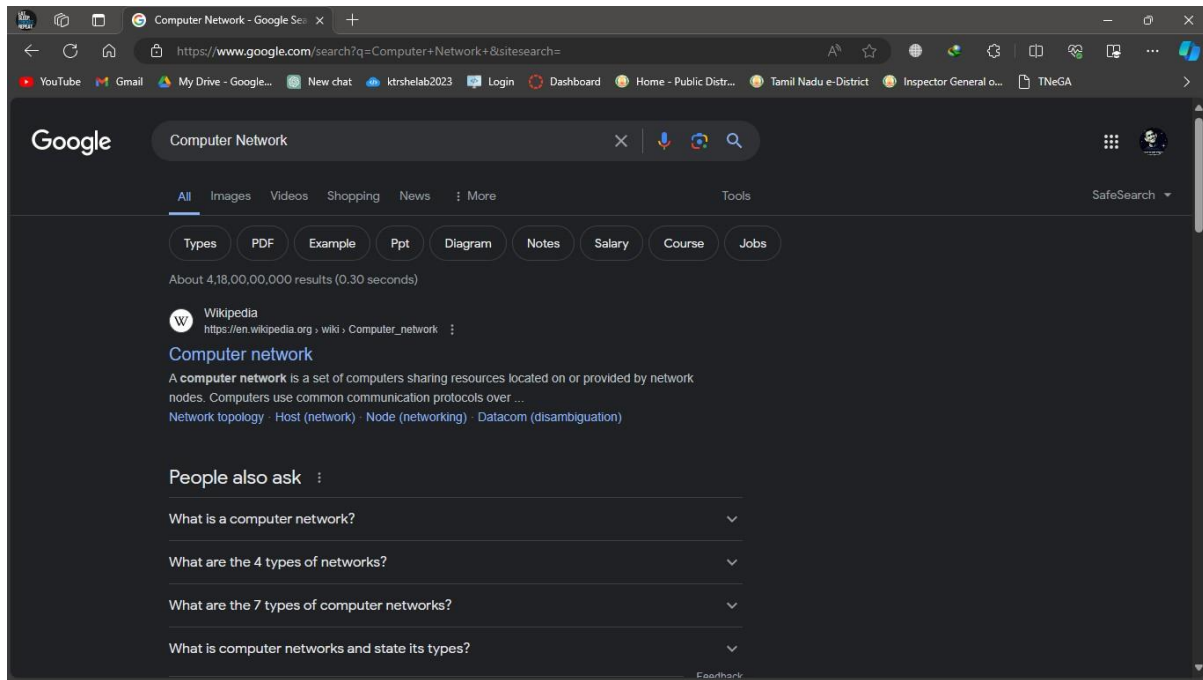
</html>

```

OUTPUT :







RESULT :

Thus, the implementation of search engine web programming is executed successfully and the output is verified.