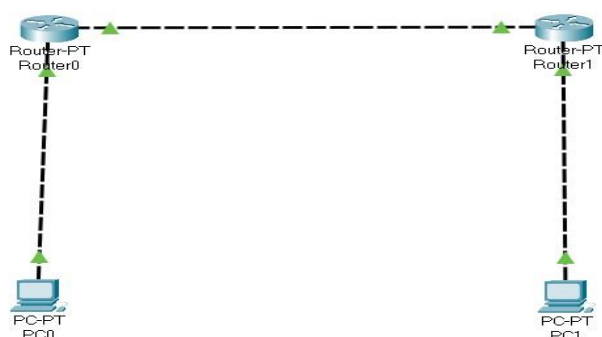


## Practical No. 1

### Study of Networking

**Aim :-** To study the IP address.

**Circuit Diagram :-**



**Program :-**

```
Router 0 > cli :- enable
configure terminal interface
fastethernet 0/0 ip address
10.0.0.1 255.0.0.0 no
shutdown
exit interface fastethernet
0/1 ip address 20.0.0.1
255.0.0.0 no shutdown
exit
```

```
Router 1 > cli :- enable
configure terminal interface
fastethernet 0/0 ip address
40.0.0.1 255.0.0.0 no
shutdown
exit
interface fastethernet 0/1 ip
address 20.0.0.2 255.0.0.0
no shutdown
exit
```

```
Pc 0 > Desktop > Ip configuration :-
ipv4 : 10.0.0.2 subnet mask :
255.0.0.0
Default gateway: 10.0.0.1
```

Pc 1 > Desktop > Ip configuration :-

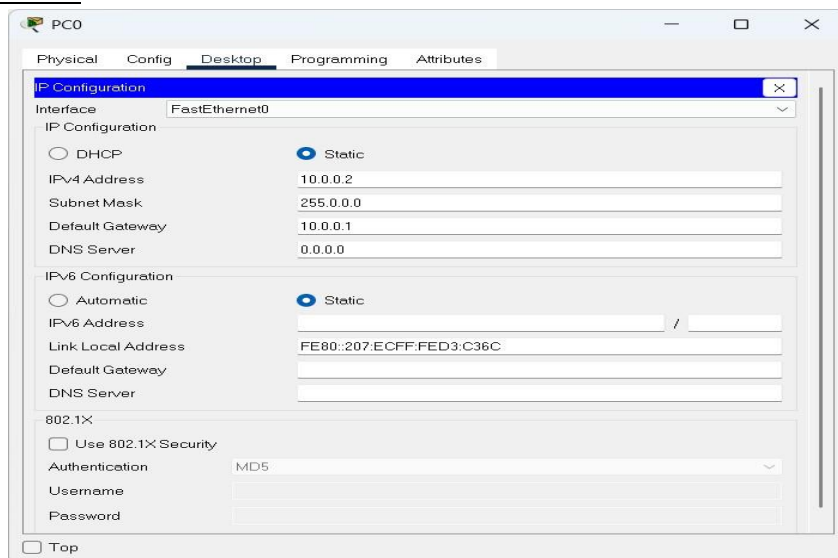
ipv4 : 40.0.0.2

subnet mask : 255.0.0.0

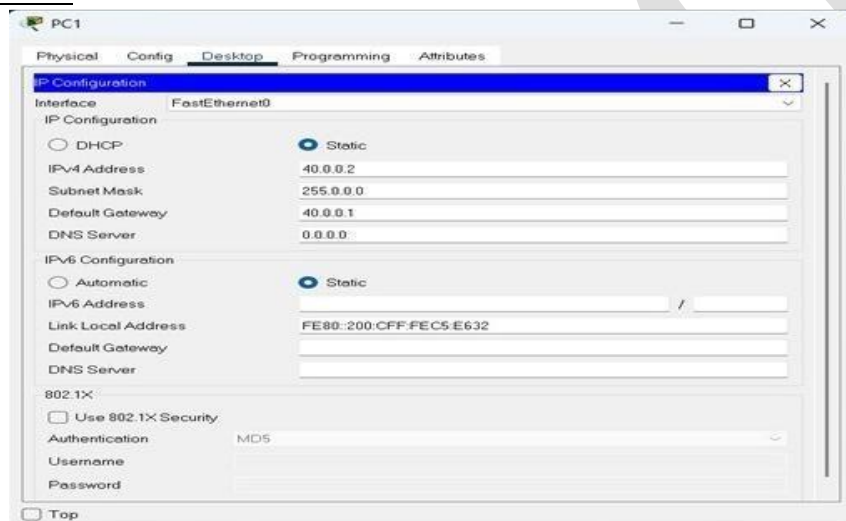
Default gateway: 40.0.0.1

**Output :-**

PC0 :-



PC1:-



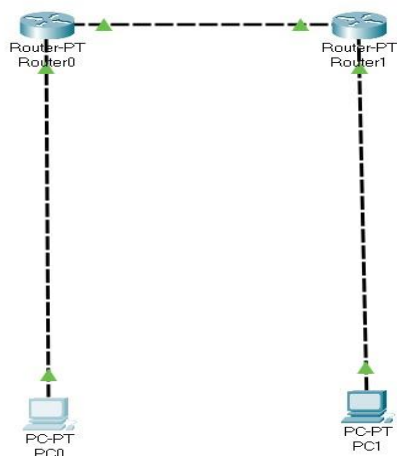
**Conclusion :-** The program was executed successfully

## Practical No. 2 Study of Network Layer

a) Static Routing

**Aim :-** To study Static routing.

**Circuit Diagram :-**



**Program :-**

**Router 0 > cli :-** enable  
 configure terminal interface  
 fastethernet 0/0 ip address  
 10.0.0.1 255.0.0.0 no  
 shutdown  
 exit interface fastethernet  
 0/1 ip address 20.0.0.1  
 255.0.0.0 no shutdown  
 exit ip route 40.0.0.0 255.0.0.0  
 20.0.0.2

**Router 1 > cli :-** enable  
 configure terminal interface  
 fastethernet 0/0 ip address  
 40.0.0.1 255.0.0.0 no  
 shutdown  
 exit  
 interface fastethernet 0/1 ip  
 address 20.0.0.2 255.0.0.0  
 no shutdown  
 exit ip route 10.0.0.0 255.0.0.0  
 20.0.0.1

**Pc 0 > Desktop > Ip configuration :-**

ipv4 : 10.0.0.2  
 subnet mask : 255.0.0.0

Default gateway: 10.0.0.1

**Pc 1 > Desktop > Ip configuration :-**

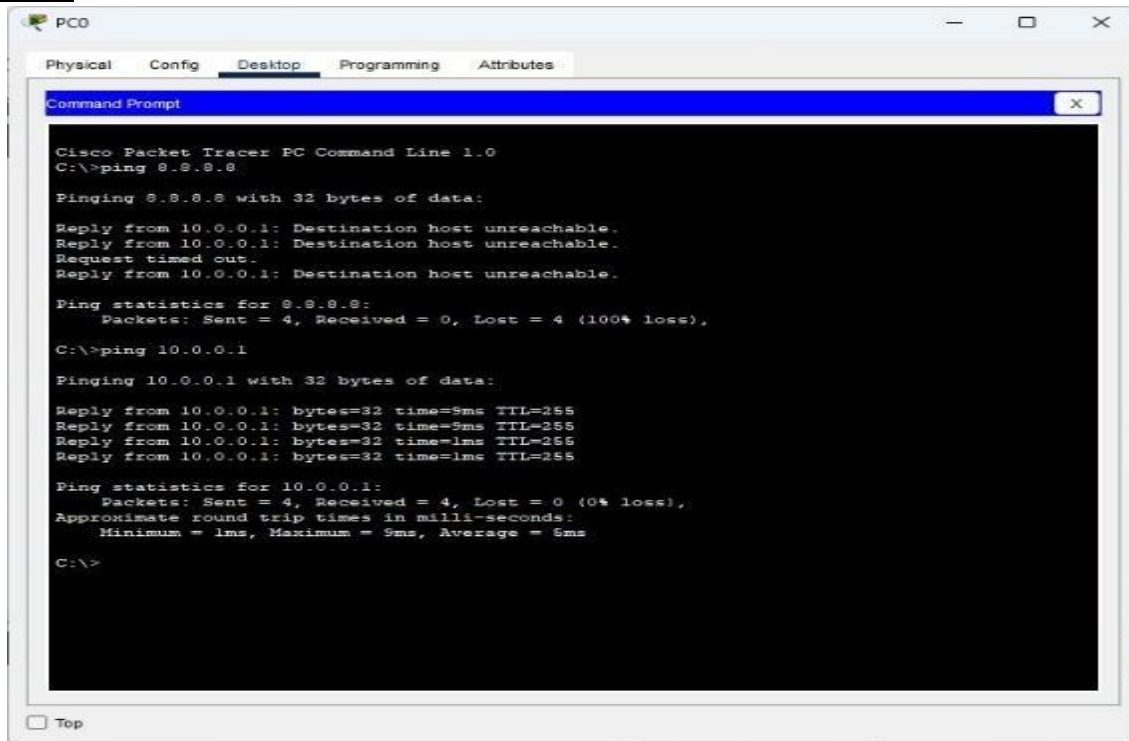
ipv4 : 40.0.0.2

subnet mask : 255.0.0.0

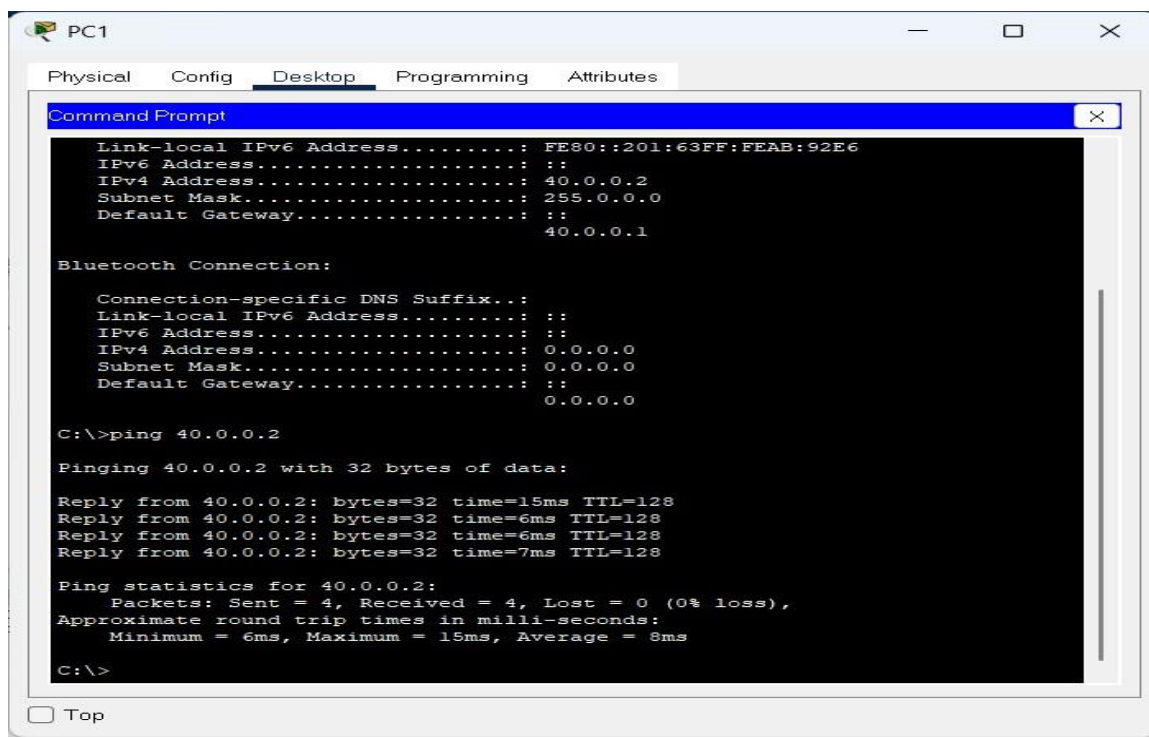
Default gateway: 40.0.0.1

Output :-

PC0 :-



PC1 :-



The screenshot shows a window titled 'PC1' with tabs for 'Physical', 'Config', 'Desktop', 'Programming', and 'Attributes'. The 'Desktop' tab is active, displaying a 'Command Prompt' window. The Command Prompt shows the following network configuration:

```
Link-local IPv6 Address.....: FE80::201:63FF:FEAB:92E6
IPv6 Address.....: ::
IPv4 Address.....: 40.0.0.2
Subnet Mask.....: 255.0.0.0
Default Gateway.....: ::
                        40.0.0.1
```

Below the network configuration, it shows a 'Bluetooth Connection:' section with the following details:

```
Connection-specific DNS Suffix...:
Link-local IPv6 Address.....: ::
IPv6 Address.....: ::
IPv4 Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway.....: ::
                        0.0.0.0
```

The Command Prompt then shows the execution of the command `C:\>ping 40.0.0.2`. The output indicates that the ping was successful, showing four replies from 40.0.0.2 with varying times and TTL values. The ping statistics show 4 packets sent, 4 received, and 0% loss.

```
C:\>ping 40.0.0.2

Pinging 40.0.0.2 with 32 bytes of data:

Reply from 40.0.0.2: bytes=32 time=15ms TTL=128
Reply from 40.0.0.2: bytes=32 time=6ms TTL=128
Reply from 40.0.0.2: bytes=32 time=6ms TTL=128
Reply from 40.0.0.2: bytes=32 time=7ms TTL=128

Ping statistics for 40.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 6ms, Maximum = 15ms, Average = 8ms

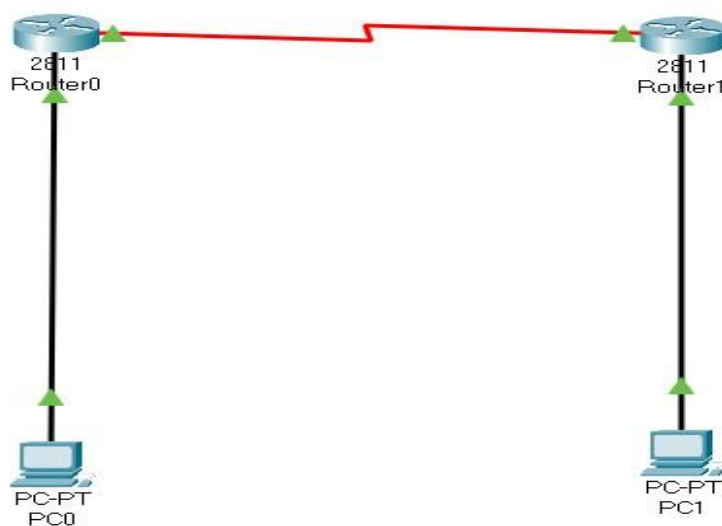
C:\>
```

**Conclusion :-** The program was executed successfully.

## b) RIP Routing

**Aim :-** To study RIP routing.

**Circuit Diagram :-**



**Program :-**

```
Router 0 > cli :- enable
configure terminal interface
fastethernet 0/0 ip address
10.0.0.1 255.0.0.0 no
shutdown
exit interface fastethernet
0/1 ip address 20.0.0.1
255.0.0.0 no shutdown
exit router rip
version 2
network 10.0.0.0
network 20.0.0.0
exit
```

```
Router 1 > cli :- enable
configure terminal interface
fastethernet 0/0 ip address
```

```
40.0.0.1 255.0.0.0 no  
shutdown  
exit interface fastethernet  
0/1 ip address 20.0.0.2  
255.0.0.0 no shutdown  
exit router rip  
version 2  
network 40.0.0.0  
network 20.0.0.0  
exit
```

**Pc 0 > Desktop > Ip configuration :-**

ipv4 : 10.0.0.2 subnet mask :  
255.0.0.0  
Default gateway: 10.0.0.1

**Pc 1 > Desktop > Ip configuration :-**

ipv4 : 40.0.0.2  
subnet mask : 255.0.0.0  
Default gateway: 40.0.0.1

**Output :-**

**PC0:-**

```

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 8.8.8.8

Pinging 8.8.8.8 with 32 bytes of data:

Reply from 10.0.0.1: Destination host unreachable.
Reply from 10.0.0.1: Destination host unreachable.
Request timed out.
Reply from 10.0.0.1: Destination host unreachable.

Ping statistics for 8.8.8.8:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 10.0.0.1

Pinging 10.0.0.1 with 32 bytes of data:

Reply from 10.0.0.1: bytes=32 time=3ms TTL=255
Reply from 10.0.0.1: bytes=32 time=3ms TTL=255
Reply from 10.0.0.1: bytes=32 time=1ms TTL=255
Reply from 10.0.0.1: bytes=32 time=1ms TTL=255

Ping statistics for 10.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 3ms, Average = 2ms

C:\>

```

**PC1:-**

```

Link-local IPv6 Address.....: FE80::201:63FF:FEAB:92E6
IPv6 Address.....: ::
IPv4 Address.....: 40.0.0.2
Subnet Mask.....: 255.0.0.0
Default Gateway.....: ::
                        40.0.0.1

Bluetooth Connection:

Connection-specific DNS Suffix.:
Link-local IPv6 Address.....: ::
IPv6 Address.....: ::
IPv4 Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway.....: ::
                        0.0.0.0

C:\>ping 40.0.0.2

Pinging 40.0.0.2 with 32 bytes of data:

Reply from 40.0.0.2: bytes=32 time=15ms TTL=128
Reply from 40.0.0.2: bytes=32 time=6ms TTL=128
Reply from 40.0.0.2: bytes=32 time=6ms TTL=128
Reply from 40.0.0.2: bytes=32 time=7ms TTL=128

Ping statistics for 40.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 6ms, Maximum = 15ms, Average = 8ms

C:\>

```

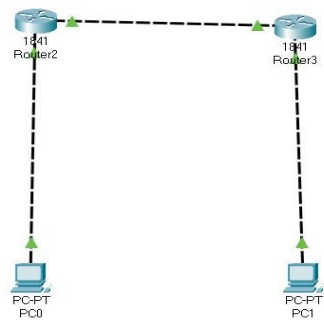
**Conclusion :-** The program was executed successfully.



### c) OSPF Routing

**Aim :-** To study OSPF routing.

#### Circuit Diagram :-



#### Program :-

**Router 0 > cli :-** enable  
 configure terminal interface  
 fastethernet 0/0 ip address  
 10.0.0.1 255.0.0.0 no  
 shutdown  
 exit interface fastethernet  
 0/1 ip address 20.0.0.1  
 255.0.0.0 no shutdown  
 exit router ospf 1 network 10.0.0.0  
 0.255.255.255 area 0 network 20.0.0.0  
 0.255.255.255 area 0 exit

**Router 1 > cli :-** enable  
 configure terminal interface  
 fastethernet 0/0 ip address  
 40.0.0.1 255.0.0.0 no  
 shutdown  
 exit interface fastethernet  
 0/1 ip address 20.0.0.2  
 255.0.0.0 no shutdown

```
exit router ospf 2 network 40.0.0.0
0.255.255.255 area 0 network 20.0.0.0
0.255.255.255 area 0 exit
```

**Pc 0 > Desktop > Ip configuration :-**

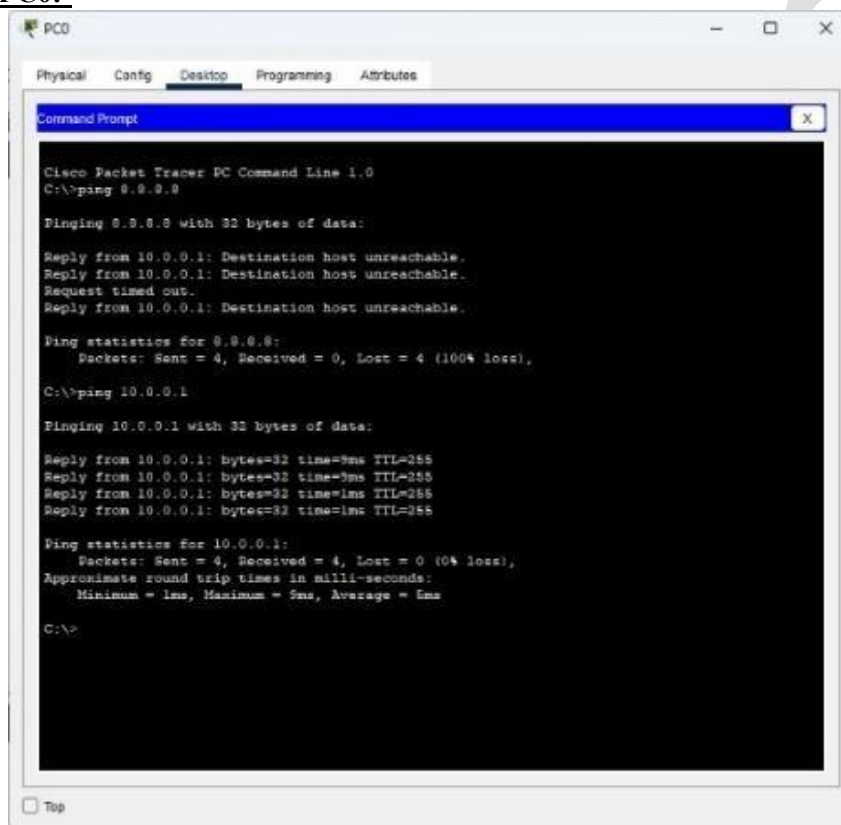
ipv4 : 10.0.0.2  
 subnet mask : 255.0.0.0  
 Default gateway: 10.0.0.1

**Pc 1 > Desktop > Ip configuration :-**

ipv4 : 40.0.0.2  
 subnet mask : 255.0.0.0  
 Default gateway: 40.0.0.1

**Output :-**

**PC0:-**



```
PC0
Physical  Config  Desktop  Programming  Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 0.0.0.0

Pinging 0.0.0.0 with 32 bytes of data:

Reply from 10.0.0.1: Destination host unreachable.
Reply from 10.0.0.1: Destination host unreachable.
Request timed out.
Reply from 10.0.0.1: Destination host unreachable.

Ping statistics for 0.0.0.0:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

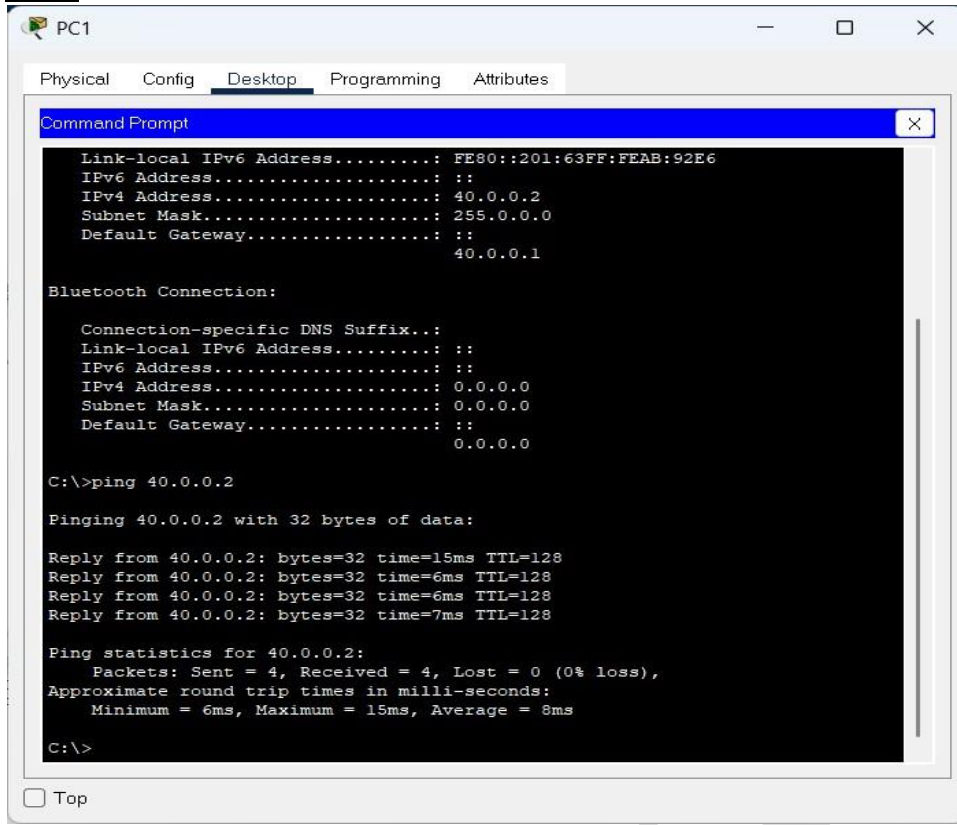
C:\>ping 10.0.0.1

Pinging 10.0.0.1 with 32 bytes of data:

Reply from 10.0.0.1: bytes=32 time=3ms TTL=255
Reply from 10.0.0.1: bytes=32 time=3ms TTL=255
Reply from 10.0.0.1: bytes=32 time=1ms TTL=255
Reply from 10.0.0.1: bytes=32 time=1ms TTL=255

Ping statistics for 10.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 3ms, Average = 2ms

C:\>
```

**PC1:-**

The screenshot shows a PC1 desktop environment with a window titled 'PC1'. The 'Desktop' tab is selected, displaying a Command Prompt window. The Command Prompt shows the following network configuration:

```
Link-local IPv6 Address.....: FE80::201:63FF:FEAB:92E6
IPv6 Address.....: ::
IPv4 Address.....: 40.0.0.2
Subnet Mask.....: 255.0.0.0
Default Gateway.....: ::
                        40.0.0.1
```

Below the network configuration, the Bluetooth connection status is shown:

```
Bluetooth Connection:

Connection-specific DNS Suffix...:
Link-local IPv6 Address.....: ::
IPv6 Address.....: ::
IPv4 Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway.....: ::
                        0.0.0.0
```

The Command Prompt then shows the execution of a ping command:

```
C:\>ping 40.0.0.2

Pinging 40.0.0.2 with 32 bytes of data:

Reply from 40.0.0.2: bytes=32 time=15ms TTL=128
Reply from 40.0.0.2: bytes=32 time=6ms TTL=128
Reply from 40.0.0.2: bytes=32 time=6ms TTL=128
Reply from 40.0.0.2: bytes=32 time=7ms TTL=128

Ping statistics for 40.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 6ms, Maximum = 15ms, Average = 8ms

C:\>
```

The Command Prompt window has a 'Top' button at the bottom left.

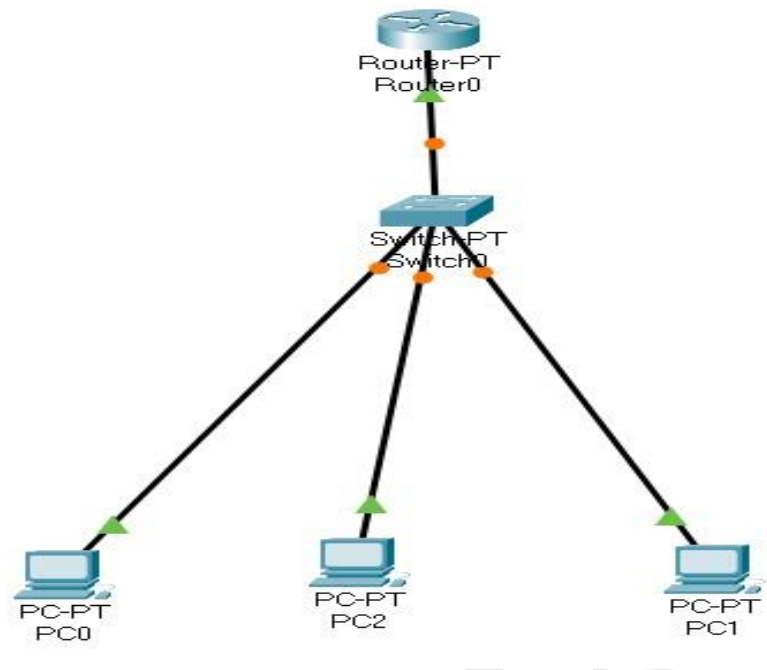
**Conclusion :-** The program was executed successfully.

## Practical No. 3 Study of Application Layer

### a) DHCP

**Aim :-** To study DHCP.

**Circuit Diagram :-**



**Program :-**

```
Router 0 > cli :- enable
configure terminal interface
fastethernet 0/0 ip address
10.0.0.1 255.0.0.0 no
shutdown
exit ip dhcp pool syit network 10.0.0.0
255.0.0.0 default-router 10.0.0.1 ip dhcp
excluded-address 10.0.0.2 10.0.0.1 ip dhcp
pool syit network 10.0.0.0 255.0.0.0
default-router 10.0.0.1 ip dhcp excluded-
address 10.0.0.2 10.0.0.13
exit
```

**Output:-**

**Pc0**

The screenshot shows the configuration window for PC0. The 'Desktop' tab is selected. The 'IP Configuration' section is expanded, showing the 'FastEthernet0' interface. The 'IP Configuration' section has two sub-sections: 'IP Configuration' and 'IPv6 Configuration'. In the 'IP Configuration' section, the 'DHCP' radio button is selected, and the 'Static' radio button is unselected. The fields for 'IPv4 Address', 'Subnet Mask', 'Default Gateway', and 'DNS Server' are all empty. In the 'IPv6 Configuration' section, the 'Automatic' radio button is unselected, and the 'Static' radio button is selected. The fields for 'IPv6 Address', 'Link Local Address', 'Default Gateway', and 'DNS Server' are all empty. The '802.1X' section is also visible, with the 'Use 802.1X Security' checkbox unselected, and the 'Authentication' dropdown set to 'MD5'. The 'Username' and 'Password' fields are empty. A 'Top' button is located at the bottom left of the window.

Interface	FastEthernet0
<b>IP Configuration</b>	
<input checked="" type="radio"/> DHCP	<input type="radio"/> Static
IPv4 Address	10.0.0.2
Subnet Mask	255.0.0.0
Default Gateway	10.0.0.1
DNS Server	0.0.0.0
<b>IPv6 Configuration</b>	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::2D0:BAFF:FE26:8EAE
Default Gateway	
DNS Server	
<b>802.1X</b>	
<input type="checkbox"/> Use 802.1X Security	
Authentication	MD5
Username	
Password	

**Pc1**

The screenshot shows the configuration window for PC1. The 'Desktop' tab is selected. The 'IP Configuration' section is expanded, showing the 'FastEthernet0' interface. The 'IP Configuration' section has two sub-sections: 'IP Configuration' and 'IPv6 Configuration'. In the 'IP Configuration' section, the 'DHCP' radio button is selected, and the 'Static' radio button is unselected. The fields for 'IPv4 Address', 'Subnet Mask', 'Default Gateway', and 'DNS Server' are all empty. In the 'IPv6 Configuration' section, the 'Automatic' radio button is unselected, and the 'Static' radio button is selected. The fields for 'IPv6 Address', 'Link Local Address', 'Default Gateway', and 'DNS Server' are all empty. The '802.1X' section is also visible, with the 'Use 802.1X Security' checkbox unselected, and the 'Authentication' dropdown set to 'MD5'. The 'Username' and 'Password' fields are empty. A 'Top' button is located at the bottom left of the window.

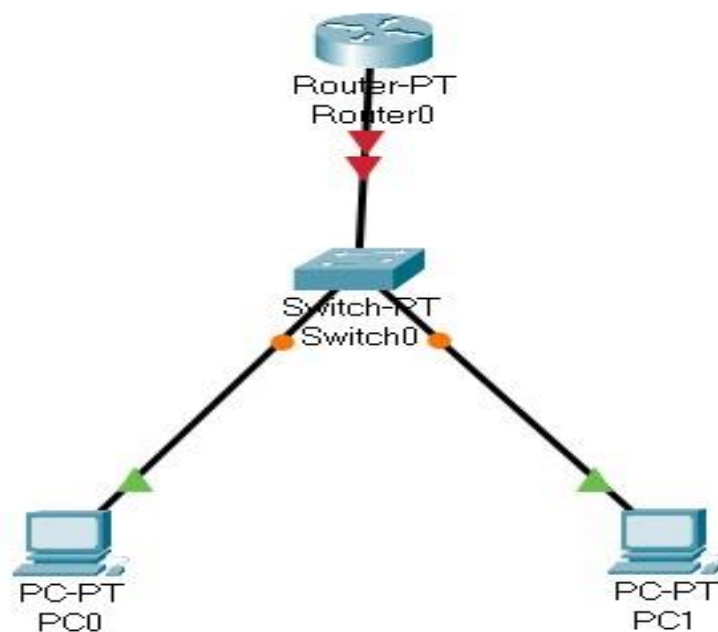
Interface	FastEthernet0
<b>IP Configuration</b>	
<input checked="" type="radio"/> DHCP	<input type="radio"/> Static
IPv4 Address	10.0.0.15
Subnet Mask	255.0.0.0
Default Gateway	10.0.0.1
DNS Server	0.0.0.0
<b>IPv6 Configuration</b>	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::260:70FF:FE7C:150C
Default Gateway	
DNS Server	
<b>802.1X</b>	
<input type="checkbox"/> Use 802.1X Security	
Authentication	MD5
Username	
Password	

Conclusion :- The program was executed successfully.

**b) DNS**

**Aim :-** To study DNS.

**Circuit Diagram :-**



**Program :-**

**Router 0 > cli :-** enable  
 configure terminal interface  
 fastethernet 0/0 ip address  
 10.0.0.1 255.0.0.0 no  
 shutdown  
 exit ip dhcp pool syit network  
 10.0.0.0 255.0.0.0 default-  
 router 10.0.0.1 dns-server  
 8.8.8.8 exit ip host  
 www.syit.com 10.0.0.1 exit

**Pc 0 > Desktop > Ip configuration :-**

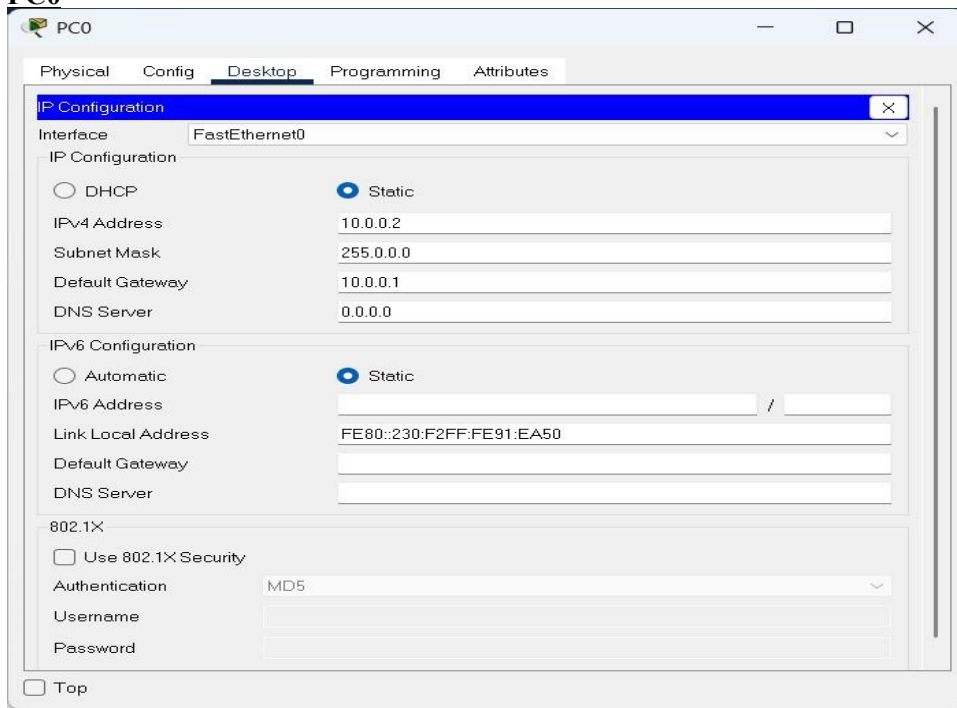
ipv4 : 10.0.0.2  
 subnet mask : 255.0.0.0  
 Default gateway: 10.0.0.1

**Pc 1 > Desktop > Ip configuration :-**

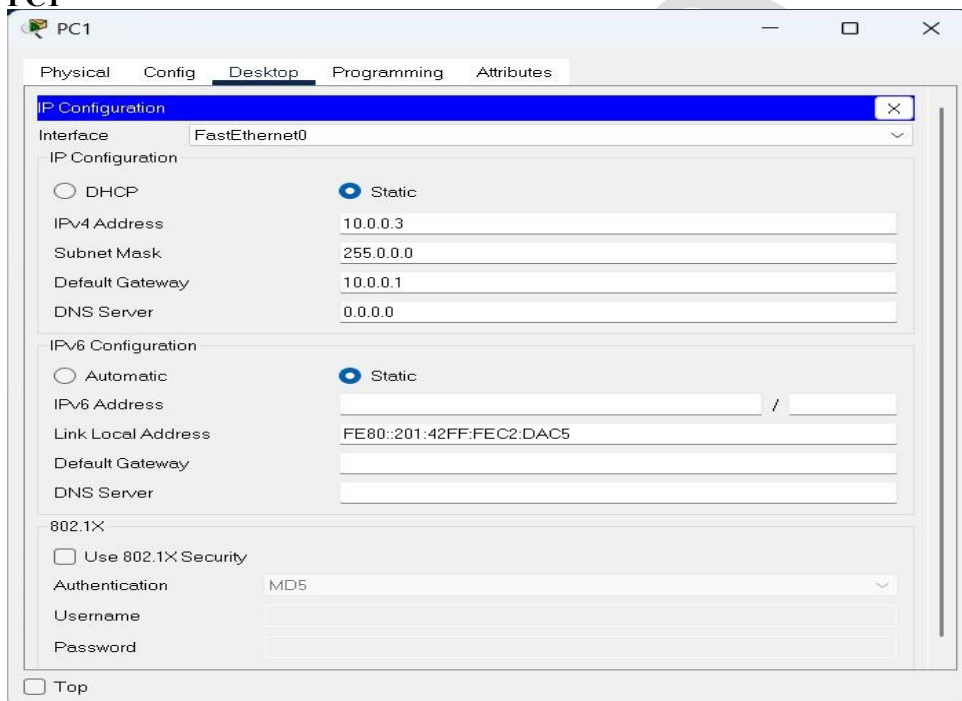
ipv4 : 10.0.0.3  
 subnet mask : 255.0.0.0  
 Default gateway: 10.0.0.1

**Output:-**

**PC0**



**PC1**

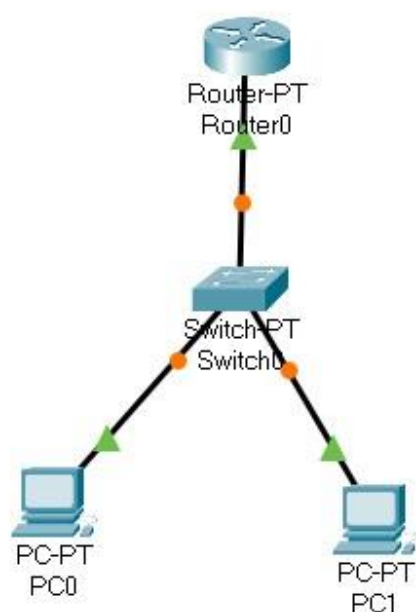


**Conclusion:-The program executed Successfully**

**c) FTP**

**Aim :-** To study FTP.

**Diagram:**



### Program :-

**Router 0 > cli :-** enable  
 configure terminal interface  
 fastethernet 0/0 ip address  
 10.0.0.1 255.0.0.0 no  
 shutdown  
 exit ip ftp username  
 bscit ip ftp password  
 syit ip ftp server  
 enable exit

### Pc 0 > Desktop > Ip configuration :-

ipv4 : 10.0.0.2 subnet mask :  
 255.0.0.0  
 Default gateway: 10.0.0.1

### Pc 1 > Desktop > Ip configuration :-

ipv4 : 10.0.0.3  
 subnet mask : 255.0.0.0  
 Default gateway: 10.0.0.1

### Pc 0 > Desktop > Text Editor :-

This is from PC0

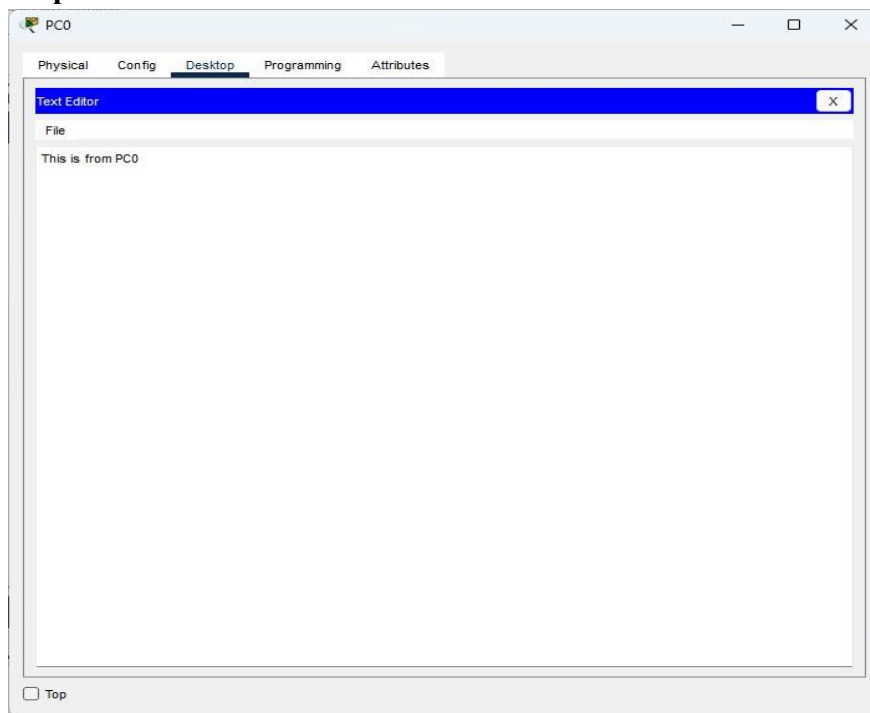


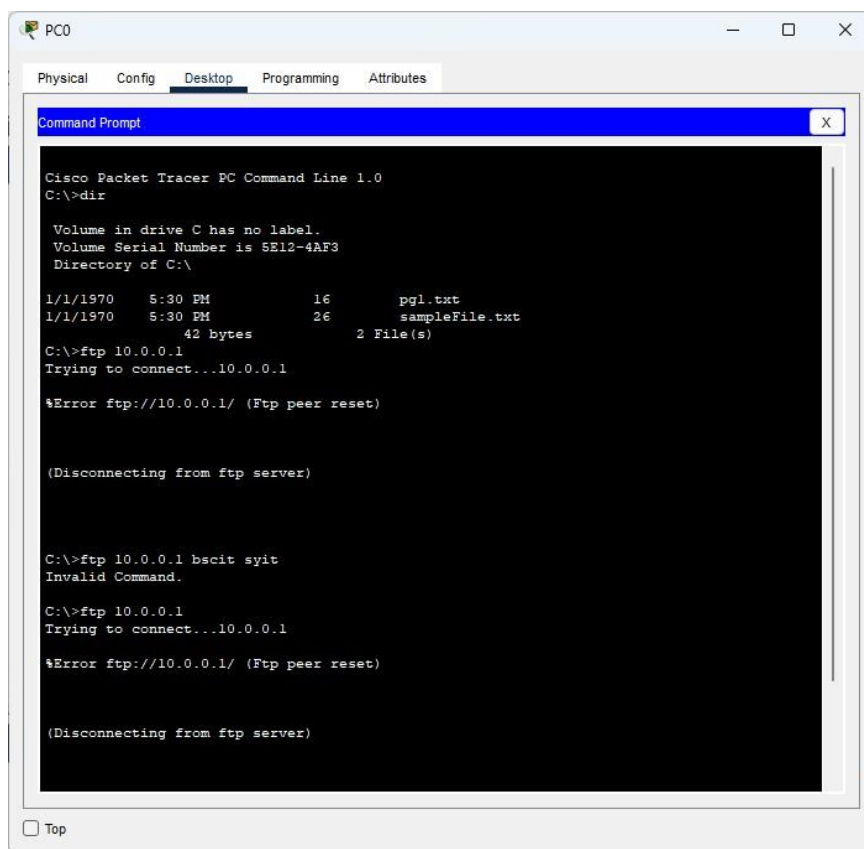
**Pc 0 > Desktop > Command Prompt :-**

```
ftp 10.0.0.1  
username : bscit  
password : syit put  
testfile.txt
```

**Pc 1 > Desktop > Command Prompt :-**

```
ftp 10.0.0.1  
username : bscit  
password : syit get  
testfile.txt
```

**Output:-**



The screenshot shows a Cisco Packet Tracer PC Command Line window for PC0. The window has tabs for Physical, Config, Desktop, Programming, and Attributes. The Desktop tab is active, displaying a Command Prompt. The Command Prompt shows the following text:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>dir

Volume in drive C has no label.
Volume Serial Number is 5E12-4AF3
Directory of C:\

1/1/1970    5:30 PM           16      pgl.txt
1/1/1970    5:30 PM           26      sampleFile.txt
               42 bytes           2 File(s)

C:\>ftp 10.0.0.1
Trying to connect...10.0.0.1

%Error ftp://10.0.0.1/ (Ftp peer reset)

(Disconnecting from ftp server)

C:\>ftp 10.0.0.1 bscit syit
Invalid Command.

C:\>ftp 10.0.0.1
Trying to connect...10.0.0.1

%Error ftp://10.0.0.1/ (Ftp peer reset)

(Disconnecting from ftp server)
```

**Conclusion:-The program executed Successfully**

#### **d) HTTP**

**Aim :-** To study HTTP.

**Circuit Diagram:-**

**Program :-** Server 0 > Desktop > Ip configuration :- ipv4 : 10.0.0.2 subnet mask : 255.0.0.0  
Default gateway: 0.0.0.0

**Server 0 > Services > HTTP :-**

HTTP : on

HTTPS : on

**Server 0 > Services > TFTP :-** service:  
off

**Server 0 > Services > HTTP > index.html > Edit :-**

<html>

<head>

<title>SYIT</title>

</head>

<body>

```
<h1>I am SYIT</h1>
</body>
</html>
```

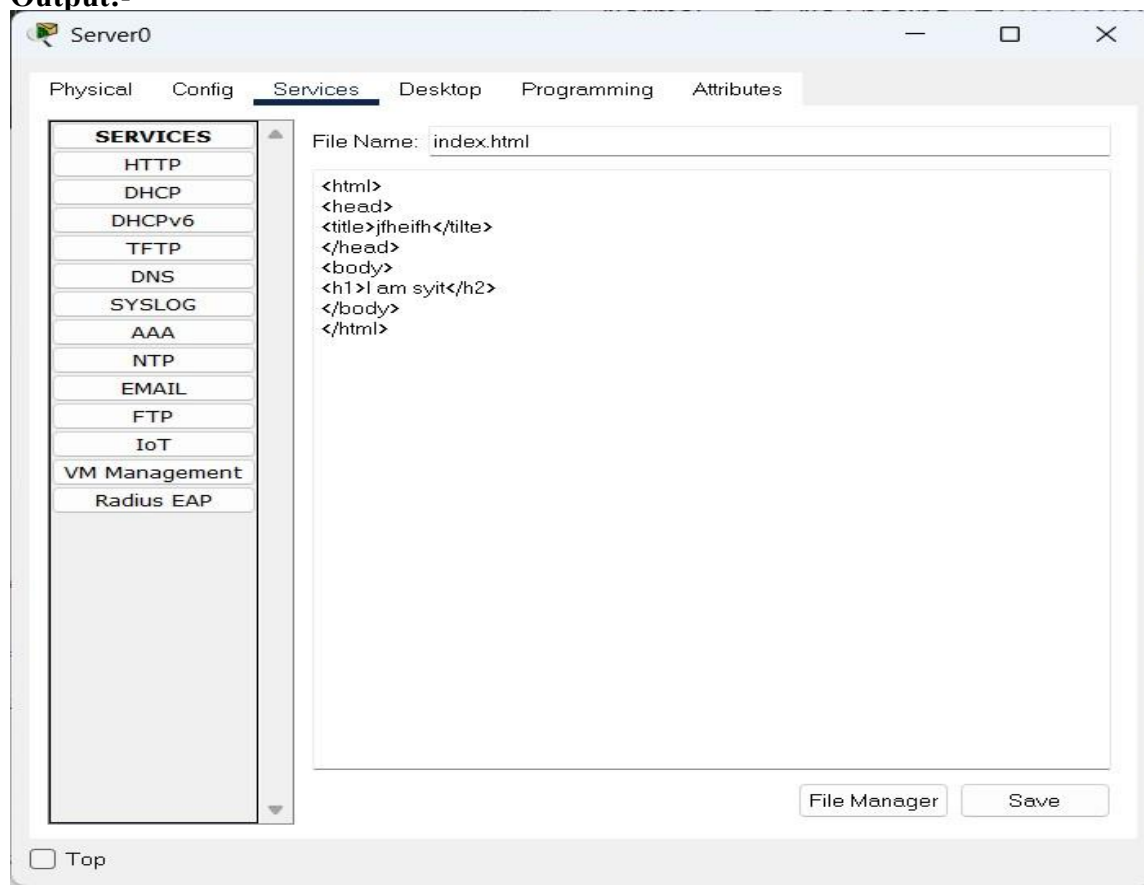
Pc 0 > Desktop > Ip Configuration :-

ipv4 : 10.0.0.3 subnet mask :

255.0.0.0

Default gateway: 10.0.0.2

### Output:-

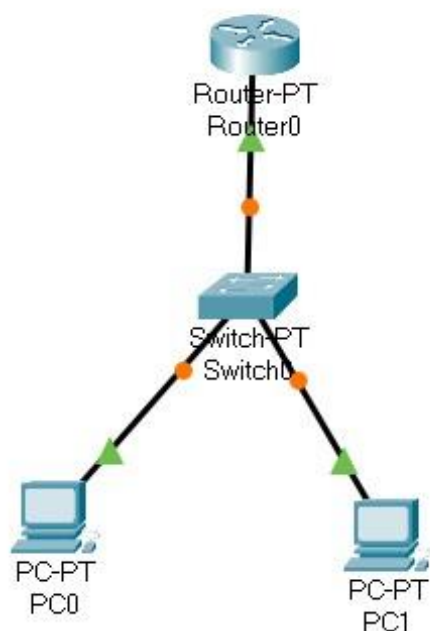


**Conclusion:-**The program executed Successfully.

### e) TELNET

**Aim :-** To study TELNET.

**Circuit diagram:-**



### Program :-

**Router 0 > cli :-** enable  
 configure terminal interface  
 fastethernet 0/0 ip address  
 10.0.0.1 255.0.0.0 no  
 shutdown  
 exit line vty 0 10  
 password syit login  
 transport input telnet  
 exit exit

### Pc 0 > Desktop > Ip configuration :-

ipv4 : 10.0.0.2 subnet mask :  
 255.0.0.0  
 Default gateway: 10.0.0.1

### Pc 1 > Desktop > Ip configuration :-

ipv4 : 10.0.0.3  
 subnet mask : 255.0.0.0  
 Default gateway: 10.0.0.1

**Output:-**

**PC0**

Physical Config Desktop Programming Attributes

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>telnet 10.0.0.1
Trying 10.0.0.1 ...Open

User Access Verification
Password:
Router>
```

☐ Top

**PC1**

Physical Config Desktop Programming Attributes

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ipconfig

FastEthernet0 Connection:(default port)
Connection-specific DNS Suffix...:
Link-local IPv6 Address...: FE80::201:64FF:FECC:DC27
IPv6 Address...: ::
IPv4 Address...: 10.0.0.3
Subnet Mask...: 255.0.0.0
Default Gateway...: 10.0.0.1

Bluetooth Connection:
Connection-specific DNS Suffix...:
Link-local IPv6 Address...: ::
IPv6 Address...: ::
IPv4 Address...: 0.0.0.0
Subnet Mask...: 0.0.0.0
Default Gateway...: 0.0.0.0

C:\>telnet 10.0.0.1
Trying 10.0.0.1 ...Open

User Access Verification
Password:
Password:
Router>
```

☐ Top

**Conclusion:-**The program executed Successfully.