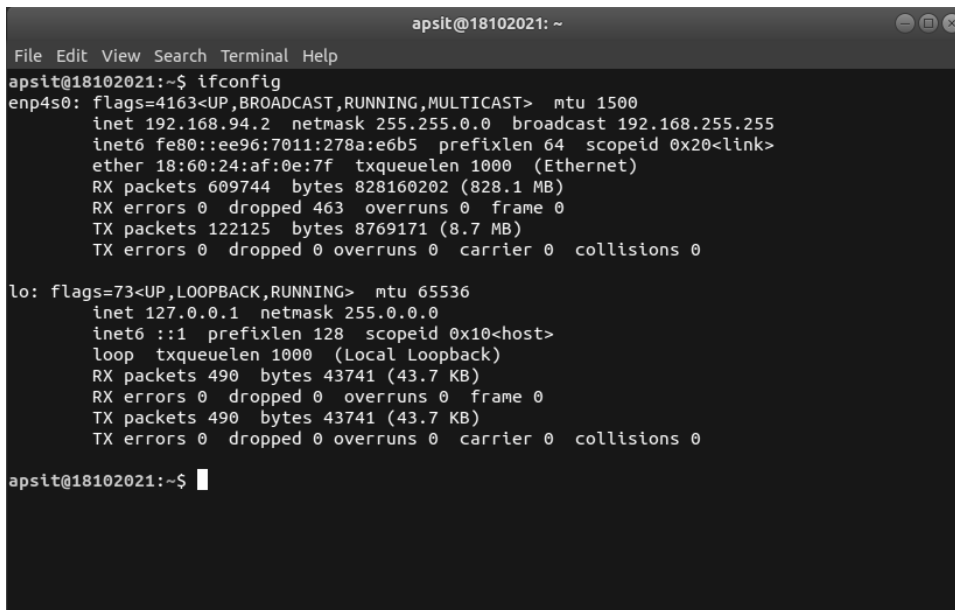


# Experiment 1

**Aim:** Use basic networking commands in Linux (ping, tracer, nslookup, netstat, ARP, RARP, ip, ifconfig, dig, route)

## Output:

### 1. Ifconfig

A screenshot of a terminal window titled 'apsit@18102021: ~'. The terminal shows the output of the 'ifconfig' command. It displays details for the 'enp4s0' interface (Ethernet) and the 'lo' interface (Local Loopback). The 'enp4s0' interface has an IP address of 192.168.94.2, a netmask of 255.255.0.0, and a broadcast address of 192.168.255.255. It also shows the MAC address 18:60:24:af:0e:7f and various statistics like RX packets, TX packets, and errors. The 'lo' interface has an IP address of 127.0.0.1, a netmask of 255.0.0.0, and a broadcast address of 127.0.0.1. It also shows the MAC address ::1 and various statistics.

```
apsit@18102021: ~  
File Edit View Search Terminal Help  
apsit@18102021:~$ ifconfig  
enp4s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
    inet 192.168.94.2 netmask 255.255.0.0 broadcast 192.168.255.255  
    inet6 fe80::ee96:7011:278a:e6b5 prefixlen 64 scopeid 0x20<link>  
    ether 18:60:24:af:0e:7f txqueuelen 1000 (Ethernet)  
    RX packets 609744 bytes 828160202 (828.1 MB)  
    RX errors 0 dropped 463 overruns 0 frame 0  
    TX packets 122125 bytes 8769171 (8.7 MB)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536  
    inet 127.0.0.1 netmask 255.0.0.0  
    inet6 ::1 prefixlen 128 scopeid 0x10<host>  
    loop txqueuelen 1000 (Local Loopback)  
    RX packets 490 bytes 43741 (43.7 KB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 490 bytes 43741 (43.7 KB)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
apsit@18102021:~$
```

## 2. Nslookup

```
apsit@18102021: ~  
File Edit View Search Terminal Help  
apsit@18102021:~$ nslookup www.moodle.apsit.com  
Server:      127.0.0.53  
Address:     127.0.0.53#53  
  
Non-authoritative answer:  
Name:   www.moodle.apsit.com  
Address: 199.59.243.220  
  
apsit@18102021:~$
```

## 3. Ping

```
apsit@18102021: ~  
File Edit View Search Terminal Help  
apsit@18102021:~$ ping -c 4 10.1.8.3  
PING 10.1.8.3 (10.1.8.3) 56(84) bytes of data.  
From 192.168.192.193 icmp_seq=1 Destination Host Unreachable  
From 192.168.192.193 icmp_seq=2 Destination Host Unreachable  
From 192.168.192.193 icmp_seq=3 Destination Host Unreachable  
From 192.168.192.193 icmp_seq=4 Destination Host Unreachable  
  
--- 10.1.8.3 ping statistics ---  
4 packets transmitted, 0 received, +4 errors, 100% packet loss, time 3067ms  
pipe 4  
apsit@18102021:~$
```

## 4. Traceroute

```
apsit@18102021:~$ traceroute
traceroute [ -4dFItnreAUDV ] [ -f first_ttl ] [ -g gate,... ] [ -i device ] [ -n max_ttl ] [ -N queries ] [ -p port ] [ -t tos ] [ -l flow_label ] [ -w MAX,HERE,NEAR ] [ -q queries ] [ -s src_addr ] [ -z sendwait ] [ --fwmarknum ] host [ packetlen ]
Options:
  -4                Use IPv4
  -6                Use IPv6
  -d --debug        Enable socket level debugging
  -f --dont-fragment Do not fragment packets
  -f first_ttl      Start from the first_ttl hop (instead from 1)
  -g gate,... --gateway-gate,... Route packets through the specified gateway
                        (maximum 8 for IPv4 and 127 for IPv6)
  -I --icmp         Use ICMP ECHO for tracerouting
  -T --tcp         Use TCP SYN for tracerouting (default port is 80)
  -i device --interface-device Specify a network interface to operate with
  -m max_ttl --max-hops=max_ttl Set the max number of hops (max TTL to be
                        reached), default is 30
  -N queries --sn-queries=queries Set the number of probes to be tried
                        simultaneously (default is 30)
  -n               Do not resolve IP addresses to their domain names
  -p port --port=port Set the destination port to use. It is either
                        initial udp port value for "default" method
                        (incremented by each probe, default is 33434), or
                        initial seq for "icmp" (incremented as well,
                        default from 1), or some constant destination
                        port for other methods (with default of 80 for
                        "tcp", 53 for "udp", etc.)
  -t tos --tos=tos Set the TOS (IPv4 type of service) or TC (IPv6
                        traffic class) value for outgoing packets
  -l flow_label --flowlabel=flow_label Use specified flow_label for IPv6 packets
  -w MAX,HERE,NEAR --wait=MAX,HERE,NEAR Wait for a probe no more than HERE (default 3)
                        times longer than a response from the same hop.
```

## 5. Netstat

```
apsit@18102021:~$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        1      0 18102021:37024          199.59.243.220:http    CLOSE_WAIT
tcp        1      0 18102021:52712          103.123.226.102:http   CLOSE_WAIT
tcp        1      0 18102021:52710          103.123.226.102:http   CLOSE_WAIT
tcp        1      0 18102021:37240          _gateway:8090          CLOSE_WAIT
tcp        1      0 18102021:52708          103.123.226.102:http   CLOSE_WAIT
tcp        1      0 18102021:52704          103.123.226.102:http   CLOSE_WAIT
tcp        0      0 18102021:35076          bom12s12-in-f2.1e:https ESTABLISHED
tcp        1      0 18102021:52714          103.123.226.102:http   CLOSE_WAIT
tcp        1      0 18102021:52706          103.123.226.102:http   CLOSE_WAIT
tcp        1      0 18102021:37026          199.59.243.220:http    CLOSE_WAIT
tcp        1      0 18102021:37028          199.59.243.220:http    CLOSE_WAIT

Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags   Type       State      I-Node  Path
unix    2      [ ]      DGRAM      -          36080    /run/user/1000/systemd/n
otify
unix    2      [ ]      DGRAM      -          26049    /run/user/121/systemd/no
tify
unix    3      [ ]      DGRAM      -          2587     /run/systemd/notify
unix    2      [ ]      DGRAM      -          2602     /run/systemd/journal/sys
log
```

## 6. ARP

```
apsit@18102021:~$ arp -v
Address HWtype HWaddress Flags Mask Iface
192.168.5.15 ether 10:62:e5:5c:62:9e C enp4s0
_gateway ether c8:4f:86:05:06:24 C enp4s0
Entries: 2 Skipped: 0 Found: 2
```

## 7. IP

```
apsit@18102021: ~  
File Edit View Search Terminal Help  
apsit@18102021:~$ ip addr show  
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000  
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00  
    inet 127.0.0.1/8 scope host lo  
        valid_lft forever preferred_lft forever  
    inet6 ::1/128 scope host  
        valid_lft forever preferred_lft forever  
2: enp4s0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000  
    link/ether 18:60:24:af:0e:7f brd ff:ff:ff:ff:ff:ff  
    inet 192.168.94.2/16 brd 192.168.255.255 scope global noprefixroute enp4s0  
        valid_lft forever preferred_lft forever  
    inet6 fe80::ee96:7011:278a:e6b5/64 scope link noprefixroute  
        valid_lft forever preferred_lft forever  
apsit@18102021:~$
```

## 8. Dig

```
apsit@18102021: ~  
File Edit View Search Terminal Help  
apsit@18102021:~$ dig youtube.com  
;  
;<> DiG 9.11.3-ubuntu1.17-Ubuntu <> youtube.com  
;; global options: +cmd  
;; Got answer:  
;; ->HEADER<- opcode: QUERY, status: NOERROR, id: 4713  
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1  
;  
;; OPT PSEUDOSECTION:  
;; EDNS: version: 0, flags:; udp: 65494  
;; QUESTION SECTION:  
;youtube.com. IN A  
;  
;; ANSWER SECTION:  
youtube.com. 220 IN A 216.58.203.46  
;  
;; Query time: 0 msec  
;; SERVER: 127.0.0.53#53(127.0.0.53)  
;; WHEN: Thu Jul 21 10:58:49 IST 2022  
;; MSG SIZE rcvd: 56  
apsit@18102021:~$
```

## 9. Iwconfig

```
apsit@18102021: ~  
File Edit View Search Terminal Help  
apsit@18102021:~$ iwconfig  
enp4s0 no wireless extensions.  
  
lo no wireless extensions.  
apsit@18102021:~$
```

## 10. My traceroute

```
apsit@18102021: ~  
File Edit View Search Terminal Help  
My traceroute [v0.92]  
18102021 (127.0.0.1) 2022-07-21T11:02:20+0530  
Keys: Help Display mode Restart statistics Order of fields quit  
Packets Pings  
Host Loss% Snt Last Avg Best Wrst StDev  
1. localhost 0.0% 17 0.0 0.1 0.0 0.1 0.0
```

## 11. Whois

```
apsit@18102021: ~  
File Edit View Search Terminal Help  
apsit@18102021:~$ whois instagram.com  
Domain Name: INSTAGRAM.COM  
Registry Domain ID: 121748357_DOMAIN_COM-VRSN  
Registrar WHOIS Server: whois.registrarsafe.com  
Registrar URL: http://www.registrarsafe.com  
Updated Date: 2021-11-08T21:56:06Z  
Creation Date: 2004-06-04T13:37:18Z  
Registry Expiry Date: 2031-06-04T13:37:18Z  
Registrar: RegistrarSafe, LLC  
Registrar IANA ID: 3237  
Registrar Abuse Contact Email: abusecomplaints@registrarsafe.com  
Registrar Abuse Contact Phone: +1-650-308-7004  
Domain Status: clientDeleteProhibited https://icann.org/epp#clientDeleteProhibit  
Domain Status: clientTransferProhibited https://icann.org/epp#clientTransferProhibited  
Domain Status: clientUpdateProhibited https://icann.org/epp#clientUpdateProhibited  
Domain Status: serverDeleteProhibited https://icann.org/epp#serverDeleteProhibited  
Domain Status: serverTransferProhibited https://icann.org/epp#serverTransferProhibited  
Domain Status: serverUpdateProhibited https://icann.org/epp#serverUpdateProhibited
```

## 12. Tracpath

```
apsit@18102021: ~  
File Edit View Search Terminal Help  
apsit@18102021:~$ tracpath youtube.com  
1?: [LOCALHOST] pmtu 1500  
1: _gateway 0.567ms  
1: _gateway 0.498ms  
2: jnpl.jeebr.net 0.974ms  
3: jnpl.jeebr.net 9.000ms  
4: no reply  
5: 142.250.167.25 2.391ms asymm 9  
6: no reply  
7: no reply  
8: no reply  
9: no reply  
^10: no reply  
^C  
apsit@18102021:~$
```

# Experiment 2

**Aim:** Use Wire shark to understand the operation of TCP/IP layers:

- Ethernet Layer: Frame header, Frame size etc.
- Data Link Layer: MAC address, ARP (IP and MAC address binding)
- Network Layer: IP Packet (header, fragmentation), ICMP (Query and Echo)
- Transport Layer: TCP Ports, TCP handshake segments etc.

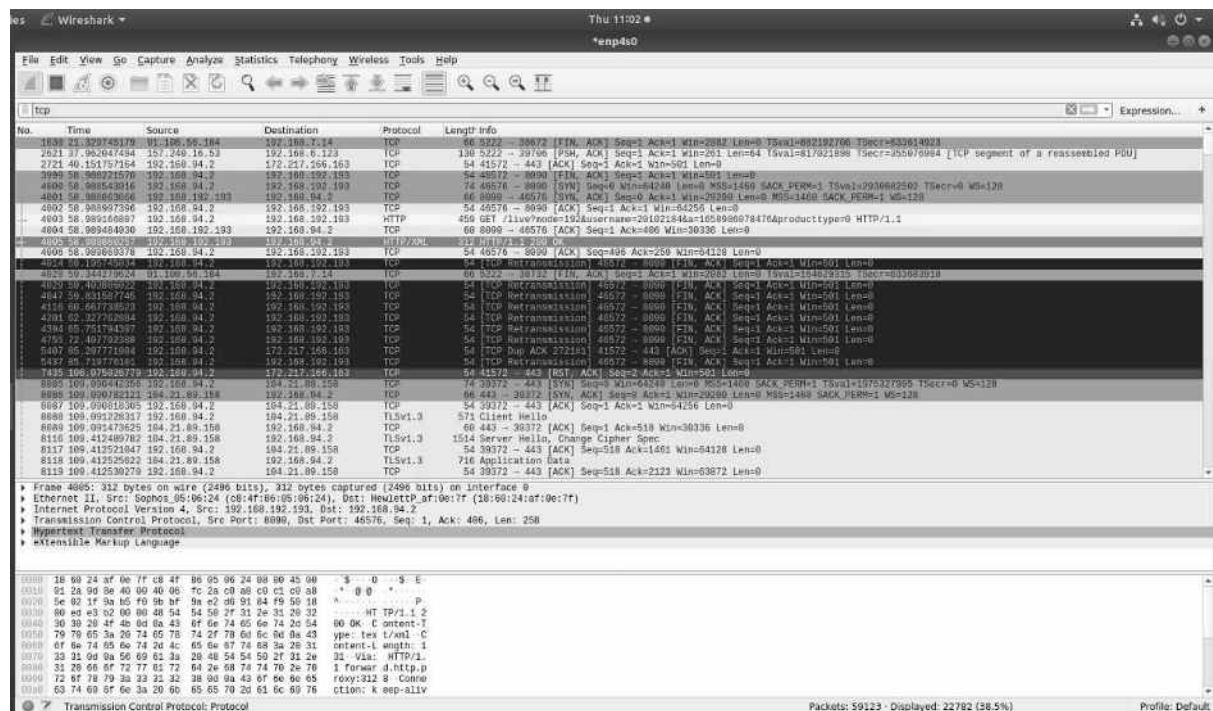
Application Layer: DHCP, FTP, HTTP header formats

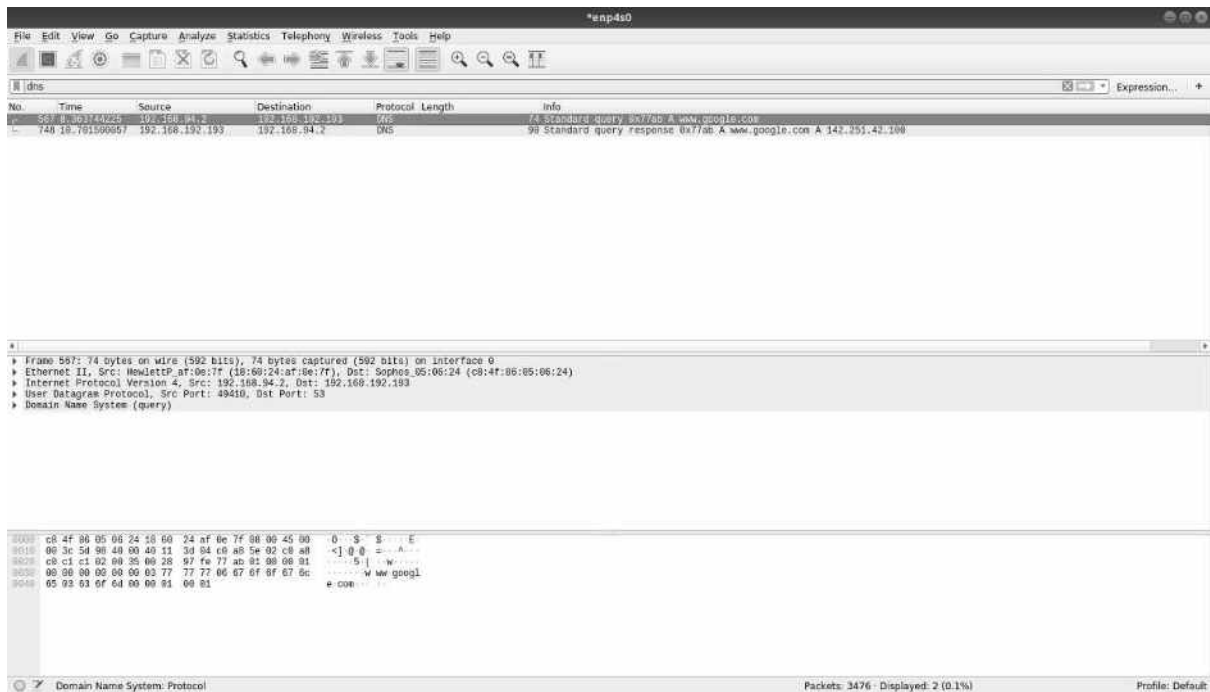
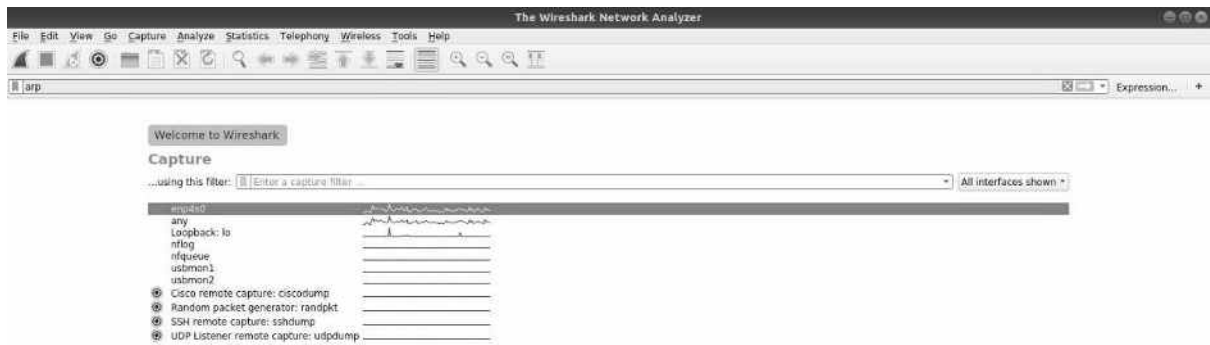
## Output:

## Steps to install wireshark

### 1. sudo apt install wireshark

### 2. sudo wireshark





File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

http

| No.   | Time          | Source          | Destination     | Protocol | Length | Info  |
|-------|---------------|-----------------|-----------------|----------|--------|---|
| 4003  | 50.069156697  | 192.168.192.2   | 192.168.192.193 | HTTP     | 459    | GET /live?mode=192&username=20102184&a=1658985878476&producttype=0 HTTP/1.1 |
| 4005  | 50.32020257   | 192.168.192.193 | 192.168.192.2   | HTTP/XML | 312    | HTTP/1.1 200 OK   |
| 20878 | 196.755547751 | 192.168.192.2   | 35.232.131.17   | HTTP     | 141    | GET / HTTP/1.1  |
| 20952 | 191.291440810 | 35.232.131.17   | 192.168.192.2   | HTTP     | 273    | HTTP/1.1 204 No Content   |
| 44374 | 249.815581262 | 192.168.192.2   | 192.168.192.193 | HTTP     | 459    | GET /live?mode=192&username=20102184&a=1658985878476&producttype=0 HTTP/1.1 |
| 44376 | 249.816133835 | 192.168.192.193 | 192.168.192.2   | HTTP/XML | 312    | HTTP/1.1 200 OK   |

▶ Frame 4005: 312 bytes on wire (2496 bits), 312 bytes captured (2496 bits) on interface 0  
 ▶ Ethernet II, Src: Sophos, 08:0e:24:c0:af:7f, Dst: HewlettP, af:0e:7f (18:00:24:c0:af:7f)  
 ▶ Internet Protocol Version 4, Src: 192.168.192.193, Dst: 192.168.192.2  
 ▶ Transmission Control Protocol, Src Port: 8090, Dst Port: 46576, Seq: 1, Ack: 406, Len: 258  
 ▶ Hypertext Transfer Protocol  
 ▶ eXtensible Markup Language

```

0000  18 60 24 af 0e 7f c8 4f 96 05 06 24 08 00 45 86  .$.0..$.E
0010  91 24 0d 0e 48 00 48 66 7c 2a c8 a8 c8 c1 c8 a8  ..00.....P
0020  5e 02 1f 0a 05 f0 90 b7 0a e2 06 91 04 f9 58 18  A.....P
0030  00 e3 b2 00 00 48 54 54 50 2f 31 2e 31 20 32    .HTP/1.1.2
0040  30 30 20 4f 4d 50 0a e3 8f 6e 74 65 66 74 20 54  00OK:Content-Type:
0050  79 70 65 3a 20 74 65 78 74 2f 70 60 6c 00 0a 43  ype:text/xml;char
0060  6f 6e 74 65 6e 74 20 4c 65 6e 67 74 68 3a 20 31  content-length:1
0070  33 31 0d 6a 56 69 81 3a 20 4b 54 50 7f 31 2e 31  .l.Via:HTTP/1.1
0080  31 20 66 67 72 77 61 72 64 2e 68 74 74 70 3a 70  .forward:http.p
0090  72 6f 70 70 3a 23 31 32 30 0d 0a 43 0f 6e 6e 65  roxy:312:8:Conn
00a0  63 74 59 6f 6e 3a 29 0b 05 05 70 20 61 6c 69 70  ction:keep-aliv
  
```

▶ Hypertext Transfer Protocol: Protocol  
 ▶ eXtensible Markup Language: Profile: Default



## Experiment 3

**Aim:** a. Using netstat and route commands of Linux, do the following:

- View current routing table
- Add and delete routes
- Change default gateway

b. Perform packet filtering by enabling IP forwarding using IPtables in Linux.

### Output:

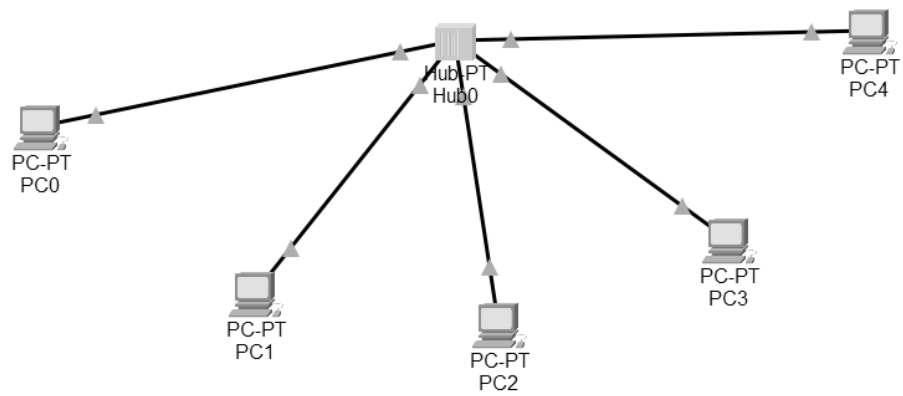
```
apsit@18102021: ~  
File Edit View Search Terminal Help  
apsit@18102021:~$ sudo ip addr add 192.168.5.144/24 dev enp4s0  
[sudo] password for apsit:  
apsit@18102021:~$ route  
Kernel IP routing table  
Destination      Gateway          Genmask          Flags Metric Ref    Use Iface  
default          _gateway        0.0.0.0          UG    100    0      0 enp4s0  
link-local      0.0.0.0         255.255.0.0      U     1000   0      0 enp4s0  
192.168.0.0      0.0.0.0         255.255.0.0      U     100    0      0 enp4s0  
192.168.4.114    192.168.5.114   255.255.255.255 UGH    0      0      0 enp4s0  
192.168.5.0      0.0.0.0         255.255.255.0    U      0      0      0 enp4s0  
apsit@18102021:~$ route -n  
Kernel IP routing table  
Destination      Gateway          Genmask          Flags Metric Ref    Use Iface  
0.0.0.0          192.168.192.193 0.0.0.0          UG    100    0      0 enp4s0  
169.254.0.0      0.0.0.0         255.255.0.0      U     1000   0      0 enp4s0  
192.168.0.0      0.0.0.0         255.255.0.0      U     100    0      0 enp4s0  
192.168.4.114    192.168.5.114   255.255.255.255 UGH    0      0      0 enp4s0  
192.168.5.0      0.0.0.0         255.255.255.0    U      0      0      0 enp4s0  
apsit@18102021:~$
```

```
apsit@18102021: ~  
File Edit View Search Terminal Help  
apsit@18102021:~$ netstat -r  
Kernel IP routing table  
Destination      Gateway          Genmask          Flags      MSS Window  irtt Iface  
default          _gateway        0.0.0.0          UG         0 0      0 enp4s0  
link-local       0.0.0.0         255.255.0.0      U          0 0      0 enp4s0  
192.168.0.0      0.0.0.0         255.255.0.0      U          0 0      0 enp4s0  
192.168.4.114    192.168.5.114   255.255.255.255 UGH        0 0      0 enp4s0  
192.168.5.0      0.0.0.0         255.255.255.0    U          0 0      0 enp4s0  
apsit@18102021:~$ netstat -rn  
Kernel IP routing table  
Destination      Gateway          Genmask          Flags      MSS Window  irtt Iface  
0.0.0.0          192.168.192.193 0.0.0.0          UG         0 0      0 enp4s0  
169.254.0.0      0.0.0.0         255.255.0.0      U          0 0      0 enp4s0  
192.168.0.0      0.0.0.0         255.255.0.0      U          0 0      0 enp4s0  
192.168.4.114    192.168.5.114   255.255.255.255 UGH        0 0      0 enp4s0  
192.168.5.0      0.0.0.0         255.255.255.0    U          0 0      0 enp4s0  
apsit@18102021:~$
```

## Experiment 4

**Aim:** Build a simple network topology and configure it for static routing protocol using packet tracer.

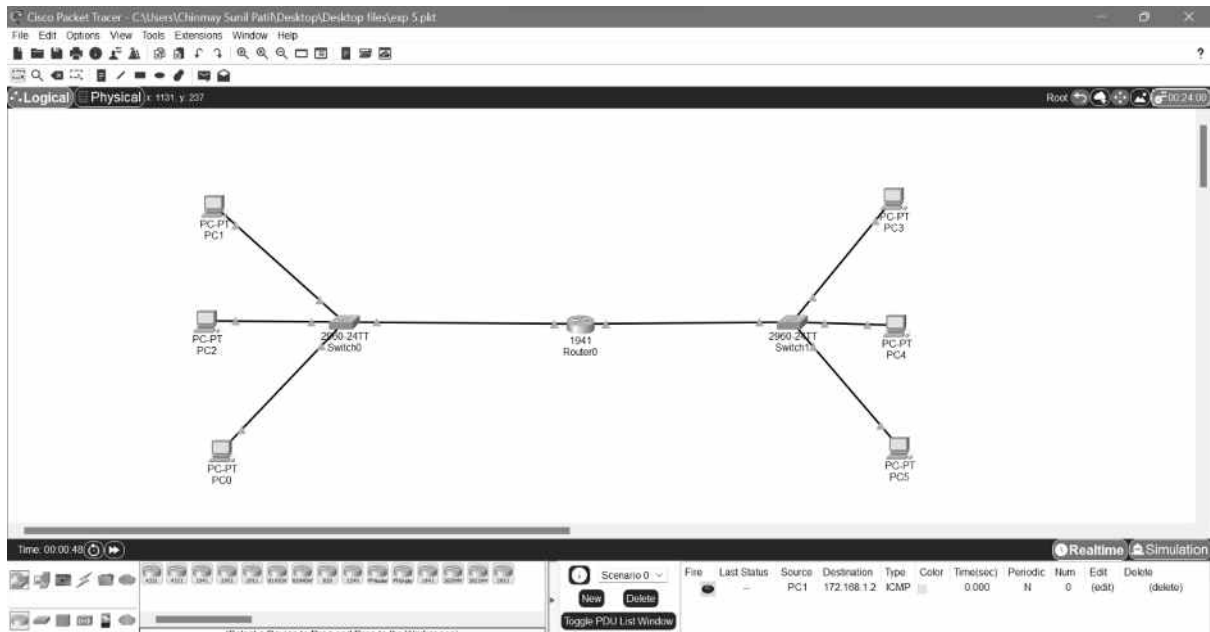
**Output:**



# Experiment 5

**Aim:** Single n/w topology for static routing protocol

**Output:**



Router0

PhysicalConfigCLIAttributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0

GigabitEthernet0/1

GigabitEthernet0/0

Port Status

☒ On

Bandwidth

☐ 1000 Mbps☒ 100 Mbps☐ 10 Mbps

Duplex

☐ Half Duplex☒ Full Duplex

MAC Address0006.2A9A.2C01

IP Configuration

IPv4 Address192.168.1.254

Subnet Mask255.255.255.0

Tx Ring Limit10

Equivalent IOS Commands

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
```

☐ Top

PC1

PhysicalConfigDesktopProgrammingAttributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Bluetooth

FastEthernet0

Port Status

☒ On

Bandwidth

☒ 100 Mbps☐ 10 Mbps

Duplex

☐ Half Duplex☒ Full Duplex

MAC Address0001.43AD.07DE

IP Configuration

☐ DHCP

☒ Static

IPv4 Address192.168.1.1

Subnet Mask255.255.255.0

IPv6 Configuration

☐ Automatic

☒ Static

IPv6 Address

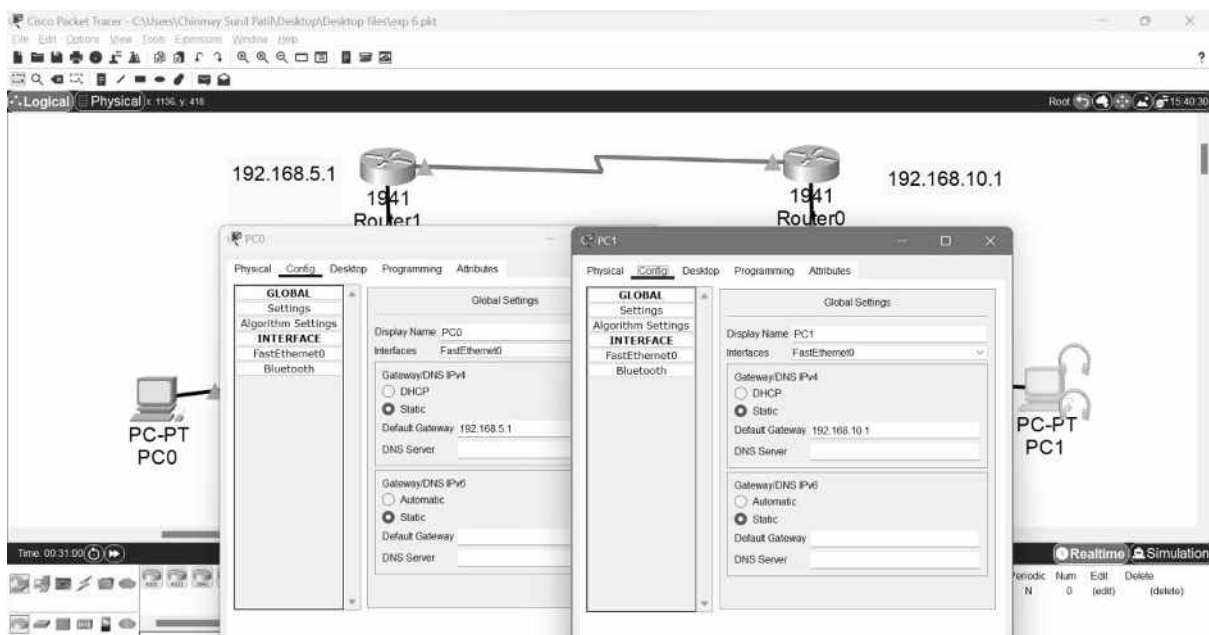
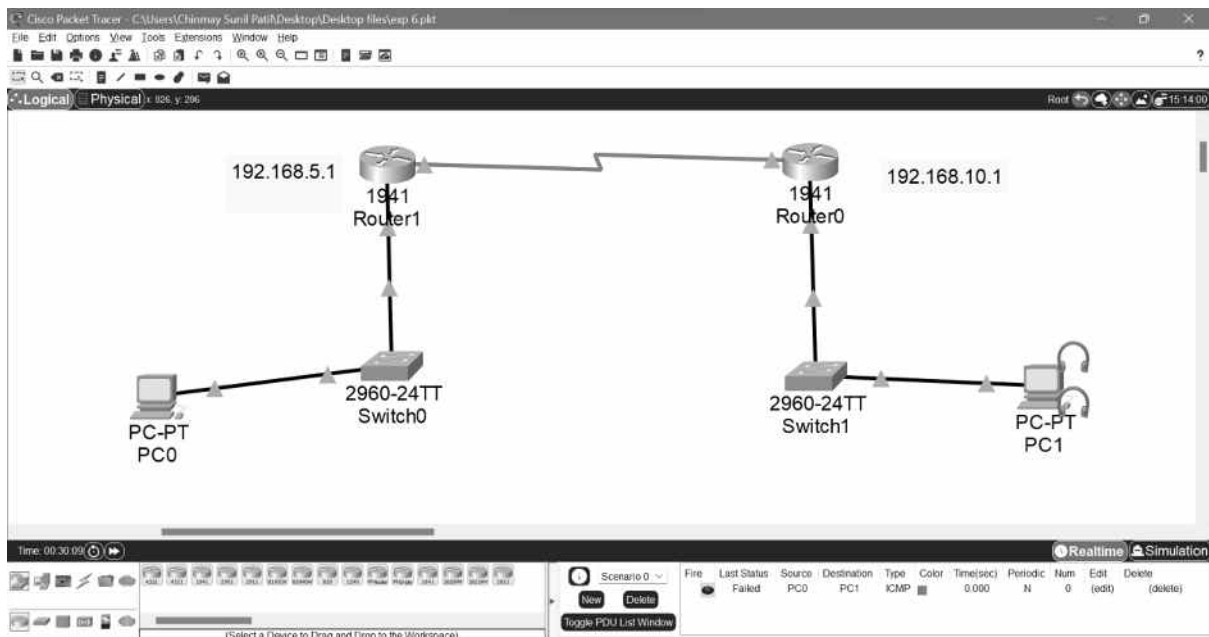
Link Local Address:FE80::201:43FF:FEAD:7DE

☐ Top

## Experiment 6

**Aim:** To configure static routing in packet tracer (Simulation of router configuration).

**Output:**



Cisco Packet Tracer - C:\Users\Chinmy Sunil\Desktop\Desktop files\exp 6.pkt

File Edit Options View Tools Extensions Window Help

Logical Physical x 900 y 106

192.168.5.1 10.1.1.1 192.168.10.1

Router1

Physical Config CLI Attributes

GLOBAL Settings Algorithm Settings ROUTING Static RIP SWITCHING VLAN Database INTERFACE GigabitEthernet0/0 GigabitEthernet0/1 Serial0/1/0 Serial0/1/1

Serial0/1/0

Port Status Duplex Full Duplex Clock Rate 2000000 Tx Ring Limit 10

IP Configuration IPv4 Address 10.1.1.1 Subnet Mask 255.0.0.0

Equivalent IOS Commands

```
Router>configure terminal
Router(config)#interface Serial0/1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#
```

Router0

Physical Config CLI Attributes

GLOBAL Settings Algorithm Settings ROUTING Static RIP SWITCHING VLAN Database INTERFACE GigabitEthernet0/0 GigabitEthernet0/1 Serial0/1/0 Serial0/1/1

Serial0/1/0

Port Status Duplex Full Duplex Clock Rate 1200 Tx Ring Limit 10

IP Configuration IPv4 Address 10.1.1.0 Subnet Mask 255.0.0.0

Equivalent IOS Commands

```
Router>enable
Router#
Router#configure terminal
Router(config)#interface Serial0/1/0
Router(config-if)#
```

Time: 00:32:11

Realtime Simulation

Run Edit Delete

0 (edit) (delete)

# Experiment 7

**Aim:** Perform network discovery using discovery tools-Nmap

## Output:

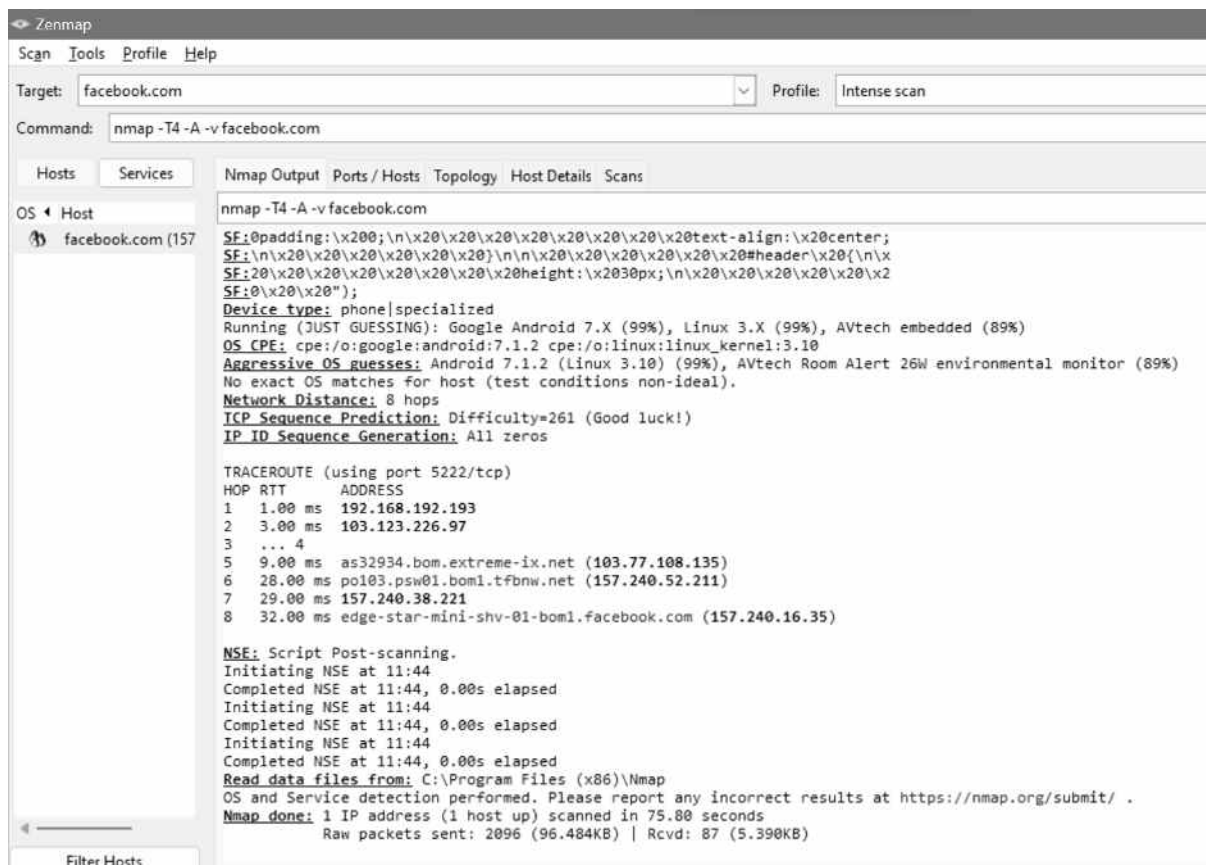
sudo apt install nmap

wget http://archive.ubuntu.com/ubuntu/pool/universe/n/nmap/zenmap\_7.60-1ubuntu5\_all.deb

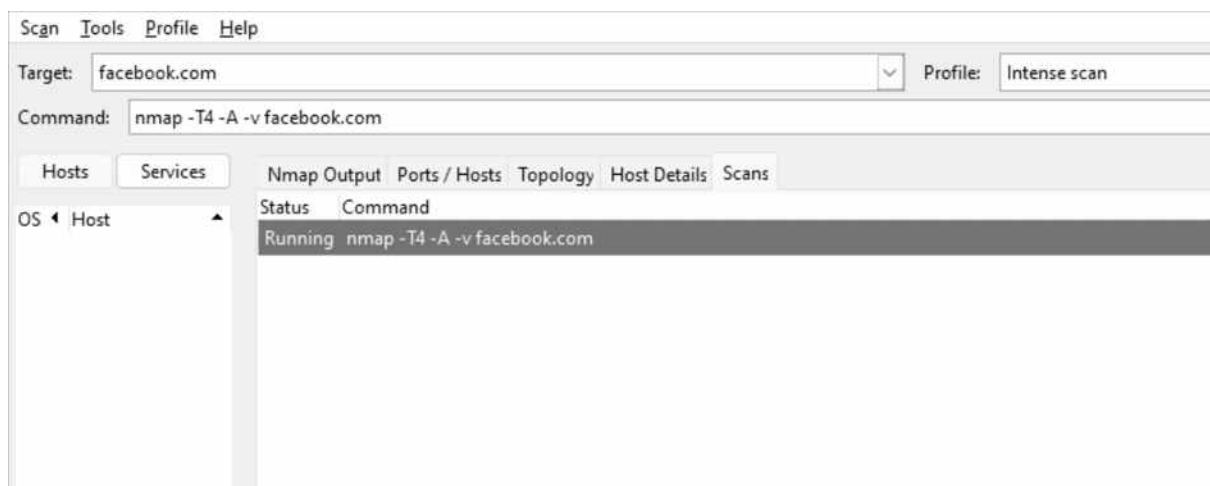
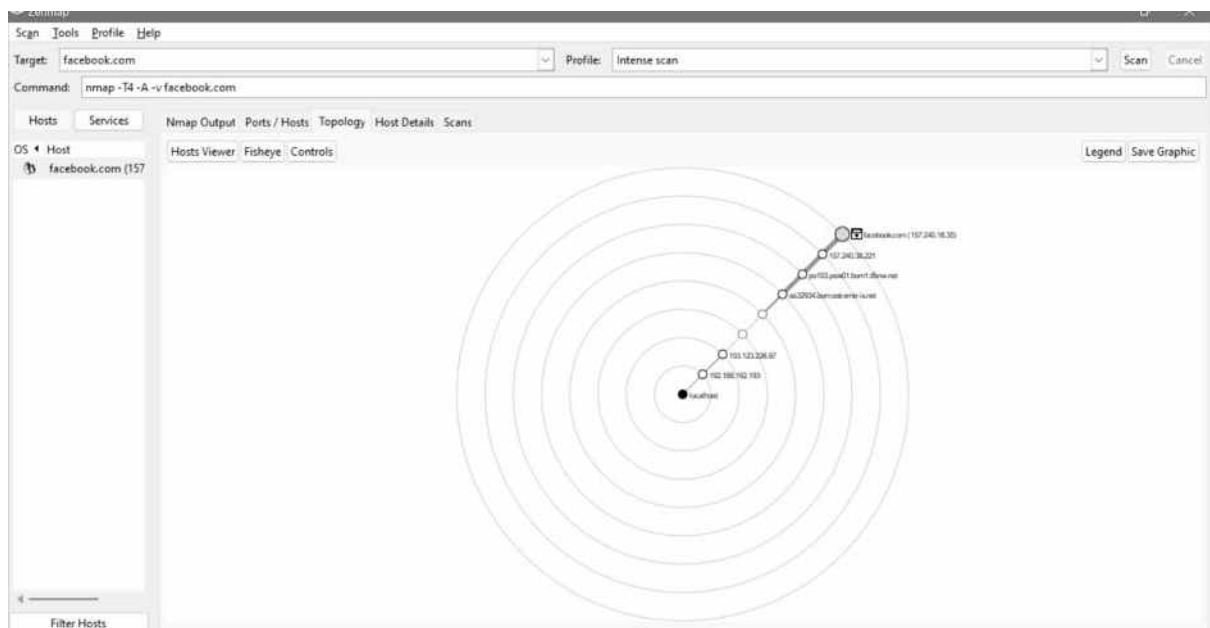
sudo apt install ./zenmap\_7.60-1ubuntu5\_all.deb

sudo zenmap

sudo apt install alien







## Experiment 8

**Aim:** Socket programming using TCP. Design TCP iterative Client and Server application to reverse the given input sentence.

### Output:

#### Server.c

##### (Code):

```
#include<stdio.h>
#include<unistd.h>
#include<string.h>
#include<sys/socket.h>
#include<stdlib.h>
#include<netinet/in.h>
#include<sys/types.h>
#define MAXLINE 20
#define SERV_PORT 5777
void main(int argc,char *argv) {
    int i,j;
    ssize_t n;
    char line[MAXLINE],revline[MAXLINE];
    int listenfd,connfd,clilen;
    struct sockaddr_in servaddr,cliaddr;
    listenfd=socket(AF_INET,SOCK_STREAM,0);
    bzero(&servaddr,sizeof(servaddr));
    servaddr.sin_family=AF_INET;
    servaddr.sin_port=htons(SERV_PORT);
    bind(listenfd,(struct sockaddr*)&servaddr,sizeof(servaddr));
    listen(listenfd,1);
    for(;;)
    {
        clilen=sizeof(cliaddr);
        connfd=accept(listenfd,(struct sockaddr*)&cliaddr,&clilen);
        printf("CONNECT TO CLIENT\n");
        while(1)
        {
            if((n=read(connfd,line,MAXLINE))==0)
                break;
            line[n-1]='\0';
            j=0;
            for(i=n-2;i>=0;i--)
                revline[j++]=line[i];
            revline[j]='\0';
            write(connfd,revline,n);
        }
    }
}
```

```
}  
}  
}
```

## **Client.c**

### **(Code):**

```
#include<stdio.h>  
#include<unistd.h>  
#include<string.h>  
#include<sys/socket.h>  
#include<stdlib.h>  
#include<netinet/in.h>  
#include<sys/types.h>  
#define MAXLINE 20  
#define SERV_PORT 5777  
void main(int argc,char *argv)  
{  
    char sendline[MAXLINE],revline[MAXLINE]; int sockfd;  
    struct sockaddr_in servaddr; sockfd=socket(AF_INET,SOCK_STREAM,0);  
    bzero(&servaddr,sizeof(servaddr));  
    servaddr.sin_family=AF_INET;servaddr.sin_port=ntohs(SERV_PORT);  
    connect(sockfd,(struct sockaddr*)&servaddr,sizeof(servaddr));  
    printf("Enter the data to be sent\n");  
    while(fgets(sendline,MAXLINE,stdin)!=NULL)  
    {  
        write(sockfd,sendline,strlen(sendline));  
        printf("\n Line sent");  
        read(sockfd,revline,MAXLINE);  
        printf("\nReverse of the given sentence is %s",revline);  
        printf("\n");  
    }  
    exit(0);  
}
```

Server-Side Output:

```
apsit@20102091: ~/Desktop
File Edit View Search Terminal Help
apsit@20102091:~$ cd Desktop
apsit@20102091:~/Desktop$ gcc server.c
apsit@20102091:~/Desktop$ ./a.out
CONNECT TO CLIENT
```

Client-Side Output:

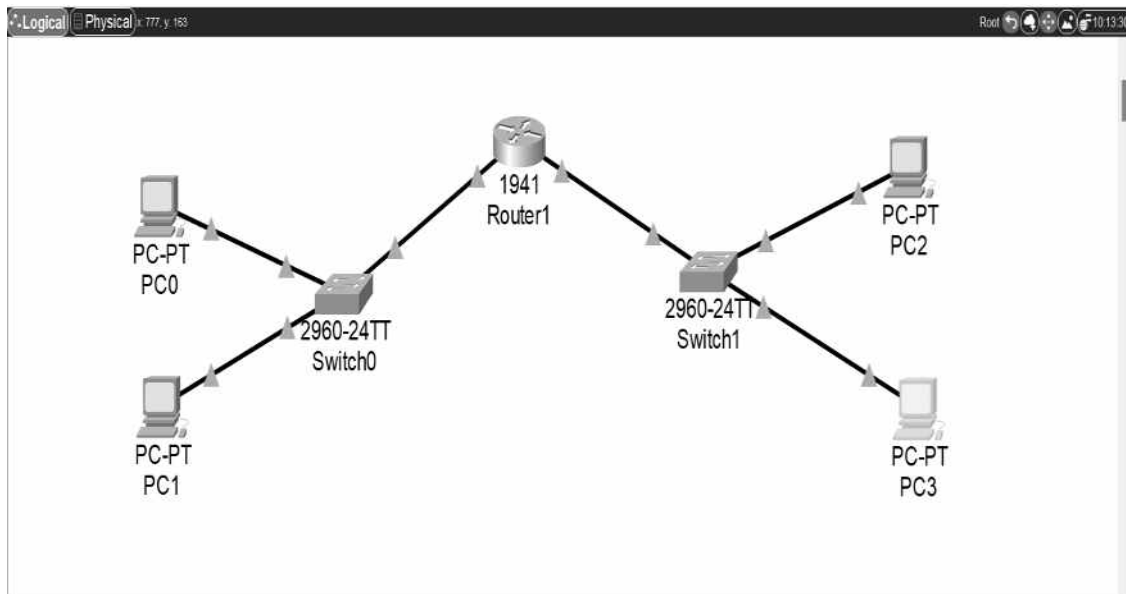
```
apsit@20102091: ~/Desktop
File Edit View Search Terminal Help
apsit@20102091:~$ cd Desktop
apsit@20102091:~/Desktop$ gcc client.c
apsit@20102091:~/Desktop$ ./a.out
Enter the data to be sent
This is an example

Line sent
Reverse of the given sentence is elpmaxe na si sihT
```

# Experiment 9

**Aim:** Implementation of DHCP using packet tracer.

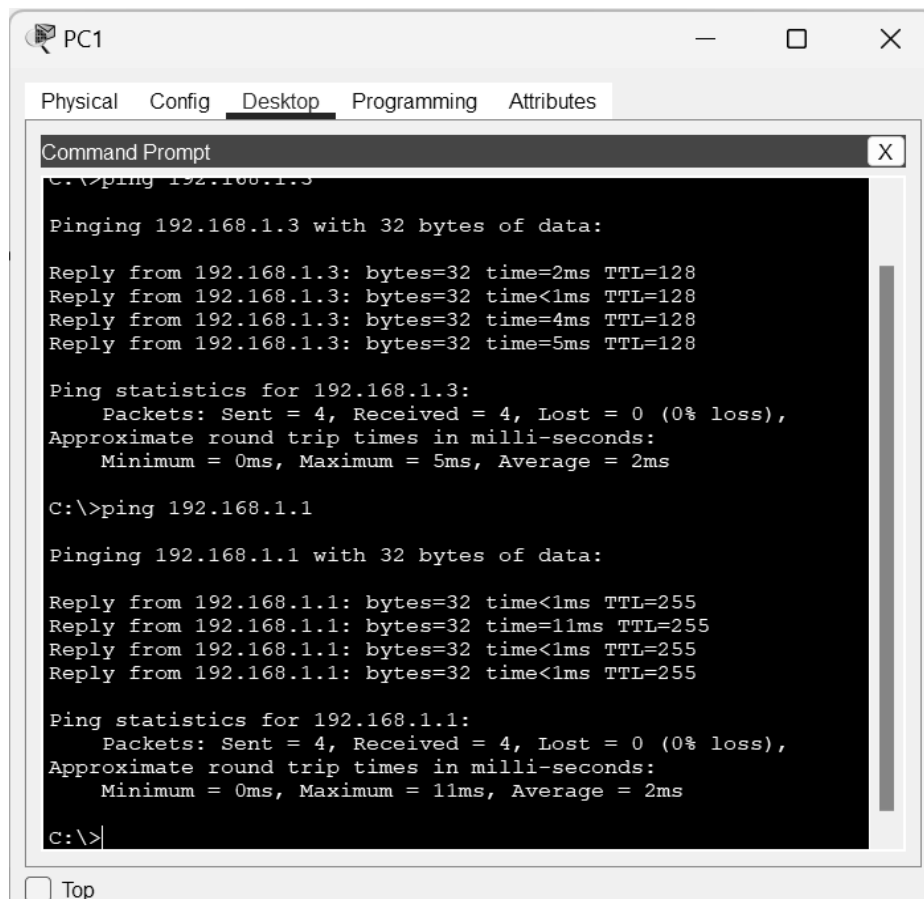
**Output:**



```
Router1
Physical Config CLI Attributes
IOS Command Line Interface
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#no ip address
Router(config-if)#ip address 192.168.2.1 255.255.255.0
Router(config-if)#ip address 192.168.2.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

Router(config-if)#
Router(config-if)#ex
Router(config)#ip dhcp pool LAN1
Router(dhcp-config)#network 192.168.1.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.1.1
Router(dhcp-config)#exit
Router(config)#ip dhcp excluded-address 192.168.1.1
Router(config)#ip dhcp pool LAN2
Router(dhcp-config)#network 192.168.2.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.2.1
Router(dhcp-config)#exit
Router(config)#ip dhcp excluded-address 192.168.2.1
Router(config)#
```



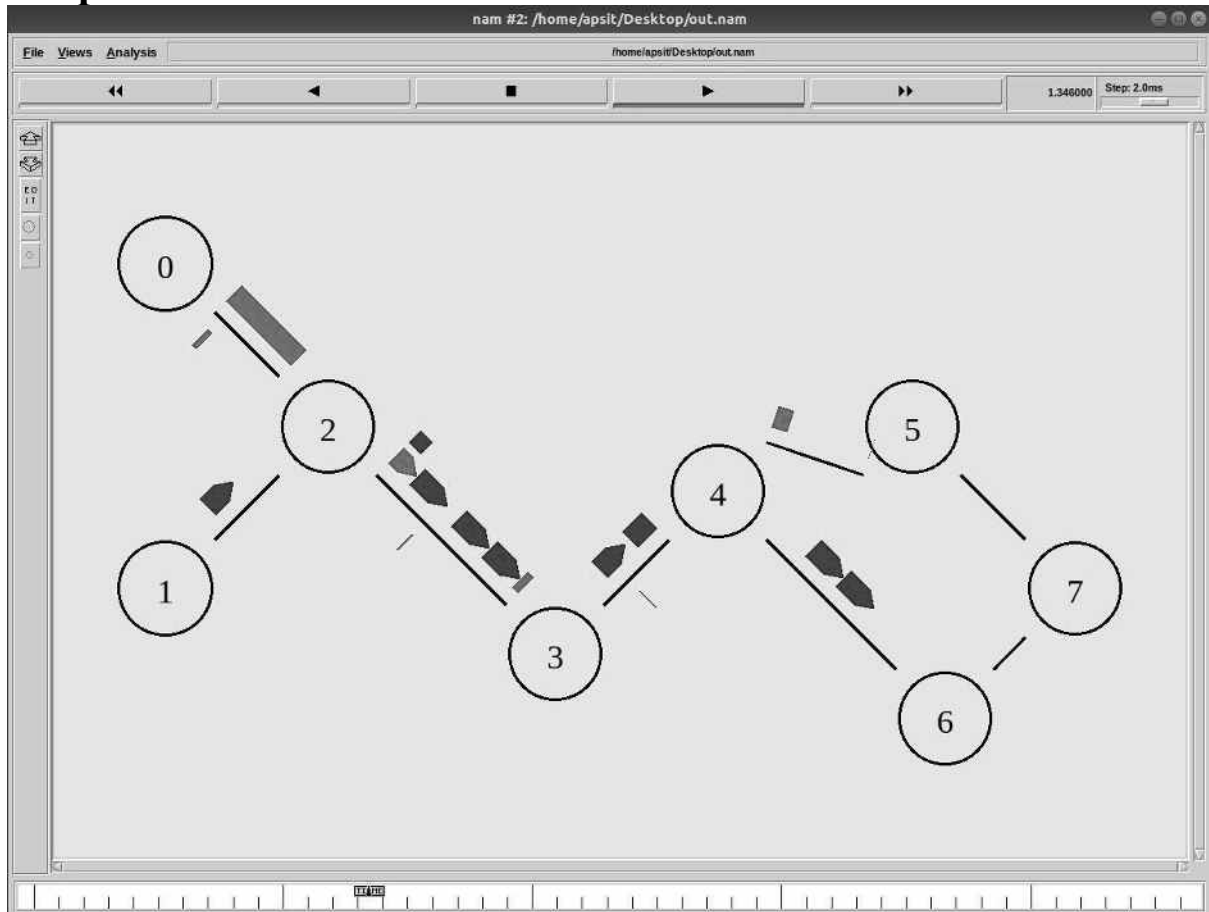
## Experiment 11

### Crimping Tool

# Experiment 12

**Aim:** Installation of NS2.

**Output:**



```
apsit@20102192: ~/Desktop
File Edit View Search Terminal Help
apsit@20102192:~/Desktop$ bad window path name ".model1
.ctrl.p0b.f.c": bad window path name ".model1.ctrl.p0b.
f.c"
    while executing
"pack $timeslider(canvas) -side left -fill x -expand 1
-padx 0 -pady 0"
    (procedure "_o14" line 18)
    (TimesliderView timeticks line 18)
    invoked from within
"_o14 timeticks .model1.ctrl.p0b.f.c"
    (command bound to event)
Cannot connect to existing nam instance. Starting a new
one...
ns simple.tcl
    When configured, ns found the right version of tclsh i
n /usr/bin/tclsh8.6
but it doesn't seem to be there anymore, so ns will fal
l back on running the first tclsh in your path. The wro
ng version of tclsh may break the test suites. Reconfig
ure and rebuild ns if this is a problem.
CBR packet size = 1000
CBR interval = 0.008000000000000000002
apsit@20102192:~/Desktop$
```