1928343 | KAPIL SHARMA | CSSE-04

CN LAB- 06

Q.(1)

> gedit client.c ↵

```
#include <stdio.h>
#include <sys/types.h>
#include <error.h>
#include <stdlib.h>
#include <string.h>
#include <sys/socket.h>
#include <netinet/in.h>
#include <netdb.h>
#include <fcntl.h>
#define MAXD 100
#define STDIN 0
int main(int argc, char *argc[]) {
  int fd, numbytes, nval;
  char buf[MAXD];
  struct hostnet *he;
  struct sockaddr_in server;
  if(argc != 3) {
    print("Usage: %s <IPaddress><PORT>",
                argv[0]);
    exit(-1);
  }
  if ((fd = socket (AF_INET, SOCK_STREAM, 0)) ==
                -1) {
    printf("Socket 0 Error")
    exit(-1);
  }
```

```
char temp_buf[INET_ADDR STRLEN];
inet_ntop (Af_INET, &(client.sin_addr), temp_buf,
        INET_ADDRSTRLEN);

if(temp_buf == NULL)
   printf ("inet_ntop error");
else
   printf ('accepted connection , IP: %s . port %u",
        temp_buf, ntohs (client.sin_port));

if( max_index == FD_SETSIZE){
    printf ("Limit reached");
 else {
   client_fd [max_index] == com_fd;
   max_index++;
  }
FD_SET (com_fd , &all_set);
 if (com_fd > max_fd)
    max_fd =  com_fd;
 }
 else {
 for(i=0; i< FD_SETSIZE , ++i) {
    sin_size = sizeof (struct sockaddr_in);
    char temp_buf [INET_ADDR STRLEN];
    char buf [1000];
    if( FD_ISSET (client_fd[i], &read_set)){
        int numbytes;
        numbytes = recv(client_fd[i], buf, MAXD, 0);
```

```
int set_val;
max_index = 0;
for(i=0; i<FD_SETSIZE; ++i) {
    client_fd[i] = -1;
}

int max_fd = listen_fd;
FD_ZERO(&read_set);
FD_ZERO(&write_set);
FD_ZERO(&all_set);
fcntl(STDIN, F_SETFL, O_NONBLOCK);
FD_SET(listen_fd, &all_set);
while(1) {
    read_set = all_set;
    write_set = all_set;
    timeout.tv_set = 100;
    timeout.tv_usec = 0;
    set_val = select(max_fd+1, &read_set, NULL,
                NULL, &timeout);
    if (set_val == -1) {
        perror("select");
        exit(-1);
    }
    else if(FD_ISSET(listen_fd, &read_set)){
        int sin_size = sizeof(struct sockaddr_in);
        if((com_fd = accept(listen_fd, (struct sockaddr*)
            &client, &sin_size)) == -1) {
            perror("Accept");
            exit(-1);
        }
```

```
struct sockaddr_in server;
struct sockaddr_in client;
struct sockaddr_in temp;
if (argc != 2) {
   printf ("Usage %s <IP_ADDRESS><PORT>", argv[0]);
   exit(-1);
}
if((listen_fd = socket( AF_INET, SOCK_STREAM,0)) == -1) {
   printf("Socket() error");
   exit(-1);
}

server.sin_family = AF_INET;
server.sin_port = htons (atoi (&argv[1]));
server.sin_addr.s_addr = INADDR_ANM;
bZero (&(server.sin_zero), 8);
if ( bind (listen_fd, (struct sockaddr *) & server,
    sizeof(struct sockaddr)) == -1) {
      printf ("bind() error");
      exit(-1);
   }
if (listen (listen_fd, BACKLOG) == -1) {
   printf ("listen() error");
   exit(-1);
}
fd_set, read_set, write_set, all_set;
struct timeval timeout;
```

```
    if (FD_ISSET(STDIN, &rset)) {
        fgets(buf1, 1000, stdin);
        send(fd, buf1, strlen(buf1), 0);
    }
} while(strcmp(buf, "exit", 4) != 0);
close(fd);
}
```

> gedit server.c ↵

```
#include <stdio.h>
#include <sys/types.h>
#include <sys/socket.h>
#include <netinet.h>
#include <string.h>
#include <error.h>
#include <stdlib.h>
#include <sys/select.h>
#include <sys/time.h>
#include <unistd.h>
#include <fcntl.h>
#include <sys/ioctl.h>
#DEFINE BACKLOG 2
#DEFINE MAXDATASIZE 1000
#DEFINE STDIN 0

int main(int argc, char *argv[]) {
 int listen_fd, com_fd;
 int client_fd[FD_SETSIZE];
 int max_index;
 int sin_size;
```

```
server.sin_family = AF_INET;
server.sin_port = htons(atoi(&args[2]));
server.sin_addr.s_addr = inet_addr(args[1]);
bzero(&(server.sin_zero), 8);
if(connect(fd, (struct sockaddr *)&server,
  sizeof(struct sockaddr)) == -1) {
   printf("Connect 0 error");
   exit(-1);
   }

static char buf1[1000];
fd_set rset, master, wset;
struct timeval timeout;
FD_ZERO(&rset);
FD_ZERO(&master);
FD_SET(fd, &master);
FD_SET(STDIN, &master);
do {
 rset = master;
 timout.tv_sit = 100;
 timeout.tv_usec = 0;
 nval = select(fd+1, &rset, NULL, NULL, &timeout);
 if(FD_ISSET(fd, &rset)) {
    numbytes = recv(fd, buf, MAXD, 0);
    buf[numbytes] = '\0';
    printf("Server msg : %s ", buf);
    }
```

```
if(numbytes >0) {
    buf[numbytes] = '\0';
    if( getpeername(client_fd[i], (struct sockaddr *)
        &temp, &sin_size)==-1) {
        printf("Peername error");
        exit(-1);
        }
    Inet_ntop(AF_INET, &(temp.sin_addr), temp_buf,
            INET_ADDSTRLEN);
    if(temp_buf == NULL)
        printf("inet top addr");
    else
      printf("Message from client : %s", temp_buf);
  }
  fgets(buf, 1000, stdin);
  send(client_fd[i], buf, strlen(buf), 0);
 }
}
}
}
```

```
> gcc server.c -o sever
> ./s 3000 server 3000
  accepted connection
  47.9.129.226 35798
```

```
> gcc client.c -o client
> ./client.c 47.9.129.226 3000
  Hello
  Server msg: Hello.
```

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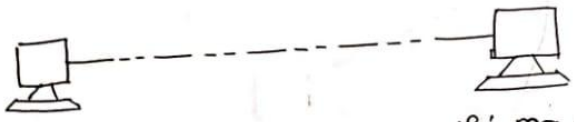
CN LAB – 07

(1) Network connection between 2 PCs



IP: 192.168.1.2

IP: 192.168.1.1

Process →

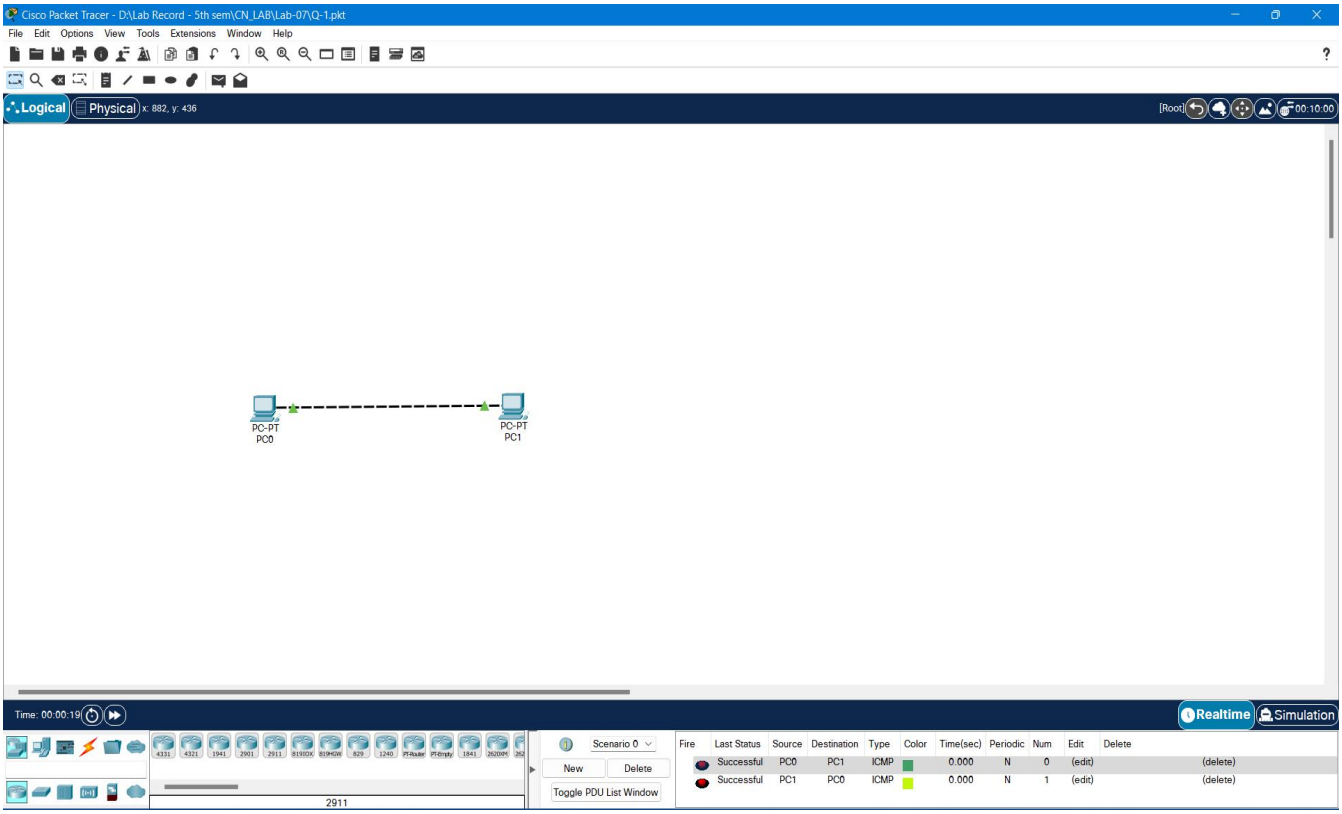
I) Setup end devices – PC_1 & PC_2.

II) Configure the end devices

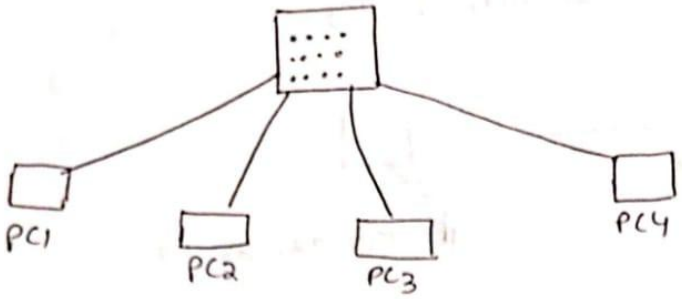
IP of PC_1 = 192.168.1.2.

IP of PC_2 = 192.168.1.1

III) Connection → connected using copper cross-over cable.


Cisco Packet Tracer - D:\Lab Record - 5th sem\CN_LAB\Lab-07\Q-1.pkt
File Edit Options View Tools Extensions Window Help
Logical
Physical
x: 882, y: 436
[Root]
00:10:00
PC-PT
PC0
PC-PT
PC1
Time: 00:00:19
Realtime
Simulation
2911
Scenario 0
New
Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete
Successful PC0 PC1 ICMP 0.000 N 0 (edit) (delete)
Successful PC1 PC0 ICMP 0.000 N 1 (edit) (delete)

(2) Network connection b/n 4PCs & hub.



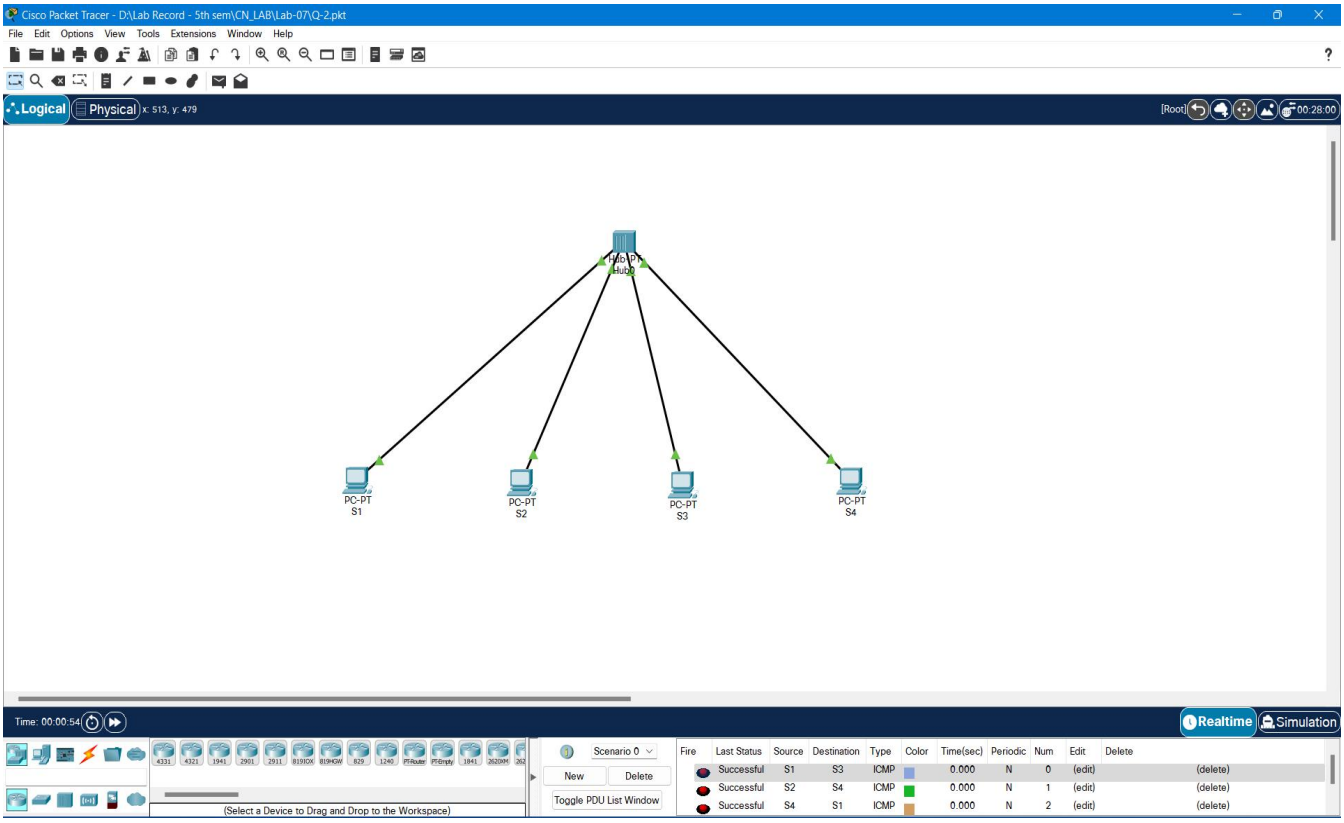
Process →

i) Hub used → PT-HUB

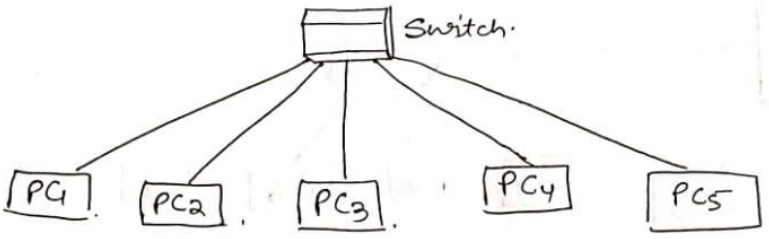
ii) Configuration ⇒ end devices.

PC1 : 192.168.1.1
PC2 : 192.168.1.2
PC3 : 192.168.1.3
PC4 : 192.168.1.4

iii) All devices are connected with hub using straight-through cable.


Cisco Packet Tracer - D:\Lab Record - 5th sem\CN_LAB\Lab-07\Q-2.pkt
File Edit Options View Tools Extensions Window Help
Logical
Physical
x: 513, y: 479
[Root]
00:28:00
Hub-PT
Hub0
PC-PT
S1
PC-PT
S2
PC-PT
S3
PC-PT
S4
Time: 00:00:54
Realtime
Simulation
(Select a Device to Drag and Drop to the Workspace)
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Type
Color
Time(sec)
Periodic
Num
Edit
Delete
Successful S1 S3 ICMP 0.000 N 0 (edit) (delete)
Successful S2 S4 ICMP 0.000 N 1 (edit) (delete)
Successful S4 S1 ICMP 0.000 N 2 (edit) (delete)

(3) Network connection between 5 PCs & switch.



Process →

I) Switch used → 2960-24TT switch.

II) Configure the end devices

IP of PC1: 192.168.1.1

IP of PC2: 192.168.1.2

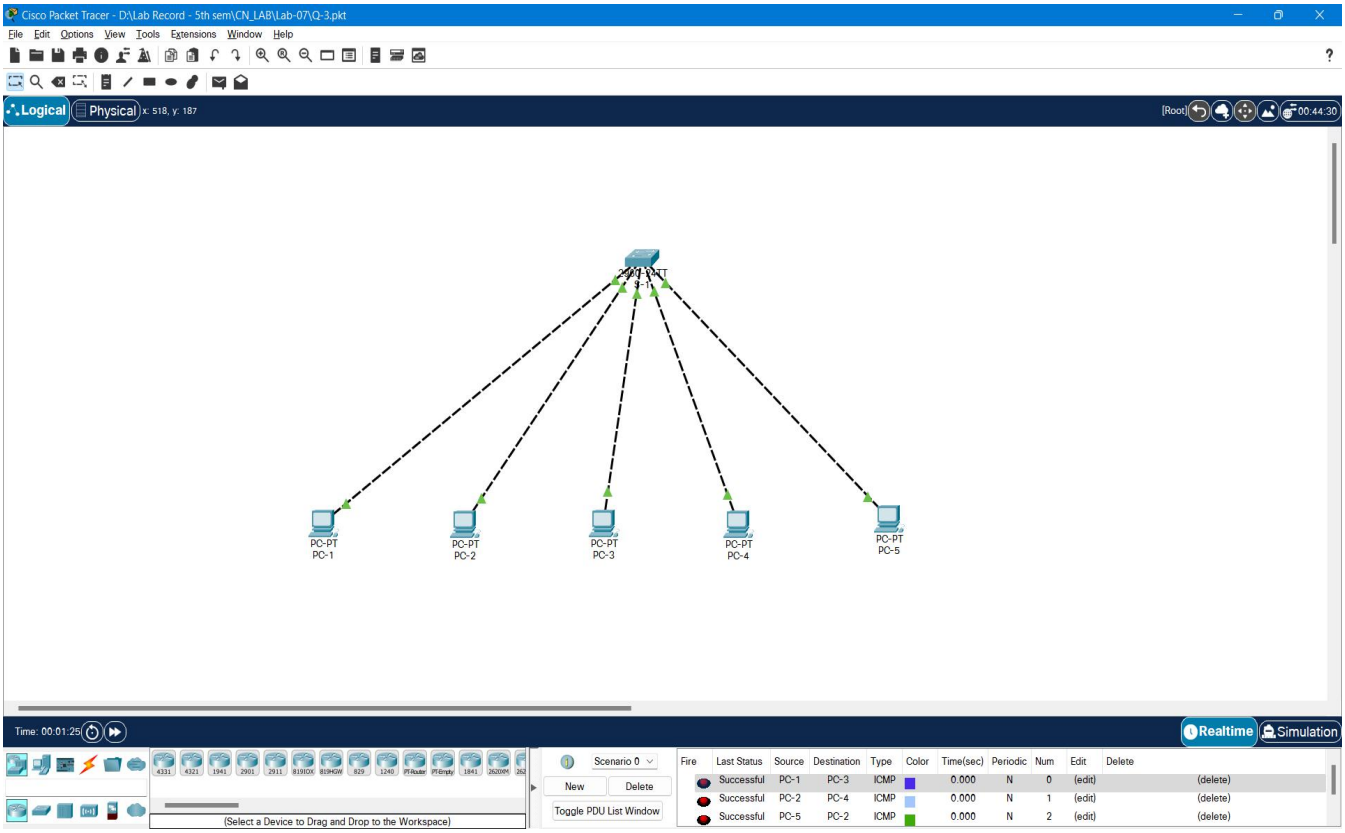
IP of PC3: 192.168.1.3

IP of PC4: 192.168.1.4

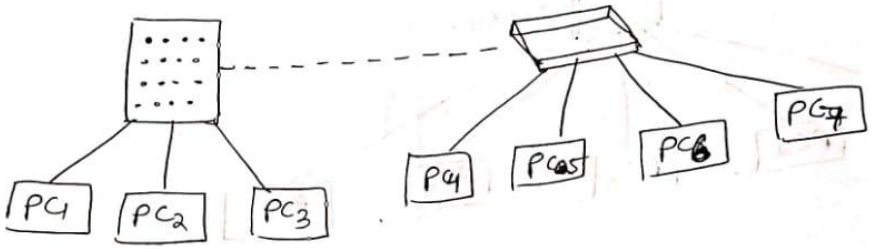
IP of PC5: 192.168.1.5

III) Connection →

All devices are connected to switch using straight-through cable.


Cisco Packet Tracer - D:\Lab Record - 5th sem\CN_LAB\Lab-07\Q-3.pkt
File Edit Options View Tools Extensions Window Help
Logical
Physical
x: 518, y: 187
[Root]
00:44:30
2911 PKT
PC-PT PC-1
PC-PT PC-2
PC-PT PC-3
PC-PT PC-4
PC-PT PC-5
Time: 00:01:25
Realtime
Simulation
(Select a Device to Drag and Drop to the Workspace)
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Type
Color
Time(sec)
Periodic
Num
Edit
Delete
Successful PC-1 PC-3 ICMP 0.000 N 0 (edit) (delete)
Successful PC-2 PC-4 ICMP 0.000 N 1 (edit) (delete)
Successful PC-5 PC-2 ICMP 0.000 N 2 (edit) (delete)

(4) Network connection of PC-Hub-switch-PC.



Process →

i) End devices = 7 pcs.
Connecting devices = 1 Hub & 1 switch.

ii) Configure the end devices:

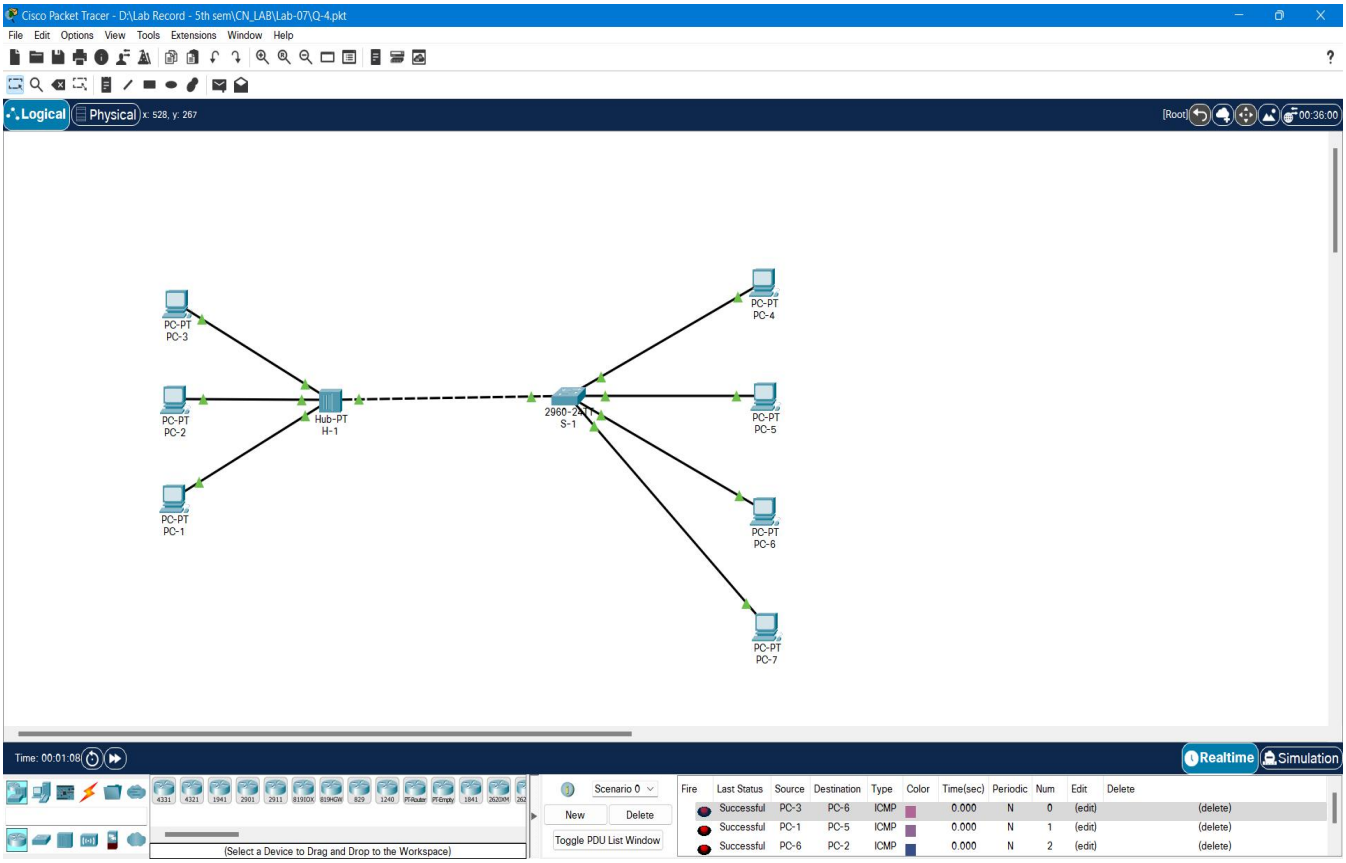
IP of PC1 ⇒ 192.168.1.1

IP of PC2 : 192.168.1.2
IP of PC3 : 192.168.1.3
IP of PC4 : 192.168.1.4
IP of PC5 : 192.168.1.5
IP of PC6 : 192.168.1.6
IP of PC7 : 192.168.1.7

iii) PC1, PC2 & PC3 are connected to Hub using straight-through cable.

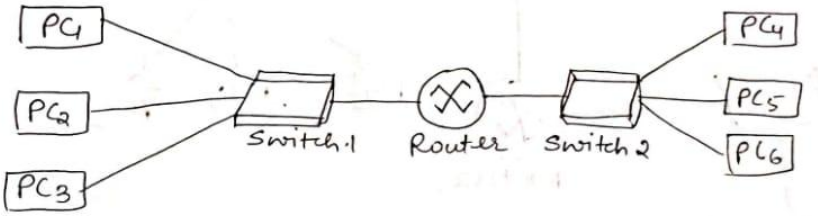
PC4, PC5, PC6, PC7 are connected to switch.

iv) Hub and Switch are connected through Cross-over cable.


Cisco Packet Tracer - D:\Lab Record - 5th sem\CN_LAB\Lab-07\Q-4.pkt
File Edit Options View Tools Extensions Window Help
Logical
Physical
x: 528, y: 267
[Root]
00:36:00
PC-PT PC-3
PC-PT PC-2
PC-PT PC-1
Hub-PT H-1
2960-24TT S-1
PC-PT PC-4
PC-PT PC-5
PC-PT PC-6
PC-PT PC-7
Time: 00:01:08
Realtime
Simulation
(Select a Device to Drag and Drop to the Workspace)
Scenario 0
New
Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete
Successful PC-3 PC-6 ICMP 0.000 N 0 (edit) (delete)
Successful PC-1 PC-5 ICMP 0.000 N 1 (edit) (delete)
Successful PC-6 PC-2 ICMP 0.000 N 2 (edit) (delete)

CN LAB - 08

① Design 2 LAN of 3 end user each. (SRC)



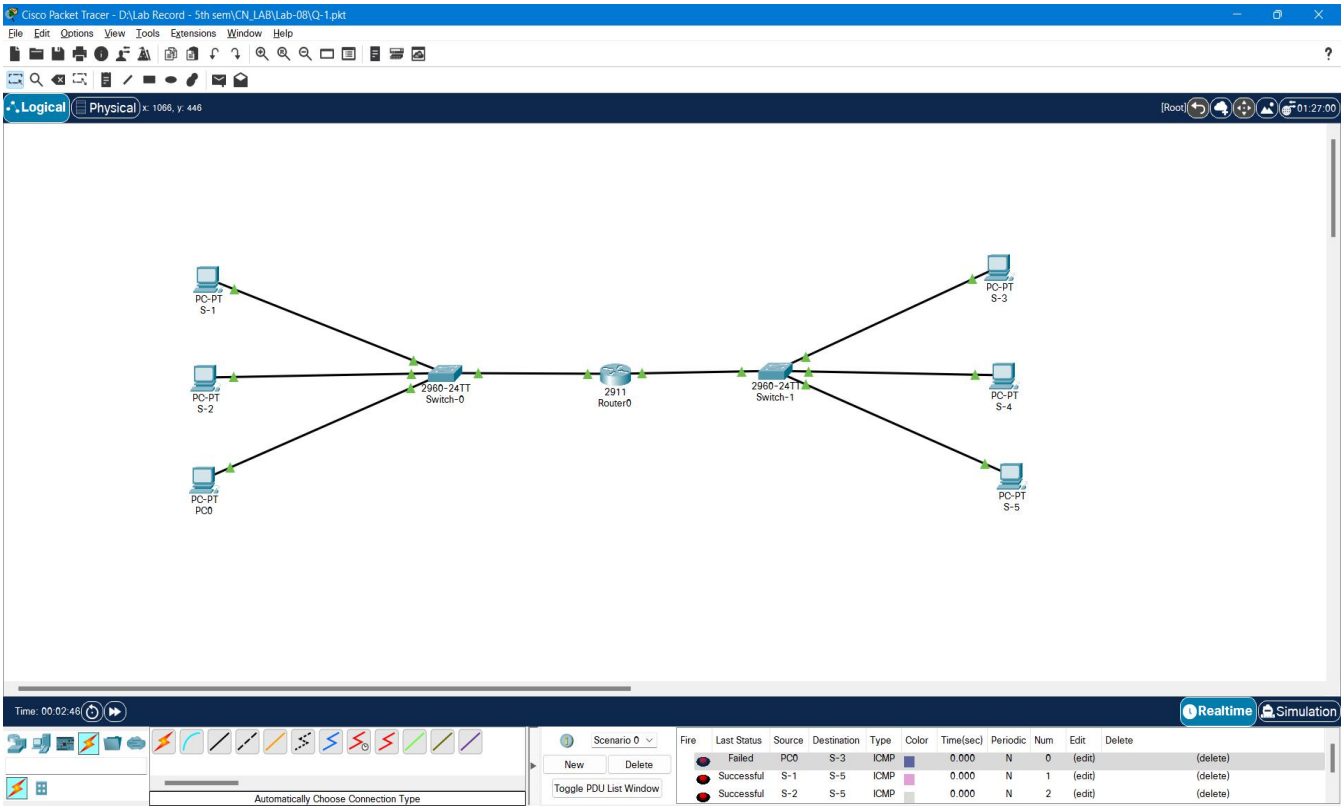
Process →

I) End devices = 6 PCs
Connecting devices = 2 switches & 1 Router.

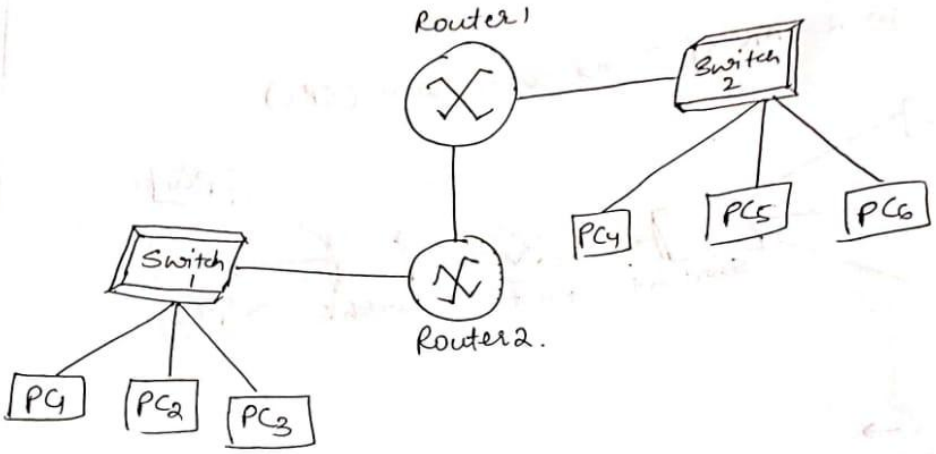
II) IP of PC1 : 15.10.20.30
IP of PC2 : 15.10.20.31
IP of PC3 : 15.10.20.33
] Default Gateway : 15.10.20.32

IP of PC4 : 172.17.20.1
IP of PC5 : 172.17.20.2
IP of PC6 : 172.17.20.3
] Default Gateway : 172.17.20.4

III) Configuration of router :
Left side : IP → 15.10.20.2
Right side : IP → 172.17.20.4


Cisco Packet Tracer - D:\Lab Record - 5th sem\CN_LAB\Lab-08\Q-1.pkt
File Edit Options View Tools Extensions Window Help
Logical
Physical
x: 1066, y: 446
[Root]
01:27:00
PC-PT S-1
PC-PT S-2
PC-PT PC0
2960-24TT Switch-0
2911 Router0
2960-24TT Switch-1
PC-PT S-3
PC-PT S-4
PC-PT S-5
Time: 00:02:46
Realtime
Simulation
Automatically Choose Connection Type
Scenario 0
New
Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete
Failed PC0 S-3 ICMP 0.000 N 0 (edit) (delete)
Successful S-1 S-5 ICMP 0.000 N 1 (edit) (delete)
Successful S-2 S-5 ICMP 0.000 N 2 (edit) (delete)

② Connection b/n 2 LAN using 2 DRC.



Process →

i) End devices = 6 PCs.
connecting devices = 2 routers & 2 switches.

ii) Configuring end devices.

LAN1
- IP of PC1 : 10.1.1.2.
- IP of PC2 : 10.1.1.3
- IP of PC3 : 10.1.1.4

} Default Gateway: 10.1.1.1

LAN2
- IP of PC4 : 172.16.1.2
- IP of PC5 : 172.16.1.3
- IP of PC6 : 172.16.1.4

} Default Gateway : 172.16.1.1

iii) Router configuration → Inserting 2 serial port on both router.

Router ①

IP: 10.1.1.1 (Left side connected with LAN 1)

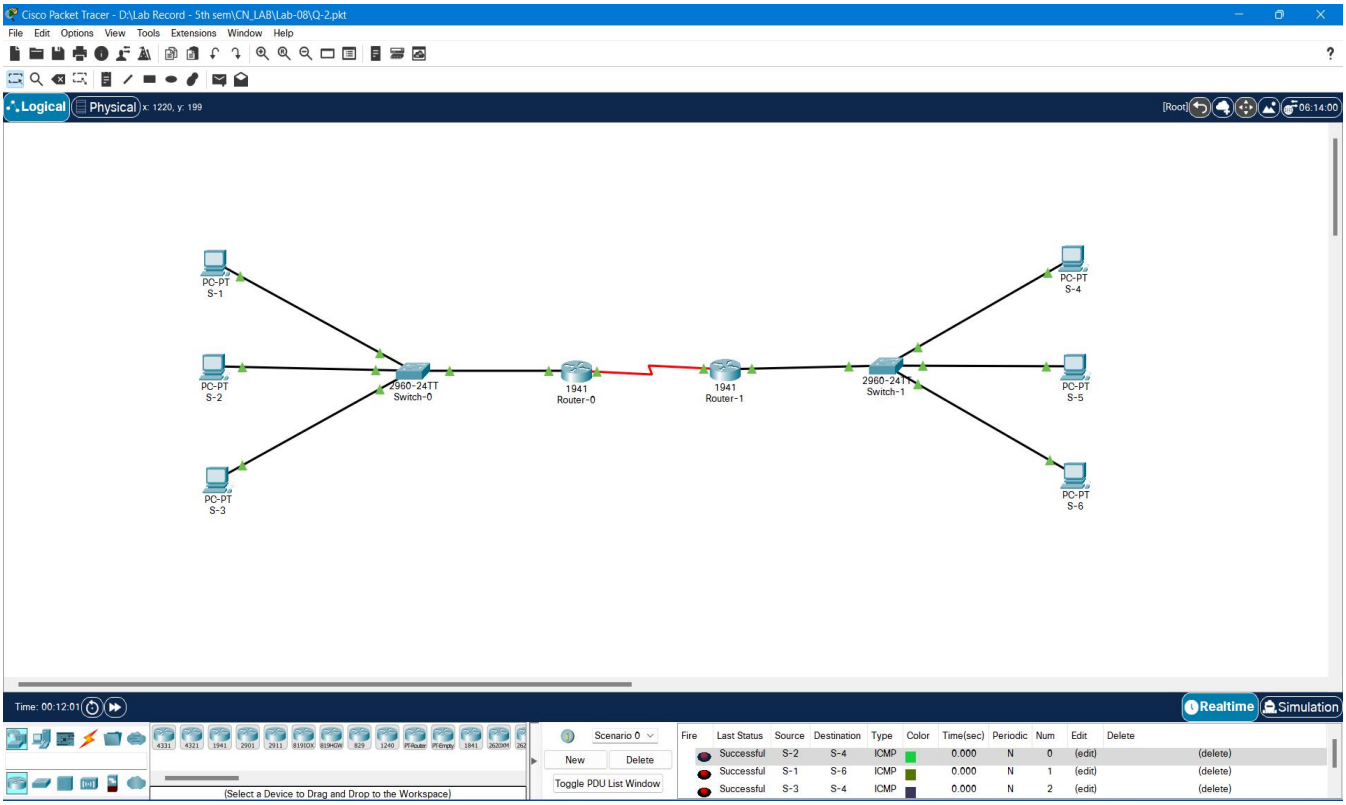
IP: [redacted] (Right side connected with 128.1.1.1 Router 2)

Router 2 →
IP: 172.16.1.1 (connected with LAN 2)
If: 128.1.1.2. (serial port connected with Router 1)

Setting route of router ① →
Network: 172.16.0.0
Subnet: 255.255.0.0
Next hop: 128.1.1.2.

Setting route of router ② →
Network: 10.0.0.0
Subnet: 255.0.0.0
Next hop: 128.1.1.1

iv) All the devices are connected through straight-through cable.
Both the routers are connected through serial DCE cable.


Cisco Packet Tracer - D:\Lab Record - 5th sem\CN_LAB\Lab-08\Q-2.pkt
File Edit Options View Tools Extensions Window Help
Logical
Physical
x: 1220, y: 199
[Root]
06:14:00
PC-PT S-1
PC-PT S-2
PC-PT S-3
2960-24TT Switch-0
1941 Router-0
1941 Router-1
2960-24TT Switch-1
PC-PT S-4
PC-PT S-5
PC-PT S-6
Time: 00:12:01
Realtime
Simulation
(Select a Device to Drag and Drop to the Workspace)
Scenario 0
New
Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete
Successful S-2 S-4 ICMP 0.000 N 0 (edit) (delete)
Successful S-1 S-6 ICMP 0.000 N 1 (edit) (delete)
Successful S-3 S-4 ICMP 0.000 N 2 (edit) (delete)

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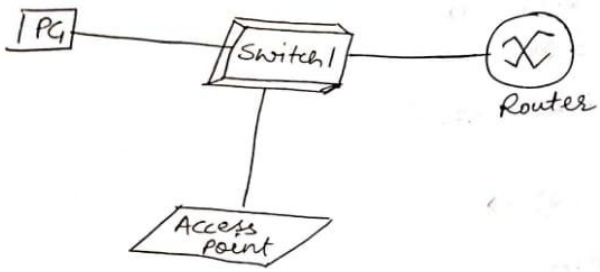
CN LAB - 09

① Wireless connection.



Process →

i) End devices → 2 PCs, 1 laptop, 1 tablet, 1 Phone, 1 printer.

Connecting devices → 1 switch, 1 Router, 1 access point.

ii) Configuration of end devices →

IP address of PC1 :- 10.1.1.2

Default Gateway of PC1 : 10.1.1.1

iii) Configuration of PC2.

- Adding wireless port (WMP300N)
- IP address : 10.1.1.3
- Default Gateway : 10.1.1.1
- Connecting to KAPIL343 wireless network through "PC- wireless" option (Pass key: 1234567890).

iv) Configuration to laptop →

- Adding wireless port (WPC200N)
- IP address : 10.1.1.4
- Default Gateway : 10.1.1.1
- Connecting to KAPIL343 wireless network through "PC- wireless" option. (Pass key : 1234567890).

v) Configuration of tablet →

- IP address : 10.1.1.5
- Default Gateway : 10.1.1.1
- Set WEP: KAPIL343 (Pass Key: 1234567890)

vi) Configuration of smartphone →

- IP address : 10.1.1.6
- Default Gateway : 10.1.1.1
- Set WEP: SSID → KAPIL343, PASS : 1234567890.

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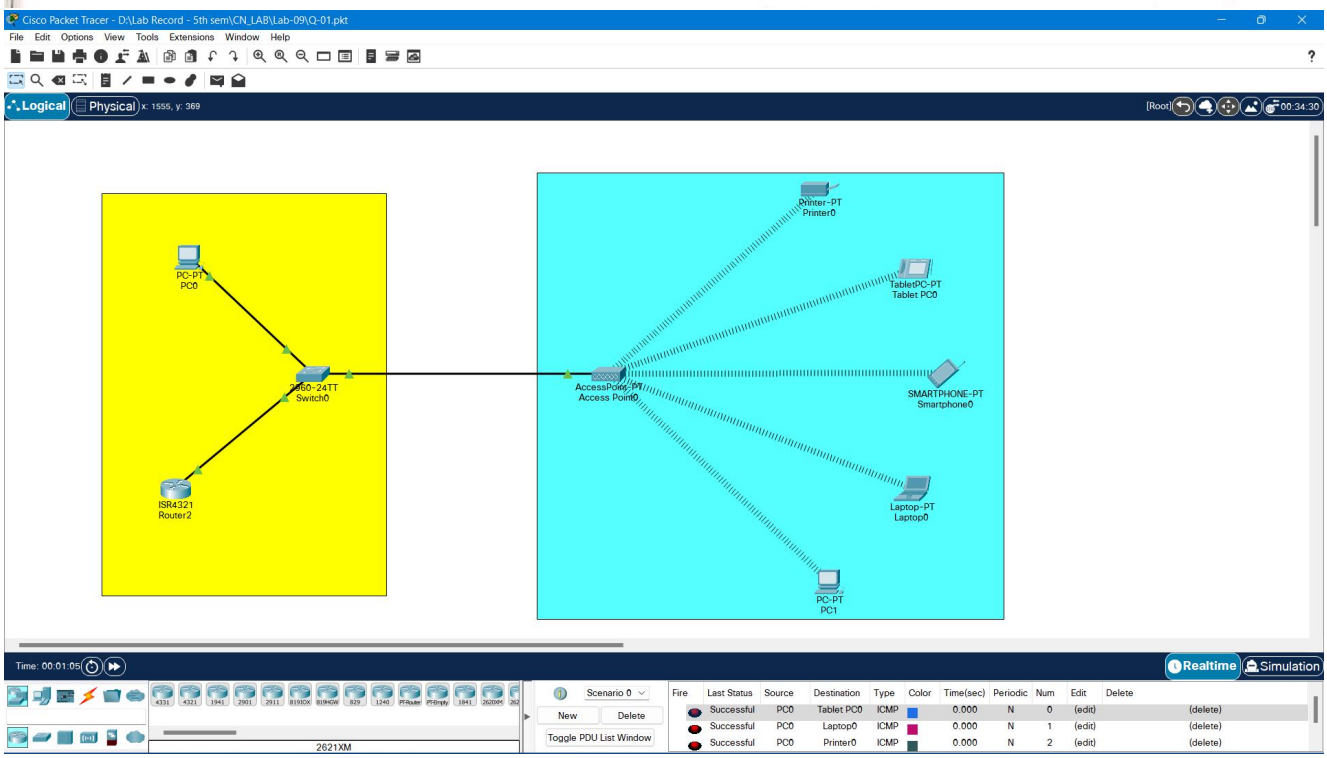
VII) Configuration of printer →

- IPaddress: 10.1.1.7
- Default Gateway: 10.1.1.1
- Adding wireless port.
- Connecting to KAPIL343 wireless network using Pass: 1234567890.

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