LAB MANUAL

Computer Networks (MCA-161)

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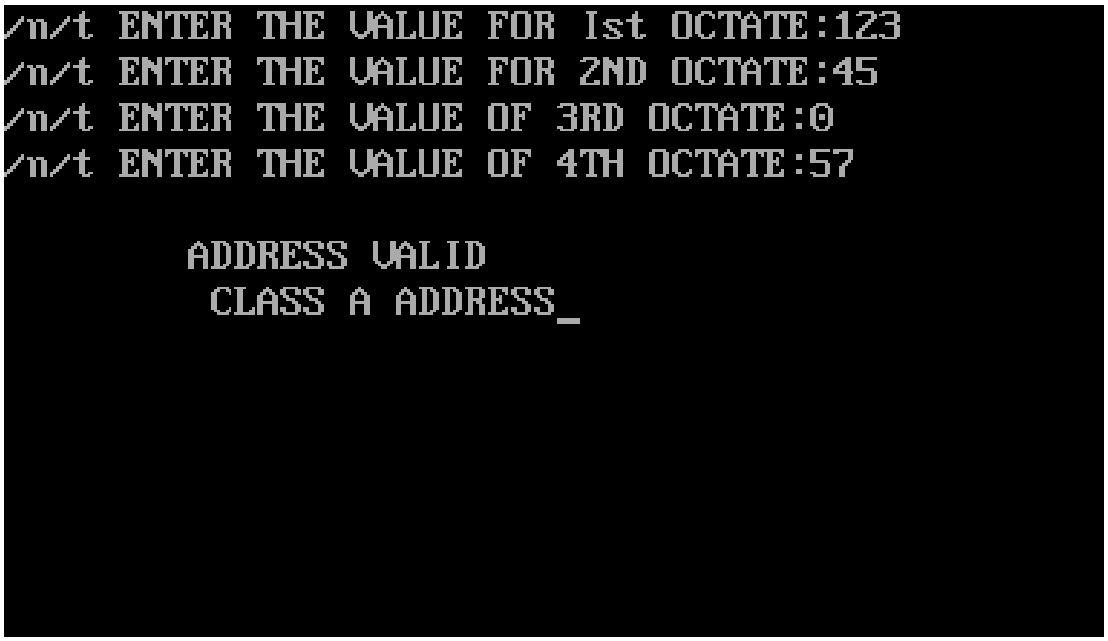
Q1. Write a program to find the class of IP address entered by user.

```
#include<iostream.h>
#include<conio.h>
#include<stdio.h>  void
main()
{
int a,b,c,d;
clrscr();
printf("/n/t  ENTER THE VALUE FOR Ist OCTATE:");
scanf("%d",&a);
printf("/n/t  ENTER THE VALUE FOR 2ND OCTATE:");
scanf("%d",&b);
printf("/n/t  ENTER THE VALUE OF 3RD OCTATE:");
scanf("%d",&c);
printf("/n/t  ENTER THE VALUE OF 4TH OCTATE:");
scanf("%d",&d);

if(a>=0  && a<=255 && b>=0 && b<=255 && c>=0 && c<=255 && d>=0 &&
d<=255)
{
printf("\n\tADDRESS  VALID");
}
else{
printf("\n\t  address inalid");
```

```
}
if(a>=1  && a<=126)
{
printf("\n\t  CLASS A ADDRESS");
}
else  if(a==127)
{
printf("\n\t  loopback  adress");
}
else  if(a>=128  && a<=191)
{
printf("\n\t  class  B address");
}
else  if(a>=192  && a<=233)
{
printf("\n\t  class  C address");
}
else  if(a>=234  && a<=239)
{
printf("\n\t  class  D address");
}
else  if(  a>=240 && a<= 254)
{
printf("\n\t  class  E address");
}
getch();
```

}

Output program 1:



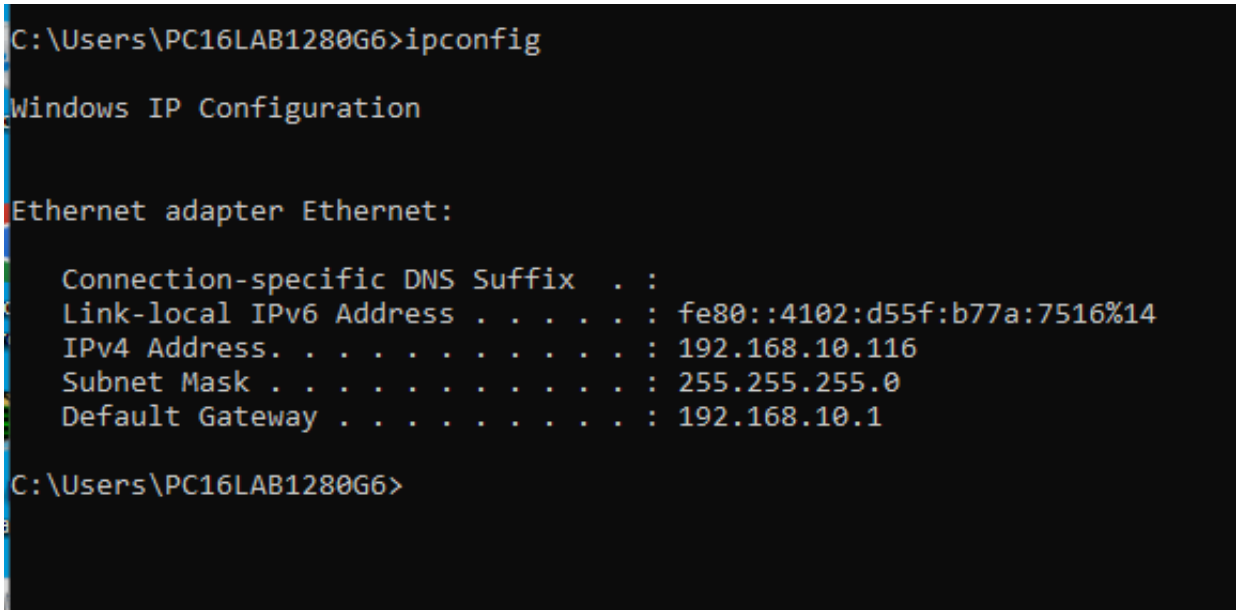
Q2 Illustrate the various networking commandsavailable.

1. ipconfig

Displays all current TCP/IP network configuration values and refreshes Dynamic Host Configuration Protocol (DHCP) and Domain Name System (DNS) settings.

(ipconfig /all): It tells us ethernet address.

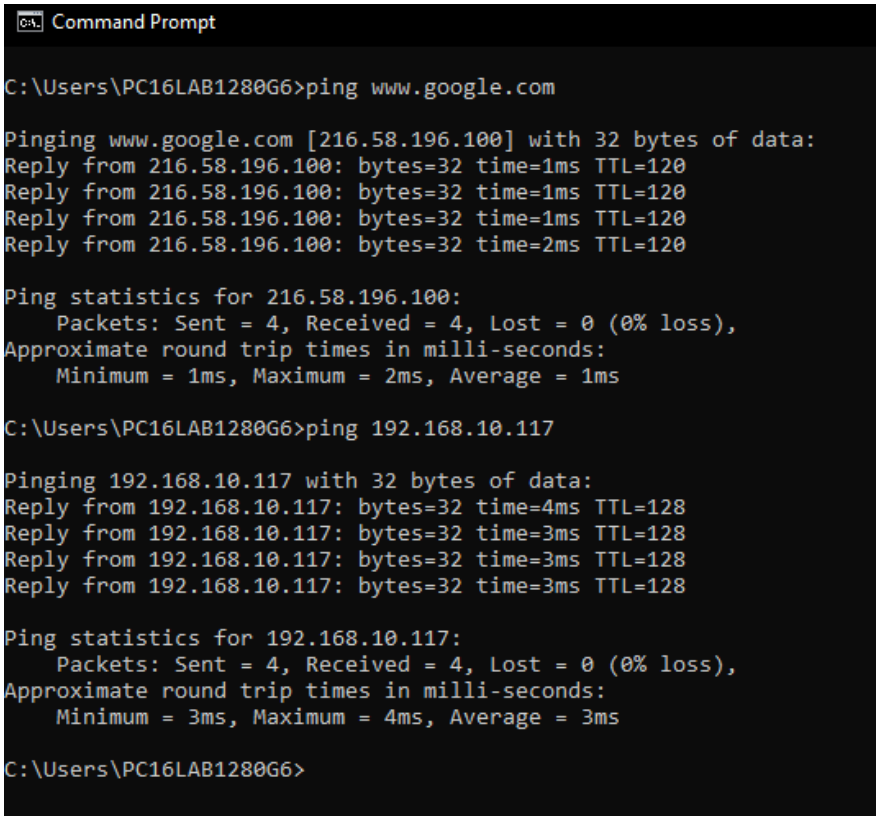
It gives mac(physical) and ip address.



2. PING

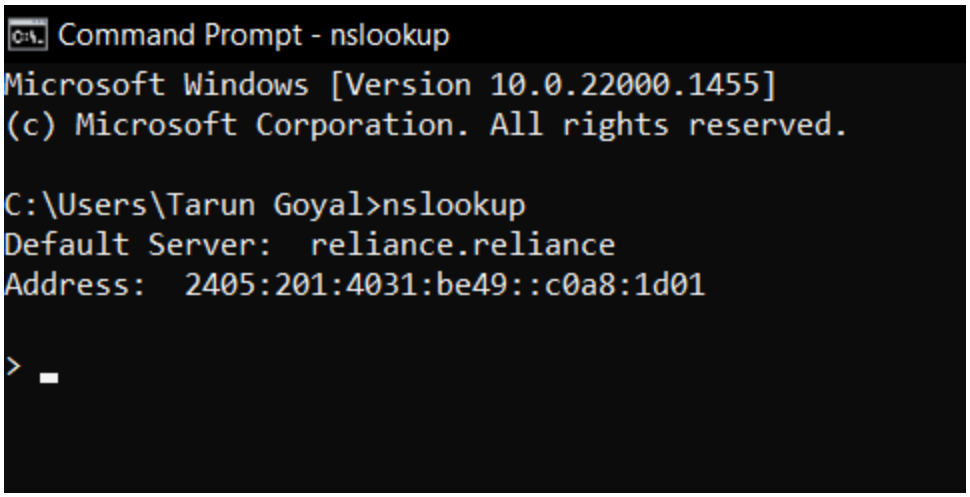
Its most basic use is to confirm network connectivity between two hosts. Ping sends out an ICMP echo request to which it expects an ICMP echo reply response.

(ping www.google.com or ping ip address)



3. NSLOOKUP

Stands for "Name Server Lookup" is a useful command for getting information from the DNS server. It is a network administration tool for querying the Domain Name System (DNS) to obtain domain name or IP address mapping or any other specific DNS record. It is also used to troubleshoot DNS-related problems.



4. tracert

The TRACERT diagnostic utility determines the route toa destination by sending Internet Control Message Protocol (ICMP) echo packets to the destination.

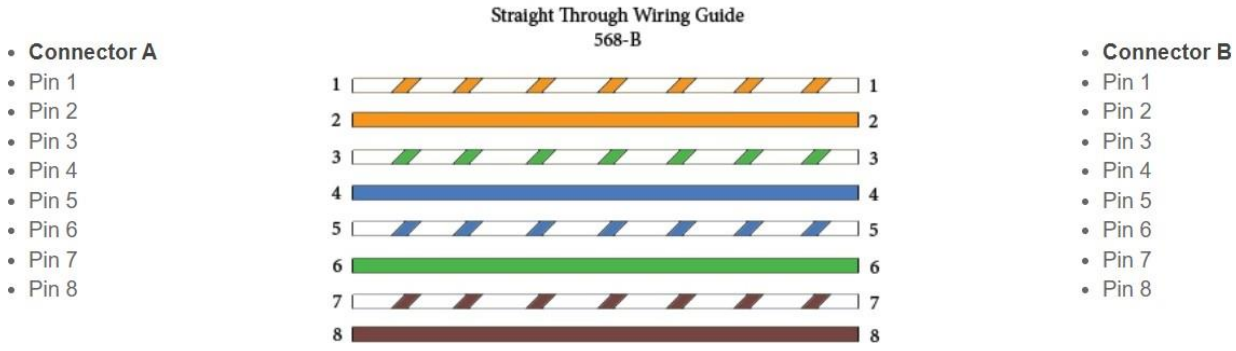
It tells up to and fro route of packet how many routers hit during packet transfer. first hit default gateway.It give finall address in last.

```
:\Users\PC16LAB1280G6>tracert www.bciit.com

racing route to hdr-nlb7-aebd5d615260636b.elb.us-east-1.amazonaws.com [54.161.222.85]
ver a maximum of 30 hops:

 1     1 ms    <1 ms     1 ms  192.168.10.1
 2     3 ms     1 ms    <1 ms  172.16.106.1
 3     3 ms     4 ms     4 ms  103.196.223.149
 4     4 ms     4 ms     3 ms  10.100.8.5
 5     3 ms     2 ms     4 ms  219.65.112.233.static-delhi.vsnl.net.in [219.65.112.233]
 6    44 ms    45 ms    45 ms  172.31.167.54
 7    39 ms    39 ms    39 ms  14.141.123.226.static-Chennai.vsnl.net.in [14.141.123.226]
 8    39 ms    39 ms    41 ms  ix-ae-4-2020.tcore1.cxr-chennai.as6453.net [180.87.36.165]
 9     *        *        *     Request timed out.
10     *        *        *     Request timed out.
11   259 ms   260 ms   259 ms  if-ae-36-2.tcore3.aeq-ashburn.as6453.net [216.6.87.110]
12   262 ms   263 ms   264 ms  216.6.87.227
13     *        *        *     Request timed out.
14     *        *        *     Request timed out.
15   260 ms   260 ms   260 ms  52.93.28.114
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.
```

Q3. Illustrate the functioning of straight through, cross over and role over wire cable commonly used in LAN connection.

a) Straight-Through Cables

Straight-Through refers to cables that have the pin assignments on each end of the cable. In other words, Pin 1 connector A goes to Pin 1 on connector B, Pin 2 to Pin 2, etc. Straight-Through wired cables are most commonly used to connect a host to a client. When we talk about cat5e patch cables, the Straight-Through wired cat5e patch cable is used to connect computers, printers, and other network client devices to the router switch or hub (the host device in this instance).

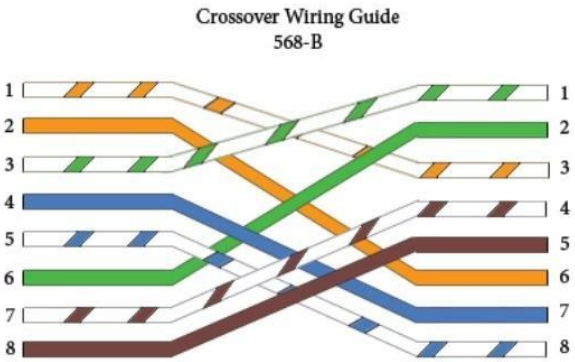


B .Cross-over cables

Crossover wired cables (commonly called crossover cables) are very much like Straight-Through cables with the exception that TX and RX lines are crossed (they are at opposite positions on either end of the cable. Using the 568-Bstandard as an example below, you will see that Pin 1 on connector A goes to Pin 3 on connector B. Pin 2 on connector

A goes to Pin 6 on connector B, etc. Crossover cables are most commonly used to connect two hosts directly. Examples would be connecting a computer directly to another computer, connecting a switch directly to another switch, or connecting a router to a router. Note: While in the past, when connecting two host devices directly, a crossover cable was required. Nowadays, most devices have auto-sensing technology that detects the cable and device and crosses pairs when needed.

- **Connector A**
- Pin 1
- Pin 2
- Pin 3
- Pin 4
- Pin 5
- Pin 6
- Pin 7
- Pin 8

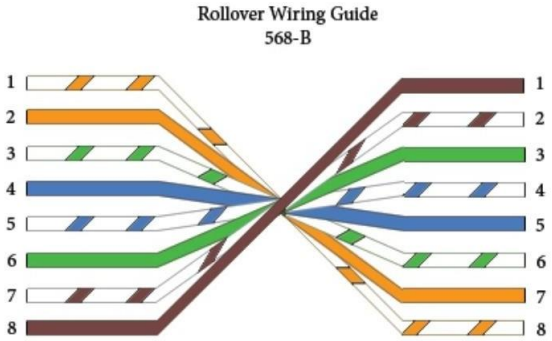


- **Connector B**
- Pin 1
- Pin 2
- Pin 3
- Pin 4
- Pin 5
- Pin 6
- Pin 7
- Pin 8

c. Rollover cables

Rollover wired cables, most commonly called rollover cables, have opposite Pin assignments on each end of the cable or, in other words, it is "rolled over." Pin 1 of connector A would beconnected to Pin 8 of connector B. Pin 2 of connector A would be connected to Pin 7 of connector B and so on. Rollover cables, sometimes referred to as Yost cables are most commonly used to connect to a device's console port to make programming changes to the device. Unlike crossover and straight-wired cables, rollover cables are not intended to carry data but instead create an interface with the device.

- **Connector A**
- Pin 1
- Pin 2
- Pin 3
- Pin 4
- Pin 5
- Pin 6
- Pin 7
- Pin 8

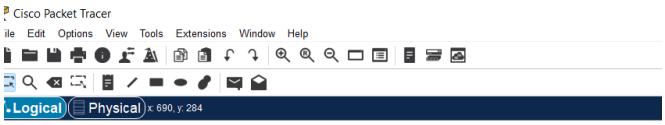


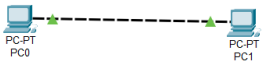
- **Connector B**
- Pin 1
- Pin 2
- Pin 3
- Pin 4
- Pin 5
- Pin 6
- Pin 7
- Pin 8

Q4. Study the cisco packet tracer and simulate peer to peer network using ciscopacket tracer.

Steps for peer to peer connection.

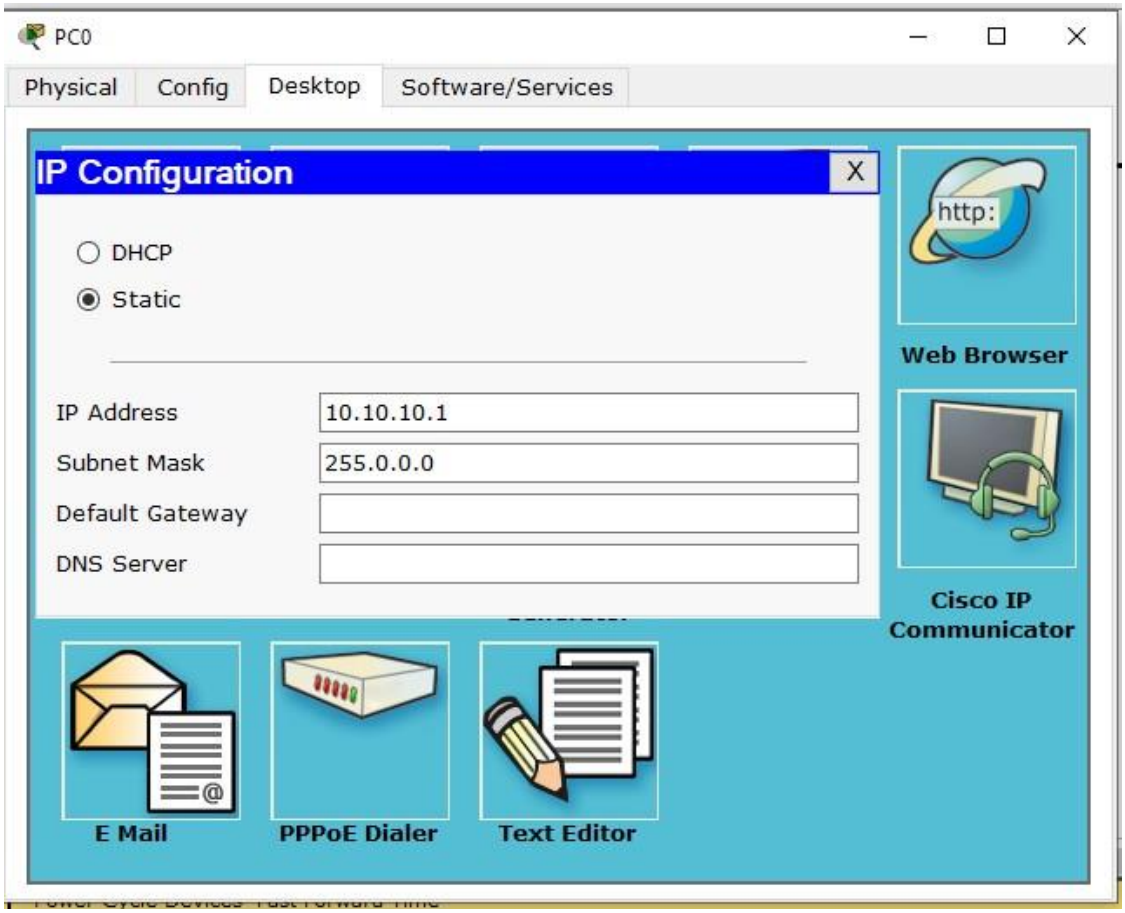
1. open software packet tracer
2. click End Devices icon (lower left corner) or press CTRL + ALT + V
3. drag icon general (Personal Computer) and drop to worksheets.
4. click Connections icon or press CTRL + ALT + 0 , then click Automatically Choose Connection Type.





5. click PC0 then click PC1.
6. double click PC0.
7. Desktop tab, then click IP Configuration.
8. set IP Address for PC0.

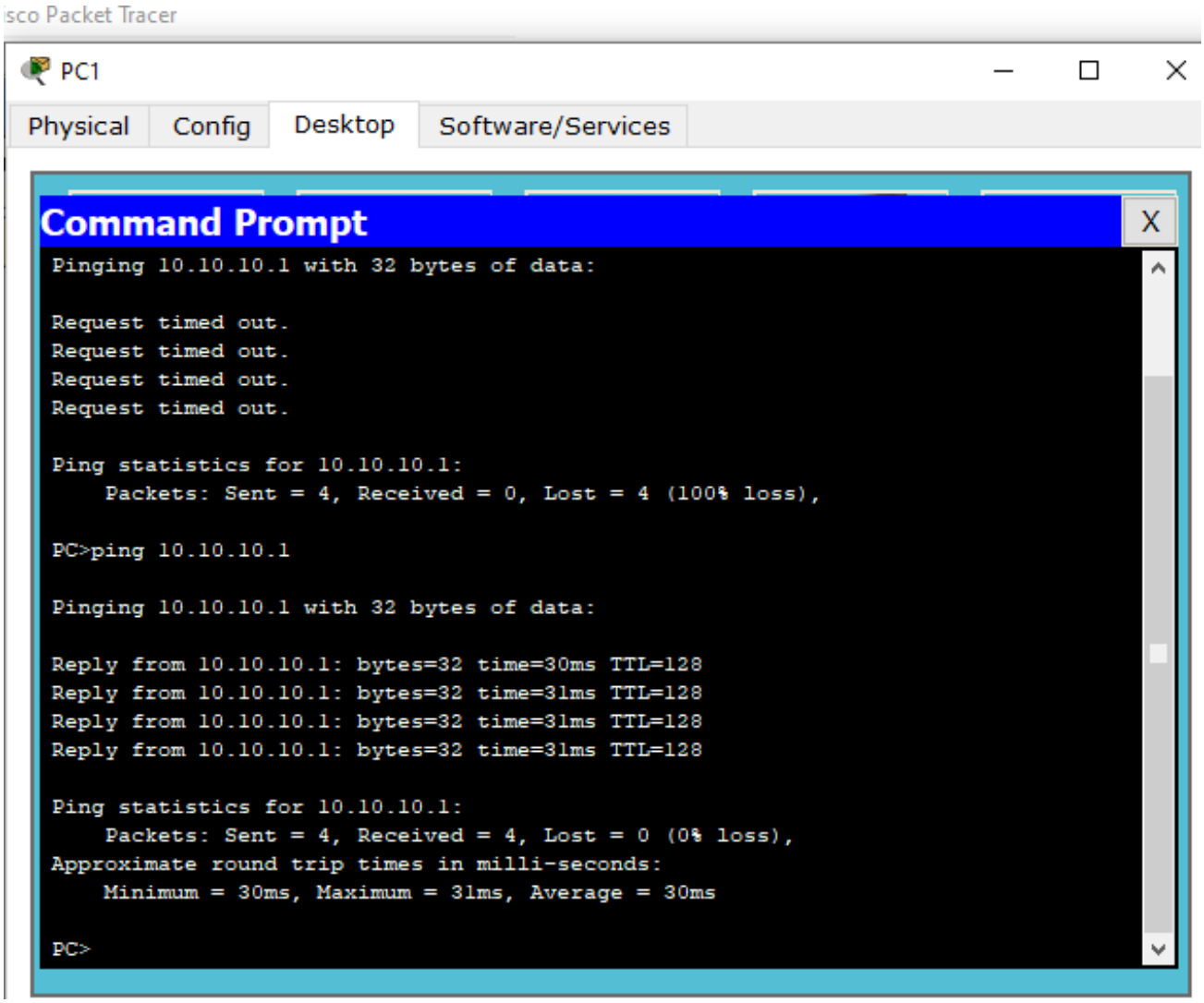
IP Address PC0 = 10.10.10.1



9. close window PC0
10. double click PC1
11. Desktop tab, then click IP Configuration.
12. set IP Address for PC1. IP Address

PC0 = 10.10.10.2

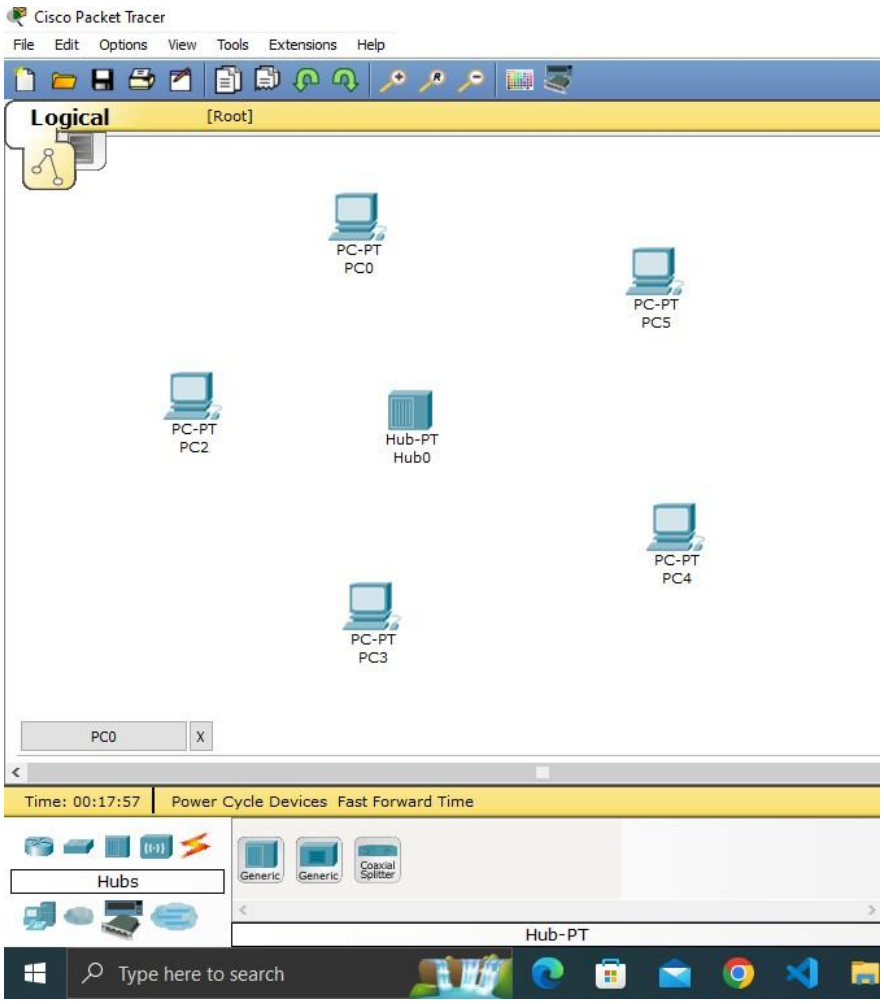
13. Desktop tab, then click Command Prompt
14. type ping 10.10.10.1 then enter
15. if it appears as shown below, it means PC0 and PC1 areconnected and successful.



Q5. Simulate LAN using HUB.

Steps for simulate LAN using HUB

1. open software packet tracer
2. click End Devices icon (lower left corner) or press CTRL + ALT + V
3. drag icon general (Personal Computer) and drop to worksheets.
4. Drag a HUB.



5. click Connections icon or press CTRL + ALT + 0 , then click Automatically Choose Connection Type.

6. click PC0 then click HUB

7. double click PC0.

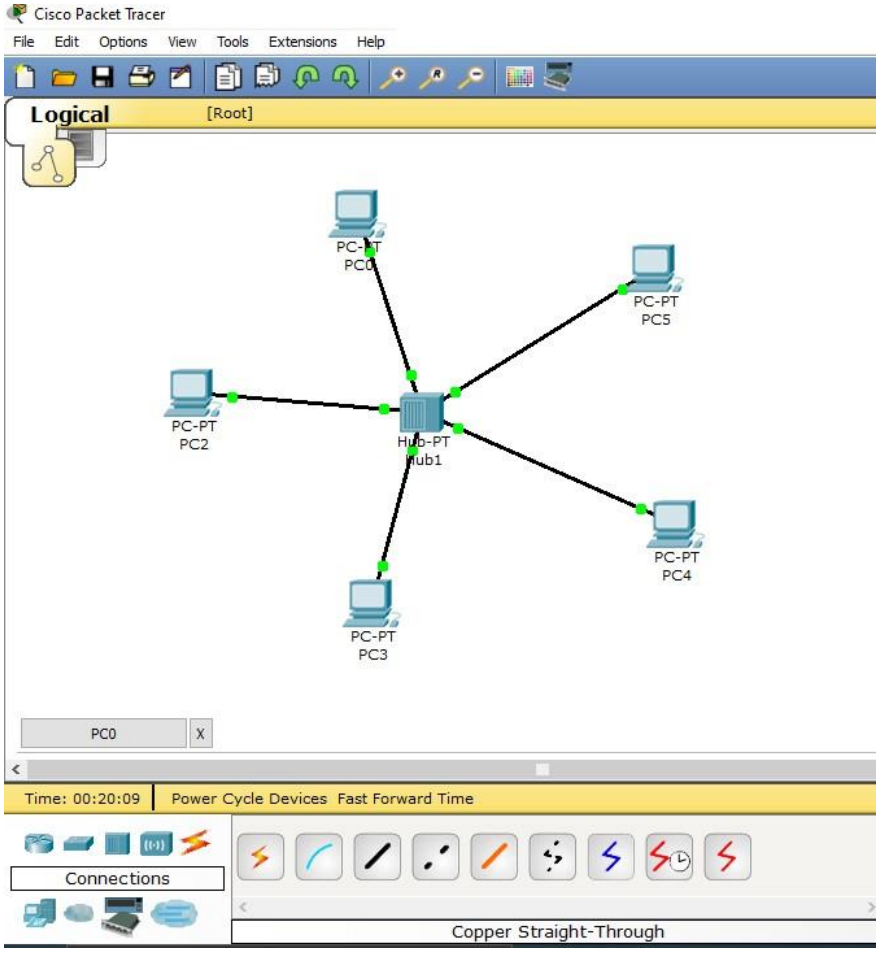
8. Desktop tab, then click IP Configuration.

9. set IP Address for PC0.

IP Address PC0 = 10.10.10.1

10. Repeat steps 5 to 8 for all PCs.

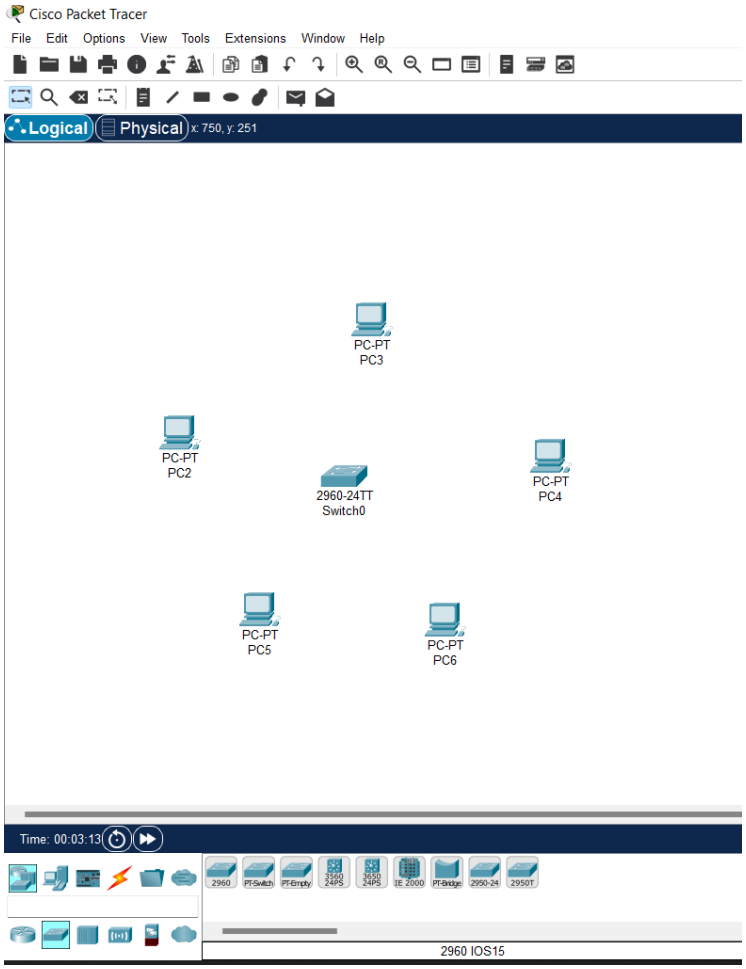
11. If it shows GREEN dots on both the end of cable it means connection establish successfully.



Q6. Simulate LAN using SWITCH.

Steps for simulate LAN using SWITCH:

1. open software packet tracer
2. click End Devices icon (lower left corner) or press CTRL + ALT + V
3. drag icon general (Personal Computer) and drop to worksheets.
4. Drag a Switch.



5. click Connections icon or press CTRL + ALT + 0 , then click Automatically Choose Connection Type.

6. click PC0 then click SWITCH

7. double click PC0.

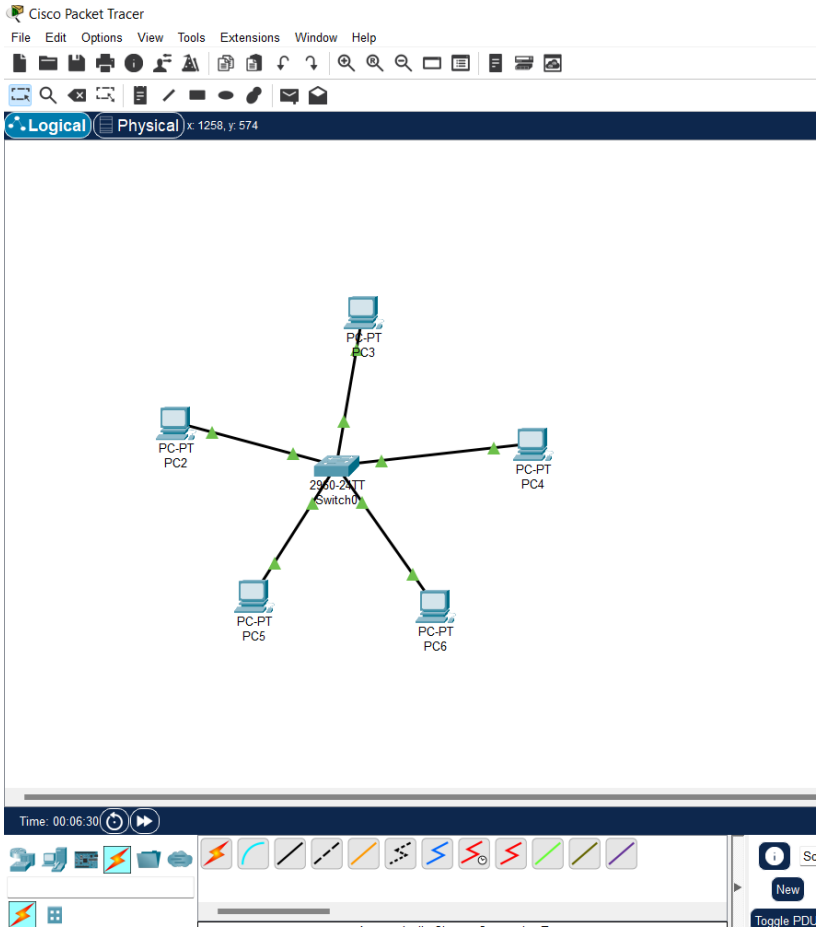
8. Desktop tab, then click IP Configuration.

9. set IP Address for PC0.

IP Address PC0 = 10.10.10.1

10. Repeat steps 5 to 8 for all PCs.

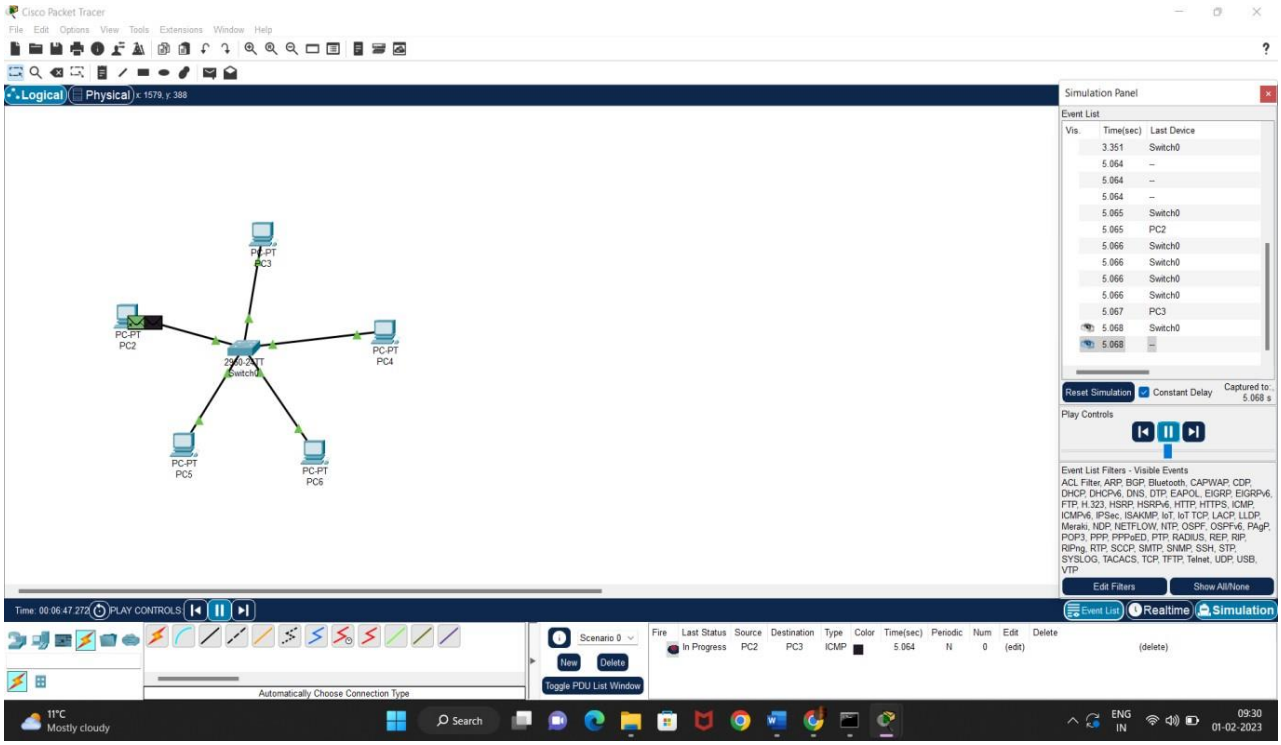
11. If it shows GREEN dots on both the end of cable it means connection establish successfully.



12. Enter into simulation mode.

13. Select packet.

14. Click on sender PC, then Click on receiving PC.15 play.



Q7. Simulate LAN using ROUTER.

Steps for simulate LAN using ROUTER:

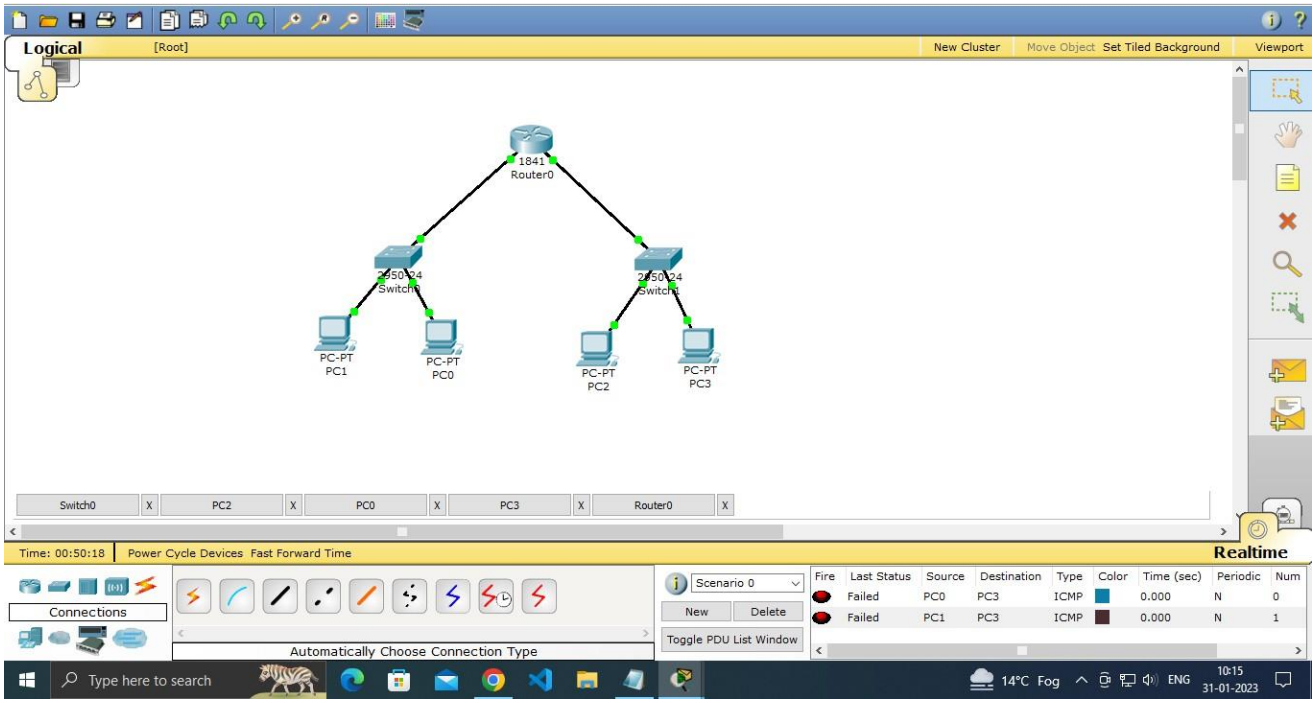
1. open software packet tracer
2. click End Devices icon (lower left corner) or press CTRL + ALT + V
3. drag icon general (Personal Computer) and drop toworksheets.
4. Drag a Switch.
5. repeat steps 3 and 4 to make another LAN on same worksheet.
6. Drag a ROUTER.
7. connect both switches with router.
8. 5. click Connections icon or press CTRL + ALT + 0 , thenclick Automatically Choose Connection Type.
9. click PC0 then click SWITCH
10. double click PC0.
11. Desktop tab, then click IP Configuration.
12. set IP Address for PC0. IP

Address PC0 = 10.10.10.1

13. Repeat steps 5 to 8 for all PCs
14. connect SWITCES with ROUTER PORT and assign Default gateway of switches as ROUTER IP.

Note: must ensure that network is of different class.

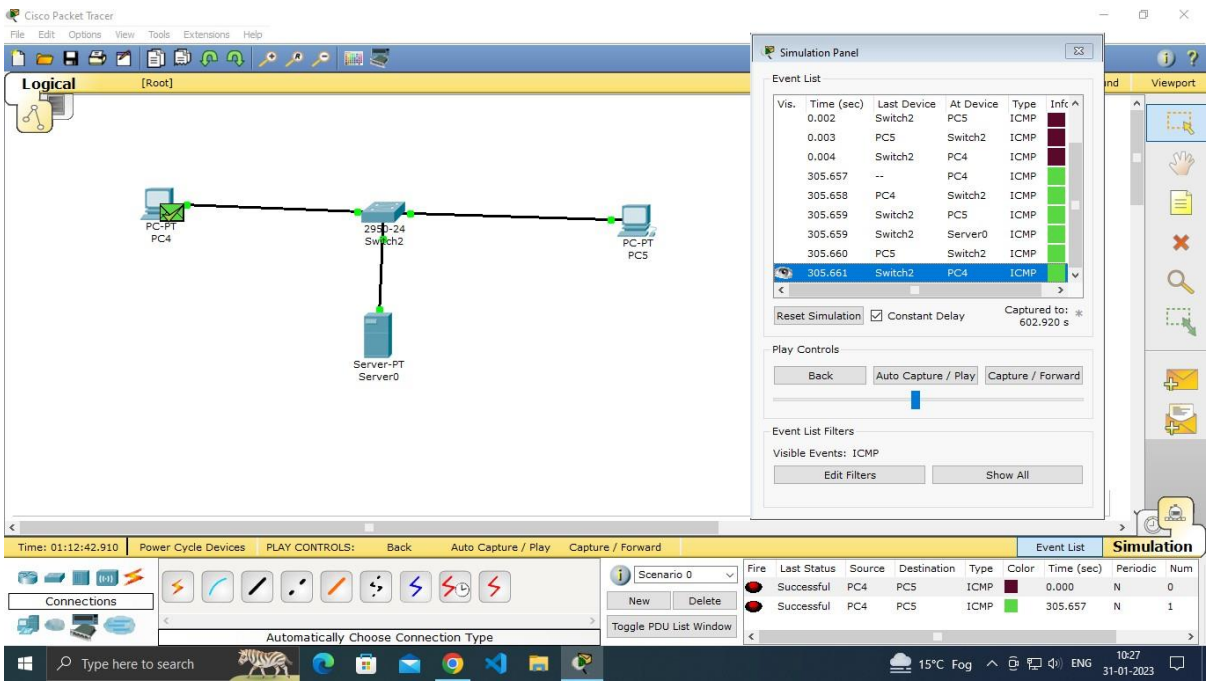
15. If it shows GREEN dots on both the end of cable it means connection establish successfully.



Q8. Create a client-server network and show steps to send a simple PDU in simulation mode.

Steps for client-server

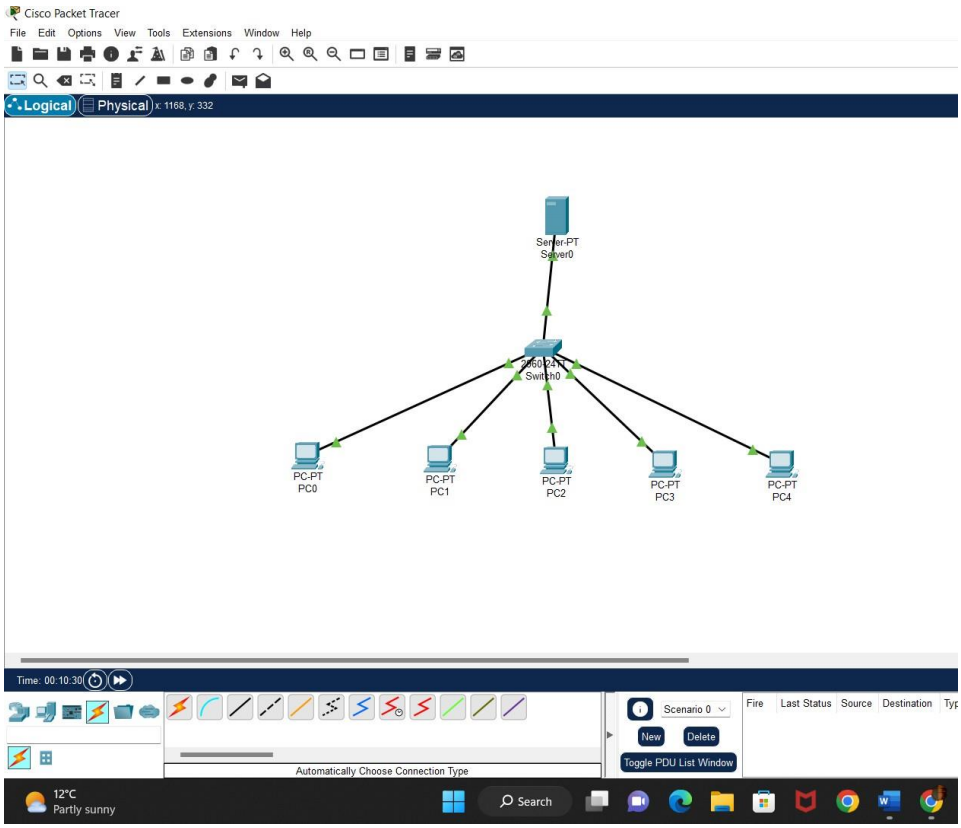
1. Drag two PCs.
2. Drag switch.
3. Connect PCs two Switch.
4. Double click on PC and assign IP address to both and default gateway.
5. Drag Server to worksheet
6. Give same default gateway to server as PC.
7. Green dots means connection established successfully.



Q9. Configure a service DHCP server and autoconfigure to such clients through the server.

Steps for DHCP server:

1. Drag 5 PC, 1Switch, 1Router
2. Connect PCs to Switch.
3. Connect Switch to Router.
4. Double click on Router go to desktop tab
5. Give IP ADDRESS 192.168.20.1
6. Go to Services
7. Select DHCP
8. ENTER IP address and DNS address as 10.0.0.1
9. Double click on PC



10. Go to desktop
11. Click on IP
12. Select DHCP, it will automatically give IP address by requesting to DHCP
13. Enter into simulation mode
14. Select packet.
15. Select sender and receiver PC.
16. Play.