

Worksheet – 2.1

Student Name: Vivek Kumar

UID: 21BCS8129

Branch: BE-CSE (LEET)

Section/Group: 809/A

Semester: 4th

Date of Performance: 28/03/2022

Subject Name: Computer Network Lab

Subject Code: 20CSP-257

1. Aim/Overview of the practical:

Create a network that shows the working of Hub and also write the steps how to implement it.

2. Task to be done/ Which logistics used:

- Implementation of Switch
- Implementation of HUB

Prerequisites:

S/W:

- Laptop/Desktop
- CISCO Packet Tracer program

H/W:

- Main Memory - 128 MB RAM
- Hard Disk – minimum 20 GB IDE Hard Disk
- 44 MB Floppy Disk Drive
- –52X IDE CD-ROM Drive
- PS/2 HCL

3. Steps for experiment/Code with Result/Output:

Working of Hub:

Hubs were the common network infrastructure devices used for LAN. Hubs function as the central connection point for LANs. Hubs are designed to work with Twisted pair cabling and normally use RJ45 jack to connect the devices. Network devices (Servers, Workstations,

Printers, Scanners etc) are attached to the hub by individual network cables. Hubs usually come in different shapes and different numbers of ports.

When a hub receives a packet of data at one of its ports from a network device, it transmits the packet to all of its ports to all of the other network devices. If two network devices on the same network try to send packets at the same time a collision is said to occur.

Hubs operate in such a way that all data received through one port is sent to all other ports. This type of operation creates an extremely unsecure environment and anyone can sniff the network using a sniffer and any unencrypted traffic over the network is not secure. Hubs are unsecure LAN device. Hubs are considered to operate at Physical Layer (Layer 1) of OSI model.

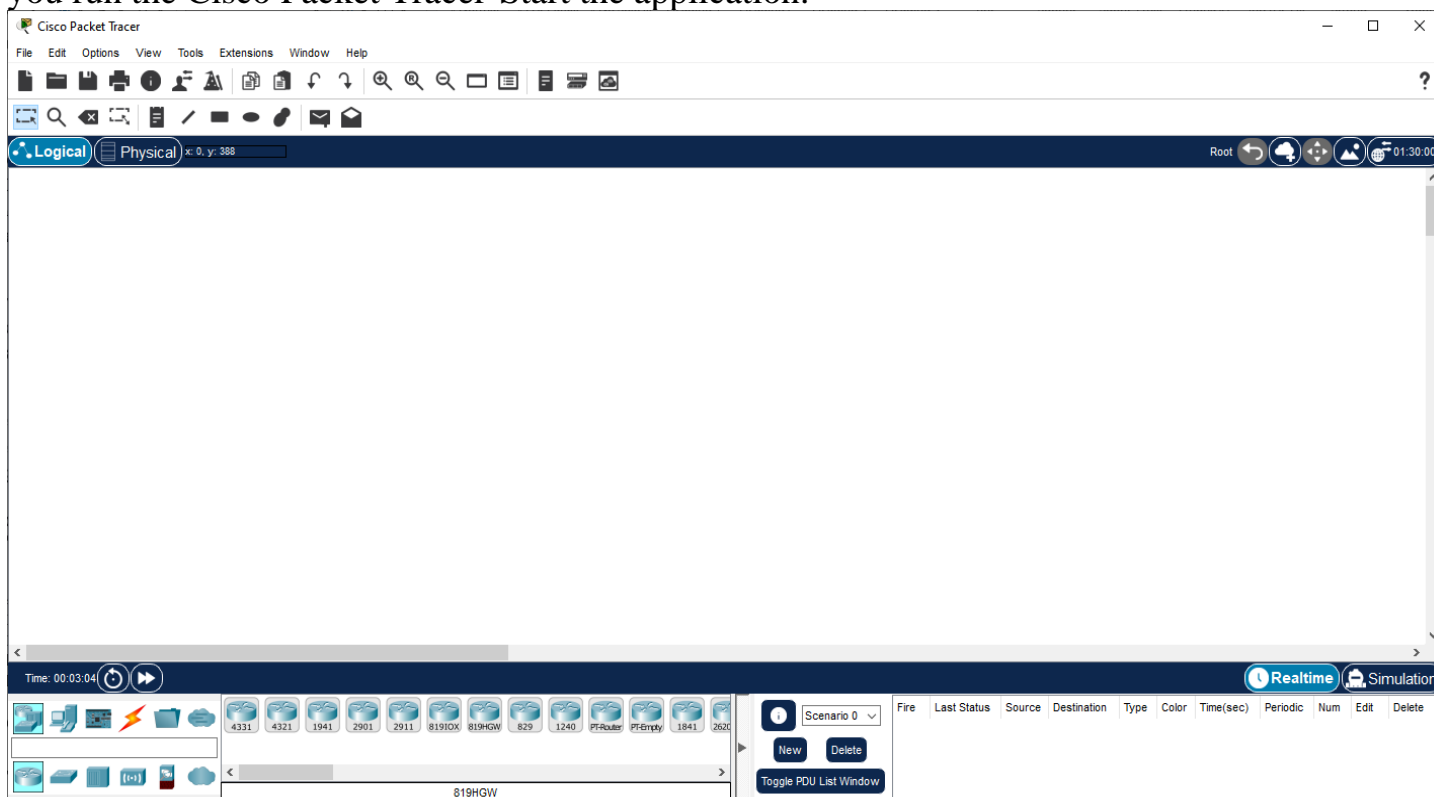
Setting Up:

Follow the below steps to initiate the setup for the connection:

Step 1: Download Cisco Packet Tracer.

Step 2: Run and install the setup (You can be requested to log in to your Cisco Networking Academy Account or you can also log in as a guest).

Step 3: After the installation procedure has completed this display (below) will appear when you run the Cisco Packet Tracer-Start the application.



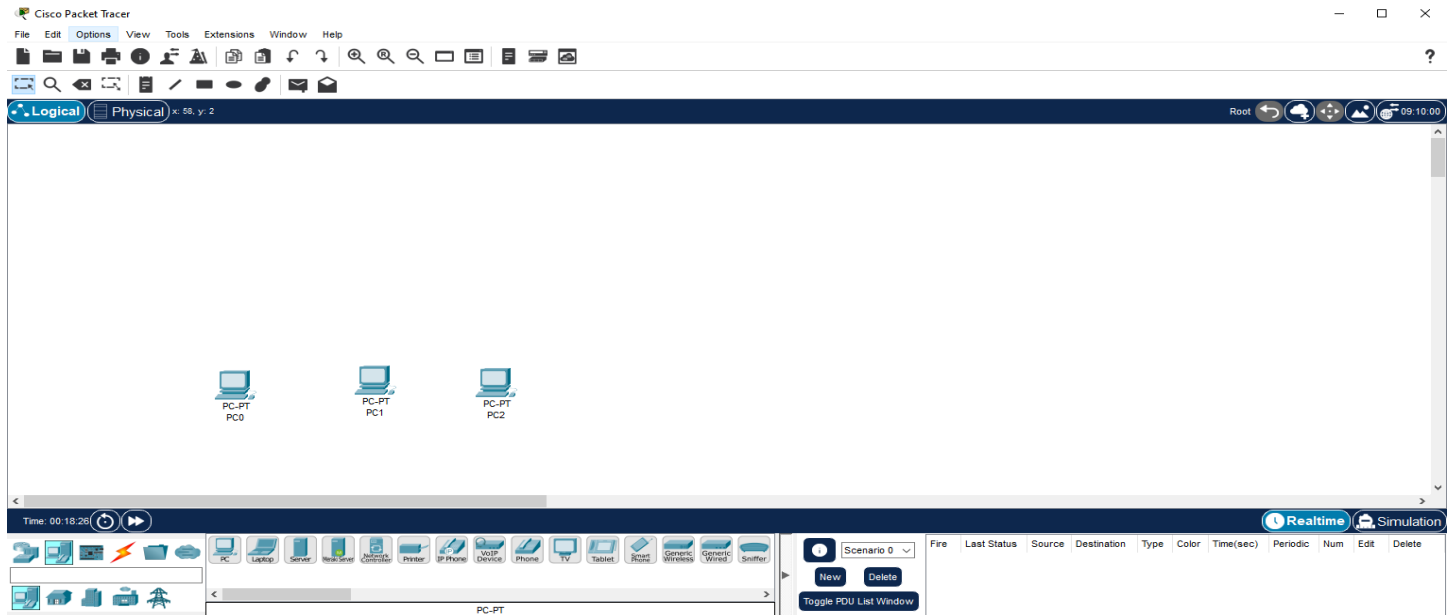
Cisco Packet Tracer

Implementation of Hub:

Follow the below steps to implement the connection:

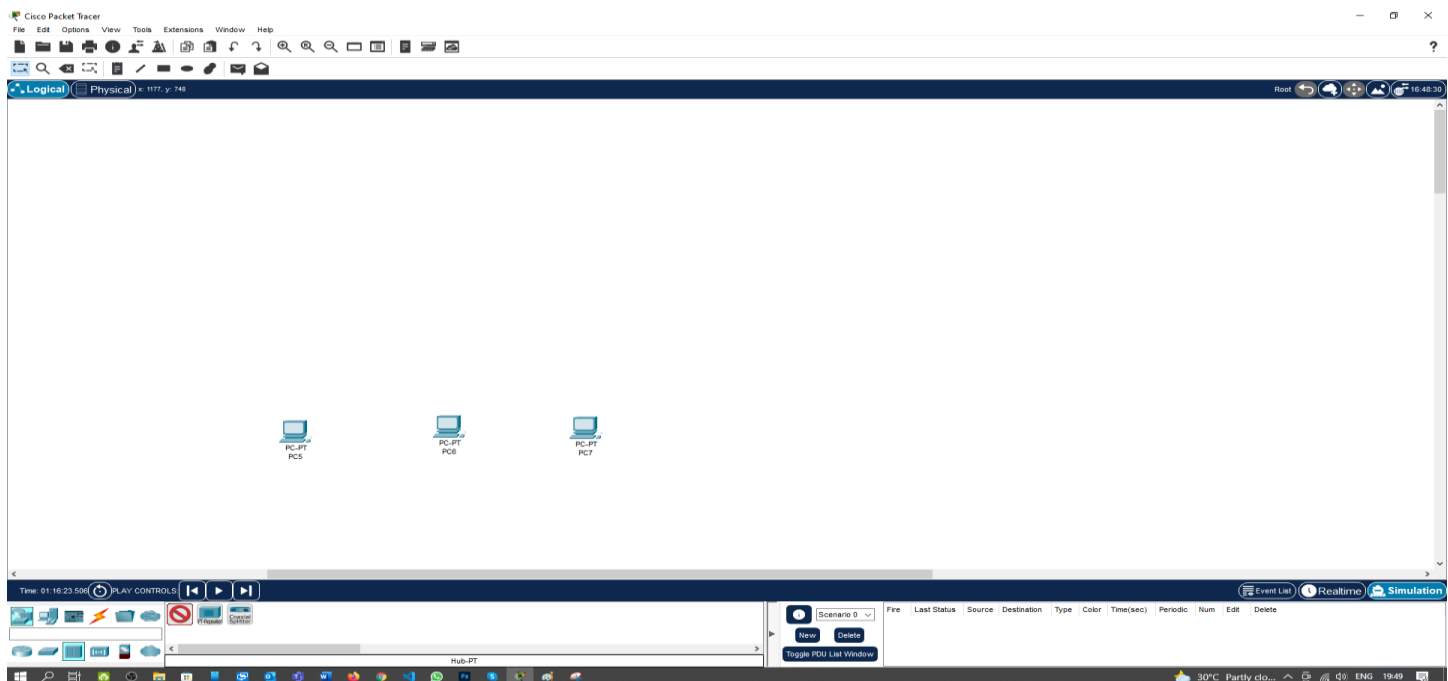
Step 1: From the bottom toolbar, click on 'End Devices' and select 'PC' and then click on the screen (for three PC's do this step trice).

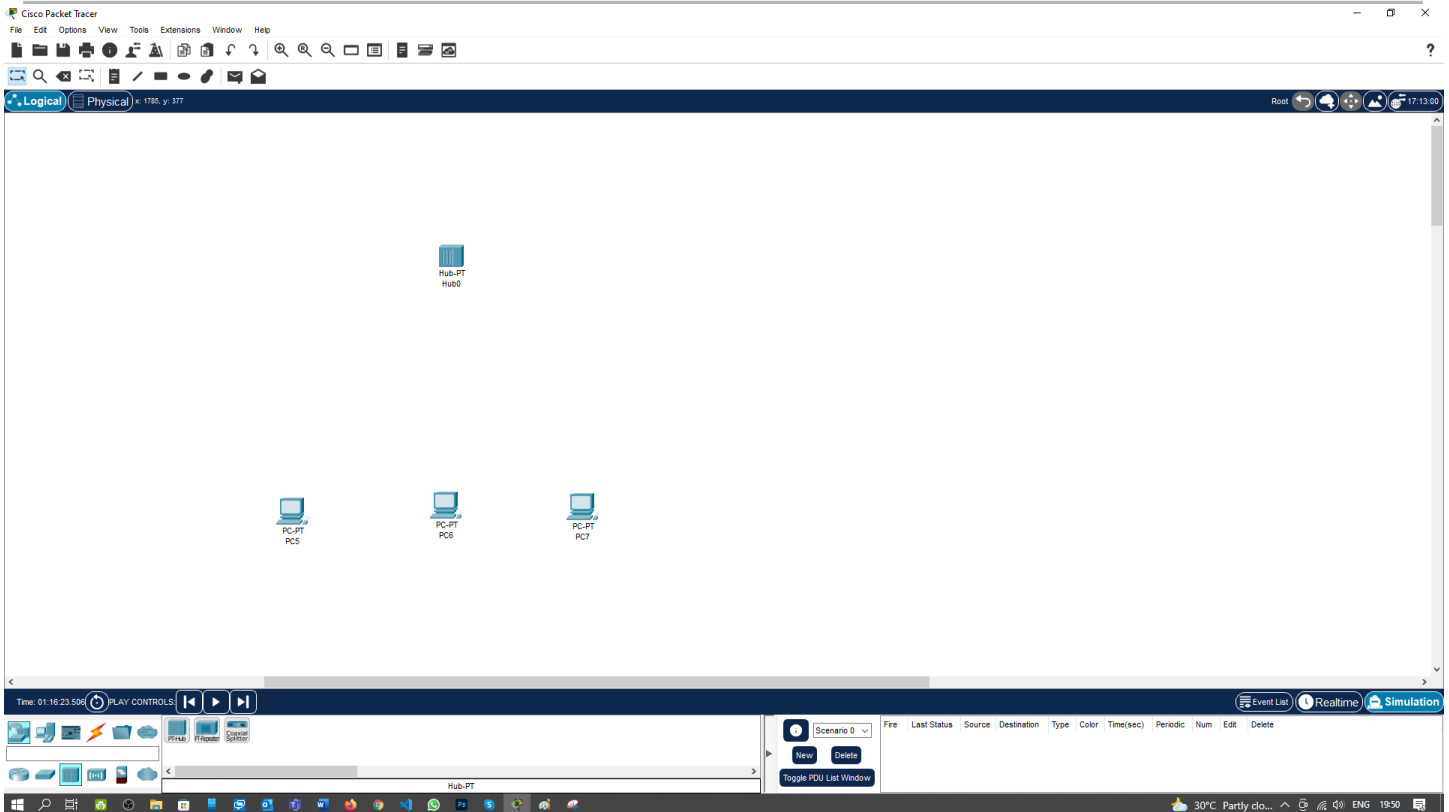
Bottom toolbar->End devices->PC



Step 2: Now to select the Network devices from bottom bar select the switch and then select the PT-Hub and then click on the screen.

Bottom toolbar-> Network devices ->Hub -> PT-Hub

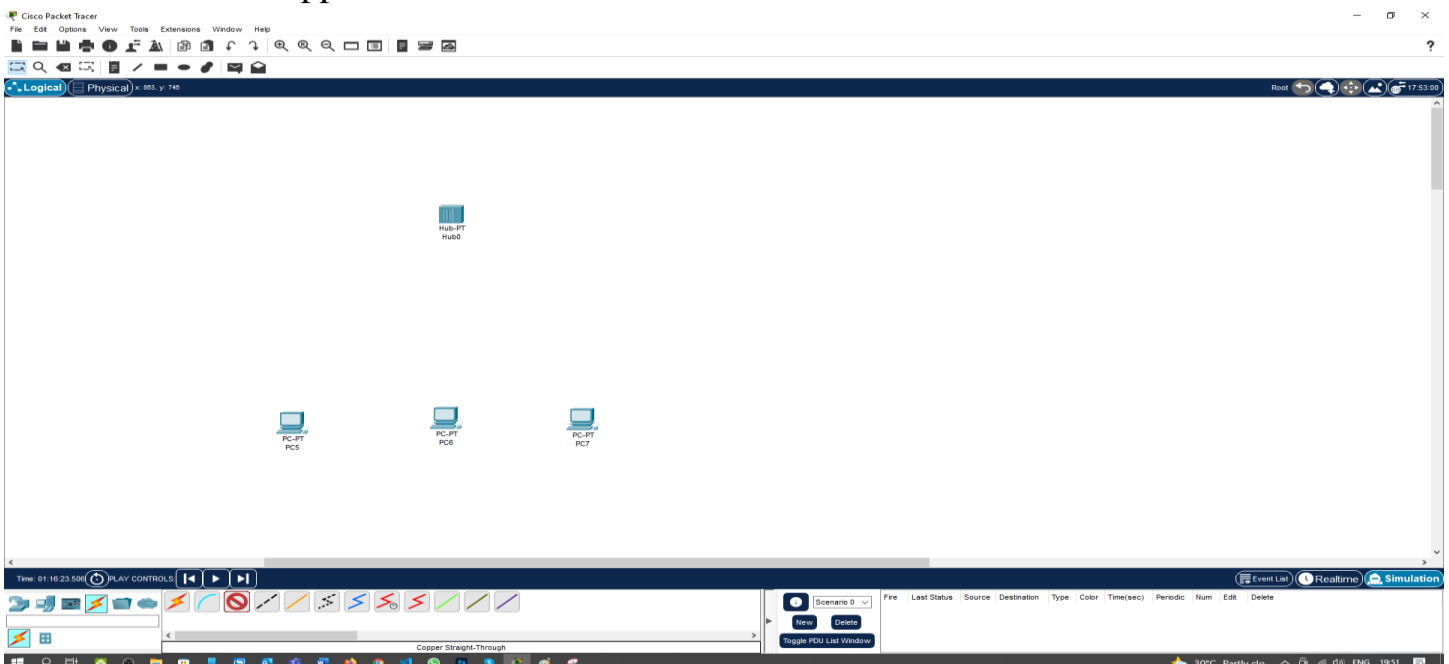




Step 3: Now to select the Connections from bottom bar and select the Couper Straight-Through wire.

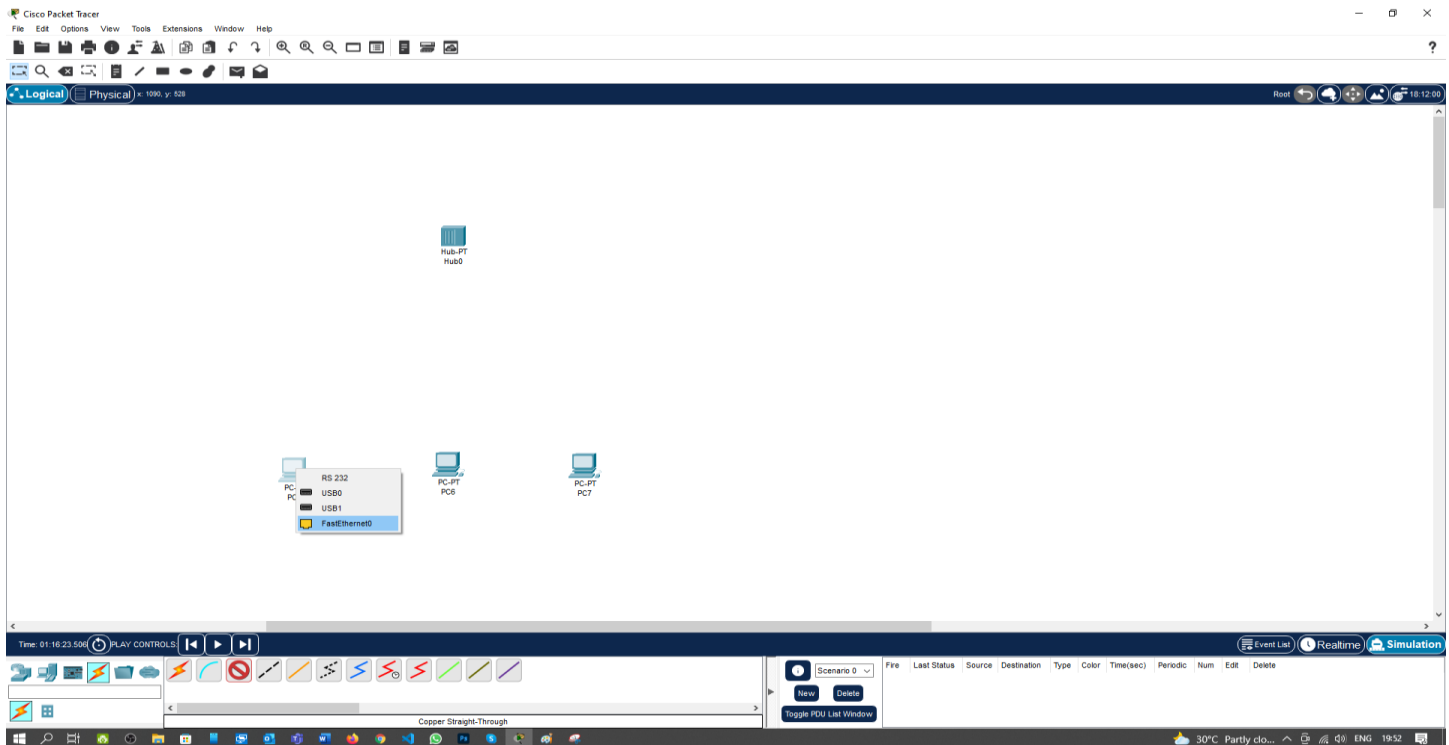
Bottom toolbar-> Connections -> Couper Straight-Through

This is how it will appear on the screen



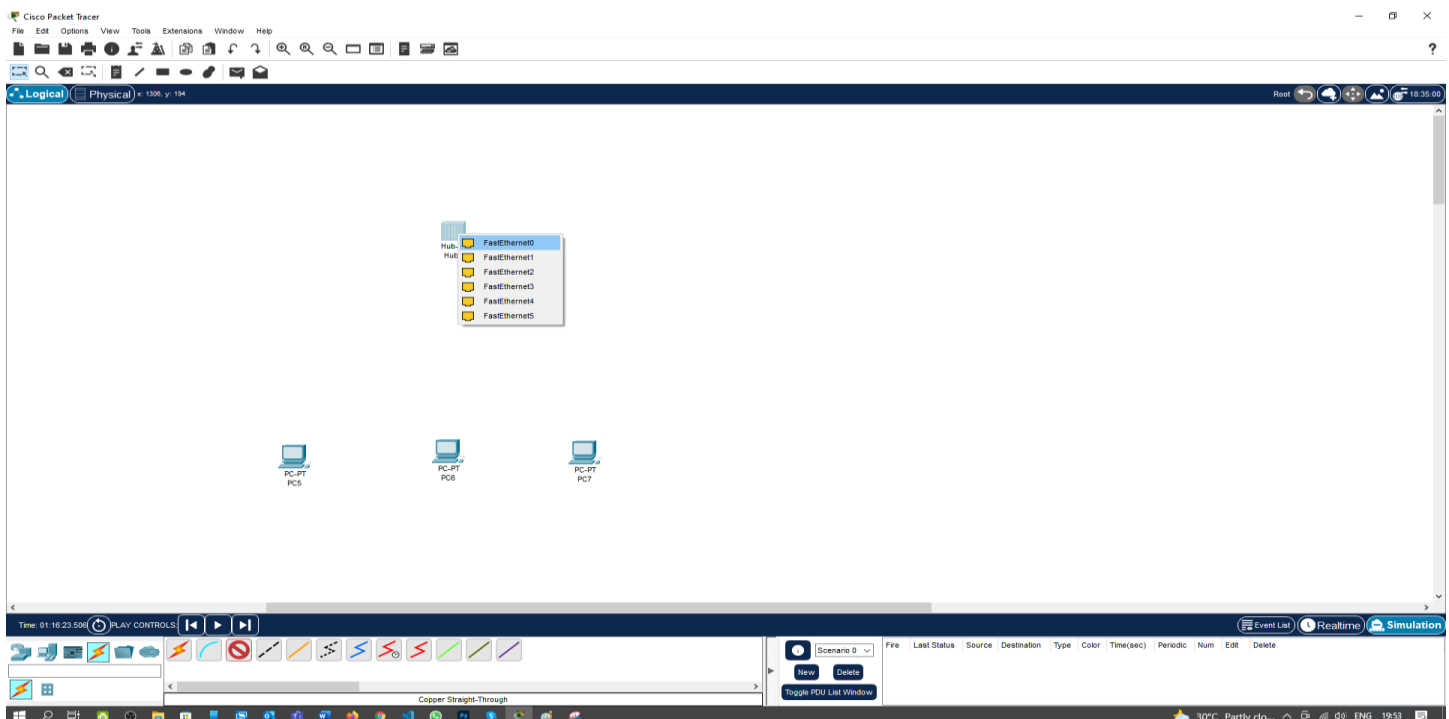
Step 4: Now to select the PC 0 you will get the Popup for the port then select the FastEthernet0.

Select PC 0 -> FastEthernet0

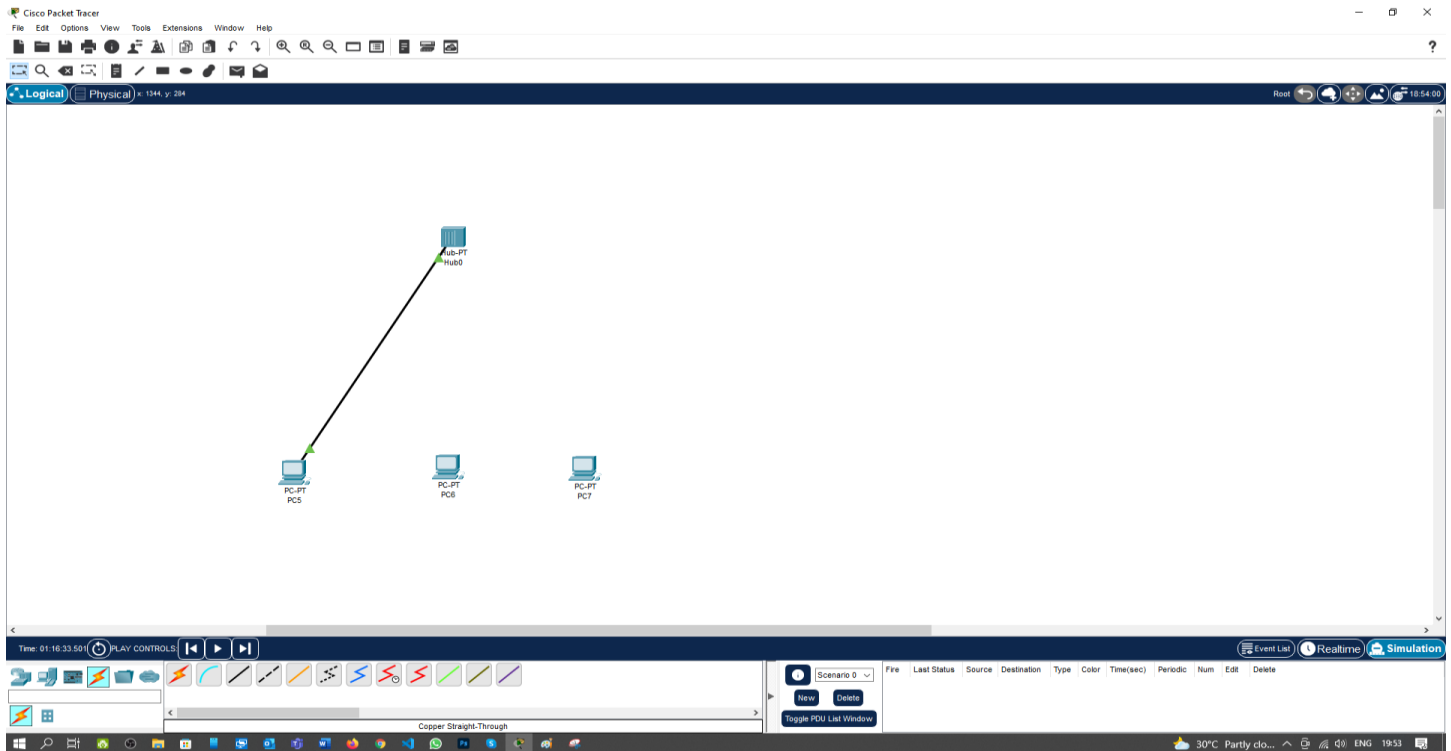


Step 5: Now click on the Hub you will get the Popup for the port then select the FastEthernet0 or Available Fast Ethernet port.

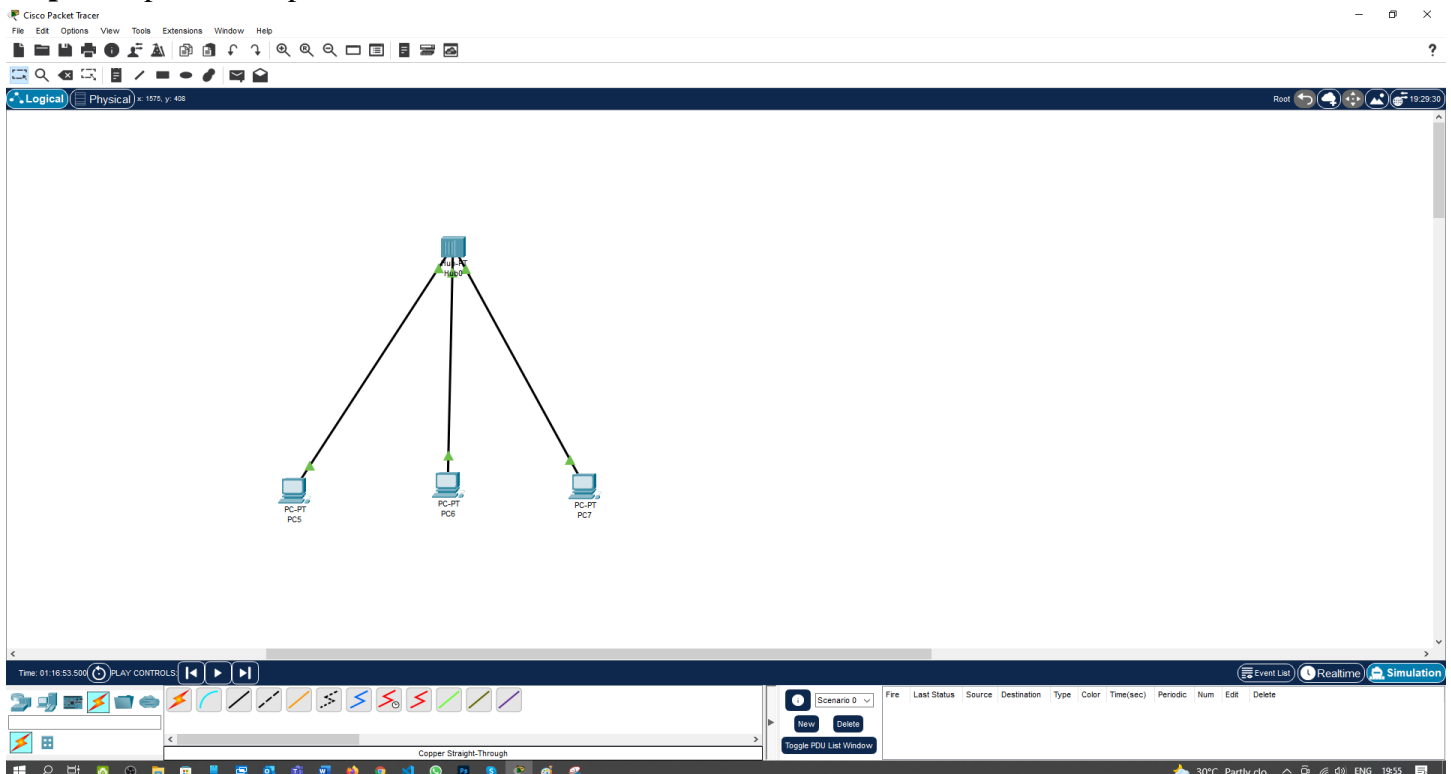
Select Hub -> FastEthernet0



Now the Screen will be appeared Like this

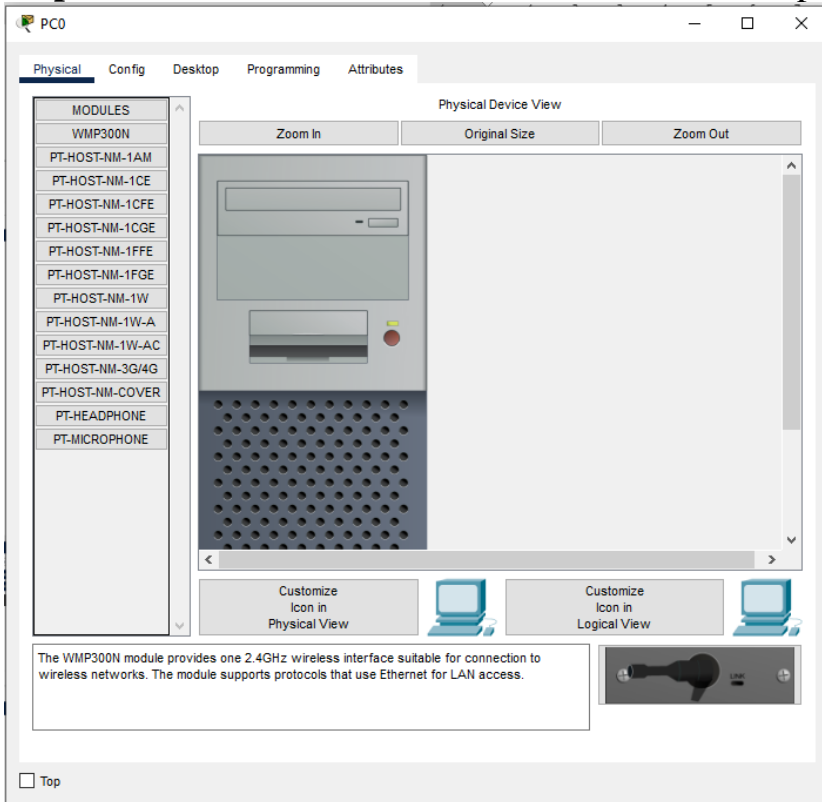


Step 6: Repeat the step 3 to 5 for all the PC1 and PC2

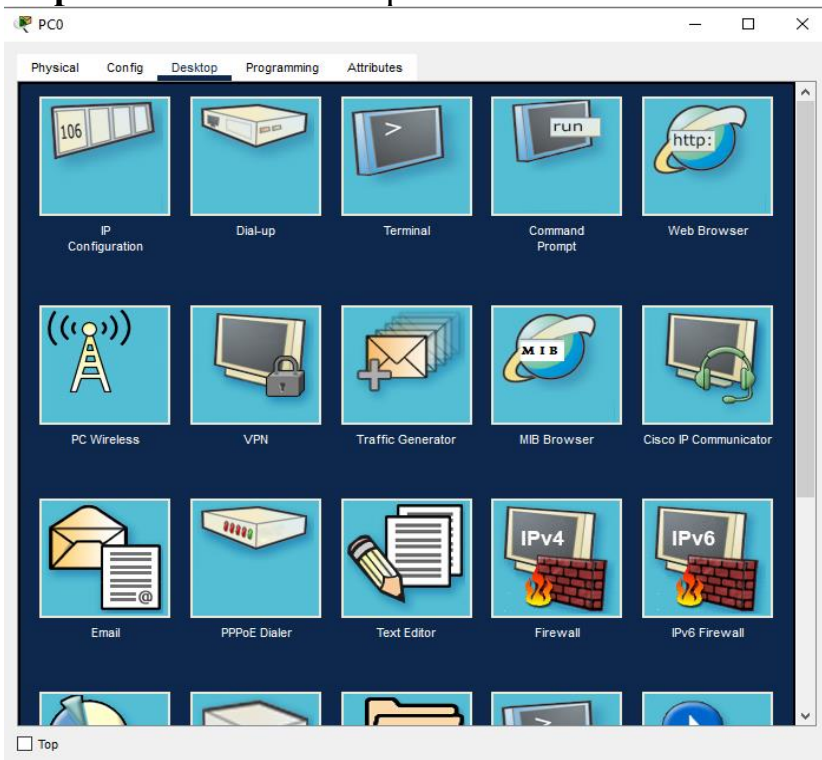


Now, we will assign the IP address to all three PCs (PC0, PC1 & PC2).

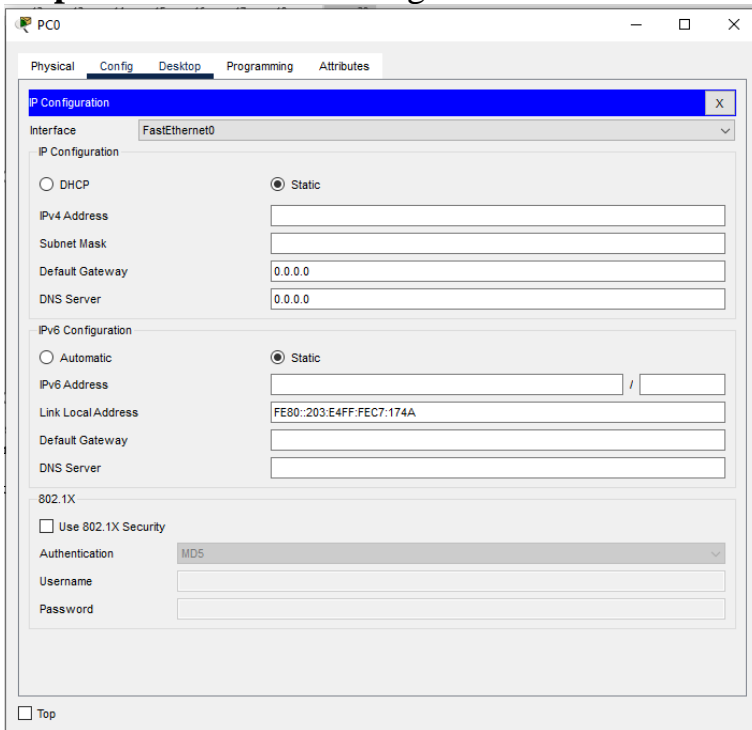
Step 7: Click on the PC0 then on new window will open for Configuring the PCs.



Step 8: Select the Desktop.

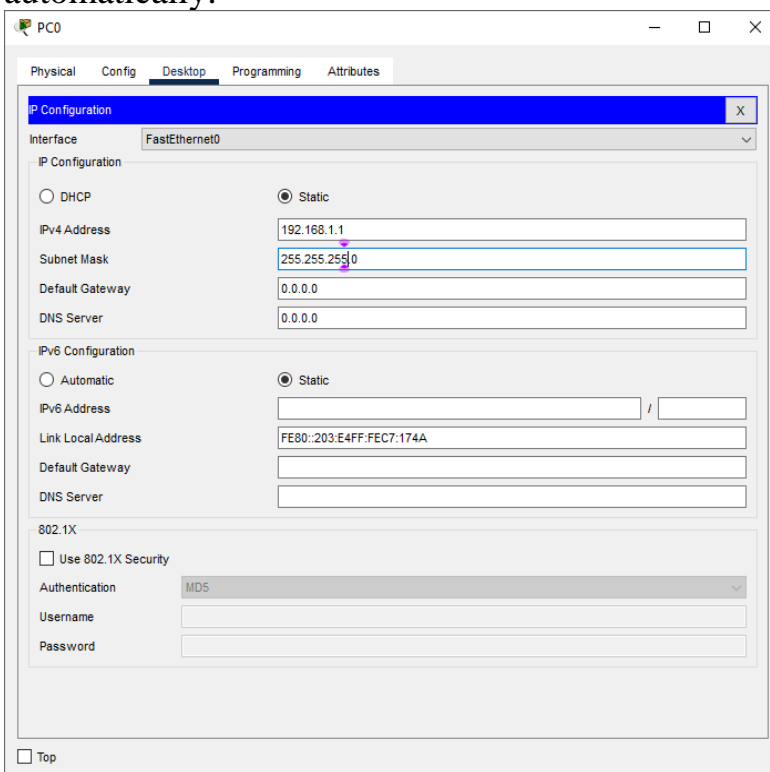


Step 9: Select the IP Configuration.



The screenshot shows the 'PC0' configuration window with the 'Config' tab selected. The 'IP Configuration' section is expanded, showing the 'Interface' dropdown set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The 'IPv4 Address' field is empty, and the 'Subnet Mask' field is empty. The 'Default Gateway' field is set to '0.0.0.0' and the 'DNS Server' field is set to '0.0.0.0'. Under 'IPv6 Configuration', the 'Static' radio button is selected. The 'IPv6 Address' field is empty, the 'Link Local Address' field is set to 'FE80::203:E4FF:FE7:174A', and the 'Default Gateway' and 'DNS Server' fields are empty. Under '802.1X', the 'Use 802.1X Security' checkbox is unchecked, and the 'Authentication' dropdown is set to 'MD5'. The 'Username' and 'Password' fields are empty.

Step 10: Type the IP Address 192.168.1.1 and click on the Subnet Mask fields. It will accept automatically.



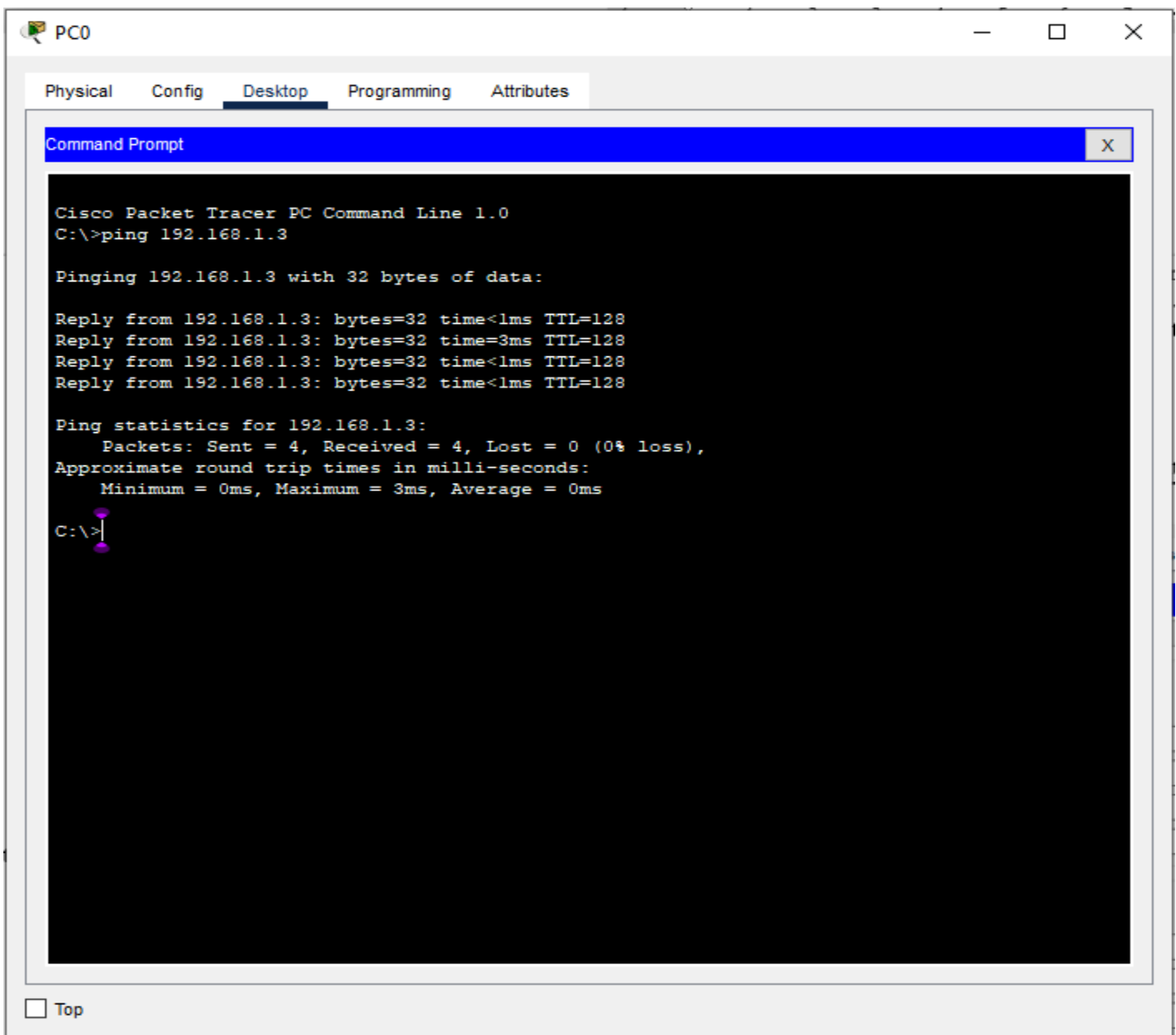
The screenshot shows the 'PC0' configuration window with the 'Config' tab selected. The 'IP Configuration' section is expanded, showing the 'Interface' dropdown set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The 'IPv4 Address' field is set to '192.168.1.1' and the 'Subnet Mask' field is set to '255.255.255.0'. The 'Default Gateway' field is set to '0.0.0.0' and the 'DNS Server' field is set to '0.0.0.0'. Under 'IPv6 Configuration', the 'Static' radio button is selected. The 'IPv6 Address' field is empty, the 'Link Local Address' field is set to 'FE80::203:E4FF:FE7:174A', and the 'Default Gateway' and 'DNS Server' fields are empty. Under '802.1X', the 'Use 802.1X Security' checkbox is unchecked, and the 'Authentication' dropdown is set to 'MD5'. The 'Username' and 'Password' fields are empty.

Step 11: Repeat the Step 7 to Step 10 for PC1 & PC2 with the IP Address 192.168.1.2 & 192.168.1.3 respectively.

Now our all the Connection is done for Communication Using Hub.

Step 12: To check the connection of the PCs Just Go to the Desktop and Click on the Command prompt of the PC0 and type the Ping Command along with the IP Address of PC2.

Click on PC0->Desktop->Command Prompt



The screenshot shows a Cisco Packet Tracer window for PC0. The 'Desktop' tab is selected, and the 'Command Prompt' application is open. The command prompt displays the output of a ping command to 192.168.1.3. The output shows four successful replies with varying times (1ms, 3ms, 1ms, 1ms) and a TTL of 128. The ping statistics indicate that all four packets were sent and received, with 0% loss. The approximate round trip times are: Minimum = 0ms, Maximum = 3ms, Average = 0ms. The command prompt is currently at the C:\> prompt.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.3

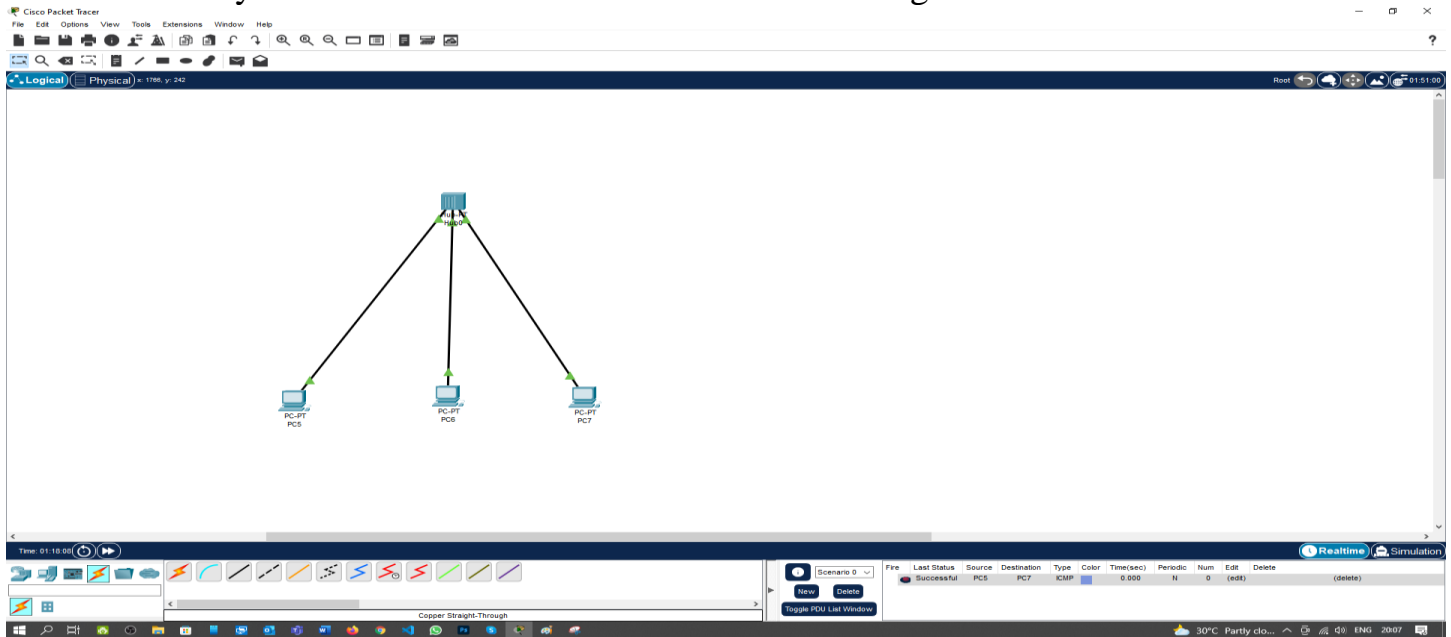
Pinging 192.168.1.3 with 32 bytes of data:

Reply from 192.168.1.3: bytes=32 time<1ms TTL=128
Reply from 192.168.1.3: bytes=32 time=3ms TTL=128
Reply from 192.168.1.3: bytes=32 time<1ms TTL=128
Reply from 192.168.1.3: bytes=32 time<1ms TTL=128

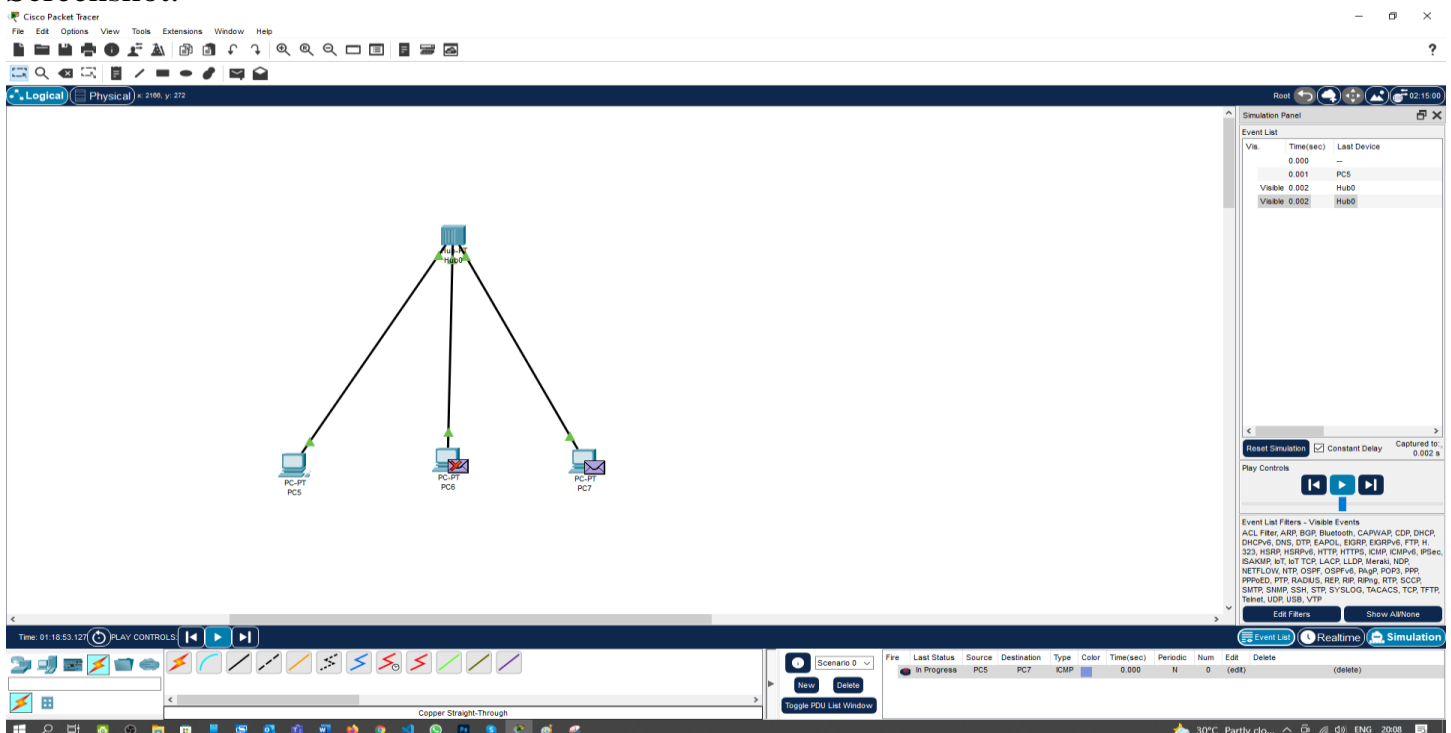
Ping statistics for 192.168.1.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 3ms, Average = 0ms

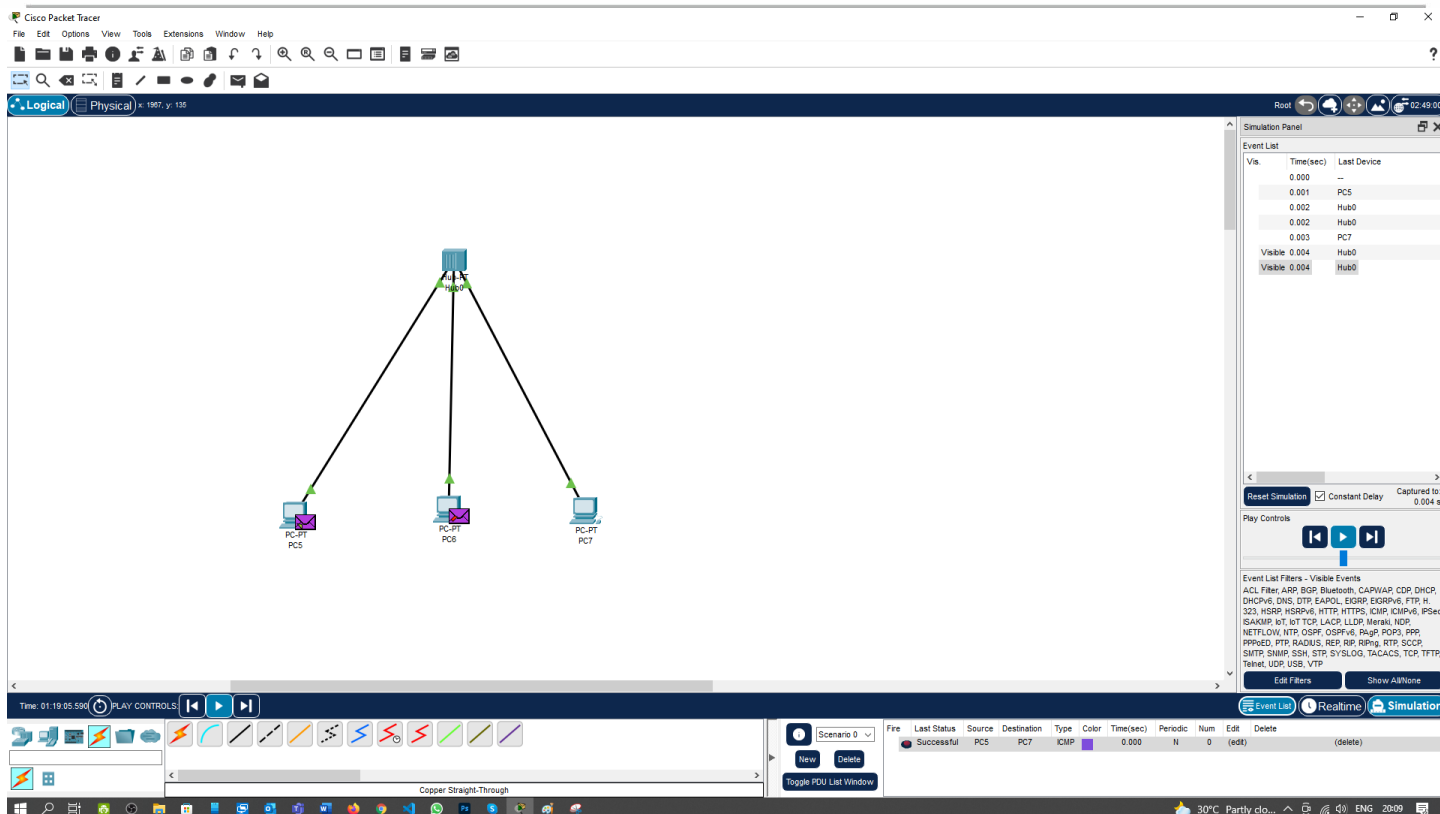
C:\>
```

Step 13: Select the **Add Simple PDU** from the Task bar and Then select the PC0 first then Select the PC2 you will see the **RunTime Successful** message in The Bottom bar.



Step 13: Now select the Simulation Mode from the Bottom Bar and then Click Play. You will Absorb the Steps of message transfer from PC0 to PC2 which is shown in the Below Screenshot.





I have successfully connected three computers, using Switch and Hub in the virtual program Cisco Packet Tracer.

Learning outcomes (What I have learnt):

1. Understand working of network device HUB.
2. Executed all device connections using hub.

Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.			
2.			
3.			