

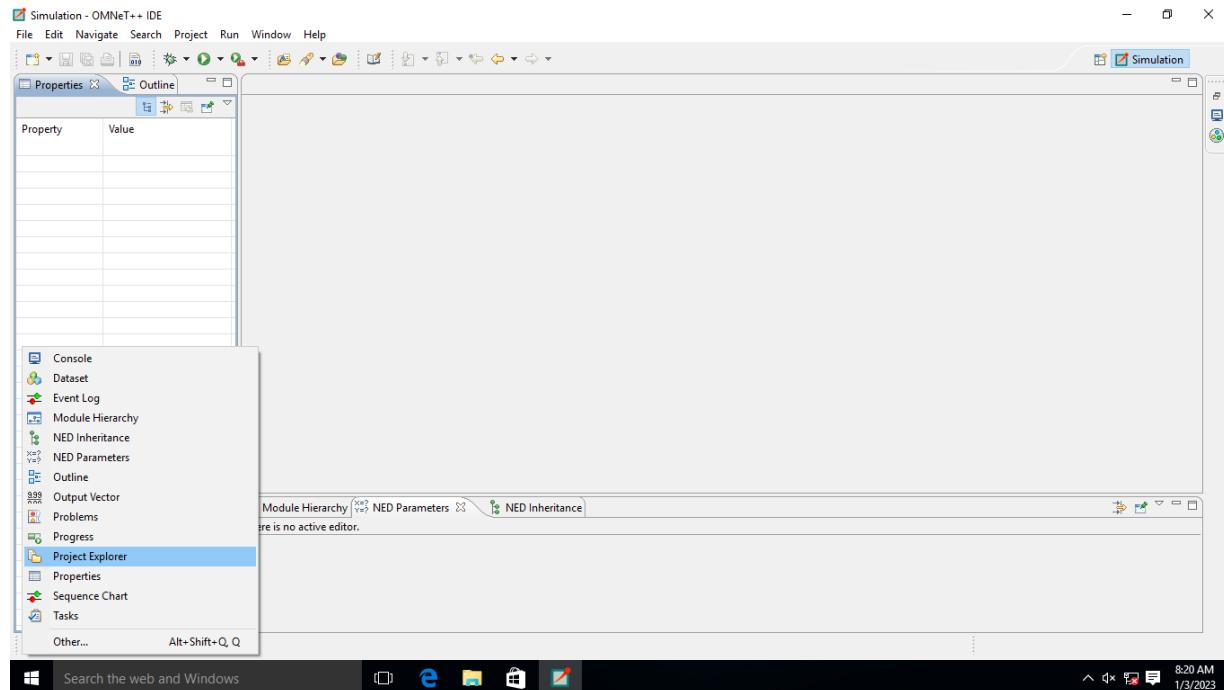
Practical No.3

Aim: Understanding TOSSIM for: -

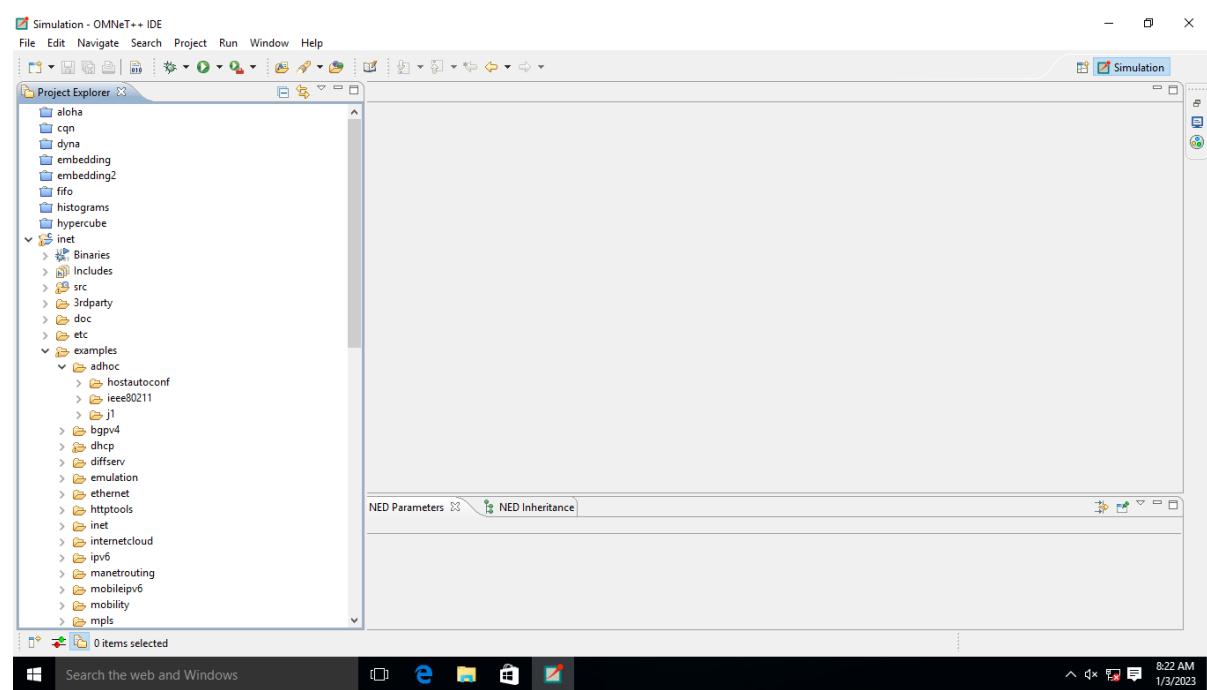
-Mote-mote radio communication

-Mote-PC serial communication

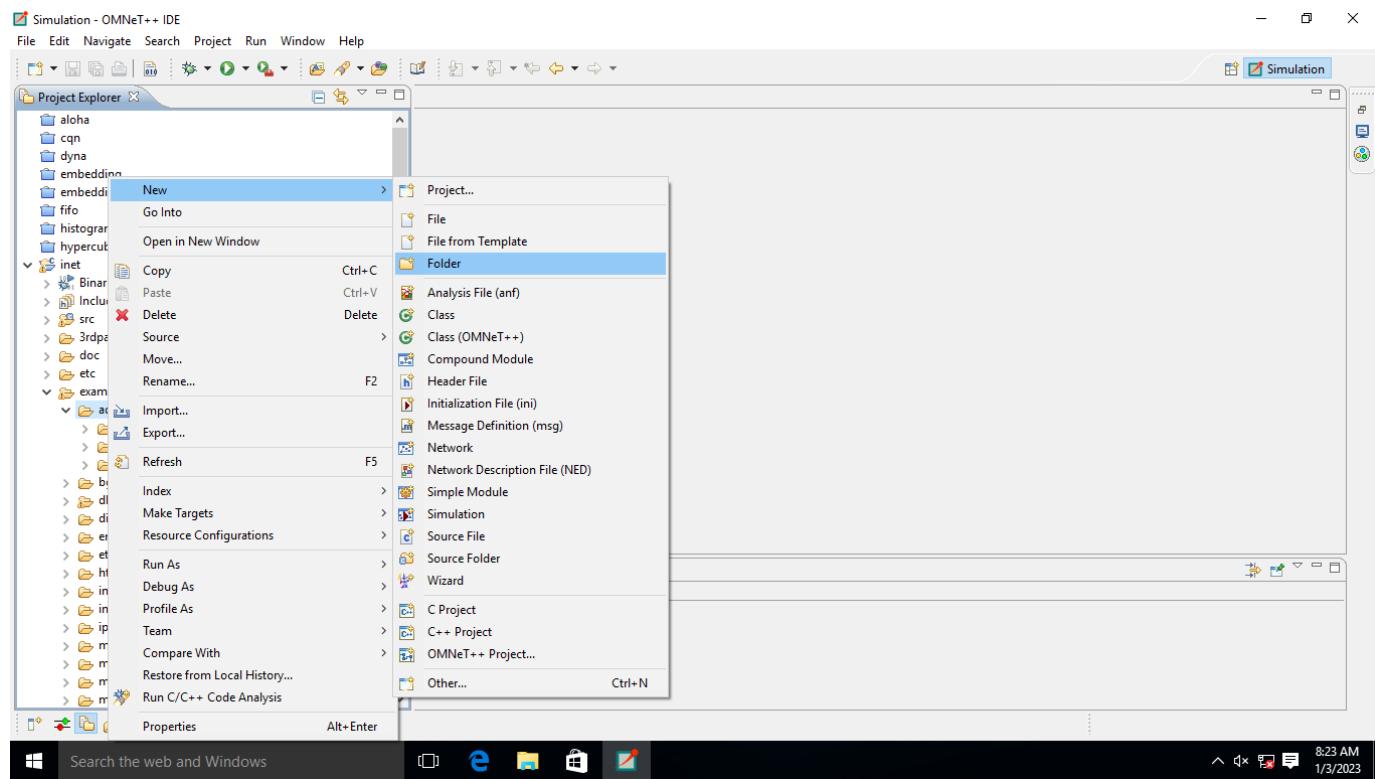
1. Open Omnetpp++, Click on Battery icon and Select Project Explorer.



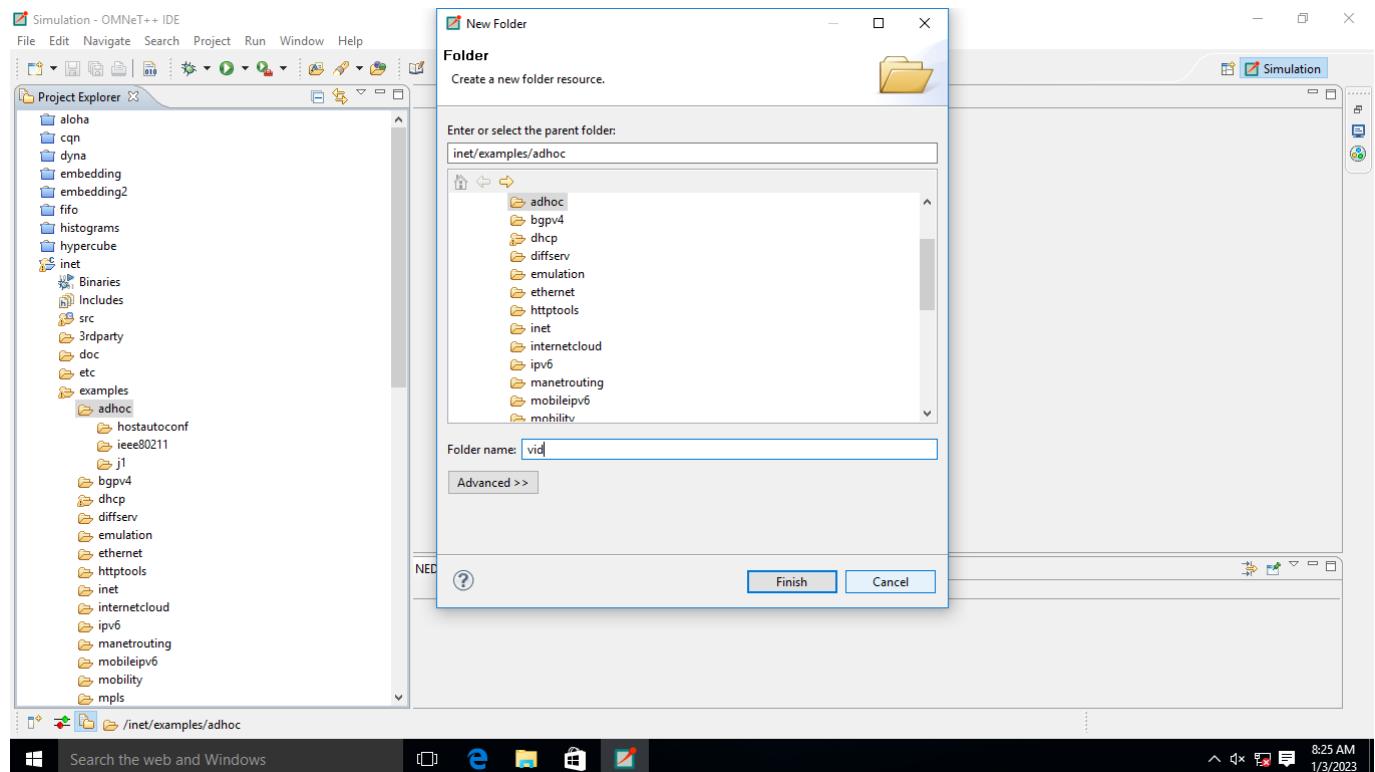
2. Expand inet folder → examples → adhoc



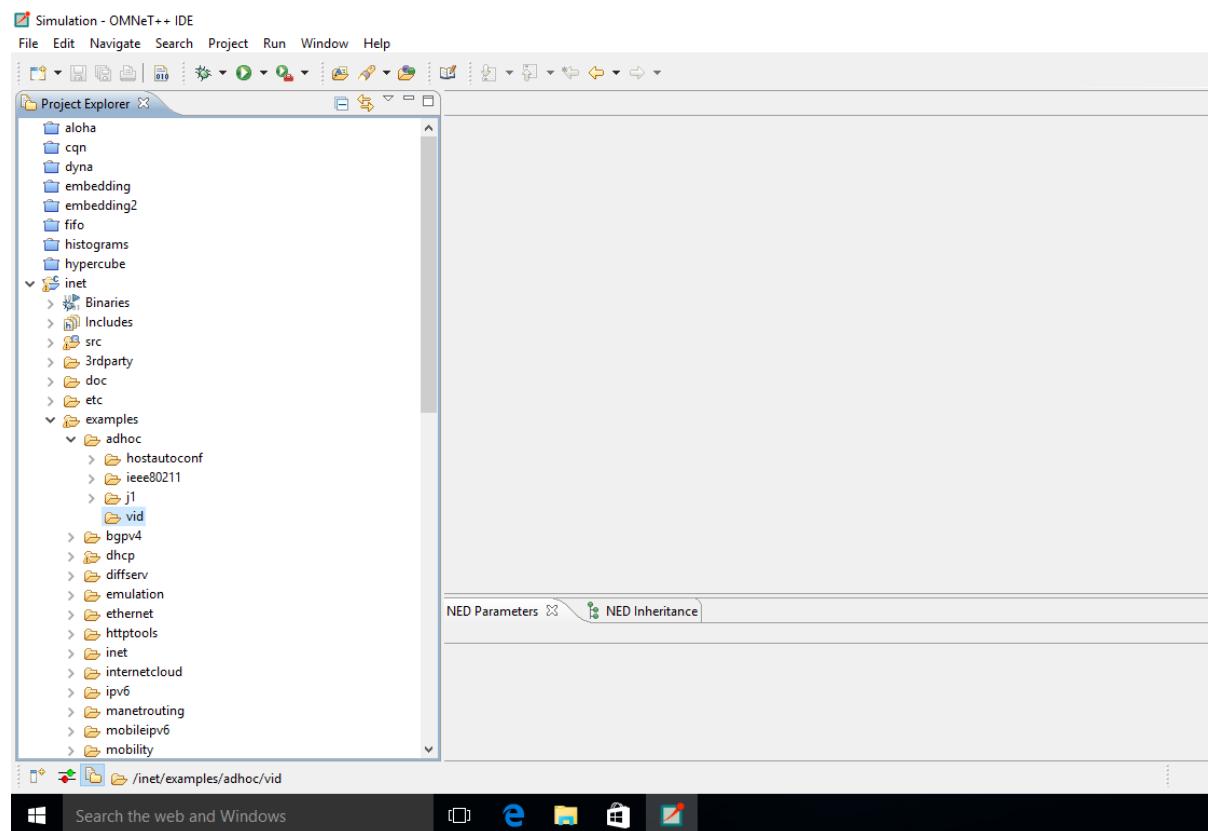
3.Right click on adhoc→new→folder.



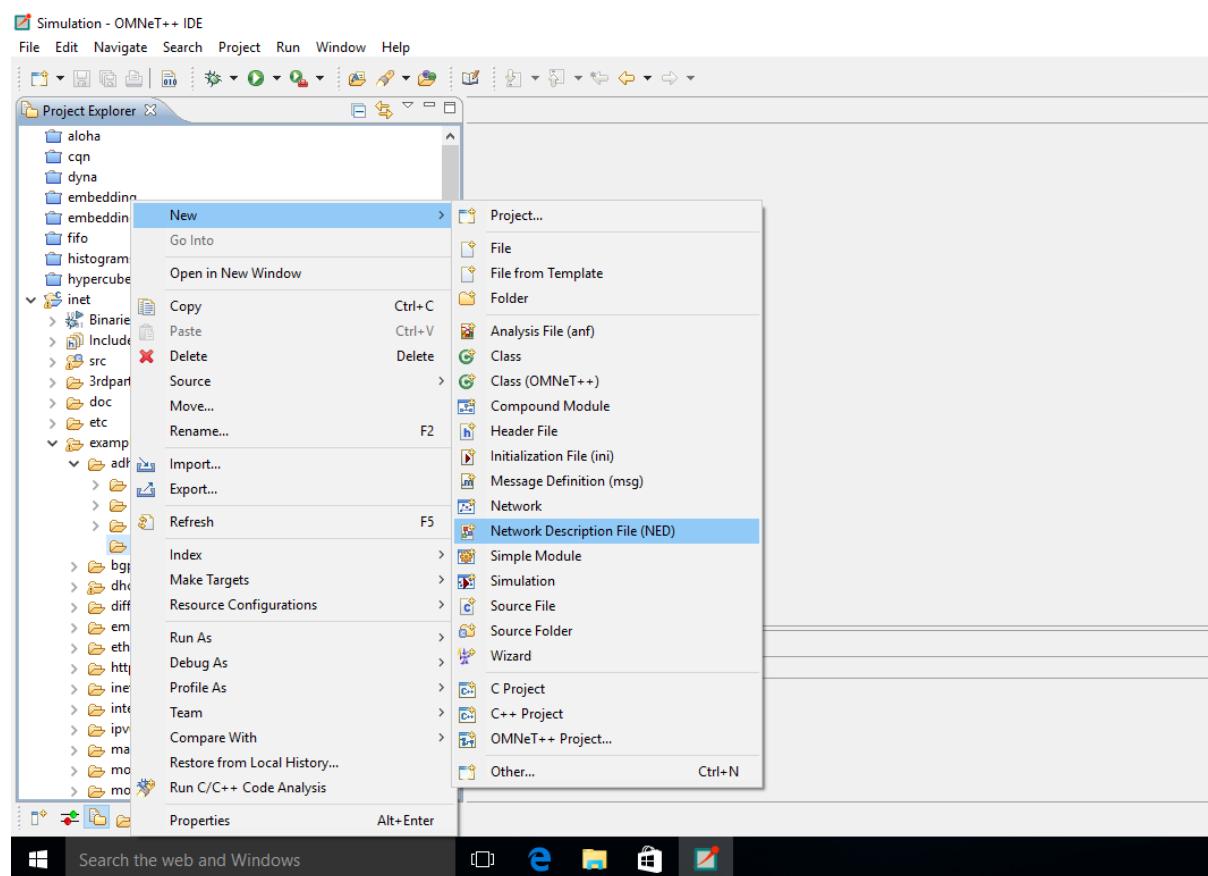
4.Enter Folder name(e.g vid) and Click on finish.



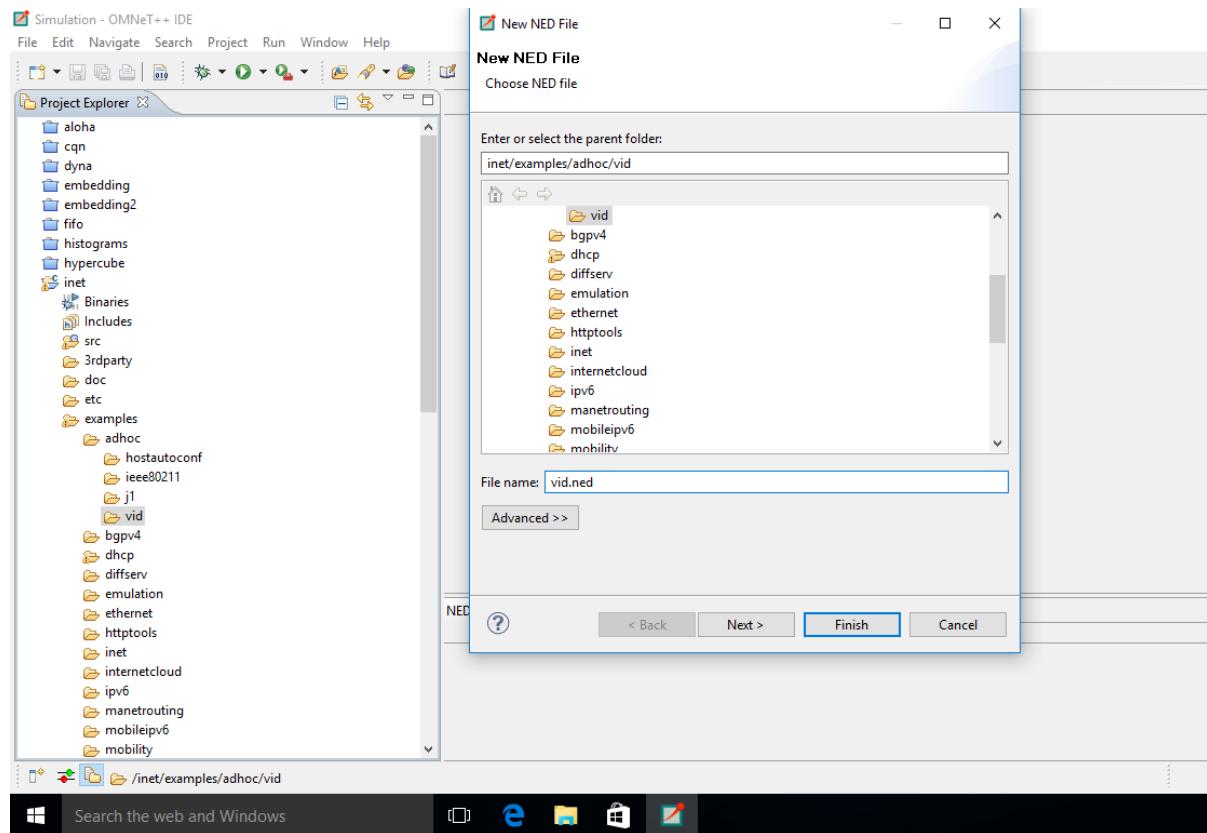
5.You will see,your created folder inside the adhoc folder.



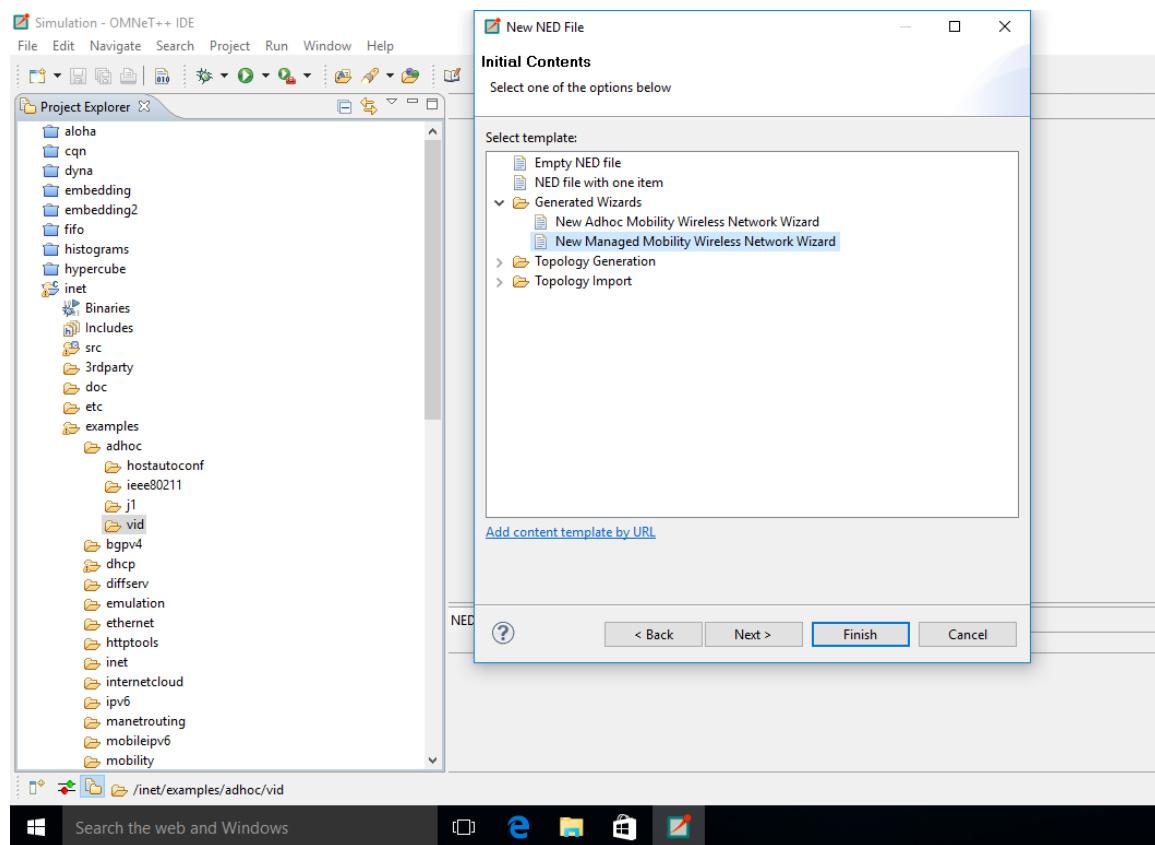
6.Right click on created folder→new→Network Description File(NED).



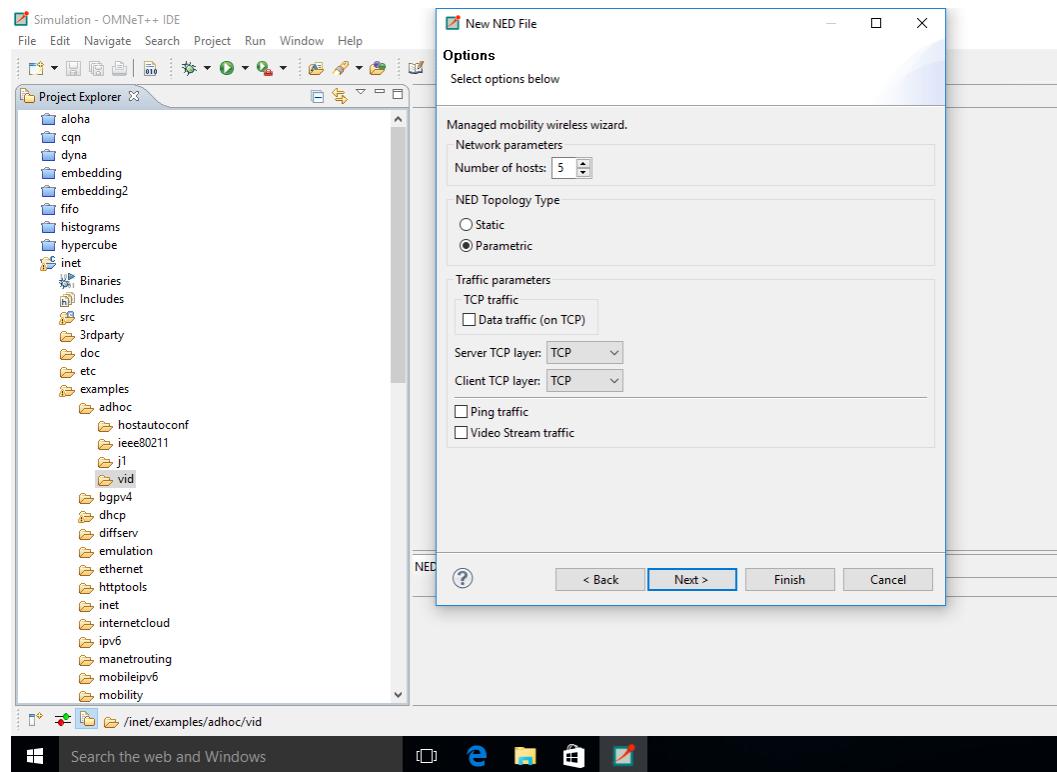
7.Enter file name(e.g vid.ned) and Click on Next.



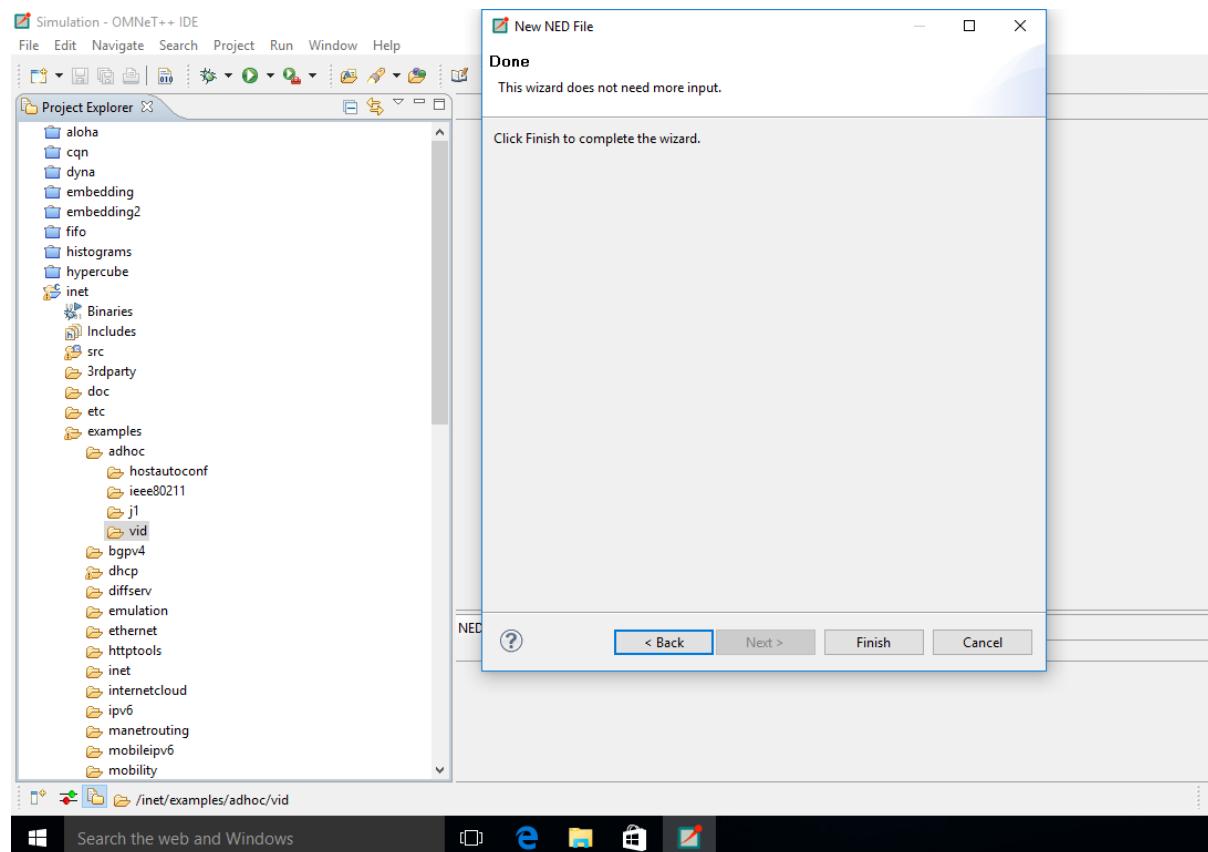
8.Expand Generated Wizards,Click on New Managed Mobility Wireless Network Wizard and Click on next.



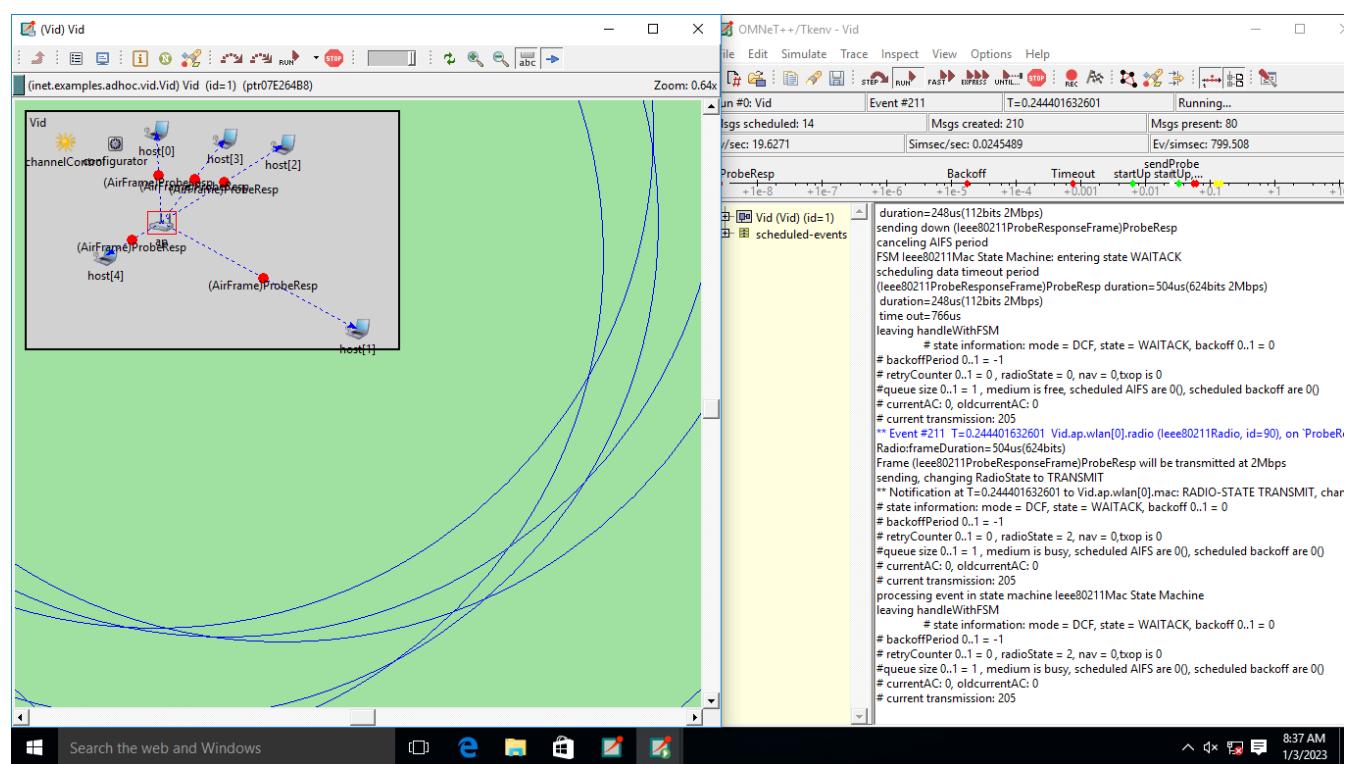
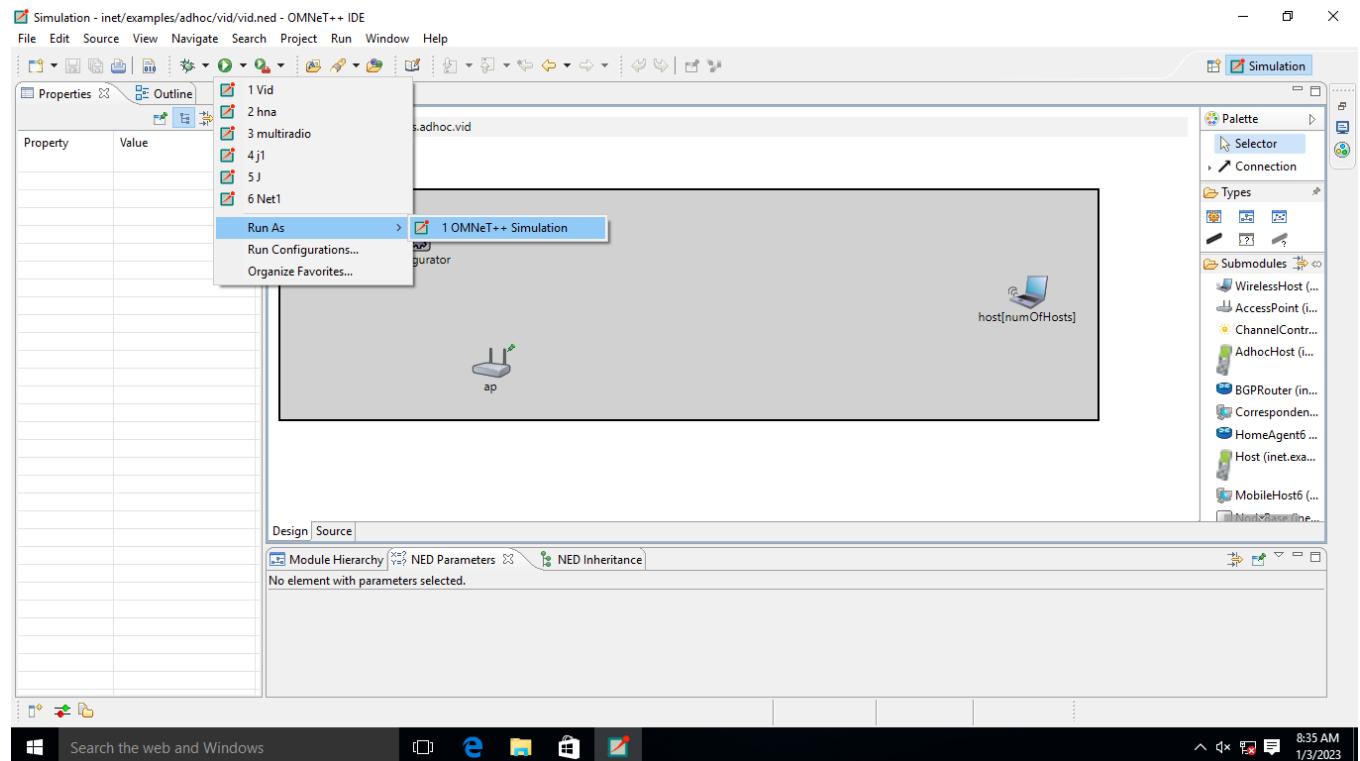
9.You can change the number of hosts and click on next.



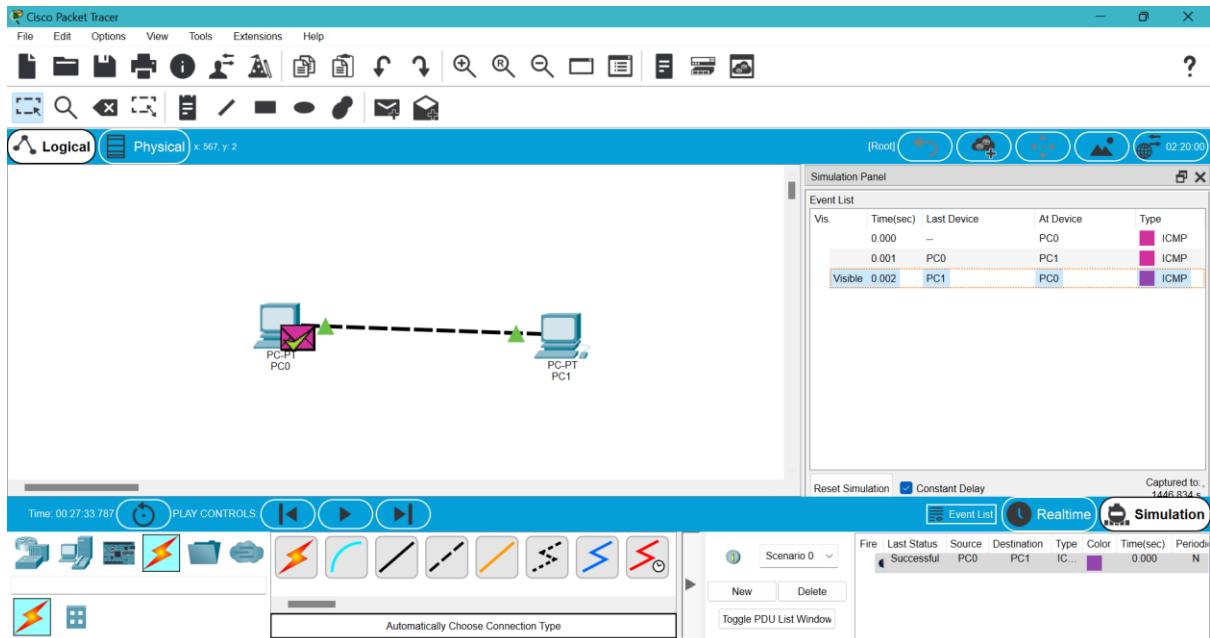
10.Click on Finish.



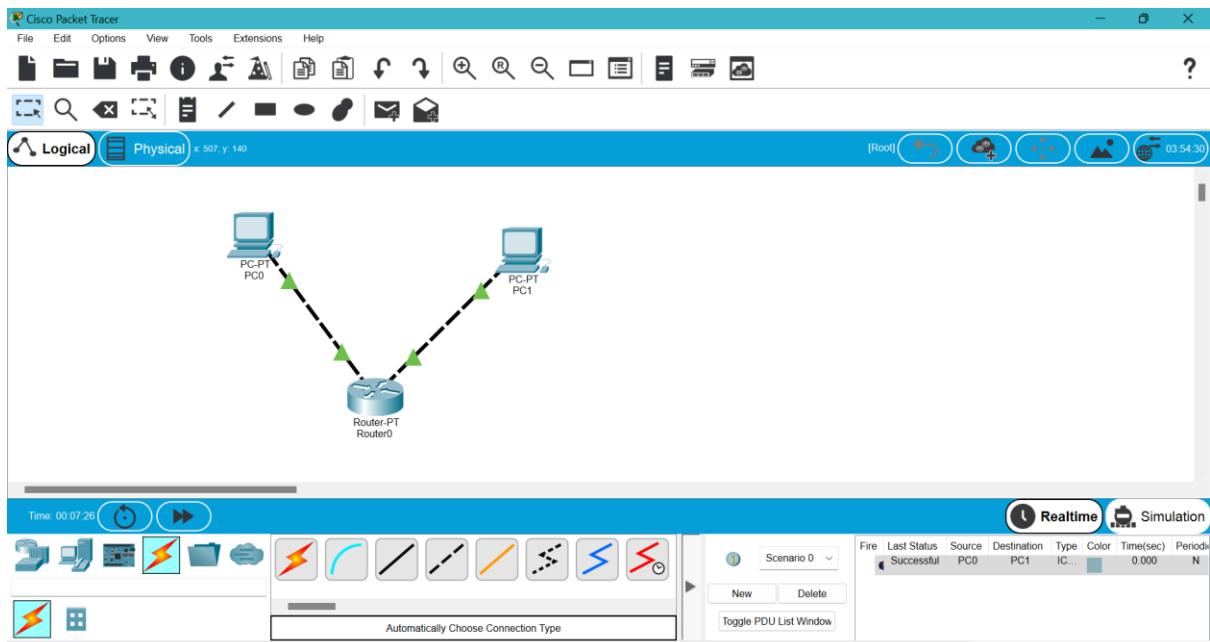
11.Click on Run,select Run as→omnet++ Simulation and ctrl+B.



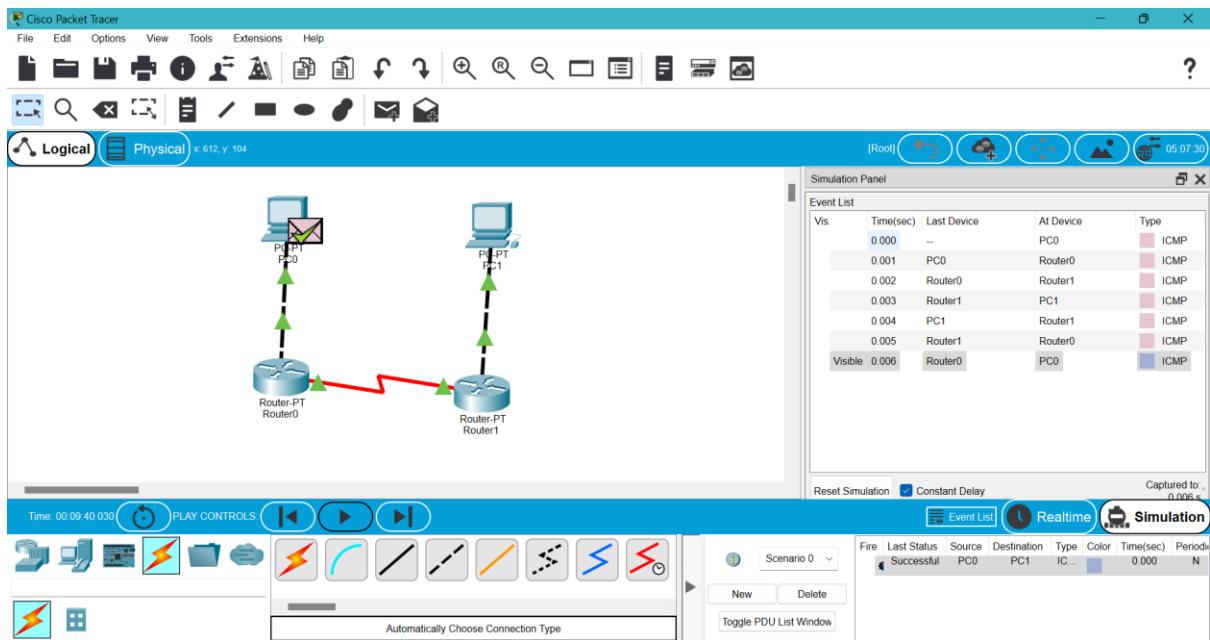
Topology 1:- Only 2 PC's



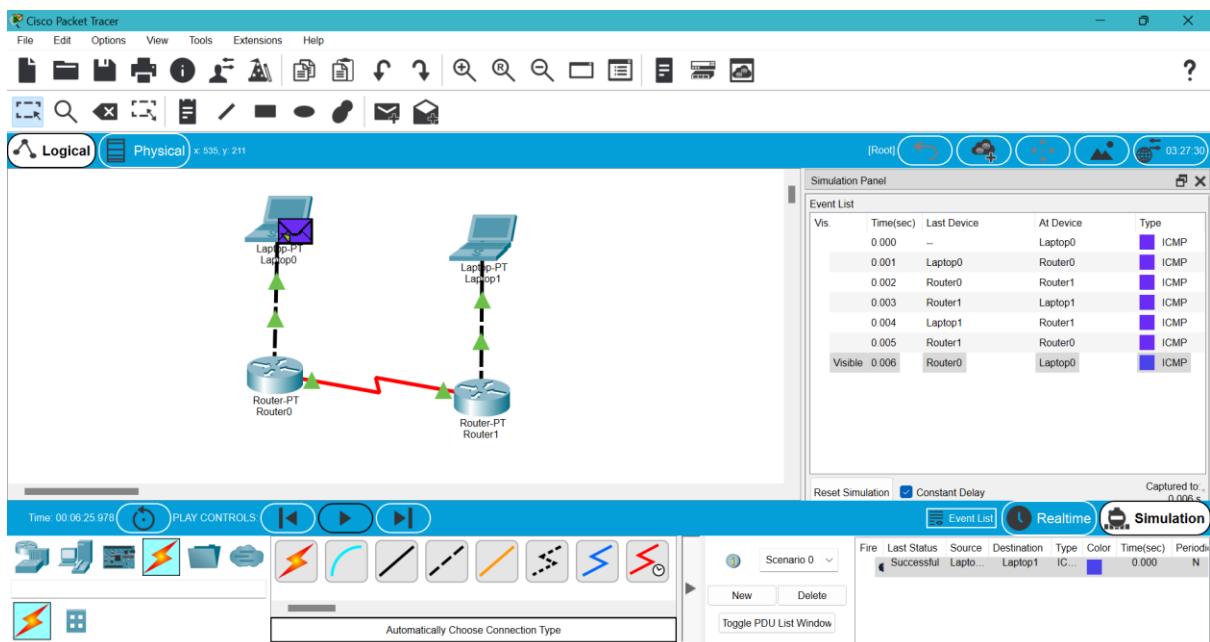
Topology 2:- 2PC's and 1 Router



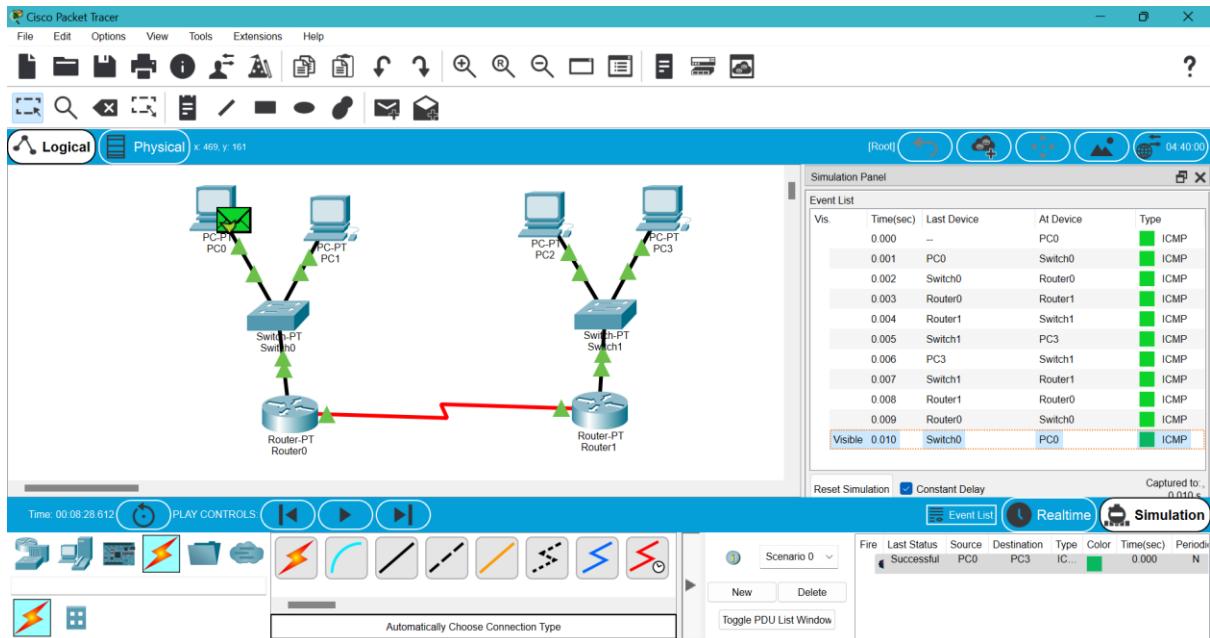
Topology 3:- 2PC's and 2 Routers



Topology 4:- 2 Laptops and 2 Routers



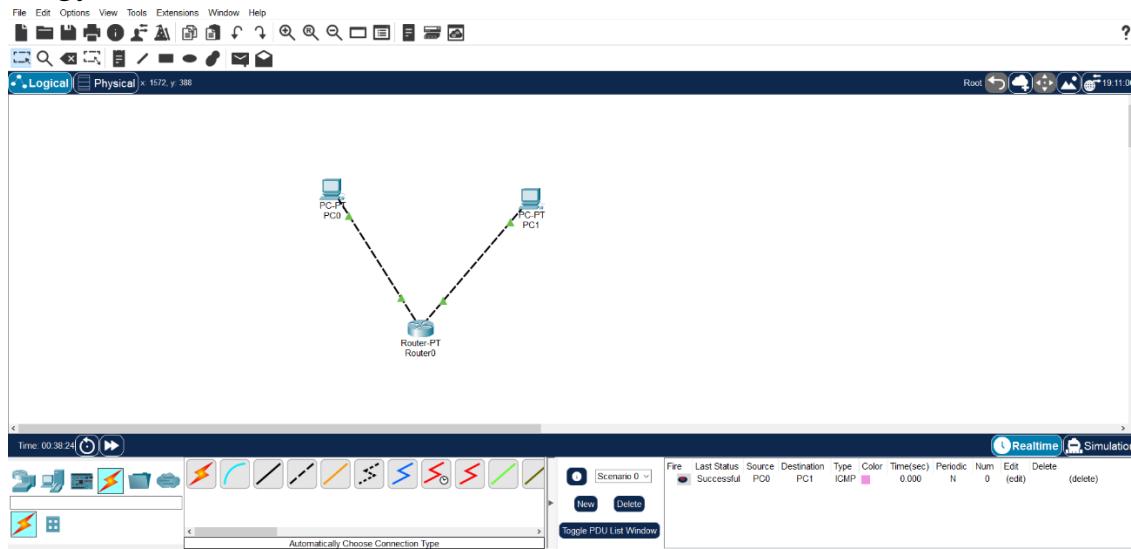
Topology 5:- Connect Multiple PC's using Switches



Practical No.5

Aim: Understanding, Reading and Analyzing Routing Table of a network

Topology:



Command Line:

Router0

Physical Config **CLI** Attributes

IOS Command Line Interface

```
Router(config-if)#no shutdown
Router(config-if)#
$LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#interface FastEthernet1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#no network 10.0.0.0
Router(config-router)#no network 20.0.0.0
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
enable
Router(config)
Configuring from terminal, memory, or network [terminal]? t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 10.0.0.0
Router(config-router)#network 20.0.0.0
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
enable
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
      i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
      * - candidate default, U - per-user static route, o - ODR
      P - periodic downloaded static route

Gateway of last resort is not set

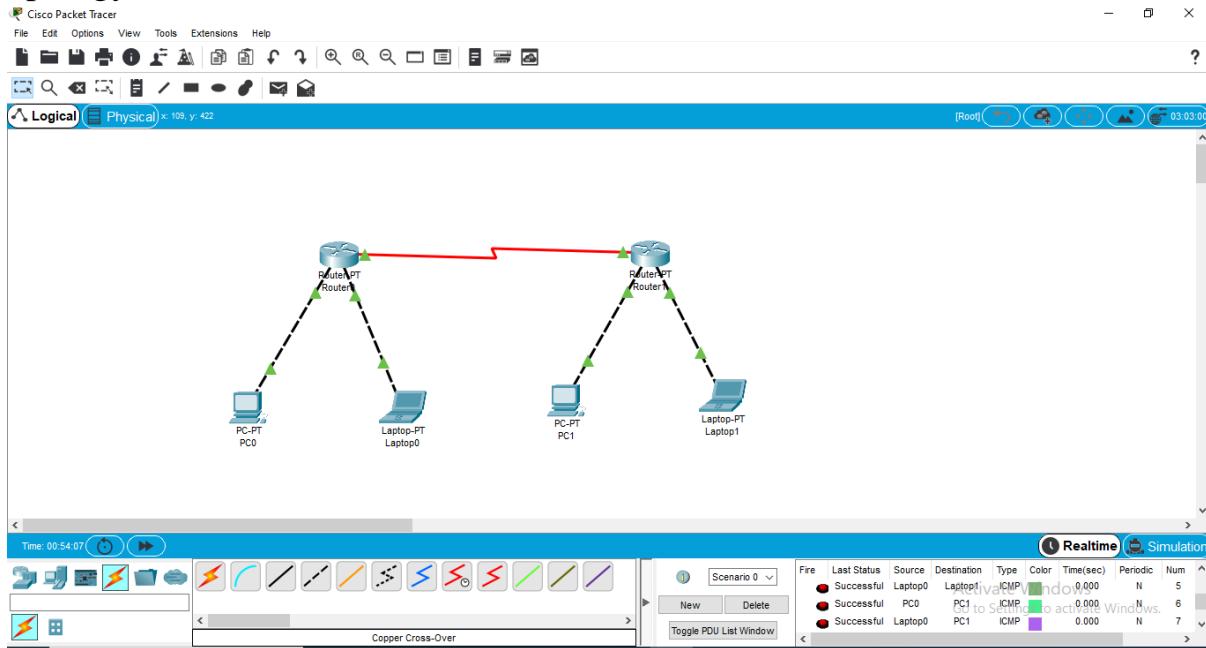
C    10.0.0.0/8 is directly connected, FastEthernet0/0
C    20.0.0.0/8 is directly connected, FastEthernet1/0

Router#
```

Practical No.6

Aim: Implement a Wireless sensor network simulation.

Topology 1:



Command Line:

Router# Press RETURN to get started!

```

Router>enable
Router>config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int Fa0/0
Router(config-if)#ip address 10.0.0.1 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
$LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
$LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#int Fa1/0
Router(config-if)#ip address 20.0.0.1 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
$LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up
$LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up

Router(config-if)#int Se2/0
Router(config-if)#ip address 50.0.0.1 255.0.0.0
Router(config-if)#no shut

$LINK-5-CHANGED: Interface Serial2/0, changed state to down
Router(config-if)#router rip
Router(config-router)#network 10.0.0.0
Router(config-router)#network 20.0.0.0
Router(config-router)#network 30.0.0.0
Router(config-router)#network 40.0.0.0
Router(config-router)#network 50.0.0.0
Router(config-router)#exit

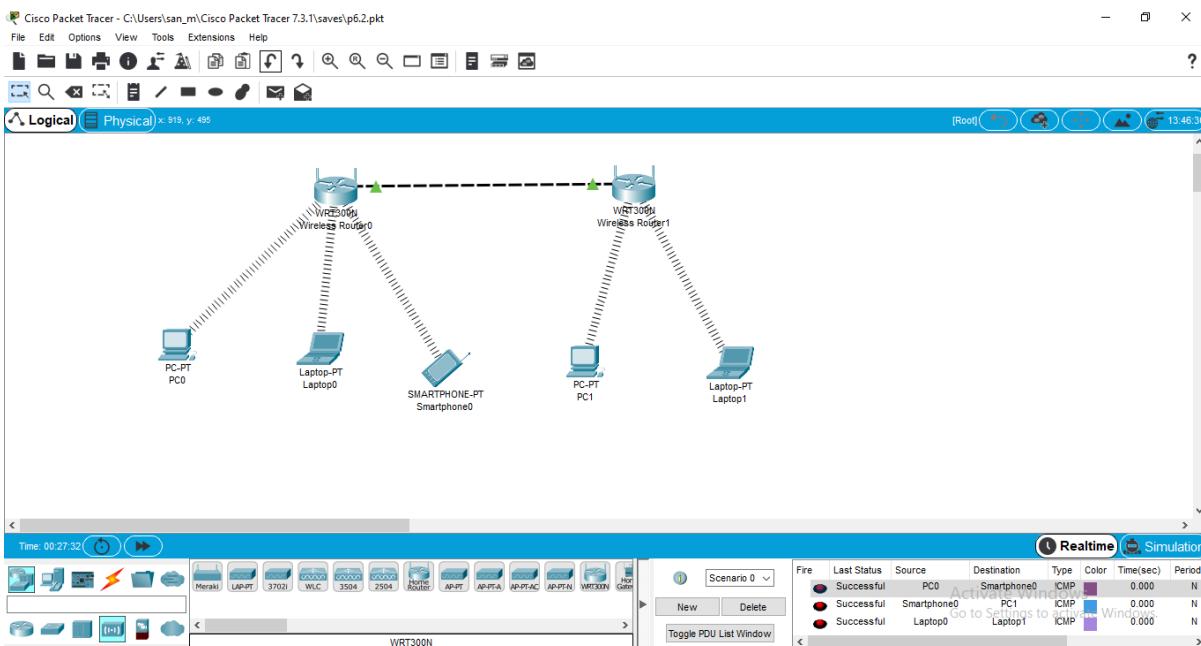
```

Ctrl+F6 to exit CLI focus

Activate Windows
Go to Settings to activate Windows.

Top

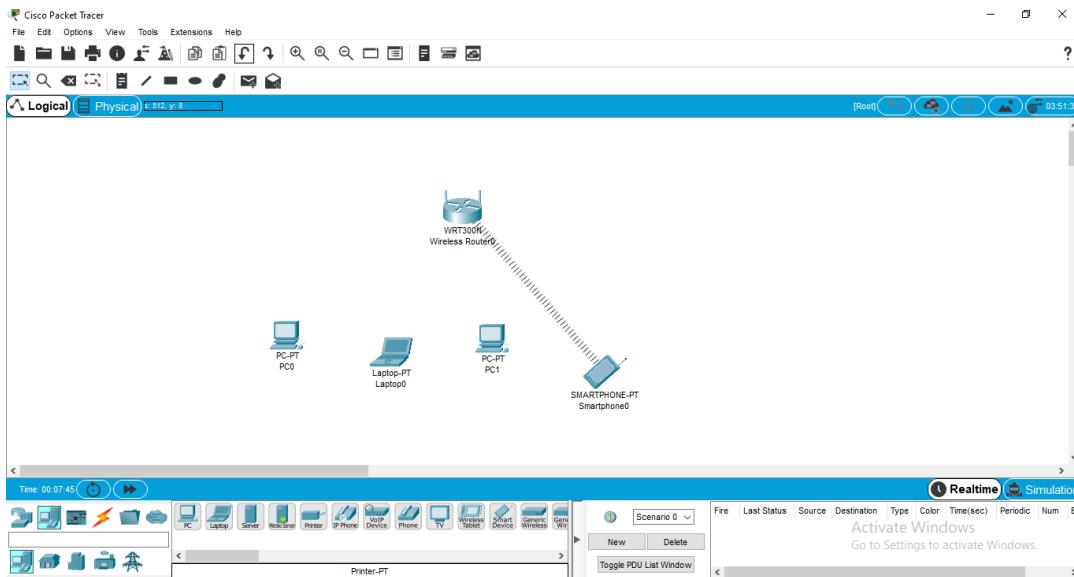
Topology 2:



Practical No.7

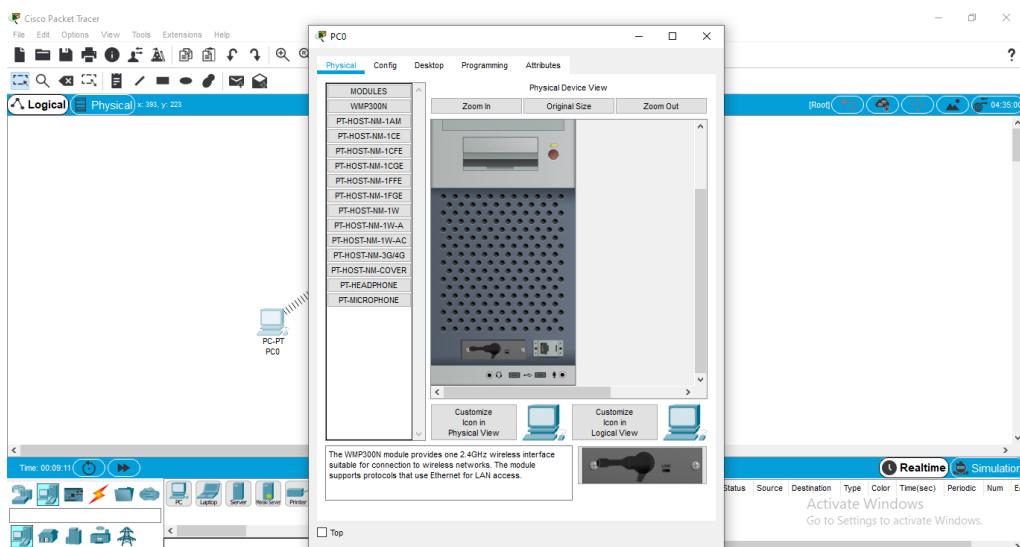
Aim: Create MAC protocol simulation implementation for wireless sensor Network

Step 1: Take 1 Wireless Router (WRT300N), 2 PC's, 1 Laptop, 1 Smartphone and arrange them as follows.

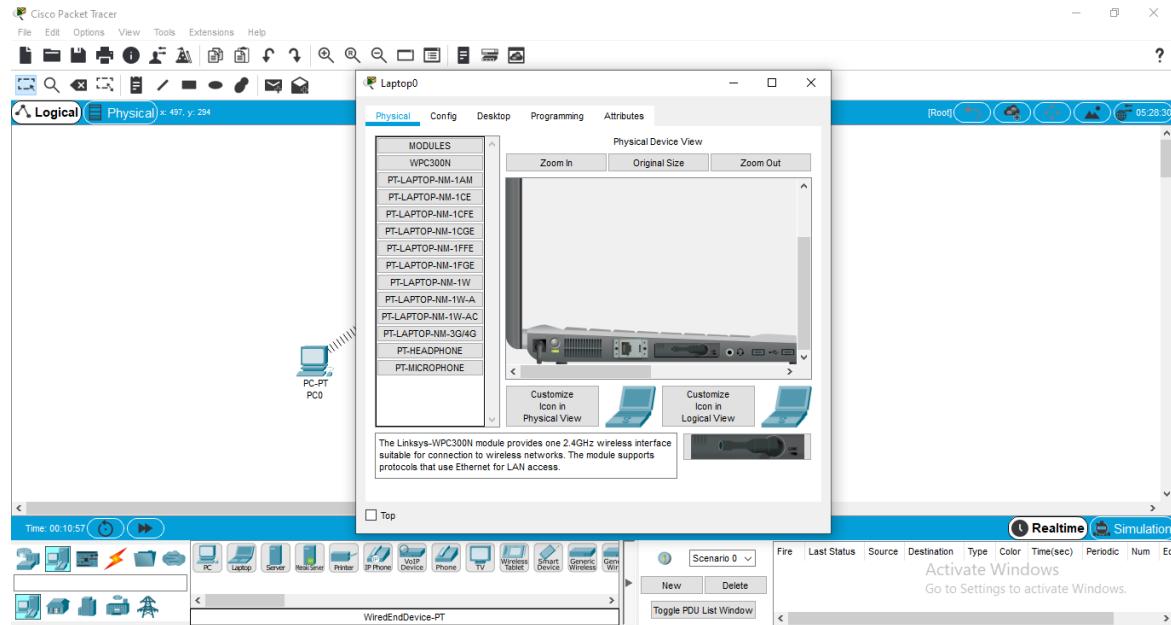


Step 2: Now Click on PC0 → Physical View. Turn off the CPU and then remove the existing Module from that CPU, and then drag & drop WMP300N Module in place of it. Follow same steps for Laptop0, PC1.

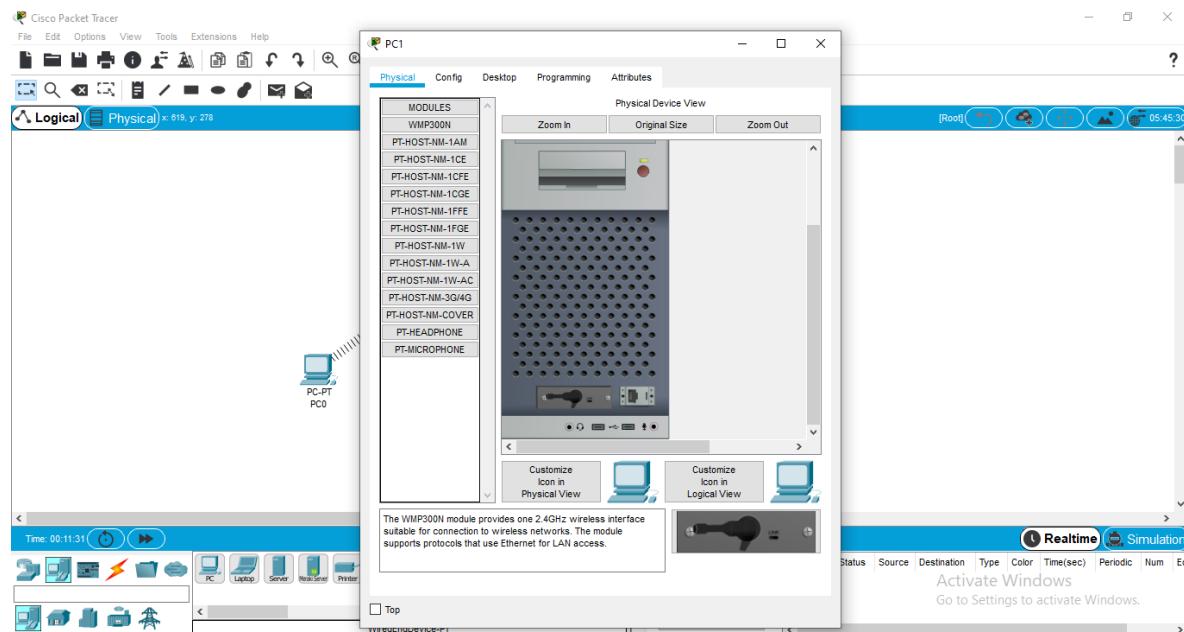
Physical View of PC0:



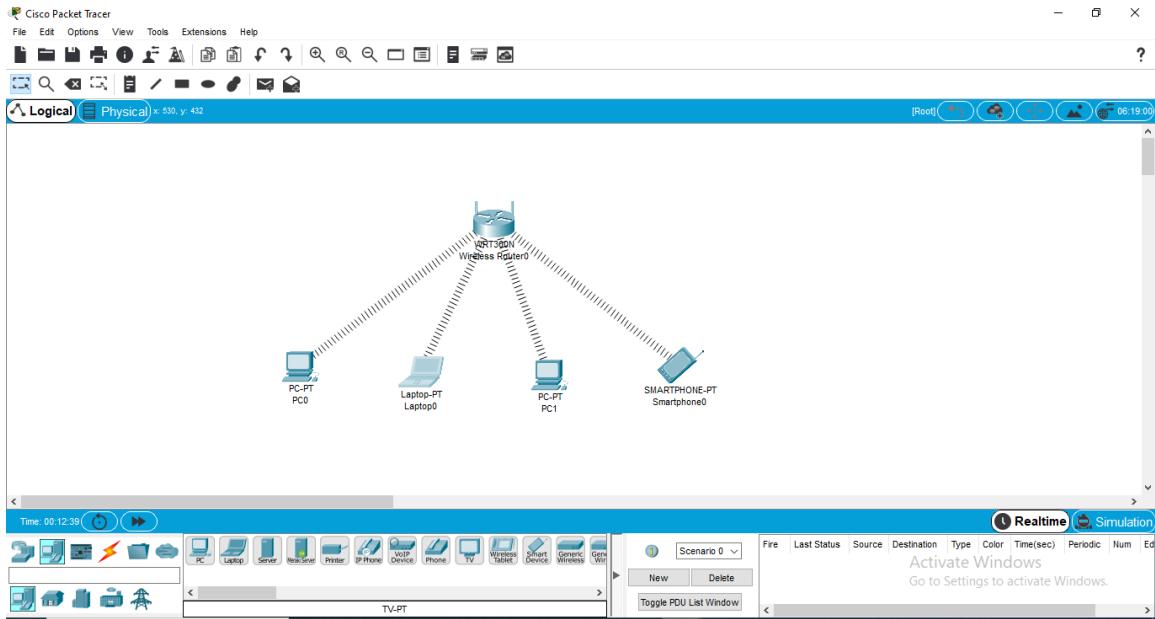
Physical View of Laptop0 (For Laptop Drag & Drop WPC300N):



Physical View of PC1:

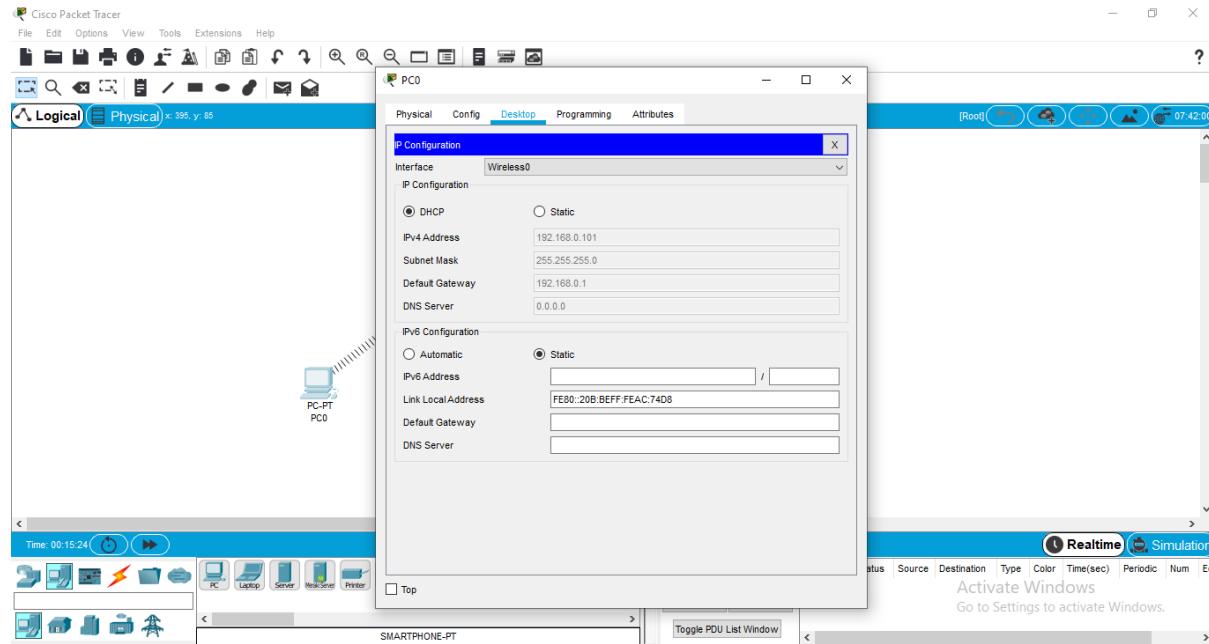


Step 3: Devices after installing Wireless Module:

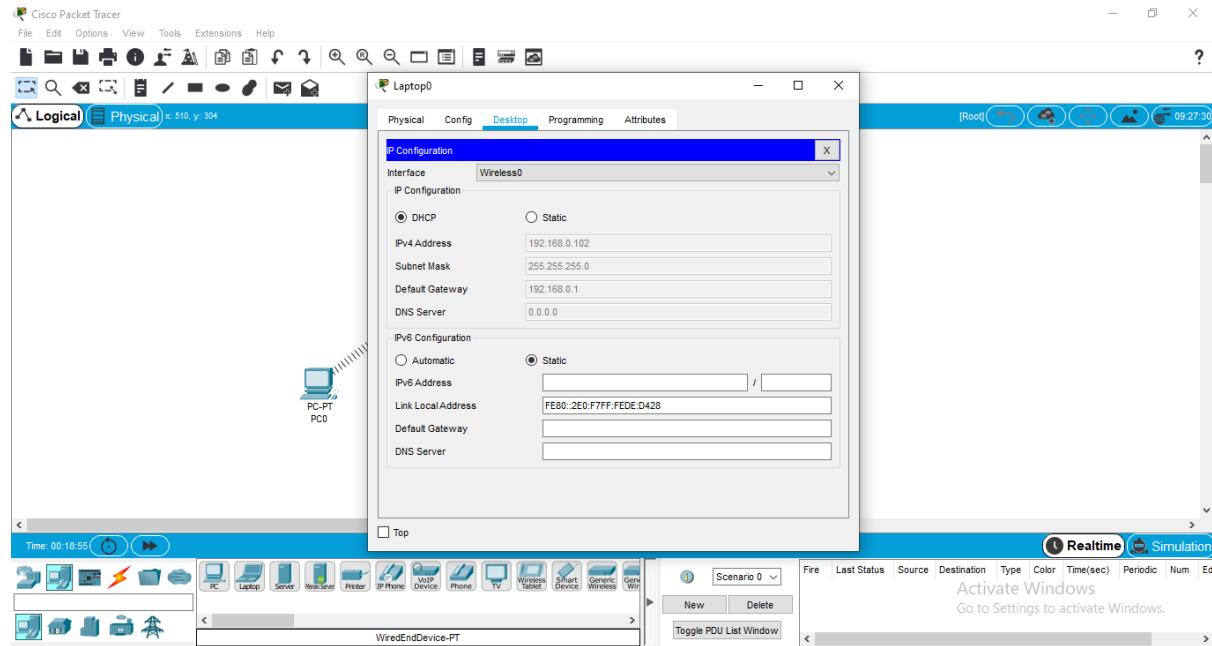


Step 4: Now again click on PC0 → Desktop → IP Configuration. Select “DHCP” in IP Configuration to automatically assign IPv4 Address and Subnet Mask to PC0. Follow Same Step for Laptop0, PC1, Smartphone0.

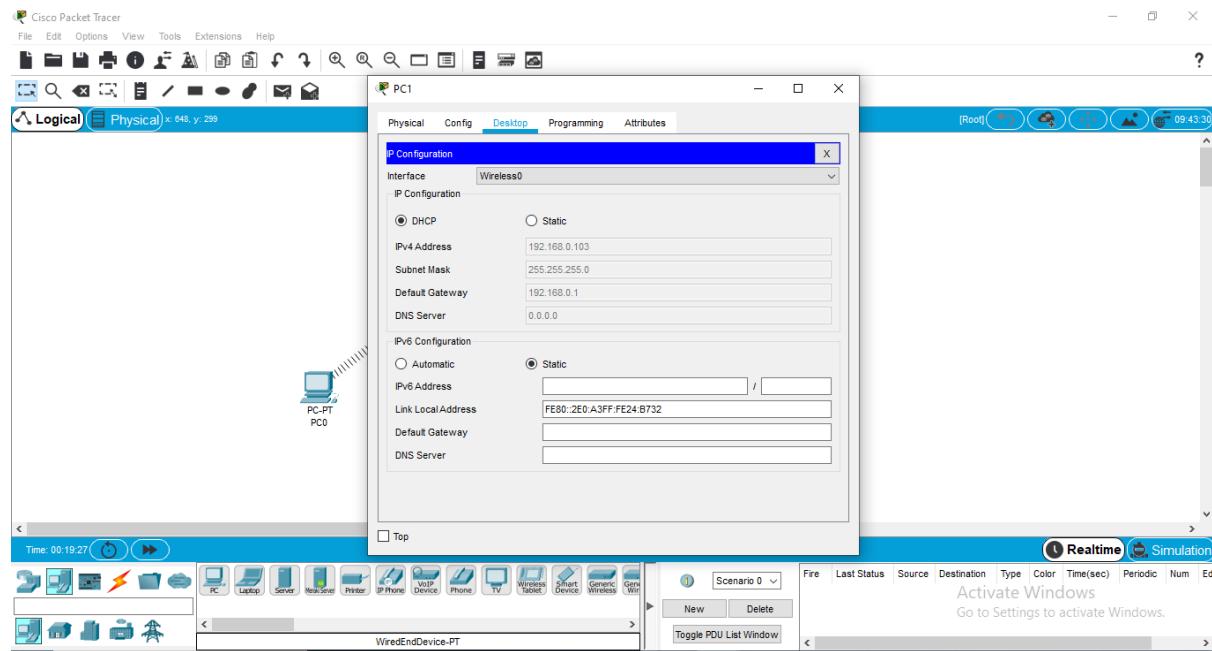
IP Configuration of PC0:



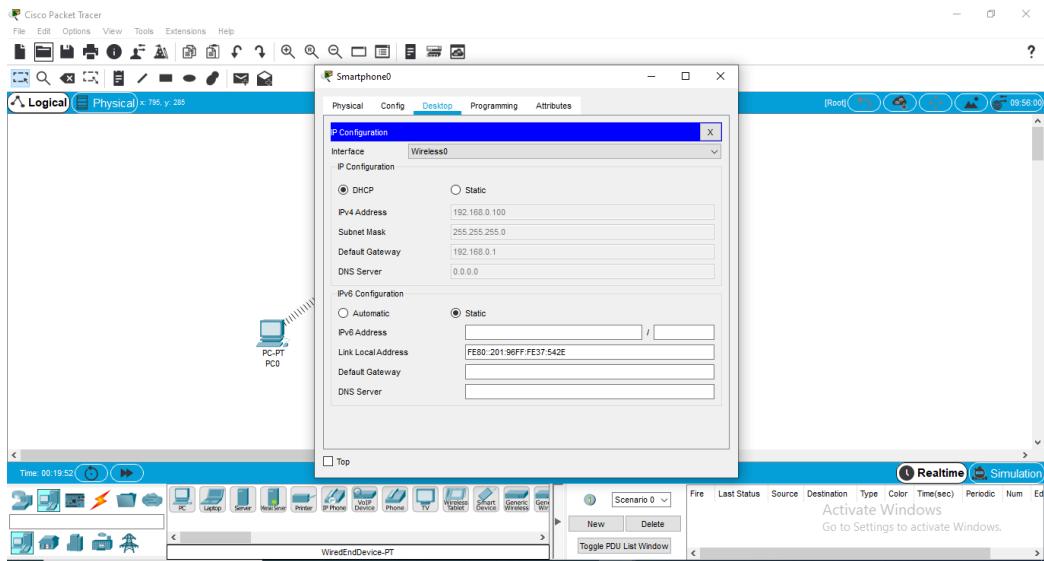
IP Configuration of Laptop0:



IP Configuration of PC1:



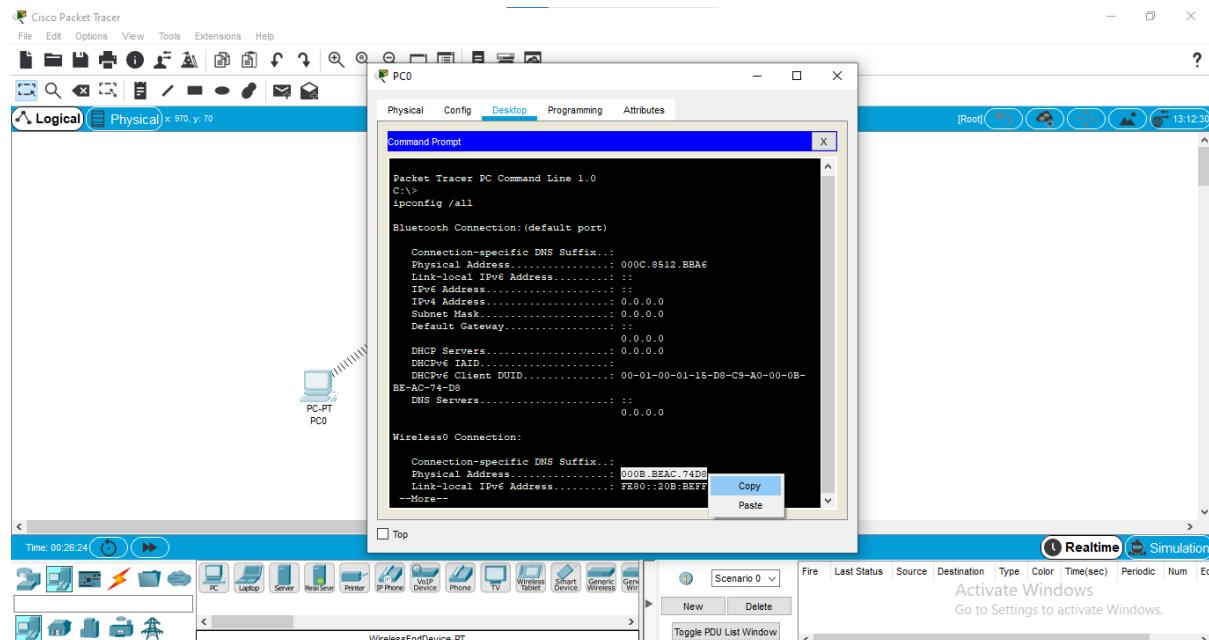
IP Configuration of Smartphone0:



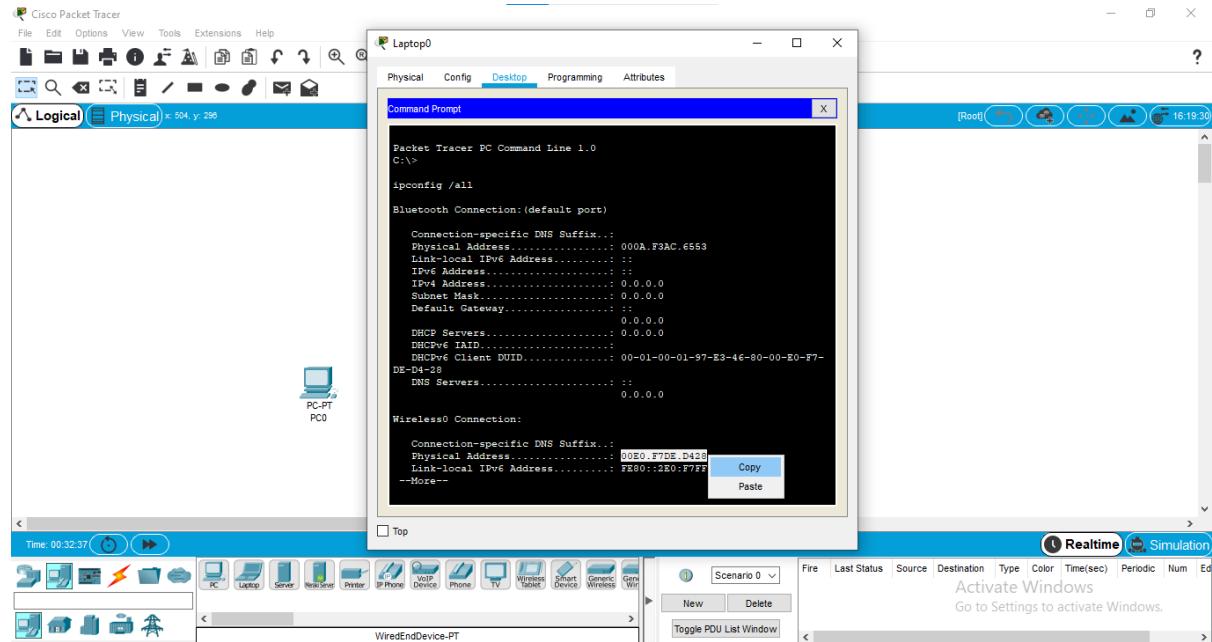
Step 5: Now Select any Device (here PC1) → Desktop → Command Prompt → Type ipconfig /all and copy the Physical Address from the Wireless Connection.

Copy IP address for showing Wireless Connection

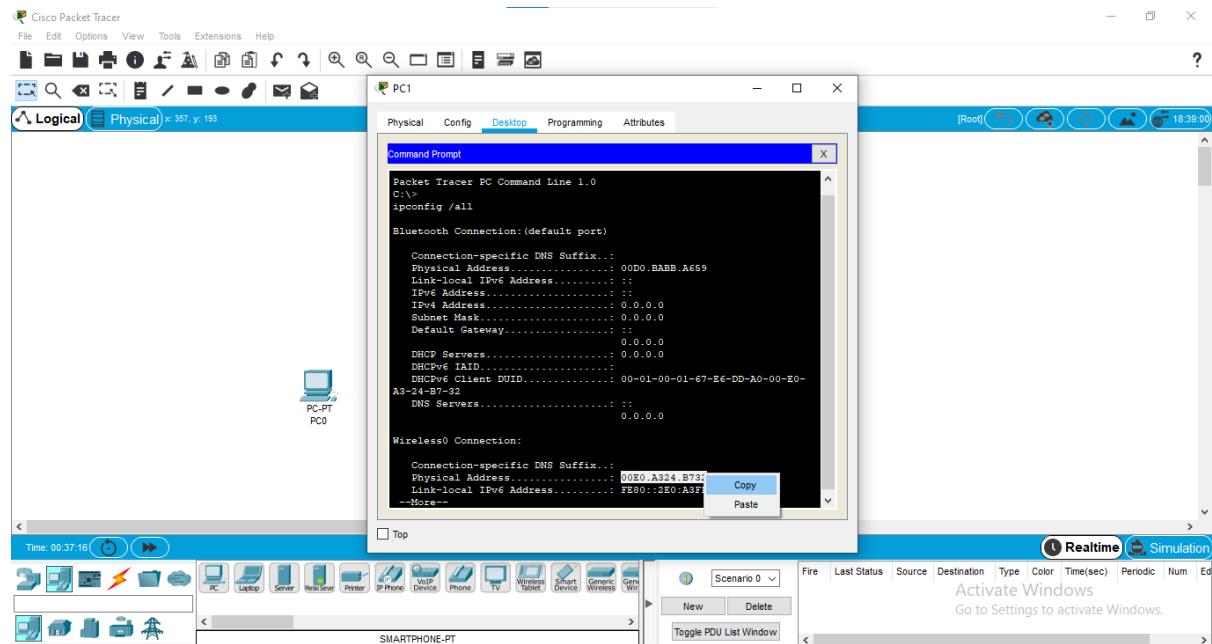
PC0:



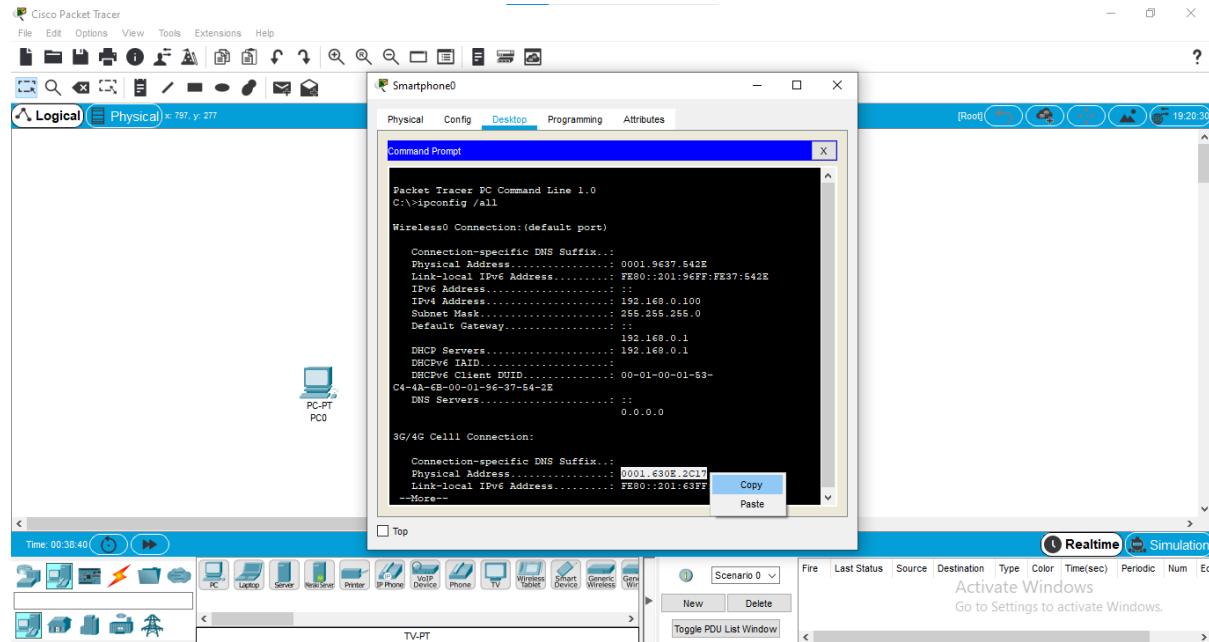
Laptop0:



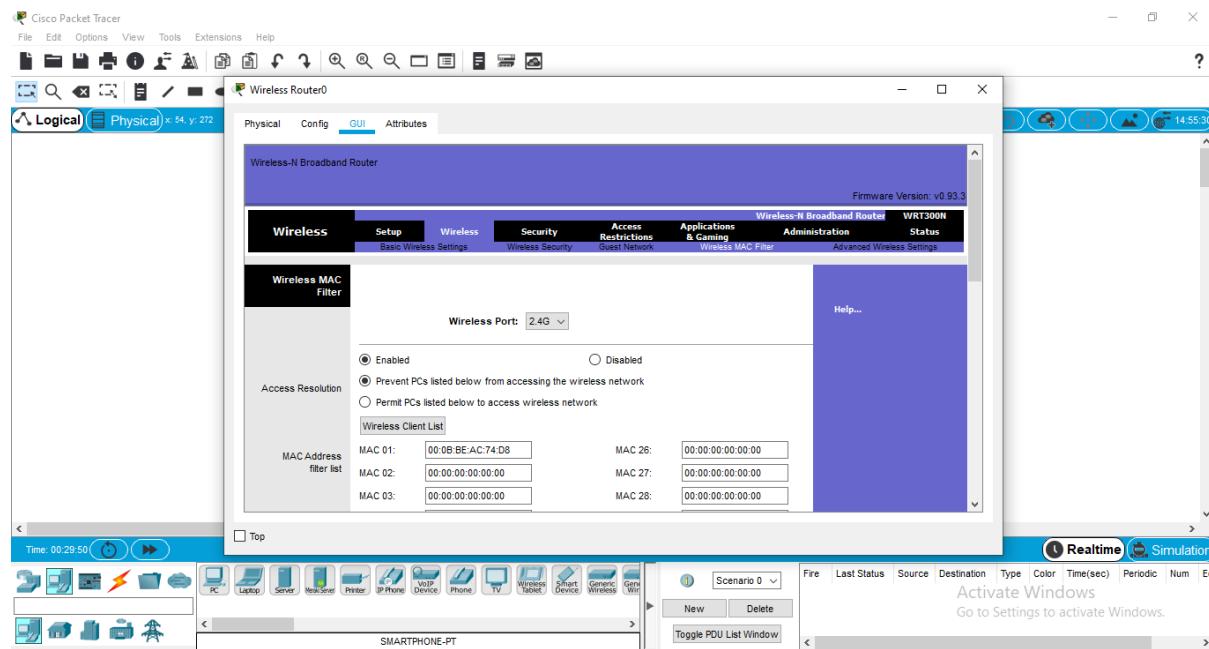
PC1:

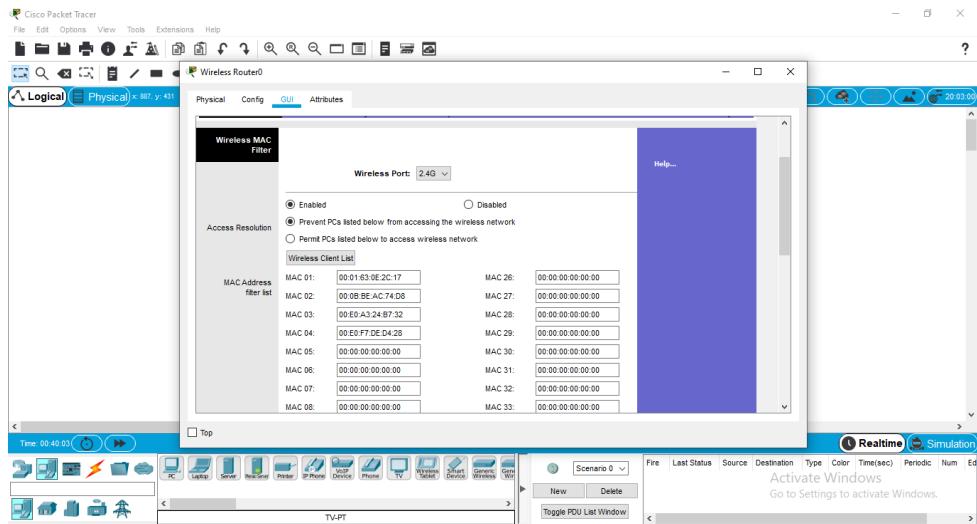


Smartphone0:

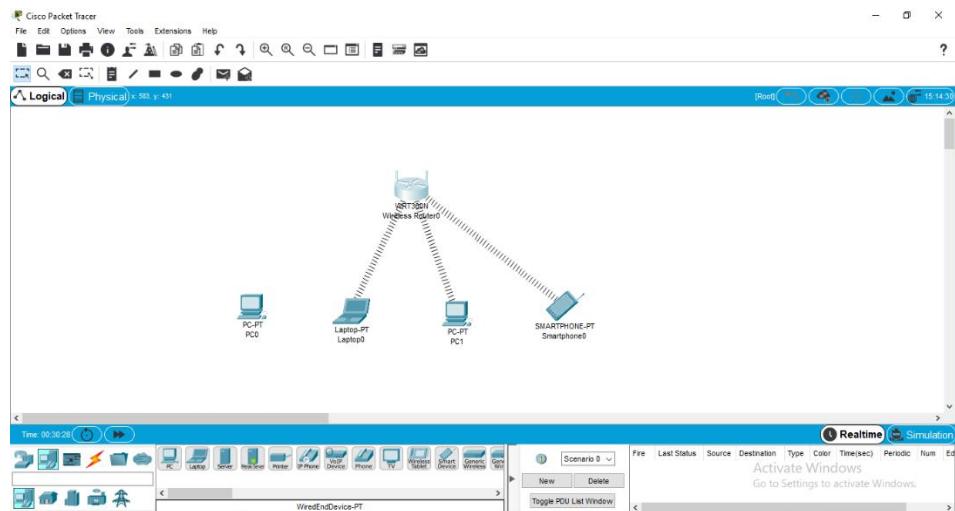


Step 6: Now Select Wireless Router0 → GUI → Wireless → Wireless MAC Filter → Paste the Physical Address copied from Command Prompt of PC0. Also add ":" after each 2 digits in the Physical Address → Click on Save Settings.

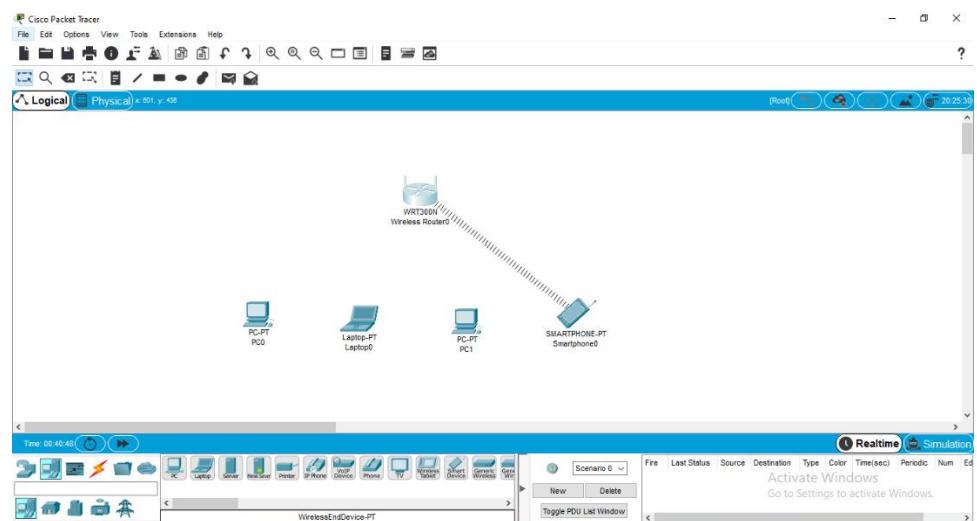




Step 7: After Disabling MAC of PC0:



Similarly for all other devices.



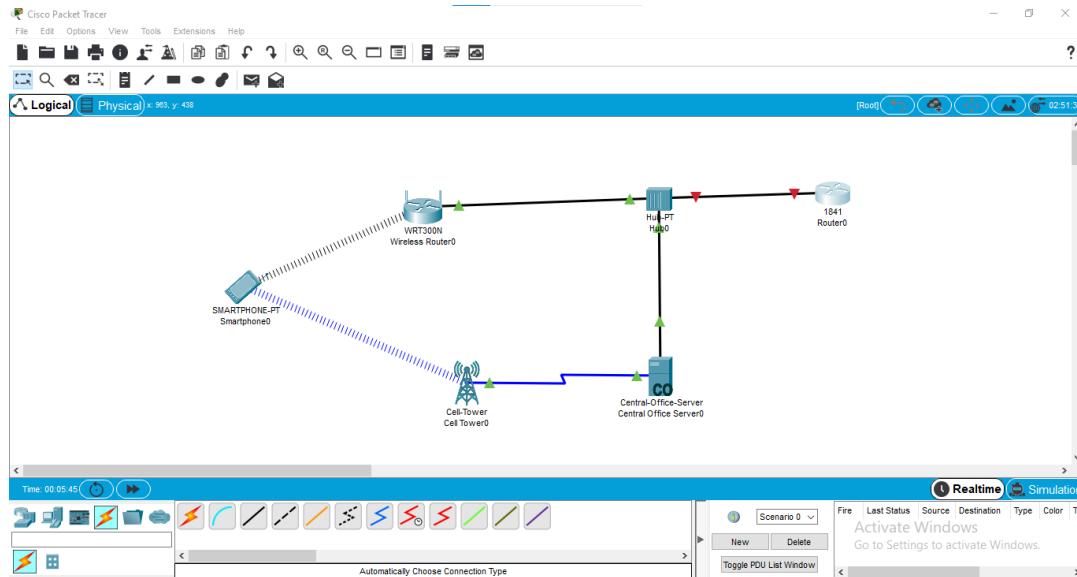
Practical No.8

Aim: Create a mobile network using Cell Tower, Central Office Server, Web browser and Web Server. Simulate connection between them

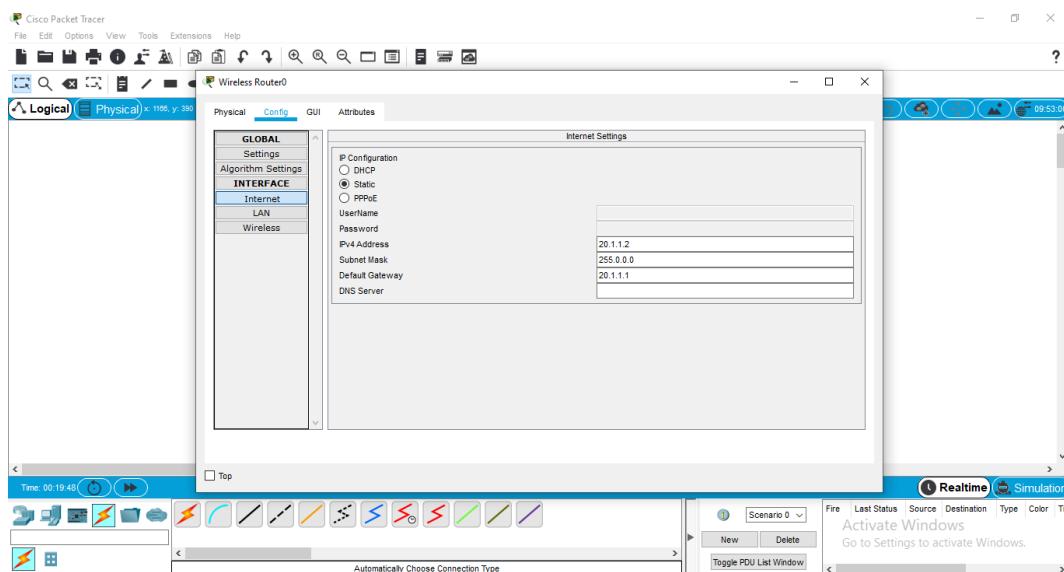
Step 1: Create a network using smartphone, wireless router WRT300N, hub-pt, 1841 Router, central office-server, Cell-Tower.

Step 2: Connect cell tower and central office server using coaxial cable.

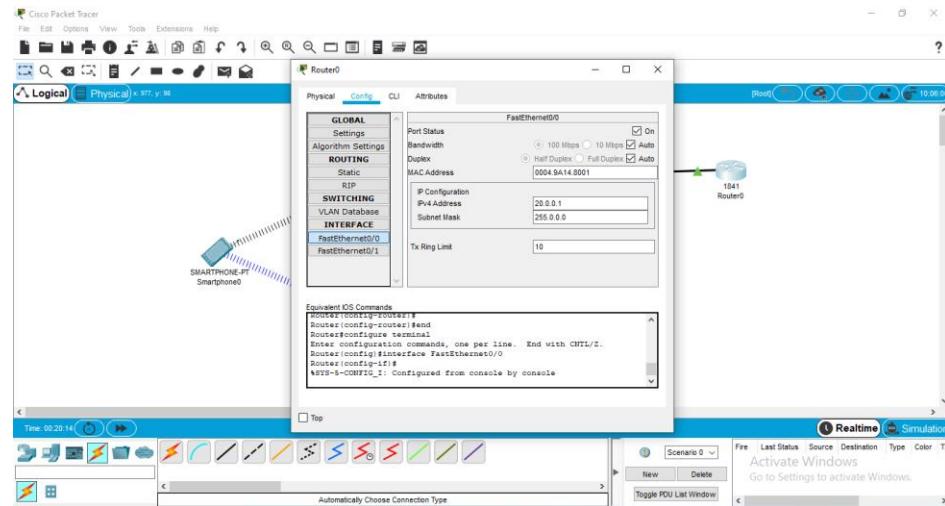
Step 3: Connect wireless router WRT300N, Hub-pt, 1841 Router, central-office-server using copper straight through wire.



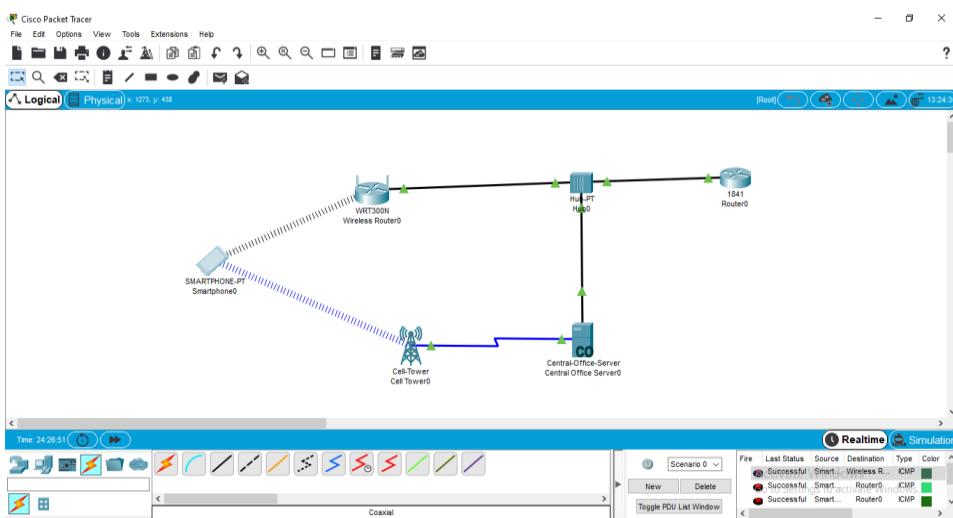
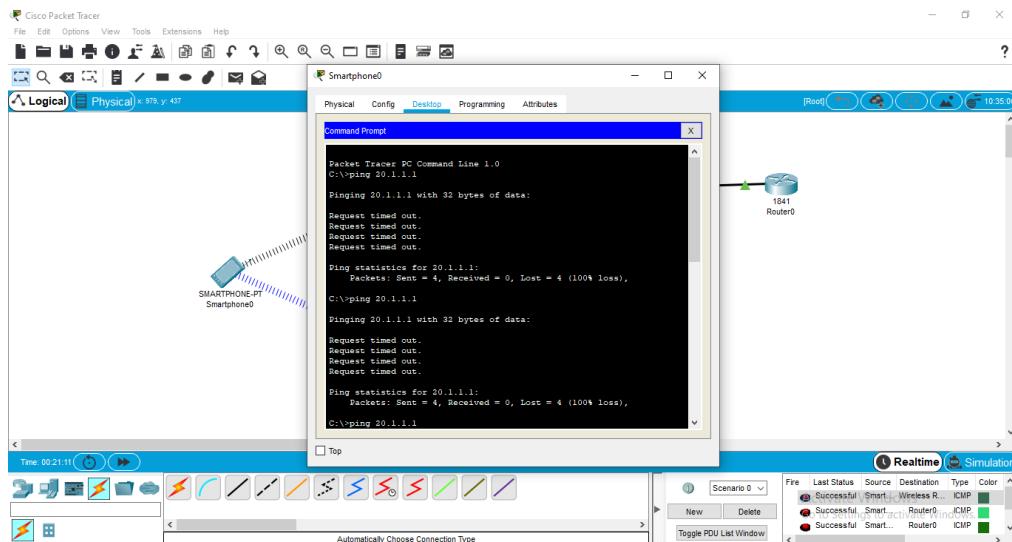
Step 4: Click on wireless router -> in config tab select internet -> in internet choose ip configuration as static and set IP address and default gateway.



Step 5: Click on router 1841. In config tab select interface and give IP address.



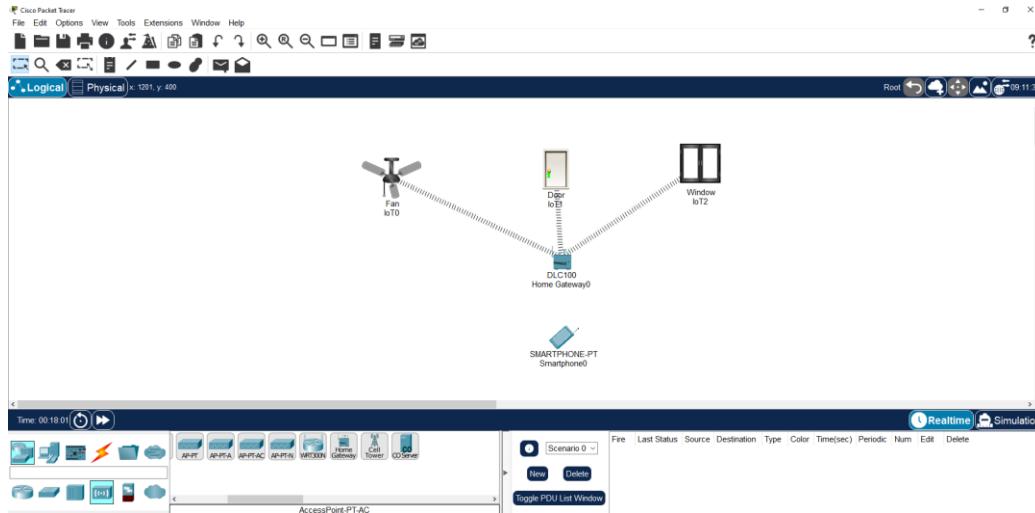
Step 6: Click on smartphone and ping router 1841.



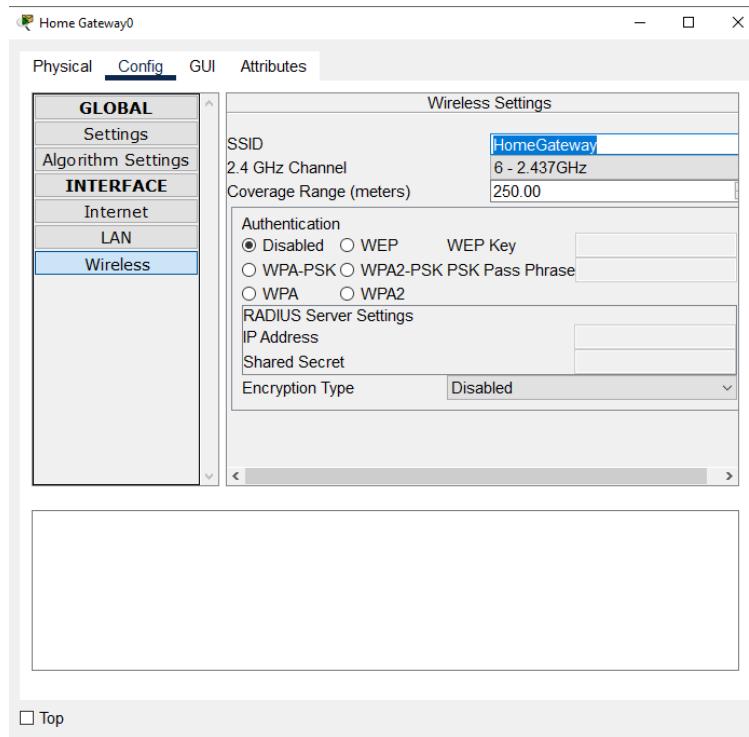
Practical No.9

Aim: Simulate Mobile Adhoc Network with Directional Antenna.

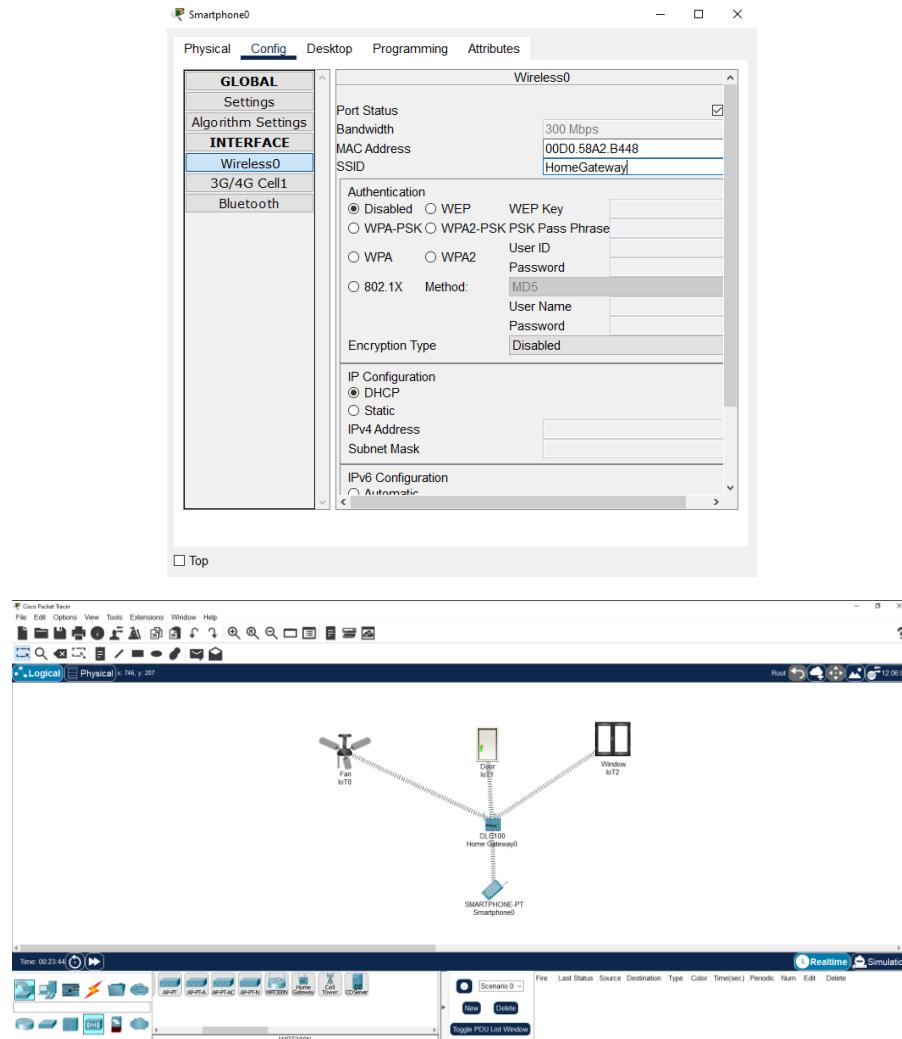
Step 1: Create a following network.



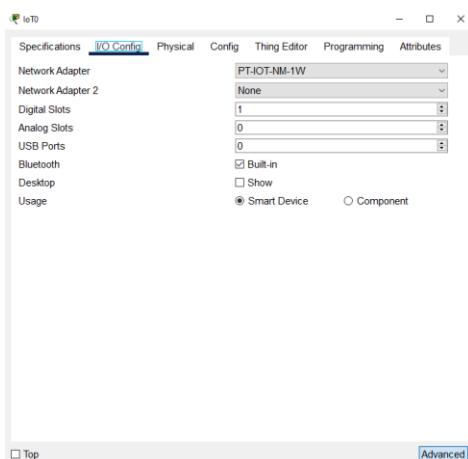
Step 2: Click on Home Gateway → Config → Wireless. Copy the SSID



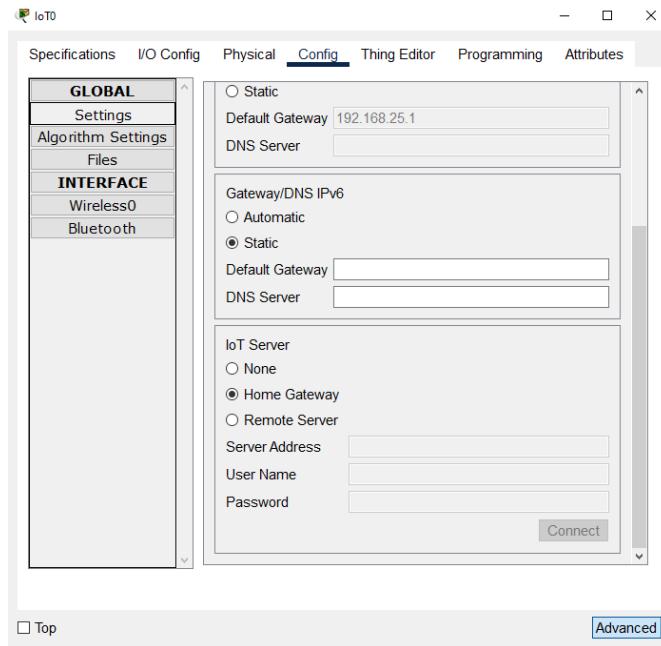
Step 3: Click on Smartphone → Config → Wireless0. Paste the copied SSID, which will allow smartphone to get connected to Home Gateway



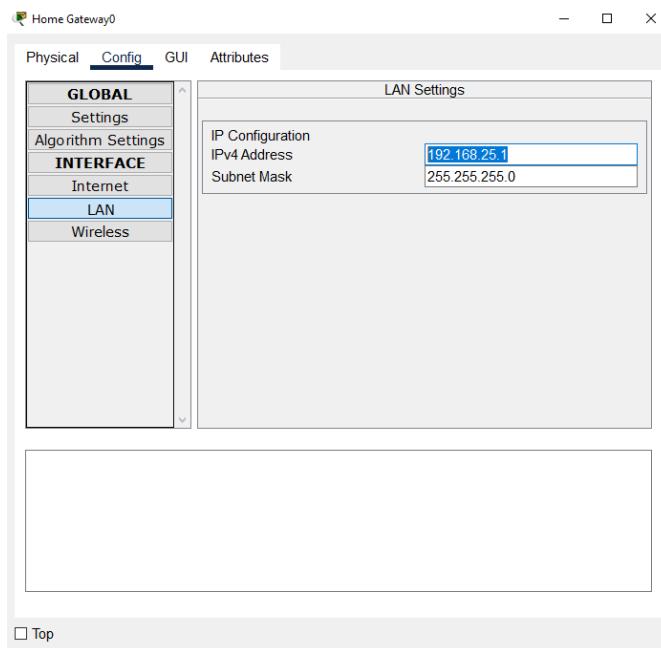
Step 4: Click on Fan → Advanced → I/O Config. Make sure the following configurations are selected. Follow the same steps for Door and Window.



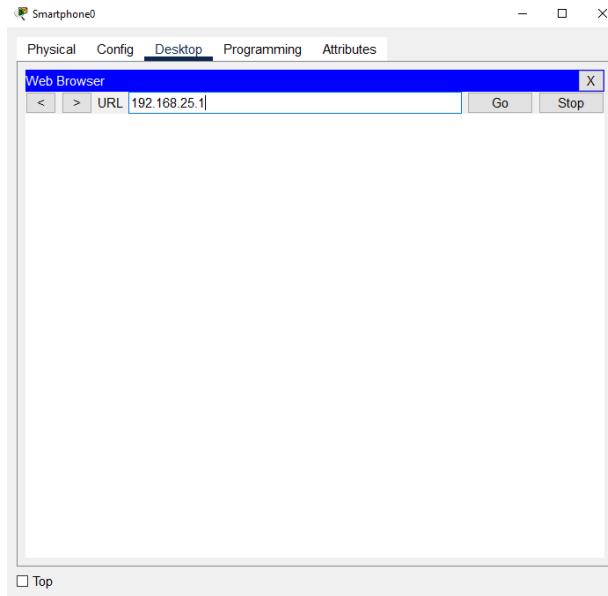
Step 5: Now Click on Fan→Global→Settings. Check the Home Gateway radio button in IoT Server Section. Also ensure that its SSID is “HomeGateway” by clicking on Interface→Wireless0. Follow same steps for Door and Window.



Step 6: Select HomeGateway0→Config→Interface→LAN→Copy the IPv4 Address.



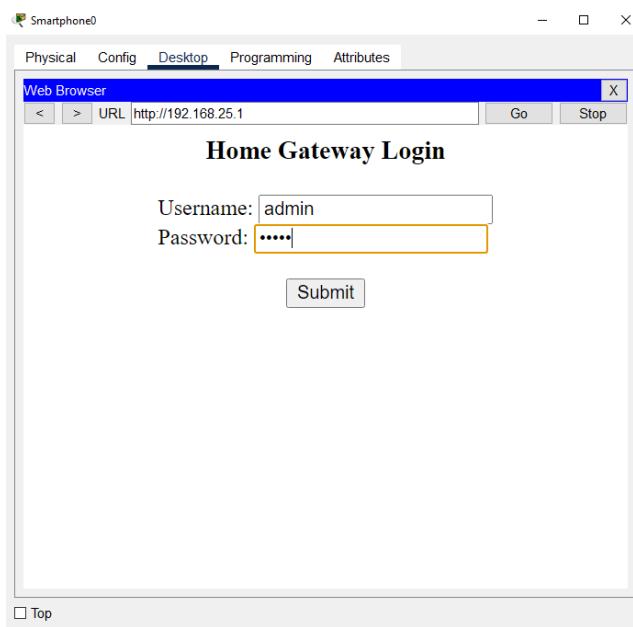
Step 7: Now select Smartphone → Desktop → Web Browser, and enter the IP address in the search URL section.



Step 8: A Home Gateway Login Page will appear. Enter the following credentials and click on submit.

Username: - admin

Password: - admin



Step 9: We will get directed to home.html, from here we can change the status of IoT devices such as changing speed of Fan (Off, High, Low), Locking/Unlocking of the Door, Opening/Closing of the Window.

