

LAN with Switch



What is our GOAL for this MODULE?

The goal of this module is to create a Local Area Network where 4 computers are connected using a switch.

What did we ACHIEVE in the class TODAY?

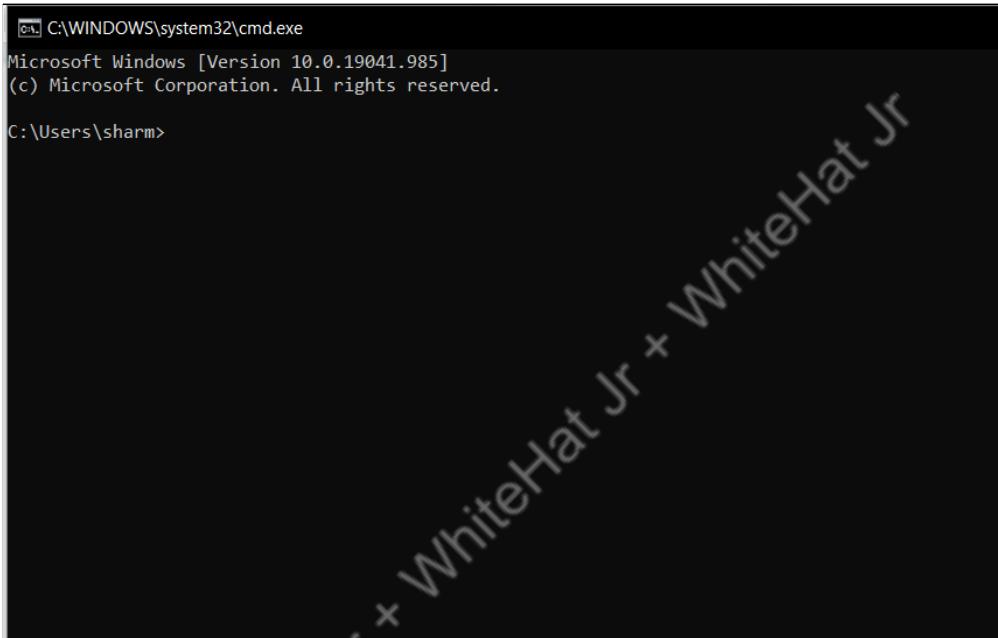
We created a virtual network of 4 computers. Assigned the IP address to each computer and performed a ping test in the simulation mode. We also used show mac address command to see the mac address table stores in the Switch.

Which CONCEPTS/CODING BLOCKS did we cover today?

- We learned about various networking commands.
- We learned about the mac address.
- We created a LAN using Switch
- We also created network simulation

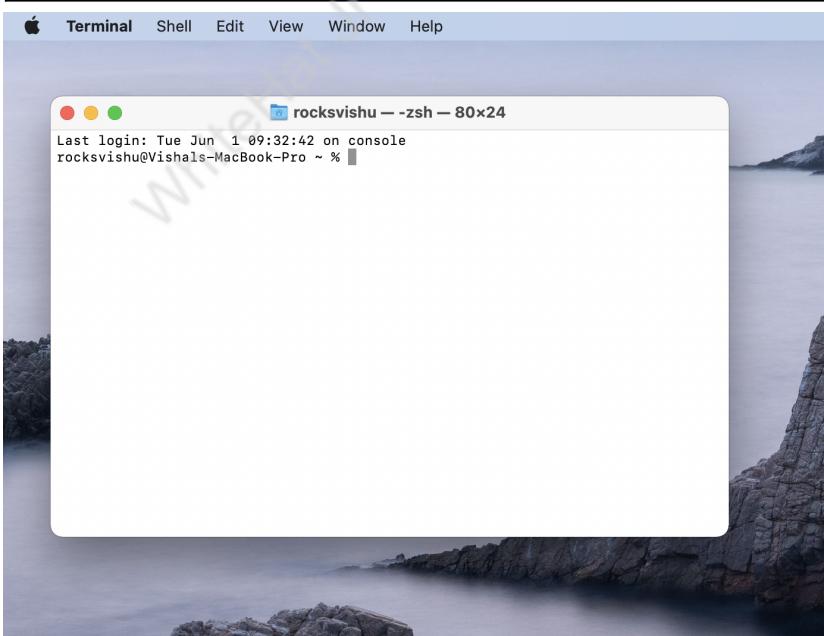
How did we DO the activities?

1. Open the Command Prompt or terminal in mac.

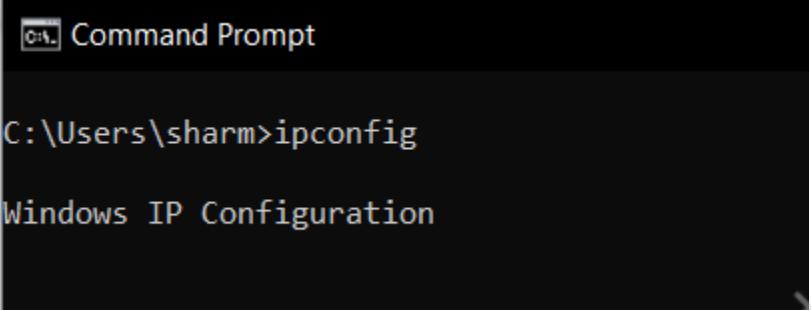


```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Version 10.0.19041.985]
(c) Microsoft Corporation. All rights reserved.

C:\Users\sharm>
```

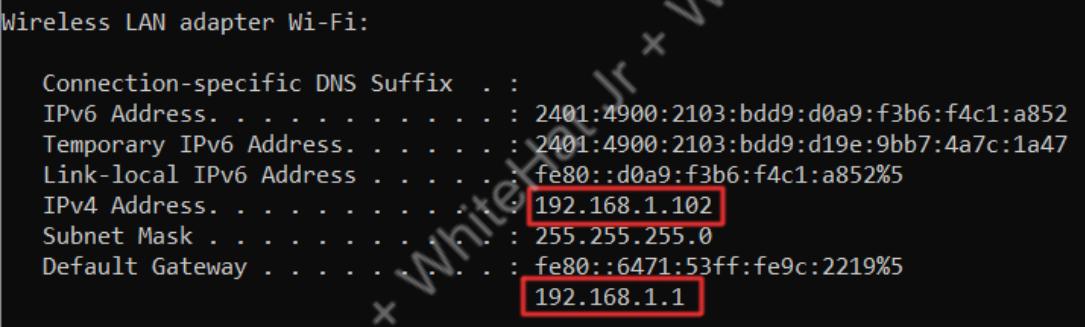


2. Run the Ipconfig command to check the IP address of the computer.



```
C:\Users\sharm>ipconfig

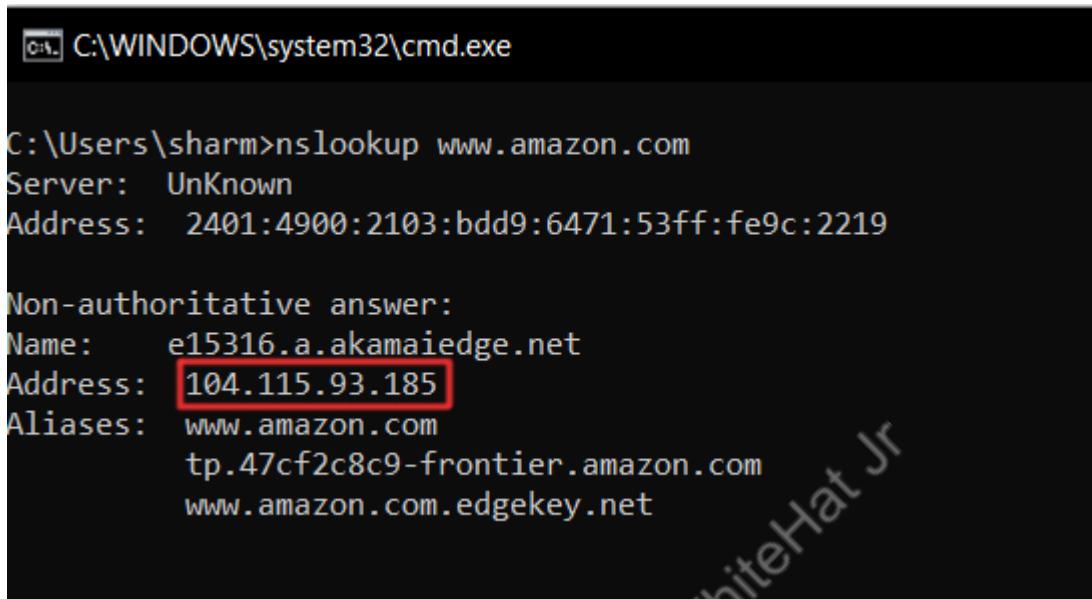
Windows IP Configuration
```



```
Wireless LAN adapter Wi-Fi:

  Connection-specific DNS Suffix . . . . .
  IPv6 Address . . . . . : 2401:4900:2103:bdd9:d0a9:f3b6:f4c1:a852
  Temporary IPv6 Address . . . . . : 2401:4900:2103:bdd9:d19e:9bb7:4a7c:1a47
  Link-local IPv6 Address . . . . . : fe80::d0a9:f3b6:f4c1:a852%5
  IPv4 Address . . . . . : 192.168.1.102
  Subnet Mask . . . . . : 255.255.255.0
  Default Gateway . . . . . : fe80::6471:53ff:fe9c:2219%5
                                192.168.1.1
```

3. Find the IP address of amazon.com using **nslookup** command.

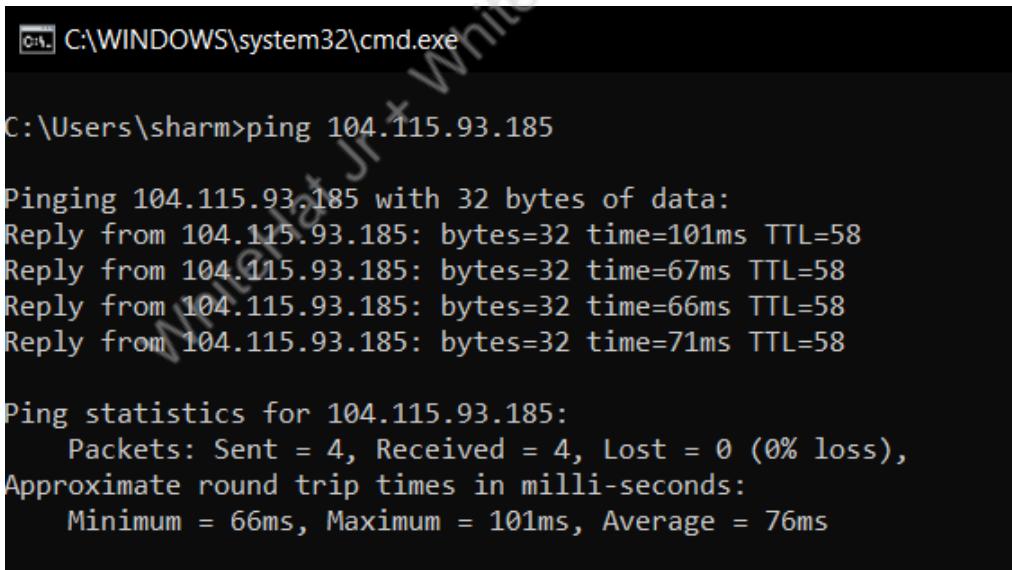


```
C:\WINDOWS\system32\cmd.exe

C:\Users\sharm>nslookup www.amazon.com
Server: UnKnown
Address: 2401:4900:2103:bdd9:6471:53ff:fe9c:2219

Non-authoritative answer:
Name: e15316.a.akamaiedge.net
Address: 104.115.93.185
Aliases: www.amazon.com
          tp.47cf2c8c9-frontier.amazon.com
          www.amazon.com.edgekey.net
```

4. Ping the www.amazon.com using its IP address.



```
C:\WINDOWS\system32\cmd.exe

C:\Users\sharm>ping 104.115.93.185

Pinging 104.115.93.185 with 32 bytes of data:
Reply from 104.115.93.185: bytes=32 time=101ms TTL=58
Reply from 104.115.93.185: bytes=32 time=67ms TTL=58
Reply from 104.115.93.185: bytes=32 time=66ms TTL=58
Reply from 104.115.93.185: bytes=32 time=71ms TTL=58

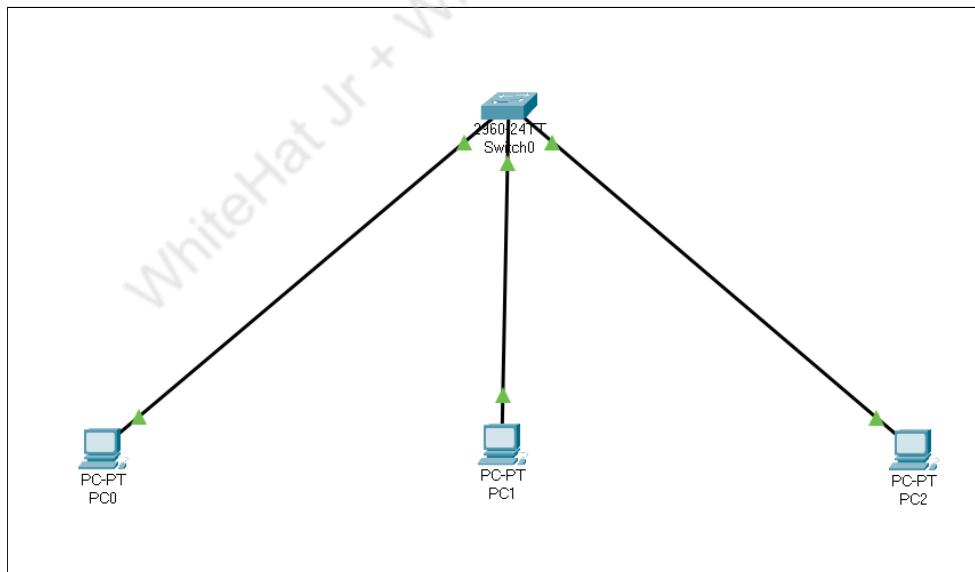
Ping statistics for 104.115.93.185:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 66ms, Maximum = 101ms, Average = 76ms
```

5. Find the mac address of the computer using ipconfig /all command.

```
Wireless LAN adapter Wi-Fi:

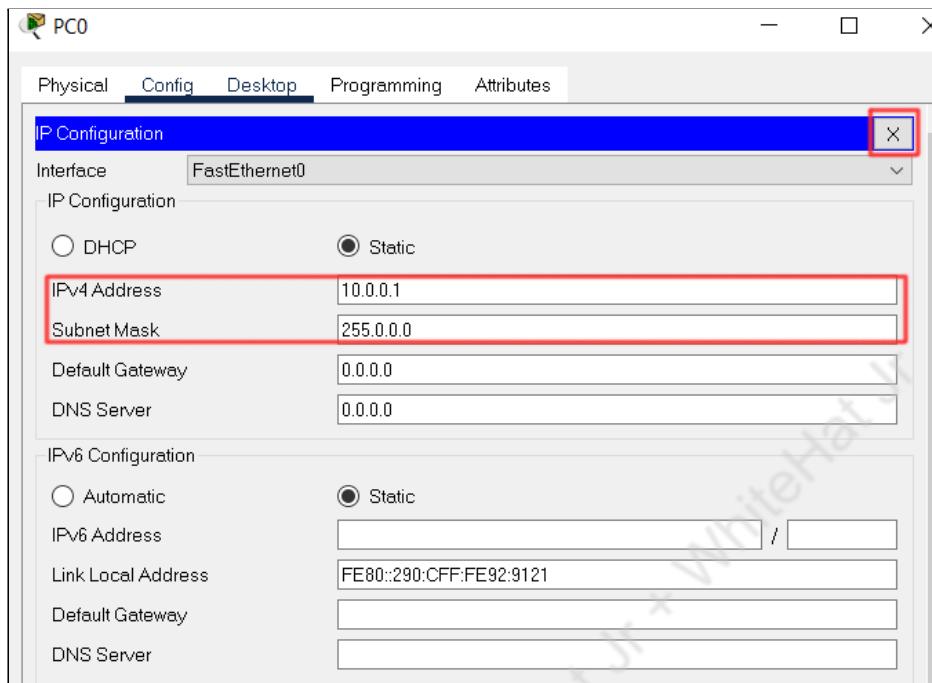
Connection-specific DNS Suffix . :
Description . . . . . : Intel(R) Wireless-AC 9560 160MHz
Physical Address. . . . . : D0-AB-D5-22-FF-29
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes
IPv6 Address. . . . . : 2401:4900:2105:8f39:d0a9:f3b6:f4c1:a852(PREFERRED)
Temporary IPv6 Address. . . . . : 2401:4900:2105:8f39:bc11:dd72:a35f:ff06(PREFERRED)
Link-local IPv6 Address . . . . . : fe80::d0a9:f3b6:f4c1:a852%5(PREFERRED)
IPv4 Address. . . . . : 192.168.1.101(PREFERRED)
Subnet Mask . . . . . : 255.255.255.0
Lease Obtained. . . . . : 01 June 2021 09:37:45
Lease Expires . . . . . : 02 June 2021 09:41:38
Default Gateway . . . . . : fe80::3851:f0ff:fe1b:df97%5
                                         192.168.1.1
DHCP Server . . . . . : 192.168.1.1
DHCPv6 IAID . . . . . : 248556501
DHCPv6 Client DUID. . . . . : 00-01-00-01-24-9A-1C-DE-08-97-98-6A-5D-6B
DNS Servers . . . . . : 2401:4900:2105:8f39:3851:f0ff:fe1b:df97
                         2401:4900:2105:8f39:3851:f0ff:fe1b:df97
                                         192.168.1.1
```

6. Create a Local Area Network of 3 computers using Switch.

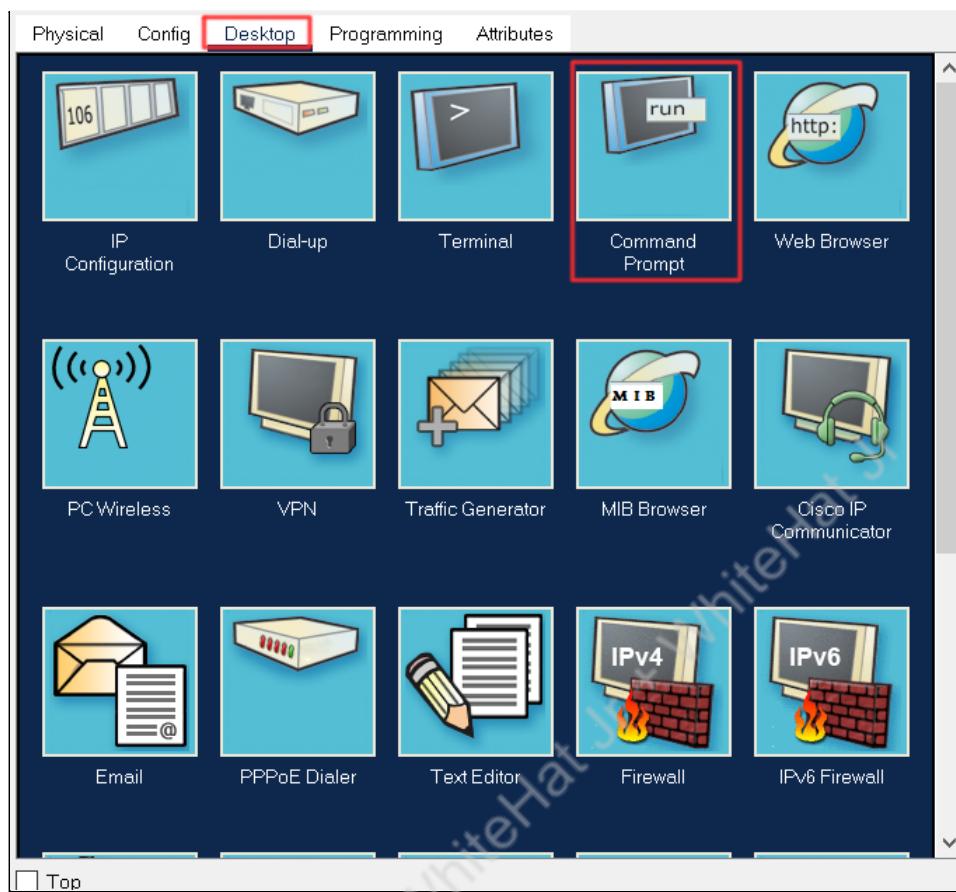


7. In the tab ipv4 address we will write our IP address, we can assign the IP address of our choice. For this PC let's assign 10.0.0.1. Once we assign the IP address, this will automatically set the subnet mask as 255.0.0.0 and close the window. Repeat the

same process for the other 2 computers and set the IP as 10.0.0.2 & 10.0.0.3



8. Open the Command Prompt.



9. Ping to the other computer using ping command and the IP address.

Physical Config Desktop Programming Attributes

Command Prompt

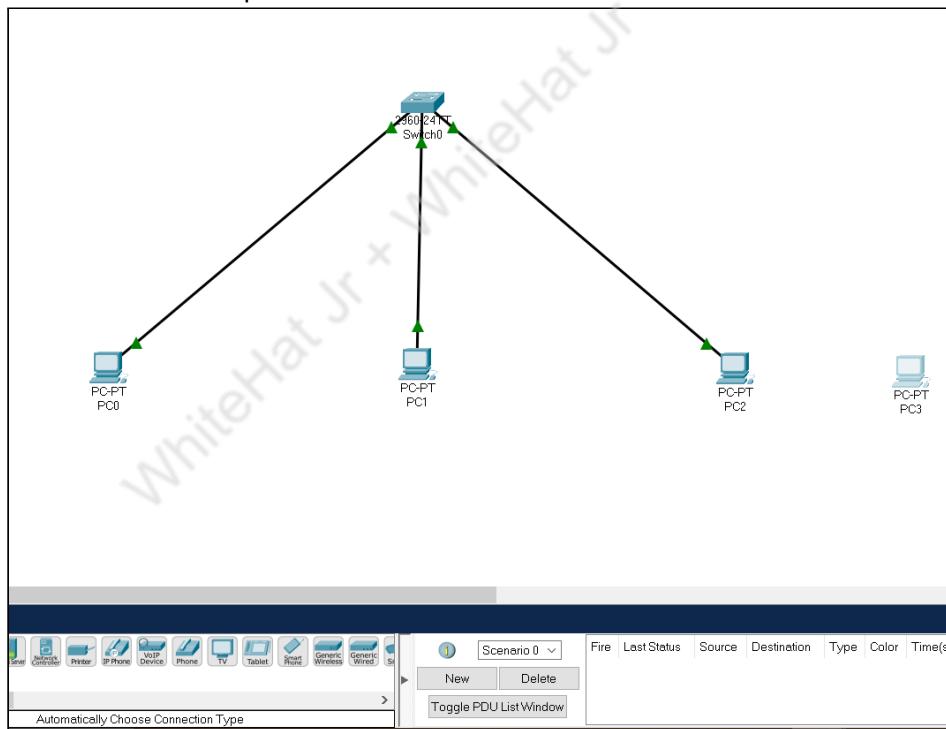
```
Packet Tracer PC Command Line 1.0
C:\>ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

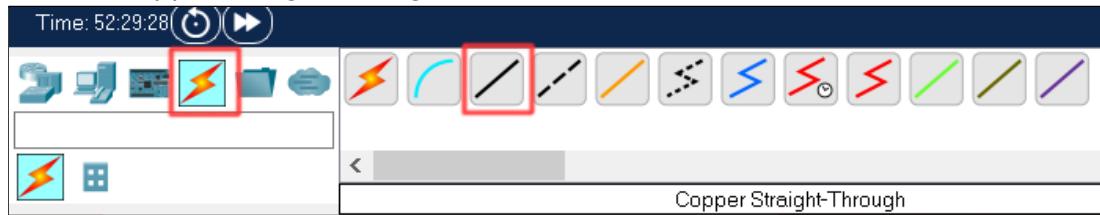
Reply from 10.0.0.2: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

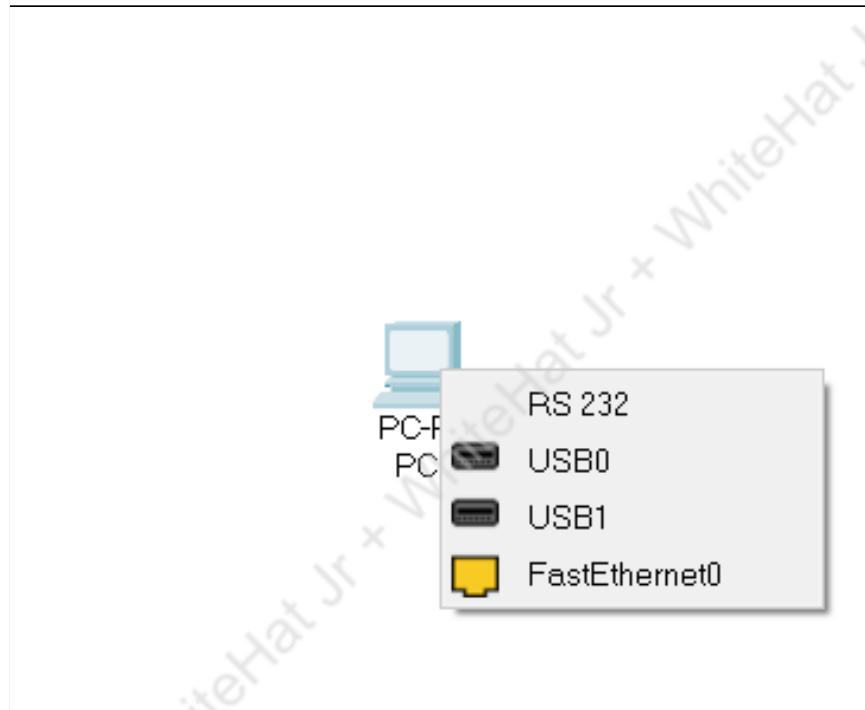
10. Add one more computer on the screen.



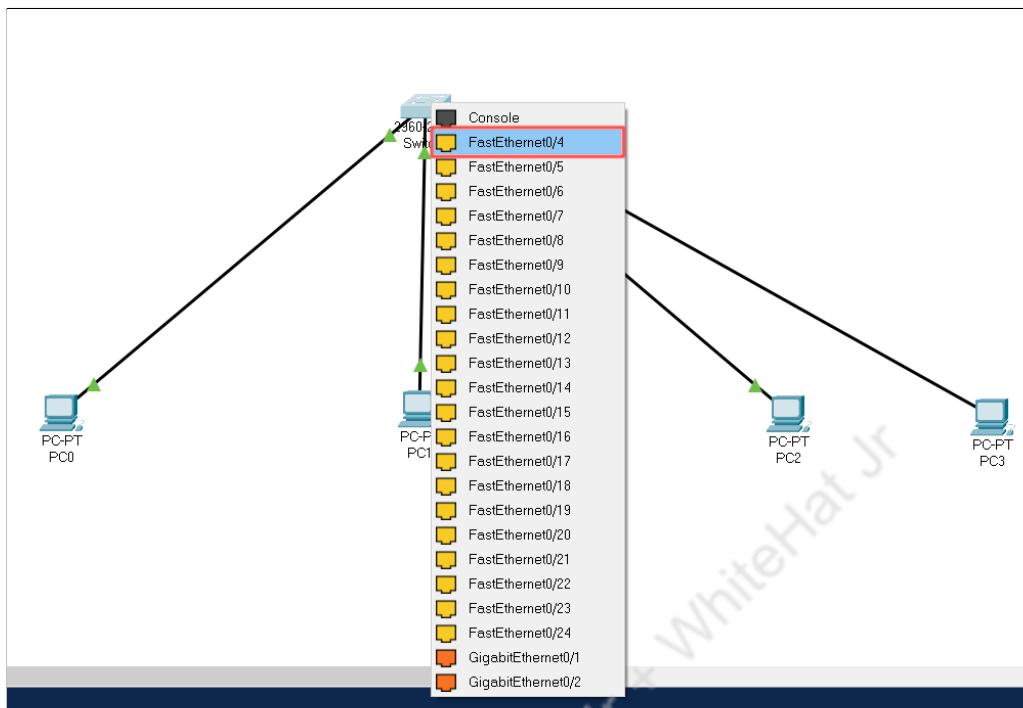
11. Select the copper straight through cable from connection menu.



12. Click on the new added PC and select the fast ethernet port.



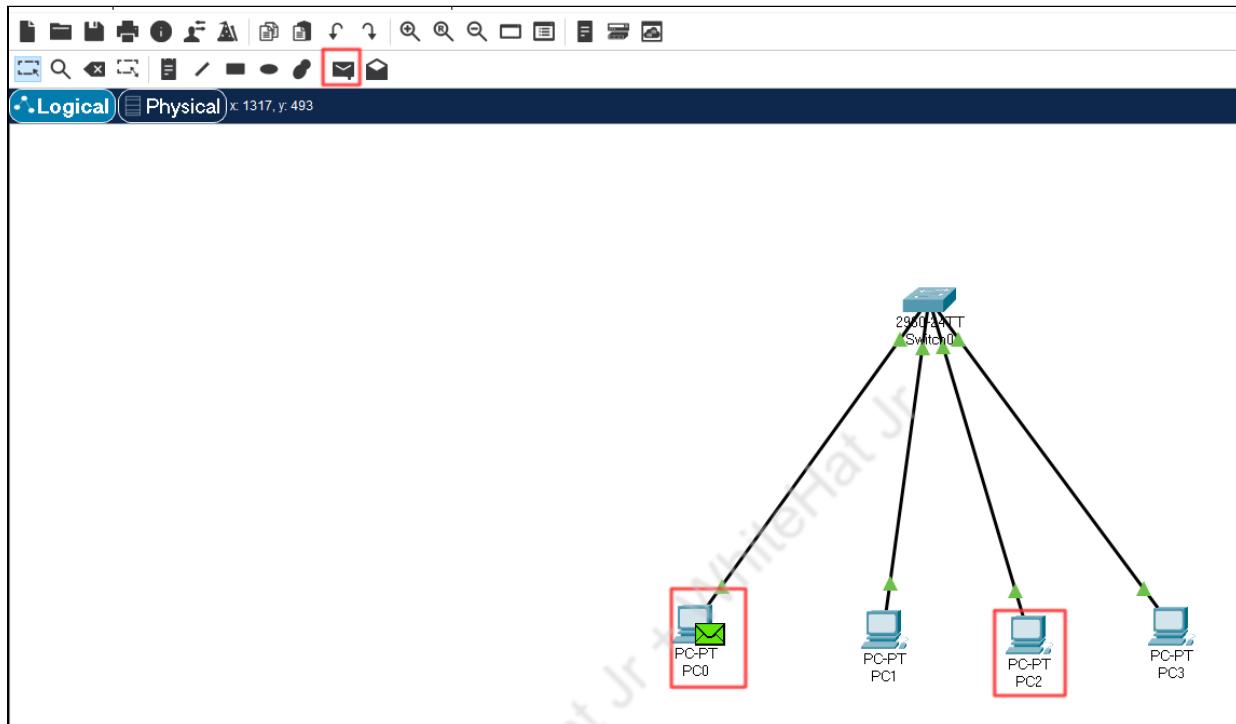
13. Click on the Switch and select the fast Ethernet port 0/4.



14. Select the Simulation mode.



15. Select the packet from the top menu and first select the PC0 and then select the PC2.

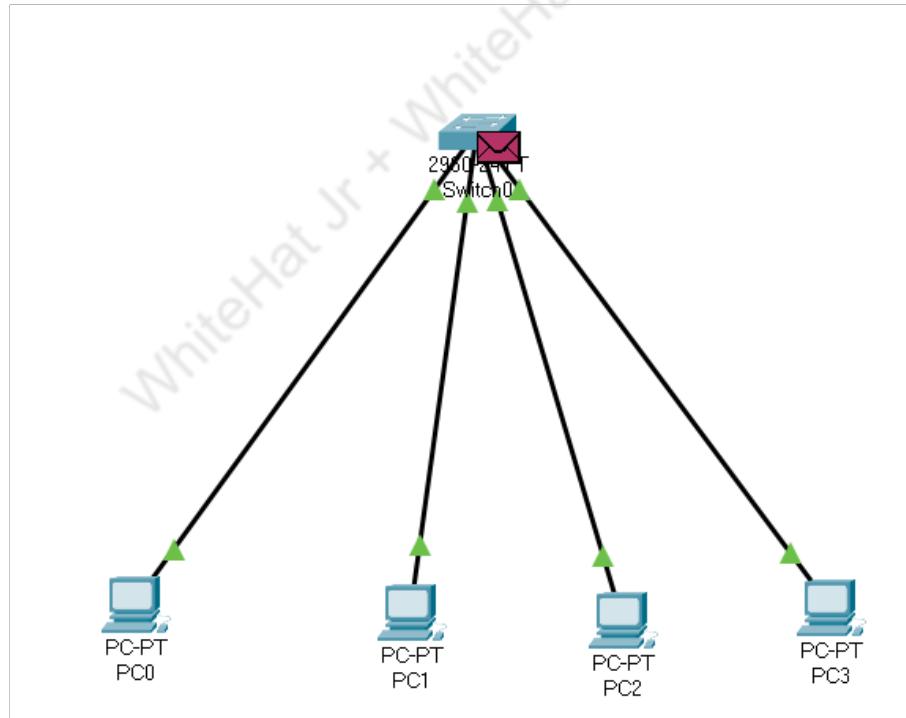
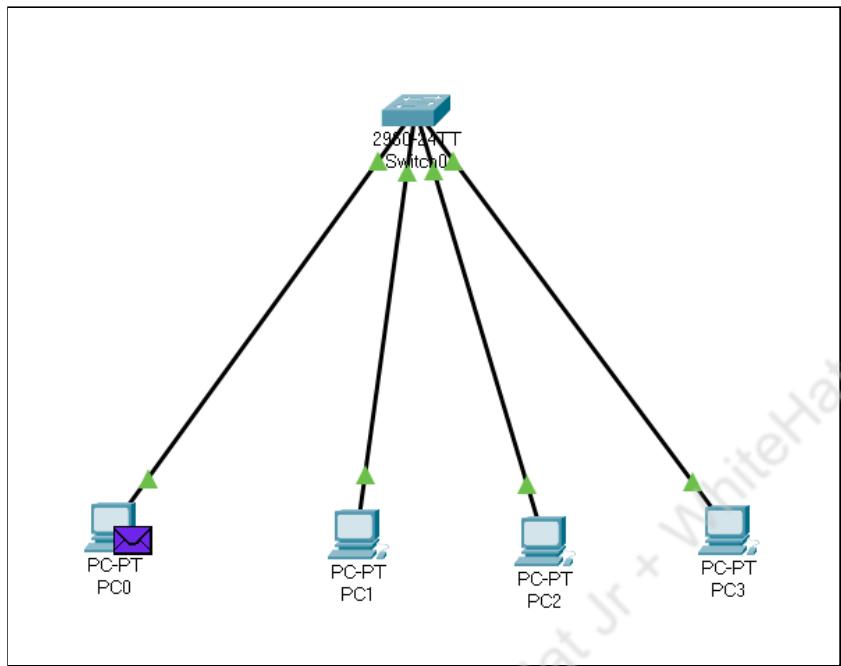


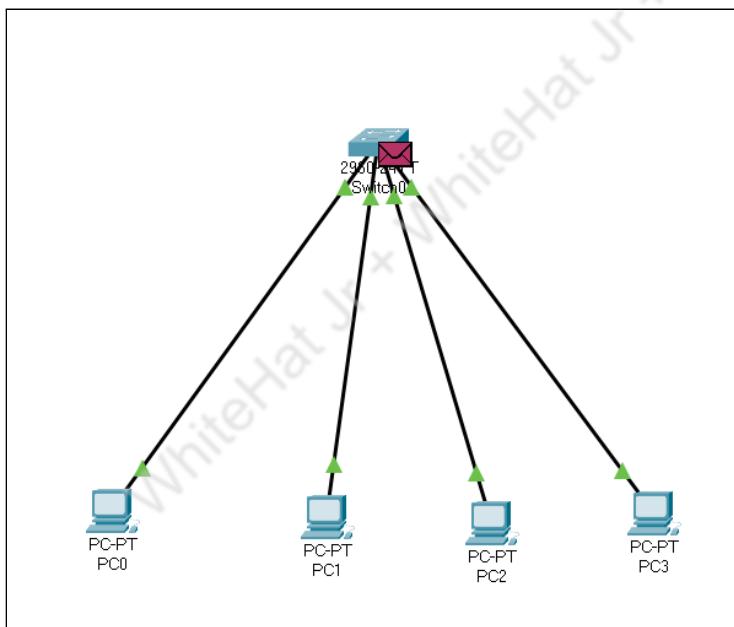
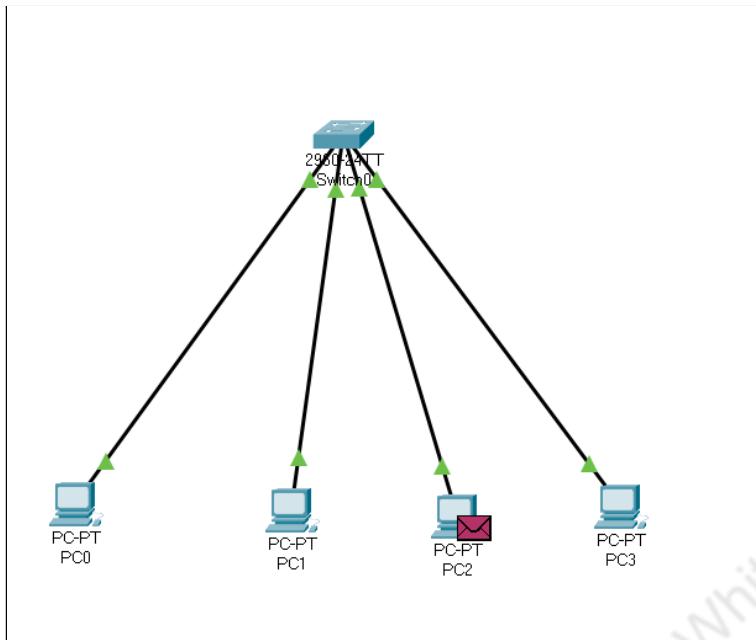
16. Advance the packet by clicking on the forward button.

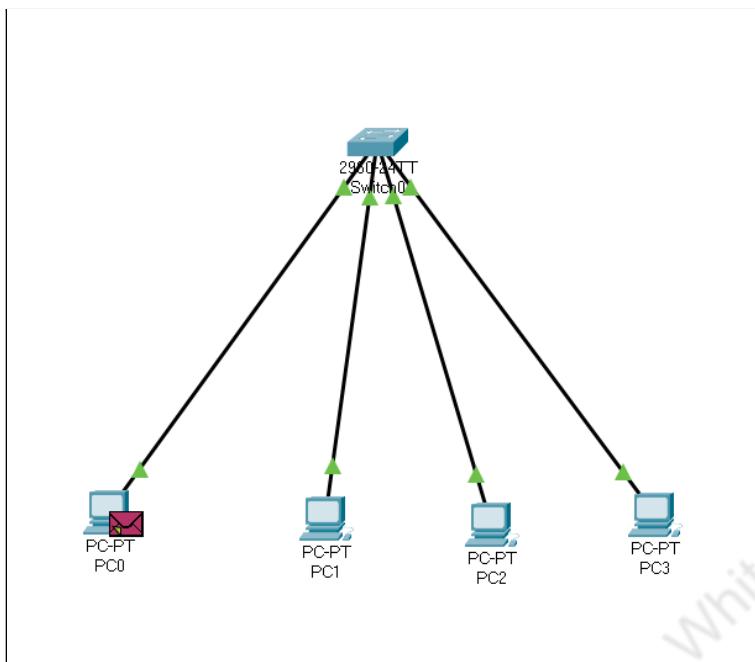


17. Click on the fast forward button until the packet comes back to the PC0.packet will

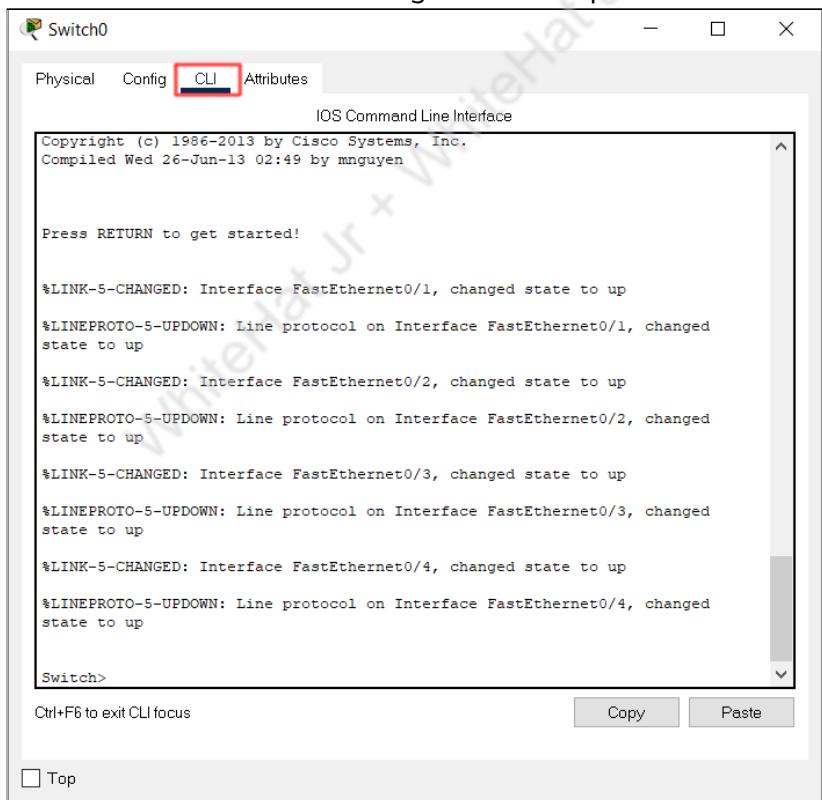
travel from PC0 to switch and then to PC2 and the back to the switch and then to PC0. This will complete the ping. And we can see the packet taken by the data packet.







18. Double click on the switch and go to the cli option.



Switch0

Physical Config **CLI** Attributes

IOS Command Line Interface

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Compiled Wed 26-Jun-13 02:49 by mmnguyen

Press RETURN to get started!

%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to up

Switch>

Ctrl+F6 to exit CLI focus

Top

19. Type the command show mac-address-table to see the mac address of the 2 computers used for the ping.

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to up

Switch>show mac-address-table
      Mac Address Table
-----
  Vlan     Mac Address         Type      Ports
  ----  -----  -----  -----
    1      0001.9648.a873  DYNAMIC   Fa0/3
    1      00e0.f991.c474  DYNAMIC   Fa0/1
Switch>
```

Ctrl+F6 to exit CLI focus [Copy](#) [Paste](#)

We have successfully established the connection between the four computers connected via switch. We also see how data travels across the device when we do a ping test and how the switch stores the mac addresses of the computers.

What's NEXT?

In the next class, we will learn more about how to connect 2 Local Area Networks using Router.

EXTEND YOUR KNOWLEDGE

You can learn more about mac addresses from the [link](#).