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Reg No: 16550

LAB: 1

TASK 1: Identify the Network Devices

Answer:



1.Router



2.Bridge



3.Switch



4. Gigabit switch



5.Hub

What must computers on a network have in common in order to directly communicate with each other?

- ☐ Use the same operating system
- ☐ Use the same hardware
- ☐ Use the same protocol
- ☐ Built by the same company

Answer: Use the Same Protocol.

Which layer offers provisions for data expedition, class of service, and exception reporting?

- ☐ Session
- ☐ Presentation
- ☐ Network
- ☐ Data Link

Answer: Session

Which layer of the OSI model provides connectivity and path selection between two end systems where routing occurs?

- ☐ Physical Layer
- ☐ Data Link Layer
- ☐ Network Layer
- ☐ Transport Layer

Answer: Network Layer

Packets are encapsulated in frames at which layer of the OSI model?

- ☐ Data Link
- ☐ Network
- ☐ Transport
- ☐ Session

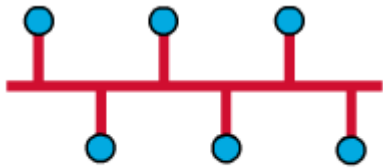
Answer: Data Link

In the TCP/IP model which layer would deal with reliability, flow control, and error correction?

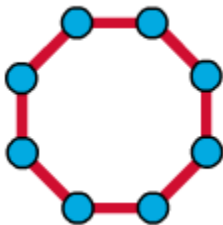
- ☐ Transport
- ☐ Internet
- ☐ Network
- ☐ Application

Answer: Transport

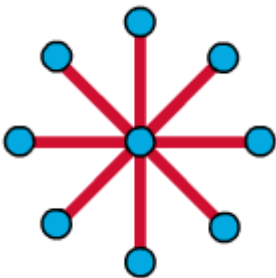
Name the Following Topologies:



1. Bus



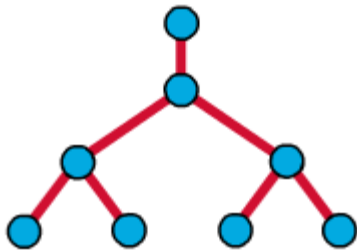
2. Ring



3. Star



4. Extended Star

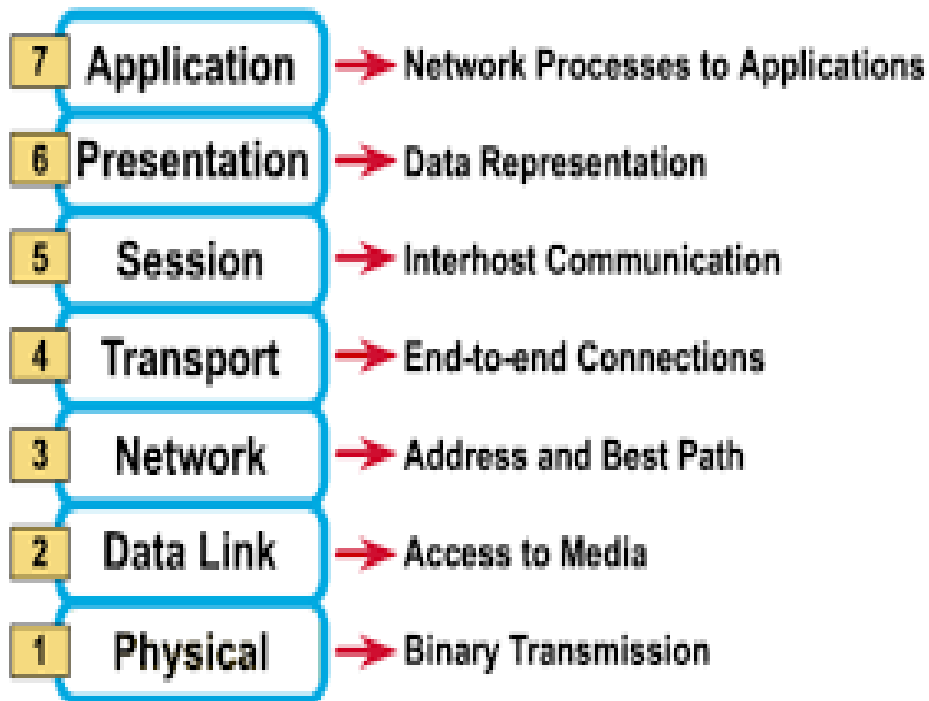


5. Hierarchical



6. Mesh

Name the Layers of the OSI Model



A hub is an OSI layer _____ device.

- ☐ One
- ☐ Two
- ☐ Four
- ☐ Six

Answer: One

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```
Command Prompt

Wireless LAN adapter Local Area Connection* 1:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::f03c:959b:ed0d:4ed6%17
    IPv4 Address. . . . . : 172.16.2.89
    Subnet Mask . . . . . : 255.255.240.0
    Default Gateway . . . . . : 172.16.5.1

Ethernet adapter Bluetooth Network Connection:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

C:\Users\HU>
```

Step 3 Record the following TCP/IP information for this computer

IP address: 172.16.2.89_____

Subnet Mask: 255.255.240.0 _____

Default Gateway:172.16.5.1 _____

```
C:\Users\HU>ipconfig/all
```

Windows IP Configuration

```
Host Name . . . . . : DESKTOP-F05P528
Primary Dns Suffix . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
```

Ethernet adapter Ethernet:

```
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Description . . . . . : Realtek PCIe GbE Family Controller
Physical Address. . . . . : B0-0C-D1-EA-14-5D
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes
```

Wireless LAN adapter Local Area Connection* 1:

```
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Description . . . . . : Microsoft Wi-Fi Direct Virtual Adapter
Physical Address. . . . . : 4A-5F-99-6F-EA-71
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes
```

Wireless LAN adapter Local Area Connection* 2:

```
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Description . . . . . : Microsoft Wi-Fi Direct Virtual Adapter #2
Physical Address. . . . . : CA-5F-99-6F-EA-71
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes
```

Wireless LAN adapter Wi-Fi:

```
Connection-specific DNS Suffix . :
Description . . . . . : Realtek RTL8821CE 802.11ac PCIe Adapter
Physical Address. . . . . : 48-5F-99-6F-EA-71
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::f03c:959b:ed0d:4ed6%17(Preferred)
IPv4 Address. . . . . : 172.16.2.89(Preferred)
Subnet Mask . . . . . : 255.255.240.0
Default Gateway . . . . . : 172.16.5.1
DHCPv6 IAID . . . . . : 273178521
```


Notice the Physical Address (MAC) and the NIC model (Description).

48-5F-99-6F-EA-71_____ Realtek RTL8821CE 802.11ac PCIe Adapter_____

Write down the IP addresses of any servers listed:

172.16.5.1_____

Type the following command: ping 127.0.0.1

The 127.0.0.0 network is reserved for loopback testing. If the ping is successful, then TCP/IP is properly installed and functioning on this computer.

Was the ping successful ____yes_____

```
C:\Users\HU>ping 127.0.0.1

Pinging 127.0.0.1 with 32 bytes of data:
Reply from 127.0.0.1: bytes=32 time<1ms TTL=128
Reply from 127.0.0.1: bytes=32 time<1ms TTL=128
Reply from 127.0.0.1: bytes=32 time<1ms TTL=128
Reply from 127.0.0.1: bytes=32 time<1ms TTL=128

Ping statistics for 127.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Lab 3

```

C:\> Command Prompt
Windows IP Configuration

Host Name . . . . . : DESKTOP-F05P528
Primary Dns Suffix . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No

Ethernet adapter Ethernet:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Description . . . . . : Realtek PCIe GbE Family Controller
Physical Address. . . . . : B0-0C-D1-EA-14-5D
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Local Area Connection* 1:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Description . . . . . : Microsoft Wi-Fi Direct Virtual Adapter
Physical Address. . . . . : 4A-5F-99-6F-EA-71
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Local Area Connection* 2:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Description . . . . . : Microsoft Wi-Fi Direct Virtual Adapter #2
Physical Address. . . . . : CA-5F-99-6F-EA-71
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Wi-Fi:

Connection-specific DNS Suffix . :
Description . . . . . : Realtek RTL8821CE 802.11ac PCIe Adapter
Physical Address. . . . . : 48-5F-99-6F-EA-71
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::f03c:959b:ed0d:4ed6%17(Preferred)
IPv4 Address. . . . . : 172.16.2.89(Preferred)
Subnet Mask . . . . . : 255.255.240.0
Default Gateway . . . . . : 172.16.5.1
DHCPv6 IAID . . . . . : 273178521
DHCPv6 Client DUID. . . . . : 00-01-00-01-24-C0-37-92-B0-0C-D1-EA-14-5D
DNS Servers . . . . . : 8.8.8.8
NetBIOS over Tcpip. . . . . : Enabled

```

Lab 03- IP Addressing

Q.1: What is your machine's IP Address?

I Pv4 Address-----: 172.16.2.89(Preferred)

Q.2: What is the class of its Address?

Its Address has a Class B as it ranges from 128.0.0.0–191.255.255.255

Q.3: Is this a local or global Address?

IP addresses can also be divided into two groups: Private addresses or Globally unique addresses. Non-Routable or Private Addresses fall in the range as under:

172.16.0.0–172.31.255.255

So its global address.

Q.4: What is the network mask?

225.255.240.0

Q.5: Is subnetting used?

Yes, subnetting is used in this computer.

Q.6: What is the Host number, the network number, and if applicable, the subnet number?

Network number: 172.16.2.89 (Preferred)

Subnet number: 255.255.240.0

Q.7: Can you determine the broadcast address? If so, what is it?

Yes broadcast address can be determined. The broadcast number for this is 172.16.2.225

Q.8: What is the host name and network name for the computer?

Host Name: DESKTOP-F05P528

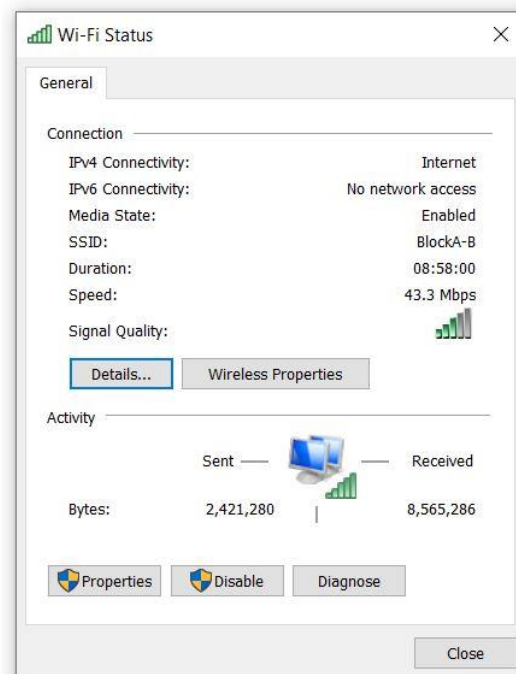
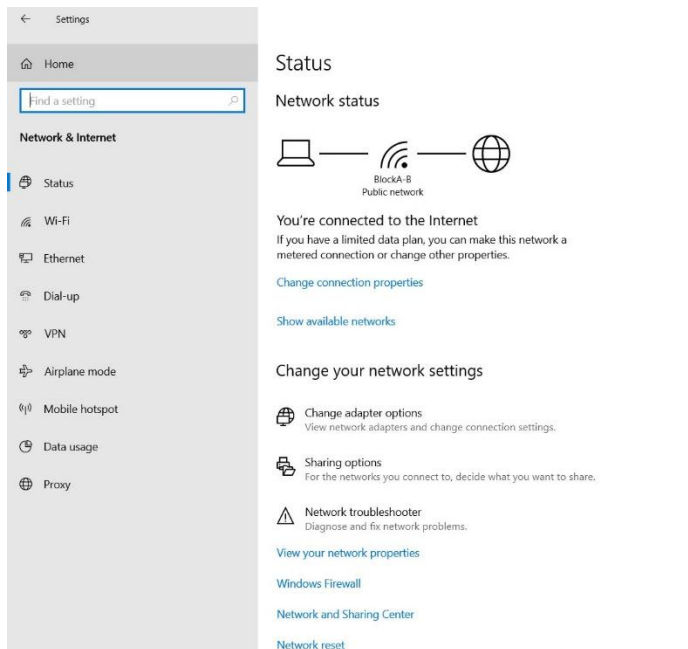
Network name: BlockA-B

Q.9: What is the default gateway for the computer?

Default gateway is the node in computer network using the internet protocol suit that serves as the forwarding host (router) to other networks when no other route specification matches the destination IP Address of a packet. The default gateway for this computer is 172.16.5.1

Q.10: What is the data link address?

Data link address is used to deliver the data link frame from one network interface to another network interface on the same network. Before an IP packet can be sent over a wired or wireless network it must be encapsulated in a data link frame so it can be transmitted over the physical medium, the actual network. This computer uses a wireless Network connection.



Q.11:Can you determine DHCP is used? If so, what are the DNS parameters?

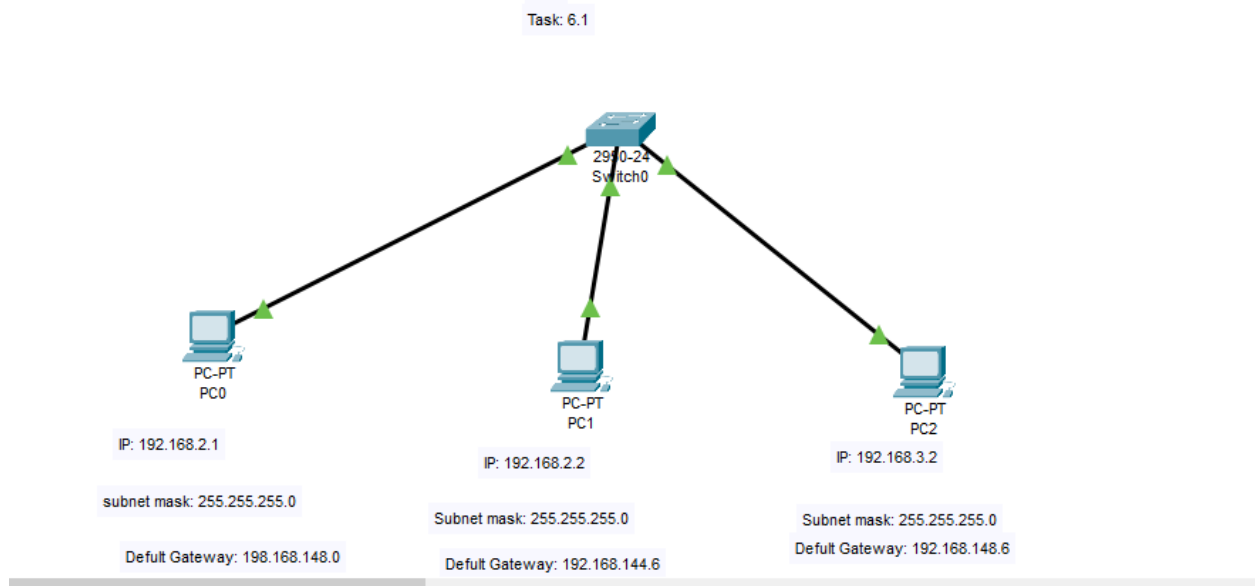
Yes, DHCP is used in this computer.

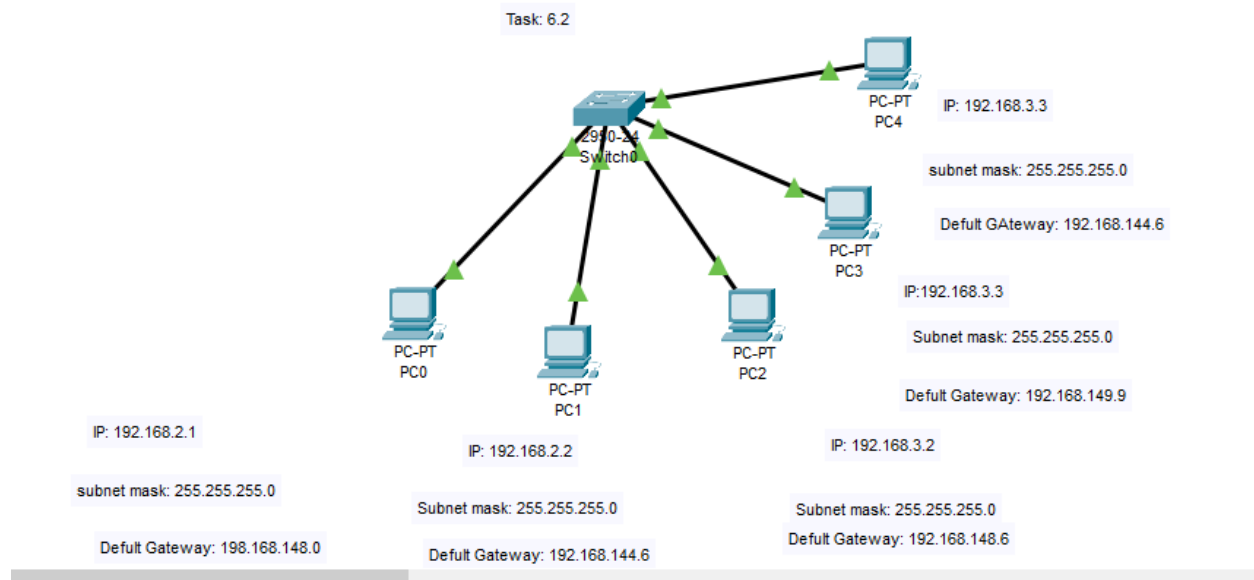
DNS Servers : 8.8.8.8

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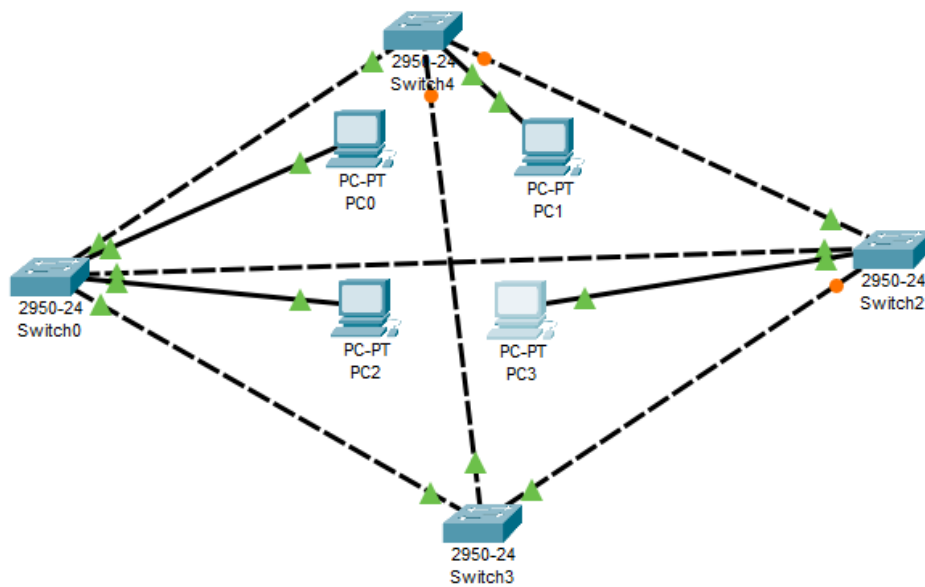
LAB: 5





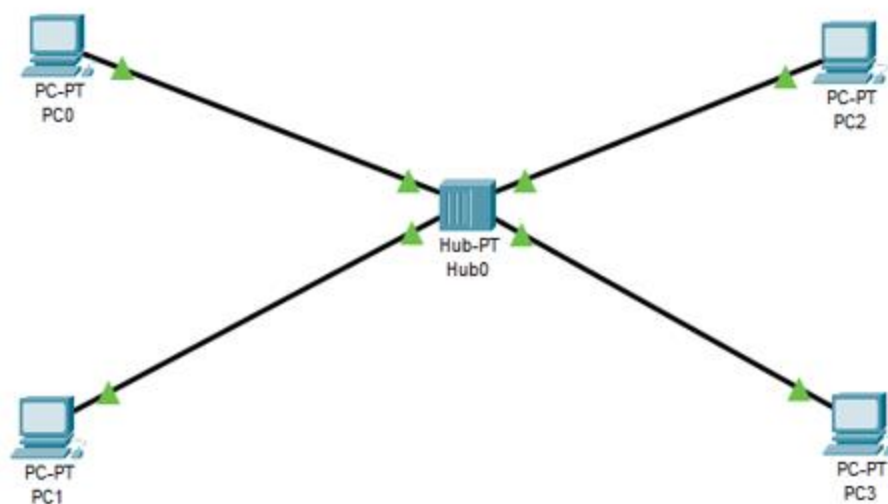
Lab 6

Construct a Mesh network topology which have four switches connected with 4 computers and assign them proper IP addresses, subnet mask and default gateways, also show the status of the PDU, by sending PDU from one PC to Another.



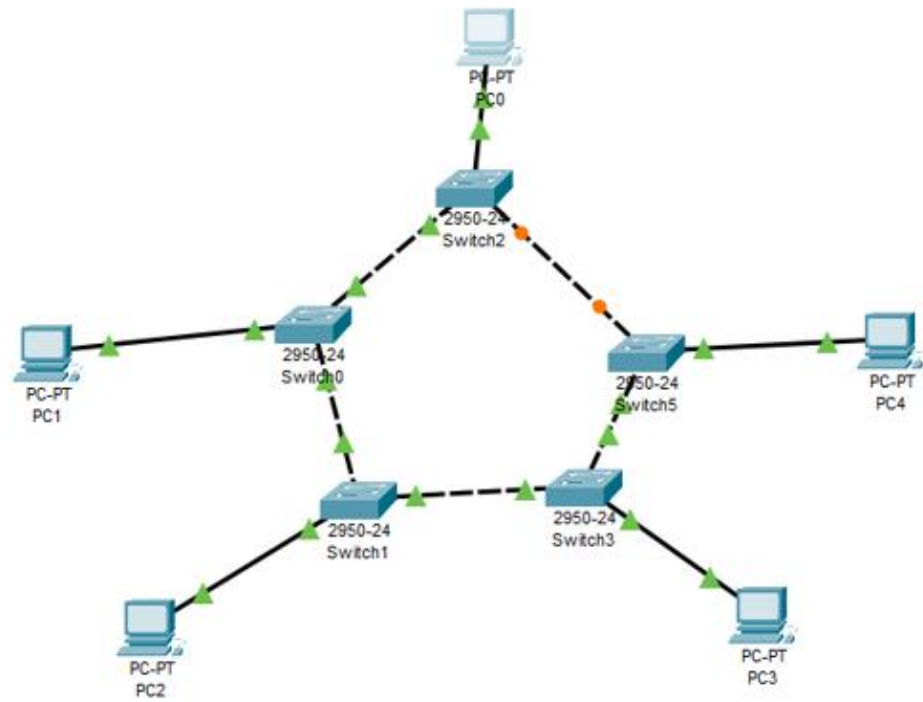
<div> <div>Realtime</div> <div>Simulation</div> </div>									
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	
	Successful	PC0	PC1	ICMP		0.000	N	0	
	Successful	PC0	PC2	ICMP		0.000	N	1	
	Successful	PC0	PC3	ICMP		0.000	N	2	









Construct a star network topology which have one Hub connected with 4 computers and assign them proper IP addresses, subnet mask and default gateways, also show the status of the PDU, by sending PDU from one PC to Another.



PDU List Window					
Fire	Last Status	Source	Destination	Type	Color
	Successful	PC0	PC1	ICMP	
	Successful	PC0	PC2	ICMP	
	Successful	PC0	PC3	ICMP	
	Successful	PC0	PC4	ICMP	

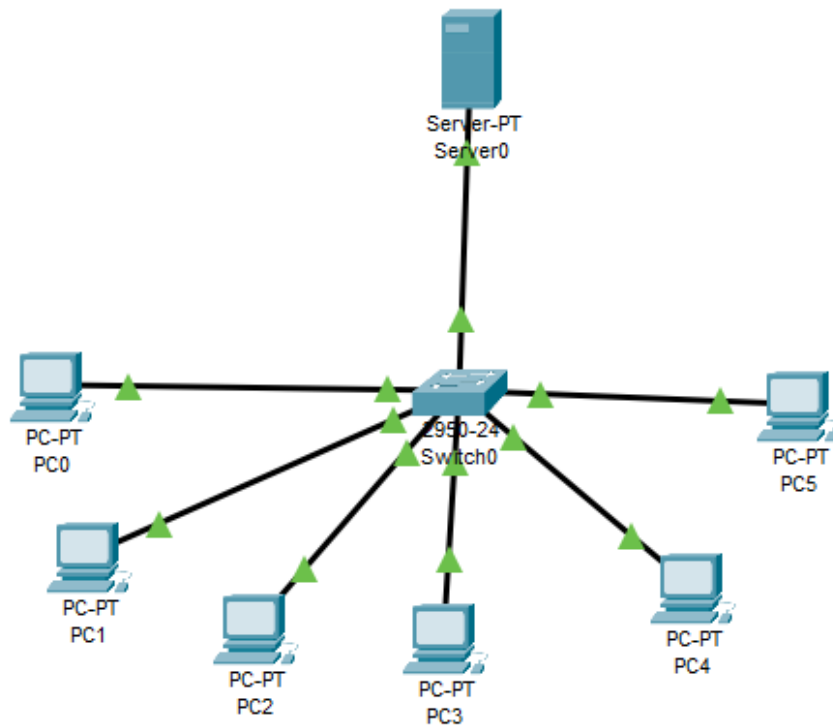
Construct a ring network topology which have five switches connected with 5 computers and assign them proper IP addresses, subnet mask and default gateways, also show the status of the PDU, by sending PDU from one PC to Another

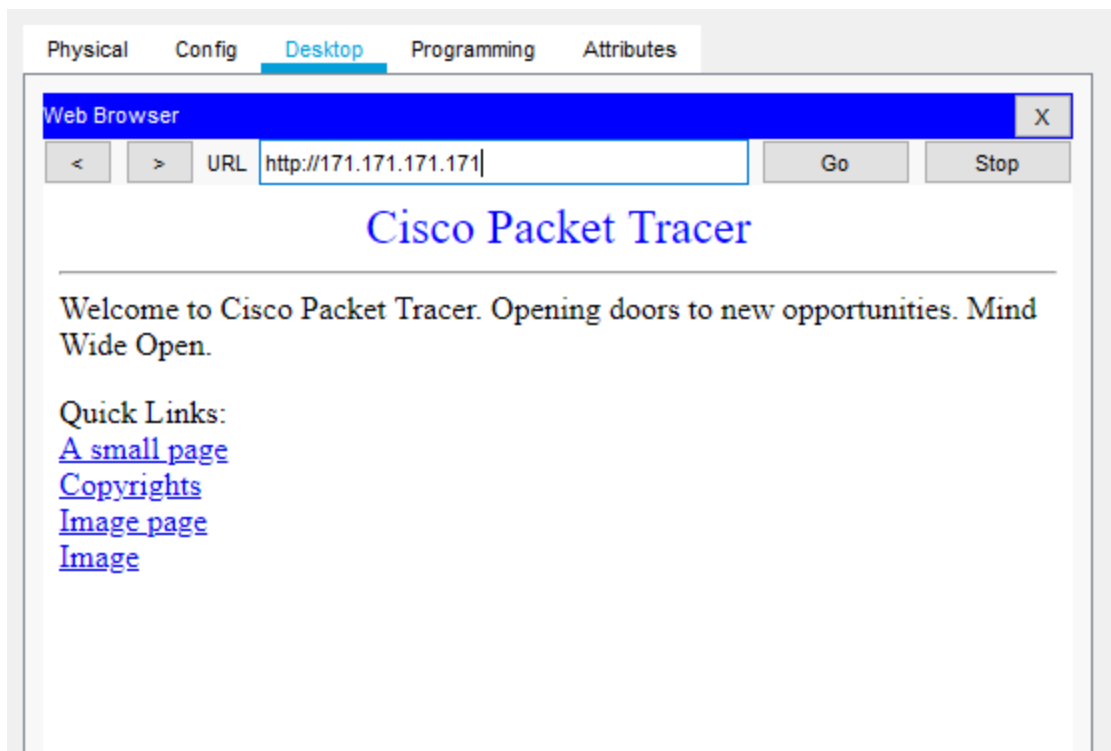


PDU List Window					
Fire	Last Status	Source	Destination	Type	Color
	Successful	PC0	PC1	ICMP	
	Successful	PC0	PC2	ICMP	
	Successful	PC0	PC3	ICMP	
	Successful	PC0	PC4	ICMP	

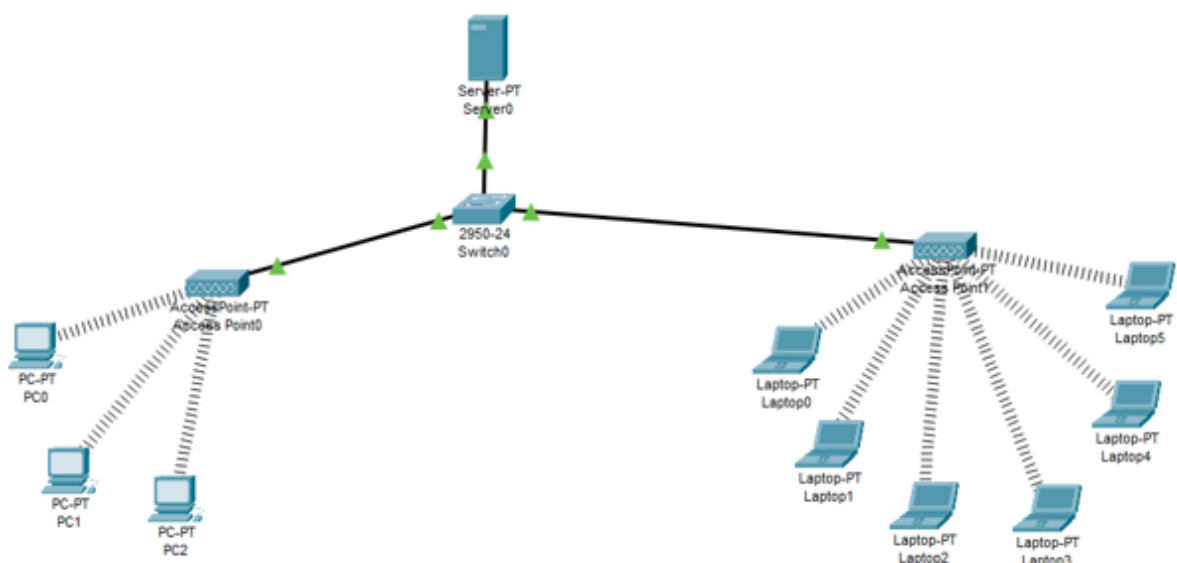
Lab 7

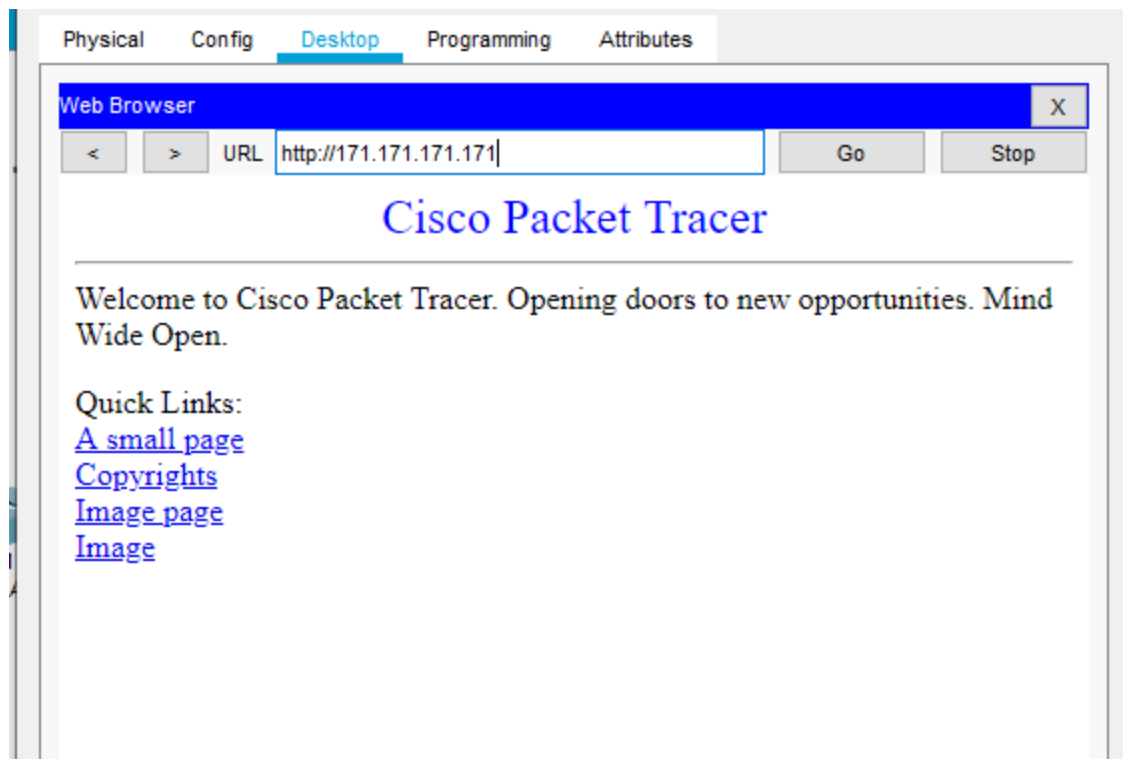
Construct a client server model that have 6 hosts, assign them IP address and subnet masks dynamically from the server. Moreover, access the HTTP server from the client and show the results.



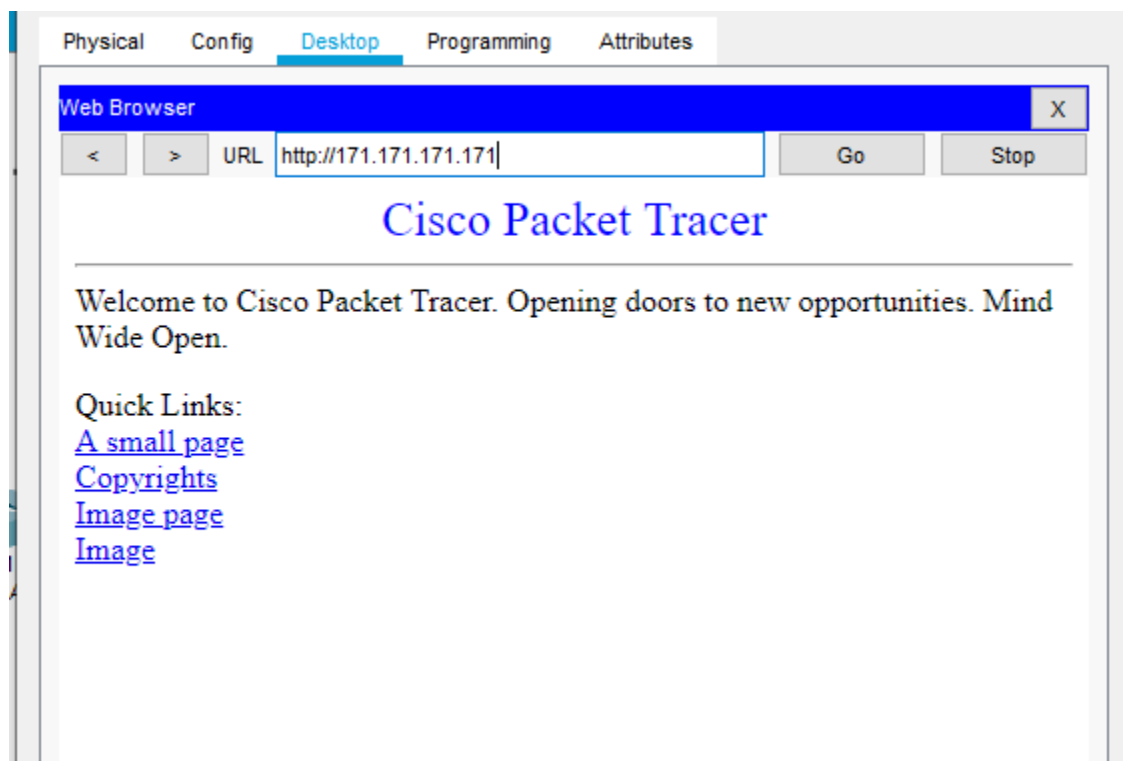


Construct a client server model that have 9 hosts, three of them are computers, and other six host will be laptops, in which further connected to 2 access points through wireless channel, as three of them will be connected to access poin1 and other through access point 2, assign them IP address and subnet masks dynamically from the server. Moreover, access the HTTP server from the client and show the results.



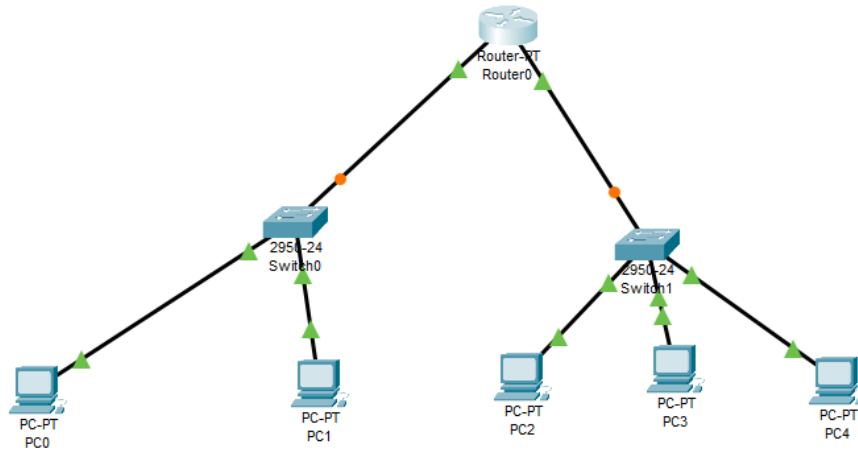


This is for Pc server



For laptop

Lab 8



```

routers(config)#exit
routers#
%SYS-5-CONFIG_I: Configured from console by console
enable
routers#enable
routers#conf t
Enter configuration commands, one per line. End with CNTL/Z.
routers(config)#hostname Ali
Ali(config)#line con 0
Ali(config-line)#password 16550
Ali(config-line)#login
Ali(config-line)#line vty 0 4
Ali(config-line)#password 16550
Ali(config-line)#login
Ali(config-line)#enable secret 55061
Ali(config)#banner motd#NO Access#
```

NO ACCESS

User Access Verification

Password: |