Experiment Number 3

Name ::	Rishabh Anand	UID ::	19BCS4525
Branch ::	CSE - IoT	Sec/Grp ::	1/A
Semester ::	6th	Date ::	4th Mar, 2022
Subject ::	NOS Lab	CODE ::	CSP-396

1. Aim :

To Implement DHCP in the Network.

2. Task :

1. We have to implement DHCP in the network
2. You will write the difference between the Cat5e and Cat6 cables based on their costing in points.
3. You will mention the advantages and disadvantages of both cables in different scenarios.

3A. Theory :

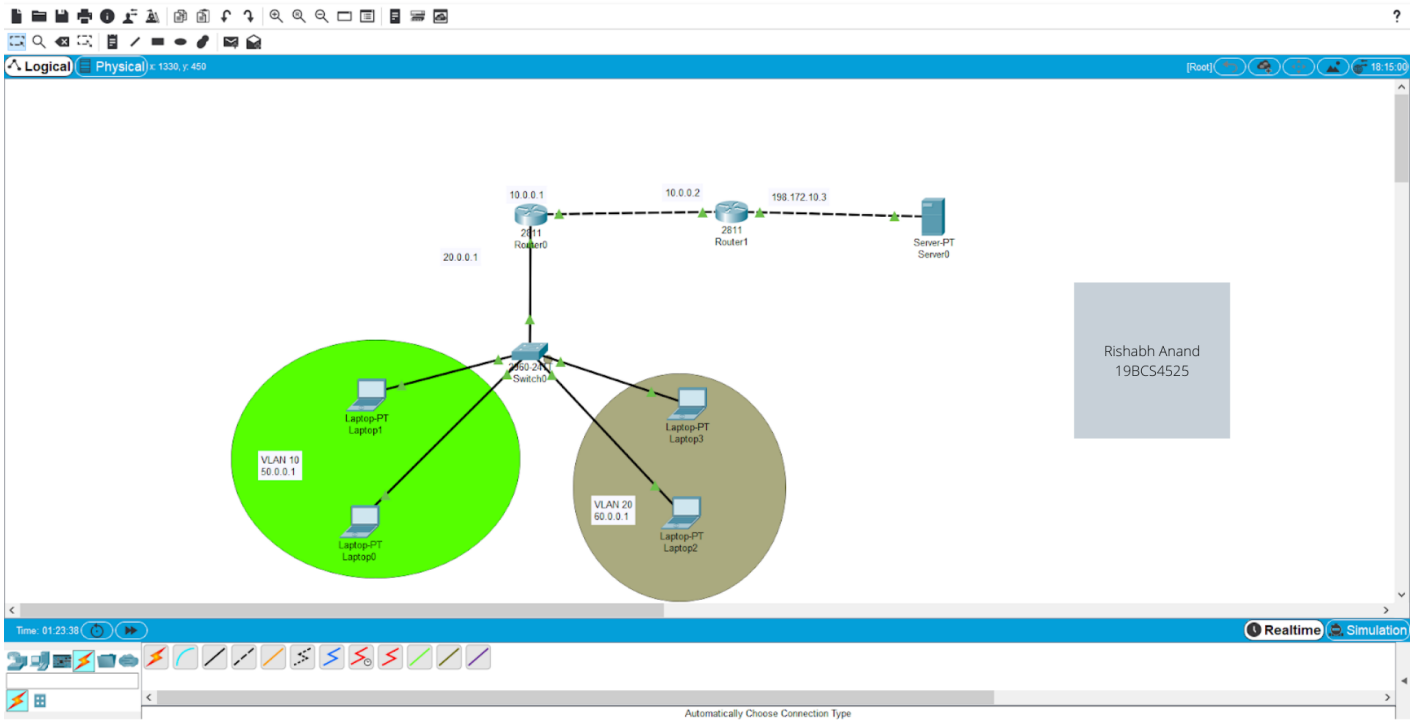
- Category 5 cable is a twisted cable built for computer networks. The most popular type of Cat 5 cable is the Cat 5e since 2001. It is a standard cable that provides performance for up to 100 MHz. Its other uses include carrying signals for telephones and video.
- The Category 6 cable is another twisted pair cable used in Ethernet and network applications. It is backward complete, meaning it can be joint together with Cat 5/5e and Cat 3 cables as well.

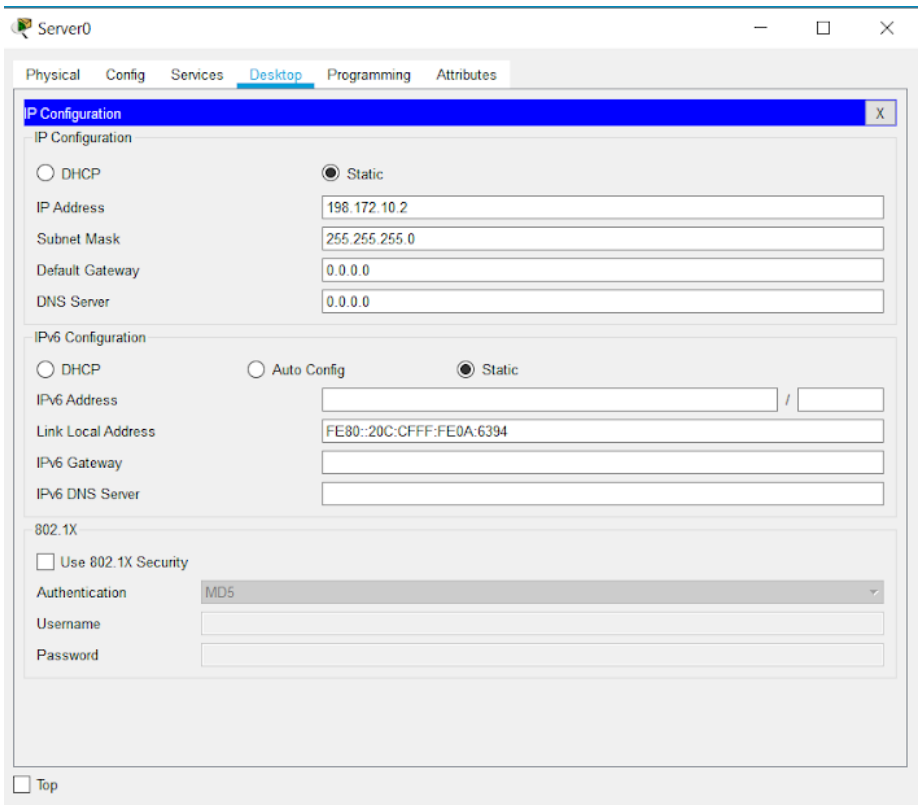
- Differences :
  - Compared with the costs of the Cat 5e cable, Cat 6 is a lot more expensive. If the cable is not showing substantial improvement in your network, it is best to not install it for your company. In most cases, the Cat 5e is a sensible choice since it is more economical while still providing good performance.
  - Cat 6 can handle speed performances for up to 250 MHz while Cat 5e is limited to 100 MHz. This performance makes the device possible to be used with a faster Ethernet network, which includes Gigabit Ethernet connections and even 10 GB Ethernet too.
  - Cat 5e wiring is a lot more flexible. The versatility of this cable makes it an ideal choice for multiple applications in cabling/wiring computer networks and telephones with several better wires on the market.

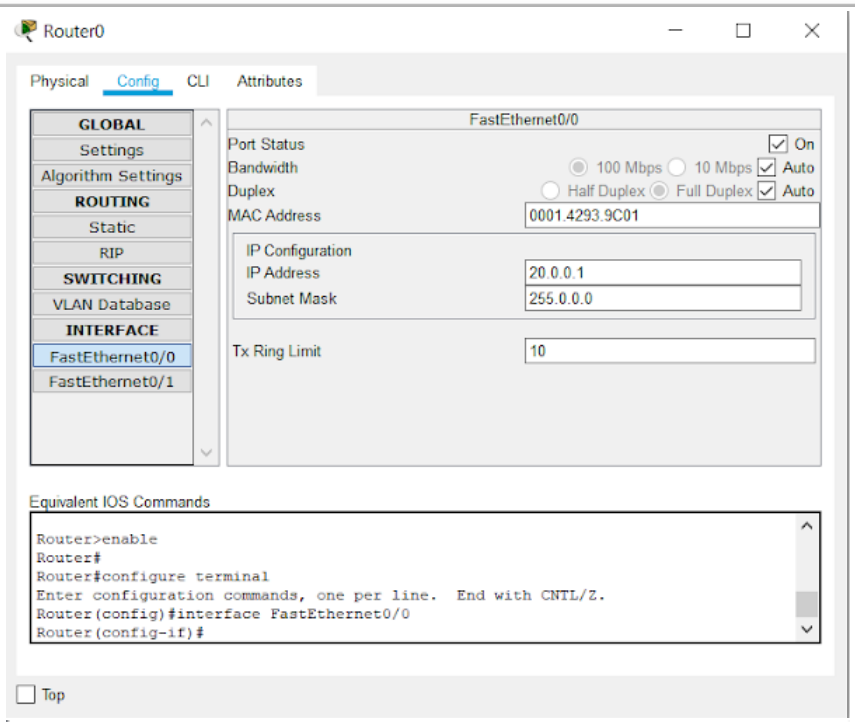
3B. Algorithm :

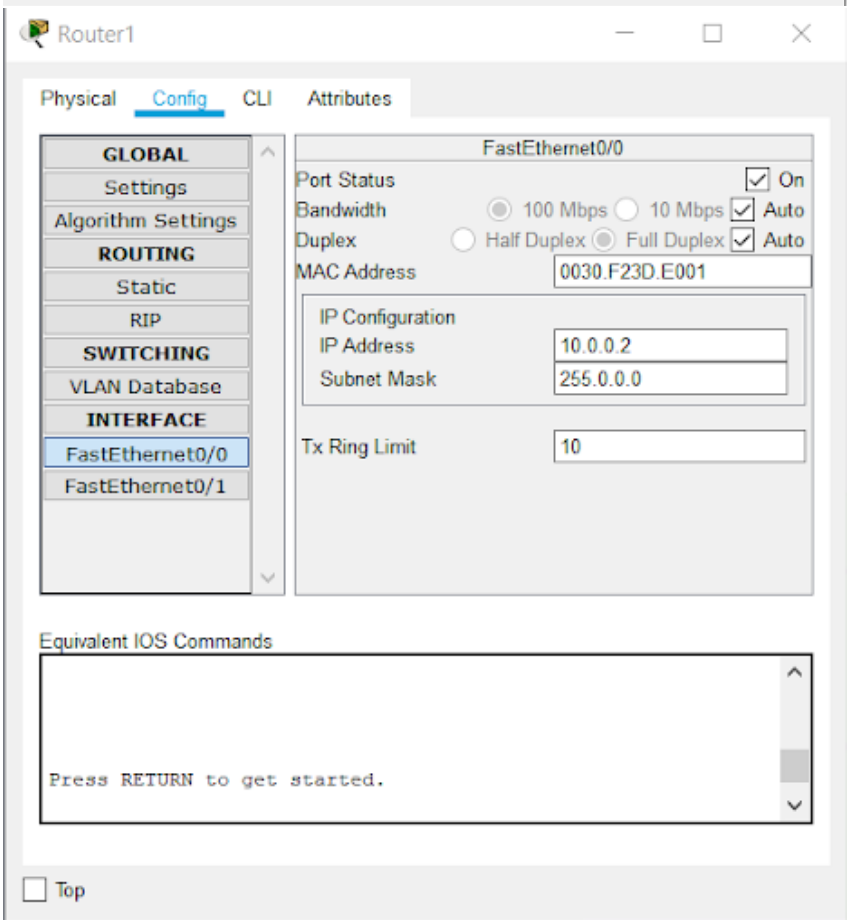
- Design
- Give ip address to DHCP server
- Configure DHCP server
- Configure router 0
- Check outputs

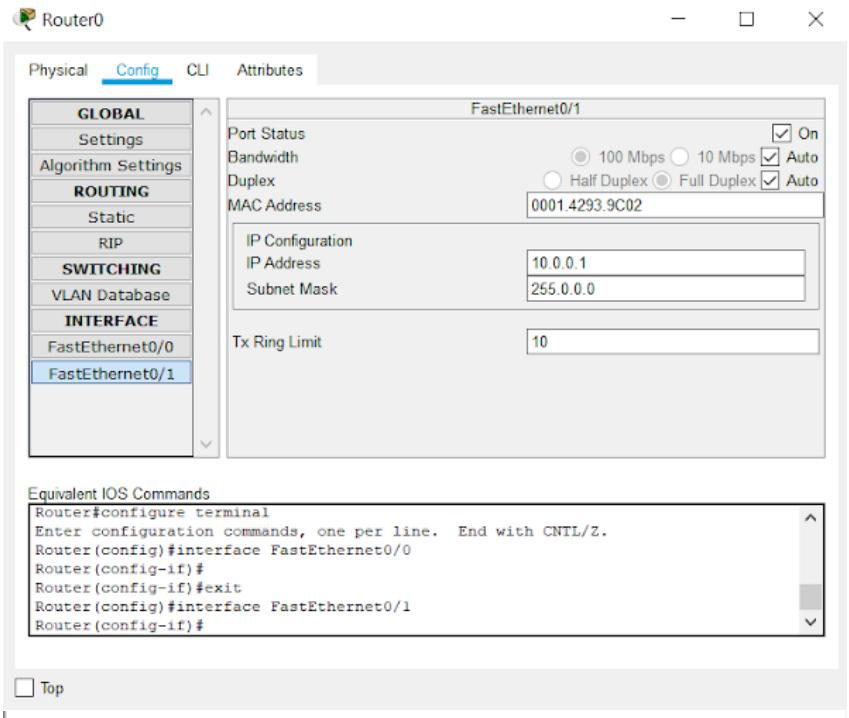
4. Steps:

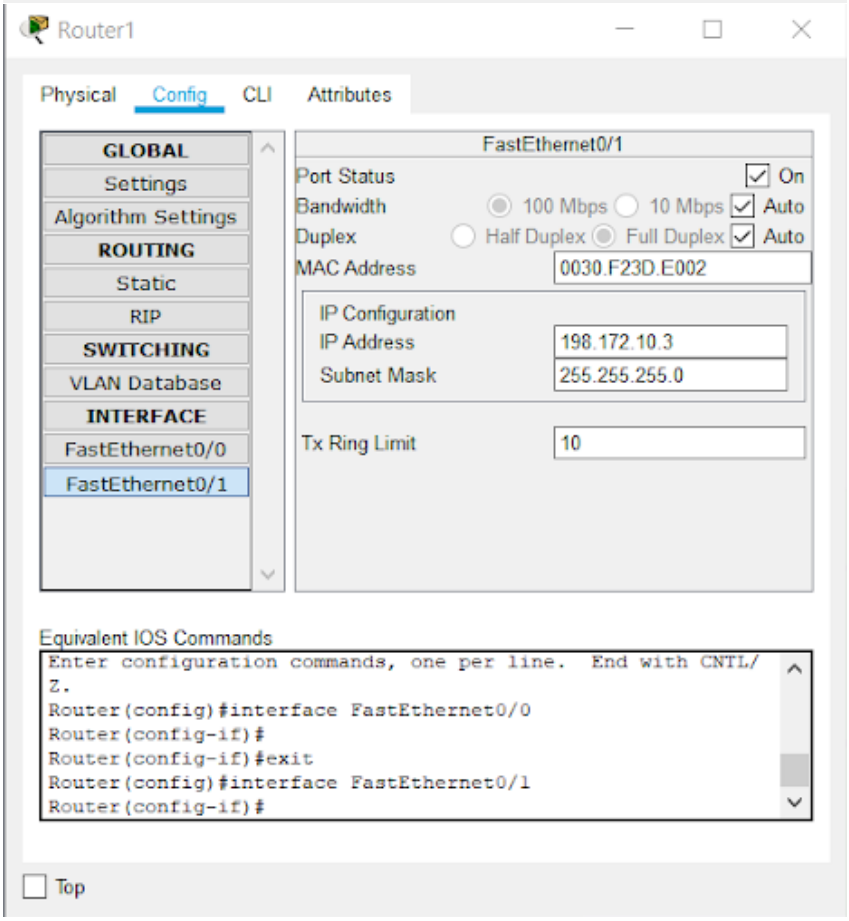

Logical
Physical
10.0.0.1
10.0.0.2
198.172.10.3
2811 Router0
2811 Router1
Server-PT Server0
20.0.0.1
2960-24TT Switch0
Laptop-PT Laptop1
Laptop-PT Laptop3
VLAN 10 50.0.0.1
VLAN 20 60.0.0.1
Laptop-PT Laptop0
Laptop-PT Laptop2
Rishabh Anand
19BCS4525
Realtime
Simulation
Automatically Choose Connection Type

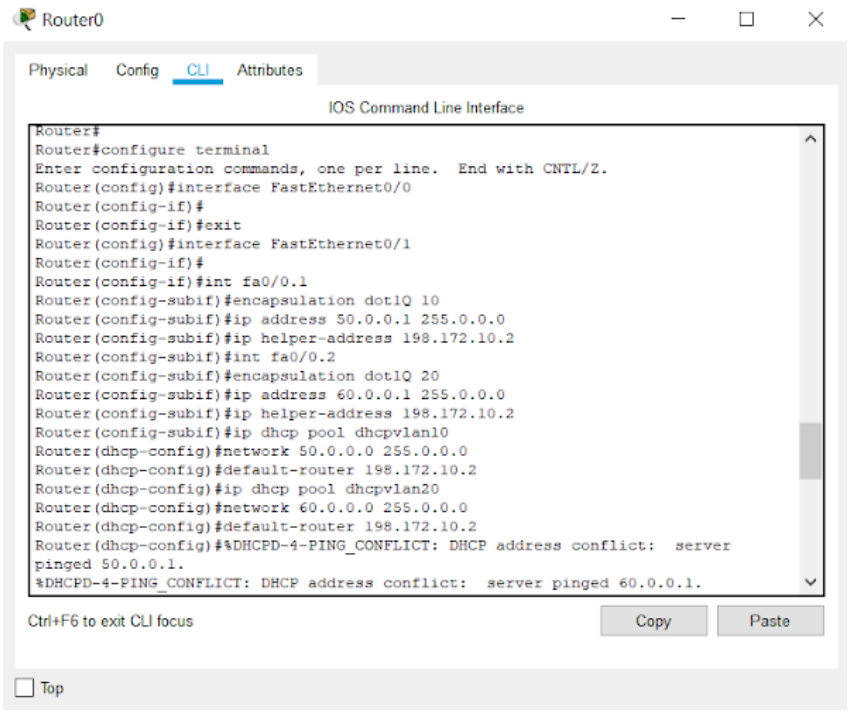

Server0
Physical
Config
Services
Desktop
Programming
Attributes
IP Configuration
X
IP Configuration
DHCP
Static
IP Address
198.172.10.2
Subnet Mask
255.255.255.0
Default Gateway
0.0.0.0
DNS Server
0.0.0.0
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::20C:CFFF:FE0A:6394
IPv6 Gateway
IPv6 DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top

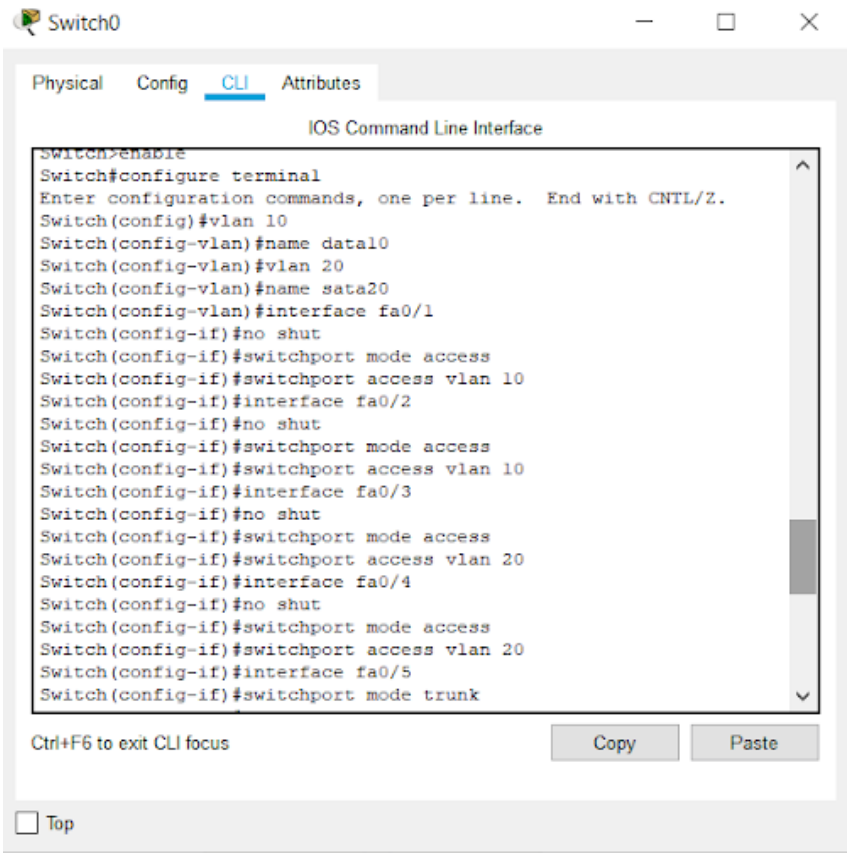

Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0001.4293.9C01
IP Configuration
IP Address
20.0.0.1
Subnet Mask
255.0.0.0
Tx Ring Limit
10
Equivalent IOS Commands
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
Top


Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0030.F23D.E001
IP Configuration
IP Address
10.0.0.2
Subnet Mask
255.0.0.0
Tx Ring Limit
10
Equivalent IOS Commands
Press RETURN to get started.
Top

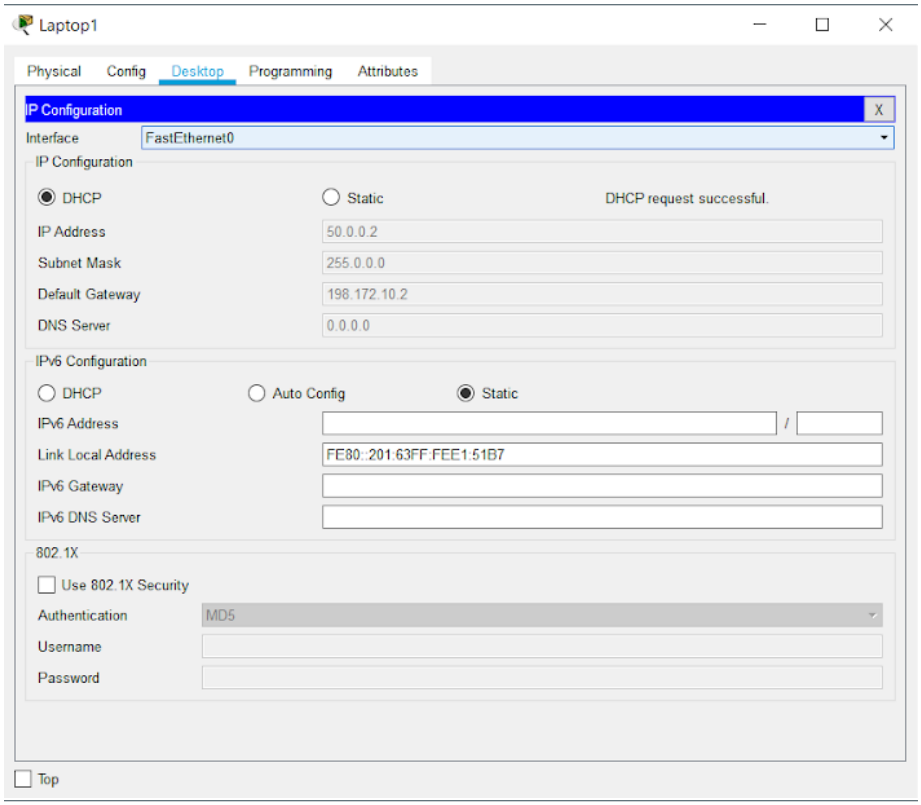

Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
FastEthernet0/1
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0001.4293.9C02
IP Configuration
IP Address
10.0.0.1
Subnet Mask
255.0.0.0
Tx Ring Limit
10
Equivalent IOS Commands
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#
Top

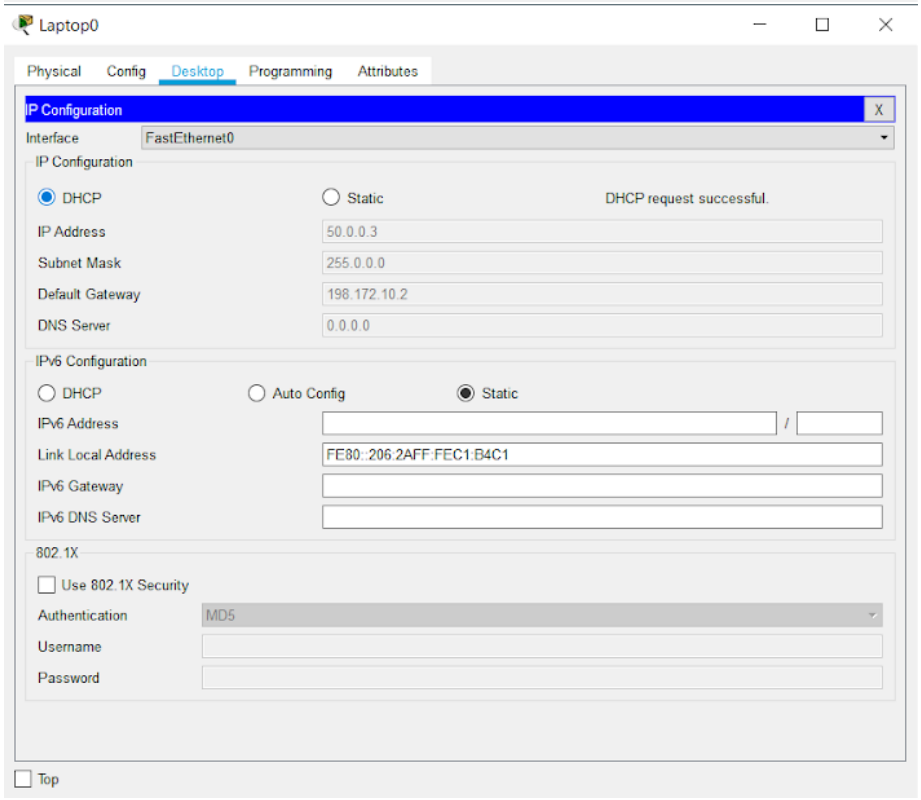

Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
FastEthernet0/1
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0030.F23D.E002
IP Configuration
IP Address
198.172.10.3
Subnet Mask
255.255.255.0
Tx Ring Limit
10
Equivalent IOS Commands
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#
Top

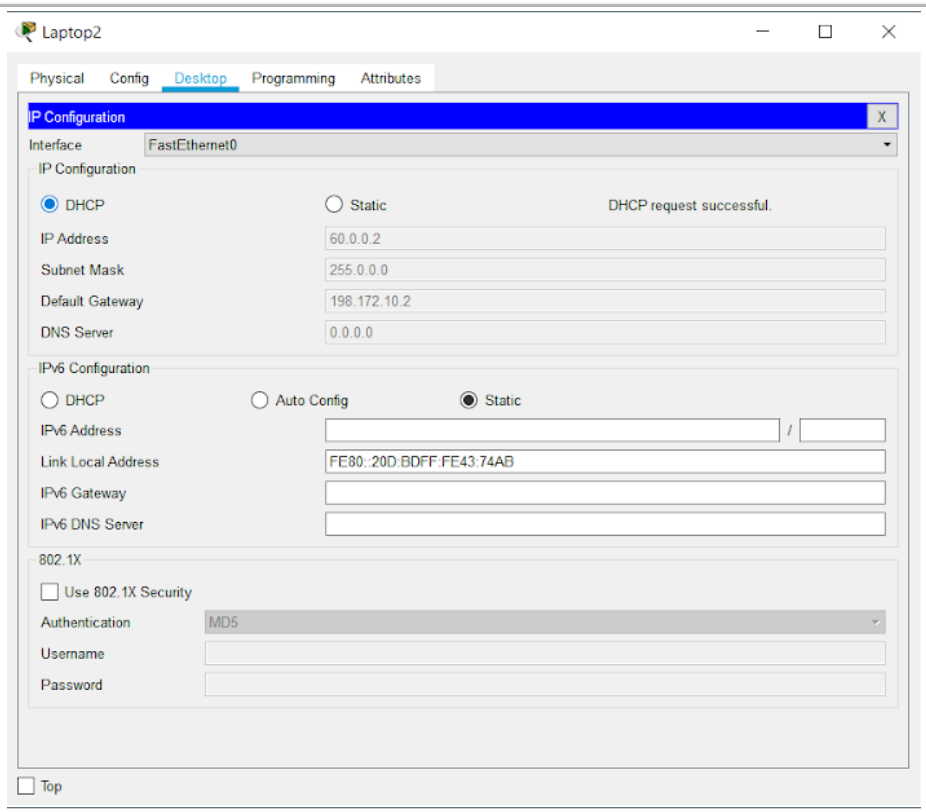

Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#
Router(config-if)#int fa0/0.1
Router(config-subif)#encapsulation dot1Q 10
Router(config-subif)#ip address 50.0.0.1 255.0.0.0
Router(config-subif)#ip helper-address 198.172.10.2
Router(config-subif)#int fa0/0.2
Router(config-subif)#encapsulation dot1Q 20
Router(config-subif)#ip address 60.0.0.1 255.0.0.0
Router(config-subif)#ip helper-address 198.172.10.2
Router(config-subif)#ip dhcp pool dhcpvlan10
Router(dhcp-config)#network 50.0.0.0 255.0.0.0
Router(dhcp-config)#default-router 198.172.10.2
Router(dhcp-config)#ip dhcp pool dhcpvlan20
Router(dhcp-config)#network 60.0.0.0 255.0.0.0
Router(dhcp-config)#default-router 198.172.10.2
Router(dhcp-config)#%DHCPD-4-PING_CONFLICT: DHCP address conflict: server
pinged 50.0.0.1.
%DHCPD-4-PING_CONFLICT: DHCP address conflict: server pinged 60.0.0.1.
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

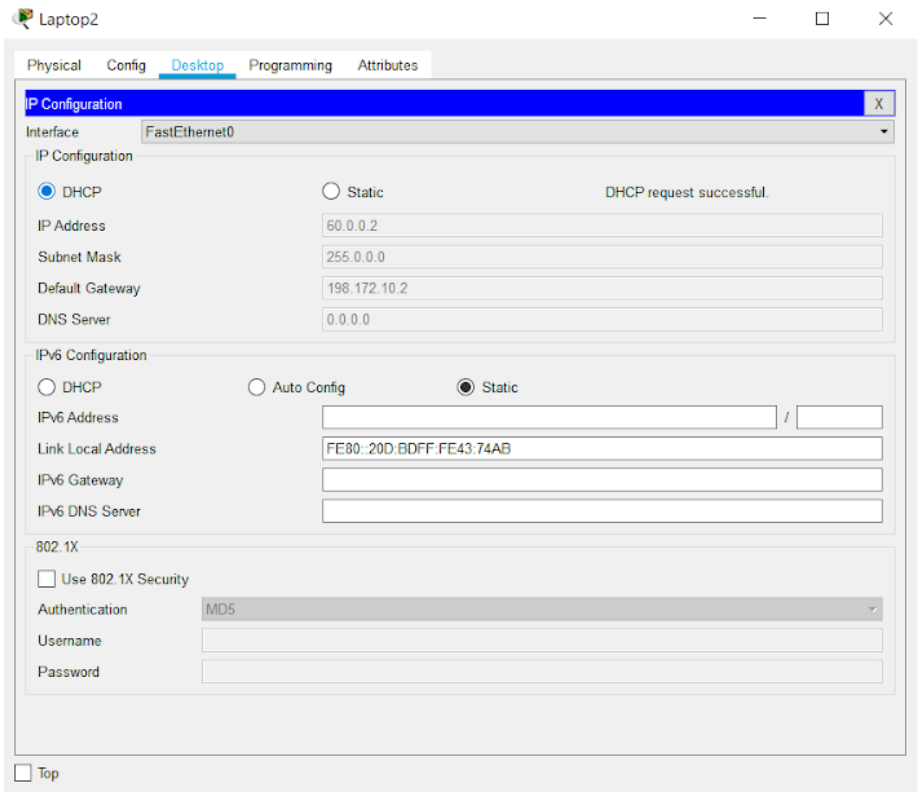

Switch0
Physical
Config
CLI
Attributes
IOS Command Line Interface
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name data10
Switch(config-vlan)#vlan 20
Switch(config-vlan)#name sata20
Switch(config-vlan)#interface fa0/1
Switch(config-if)#no shut
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10
Switch(config-if)#interface fa0/2
Switch(config-if)#no shut
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10
Switch(config-if)#interface fa0/3
Switch(config-if)#no shut
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
Switch(config-if)#interface fa0/4
Switch(config-if)#no shut
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
Switch(config-if)#interface fa0/5
Switch(config-if)#switchport mode trunk
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

5. Observations :






Laptop2
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IP Address
60.0.0.2
Subnet Mask
255.0.0.0
Default Gateway
198.172.10.2
DNS Server
0.0.0.0
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::20D:BDFF:FE43:74AB
IPv6 Gateway
IPv6 DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top


Laptop2
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP request successful.
IP Address
60.0.0.2
Subnet Mask
255.0.0.0
Default Gateway
198.172.10.2
DNS Server
0.0.0.0
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::20D:BDFF:FE43:74AB
IPv6 Gateway
IPv6 DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top

Learning Outcomes :

- I have learnt about DHCP server.
- I have learnt about VLANS.
- I have learnt about IP helper address and default router commands

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