Assignment 5
Group – 10

Ghongade Rohit Kanba	200101034
Gundameedi Sai Ram Mohan	200101036
Gunjal Om Sahebrao	200101037
Gunjan Dhanuka	200101038

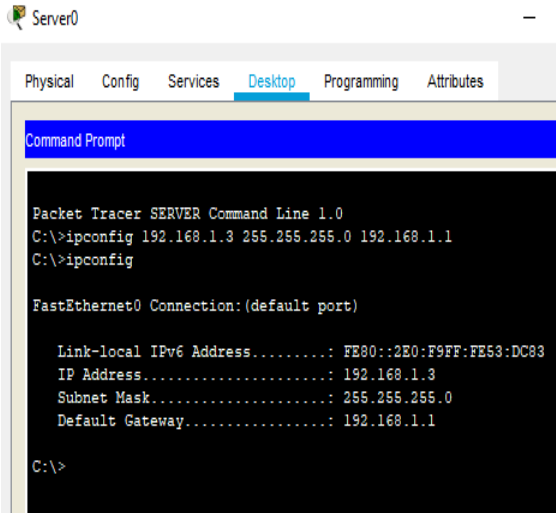## Part A:
Configuring PC's and servers:
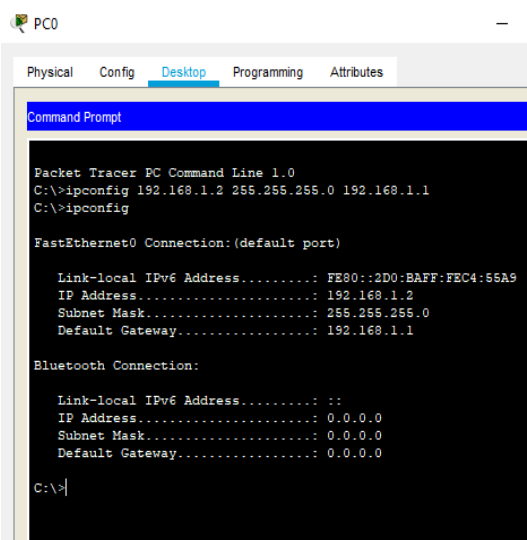
PC0:   **PC1:**
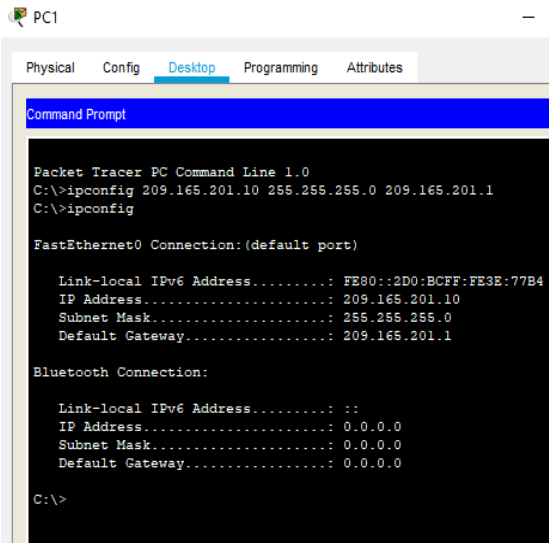
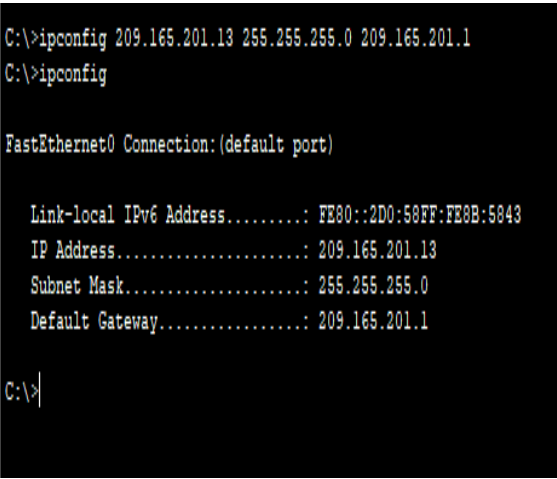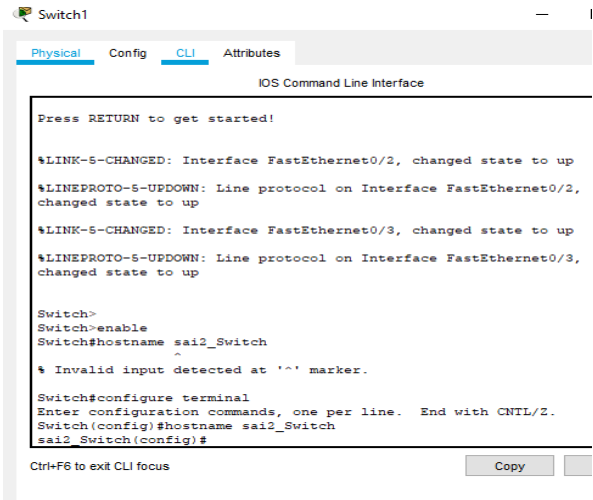**Server0:**   **Server1:**

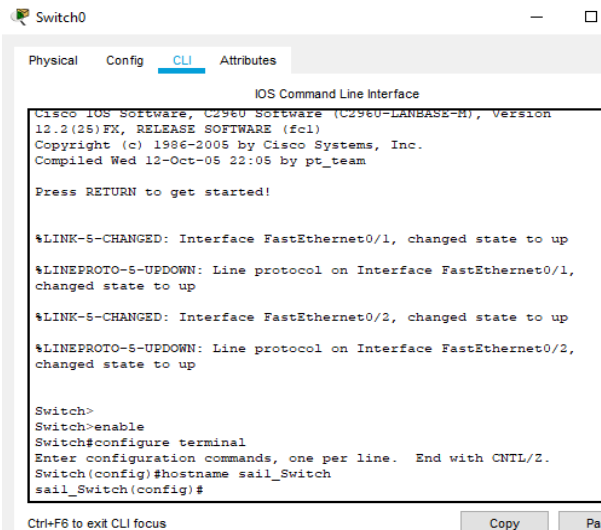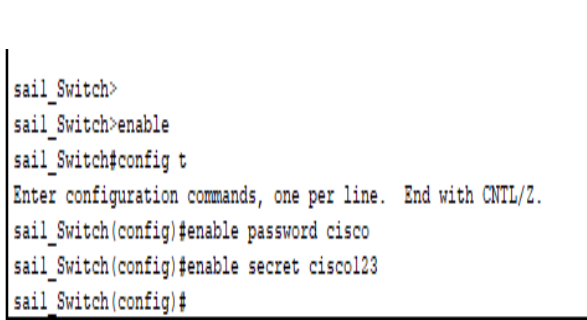## Part B:
Configuring switch hostname:
Switch0:   **Switch1:**
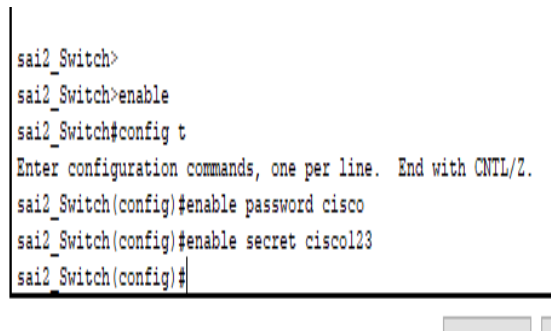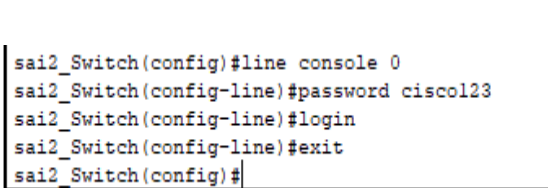
Configuring password and secret for privileged mode:
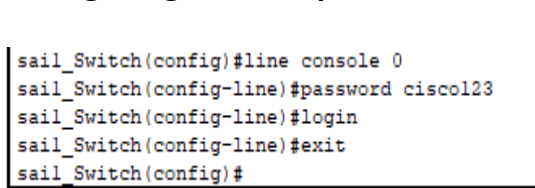
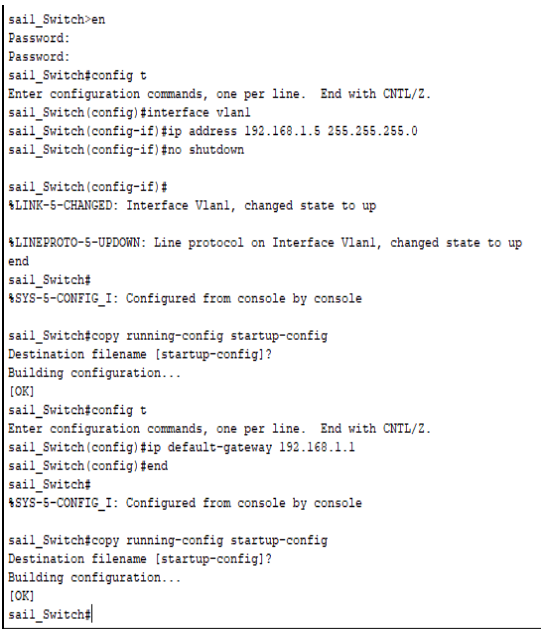**Switch0:**   **Switch1:**

```
sail_Switch>
sail_Switch>enable
sail_Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
sail_Switch(config)#enable password cisco
sail_Switch(config)#enable secret cisco123
sail_Switch(config)#
```

```
sai2_Switch>
sai2_Switch>enable
sai2_Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
sai2_Switch(config)#enable password cisco
sai2_Switch(config)#enable secret cisco123
sai2_Switch(config)#
```

Configuring console password:

```
sail_Switch(config)#line console 0
sail_Switch(config-line)#password cisco123
sail_Switch(config-line)#login
sail_Switch(config-line)#exit
sail_Switch(config)#
```

```
sai2_Switch(config)#line console 0
sai2_Switch(config-line)#password cisco123
sai2_Switch(config-line)#login
sai2_Switch(config-line)#exit
sai2_Switch(config)#
```

Assigning given IP addresses to VLANs and default gateways for the switches:

Switch0:   **Switch1:**

```
sail_Switch>en
Password:
Password:
sail_Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
sail_Switch(config)#interface vlan1
sail_Switch(config-if)#ip address 192.168.1.5 255.255.255.0
sail_Switch(config-if)#no shutdown

sail_Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up
end
sail_Switch#
%SYS-5-CONFIG_I: Configured from console by console

sail_Switch#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
sail_Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
sail_Switch(config)#ip default-gateway 192.168.1.1
sail_Switch(config)#end
sail_Switch#
%SYS-5-CONFIG_I: Configured from console by console

sail_Switch#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
sail_Switch#
```

```
sai2_Switch>
sai2_Switch>en
Password:
sai2_Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
sai2_Switch(config)#interface vlan2
sai2_Switch(config-if)#ip address 209.165.201.11 255.255.255.0
sai2_Switch(config-if)#no shutdown
sai2_Switch(config-if)#end
sai2_Switch#
%SYS-5-CONFIG_I: Configured from console by console

sai2_Switch#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
sai2_Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
sai2_Switch(config)#ip default-gateway 209.165.201.1
sai2_Switch(config)#end
sai2_Switch#
%SYS-5-CONFIG_I: Configured from console by console

sai2_Switch#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
sai2_Switch#
```

Verification:

```
C:\>ping 192.168.1.2

Pinging 192.168.1.2 with 32 bytes of data:

Reply from 192.168.1.2: bytes=32 time=2ms TTL=128
Reply from 192.168.1.2: bytes=32 time=3ms TTL=128
Reply from 192.168.1.2: bytes=32 time=4ms TTL=128
Reply from 192.168.1.2: bytes=32 time=4ms TTL=128

Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 4ms, Average = 3ms

C:\>ping 209.165.201.10

Pinging 209.165.201.10 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 209.165.201.10:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

It is clear from the above picture that Intra VLAN communication is working but not Inter VLAN communication.

Part C:
Configuring router hostname, Password, console password, secret :

```
Router>en
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname sai_Router
sai_Router(config)#enable password cisco
sai_Router(config)#line console 0
sai_Router(config-line)#password cisco
sai_Router(config-line)#login
sai_Router(config-line)#exit
sai_Router(config)#enable secret cisco123
sai_Router(config)#exit
sai_Router#
%SYS-5-CONFIG_I: Configured from console by console

sai_Router#exit
```

Assigning ip address, subnet mask:
fa0/0:   **fa0/1:**

```
sai_Router(config)#interface FastEthernet 0/0
sai_Router(config-if)#ip add 192.168.1.1 255.255.255.0
sai_Router(config-if)#no shutdown

sai_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

sai_Router(config-if)#no shut
sai_Router(config-if)#end
sai_Router#
%SYS-5-CONFIG_I: Configured from console by console

sai_Router#copy running-config starting-config
                                    ^
% Invalid input detected at '^' marker.

sai_Router#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
sai_Router#
```

```
sai_Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
sai_Router(config)#interface FastEthernet 0/1
sai_Router(config-if)#ip add 209.165.201.1 255.255.255.0
sai_Router(config-if)#no shutdown

sai_Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1,
changed state to up
end
sai_Router#
%SYS-5-CONFIG_I: Configured from console by console
copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
sai_Router#
```

Verification:

```
C:\>ping 209.165.201.13

Pinging 209.165.201.13 with 32 bytes of data:

Reply from 209.165.201.13: bytes=32 time=1ms TTL=127
Reply from 209.165.201.13: bytes=32 time=15ms TTL=127
Reply from 209.165.201.13: bytes=32 time<1ms TTL=127
Reply from 209.165.201.13: bytes=32 time<1ms TTL=127

Ping statistics for 209.165.201.13:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 15ms, Average = 4ms

C:\>
```

Inter VLAN communication working properly. Pinging Server1 from PC0.

Part D:

1) Configuring port security for the port used by PC0:

```
sail_Switch>
sail_Switch>en
Password:
sail_Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
sail_Switch(config)#int fa 0/1
sail_Switch(config-if)#switchport mode access
sail_Switch(config-if)#switchport access vlan1
                                           ^
% Invalid input detected at '^' marker.

sail_Switch(config-if)#switchport access vlan 1
sail_Switch(config-if)#switchport port-security
sail_Switch(config-if)#switchport port-security maximum 1
sail_Switch(config-if)#switchport port-security violation shutdown
sail_Switch(config-if)#switchport port-security mac-address sticky
sail_Switch(config-if)#exit
sail_Switch(config)#exit
sail_Switch#
%SYS-5-CONFIG_I: Configured from console by console
```

2) Verification of port security enabled for fa0/1:

```
sail_Switch#show port-security
Secure Port MaxSecureAddr CurrentAddr SecurityViolation Security Action
              (Count)       (Count)        (Count)
--------------------------------------------------------------------
      Fa0/1        1           0              0           Shutdown
--------------------------------------------------------------------
sail_Switch#show port-security address
                          Secure Mac Address Table
---------------------------------------------------------------------------
Vlan      Mac Address Type                      Ports        Remaining Age
                                                                (mins)
----      ----------- ----                      -----        -------------
---------------------------------------------------------------------------
Total Addresses in System (excluding one mac per port)      : 0
Max Addresses limit in System (excluding one mac per port) : 1024
sail_Switch#show port-security interface fastethernet 0/1
Port Security              : Enabled
Port Status                : Secure-up
Violation Mode             : Shutdown
Aging Time                 : 0 mins
Aging Type                 : Absolute
SecureStatic Address Aging : Disabled
Maximum MAC Addresses      : 1
Total MAC Addresses        : 0
Configured MAC Addresses   : 0
Sticky MAC Addresses       : 0
Last Source Address:Vlan   : 0000.0000.0000:0
Security Violation Count   : 0
```

3) Sending ping PC0 to server0:

```
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=4ms 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
Reply from 192.168.1.3: bytes=32 time=3ms 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 = 4ms, Average = 1ms

C:\>
```

4) Verification whether Switch0 added the MAC address for PC0 to the running configuration:

```
sail_Switch#
sail_Switch#show port-security
Secure Port MaxSecureAddr CurrentAddr SecurityViolation Security Action
            (Count)       (Count)        (Count)
--------------------------------------------------------------------
       Fa0/1       1           1             0          Shutdown
--------------------------------------------------------------------
sail_Switch#show port-security address
                         Secure Mac Address Table
--------------------------------------------------------------------------
Vlan      Mac Address Type                        Ports            Remaining Age
                                                                     (mins)
----      ----------- ----                        -----            -------------
1         00D0.BAC4.55A9      SecureSticky                 FastEthernet0/1
--------------------------------------------------------------------------
Total Addresses in System (excluding one mac per port)     : 0
Max Addresses limit in System (excluding one mac per port) : 1024
sail_Switch#show port-security interface fastethernet 0/1
Port Security              : Enabled
Port Status                : Secure-up
Violation Mode             : Shutdown
Aging Time                 : 0 mins
Aging Type                 : Absolute
SecureStatic Address Aging : Disabled
Maximum MAC Addresses      : 1
Total MAC Addresses        : 1
Configured MAC Addresses   : 0
Sticky MAC Addresses       : 1
Last Source Address:Vlan   : 00D0.BAC4.55A9:1
Security Violation Count   : 0
```

5) Removing connection fa0/1 between Switch0 and PC0 using GUI and connecting PC2 to port fa0/1:
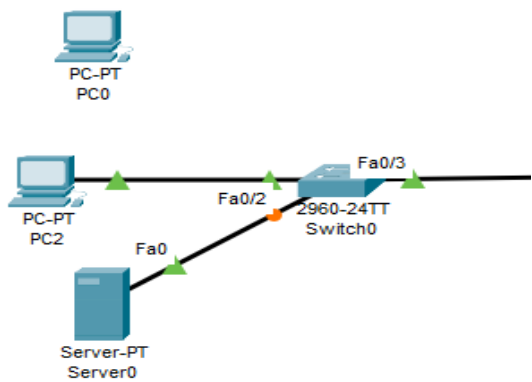
6) Security Violation:

```
C:\>ping 192.168.1.3

Pinging 192.168.1.3 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.1.3:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```
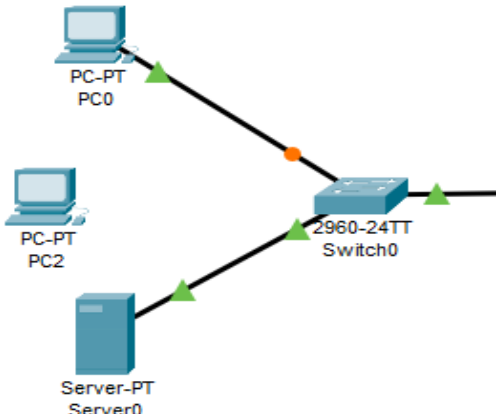
Clearly, from the above picture, it is evident that no packet switching is happening due to the security violation at the port fa0/1 in switch0.

```
Port Security                  : Enabled
Port Status                    : Secure-shutdown
Violation Mode                 : Shutdown
Aging Time                     : 0 mins
Aging Type                     : Absolute
SecureStatic Address Aging     : Disabled
Maximum MAC Addresses          : 1
Total MAC Addresses            : 1
Configured MAC Addresses       : 0
Sticky MAC Addresses           : 1
Last Source Address:Vlan       : 0010.11D9.7989:1
Security Violation Count       : 1
```

7) Re-connecting PC0 with port fa0/1 of Switch 0 using GUI and re-enabling the port:


```
sail_Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
sail_Switch(config)#interface fastethernet 0/1
sail_Switch(config-if)#shutdown

sail_Switch(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to
administratively down

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

sail_Switch(config-if)#no shutdown

sail_Switch(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

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

Part E:

1) Saving the current configuration for Switch0 and Router0 to NVRAM:

Switch0:	Router0:

Switch0:
```
sail_Switch#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
sail Switch#
```

Router0:
```
sai_Router>en
Password:
sai_Router#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
sai_Router#
```

2) Backing up the start-up configuration file on Switch0 and Router0 by uploading them to Server0:

Switch0:
```
sail_Switch#copy running-config tftp
Address or name of remote host []? 192.168.1.3
Destination filename [sail_Switch-confg]? Switch0

Writing running-config....!!
[OK - 1358 bytes]

1358 bytes copied in 3.031 secs (448 bytes/sec)
```

Router0:
```
sai_Router#copy running-config tftp
Address or name of remote host []? 192.168.1.3
Destination filename [sai_Router-confg]? Router0-config

Writing running-config....!!
[OK - 679 bytes]

679 bytes copied in 3.021 secs (224 bytes/sec)
sai Router#
```

3) Verification that Server0 has both Router0-config and Switch0-config file: