CS342: Computer Networks Assignment 5

Group 52

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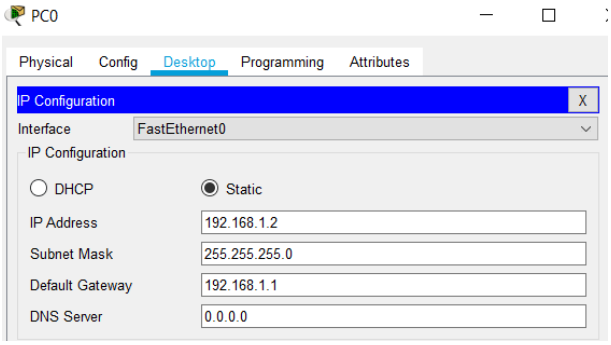
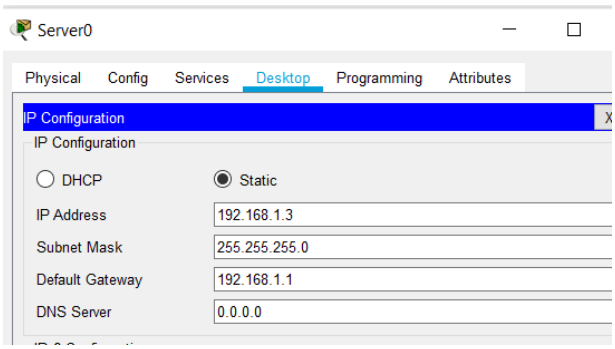
Part A

Ip address, default gateway and subnet mask to both the PCs and Servers were assigned as:





Screenshots for PC0 and Server0 is shown above. Similar thing was done for PC1 and Server1 with the required values

Part B

Below are the respective commands for Switch0 for all the sub-parts. Same thing is done for Switch1 as well.

1. Switch(config)#hostname Sahil_Switch
2. Sahil_Switch(config)#enable password cisco
   Sahil_Switch(config)#enable secret cisco123
   Sahil_Switch(config) #line console 0
   Sahil_Switch(config-line) #password cisco123

```
Sahil_Switch(config)#enable password cisco
Sahil_Switch(config)#enable secret cisco123
Sahil_Switch(config)#
```

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

3. Sahil_Switch(config) #int vlan 1
   Sahil_Switch(config-if) #ip address 192.168.1.5 255.255.255.0
   Sahil_Switch(config-if) #ip default-gateway 192.168.1.1
   no shutdown command is then used to up the connection

```
Sahil_Switch(config)#int vlan 1
Sahil_Switch(config-if)#ip address 209.165.201.10 255.255.255.0
Sahil_Switch(config-if)#ip default-gateway 209.165.201.1
Sahil_Switch(config)#ip default-gateway 209.165.201.1
Sahil_Switch(config)#int vlan 1
Sahil_Switch(config-if)#no shutdown

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

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed
state to up
```

For switch1 instead of the VLAN1 interface VLAN2 interface was used and the IP addresses and gateway were changed accordingly

Verification for Switch0

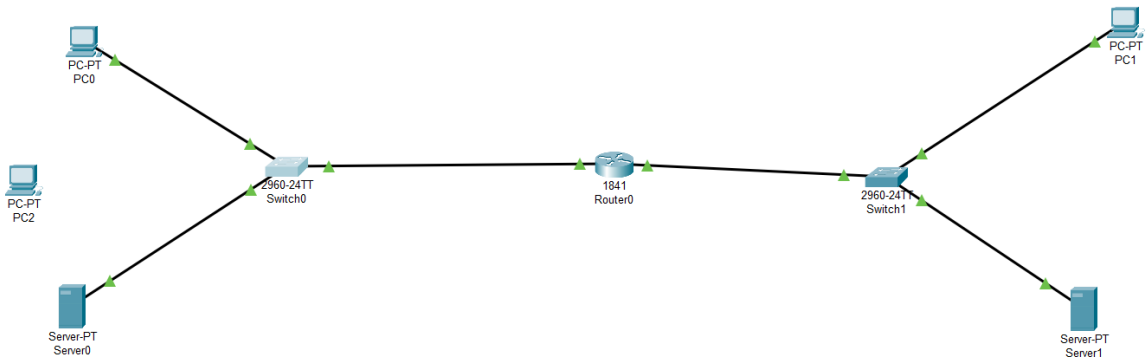
Port	Link	VLAN	IP Address	MAC Address
FastEthernet0/1	Up	1	--	000C.CFDB.BD01
FastEthernet0/2	Up	1	--	000C.CFDB.BD02
FastEthernet0/3	Up	1	--	000C.CFDB.BD03
FastEthernet0/4	Down	1	--	000C.CFDB.BD04
FastEthernet0/5	Down	1	--	000C.CFDB.BD05
FastEthernet0/6	Down	1	--	000C.CFDB.BD06
FastEthernet0/7	Down	1	--	000C.CFDB.BD07
FastEthernet0/8	Down	1	--	000C.CFDB.BD08
FastEthernet0/9	Down	1	--	000C.CFDB.BD09
FastEthernet0/10	Down	1	--	000C.CFDB.BD0A
FastEthernet0/11	Down	1	--	000C.CFDB.BD0B
FastEthernet0/12	Down	1	--	000C.CFDB.BD0C
FastEthernet0/13	Down	1	--	000C.CFDB.BD0D
FastEthernet0/14	Down	1	--	000C.CFDB.BD0E
FastEthernet0/15	Down	1	--	000C.CFDB.BD0F
FastEthernet0/16	Down	1	--	000C.CFDB.BD10
FastEthernet0/17	Down	1	--	000C.CFDB.BD11
FastEthernet0/18	Down	1	--	000C.CFDB.BD12
FastEthernet0/19	Down	1	--	000C.CFDB.BD13
FastEthernet0/20	Down	1	--	000C.CFDB.BD14
FastEthernet0/21	Down	1	--	000C.CFDB.BD15
FastEthernet0/22	Down	1	--	000C.CFDB.BD16
FastEthernet0/23	Down	1	--	000C.CFDB.BD17
FastEthernet0/24	Down	1	--	000C.CFDB.BD18
GigabitEthernet0/1	Down	1	--	000C.CFDB.BD19
GigabitEthernet0/2	Down	1	--	000C.CFDB.BD1A
Vlan1	Up	1	192.168.1.5/24	00E0.B049.57B6

Hostname: Sahil_Switch

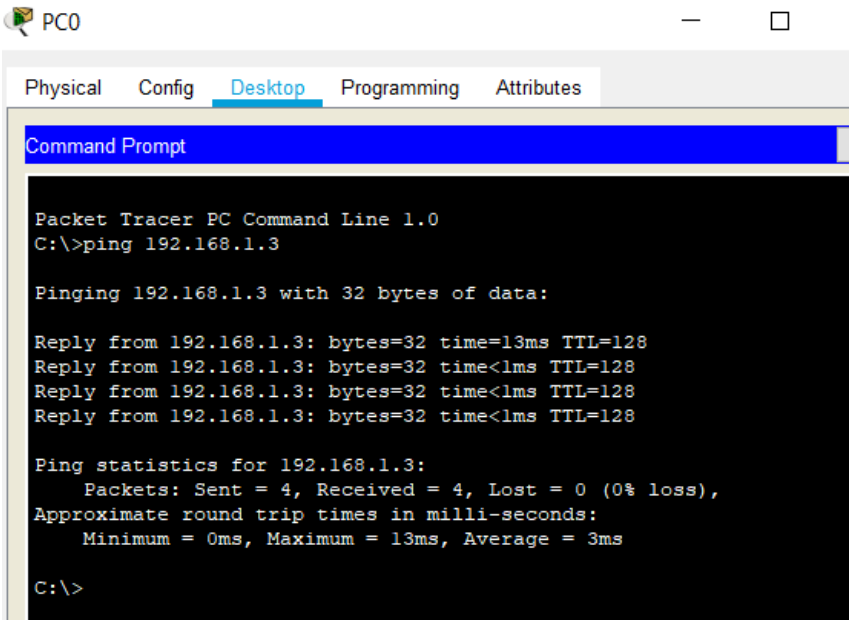
Physical location: Intercity, Home City, Corporate Office, Main Wiring Closs

4. Now the devices were connected as shown in the figure

Topology



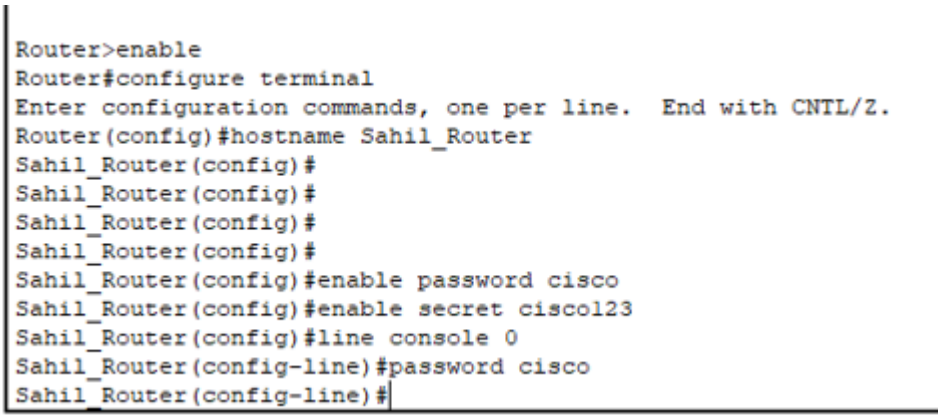
As expected the intra VLAN communication was working but the inter VLAN communication was not.



Here the ping is sent from PC0 to Server0 and since it was intra VLAN communication it is verified that it was working and obviously inter VLAN communication was not working as the router is still not configured.

Part C

The first 2 sub-parts are same as was done in the Part B first 2 sub-parts and hence only the screenshots are pasted below for them.



IP address, subnet mask to interface fa0/0 and fa0/1 are assigned using the commands:

Sahil_Router(config)#int fa0/1

Sahil_Router(config-if)#ip address 192.168.1.1 255.255.255.0

Sahil_Router(config-if)#exit

Sahil_Router(config)#int fa0/2

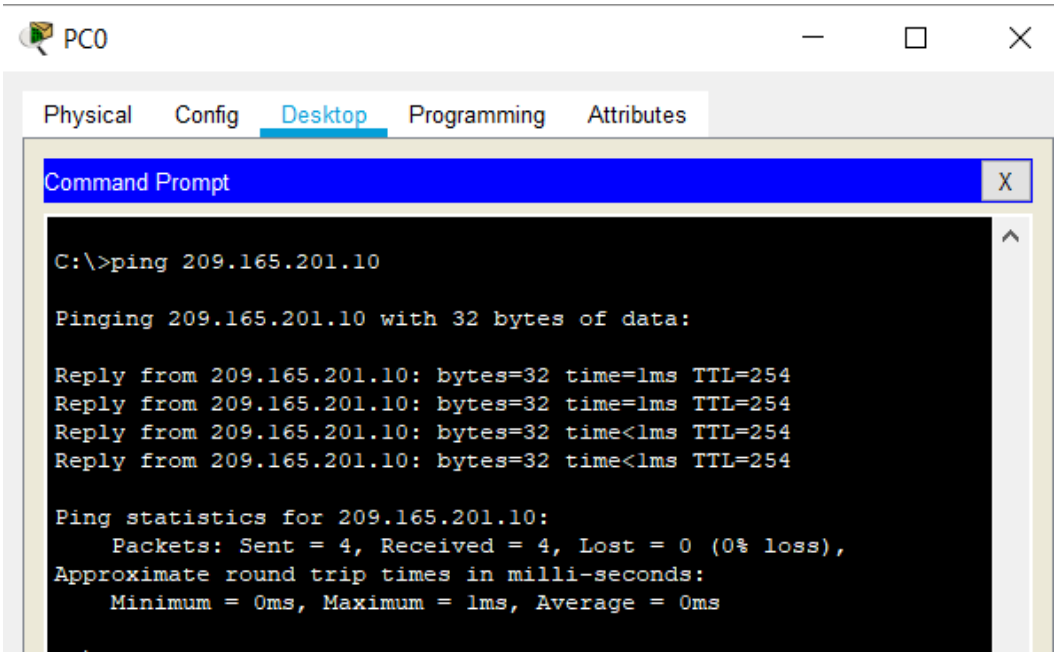
Sahil_Router(config-if)#ip address 209.165.201.1 255.255.255.0

Sahil_Router(config-if)#exit

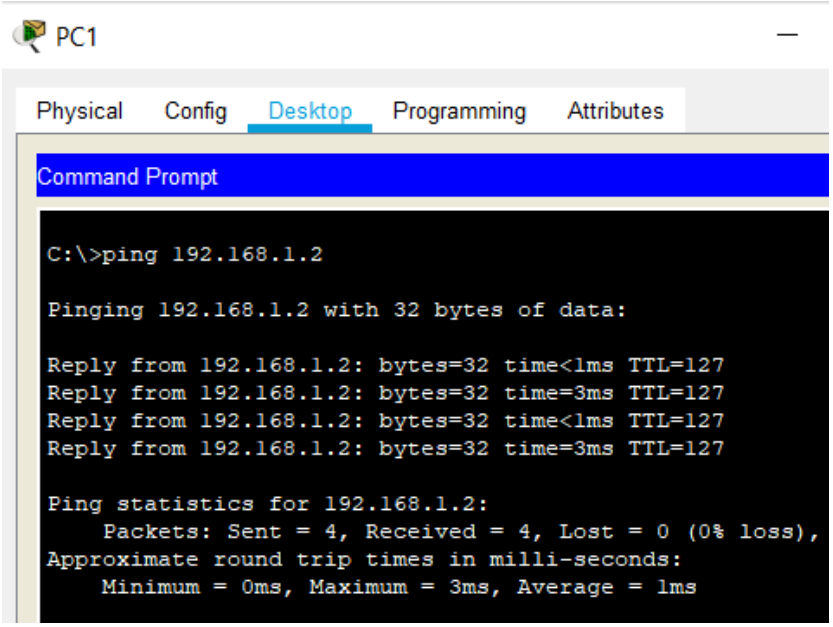
Verification for Router

```
Port              Link   VLAN   IP Address         IPv6 Address                              MAC Address
FastEthernet0/0   Up     --     192.168.1.1/24     <not set>                                 0005.5ECA.5001
FastEthernet0/1   Up     --     209.165.201.1/24   <not set>                                 0005.5ECA.5002
```

Now the inter VLAN communication was also working as shown in the screenshot below



This ping was sent from PC0 to PC1 and all the packets were received as visible in the above screenshot. And also, from PC1 to PC0 ping was working.



Part D

We first enable the port security for the port used by PC0, using the commands shown in the screenshot

```
Sahil_Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Sahil_Switch(config)#int fa0/1
Sahil_Switch(config-if)#switchport mode access
Sahil_Switch(config-if)#switchport port-security
Sahil_Switch(config-if)#switchport port-security mac-address
sticky
Sahil_Switch(config-if)#switchport port-security maximum 1
Sahil_Switch(config-if)#switchport port-security violation
shutdown
Sahil_Switch(config-if)#exit
```

Now, the verification of port security. Security violation count 0 as shown below verifies the port security.

```
Sahil_Switch>en
Password:
Sahil_Switch#show port-security
Secure Port MaxSecureAddr CurrentAddr SecurityViolation Security
Action
                (Count)        (Count)         (Count)
---------------------------------------------------------------
---
        Fa0/1         1           1                0
Shutdown
        Fa0/2         1           1                0
Shutdown
        Fa0/3         1           1                0
Shutdown
---------------------------------------------------------------
```

Ping sent from PC0 to Switch0 is working properly as shown below:

```
C:\>ping 192.168.1.5

Pinging 192.168.1.5 with 32 bytes of data:

Reply from 192.168.1.5: bytes=32 time=1ms TTL=255
Reply from 192.168.1.5: bytes=32 time<1ms TTL=255
Reply from 192.168.1.5: bytes=32 time<1ms TTL=255
Reply from 192.168.1.5: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.1.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

Verification of the MAC address

```
Sahil_Switch#show mac address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----

   1    0001.4303.e900    STATIC      Fa0/2
```

```
1    0030.a3b1.a55b    STATIC      Fa0/1
```

Now removing the connection fa0/1 b/w Switch0 and PC0 and connecting to PC2, cause the port to shut down and causes the violation as shown below:

```
% Invalid input detected at '^' marker.

Sahil_Switch#show ip int brief
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/1        unassigned      YES manual down                  down
FastEthernet0/2        unassigned      YES manual up                    up
FastEthernet0/3        unassigned      YES manual up                    up
```

```
Secure Port MaxSecureAddr CurrentAddr SecurityViolation Security Action
               (Count)       (Count)        (Count)
---------------------------------------------------------------------
        Fa0/1        1             1                1         Shutdown
        Fa0/2        1             1                0         Shutdown
```

For the last part connections were again established and it started working properly.

Part E

1 For both Switch0 and Router0, the following command was run to save the configuration to NVRAM

copy run startup

```
Sahil_Switch>en
Password:
Sahil_Switch#copy run startup
Destination filename [startup-config]?
Building configuration...
[OK]
Sahil_Switch#
```

2 Back up of the configuration file was done to Server0 using the following commands:

For router

copy startup-config tftp

192.168.1.3 (address of remote host, here address of Server0)

Router0_config (this command was to give the required name)

For server

copy startup-config tftp

192.168.1.3 (address of remote host, here address of Server0)

Swtich0_config (this command was to give the required name)

Below is the screenshot for Switch0 commands

```
Sahil_Switch>en
Password:
Sahil_Switch#copy run startup
Destination filename [startup-config]?
Building configuration...
[OK]
Sahil_Switch#
```

```
Password:
Sahil_Switch#copy startup-config tftp
Address or name of remote host []? 192.168.1.3
Destination filename [Sahil_Switch-confg]? Swtich0-config

Writing startup-config....!!
[OK - 1697 bytes]

1697 bytes copied in 3.009 secs (563 bytes/sec)
Sahil_Switch#
```

3 Verification that the server has the required files