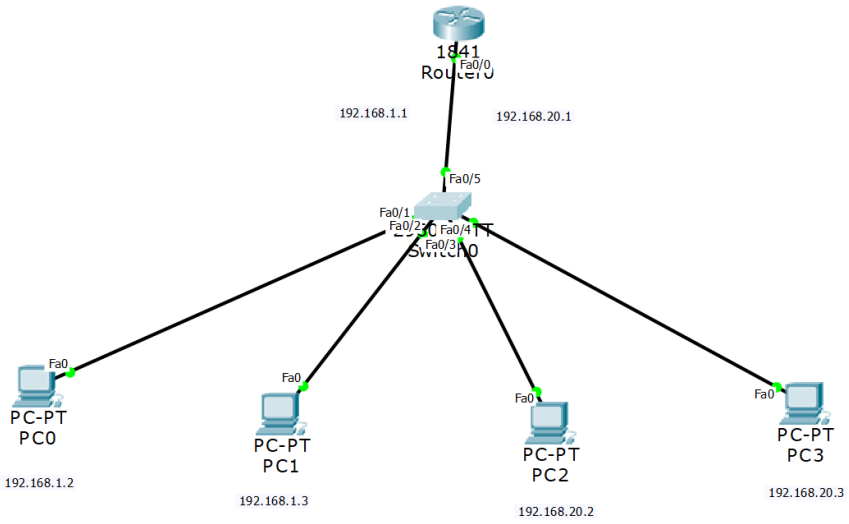
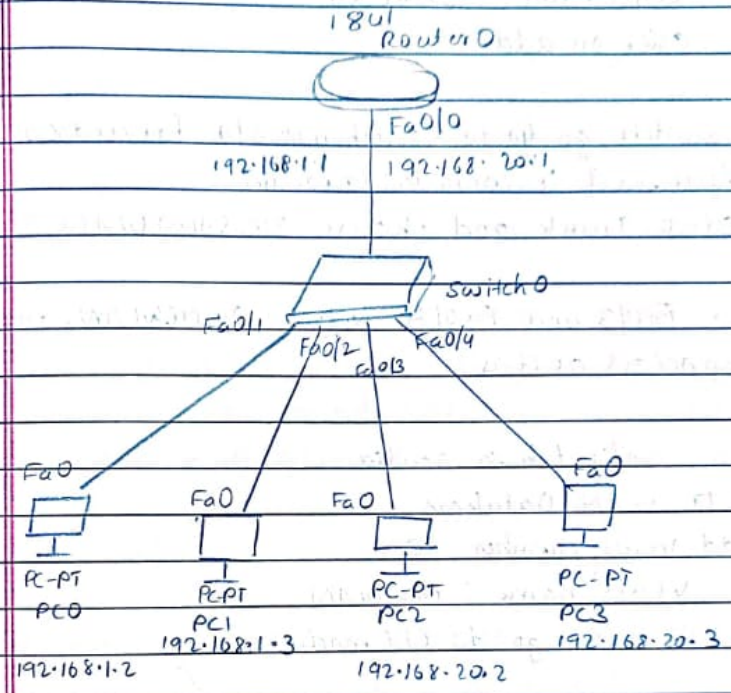
Q9)To construct a VLAN and make the PC’s communicate among a VLAN



9e. Aim: To construct a VLAN and make the PC's communicate among a VLAN.

Topology



Procedure:

1. Create the topology as shown above using 1841 router and switch connect 4 PCs to them as shown using copper straigh through cable.

2. We use class C addressing here.

3. set IP address & gateways as follow

PC0 : IP Address → 192.168.1.2 Gateway 192.168.1.1

PC1 : IP → 192.168.1.3 Gateway 192.168.1.1

PC2 : IP → 192.168.20.2 Gateway 192.168.20.1

PC3 : IP → 192.168.20.3 Gateway 192.168.20.1

4. Go to config tab of switch
Open VLAN database
Set VLAN number = 20
VLAN name = NEWVLAN
click on add.

5. In switch go to fastethernet s/0 for under interface as it is connected to router
Select Trunk and choose 20: NEW VLAN.

6. For Fa0/3 and Fa0/4 select 20:NEWLAN. and keep Access as it is.

7. Open config tab in router
Go to VLAN Database
Add VLAN Number 20
VLAN name : NEWVLAN

8. In Router0 go to CLI mode

```
Router(vlan)# exit
Router# config t
Router(config)# int fa0/0
Router(config-if)# ip address 192.168.1.1 255.255.255.0
Router(config-if)# no shut
Router(config-if) exit

Router(config)# int fa 0/0.1
Router(config-subif)# encapsulation dot1q 20
Router(config-subif)# ip address 192.168.20.1 255.255.255.0
Router(config-subif)# no shut
Router(config-subif)# exit
Router(config)# exit
```

Ping output:

PC> ping 192.168.20.2
Pinging 192.168.20.2 with 32 bytes of data:

Request timed out
Reply from 192.168.20.2: bytes=32 time=0ms TTL=127
Reply from 192.168.20.2: bytes=32 time=0ms TTL=127
Reply from 192.168.20.2: bytes=32 time=1ms TTL=127

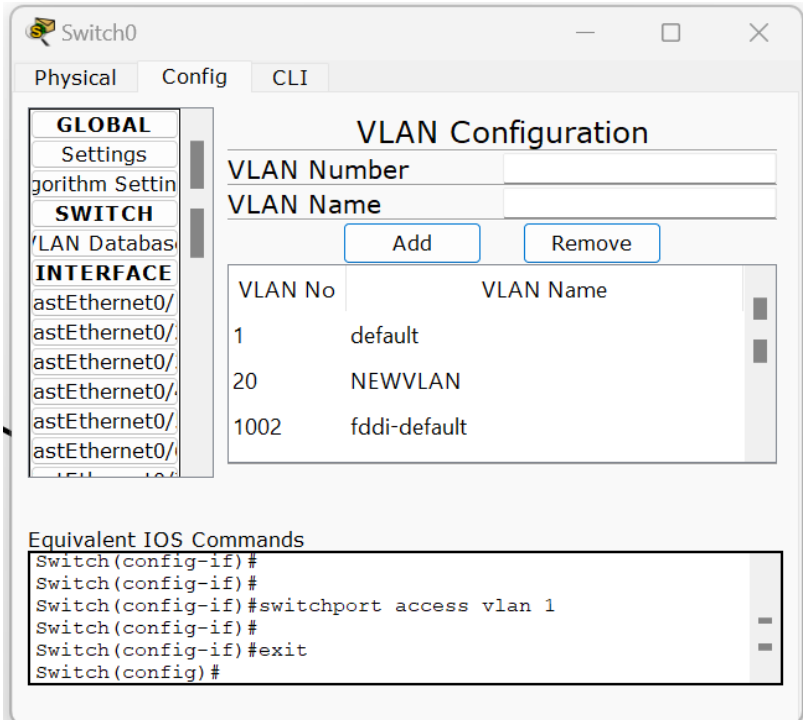
Ping statistics for 192.168.20.2:
    Packets: Sent=4, Received=3 Lost=1 (25% loss)
Approximate round trip times in milli seconds:
    Minimum=0ms Maximum=1ms, Average=0ms

Observation:

* We can observe that after VLAN is configured we can successfully ping PC2 (192.168.20.2) from PC0 (192.168.1.2)

PC2 and PC3 are grouped together and communication among them is done via VLAN

192.168.20.1 is a sub interface of router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Settings
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SWITCH
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INTERFACE
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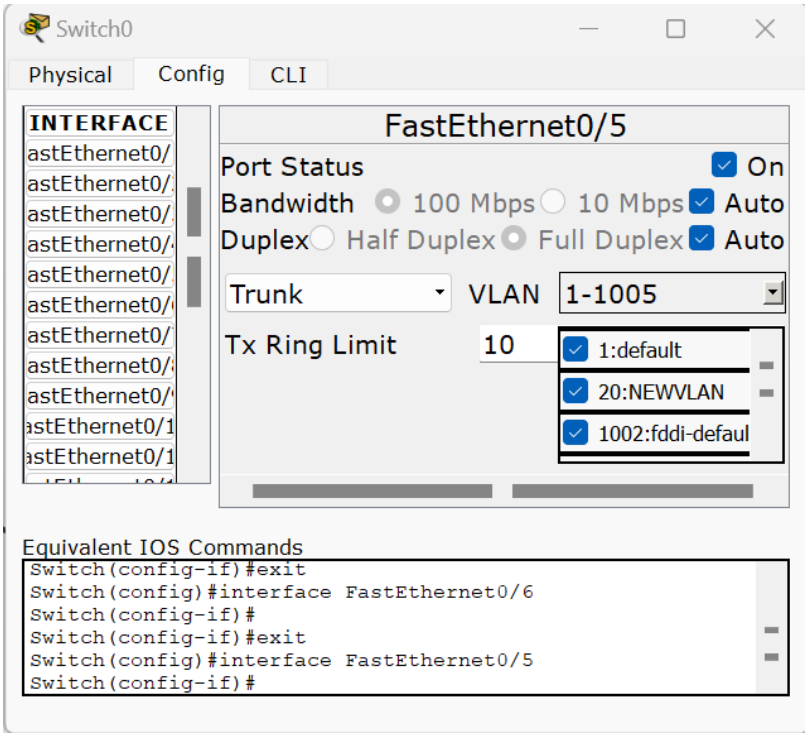
astEthernet0/
astEthernet0/
astEthernet0/
VLAN Configuration
VLAN Number
VLAN Name
Add
Remove
VLAN No
VLAN Name
1
default
20
NEWVLAN
1002
fddi-default
Equivalent IOS Commands
Switch(config-if)#
Switch(config-if)#
Switch(config-if)#switchport access vlan 1
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#


Switch0
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astEthernet0/
astEthernet0/
astEthernet0/
astEthernet0/
stEthernet0/1
stEthernet0/1
FastEthernet0/5
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
Trunk
VLAN
1-1005
Tx Ring Limit
10
1:default
20:NEWVLAN
1002:fddi-defaul
Equivalent IOS Commands
Switch(config-if)#exit
Switch(config)#interface FastEthernet0/6
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#interface FastEthernet0/5
Switch(config-if)#

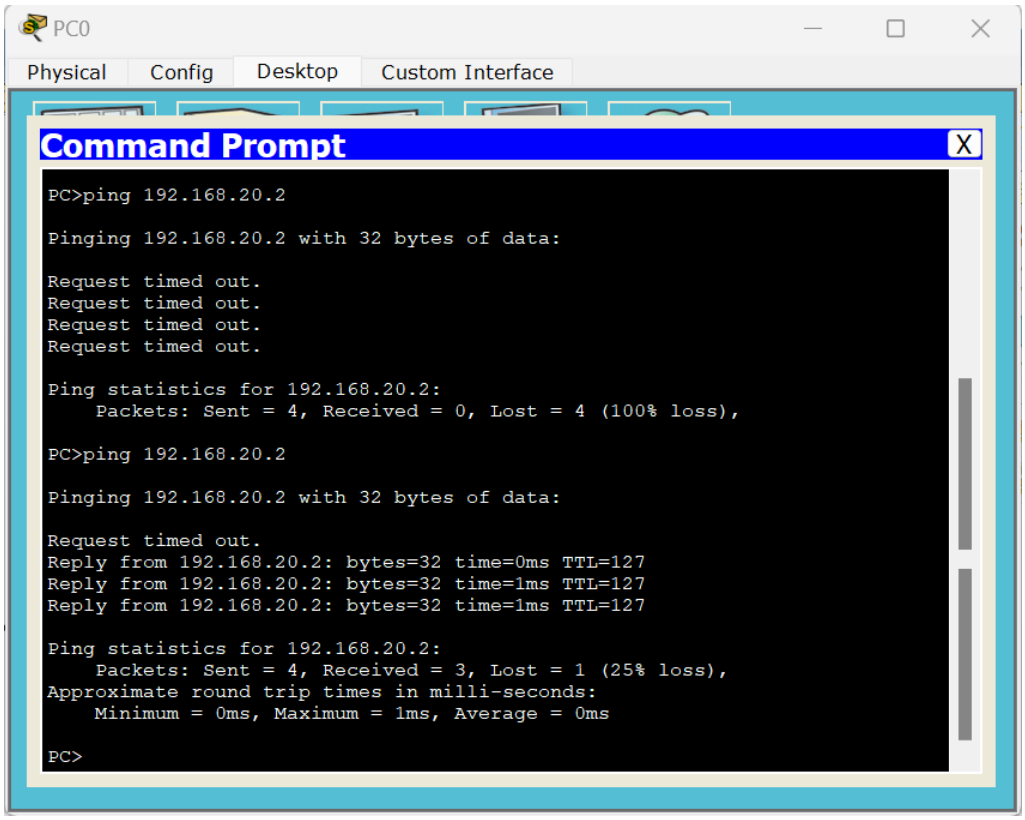
Router0

Physical | Config | CLI

IOS Commar

```
         --- System Configuration Dialog ---

Continue with configuration dialog? [yes/no]: n


Press RETURN to get started!



Router>enable
Router#vlan database
% Warning: It is recommended to configure VLAN from config mode,
  as VLAN database mode is being deprecated. Please consult user
  documentation for configuring VTP/VLAN in config mode.

Router(vlan)#vlan 20 name NEWVLAN
VLAN 20 modified:
    Name: NEWVLAN
Router(vlan)#exit
APPLY completed.
Exiting....
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int fa0/5
%Invalid interface type and number
Router(config)#int fa0/0
Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config-if)#no shut

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
exit
Router(config)#int fa 0/0.1
Router(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.1, changed state to up

Router(config-subif)#encapsulation dot1q 20
Router(config-subif)#ip address 192.168.20.1 255.255.255.0
Router(config-subif)#no shut
Router(config-subif)#exit
Router(config)#
```

OUTPUT:


PC0
Physical
Config
Desktop
Custom Interface
Command Prompt
X
PC>ping 192.168.20.2
Pinging 192.168.20.2 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 192.168.20.2:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
PC>ping 192.168.20.2
Pinging 192.168.20.2 with 32 bytes of data:
Request timed out.
Reply from 192.168.20.2: bytes=32 time=0ms TTL=127
Reply from 192.168.20.2: bytes=32 time=1ms TTL=127
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Ping statistics for 192.168.20.2:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
PC>