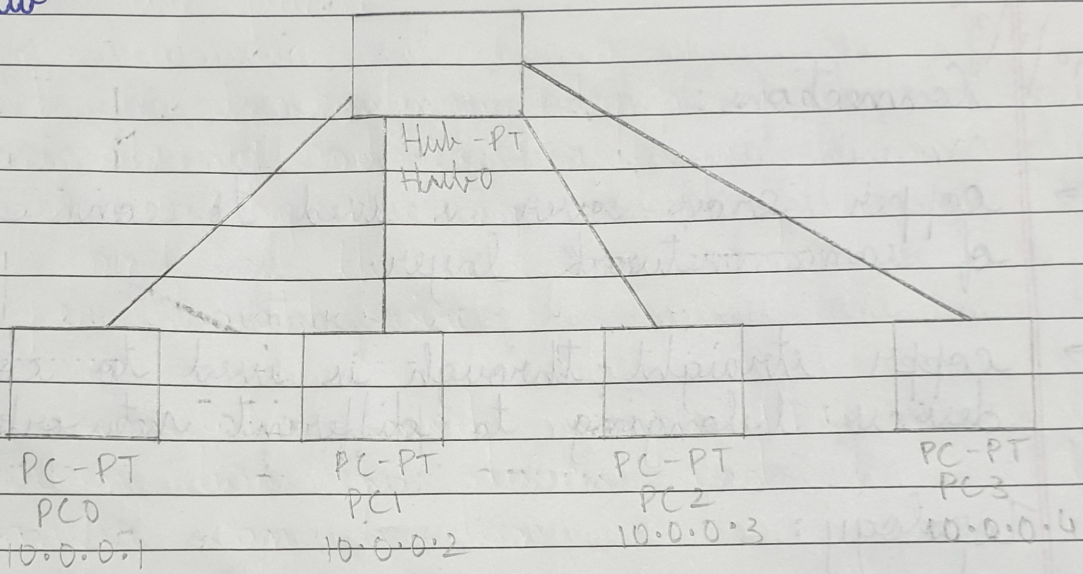
10/11/2022

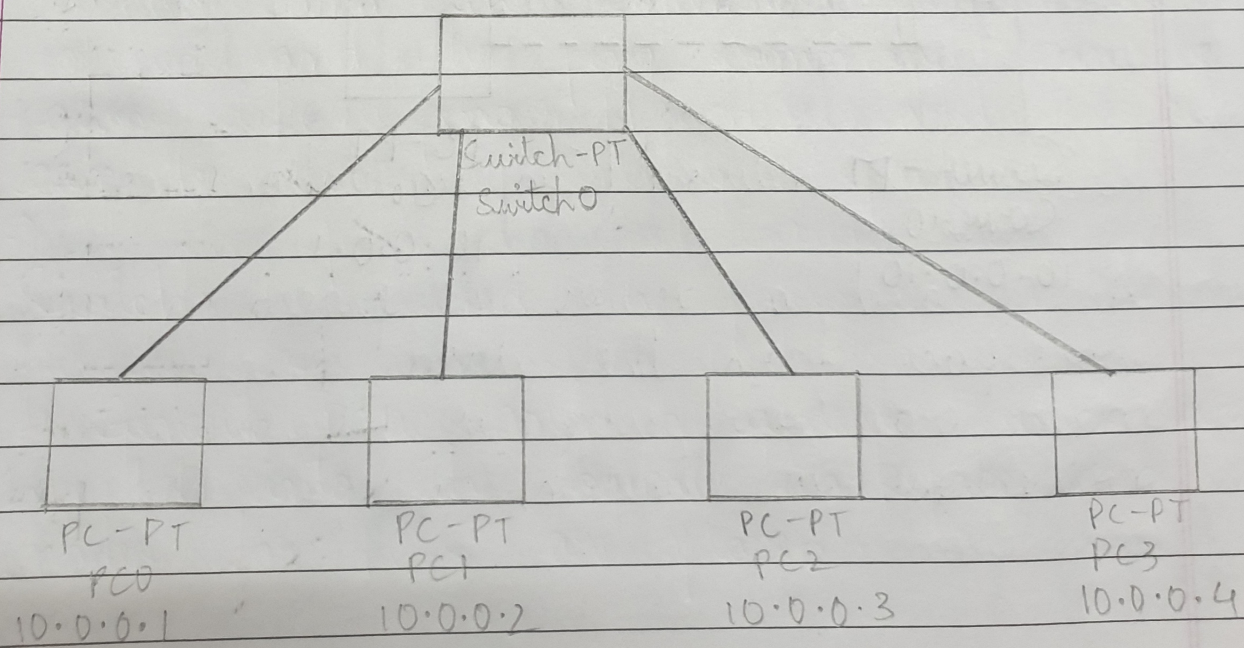
Aim: Creating a topology and simulate sending a simple PDU from source to destination using hub and switch as connecting devices

Topology:

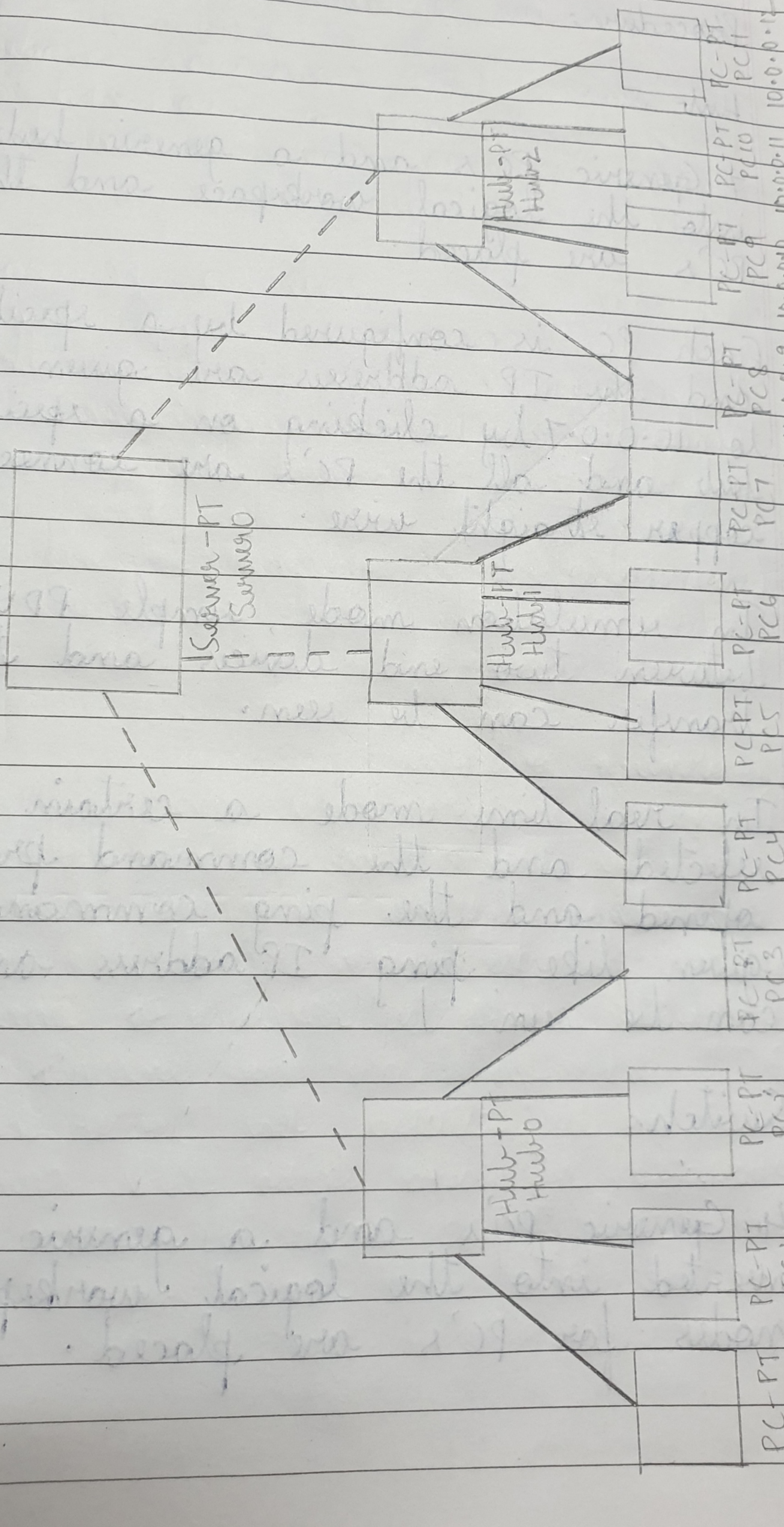
Hub



Switch



Hybrid


Server-PT
Server0
Hub-PT
Hub0
Hub-PT
Hub1
Hub-PT
Hub2
PC-PT
PC0
10.0.0.1
PC-PT
PC1
10.0.0.2
PC-PT
PC2
10.0.0.3
PC-PT
PC3
10.0.0.4
PC-PT
PC4
10.0.0.5
PC-PT
PC5
10.0.0.6
PC-PT
PC6
10.0.0.7
PC-PT
PC7
10.0.0.8
PC-PT
PC8
10.0.0.9
PC-PT
PC9
10.0.0.10
PC-PT
PC10
10.0.0.11
PC-PT
PC11
10.0.0.12

Procedure:

Hub

→ 7 Generic PC's and a generic hub are inserted into the logical workspace and the nodes for PC's are placed.

→ Each PC is configured by a specific IP address and the IP addresses are given from 10.0.0.1 to 10.0.0.7 by clicking on a specific PC. The hub and all the PC's are connected by copper straight wire.

→ In simulation mode, simple PDU is established between two end devices and the packet transfer can be seen.

→ In real-time mode a certain PC is selected and the command prompt is opened and the ping command can be given like ping IP address and the output can be seen

Switch

→ 4 Generic PC's and a generic switch are inserted into the logical workspace and the nodes for PC's are placed.

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→ Each PC is configured by a specific IP address and the IP addresses are given for the PC's from 10.0.0.1 to 10.0.0.4 by clicking on a specific PC. The switch and all the PC's are connected by using copper ~~cross-over~~ straight wire.

→ In simulation mode, simple PDU is established two end devices and auto-capture is clicked. The packet transfer can be seen between the switch and the PC's.

→ In real-time mode, a PC is selected and command prompt is ~~opt~~ opened from the desktop option and the ping command can be given or sent to any other end-device and the output can be seen.

Hybrid

→ 12 generic PC's are inserted on the logical work space where 4 PC's are connected to one hub where threre are 3 hubs each with 4 PC's and the three hubs are connected to a single switch.

→ All the nodes for 12 PC's are placed ~~alike~~ and the PC's are connected to their respective hub by copper-straight wire and the three hubs are connected to their switch by copper cross-over wire. The IP address are specified for all the 12 PC's from 10.0.0.1 to 10.0.0.12

→ In ~~simple PDU~~ simulation mode, simple PDU is established between two end devices and packet transfer can be seen from the source to the destination.

→ In real-time mode, a PC can be selected and the command prompt can be opened for pinging another PC from the present PC and the output can be seen on the command prompt screen.

Observations:

Hub

Learning outcome:

1) The hub broadcasts the message recieved by the source to all the other end devices but the message is read only by the specified destination and the destination responds backy by sending a packet.

2) If the ports are not enough, the hub has to be clicked, the power has to be switched off and extra ports can be kept in the blank spaces and the power is switched on.

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Result:
ping 10.0.0.7
pinging 10.0.0.7 with 32 bytes of data:
Reply from 10.0.0.7 : bytes = 32 time = 0ms TTL=128
Reply from 10.0.0.7 : bytes = 32 time = 0ms TTL = 128
Reply from 10.0.0.7 : bytes = 32 time = 0ms TTL = 128
Reply from 10.0.0.7 : bytes = 32 time = 0ms TTL = 128

Ping statistics for 10.0.0.7:
Packets : Sent = 4 Recieved = 4, Lost = 0 (0% loss)
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms

Switch

Learning outcome:
1) The switch does not establishes connection immediately, there is a certain time called learning time and message passing cannot be done until the green light connection is established.
2) The switch initially broadcats for all the devices but afterwards the message is sent only to the destination specified.

Result:
ping 10.0.0.3
pinging 10.0.0.3 with 32 bytes of data
Reply time 10.0.0.3 : bytes = 32 time = 0ms TTL=128
Reply from 10.0.0.3 : bytes = 32 time = 0ms TTL=128
Reply from 10.0.0.3 : bytes = 32 time = 0ms TTL = 128

Reply from 10.0.0.3 : bytes = 32 time = 0ms TTL = 128

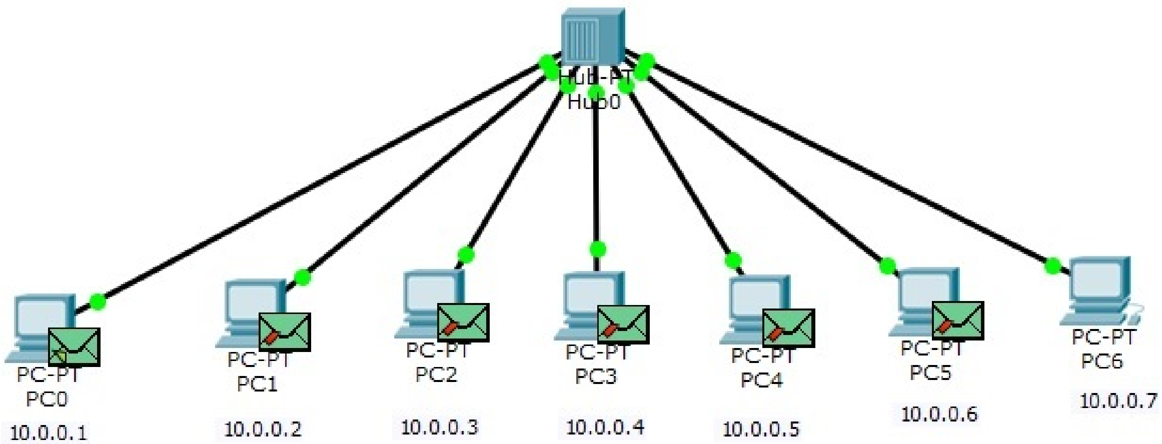
Ping statistics for 10.0.0.3 :
Packets Sent = 4, Recieved = 4, Lost = 0 (0% Loss)
Approximate round trip times in milli seconds
Minimum = 0ms, Maximum = 0ms, Average = 0ms

Hybrid

Learning outcome:
1) The switch sends message to the particular hub which is connected to the destination PC but the hub which recieves the message broadcasts to all the end devices of the particular hub while only the destination responds back.

Result:
ping 10.0.0.11
Pinging 10.0.0.11 with 32 bytes of data
Reply from 10.0.0.11 : bytes = 32 time = 0ms TTL = 128
Reply from 10.0.0.11 : bytes = 32 time = 0ms TTL = 128
Reply from 10.0.0.11 : bytes = 32 time = 1ms TTL = 128
Reply from 10.0.0.11 : bytes = 32 time = 0ms TTL = 128

Ping statistics for 10.0.0.11 :
Packets : Sent = 4, Recieved = 4, Lost = 0 (0% loss),
Approximate round trip times in milli - seconds
Minimum = 0ms, Maximum = 1ms, Average = 0ms


Hub-PT
Hub0
PC-PT
PC0
10.0.0.1
PC-PT
PC1
10.0.0.2
PC-PT
PC2
10.0.0.3
PC-PT
PC3
10.0.0.4
PC-PT
PC4
10.0.0.5
PC-PT
PC5
10.0.0.6
PC-PT
PC6
10.0.0.7

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Command Prompt

```
Packet Tracer PC Command Line 1.0
PC>ping 10.0.0.7

Pinging 10.0.0.7 with 32 bytes of data:

Reply from 10.0.0.7: bytes=32 time=0ms TTL=128
Reply from 10.0.0.7: bytes=32 time=0ms TTL=128
Reply from 10.0.0.7: bytes=32 time=0ms TTL=128
Reply from 10.0.0.7: bytes=32 time=0ms TTL=128

Ping statistics for 10.0.0.7:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>
```

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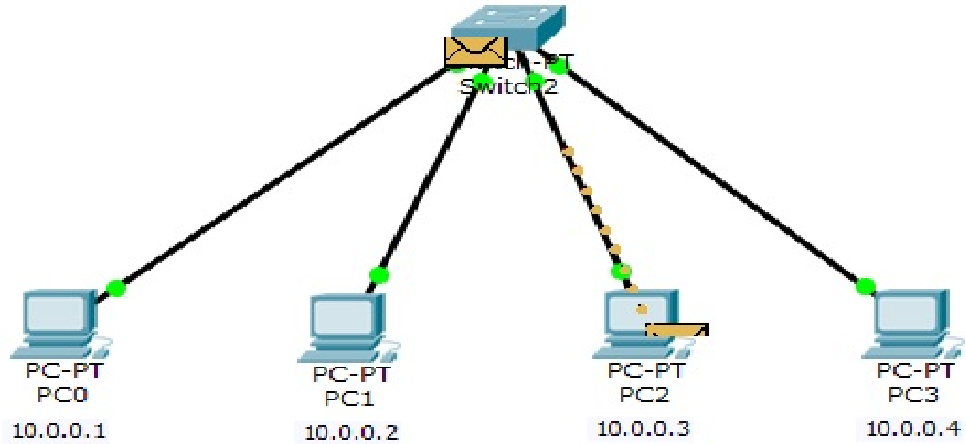
Switch-PT
Switch2
PC-PT
PC0
10.0.0.1
PC-PT
PC1
10.0.0.2
PC-PT
PC2
10.0.0.3
PC-PT
PC3
10.0.0.4

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Command Prompt

```
Packet Tracer PC Command Line 1.0
PC>ping 10.0.0.3

Pinging 10.0.0.3 with 32 bytes of data:

Reply from 10.0.0.3: bytes=32 time=0ms TTL=128
Reply from 10.0.0.3: bytes=32 time=0ms TTL=128
Reply from 10.0.0.3: bytes=32 time=0ms TTL=128
Reply from 10.0.0.3: bytes=32 time=0ms TTL=128

Ping statistics for 10.0.0.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>
```

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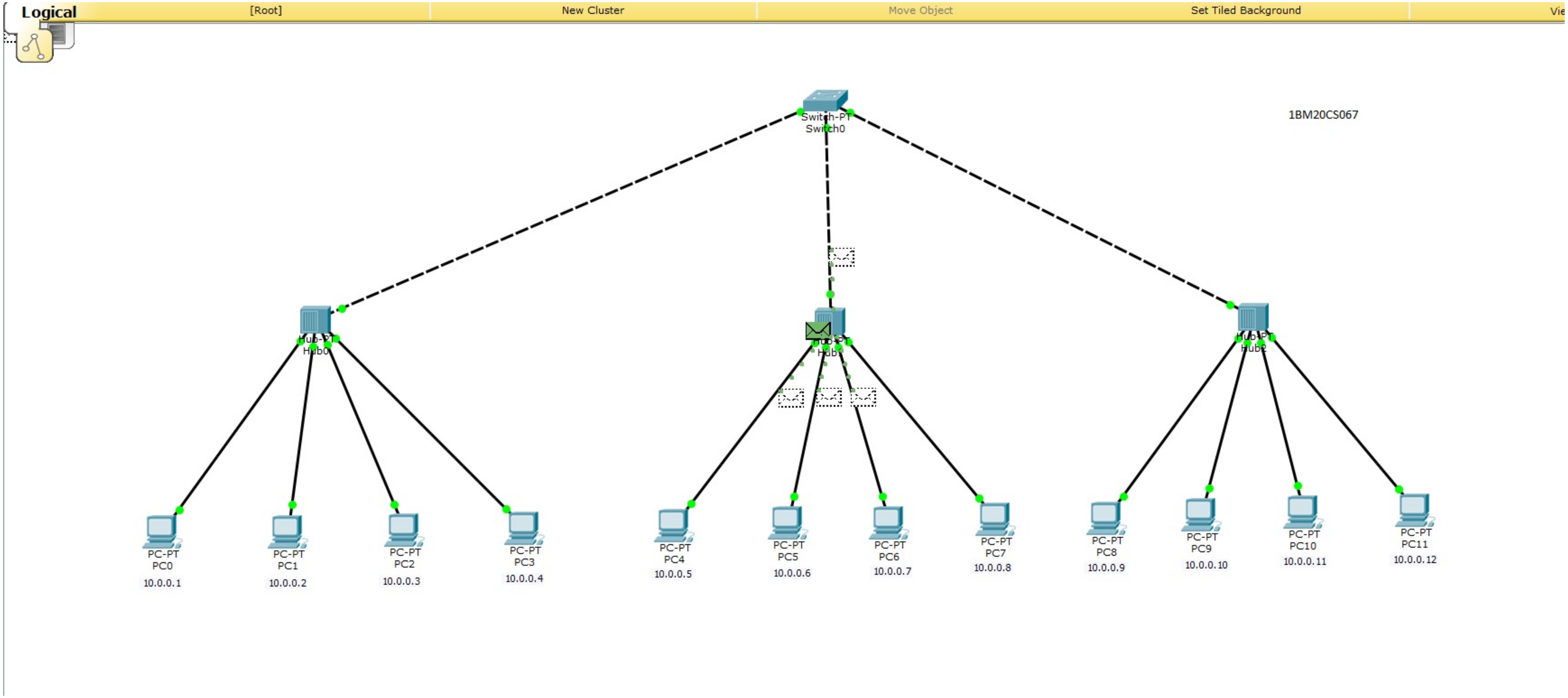
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
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Switch-PT
Switch0
PC-PT
PC0
10.0.0.1
PC-PT
PC1
10.0.0.2
PC-PT
PC2
10.0.0.3
PC-PT
PC3
10.0.0.4
PC-PT
PC4
10.0.0.5
PC-PT
PC5
10.0.0.6
PC-PT
PC6
10.0.0.7
PC-PT
PC7
10.0.0.8
PC-PT
PC8
10.0.0.9
PC-PT
PC9
10.0.0.10
PC-PT
PC10
10.0.0.11
PC-PT
PC11
10.0.0.12

Command Prompt

```
Packet Tracer PC Command Line 1.0
PC>ping 10.0.0.11

Pinging 10.0.0.11 with 32 bytes of data:

Reply from 10.0.0.11: bytes=32 time=0ms TTL=128
Reply from 10.0.0.11: bytes=32 time=0ms TTL=128
Reply from 10.0.0.11: bytes=32 time=1ms TTL=128
Reply from 10.0.0.11: bytes=32 time=0ms TTL=128

Ping statistics for 10.0.0.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

PC>
```

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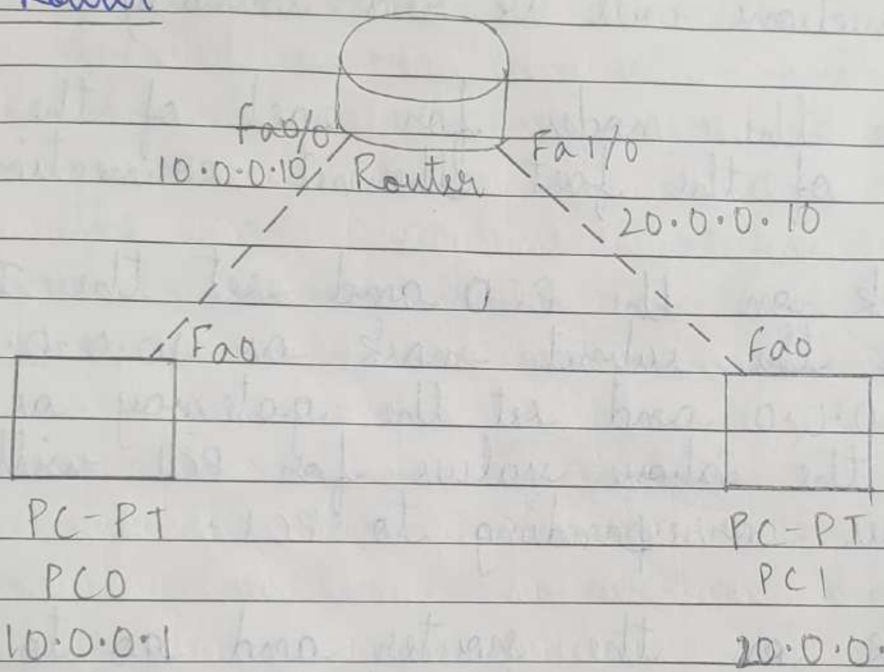
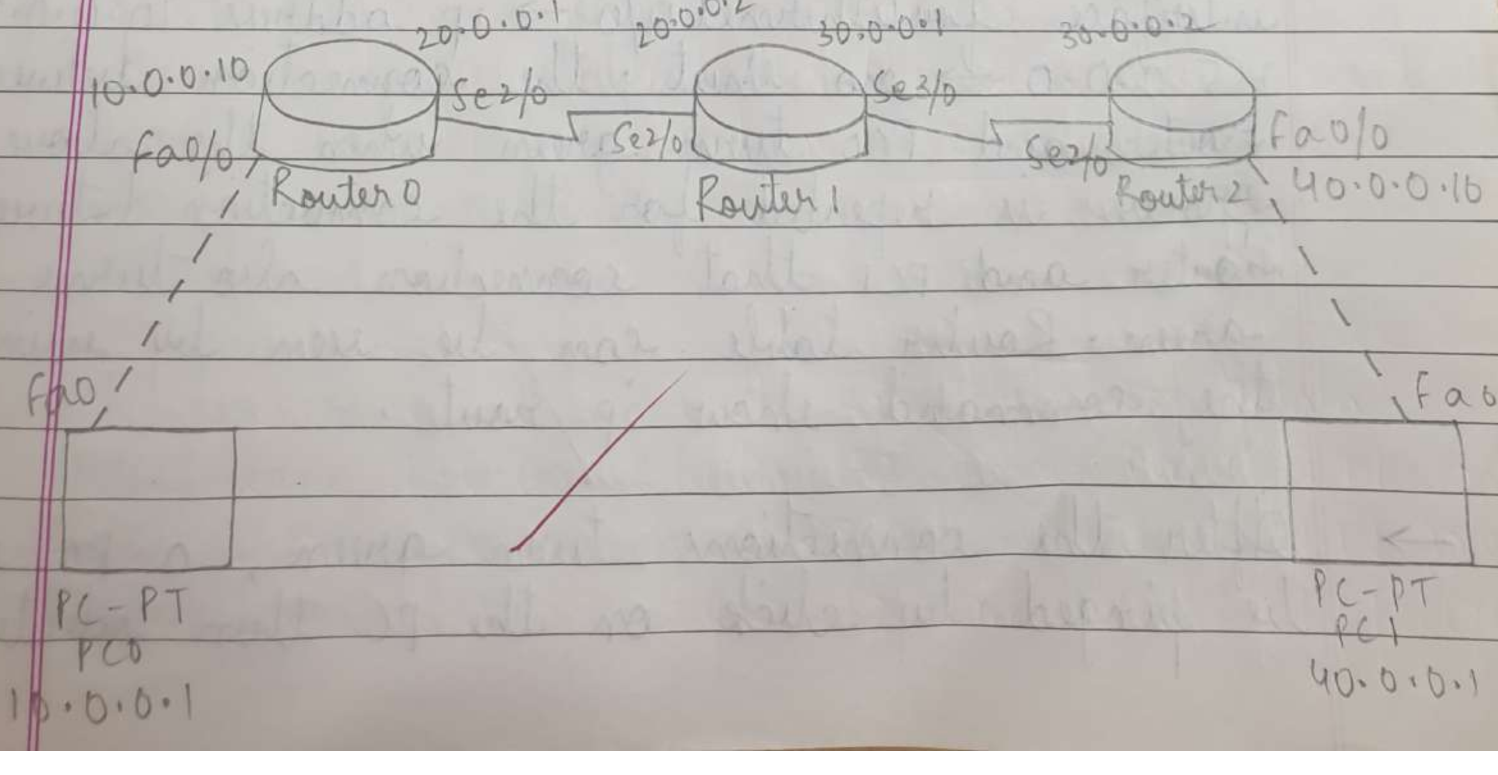
Aim : Configuring IP address to Routers in Packet Tracer. Explore the following messages : Ping Responses, Destination unreachable, Request timed out, Reply.

Topology:

One - Router



Three router



Procedure :

One-Router

→ Place two generic PC's and a generic router and the router is connected to each of the PC's with a copper cross wire. The connections will be red initially

→ Place the nodes for each of the PC's and each of the fast ethernet connections.

→ Click on the PC0 and set the IP address and the subnet mask as 10.0.0.1 and 255.0.0.0 and set the gateway as 10.0.0.10. Set the above values for PC1 with the values corresponding to PC1.

→ Click on the router and go to the command line interface (CLI) → donot continue with configuration dialog → enable → config t → interface fastethernet 0/0 → ip address 10.0.0.10 255.0.0.0 → no shut ; the connection between router and PC0 turn green when the above process is repeated for the connection between router and PC1 that connection also turns green. Router table can be seen by using the command show ip route.

→ After the connections turn green, a PC can be pinged by click on the PC then selecting desktop and then select command prompt.

3- routers

→ Place three generic routers and two generic PC's. First router is connected to the first PC and third router is connected to second PC by a copper cross-over wire and the three routers are connected among each other with the serial DCE cable. All the connections are red initially

→ Place the nodes and the router and PC is connected through fast ethernet while the routers are connected through serial.

→ Each of the PC is clicked and the IP address, subnet mask and gateway is set for each of the PC with the corresponding values.

→ Router 1 is clicked > CLI > "no" > enable > config t > interface fastethernet 0/0 > ip address 10.0.0.10 255.0.0.0 > no shut → With these the first connection is established.
config t > interface serial 2/0 > ip address 20.0.0.1 255.0.0.0 > no shut → ~~Seco~~ Second connection is established.

→ Router 2 is clicked > CLI > "no" > enable > config t > interface serial 2/0 > ip address 20.0.0.2 255.0.0.0 > no shut → With these first connection is established

→ Now, the correct reply is seen ~~from~~ when PC1 is pinged by PC0

Observations:

One - Router

When PC0 pings PC1 for the first time we get
ping 20.0.0.1

Pinging 20.0.0.1 with 32 bytes of data:
Request timed out
Reply from 20.0.0.1: bytes = 32 time = 0ms TTL = 127
Reply from 20.0.0.1: bytes = 32 time = 0ms TTL = 127
Reply from 20.0.0.1: bytes = 32 time = 0ms TTL = 127

Ping statistics for 20.0.0.1:
Packets: Sent = 4, Recieved = 3, Lost = 1 (25% Loss),
Approximate round trip times in ms
Minimum = 0ms, Maximum = 4ms, Average = 1ms

But when PC0 pings PC1 again or if PC1 reverse pings PC0 we get the output when where all the 4 times ~~replied~~ reply is observed.

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3 - Routers

Before the routers are trained and PC1 is pinged by PC0 ~~we~~ ~~get~~ & Router2 we get

ping 40.0.0.1

Pinging 40.0.0.1 with 32 bytes of data:

Reply from ~~40~~10.0.0.10: Destination host unreach
Reply from 10.0.0.10: Destination host unreachable
Reply from 10.0.0.10: Destination host unreachable
Reply from 10.0.0.10: Destination host unreachable

Pinging statistics 40.0.0.1
Packets: Sent = 4 Recieved = 0 Lost = 4 (100% loss)

ping 20.0.0.2

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

Pinging statistics 20.0.0.2
Packets: Sent = 4 Recieved = 0 Lost = 4 (100% loss)

After the routers are trained

ping 40.0.0.1

Pinging 40.0.0.1 with 32 bytes of data

Request timed out
Reply from 40.0.0.1: bytes=32 time=2ms TTL=125
Reply from 40.0.0.1: bytes=32 time=2ms TTL=125
Reply from 40.0.0.1: bytes=32 time=2ms TTL=125

Pinging statistics for 40.0.0.1
Packets: Sent=4 Recieved=3 Loss=1 (25% Loss)

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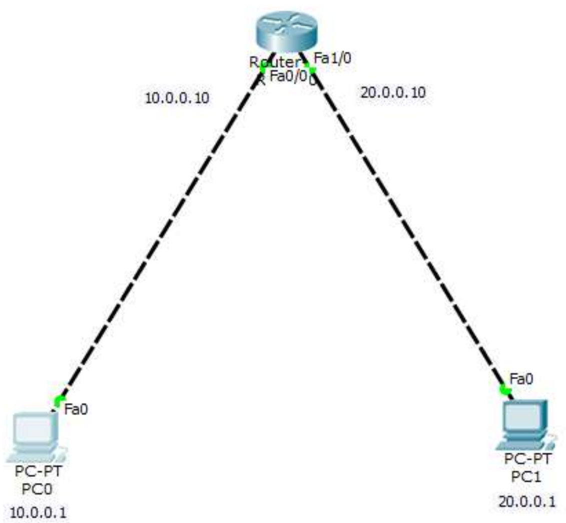

Router
Fa1/0
Fa0/0
10.0.0.10
20.0.0.10
Fa0
PC-PT
PC0
10.0.0.1
Fa0
PC-PT
PC1
20.0.0.1

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


Press RETURN to get started!
```

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```
Router>enable
Router#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface fastethernet0/0
Router(config-if)#ip address 10.0.0.10 255.0.0.0
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

Router(config-if)#exit
Router(config)#interface fastethernet1/0
Router(config-if)#ip address 20.0.0.10 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up

Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

C    10.0.0.0/8 is directly connected, FastEthernet0/0
C    20.0.0.0/8 is directly connected, FastEthernet1/0
Router#
```

```
Packet Tracer PC Command Line 1.0
PC>ping 20.0.0.1

Pinging 20.0.0.1 with 32 bytes of data:

Request timed out.
Reply from 20.0.0.1: bytes=32 time=0ms TTL=127
Reply from 20.0.0.1: bytes=32 time=0ms TTL=127
Reply from 20.0.0.1: bytes=32 time=4ms TTL=127

Ping statistics for 20.0.0.1:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 4ms, Average = 1ms

PC>ping 20.0.0.1

Pinging 20.0.0.1 with 32 bytes of data:

Reply from 20.0.0.1: bytes=32 time=0ms TTL=127
Reply from 20.0.0.1: bytes=32 time=0ms TTL=127
Reply from 20.0.0.1: bytes=32 time=3ms TTL=127
Reply from 20.0.0.1: bytes=32 time=0ms TTL=127

Ping statistics for 20.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 3ms, Average = 0ms

PC>
```

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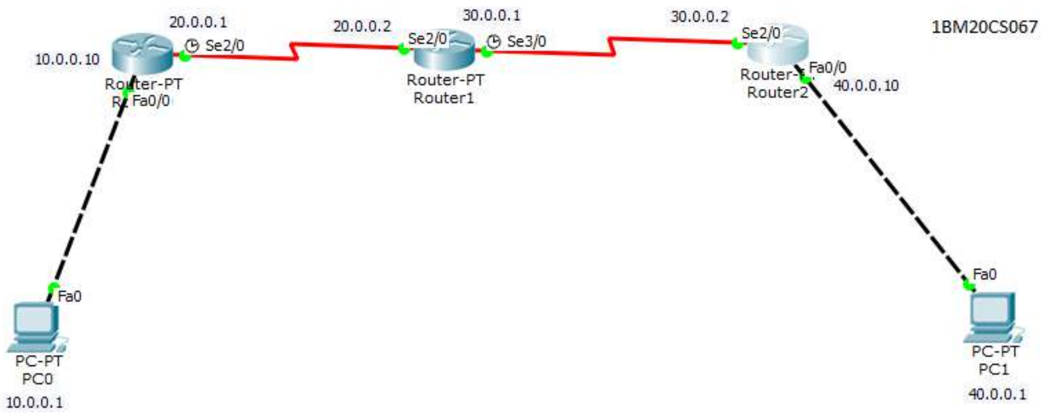

20.0.0.1
Se2/0
10.0.0.10
Router-PT
Fa0/0
20.0.0.2
Se2/0
30.0.0.1
Se3/0
Router-PT
Router1
30.0.0.2
Se2/0
Fa0/0
40.0.0.10
Router2
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Fa0
PC-PT
PC0
10.0.0.1
Fa0
PC-PT
PC1
40.0.0.1

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


Press RETURN to get started!
```

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```
Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface serial2/0
Router(config-if)#ip address 30.0.0.2 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

Router(config-if)#interface serial2/0
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, cinterface serial2/0
Router(config-if)#exit
Router(config)#interface fastethernet0/0
Router(config-if)#ip address 40.0.0.10 255.0.0.0
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

Router(config-if)#exit
Router(config)#ip route 10.0.0.0 255.0.0.0 30.0.0.1
Router(config)#ip route 20.0.0.0 255.0.0.0 30.0.0.1
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

S    10.0.0.0/8 [1/0] via 30.0.0.1
S    20.0.0.0/8 [1/0] via 30.0.0.1
C    30.0.0.0/8 is directly connected, Serial2/0
C    40.0.0.0/8 is directly connected, FastEthernet0/0
Router#
```

```
Packet Tracer PC Command Line 1.0
PC>ping 40.0.0.1

Pinging 40.0.0.1 with 32 bytes of data:

Reply from 10.0.0.10: Destination host unreachable.
Reply from 10.0.0.10: Destination host unreachable.
Request timed out.
Reply from 10.0.0.10: Destination host unreachable.

Ping statistics for 40.0.0.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

PC>ping 20.0.0.2

Pinging 20.0.0.2 with 32 bytes of data:

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

Ping statistics for 20.0.0.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

PC>ping 40.0.0.1

Pinging 40.0.0.1 with 32 bytes of data:

Request timed out.
Reply from 40.0.0.1: bytes=32 time=7ms TTL=125
Reply from 40.0.0.1: bytes=32 time=9ms TTL=125
Reply from 40.0.0.1: bytes=32 time=8ms TTL=125

Ping statistics for 40.0.0.1:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 7ms, Maximum = 9ms, Average = 8ms

PC>
```

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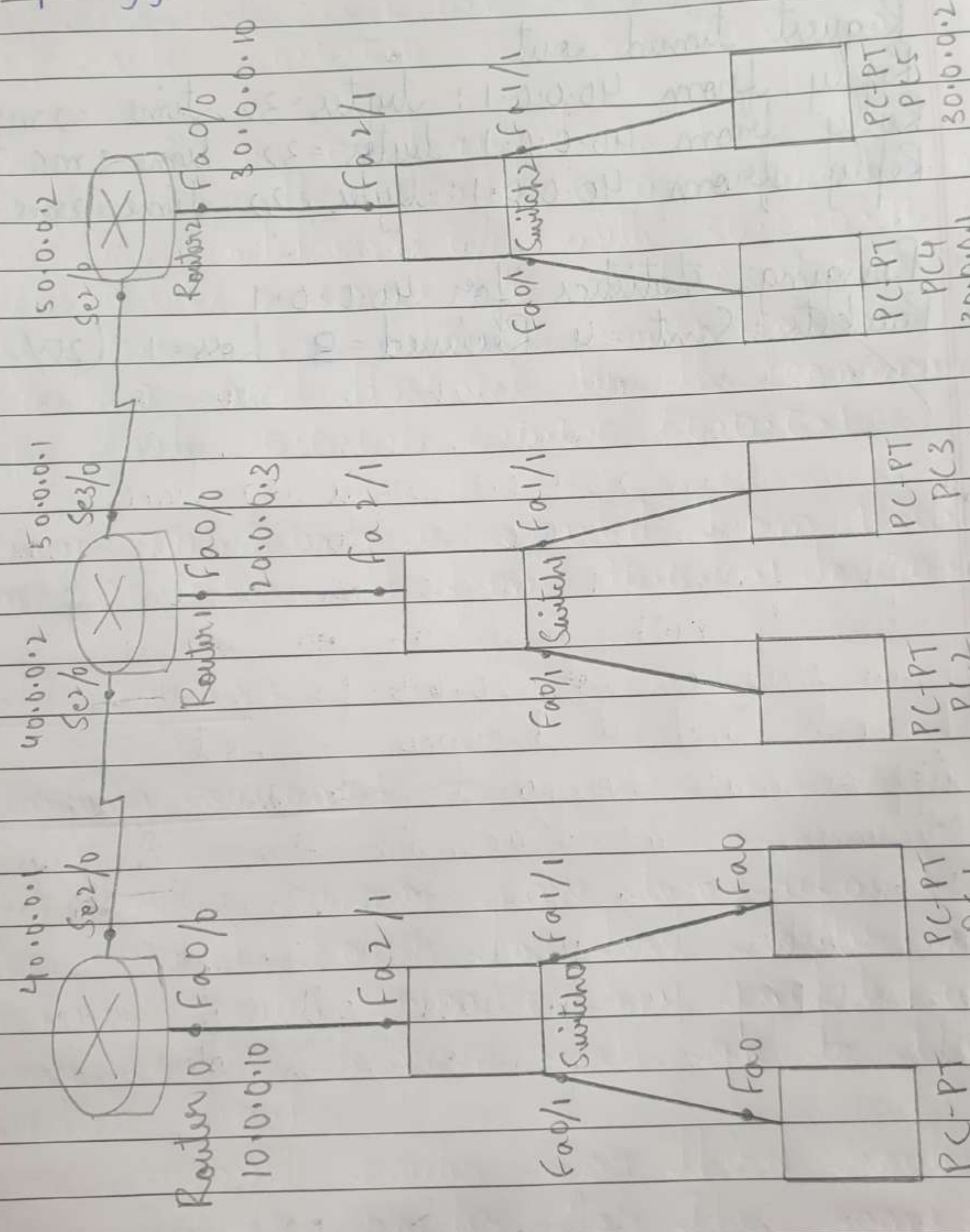
Aim: Configuring default route to the router

Topology:



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Procedure :

→ Place 6 generic PC's, 3 switches and 3 routers and connect two PC's to each switch with copper straight through wire and each switch is connected to one router with a copper straight through wire and the three routers are connected among themselves by serial DCE cable and the nodes are placed for all the devices and networks.

→ A PC is clicked to set the attributes for a PC and each PC has three attributes which are the IP address, subnet mask and the gateway and all the three are set according to the nodes placed. This process is done for all the 6 PC's.

→ For Router 1, the configurations are done in the command line interface (CLI). The IP address and subnet mask are set for both the interfaces - fastethernet 0/0 as 10.0.0.10 & 255.0.0.0 and serial 2/0 as 40.0.0.1 and 255.0.0.0. Router 2 is the default router for Router 1 and this done by the command ip route 0.0.0.0 0.0.0.0 40.0.0.2.

→ For Router 2 the IP address and subnet mask are set for all three interfaces - fastethernet 0/0 as 20.0.0.3 & 255.0.0.0 and serial 2/0 as 40.0.0.2 & 255.0.0.0 and serial 3/0 as 50.0.0.1 & 255.0.0.0

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Router 2 does not have any default routers and ~~the~~ ~~so~~ static routing is done for the network 10 & 40 by the following command
ip route 10.0.0.0 255.0.0.0 40.0.0.1
ip route 30.0.0.0 255.0.0.0 50.0.0.2

→ Router 3 is configured in both the interface with IP address and subnet mask ~~fo~~ as - fastethernet 0/0 with 30.0.0.10 & 255.0.0.0 & serial 2/0 with 50.0.0.2 & 255.0.0.0. The default router for router 3 router 2 and this set by the command
ip route 0.0.0.0 0.0.0.0 50.0.0.1

→ Ping commang is executed from 10.0.0.1 to 20.0.0.1 and from 10.0.0.1 to 30.0.0.2.

Observations:

Learning outcome:

→ One router cannot have two default routers
→ The default router for first router is the middle router because any packets which have to be delivered will go to the middle router.
→ The default router for third router is the middle router for the same reason.
→ The middle router does not have any default router because if one of the router is made default then there is a chance

that the packets which are to be sent to the switch are sent to the router.

Result:

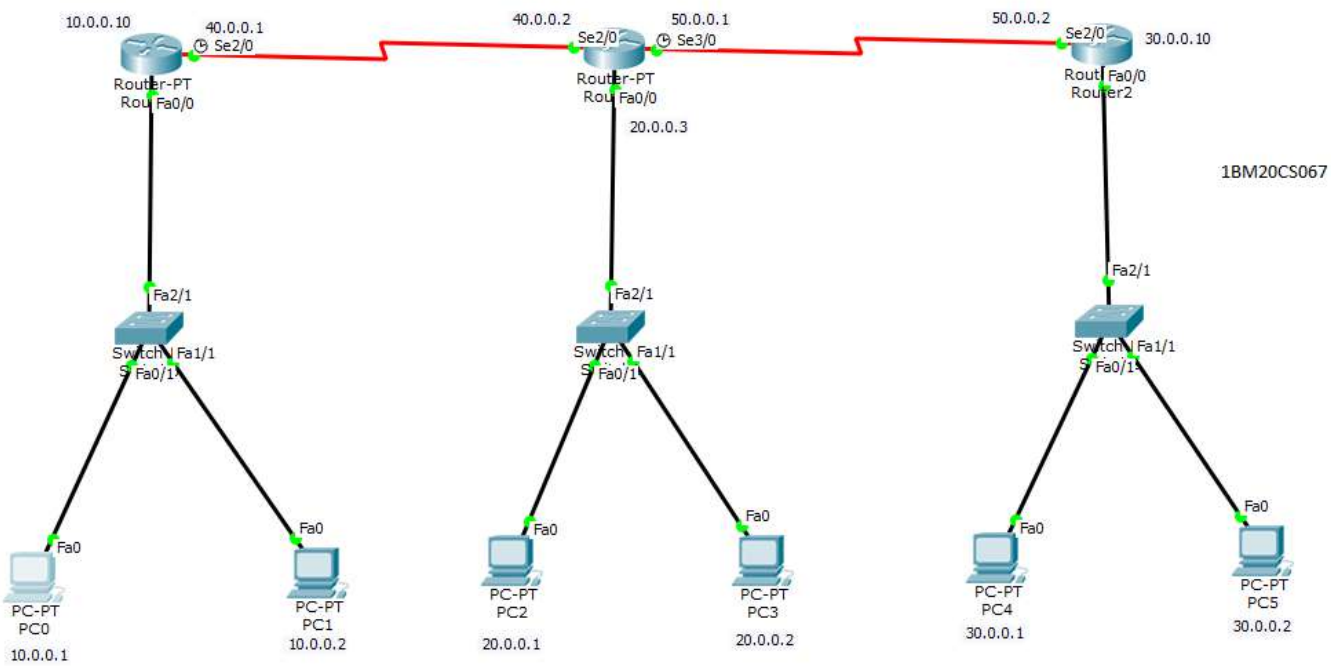
ping 20.0.0.1

Pinging 20.0.0.1 with 32 bytes of data

Request timed out.
Reply from 20.0.0.1: bytes = 32, time = 1ms, TTL=126
Reply from 20.0.0.1: bytes = 32, time = 2ms, TTL=126
Reply from 20.0.0.1: bytes = 32, time = 6ms, TTL=126

ping 30.0.0.2

Pinging 30.0.0.2 with 32 bytes of data
Request timed out
Reply from 30.0.0.2: bytes = 32, time = 4ms, TTL=125
Reply from 30.0.0.2: bytes = 32, time = 4ms, TTL=125
Reply from 30.0.0.2: bytes = 32, time = 4ms, TTL=125



10.0.0.10
40.0.0.1
Se2/0
Router-PT
Fa0/0
40.0.0.2
Se2/0
50.0.0.1
Se3/0
Router-PT
Fa0/0
20.0.0.3
50.0.0.2
Se2/0
30.0.0.10
Fa0/0
Router2
1BM20CS067
Fa2/1
Fa1/1
Fa0/1
Fa0
PC-PT
PC0
10.0.0.1
PC-PT
PC1
10.0.0.2
PC-PT
PC2
20.0.0.1
PC-PT
PC3
20.0.0.2
PC-PT
PC4
30.0.0.1
PC-PT
PC5
30.0.0.2

1BM20CS067

```
Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface serial2/0
Router(config-if)#ip address 40.0.0.2 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

Router(config-if)#exit
Router(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
interface
% Incomplete command.
Router(config)#interface fastethernet0/0
Router(config-if)#ip address 20.0.0.3 255.0.0.0
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

Router(config-if)#exit
Router(config)#interface serial3/0
Router(config-if)#ip address 50.0.0.1 255.0.0.0
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial3/0, changed state to down
Router(config-if)#
%LINK-5-CHANGED: Interface Serial3/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up

Router(config-if)#exit
Router(config)#ip route 10.0.0.0 255.0.0.0 40.0.0.1
Router(config)#ip route 30.0.0.0 255.0.0.0 50.0.0.2
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

S    10.0.0.0/8 [1/0] via 40.0.0.1
C    20.0.0.0/8 is directly connected, FastEthernet0/0
S    30.0.0.0/8 [1/0] via 50.0.0.2
C    40.0.0.0/8 is directly connected, Serial2/0
C    50.0.0.0/8 is directly connected, Serial3/0
Router#
```

```
Packet Tracer PC Command Line 1.0
PC>ping 20.0.0.1

Pinging 20.0.0.1 with 32 bytes of data:

Request timed out.
Reply from 20.0.0.1: bytes=32 time=1ms TTL=126
Reply from 20.0.0.1: bytes=32 time=2ms TTL=126
Reply from 20.0.0.1: bytes=32 time=6ms TTL=126

Ping statistics for 20.0.0.1:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 6ms, Average = 3ms

PC>ping 30.0.0.2

Pinging 30.0.0.2 with 32 bytes of data:

Request timed out.
Reply from 30.0.0.2: bytes=32 time=4ms TTL=125
Reply from 30.0.0.2: bytes=32 time=4ms TTL=125
Reply from 30.0.0.2: bytes=32 time=2ms TTL=125

Ping statistics for 30.0.0.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 4ms, Average = 3ms

PC>
```

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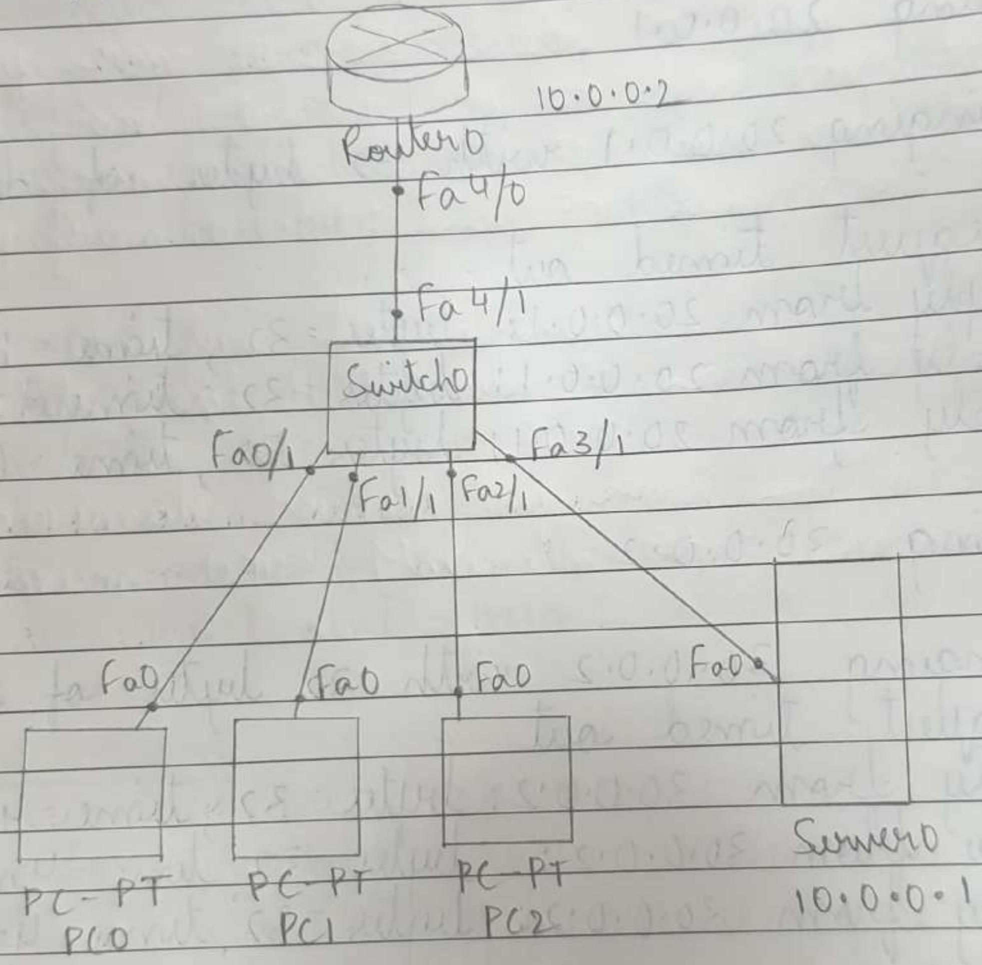
01/12/2022

Aim: Configuring DHCP within a LAN in a packet tracer.

Topology:



Procedure:

→ Place a generic router, a generic switch, a generic server and three generic PC's. Connect them with suitable connections among router - switch, switch - server and switch - PC.

→ Place the nodes for server and router as 10.0.0.1 and 10.0.0.2.

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→ Click on the server → go to configuration tab and set IP address and subnet mask as 10·0·0·1 and 255·0·0·0. Set the gateway as 10·0·0·2.

→ Click on the router → CLI tab → enable → config t → interface fastethernet4/0 → Set IP address as ip address 10·0·0·2 255·0·0·0 → no shut. The ip address is set as 10·0·0·2

→ Click on server → services tab → select DHCP and switch on the service → Set default gateway as 10·0·0·2, DNS server as 10·0·0·1 Start IP address as 10·0·0·3 and TFTP server as 10·0·0·1. After setting everything, the contents are saved.

→ Each of the PC is clicked → desktop tab → IP configuration → Set as DHCP. The IP address, subnet mask, default gateway and DNS server are set automatically.

→ Click on PC 10·0·0·3 and ping to 10·0·0·5.

Observations:

Learning outcome: The server automatically sets the IP address, subnet mask and gateway to all the PC's and IP address is allocated serially in DHCP protocol.

Result:

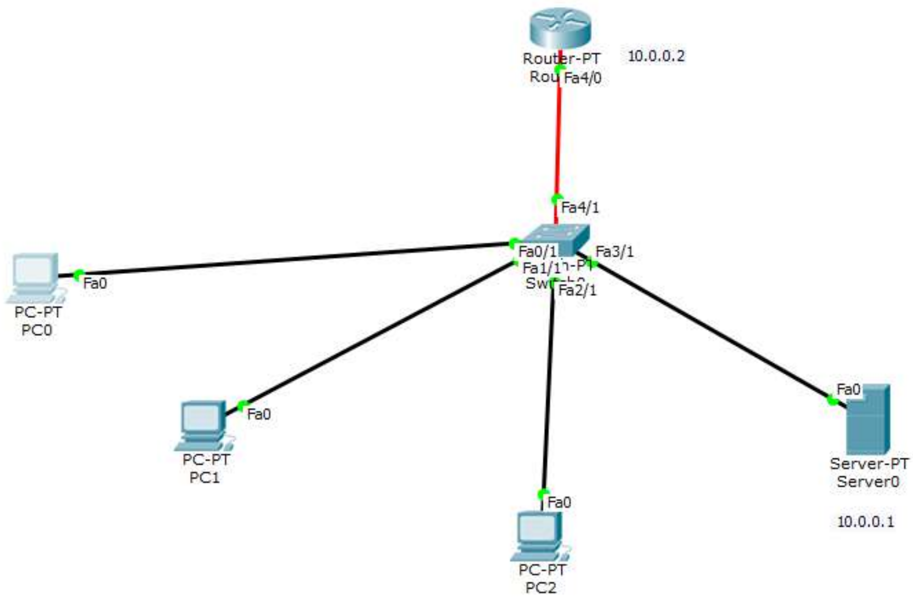
ping 10.0.0.5

Pinging 10.0.0.5 with 32 bytes of data:

Reply from 10.0.0.5: bytes = 32, time = 0 ms TTL = 128
Reply from 10.0.0.5: bytes = 32 time = 0 ms TTL = 128
Reply from 10.0.0.5: bytes = 32 time = 0 ms TTL = 128
Reply from 10.0.0.5: bytes = 32 time = 0 ms TTL = 128

Ping statistics for 10.0.0.5:
Packets: Sent = 4, Recieved = 4, Loss = 0 (0% loss),

Approximate round trip times ~~im~~ in ms:
Minimum = 0 ms, Maximum = 4 ms, Average = 1 ms.


Router-PT
10.0.0.2
Fa4/0
Fa4/1
Fa0/1
Fa1/1
Fa3/1
Fa2/1
Fa0
PC-PT
PC0
Fa0
PC-PT
PC1
Fa0
PC-PT
PC2
Fa0
Server-PT
Server0
10.0.0.1

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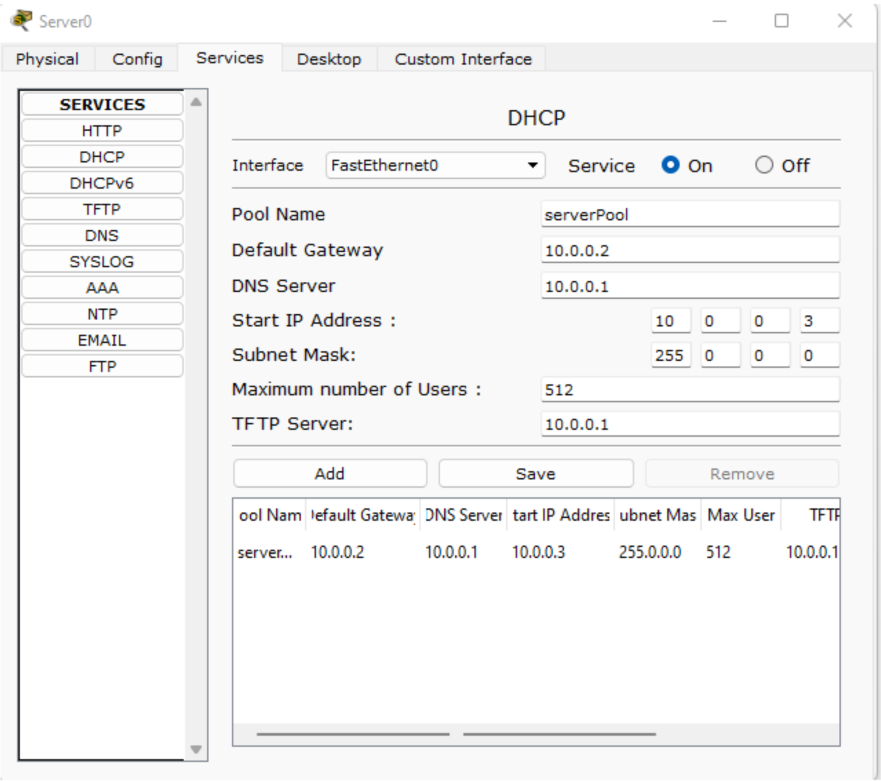
```
Continue with configuration dialog? [yes/no]: no


Press RETURN to get started!



Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface fastethernet4/0
Router(config-if)#ip address 10.0.0.2 255.0.0.0
Router(config-if)#no shut
```



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```
Packet Tracer PC Command Line 1.0
PC>ping 10.0.0.5

Pinging 10.0.0.5 with 32 bytes of data:

Reply from 10.0.0.5: bytes=32 time=0ms TTL=128
Reply from 10.0.0.5: bytes=32 time=4ms TTL=128
Reply from 10.0.0.5: bytes=32 time=0ms TTL=128
Reply from 10.0.0.5: bytes=32 time=0ms TTL=128

Ping statistics for 10.0.0.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 4ms, Average = 1ms

PC>
```

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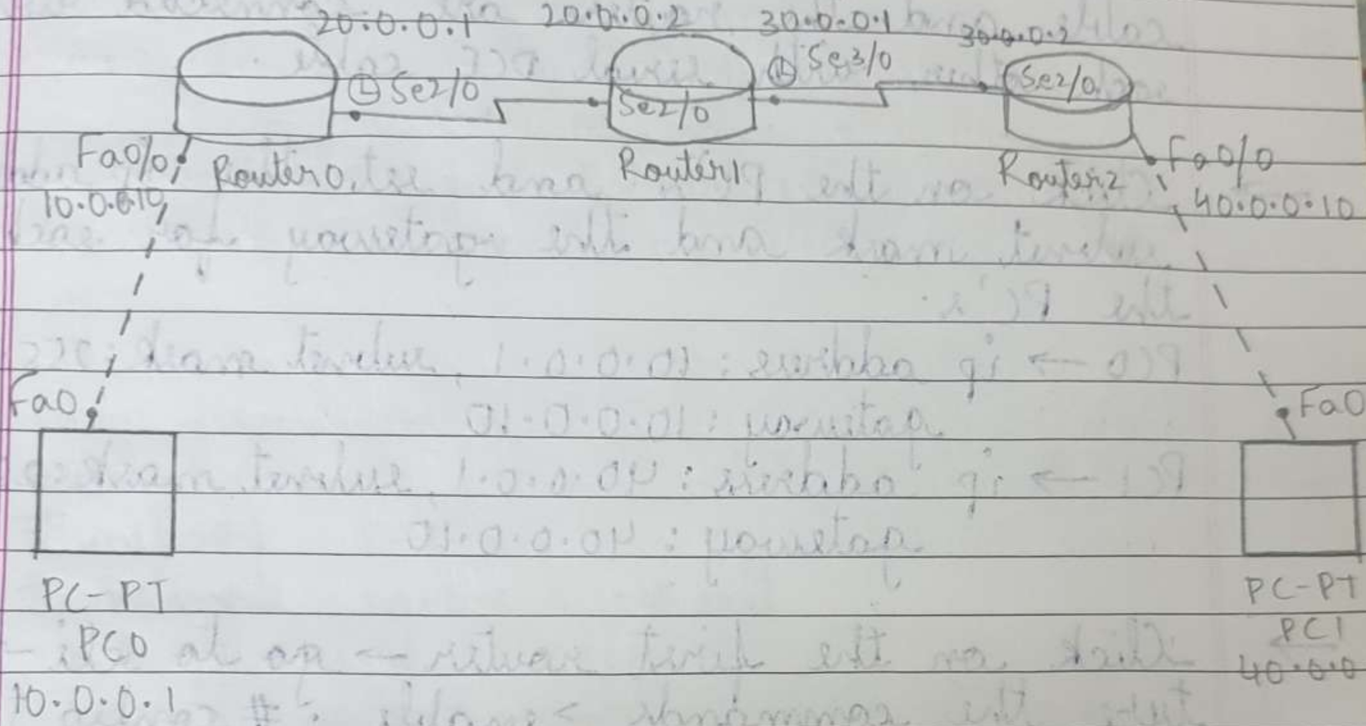
Aim: Configuring RIP routing protocol in Routers.

Topology:



Serial DCE: Serial connections, often used for WAN links, must be connected between serial ports. We must enable clocking on the DCE side to bring up the line protocol. We can tell which end of the connection is the DCE side by the small "clock" icon next to the port.

Introduction: Routing Information protocol (RIP) is a protocol that routers can use to exchange network topology information. RIP uses a distance vector algorithm to decide which path to put a packet on to get to its destination.

Procedure:

→ Place two PC's and three routers and connect the PC and router with copper cross over cable and the routers are connected with each other with serial DCE cable.

→ Click on the PC's and set the ip address, subnet mask and the gateway for each of the PC's.
PC0 → ip address : 10.0.0.1, subnet mask : 255.0.0.0
gateway : 10.0.0.10
PC1 → ip address : 40.0.0.1, subnet mask : 255.0.0.0
gateway : 40.0.0.10

→ Click on the first router → go to cli → type the commands >enable ; # config t ; # interface fastethernet0/0 ; # ip address 10.0.0.10 255.0.0.0 ; # no shut ; # exit ; # interface serial2/0 ; # ip address 20.0.0.1 255.0.0.0 ; # encapsulation PPP ; # clock rate 64000 ; # no shut

→ Click on the second router → go to cli → type the commands > enable ; # config t ; # interface serial2/0 ; # ip address 20.0.0.2 255.0.0.0 ; # encapsulation PPP ; # no shut ; # exit # interface serial3/0 ; # ip address 30.0.0.1 255.0.0.0 ; # encapsulation PPP ; # clock rate 64000 ; # no shut

→ Click on the third router → go to cli → type the commands > enable ;#config t ; #interface serial2/0 ; #ip address 30.0.0.2 255.0.0.0 ; # encapsulation ppp ; # no shut ; # exit
#interface fastethernet0/0 ; #ip address 40.0.0.10 255.0.0.0 ; # no shut

→ Now all the basic configuration are set for all the PC's and routers. All the lights are turned green

→ Now again click on first router and go to cli and type the following commands → # router rip
network 10.0.0.0
network 20.0.0.0 ; # exit

→ Click on second router → go to cli and execute
#router rip
network 20.0.0.0
network 30.0.0.0 ; # exit

→ Click on third router → go to cli and execute
router rip
network 30.0.0.0
network 40.0.0.0

→ Ping the PC 40.0.0.1 from 10.0.0.1

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Observations:

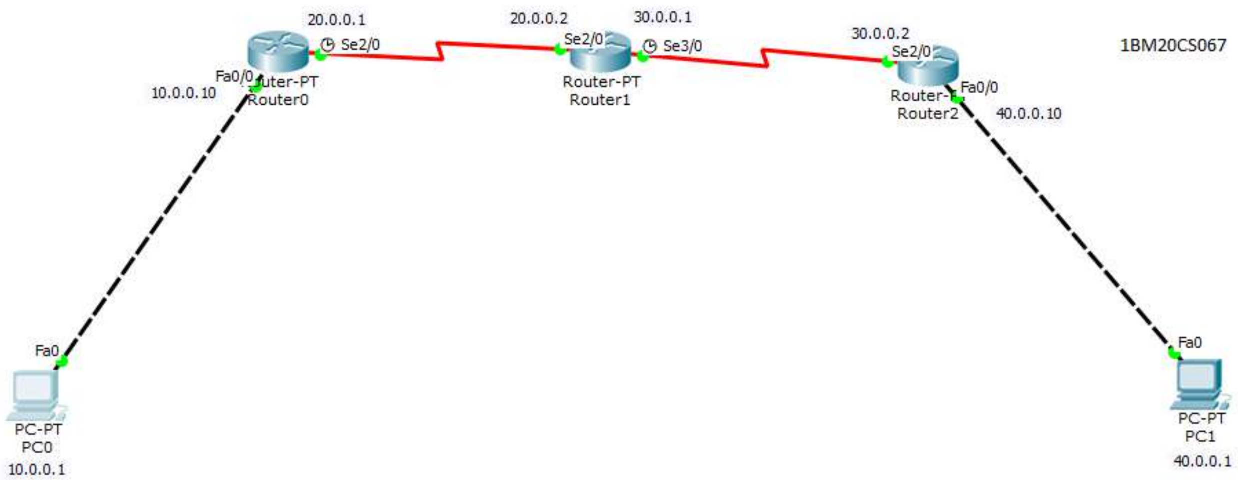
Learning outcome:
When RIP protocol is used we donot have to do static routing for all the routers. i.e we donot have to teach all the routers by providing with the next hop.
In dynamic routing (RIP protocol) we just have to specify the networks known by the router.

Result:

ping 40.0.0.1

Pinging 40.0.0.1 with 32 bytes of data:

Request timed out.
Reply from 40.0.0.1: bytes=32 time=4ms TTL=125
Reply from 40.0.0.1: bytes=32 time=2ms TTL=125
Reply from 40.0.0.1: bytes=32 time=9ms TTL=125



20.0.0.1
Se2/0
20.0.0.2
Se2/0
30.0.0.1
Se3/0
30.0.0.2
Se2/0
1BM20CS067
Fa0/0
10.0.0.10
Router-PT
Router0
Router-PT
Router1
Router-PT
Router2
Fa0/0
40.0.0.10
Fa0
PC-PT
PC0
10.0.0.1
Fa0
PC-PT
PC1
40.0.0.1

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


Press RETURN to get started!



Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface serial2/0
Router(config-if)#ip address 30.0.0.2 255.0.0.0
Router(config-if)#encapsulation ppp
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

Router(config-if)#exit
Router(config)#interface fastethernet0/0
Router(config-if)#ip address 40.0.0.10 255.0.0.0
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

Router(config-if)#exit
Router(config)#router rip
Router(config-router)#network 30.0.0.0
Router(config-router)#network 40.0.0.0
Router(config-router)#exit
Router(config)#
```

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```
Packet Tracer PC Command Line 1.0
PC>ping 40.0.0.1

Pinging 40.0.0.1 with 32 bytes of data:

Request timed out.
Reply from 40.0.0.1: bytes=32 time=2ms TTL=125
Reply from 40.0.0.1: bytes=32 time=6ms TTL=125
Reply from 40.0.0.1: bytes=32 time=7ms TTL=125

Ping statistics for 40.0.0.1:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 7ms, Average = 5ms

PC>
```

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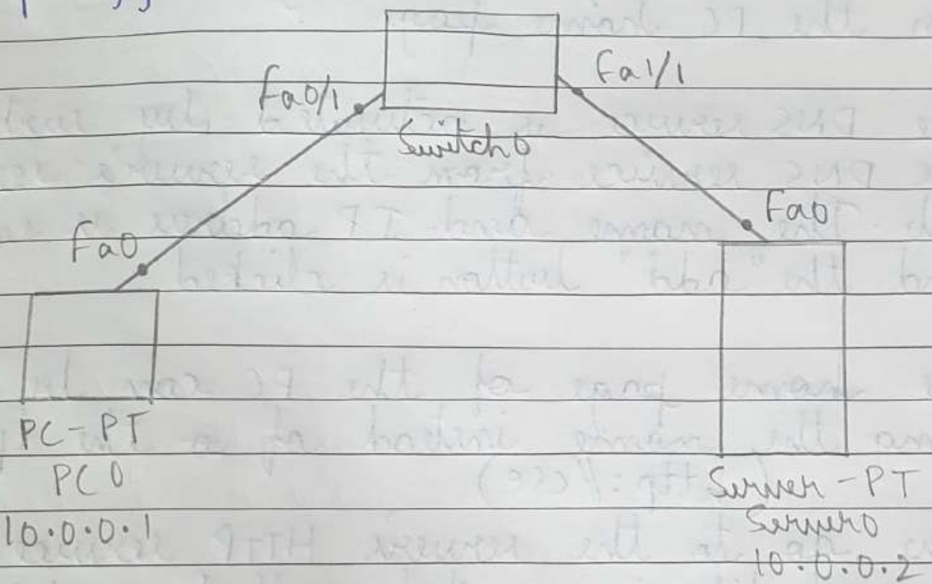
Aim: Demonstration of web server and DNS using packet tracer.

Topology:



Procedure:

→ Place a PC, a server and a switch and connect them with suitable connections and then place the nodes.

→ The IP address ~~of~~ and subnet mask are set for the PC as 10.0.0.1 255.0.0.0 and 10.0.0.2 255.0.0.0 for the server.

→ The web browser in the desktop tab are invoked for the PC and the ip address of the PC is given as http://10.0.0.2. Then a home page is displayed.

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→ Now the services tab of the server is clicked and HTTP is selected. A window is seen ~~&~~ with all the files and when the index.html file is changed it gets reflected on the PC home page

→ The DNS service is activated by switching on the DNS service from the server's services tab. The name and IP address is entered and the "add" button is clicked

→ The home page of the PC can be opened using the name instead of ~~a~~ the ip address (http://cse)

→ Now go to the server's HTTP service and a new file is created called cv.html and the file is saved.

→ Open web browser of the PC and when the command http://cse/cv.html is given the new file cv.html is appeared on the screen.

Observations:

Learning outcome: DNS protocol helps to map a name with an IP address. This protocol is very useful because the users are comfortable with the names and the computers are comfortable with the IP address.

Result :
The file typed in HTTP of server is
cv.html
<html>
<head>
CV
</head>
<body>
Name : Apoorwa

College : BMSCE
</body>
</html>

The output seen in the web browser of PC is
URL : http://cse/cv.html

CV Name : Apoorwa

College : BMSCE

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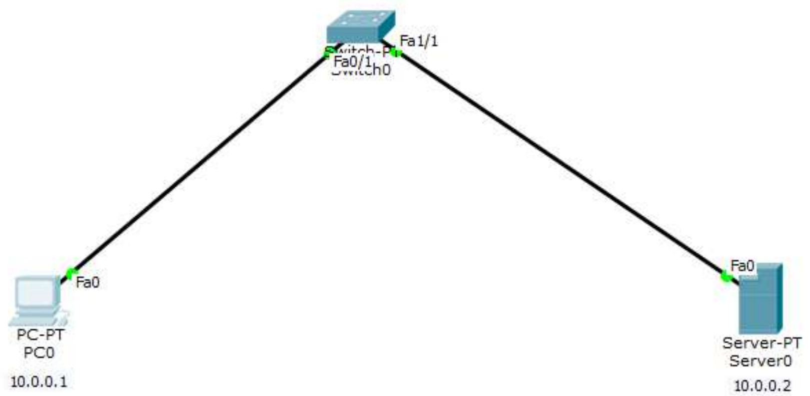
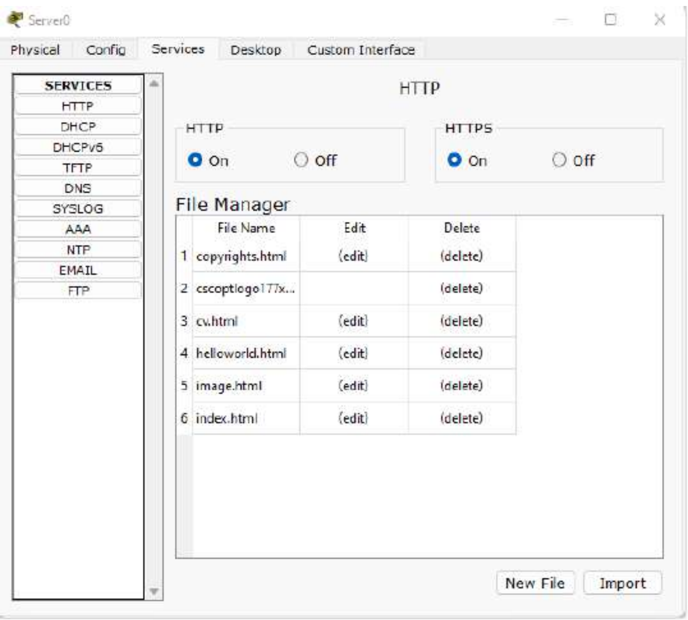
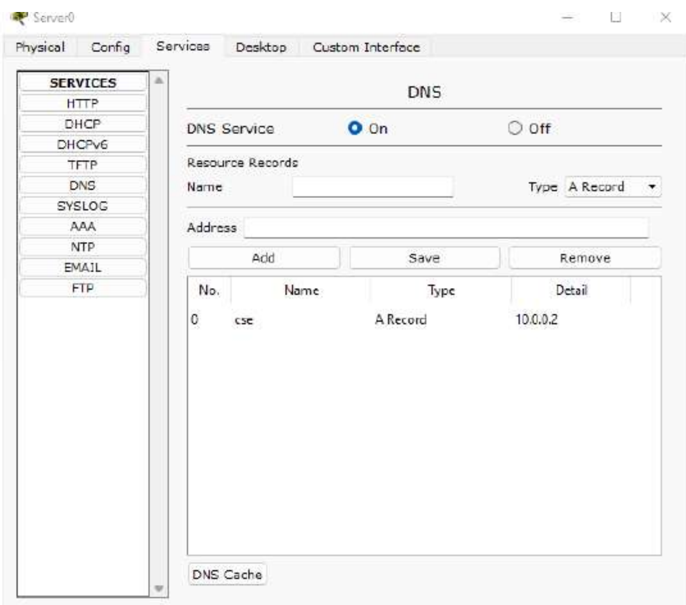


Fa1/1
Fa0/1
Switch0
Fa0
PC-PT
PC0
10.0.0.1
Fa0
Server-PT
Server0
10.0.0.2


Server0
Physical
Config
Services
Desktop
Custom Interface
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
HTTP
HTTP
On
Off
HTTPS
On
Off
File Manager
File Name
Edit
Delete
1 copyrights.html (edit) (delete)
2 cscoptlogo177x... (delete)
3 cv.html (edit) (delete)
4 helloworld.html (edit) (delete)
5 image.html (edit) (delete)
6 index.html (edit) (delete)
New File
Import


Server0
Physical
Config
Services
Desktop
Custom Interface
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
DNS
DNS Service
On
Off
Resource Records
Name
Type
A Record
Address
Add
Save
Remove
No.
Name
Type
Detail
0 cse A Record 10.0.0.2
DNS Cache

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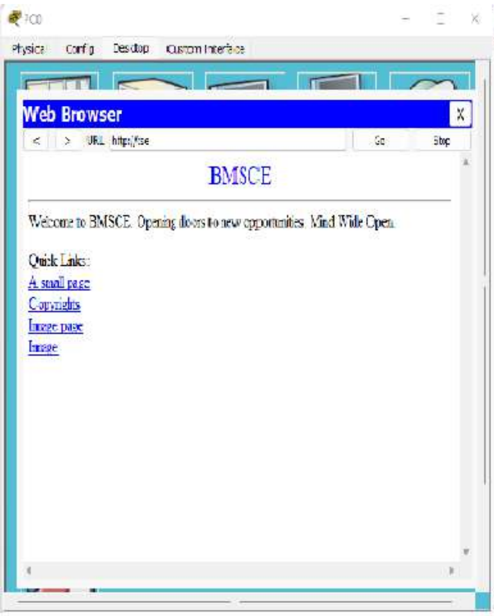
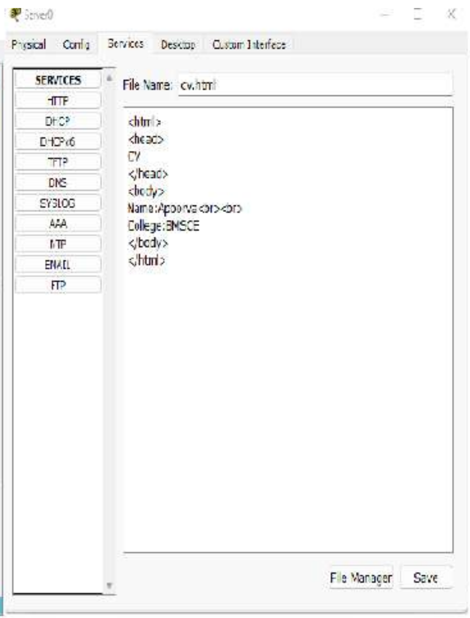
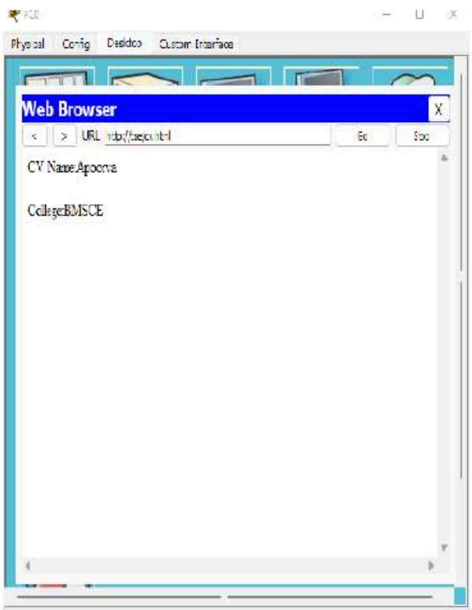

PC0
Physical
Config
Desktop
Custom Interface
Web Browser
URL
Go
Stop
BMSCE
Welcome to BMSCE. Opening doors to new opportunities. Mind Wide Open.
Quick Links:
A small page
Copyrights
Image page
Image


Server0
Physical
Config
Services
Desktop
Custom Interface
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
File Name: cv.html
<html>
<head>
CV
</head>
<body>
Name:Apoorva

College:BMSCE
</body>
</html>
File Manager
Save


PC0
Physical
Config
Desktop
Custom Interface
Web Browser
URL
CV Name:Apoorva
College:BMSCE

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29/12/2022 Write a program to Error detection using CRC CITT (16)

```
#include <stdio.h>
#include <string.h>
#define N strlen(gen)

char data[28];
char check[28];
char gen[28];
int data_length, i, j;

void XOR()
{
 for (j=1; j<N; j++)
 {
    if(check[j] == gen[j])
    { check[j]='0';
    }
    else
    {
      check[j]='1';
    }
 }
}

void reciever()
{
printf("Enter the recieved data:");
scanf("%s", data);
printf("Data recieved: %s", data);
crc();
for (i=0; (i<N-1) && (check[i]!='1'); i++);
 if (i<N-1)
```

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```
print f ("\n Error detected");
else
 print f("\n No error detected");
}
void crc()
{
 for (i=0; i<N; i++)
  check[i]= data[i];
 do
 { if (check[0]=='1')
      XOR();
   for (j=0; j<N-1; j++)
       check[j]=check[j+1];
   check[j]= data[i++];
 } while(i<=data_length + N-1);
}
int main()
{
 printf("\nEnter data word :");
 scanf("%s", data);
 print f("\n Enter the generating polynomial:");
 scan f ("%s", gen);
 data_length = strlen(data);
 for (i=data_length; i< data_length + N-1; i++)
       data [i] = '0';
```

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```
printf("\nData padded with zeros: %s", data);
crc();
printf("\nCRC or check value is %s", ch
for(i=data_length; i<data_length+N-1; i++)
    data[i]=check[i-data_length];
printf("Final data to be sent %s", data);
reciever();
return 0;
}
```

O/P-1

Enter data word : 1011010101

Enter generating polynomial : 1010
Data padded with zeros : 1011010101000

CRC is : 000
Final data to be sent : 1011010101000
Enter the recieved data : 1011010101000
Data recieved : 1011010101
No Error detected

O/P-2
Enter data word : 1011010101
Enter generating polynomial : 1010
Data padded with zeros : 1011010101000

CRC is: 000
Final data to be sent: 1011010101000
Enter the recieved data: 1011010101001
Data recieved: 1011010101001
Error detected

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```
Enter data to be transmitted: 1011010101

 Enter the Generating polynomial: 1010

 Data padded with n-1 zeros : 1011010101000
CRC or Check value is : 000
 Final data to be sent : 1011010101000Enter the received data: 1011010101000
Data received: 1011010101000
No error detected
```

12/01/2023 Write a program for distance vector algorithm to find suitable path for transmission.

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```
#include <stdio.h>
#include <stdlib.h>

int BellmanFord (int G[20][20], int V, int E,
                  int edge[20][20])
{
  int i,u,v,k, distance[20], parent[20], S,
        flag=1;
  for(i=0; i<V; i++)
      distance[i] = 1000, parent[i] = -1;
  printf("Enter source: ");
  scanf("%d", &S);
    distance[S-1] = 0;
  for(i=0; i<V-1; i++)
  {
    for(k=0; k<E; k++)
    {
      u = edge[k][0], v = edge[k][1];
      if(distance[u] + G[u][v] < distance[v])
          distance[v] = distance[u] + G[u][v],
            parent[v] = u;
    }
  }
  for(k=0; k<E; k++)
  {
    u = edge[k][0], v = edge[k][1];
    if(distance[u] + G[u][v] < distance[v])
        flag=0;
  }
```

```
if(flag)
for(i=0;i<V;i++)
    printf("Vertex %d -> cost = %d parent = %d
            \n",i+1,distance[i],parent[i]+1);

return flag;
}
int main()
{
 int V,edge[20][2],G[20][20],i,j,k=0;
 printf("Enter no of vertices");
 scanf("%d",&V);
 printf("Enter graph in matrix form :\n");
 for(i=0;i<V;i++)
   for(j=0;j<V;j++)
   {  scanf("%d",&G[i][j]);
      if(G[i][j]!=0)
        edge[k][0]=i,edge[k++][1]=j;
   }
 if(Bellman_Ford(G,V,k,edge))
     printf("\n No negative weight cycle \n");
 else
    printf("\n Negative weight cycle exists \n");
 return 0;
}
```

O/P

Enter the no. of vertices: 4
Enter graph in matrix form:

0 5 17 3
2 0 3 5
8 5 0 2
1 3 2 0

Enter source: 1
Vertex 1 → cost = 0 parent = 0
Vertex 2 → cost = 5 parent = 1
Vertex 3 → cost = 5 parent = 4
Vertex 4 → cost = 3 parent = 1

12/1/23

```
Enter no. of vertices: 4
Enter graph in matrix form:
0 5 17 3
2 0 3 5
8 5 0 2
1 3 2 0
Enter source: 1
Vertex 1 -> cost = 0 parent = 0
Vertex 2 -> cost = 5 parent = 1
Vertex 3 -> cost = 5 parent = 4
Vertex 4 -> cost = 3 parent = 1
```

12/01/2025

Implement Dijkstra's algorithm to compute the shortest path for a given topology

```
#include<stdio.h>
#include<conio.h>
#define INFINITY 9999
#define MAX 10

void dijkstra(int G[MAX][MAX], int n, int startnode

int main()
{
  int G[MAX][MAX], i, j, n, u;
  printf("Enter no. of vertices");
  scanf("%d",&n);
  printf("\nEnter the adjacency matrix:\n");
  for(i=0;i<n;i++)
     for(j=0;j<n;j++)
        scanf("%d",&G[i][j]);
  printf("Enter the starting node");
  scanf("%d",&n);
  dijkstra(G,n,u);
  return 0;
}
void dijkstra(int G[MAX][MAX], int n, int startnode)
{
  int cost[MAX][MAX], distance[MAX], pred[MAX];
  int visited[MAX], count, mindistance, nextnode, i,j;
  for(i=0; i<n; i++)
    for(j=0; j<n; j++)
      if(G[i][j]==0)
```

```
cost[i][j] = INFINITY;
else
cost[i][j] = G[i][j];

for(i=0; i<n; i++)
{
  distance[i] = cost[startnode][i];
  pred[i] = startnode;
  visited[i]=0;
}
distance[startnode] = 0;
visited[startnode] = 1;
count=1;
while(count<n-1)
{
  mindistance = INFINITY;
  for(i=0; i<n; i++)
    if(distance[i]<mindistance && !visited[i]
    {
      mindistance = distance[i];
      nextnode = i;
    }

visited[nextnode] = 1;
for(i=0; i<n; i++)
  if(!visited[i])
    if(mindistance[nextnode][i] < distance[i]
    {
```

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```
distance[i] = mindistance + cost[nextnode][i];
   pred[i] = nextnode;
  }
count++;
}
for(i=0; i<n; i++)
  if(i!=startnode)
  {
   printf("\n Distance of node %d = %d", i,
                    distance[i]);
   printf("\n Path = %d", i);
     j=i;
   do
   {
    j = pred[j];
     printf("<-%d", j);
   } while(j!=startnode);
  }
}
```

O/P

Enter no. of vertices : 4
Enter the adjacency matrix :

0	5	9999	9999
2	0	4	9999
9999	9999	0	6
4	7	5	0

Enter the starting node : 0

Distance of node1 = 5
Path = 1 ← 0
Distance of node2 = 9
Path = 2 ← 1 ← 0
Distance of node 3 = 15
Path = 3 ← 2 ← 1 ← 0

10/1/23

```
Enter no. of vertices:4

Enter the adjacency matrix:
0 5 9999 9999
2 0 4 9999
9999 9999 0 6
4 7 5 0

Enter the starting node:0

Distance of node1=5
Path=1<-0
Distance of node2=9
Path=2<-1<-0
Distance of node3=15
Path=3<-2<-1<-0
```

05/01/2023 Write a program for congestion control using leaky bucket algorithm

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```
#include <bits/stdc++.h>
using namespace std;
int main()
{
  int no, storage, output;
  int input, bucketsize, size_left;
 printf("Enter bucket size");
 scanf("%d", &bucketsize);
 printf("Enter output");
 scanf("%d", &output);
 printf("Enter number of packets");
 scanf("%d", &no);
 storage = 0;
 for(int i=0; i<no; i++)
 {
   printf("Enter input packet size");
   scanf("%d", &input);
   size_left = bucketsize - storage;
   if(input <= size_left)
   {
     storage += input;
   }
   else {
   printf("Packet cannot be taken as it is
             greater than bucket size\n");
   }
   storage -= output;
 }
 printf("The size left is %d", size_left);
 return 0;
}
```

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Enter bucket size 500
Enter output 50
Enter number of packets 5
Enter input packet size 200
Enter input packet size 100
Enter input packet size 600
Packet cannot be taken as it is greater than bucket size
Enter input packet size 100
Enter input packet size 200
The size left is 300

```
Enter bucket size500
Enter output50
Enter number of packets4
Enter input packet size100
Enter input packet size100
Enter input packet size600
Packet cannot be taken as it is greater than bucket size
Enter input packet size100
The size left is 450
```

28-01-2023

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Socket (TCP/IP)

Using TCP/IP sockets, write a client server program to make client sending the file name and the server to send back the contents of the requested file if present.

Client TCP.py

```
from socket import *
serverName='127.0.0.1'
serverPort = 12000

clientSocket = socket(AF_INET, SOCK_STREAM)
clientSocket.connect((serverName, serverPort))
sentence = input("\n Enter file name:")

clientSocket.send(sentence.encode())
filecontents = clientSocket.recv(1024).decode()
print("\nFrom Server:\n")
print(filecontents)
clientSocket.close()
```

ServerTCP.py

```
from socket import*
serverName = "127.0.0.1"
serverPort = 12000
serverSocket = socket(AF_INET, SOCK_STREAM)
serverSocket.bind((serverName, serverPort))
serverSocket.listen(1)
```

```
while(1):
    print("The server is ready to recieve")
    connectionSocket,addr = serverSocket.accept()
    sentence = connectionSocket.recv(1024).decode()
    file=open(sentence, "r")
    l=file.read(1024)

    connectionSocket.send(l.encode())
    print("\n Send contents of" + sentence)
    file.close()
    connectionSocket.close()
```

O/P

ServerTCP

The server is ready to recieve

Sent contents of ServerTCP.py

The server is ready to recieve

ClientTCP

Enter file name: ServerTCP.py

~~From Server:~~

```
from socket import *
serverName = "127.0.0.1"
serverPort = 12000

serverSocket = socket(AF_INET, SOCK_STREAM)
serverSocket.bind((serverName, serverPort))
serverSocket.listen(1)
```

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```
while 1:
    print (" The server is ready to recieve")
    connectionSocket, addr = serverSock.accept()
    sentence = connectionSocket.recv(1024).decode()
    file = open(sentence, "r")
    l = file.read(1024)
    connectionSocket.send(l.encode())
    print('\n Sent contents of' + sentence)
    file.close()
    connectionSocket.close()
>>>
```

```
Enter file name: ServerTCP.py

From Server:

from socket import *
serverName="127.0.0.1"
serverPort = 12000
serverSocket = socket(AF_INET,SOCK_STREAM)
serverSocket.bind((serverName,serverPort))
serverSocket.listen(1)
while 1:
    print ("The server is ready to receive")
    connectionSocket, addr = serverSocket.accept()
    sentence = connectionSocket.recv(1024).decode()

    file=open(sentence,"r")
    l=file.read(1024)

    connectionSocket.send(l.encode())
    print ('\nSent contents of ' + sentence)
    file.close()
    connectionSocket.close()
>>> |
```

29-01-2023

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Sockets (UDP)

Using UDP sockets, write a client-server program to make client sending the file name and the server to send back the contents of the requested file if present.

ClientUDP.py

```
from socket import *
serverName = "127.0.0.1"
serverPort = 12000
clientSocket = socket(AF_INET, SOCK_DGRAM)
sentence = input("\n Enter file name: ")

clientSocket.sendto(bytes(sentence, "utf-8"),
                    (serverName, serverPort))

filecontents, serverAddress = clientSocket.recvfrom
                                              (2048)

print("\n Reply from Server: \n")
print(filecontents.decode("utf-8"))
#for i in filecontents:
    #print(str(i), end="")
clientSocket.close()
clientSocket.close()
```

ServerUDP.py

```
from socket import *
serverPort = 12000
serverSocket = socket(AF_INET, SOCK_DGRAM)
```

```
serverSocket.bind(("127.0.0.1", serverPort))
print ("The server is ready to recieve")
while 1:
    sentence, clientAddress = serverSocket.recvfrom(2048)
    sentence = sentence.decode ("utf-8")
    file = open (sentence, "r")
    l = file.read (2048)

    serverSocket.sendto (bytes (l, "utf-8"), clientAddress)
    print ('\n Send contents of', end='')
    print (sentence)
    # for i in sentence
        # print (str(i), end='')
    file.close ()
```

O/P

ServerUDP

The server is ready to recieve

Send contents of ServerUDP.py

The server is ready to recieve

Client UDP

Enter the filename: ServerUDP.py

Reply from Server:

```
from socket import *
serverPort = 12000
serverSocket = socket (AF_INET, SOCK_DGRAM)
```

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```
serverSocket.bind(("127.0.0.1", serverPort))
while 1:
    print ("The server is ready to recieve")
    sentence, clientAddress = serverSocket.recv
                                        from(2048)
    sentence = sentence.decode("utf-8")
    file = open(sentence, "r")
    l = file.read(2048)
    serverSocket.sendto(bytes(l, "utf-8"),
                        clientAddress)
    print('\n Send contents of', end='')
    print(sentence)
    file.close()
>>>
```

```
The server is ready to receive

Sent contents of  ServerUDP.py
The server is ready to receive
```

```
Enter file name:  ServerUDP.py

Reply from Server:

from socket import *
serverPort = 12000
serverSocket = socket(AF_INET, SOCK_DGRAM)
serverSocket.bind(("127.0.0.1", serverPort))

while 1:
     print ("The server is ready to receive")
     sentence, clientAddress = serverSocket.recvfrom(2048)
     sentence = sentence.decode("utf-8")
     file=open(sentence,"r")
     l=file.read(2048)

     serverSocket.sendto(bytes(l,"utf-8"),clientAddress)

     print ('\nSent contents of ', end = ' ')
     print (sentence)
    #  for i in sentence:
        #  print (str(i), end = '')
     file.close()

>>>
```