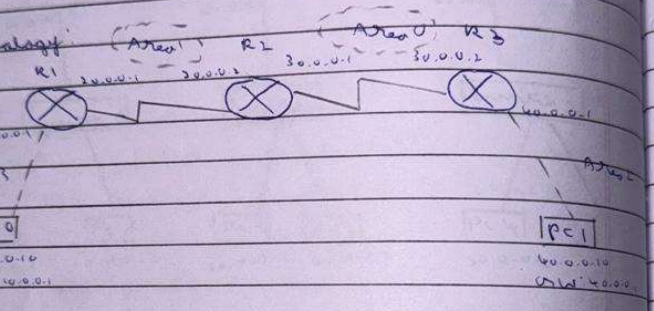
LAB-7

27/4/24

Aim:
To configure OSPF routing protocol

Devices used:
Routers, end devices

Topology:



Procedure:

(i) connect 3 routers serially and then 2 PCs to R1 and R3

(ii) configure the connection between R1 and PC0 by going to R0's CLI:

R1(config)# interface fastethernet 0/0
R1(config-if)# ip address 10.0.0.1 255.0.0.0
R1(config-if)# no shut

(iii) Do the same with R3 and PC1

(iv) To
go

(iv) To configure the connections between the routers, go to R0's CLI

R1(config)# interface serial2/0
R1(config-if)# ip address 20.0.0.1 255.0.0.0
R1(config-if)# encapsulation ppp
R1(config-if) clock rate 64000
R1(config-if)# no shut

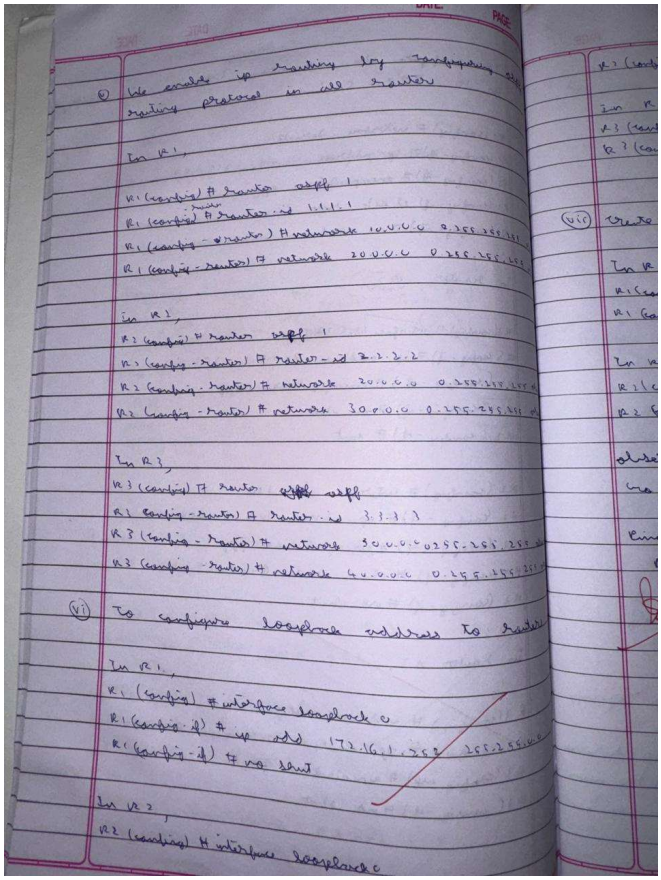
In router R2,

R2(config)# interface serial2/0
R2(config-if)# ip address 20.0.0.2 255.0.0.0
R2(config-if)# encapsulation ppp
R2(config-if)# no shut
R2(config-if)# exit

R2(config)# interface serial3/0
R2(config-if)# ip address 30.0.0.1 255.0.0.0
R2(config-if)# encapsulation ppp
R2(config-if)# clock rate 64000
R2(config-if)# no shut

In router R3,

R3(config)# interface serial2/0
R3(config-if)# ip address 30.0.0.2 255.0.0.0
R3(config-if)# encapsulation ppp
R3(config-if)# no shut



(v) We enable ip routing by configuring routing protocol in all routers

In R1,

R1(config)# router ospf 1
R1(config)# router-id 1.1.1.1
R1(config-router)# network 10.0.0.0 0.255.255.255
R1(config-router)# network 20.0.0.0 0.255.255.255

In R2,

R2(config)# router ospf 1
R2(config-router)# router-id 2.2.2.2
R2(config-router)# network 20.0.0.0 0.255.255.255
R2(config-router)# network 30.0.0.0 0.255.255.255

In R3,

R3(config)# router ospf
R3(config-router)# router-id 3.3.3.3
R3(config-router)# network 30.0.0.0 0.255.255.255
R3(config-router)# network 40.0.0.0 0.255.255.255

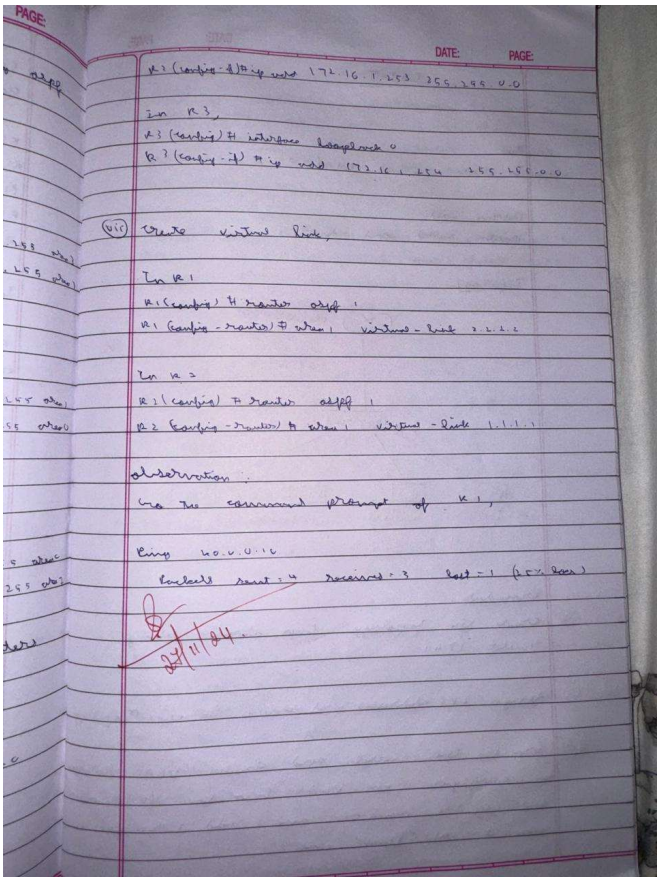
(vi) To configure loopback address to router

In R1,

R1(config)# interface loopback 0
R1(config-if)# ip add 172.16.1.254 255.255.0.0
R1(config-if)# no shut

In R2,

R2(config)# interface loopback 0



R3(config-if)# ip add 172.16.1.253 255.255.0.0

In R3,

R3(config)# interface loopback 0
R3(config-if)# ip add 172.16.1.254 255.255.0.0

(vii) Create virtual link,

In R1

R1(config)# router ospf 1
R1(config-router)# area 1 virtual-link 2.2.2.2

In R2

R2(config)# router ospf 1
R2(config-router)# area 1 virtual-link 1.1.1.1

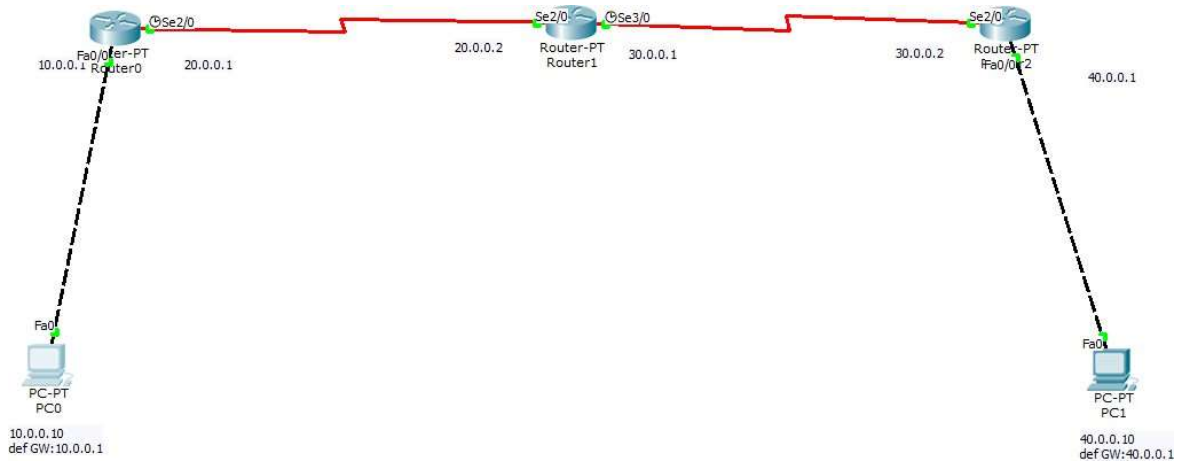
observation:

Use the command prompt of R1,

Ping 40.0.0.10

Packets sent = 4 received = 3 lost = 1 (25% loss)

27/11/24



PC0

Physical | Config | Desktop | Custom Interface

Command Prompt

```
Pinging 40.0.0.10 with 32 bytes of data:

Request timed out.
Reply from 40.0.0.10: bytes=32 time=7ms TTL=125
Reply from 40.0.0.10: bytes=32 time=7ms TTL=125
Reply from 40.0.0.10: bytes=32 time=8ms TTL=125

Ping statistics for 40.0.0.10:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 7ms, Maximum = 8ms, Average = 7ms

PC>ping 40.0.0.10

Pinging 40.0.0.10 with 32 bytes of data:

Reply from 40.0.0.10: bytes=32 time=9ms TTL=125
Reply from 40.0.0.10: bytes=32 time=7ms TTL=125
Reply from 40.0.0.10: bytes=32 time=6ms TTL=125
Reply from 40.0.0.10: bytes=32 time=6ms TTL=125

Ping statistics for 40.0.0.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 6ms, Maximum = 9ms, Average = 7ms

PC>
```