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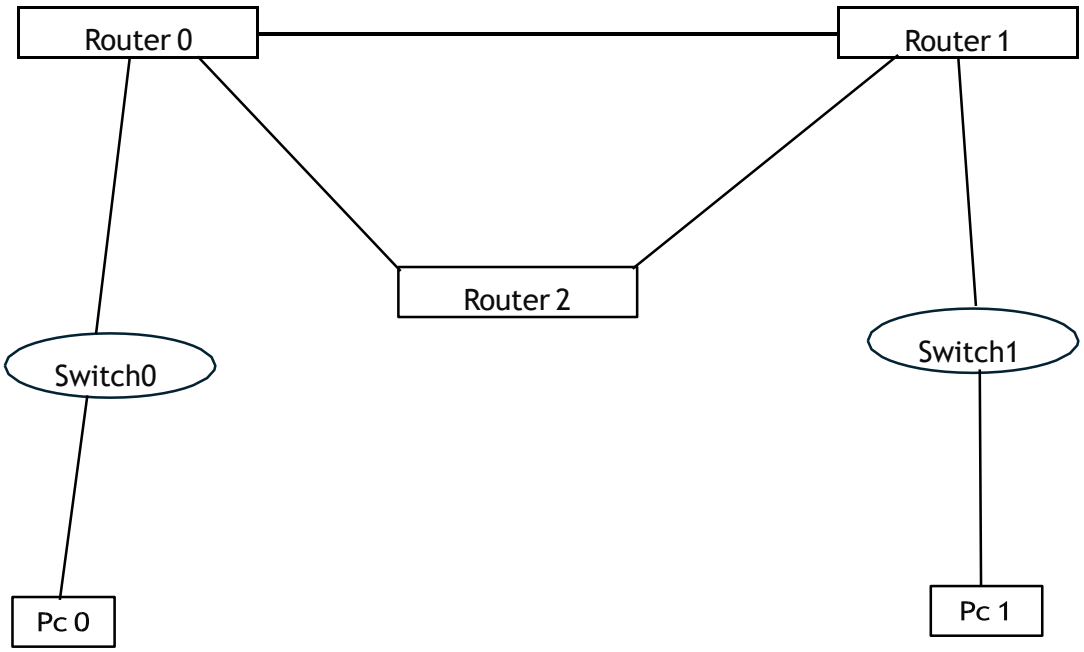
Class/Section	**8501A/S06**
Ex.No:	**7a**
Date of Submission	**20.02.2025**
Name of the Experiment	**Link State Routing**
Google Drive link of the packet tracer file (give view permission):	https://drive.google.com/drive/folders/1V9iDL8cQRT544znyoHE-_vh5bCRrIuKb?usp=drive_link

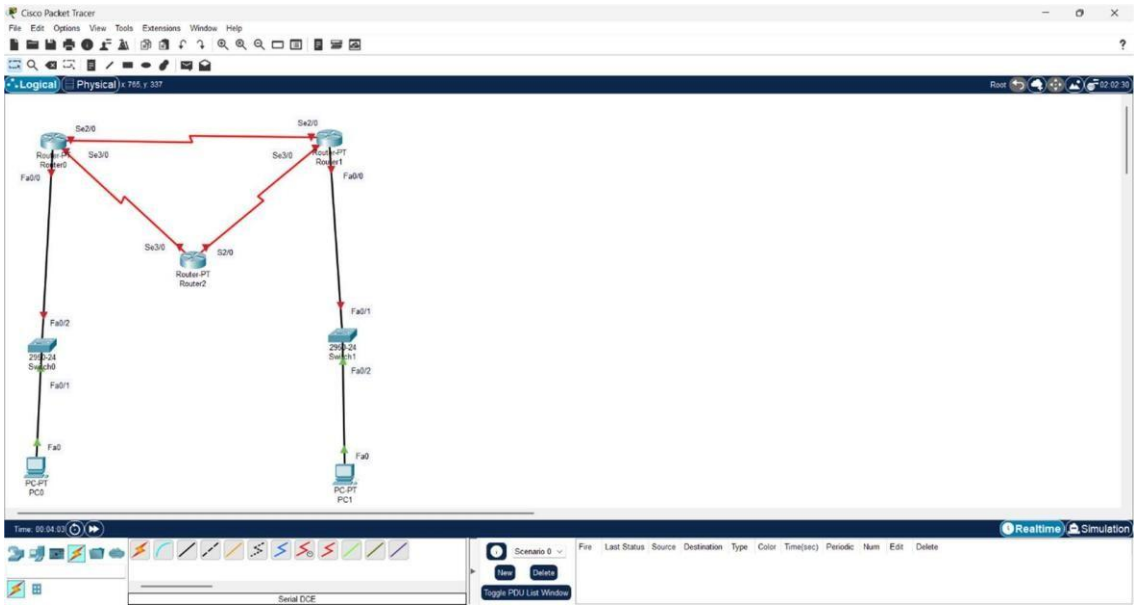
1. Device Requirements:

1. Router 0
2. Router 1
3. Router 2
4. Switch 0
5. Switch 1
6. Pc 0
7. Pc 1
8. Wires

2. Network Diagram for your experiment (draw the diagram either hand drawing/ms paint or any other drawing tools)



3. **Network Diagram (Packet Tracer diagram before configuration):**



4. **Configuration details:**

Device Name	Interface Name	IP Address	Subnet mask	Default Gateway
PC0	Fa0	10.10.10.2	255.0.0.0	10.10.10.1
PC1	Fa0	20.20.20.2	255.0.0.0	20.20.20.1
Switch 0	Fa0/2			
Switch 1	Fa0/1			
Router 0	Fa0/0, Se2/0, Se3/0	10.10.10.1 30.30.30.1 40.40.40.1	255.0.0.0 255.0.0.0 255.0.0.0	
Router 1	Fa0/0, Se2/0, Se3/0	20.20.20.1 30.30.30.3 50.50.50.2	255.0.0.0 255.0.0.0 255.0.0.0	
Router 2	Se2/0, Se3/0	40.40.40.2 50.50.50.1	255.0.0.0 255.0.0.0	

5. **Describe step by step configuration steps properly (you may copy the commands used in the configuration tab and paste it.)**

Router 0:

Router>enable

Router#

```
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#no shutdown
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 ip
address 10.10.10.1 255.0.0.0
Router(config-if)#ip address 10.10.10.1 255.0.0.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#no shutdown
Router(config-if)#clock rate 64000
This command applies only to DCE interfaces
Router(config-if)#ip address 30.30.30.1 255.0.0.0
Router(config-if)#ip address 30.30.30.1 255.0.0.0
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 u
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to down
Router(config-if)#exit
Router(config)#interface Serial3/0
Router(config-if)#no shutdown
Router(config-if)#clock rate 64000
Router(config-if)#ip address 40.40.40.1 255.0.0.0
Router(config-if)#ip address 40.40.40.1 255.0.0.0
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)#router ospf 1
Router(config-router)#network 10.0.0.0 0.255.255.255 area 0
Router(config-router)#network 30.0.0.0 0.255.255.255 area 0
```

Router(config-router)#network 40.0.0.0 0.255.255.255 area 0

Router(config-router)#exit

Router(config)#exit

Router#

%SYS-5-CONFIG_I: Configured from console by console

00:11:50: %OSPF-5-ADJCHG: Process 1, Nbr 50.50.50.1 on Serial3/0 from LOADING to FULL, Loading Done

Router 1:

Router>enable

Router#

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#interface FastEthernet0/0

Router(config-if)#no shutdown

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 ip

address 20.20.20.1 255.0.0.0

Router(config-if)#ip address 20.20.20.1 255.0.0.0

Router(config-if)#

Router(config-if)#exit

Router(config)#interface Serial2/0

Router(config-if)#no shutdown

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 no

clock rate

Router(config-if)#ip address 30.30.30.3 255.0.0.0

Router(config-if)#ip address 30.30.30.3 255.0.0.0

Router(config-if)#

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

Router(config-if)#exit

Router(config)#interface Serial3/0

Router(config-if)#no shutdown

Router(config-if)#

%LINK-5-CHANGED: Interface Serial3/0, changed state to up clock

rate 64000

Router(config-if)#

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

address 50.50.50.2 255.0.0.0

Router(config-if)#ip address 50.50.50.2 255.0.0.0

Router(config-if)#exit

Router(config)#router ospf 1

Router(config-router)#network 30.0.0.0 0.255.255.255 area 0

Router(config-router)#

Router(config-router)#network 20.0.0.0 0.255.255.255 area 0

Router(config-router)#network 50.0.0.0 0.255.255.255 area 0

Router(config-router)#ex

00:14:44: %OSPF-5-ADJCHG: Process 1, Nbr 50.50.50.1 on Serial3/0 from LOADING to FULL, Loading Done

Router(config)#exit

Router#

%SYS-5-CONFIG_I: Configured from console by console **Router**

2:

Router>enable

Router#

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#interface Serial3/0

Router(config-if)#no shutdown

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 ip

address 40.40.40.2 255.0.0.0

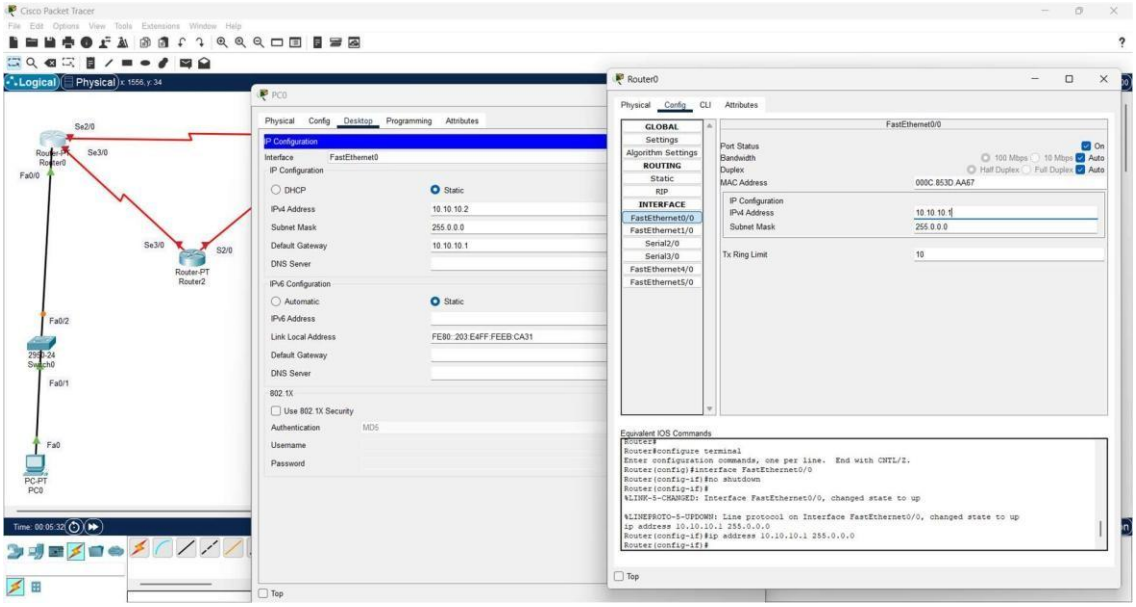
Router(config-if)#ip address 40.40.40.2 255.0.0.0

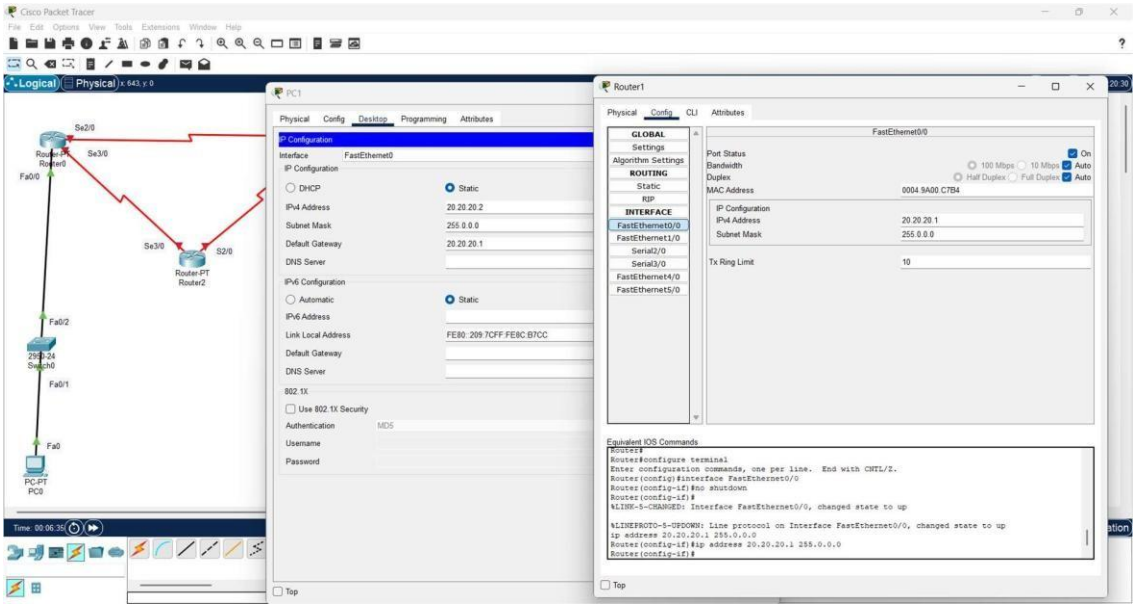
Router(config-if)#

Router(config-if)#exit

```
Router(config)#interface Serial2/0
Router(config-if)#no shutdown
Router(config-if)#ip address 50.50.50.1 255.0.0.0
Router(config-if)#ip address 50.50.50.1 255.0.0.0
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)#router ospf 1
Router(config-router)#network 40.0.0.0 0.255.255.255 area 0
Router(config-router)#network 40.0.0.0 0.255.255.255 area 0
Router(config-router)#
00:11:43: %OSPF-5-ADJCHG: Process 1, Nbr 40.40.40.1 on Serial3/0 from LOADING to FULL, Loading Done
Router(config-router)#network 50.0.0.0 0.255.255.255 area 0
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
00:14:39: %OSPF-5-ADJCHG: Process 1, Nbr 50.50.50.2 on Serial2/0 from LOADING to FULL, Loading Done
```

6. Output Diagram (Minimum 3 screenshot):





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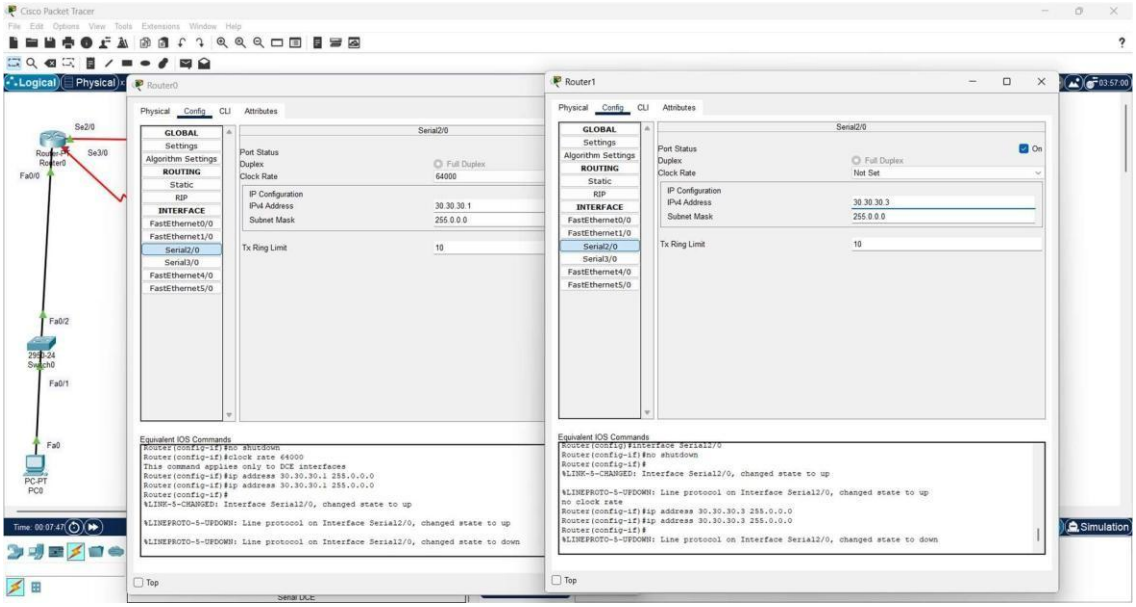
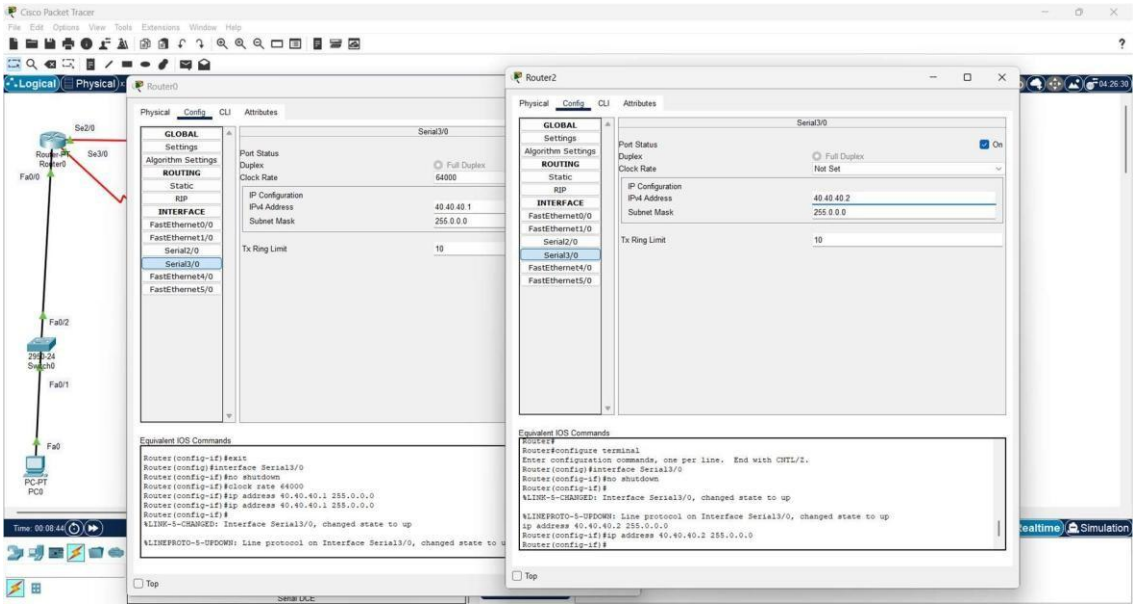
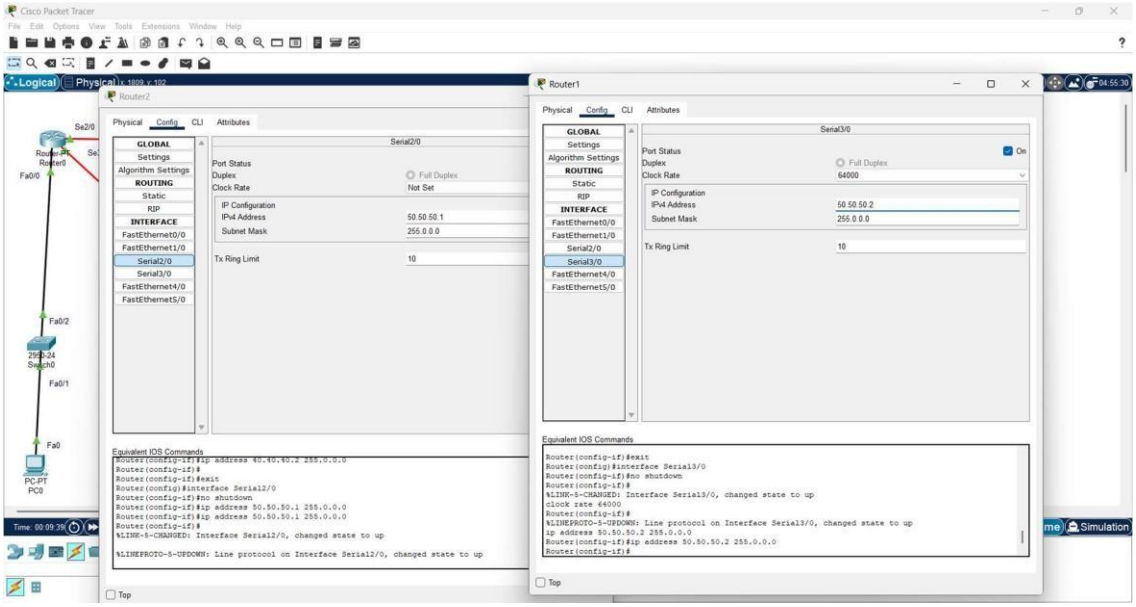
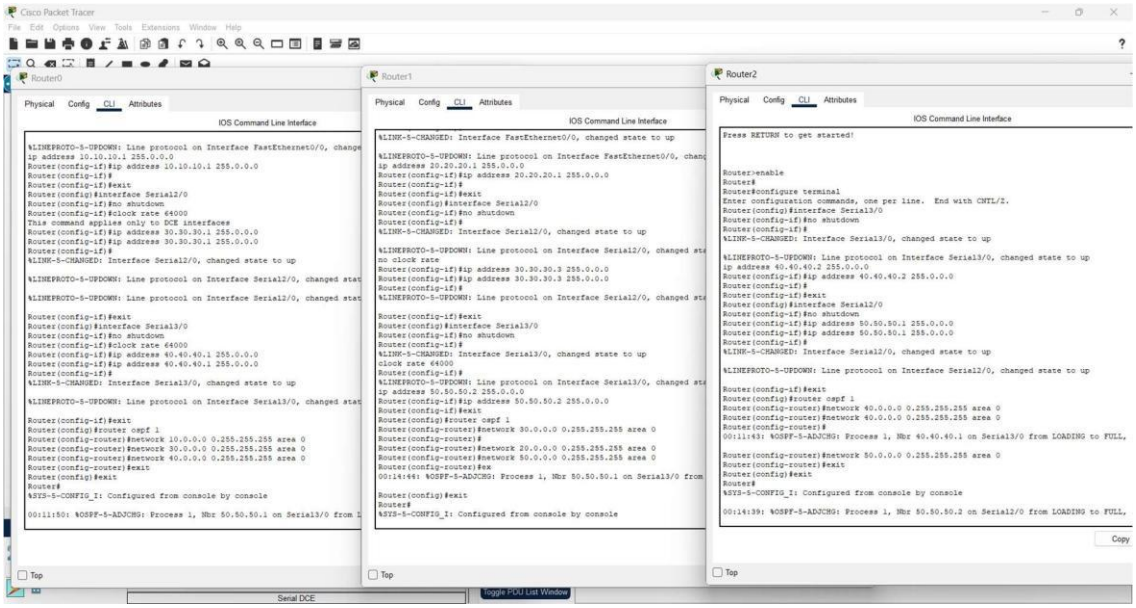




99220040570





Google Drive link of the packet tracer file (give view permission):

Link: https://drive.google.com/drive/folders/1V9iDL8cQRT544znyoHE-_vh5bCRrIuKb?usp=drive_link

CONCLUSION (provide conclusion about this experiment):

Configuring Link State Routing Protocol is essential for efficient and accurate path selection in an internetwork. By maintaining updated routing tables, network stability and performance are ensured. Proper implementation minimizes bandwidth usage, reduces convergence time, and enhances routing efficiency. Link State Advertisements (LSAs) ensure timely updates, improving overall network reliability.

Rubrics for Experiment Assessment:

Rubrics	Good	Normal	Poor	Marks
Creation of Topology (4)	Created the topology, Identify the proper devices and making the connections **(4)**	Created the topology, Identify the proper devices, making the connections But missing some features **(3)**	Created wrong topology, Failed to Identify the proper devices and making connections **(1)**	
Verify the connectivity (4)	Verified the connectivity in all the levels **(4)**	Verified the connectivity at some levels (only some nodes) **(2)**	Verified the connectivity is not done. **(1)**	
Timely Completion (2)	Completed the lab before the allotted time **(2)**	Completed the lab after the deadline **(1)**	Did not submitted before grading **(0)**	
			Total	

Result: Thus the Design a Configuration of Link State Routing Protocol has been done successfully