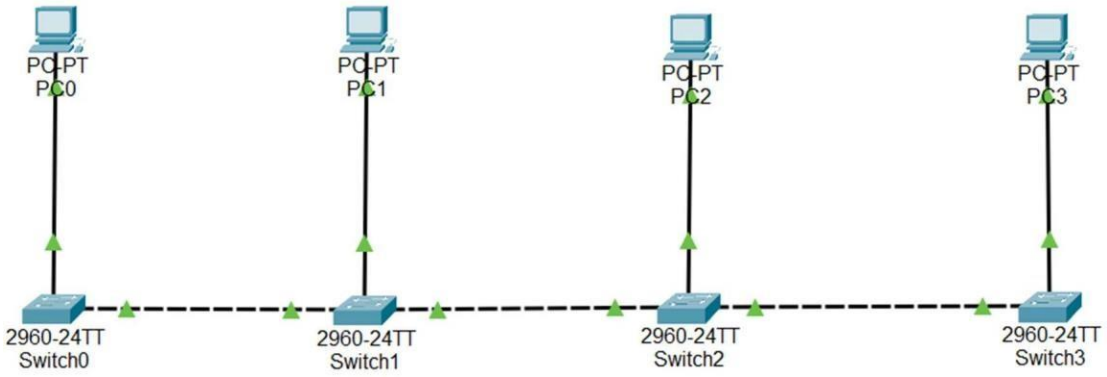
CN ASSIGNMENT

NAME:- AISWARYA SANTHOSH

ROLL.NO:- AM.EN.U4ECE22007

QUESTION-: Create all the topologies discussed in class in Cisco Packet Tracer (CPT).

BUS TOPOLOGY:-



IP Configurations:-

PC0:-

IPv4 Address	220.7.4.1
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

PC1:-

IPv4 Address	220.7.4.2
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

PC2:-

IPv4 Address	220.7.4.3
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

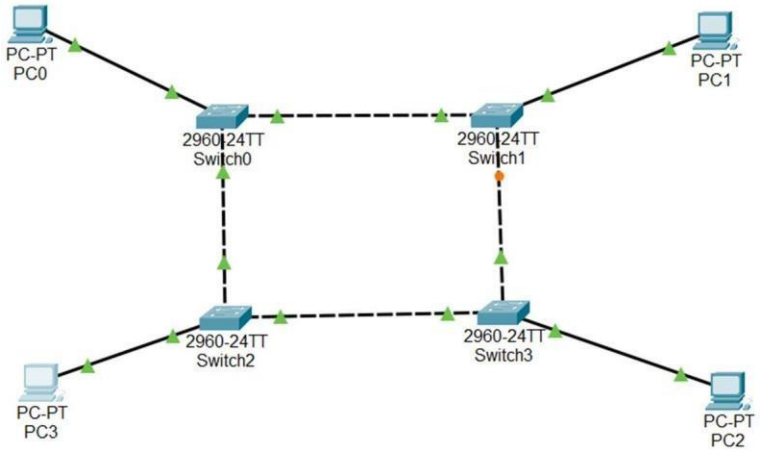
PC3:-

IPv4 Address	220.7.7.4
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

RESULTS:-

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 220.7.4.2

Pinging 220.7.4.2 with 32 bytes of data:

Reply from 220.7.4.2: bytes=32 time=4ms TTL=128
Reply from 220.7.4.2: bytes=32 time=4ms TTL=128
Reply from 220.7.4.2: bytes=32 time<1ms TTL=128
Reply from 220.7.4.2: bytes=32 time<1ms TTL=128

Ping statistics for 220.7.4.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 4ms, Average = 2ms
```

RING TOPOLOGY:-



IP Configurations:-

PC0:-

IPv4 Address	220.7.7.1
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

PC1:-

IPv4 Address	220.7.7.2
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

PC2:-

IPv4 Address	220.7.7.3
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

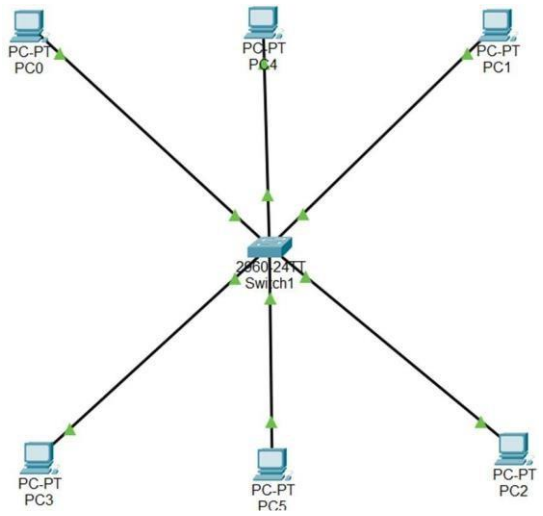
PC3:-

IPv4 Address	220.7.7.4
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

RESULTS:-

```
Cisco Packet Tracer PC Command Line 1.0
C:\>pinh 220.7.7.1
Invalid Command.

C:\>ping 220.7.7.1

Pinging 220.7.7.1 with 32 bytes of data:

Reply from 220.7.7.1: bytes=32 time=10ms TTL=128
Reply from 220.7.7.1: bytes=32 time<1ms TTL=128
Reply from 220.7.7.1: bytes=32 time=13ms TTL=128
Reply from 220.7.7.1: bytes=32 time=6ms TTL=128

Ping statistics for 220.7.7.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 13ms, Average = 7ms
```

STAR TOPOLOGY:-



IP Configurations:-

PC0:-

IPv4 Address	220.7.3.1
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

PC1:-

IPv4 Address	220.7.3.3
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

PC2:-

IPv4 Address	220.7.3.6
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

PC3:-

IPv4 Address	220.7.3.2
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

PC4:-

IPv4 Address	220.7|3.4
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

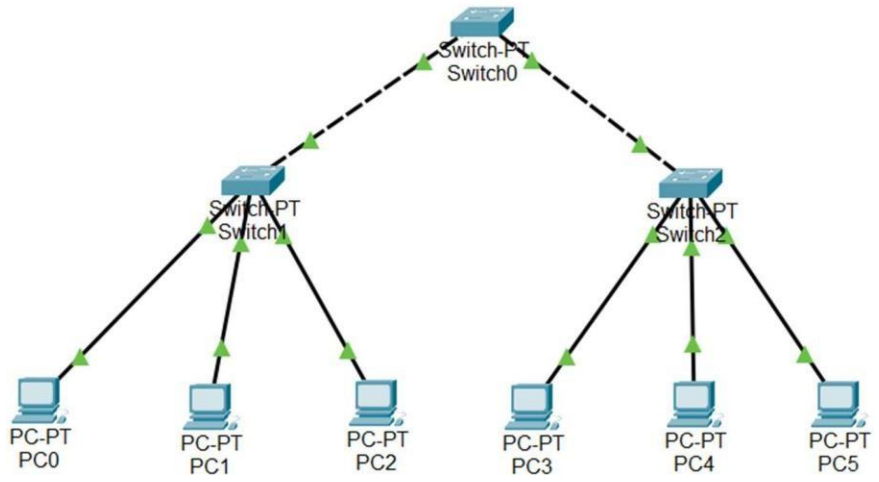
PC5:-

IPv4 Address	220.7.3.5
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

RESULTS:-

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 220.7.3.1

Pinging 220.7.3.1 with 32 bytes of data:

Reply from 220.7.3.1: bytes=32 time=4ms TTL=128
Reply from 220.7.3.1: bytes=32 time=2ms TTL=128
Reply from 220.7.3.1: bytes=32 time=7ms TTL=128
Reply from 220.7.3.1: bytes=32 time<1ms TTL=128

Ping statistics for 220.7.3.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 7ms, Average = 3ms
```

TREE TOPOLOGY:-



IP Configurations:-

PC0:-

IPv4 Address	220.7.9.1
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

PC1:-

IPv4 Address	220.7.9.2
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

PC2:-

IPv4 Address	220.7.9.3
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

PC3:-

IPv4 Address	220.7.9.4
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

PC4:-

IPv4 Address	220.7.9.5
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

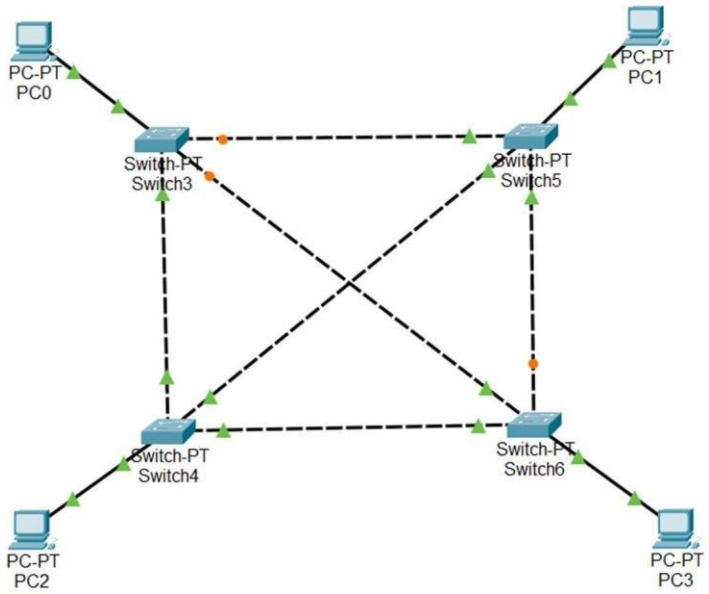
PC5:-

IPv4 Address	220.7.9.6
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

RESULTS:-

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 220.7.9.2

Pinging 220.7.9.2 with 32 bytes of data:

Reply from 220.7.9.2: bytes=32 time=1ms TTL=128
Reply from 220.7.9.2: bytes=32 time<1ms TTL=128
Reply from 220.7.9.2: bytes=32 time<1ms TTL=128
Reply from 220.7.9.2: bytes=32 time<1ms TTL=128

Ping statistics for 220.7.9.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

MESH TOPOLOGY:-



IP Configurations:-

PC0:-

IPv4 Address	220.7.6.1
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

PC1:-

IPv4 Address	220.7.6.2
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

PC2:-

IPv4 Address	220.7.6.4
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

PC3:-

IPv4 Address	220.7.6.3
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

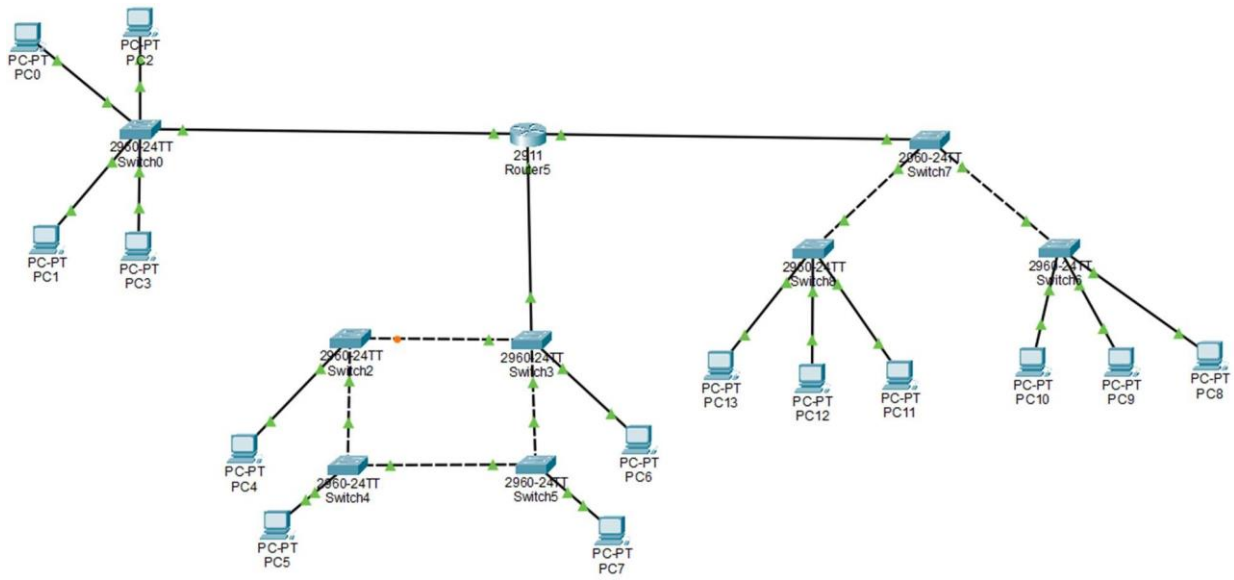
RESULTS:-

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 220.7.6.1

Pinging 220.7.6.1 with 32 bytes of data:

Reply from 220.7.6.1: bytes=32 time<1ms TTL=128
Reply from 220.7.6.1: bytes=32 time<1ms TTL=128
Reply from 220.7.6.1: bytes=32 time<1ms TTL=128
Reply from 220.7.6.1: bytes=32 time=22ms TTL=128

Ping statistics for 220.7.6.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 22ms, Average = 5ms
```

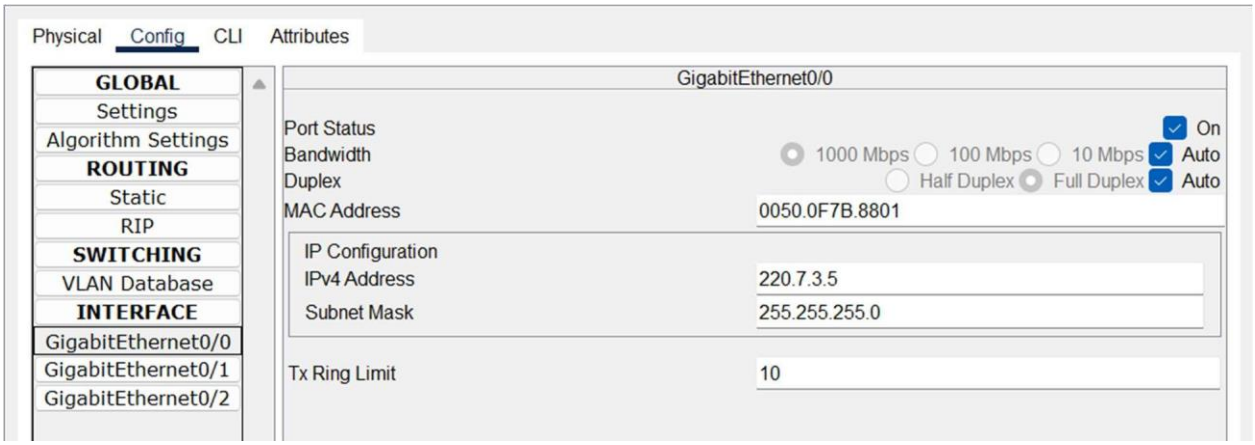
1. Create 3 LAN networks connected via a single Router (CPT). Choose appropriate router, connection and configure it. Each LAN network is configured via Tree, Star and Ring topologies respectively.

The 3LAN networks used here is star topology, ring topology and tree topology and one router.

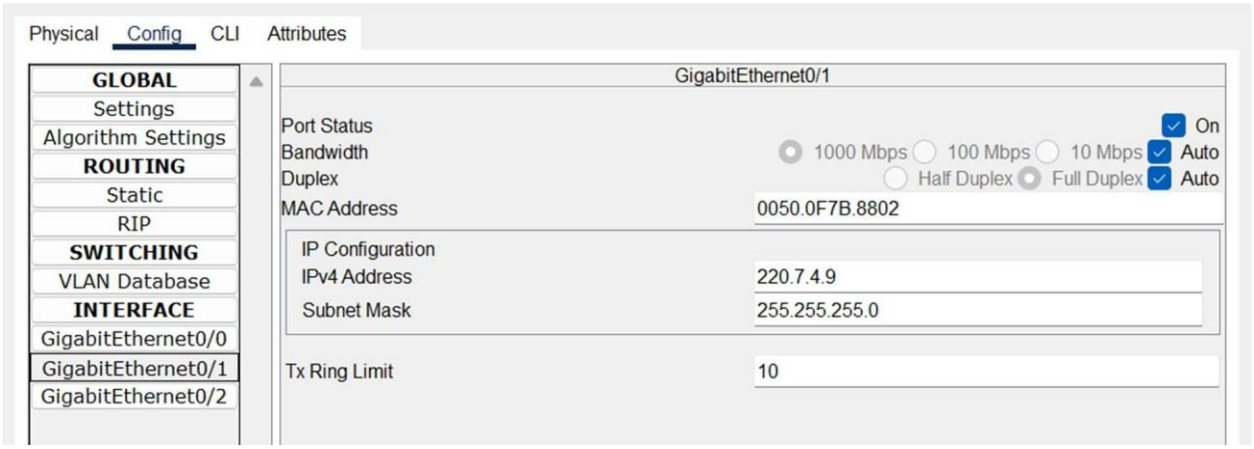
- star topology (220.7.3.1 to 220.7.3.4)
- ring topology (220.7.4.5 to 220.7.4.8)
- tree topology (220.7.5.9 to 220.7.5.14)



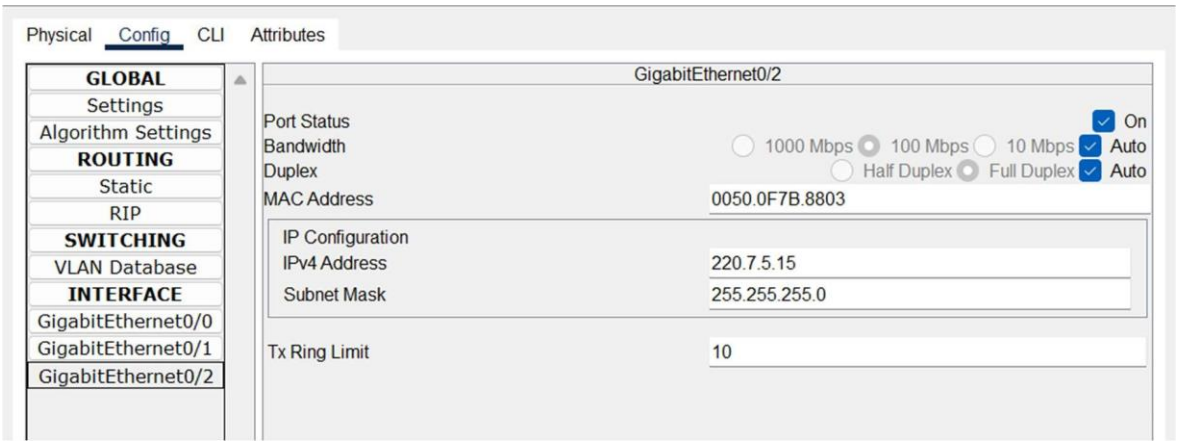
→Router config from star topology to router



→Router config from ring topology to router



→Router config from tree topology to router



Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC0	PC6	ICMP		0.000	N	0	(edit)	(delete)
	Successful	PC5	PC11	ICMP		0.000	N	1	(edit)	(delete)
	Successful	PC7	PC9	ICMP		0.000	N	2	(edit)	(delete)
	Successful	PC13	PC4	ICMP		0.000	N	3	(edit)	(delete)

→Pinging from 220.7.3.1 to 220.7.4.7

```
C:\>ping 220.7.4.7

Pinging 220.7.4.7 with 32 bytes of data:

Reply from 220.7.4.7: bytes=32 time<1ms TTL=127
Reply from 220.7.4.7: bytes=32 time<1ms TTL=127
Reply from 220.7.4.7: bytes=32 time<1ms TTL=127
Reply from 220.7.4.7: bytes=32 time<1ms TTL=127

Ping statistics for 220.7.4.7:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

→Pinging from 220.7.4.6 to 220.7.5.12

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 220.7.5.12

Pinging 220.7.5.12 with 32 bytes of data:

Reply from 220.7.5.12: bytes=32 time<1ms TTL=127
Reply from 220.7.5.12: bytes=32 time=14ms TTL=127
Reply from 220.7.5.12: bytes=32 time<1ms TTL=127
Reply from 220.7.5.12: bytes=32 time=1ms TTL=127

Ping statistics for 220.7.5.12:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 14ms, Average = 3ms
```

→Pinging from 220.7.5.13 to 220.7.4.5

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 220.7.4.5

Pinging 220.7.4.5 with 32 bytes of data:

Reply from 220.7.4.5: bytes=32 time<1ms TTL=127
Reply from 220.7.4.5: bytes=32 time<1ms TTL=127
Reply from 220.7.4.5: bytes=32 time<1ms TTL=127
Reply from 220.7.4.5: bytes=32 time<1ms TTL=127

Ping statistics for 220.7.4.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Result:

Three LAN networks were successfully created using Star, Ring, and Tree topologies with the IP address ranges 220.7.3.1 to 220.7.3.4, 220.7.4.5 to 220.7.4.8, and 220.7.5.9 to 220.7.5.14 respectively. Proper router configurations were applied to enable communication between different LANs. Successful ping tests between devices from different topologies confirmed that the network connectivity and routing were correctly set up, achieving seamless inter-network communication.

Inference:

The assignment demonstrated the correct design and setup of Star, Ring, and Tree topologies interconnected through a central router. Effective IP addressing and router configurations allowed reliable communication between different networks. The successful ping results highlight the importance of careful network planning, correct routing, and IP management in building efficient and scalable networking systems.