

CN ASSIGNMENT

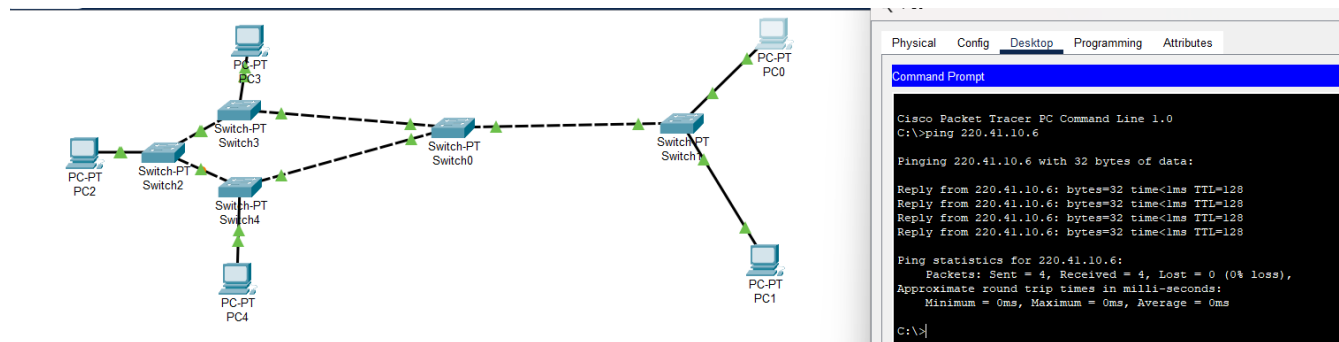
NAME: SAMUEL SEBASTIAN

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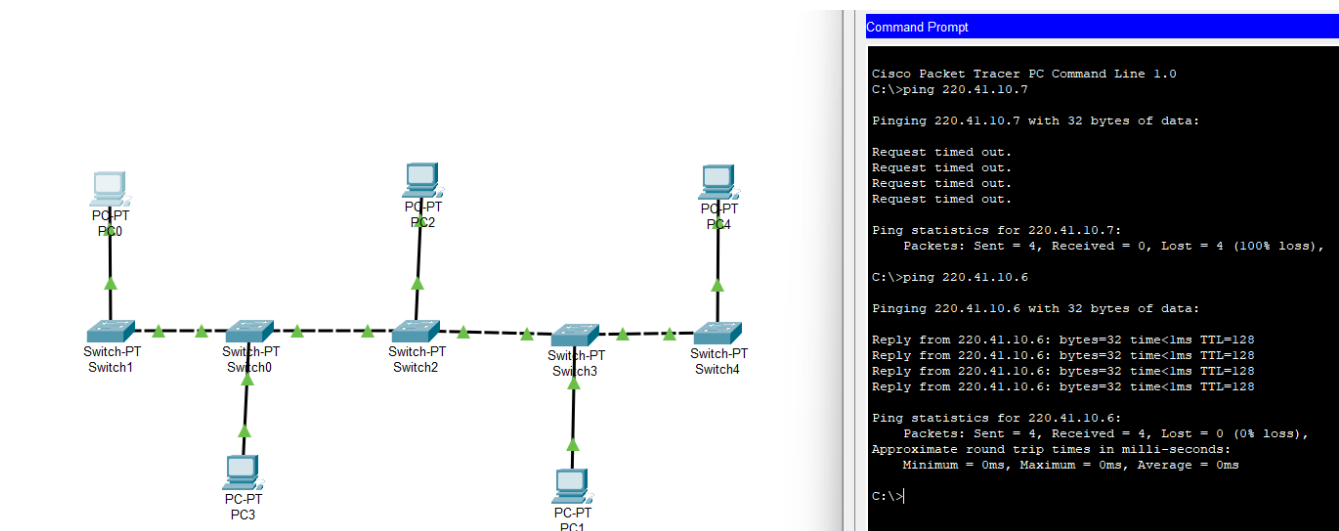
ASSIGNMENT-1

I. Create all the topologies discussed in class in Cisco Packet Tracer (CPT).

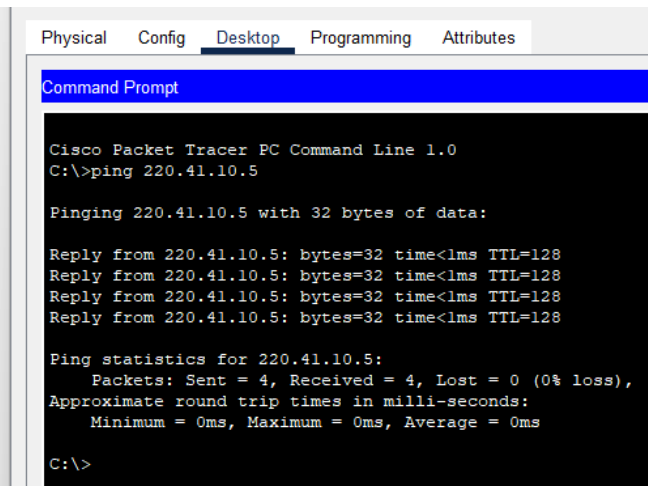
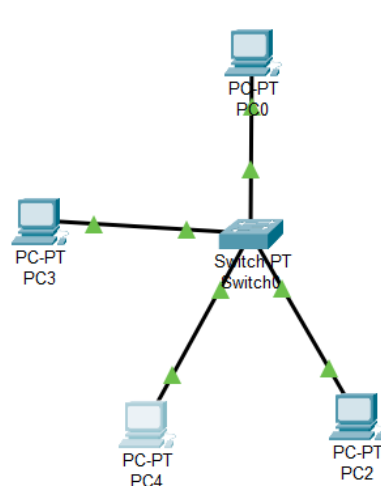
Tree



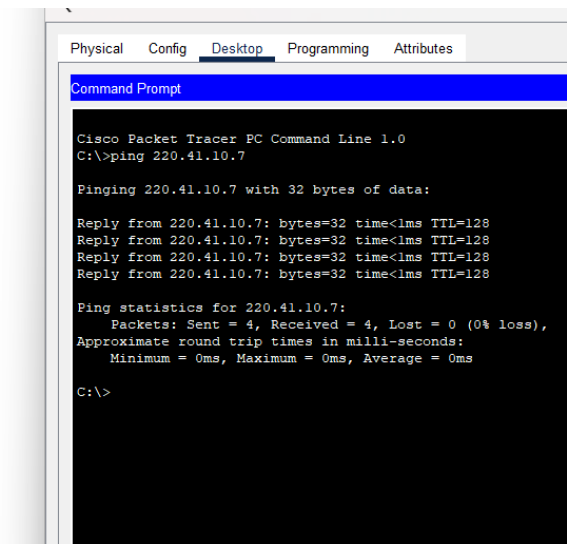
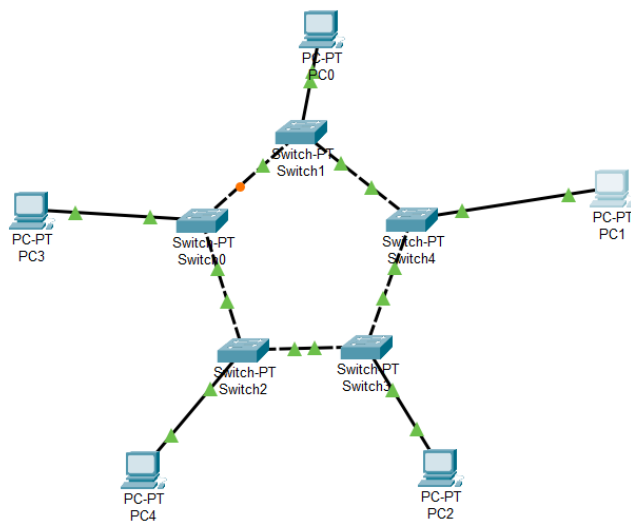
bus



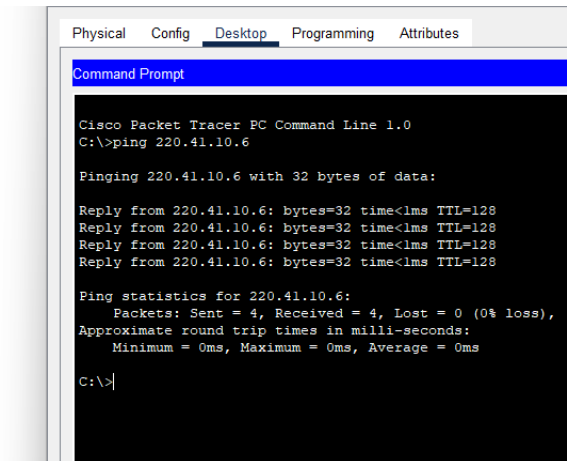
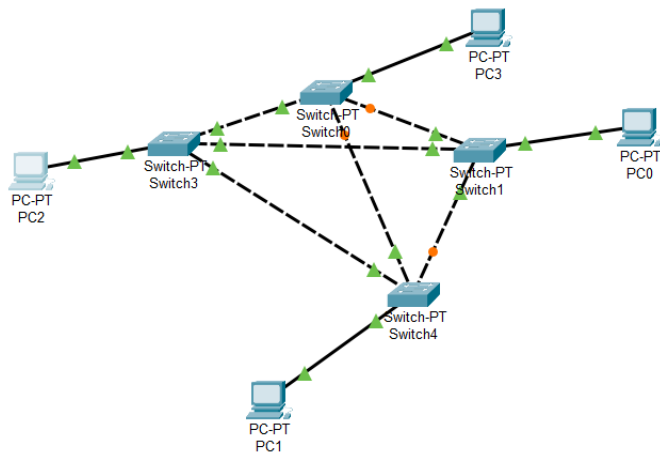
star



ring



mesh



Observation and Results:

In Cisco Packet Tracer, the Bus topology connected all devices along a single shared line, making it straightforward but vulnerable to data collisions. The Ring topology created a closed loop, enabling organized communication but risking complete network failure if a single device malfunctioned. Star topology connected each device to a central switch, ensuring easy expansion and strong reliability. Tree topology built upon the Star design by adding a hierarchical structure, supporting scalability but requiring careful network management. Meanwhile, the Mesh topology interconnected every device with every other device, delivering high reliability at the cost of increased cabling and greater complexity.

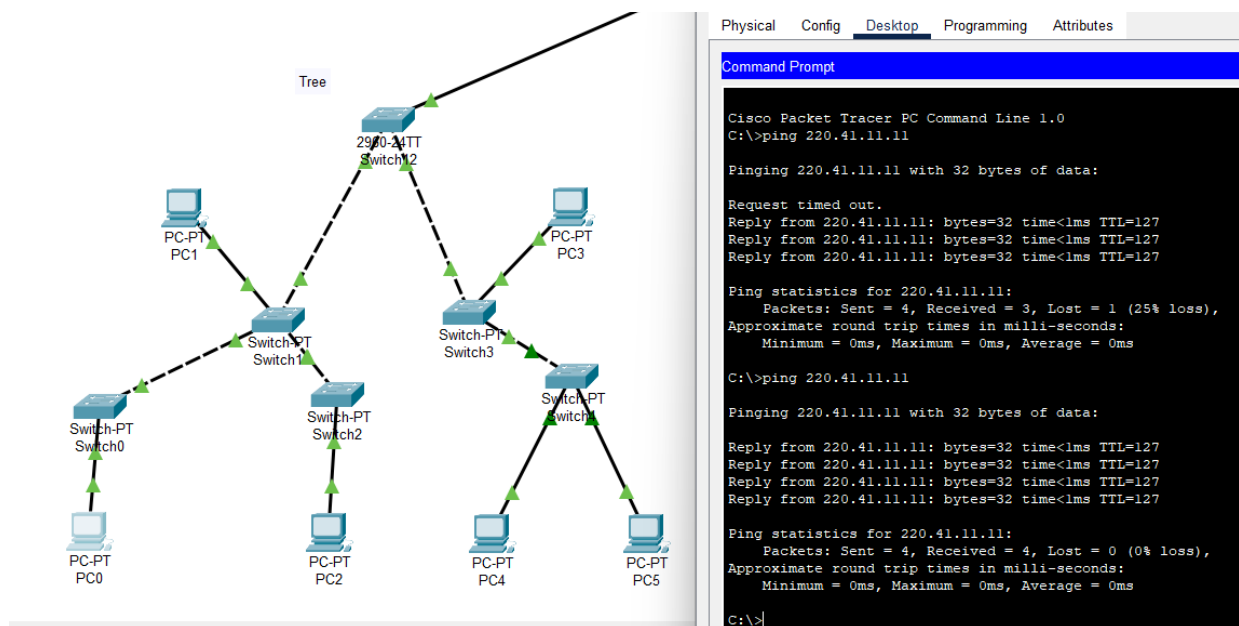
Inference:

All five network topologies — Bus, Ring, Star, Tree, and Mesh — were successfully designed, configured, and simulated using Cisco Packet Tracer. Each setup performed according to its expected behavior, validating the theoretical principles associated with each topology.

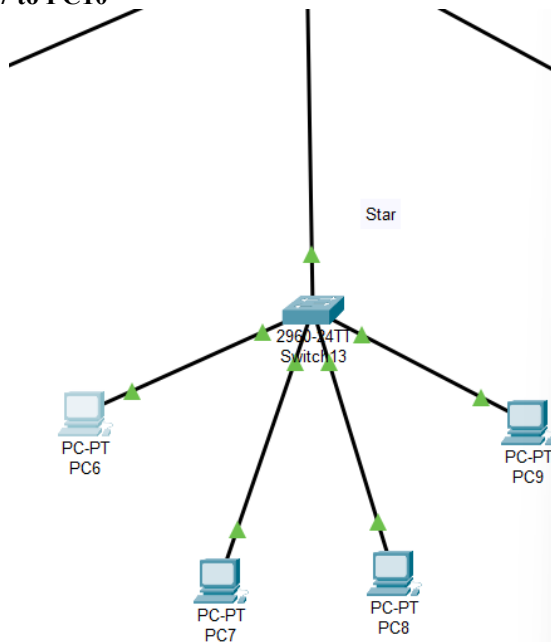
ASSIGNMENT-2

- II. 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.

PC0 to PC6



PC7 to PC10



PC6

Physical Config **Desktop** Programming Attributes

Command Prompt

```

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 220.41.12.15

Pinging 220.41.12.15 with 32 bytes of data:

Request timed out.
Reply from 220.41.12.15: bytes=32 time<1ms TTL=127
Reply from 220.41.12.15: bytes=32 time<1ms TTL=127
Reply from 220.41.12.15: bytes=32 time<1ms TTL=127

Ping statistics for 220.41.12.15:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

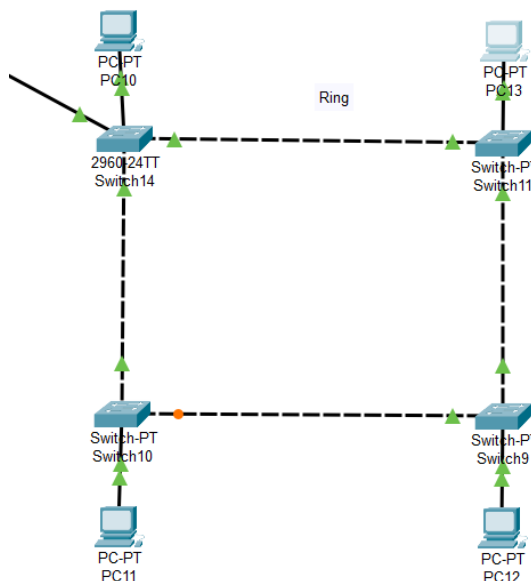
C:\>ping 220.41.12.15

Pinging 220.41.12.15 with 32 bytes of data:

Reply from 220.41.12.15: bytes=32 time<1ms TTL=127
Reply from 220.41.12.15: bytes=32 time<1ms TTL=127
Reply from 220.41.12.15: bytes=32 time=4ms TTL=127
Reply from 220.41.12.15: bytes=32 time<1ms TTL=127

Ping statistics for 220.41.12.15:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 4ms, Average = 1ms
    
```

PC12 to PC1



PC13

Physical Config **Desktop** Programming Attributes

Command Prompt

```

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 220.41.12.18

Pinging 220.41.12.18 with 32 bytes of data:

Reply from 220.41.12.18: bytes=32 time=6ms TTL=128
Reply from 220.41.12.18: bytes=32 time<1ms TTL=128
Reply from 220.41.12.18: bytes=32 time=11ms TTL=128
Reply from 220.41.12.18: bytes=32 time=7ms TTL=128

Ping statistics for 220.41.12.18:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 11ms, Average = 6ms

C:\>
    
```

Observation and Results:

In the second assignment, three separate LANs were configured using Tree, Star, and Ring topologies, all connected through a single router. Initially, the Tree topology LAN (PC0 to PC6) was successfully linked with the Star topology LAN, with the router effectively facilitating communication between the two different structures. Next, the Star topology LAN (PC7 to PC10) was connected to the Ring

topology LAN, where smooth data transfer was observed via the router. Finally, the Ring topology LAN (PC12 to PC1) communicated with the Tree topology LAN through the same router, once again demonstrating successful inter-topology communication. The router served as the key device, efficiently handling traffic routing and addressing across the different network designs.

Inference:

This assignment demonstrated that a single router can effectively manage multiple LANs with varying internal topologies, ensuring seamless communication. Despite their structural differences, the Tree, Star, and Ring networks were able to coexist and interact properly through careful router configuration. The exercise underscored the essential role of routers in supporting network expansion involving diverse topologies. Overall, it showed that network architecture can be flexible, incorporating multiple designs to meet specific needs, with routers enabling their integration and management.