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Assignment Submission III

OSPF and RIP Configuration on Different Areas Using Cisco Packet Tracer

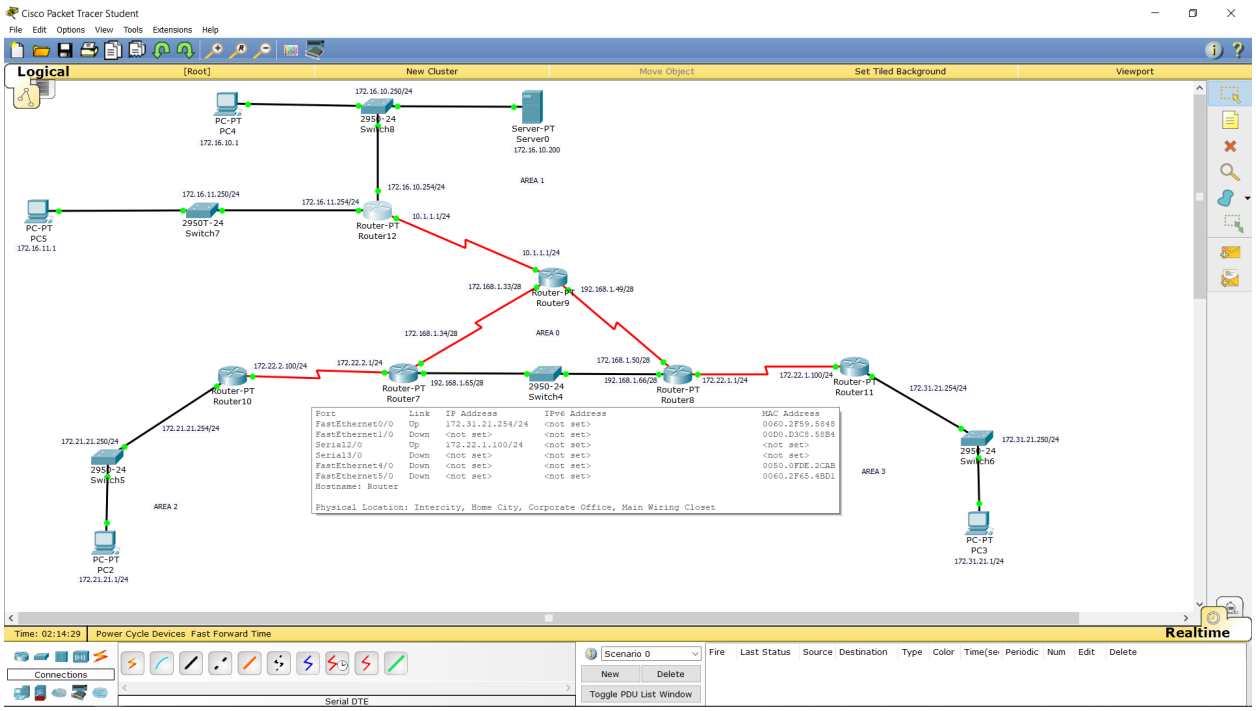
Key Ideas

- OSPF stands for Open Short Path First which is a routing protocol for internet protocols. It uses an algorithm called link state which is a group of interior gateway protocols which operate on a single system.
- RIP is a distance vector protocol, routers which use RIP protocol send all or part of their routing table to the neighboring routers to update the routing tables.

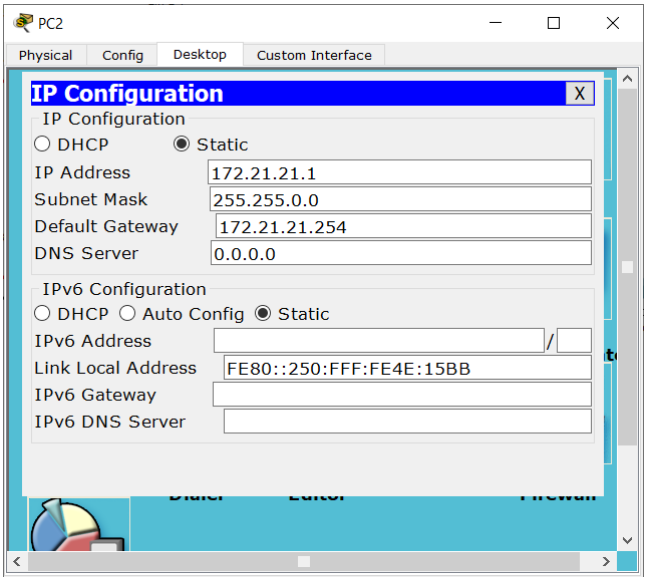
RIP	OSPF
Uses Bellman Ford algorithm	Uses Dijkstra Algorithm
Distance vector protocol	Link state protocol analyzes speed
Used in smaller size organization	Used for large size organization
Allows maximum of 15 hops	No restriction
Administrative distance is 120	Administrative distance is 110

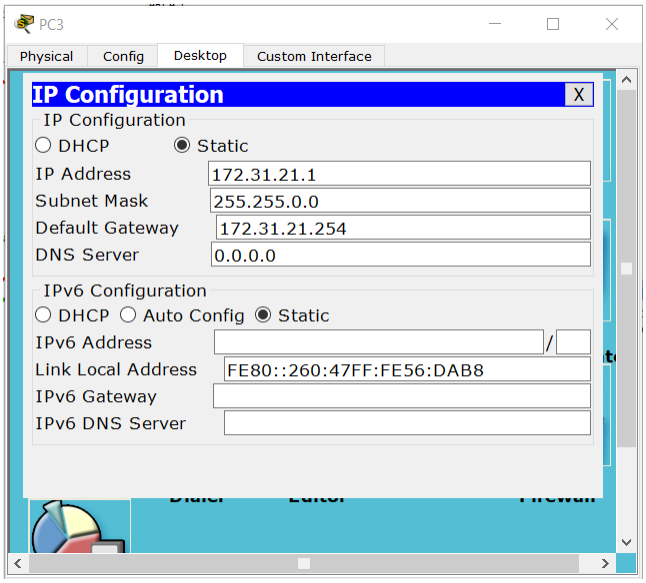
Simulation of OSPF on Cisco Packet Tracer

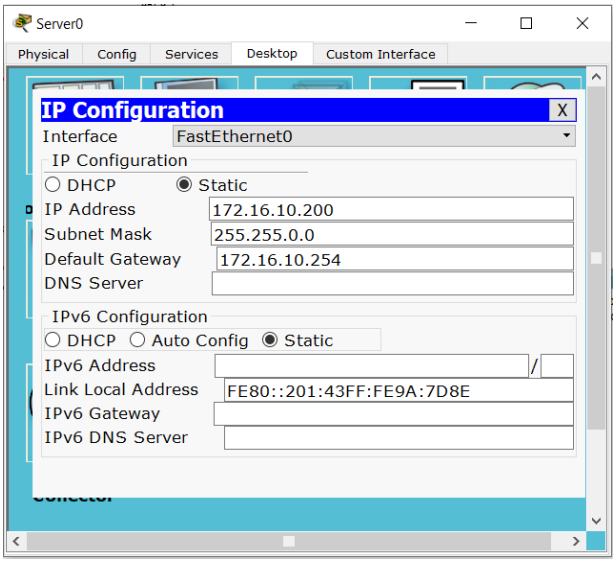
1) Place the components on the workspace and connect them using the proper cables.

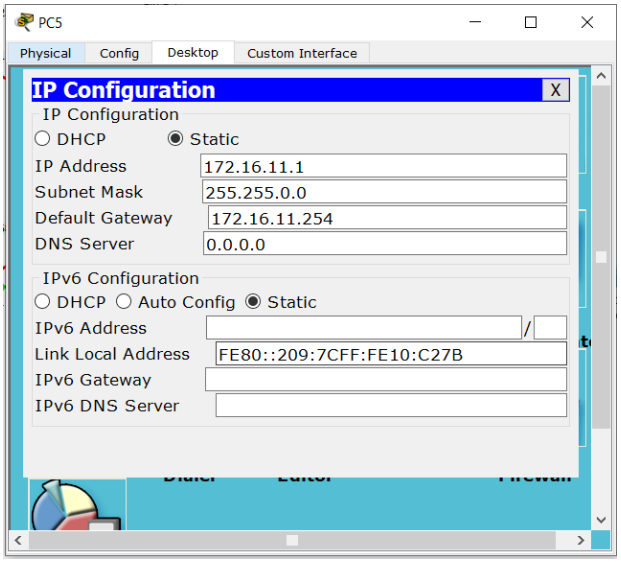


2) Then configure the IP address and subnet max for all computers respectively including their default gateway of their routers.



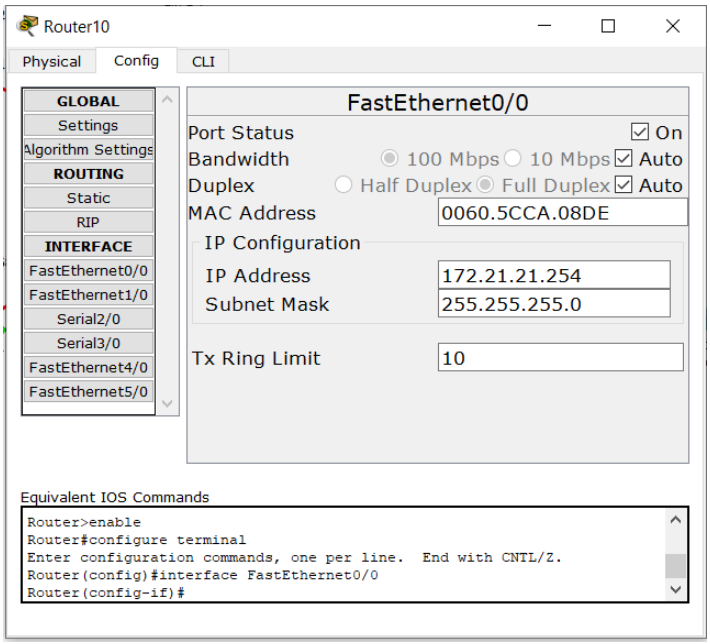


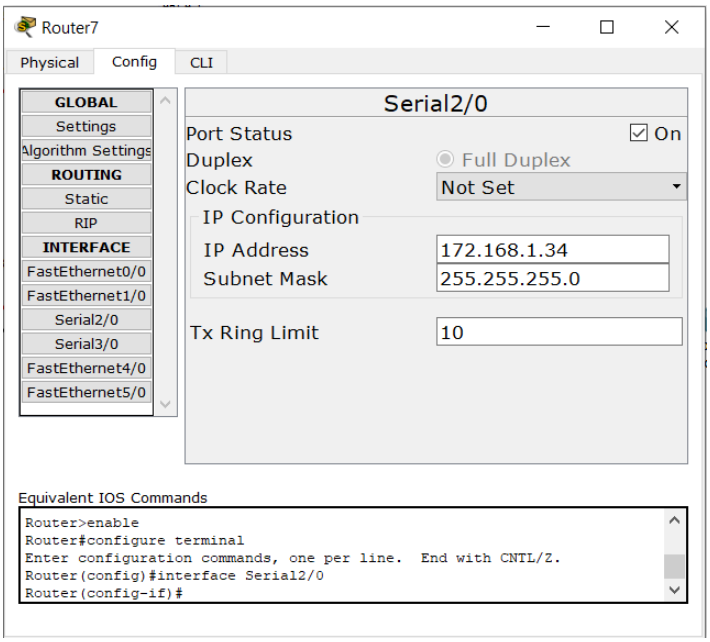


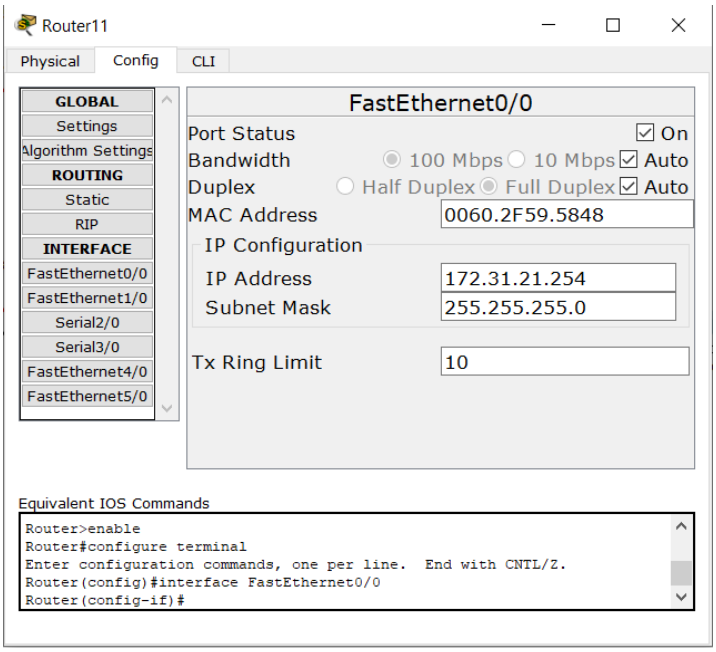


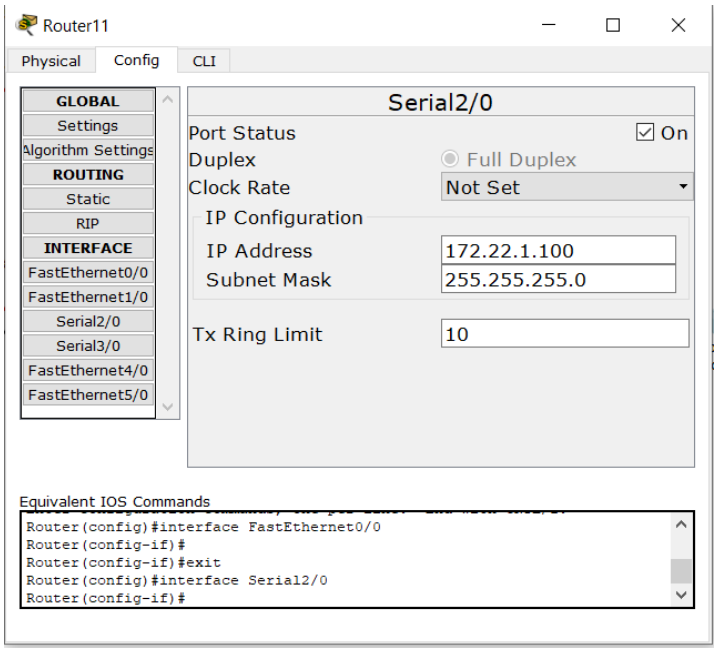
3) Configure routers using their fast internet port for local connection and serial port for outside connection. Open the CLI for a specific router and use the below commands to configure IP address and subnet mask.

enable
configure terminal
interface <router interface> ***(example f0/0 or ser0/3)***
ip address <ip address> <subnet mask>
no shut
exit



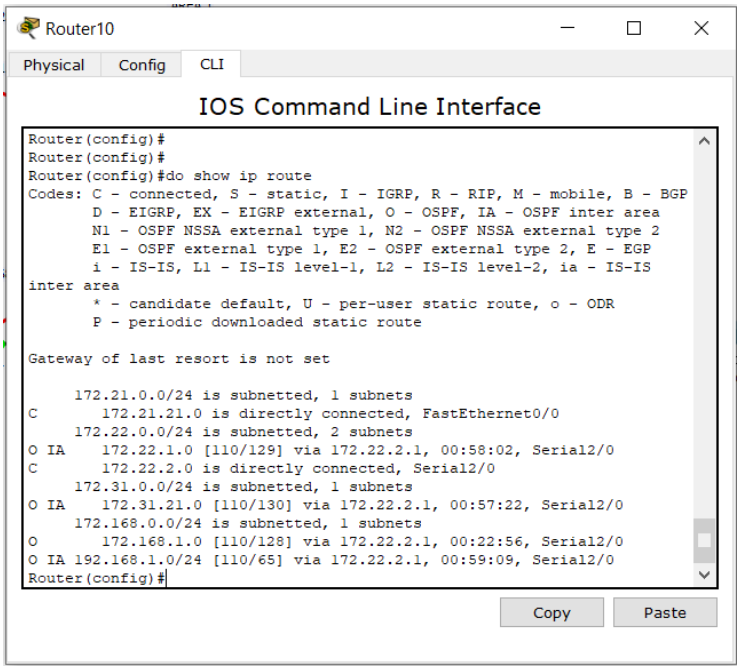


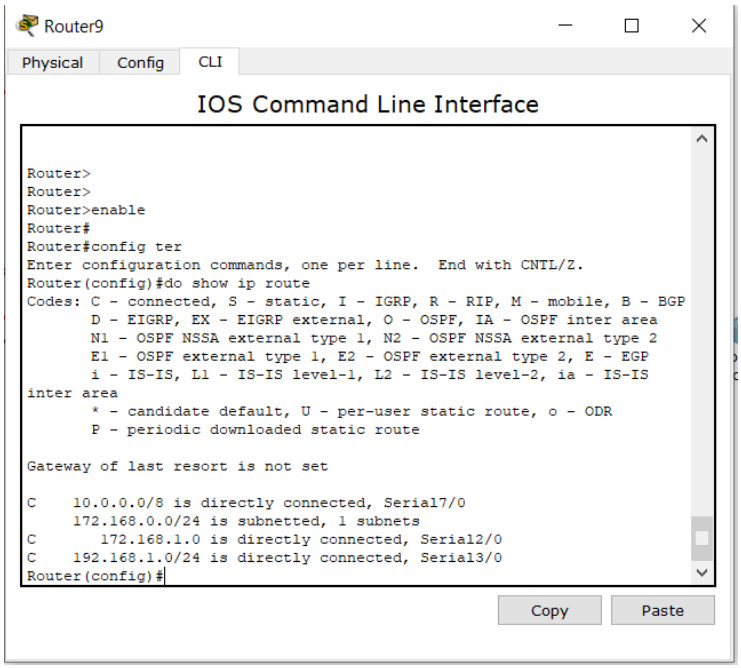


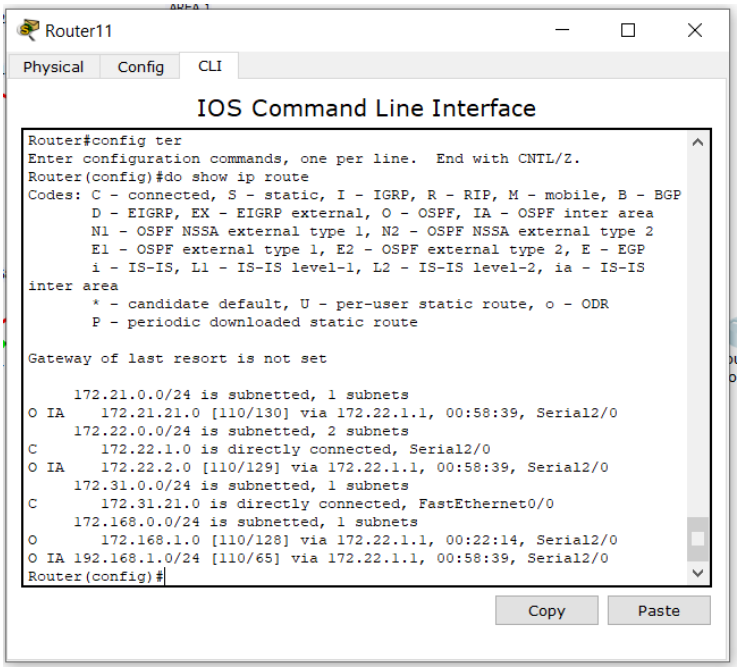


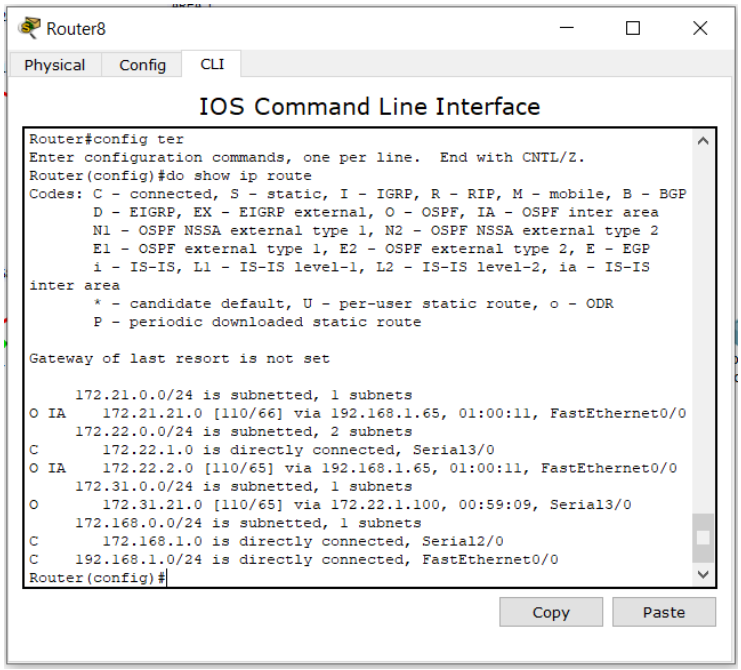
4) Once we configure the IP address for all components then we can start configuring the OSPF for each router. We use the CLI and input the commands below to configure the OSPF for a specific router.

router ospf 1 ***(give the router process id)***
network <network id> <wildcard subnet> area <area number> (172.21.21.254 0.255.255.255 area 1)
exit
do show ip route ***(will show us the IP route lis)***

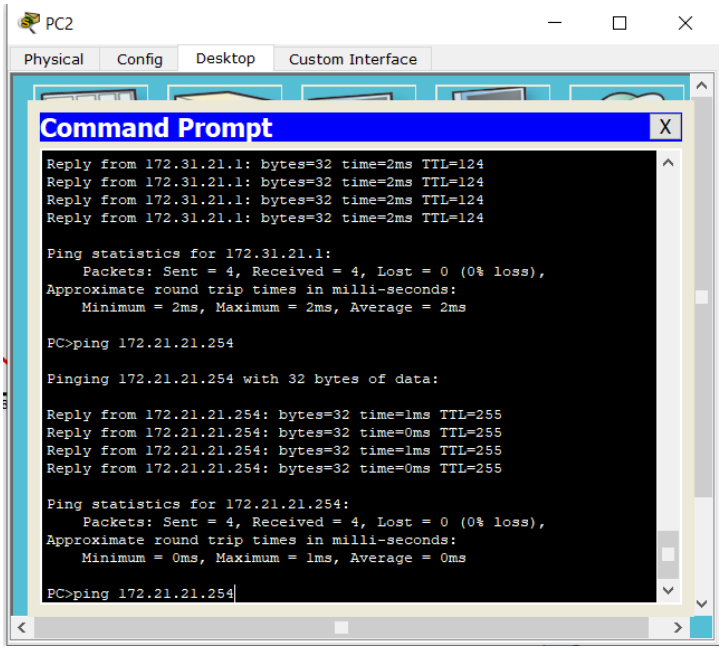


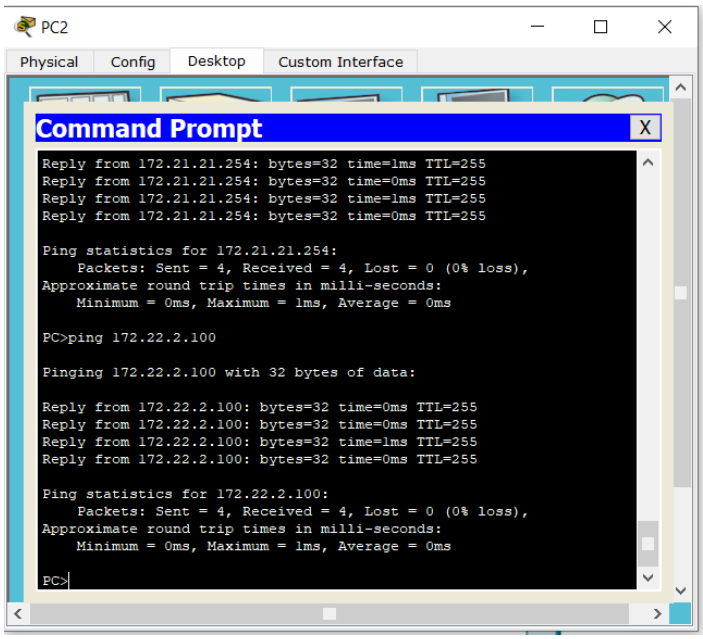


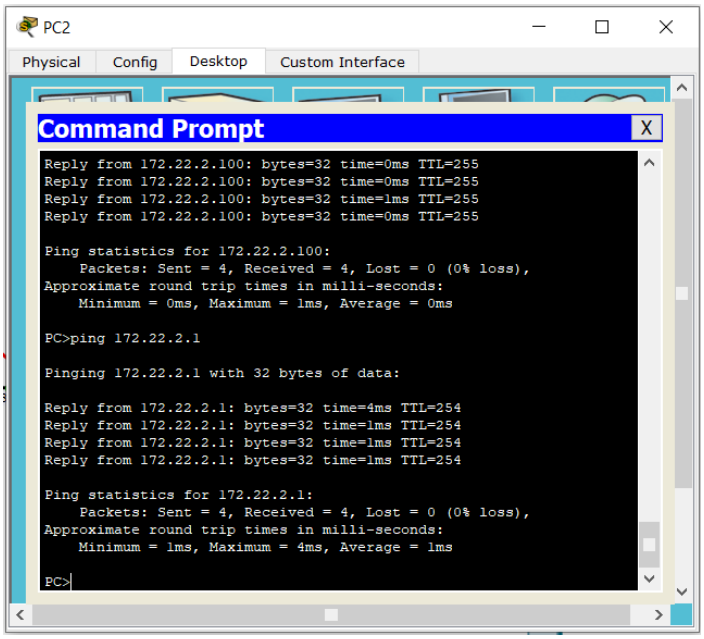


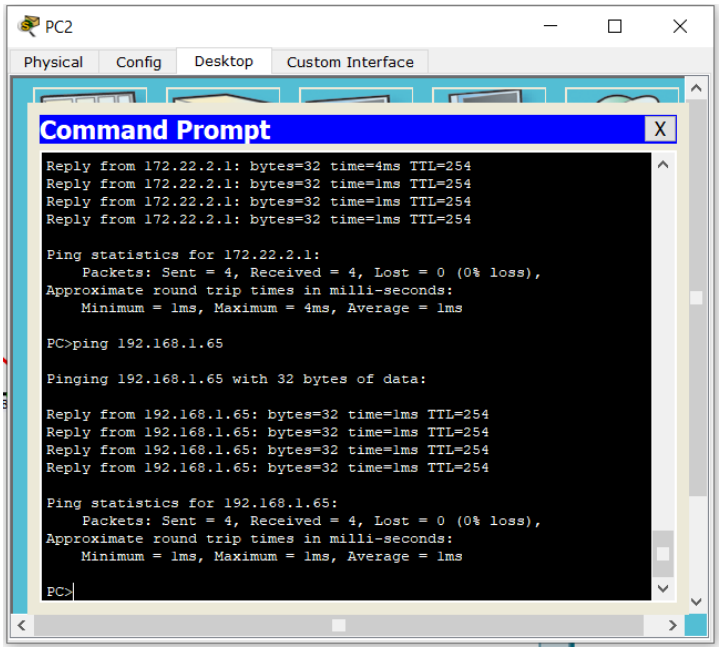


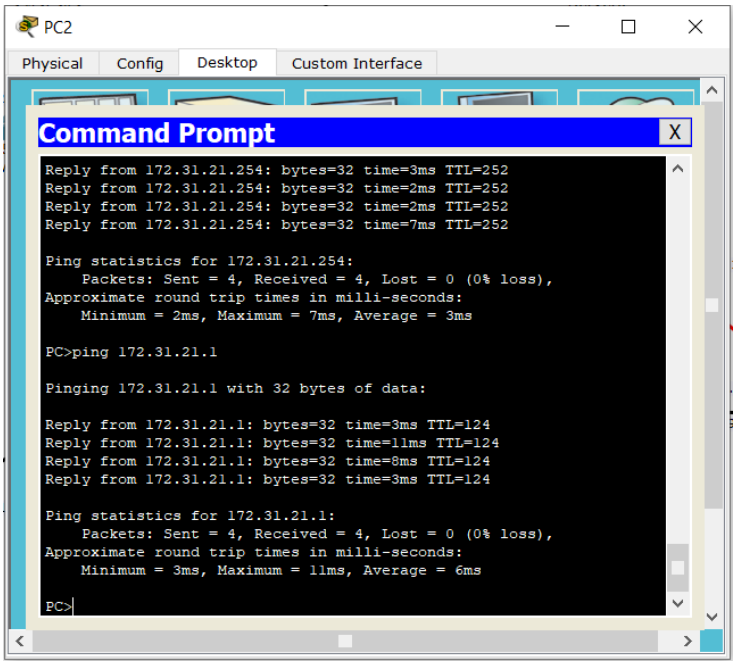
5) We can now test the connection from the nearest hope to the farthest hope to make sure all connections we created work fine.

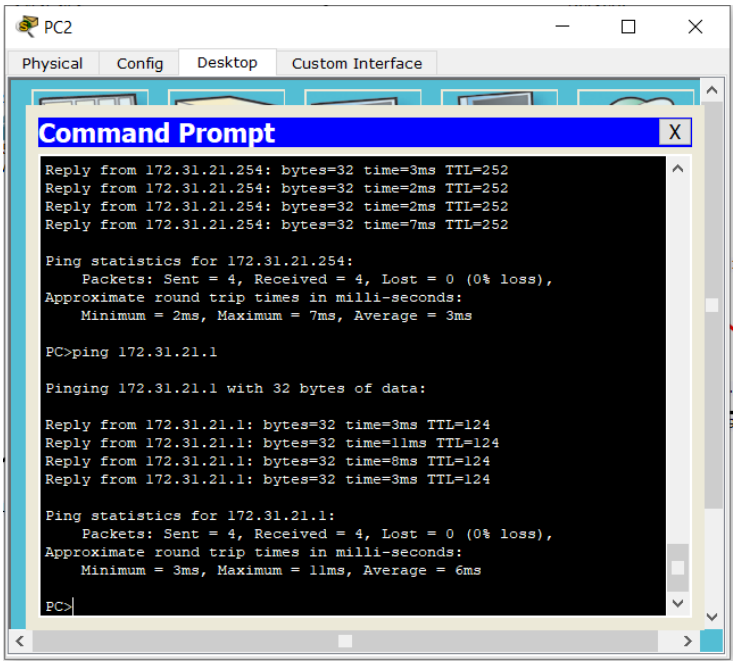

PC2
Physical
Config
Desktop
Custom Interface
Command Prompt
Reply from 172.31.21.1: bytes=32 time=2ms TTL=124
Reply from 172.31.21.1: bytes=32 time=2ms TTL=124
Reply from 172.31.21.1: bytes=32 time=2ms TTL=124
Reply from 172.31.21.1: bytes=32 time=2ms TTL=124
Ping statistics for 172.31.21.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 2ms, Average = 2ms
PC>ping 172.21.21.254
Pinging 172.21.21.254 with 32 bytes of data:
Reply from 172.21.21.254: bytes=32 time=1ms TTL=255
Reply from 172.21.21.254: bytes=32 time=0ms TTL=255
Reply from 172.21.21.254: bytes=32 time=1ms TTL=255
Reply from 172.21.21.254: bytes=32 time=0ms TTL=255
Ping statistics for 172.21.21.254:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
PC>ping 172.21.21.254

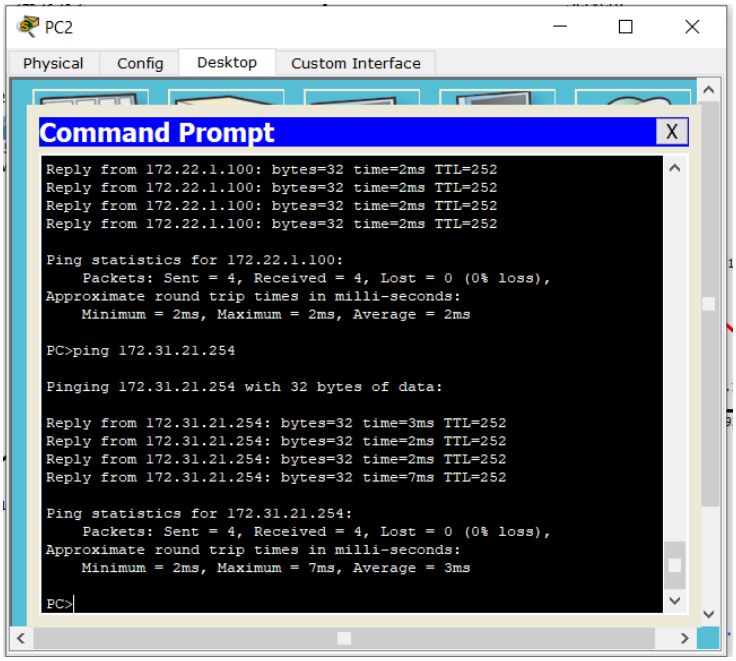

PC2
Physical
Config
Desktop
Custom Interface
Command Prompt
Reply from 172.21.21.254: bytes=32 time=1ms TTL=255
Reply from 172.21.21.254: bytes=32 time=0ms TTL=255
Reply from 172.21.21.254: bytes=32 time=1ms TTL=255
Reply from 172.21.21.254: bytes=32 time=0ms TTL=255
Ping statistics for 172.21.21.254:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
PC>ping 172.22.2.100
Pinging 172.22.2.100 with 32 bytes of data:
Reply from 172.22.2.100: bytes=32 time=0ms TTL=255
Reply from 172.22.2.100: bytes=32 time=0ms TTL=255
Reply from 172.22.2.100: bytes=32 time=1ms TTL=255
Reply from 172.22.2.100: bytes=32 time=0ms TTL=255
Ping statistics for 172.22.2.100:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
PC>

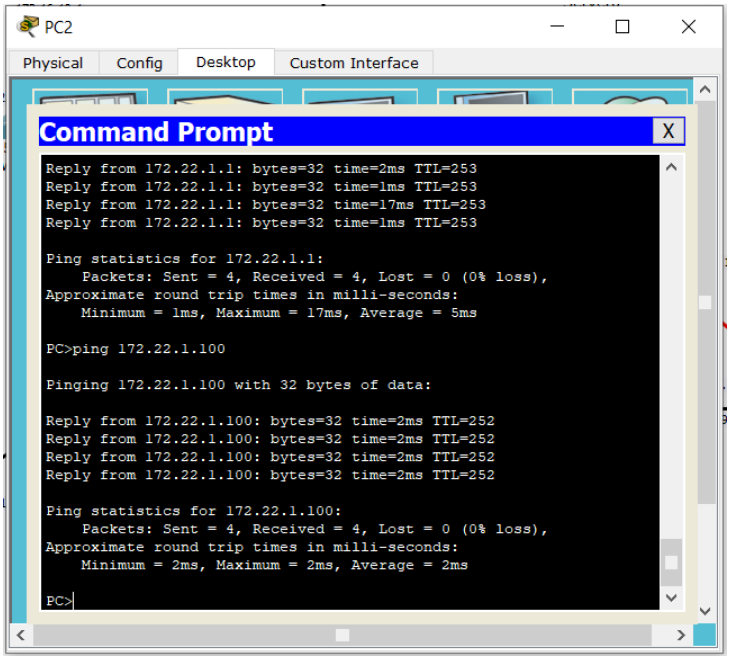

PC2
Physical
Config
Desktop
Custom Interface
Command Prompt
Reply from 172.22.2.100: bytes=32 time=0ms TTL=255
Reply from 172.22.2.100: bytes=32 time=0ms TTL=255
Reply from 172.22.2.100: bytes=32 time=1ms TTL=255
Reply from 172.22.2.100: bytes=32 time=0ms TTL=255
Ping statistics for 172.22.2.100:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
PC>ping 172.22.2.1
Pinging 172.22.2.1 with 32 bytes of data:
Reply from 172.22.2.1: bytes=32 time=4ms TTL=254
Reply from 172.22.2.1: bytes=32 time=1ms TTL=254
Reply from 172.22.2.1: bytes=32 time=1ms TTL=254
Reply from 172.22.2.1: bytes=32 time=1ms TTL=254
Ping statistics for 172.22.2.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 4ms, Average = 1ms
PC>


PC2
Physical
Config
Desktop
Custom Interface
Command Prompt
Reply from 172.22.2.1: bytes=32 time=4ms TTL=254
Reply from 172.22.2.1: bytes=32 time=1ms TTL=254
Reply from 172.22.2.1: bytes=32 time=1ms TTL=254
Reply from 172.22.2.1: bytes=32 time=1ms TTL=254
Ping statistics for 172.22.2.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 4ms, Average = 1ms
PC>ping 192.168.1.65
Pinging 192.168.1.65 with 32 bytes of data:
Reply from 192.168.1.65: bytes=32 time=1ms TTL=254
Reply from 192.168.1.65: bytes=32 time=1ms TTL=254
Reply from 192.168.1.65: bytes=32 time=1ms TTL=254
Reply from 192.168.1.65: bytes=32 time=1ms TTL=254
Ping statistics for 192.168.1.65:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 1ms, Average = 1ms
PC>



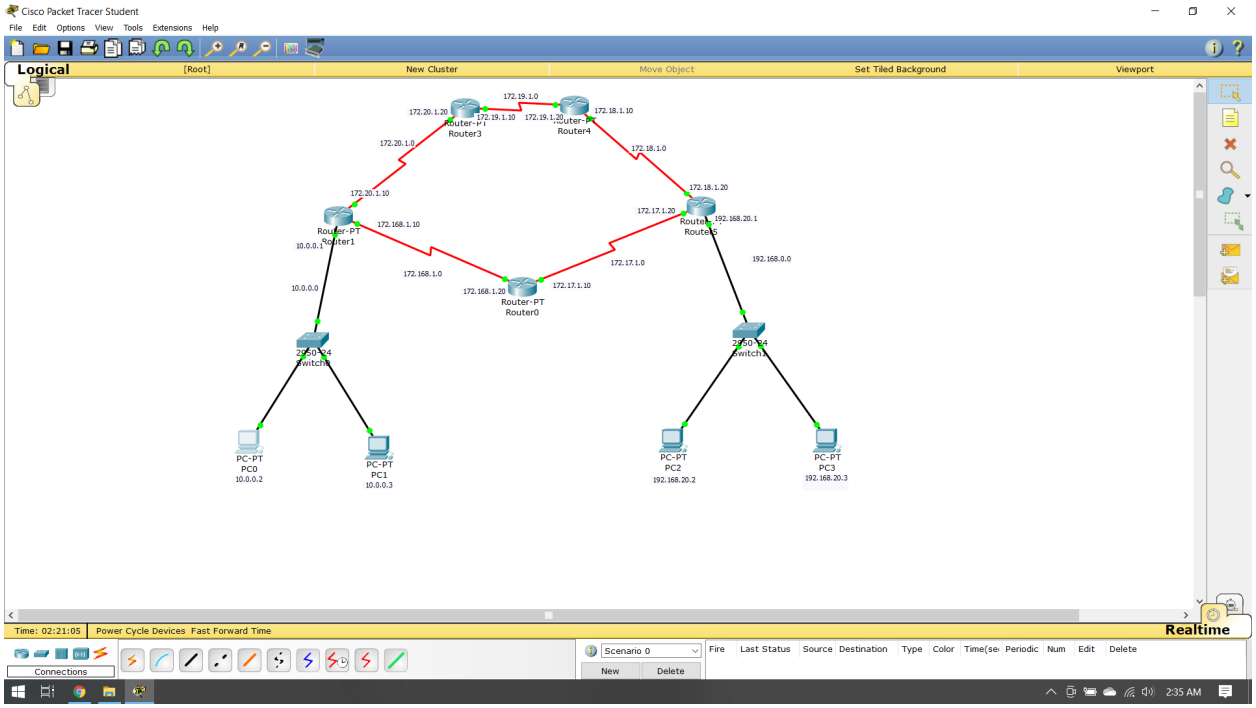




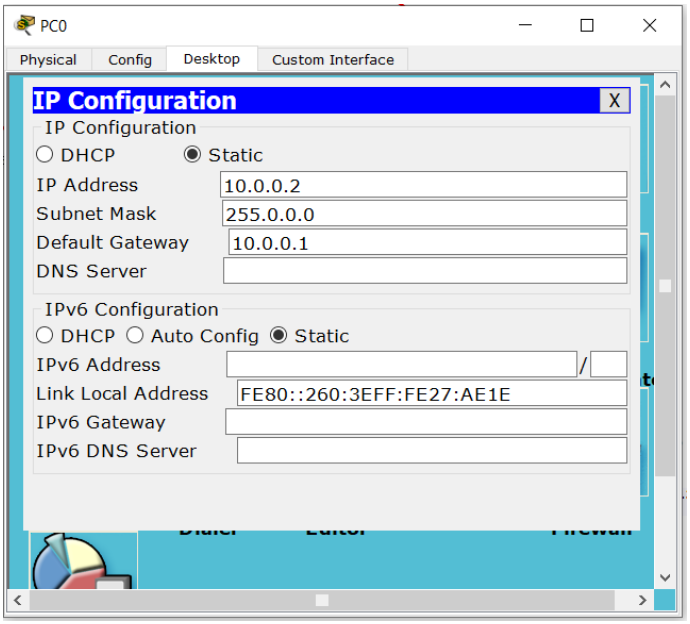


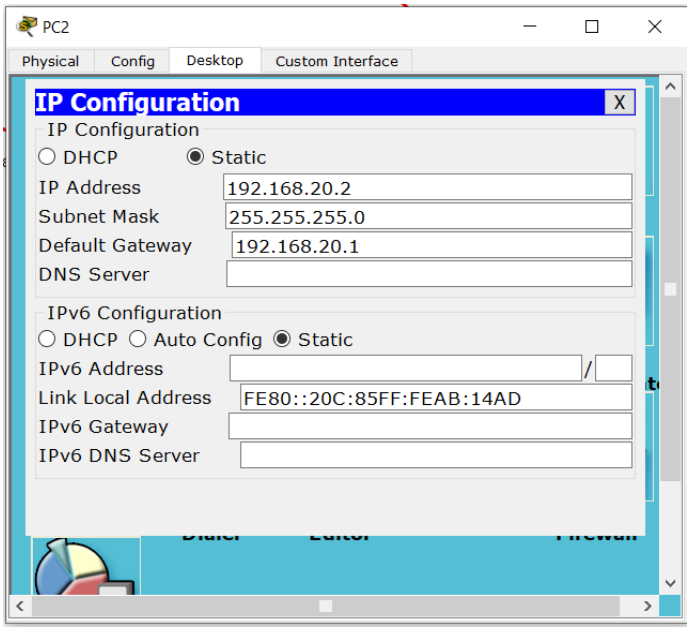
Simulation of RIP Protocol on Cisco Packet Tracer

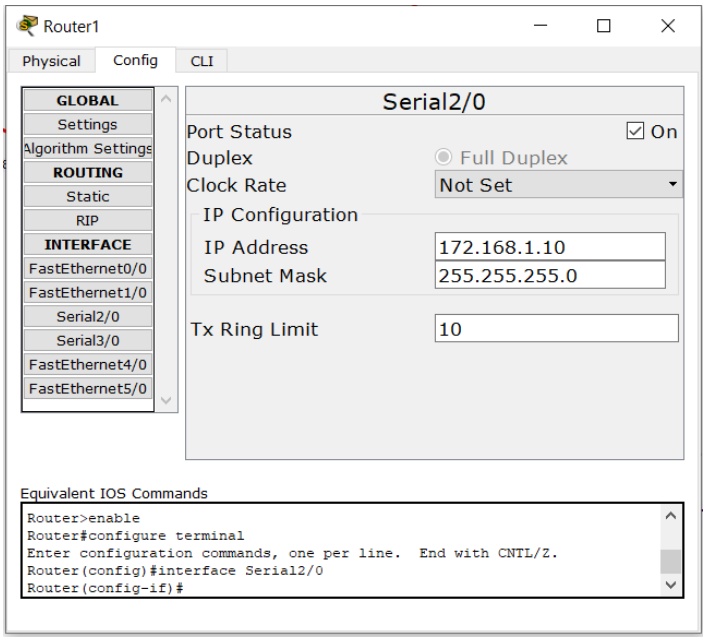
1) Place the components on the workspace then connect all the components with the appropriate cables.

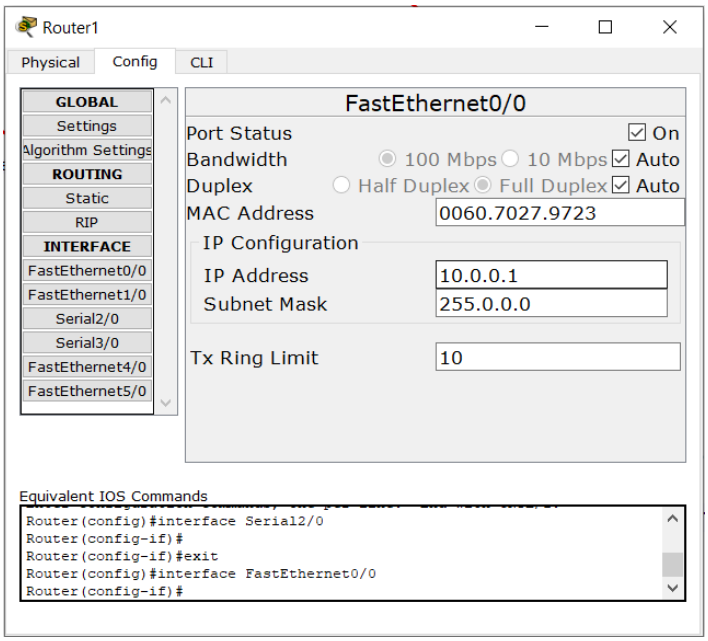


2) Configure the IP address for the computers and the routers



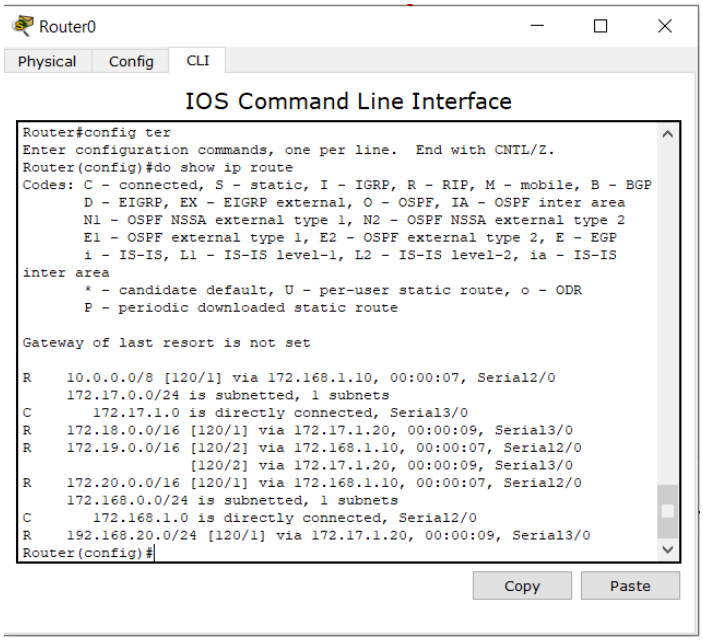


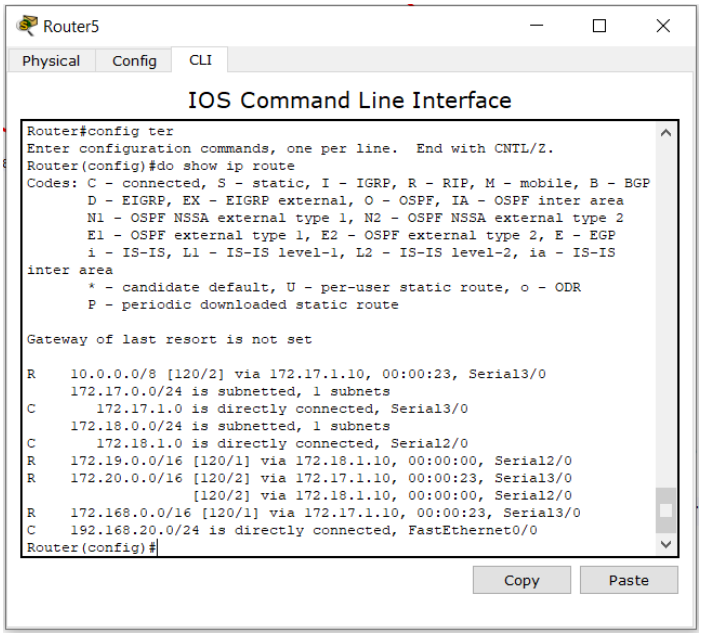




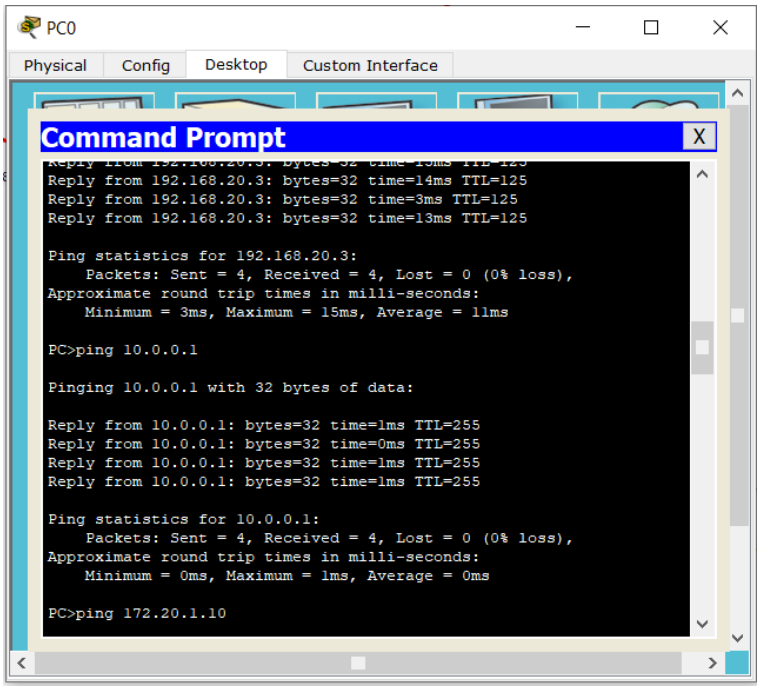
3) Once all the IP is configured and we get a green signal on each end point we can proceed to configure our RIP protocol. Open the router and go to CLI mode

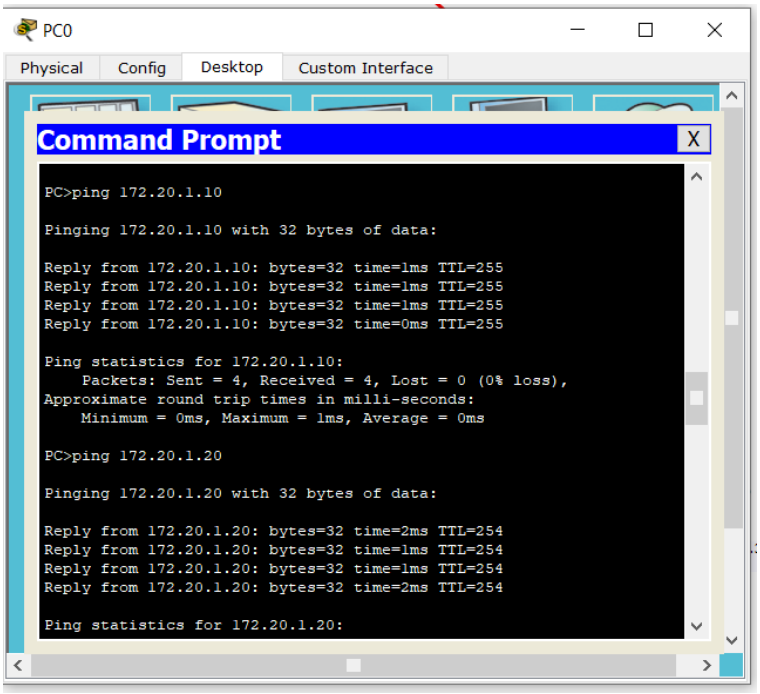
enable
configure terminal
router rip
network <network id> (10.0.0.0)
do show ip route

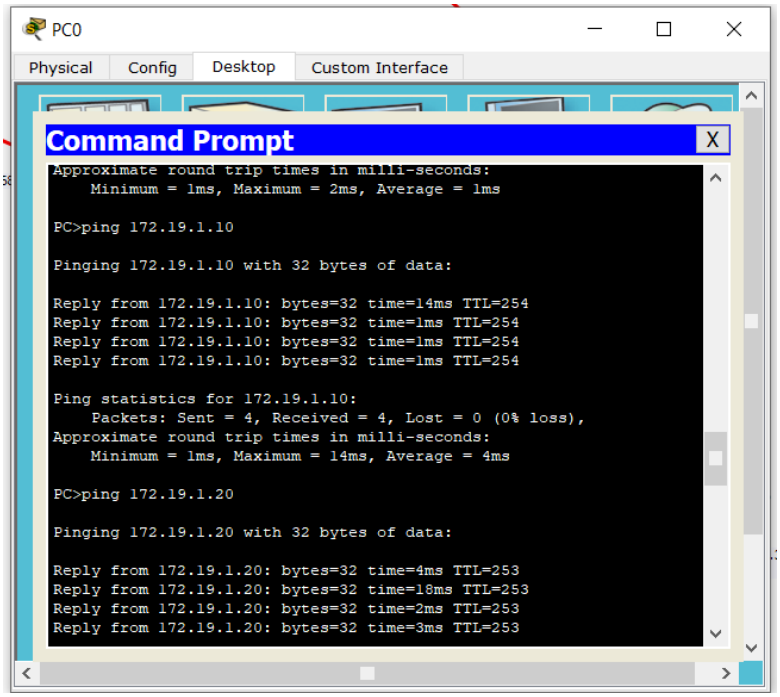


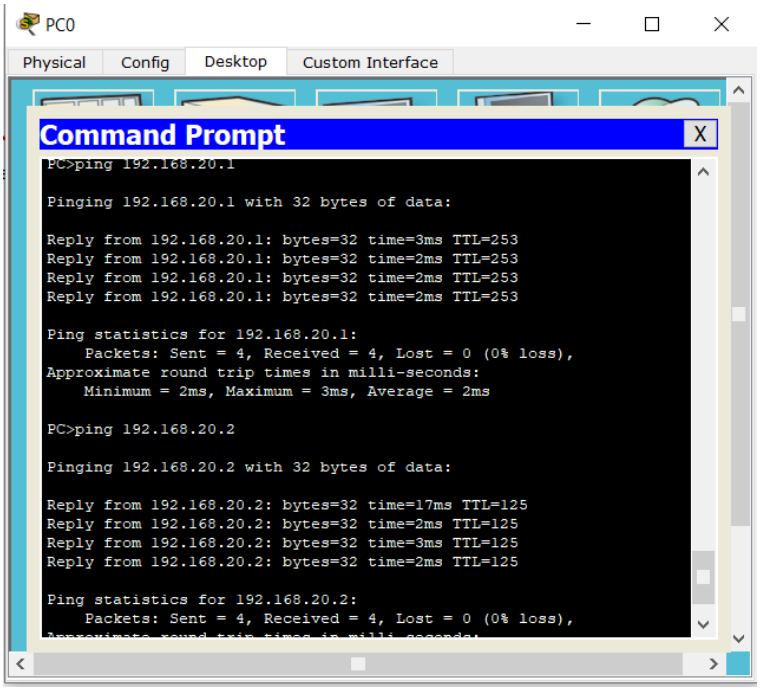


5) Then after configuring our RIP protocol we can test the connection from the nearest hop to the farthest.









- The packet file for this assignment is attached here https://github.com/mikias21/NADC/tree/main/assignment3