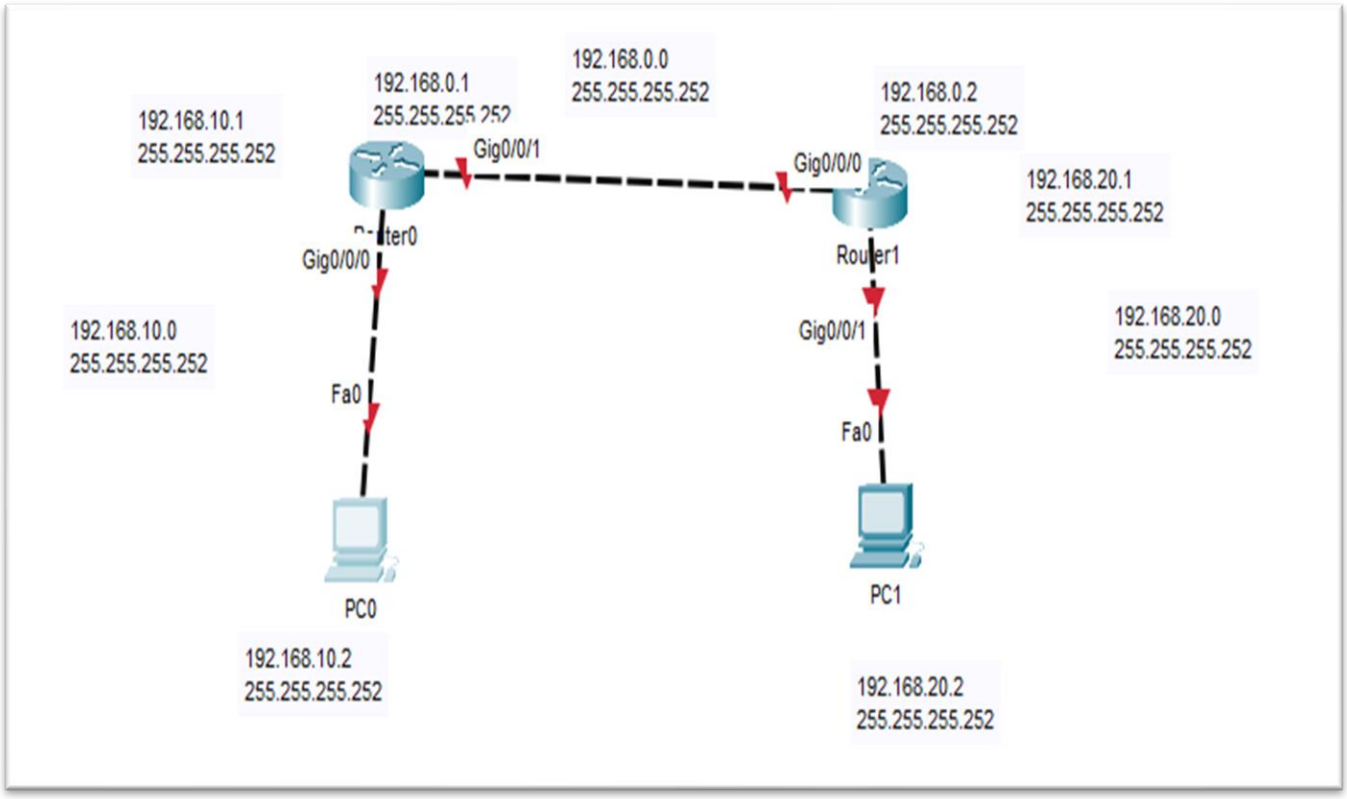
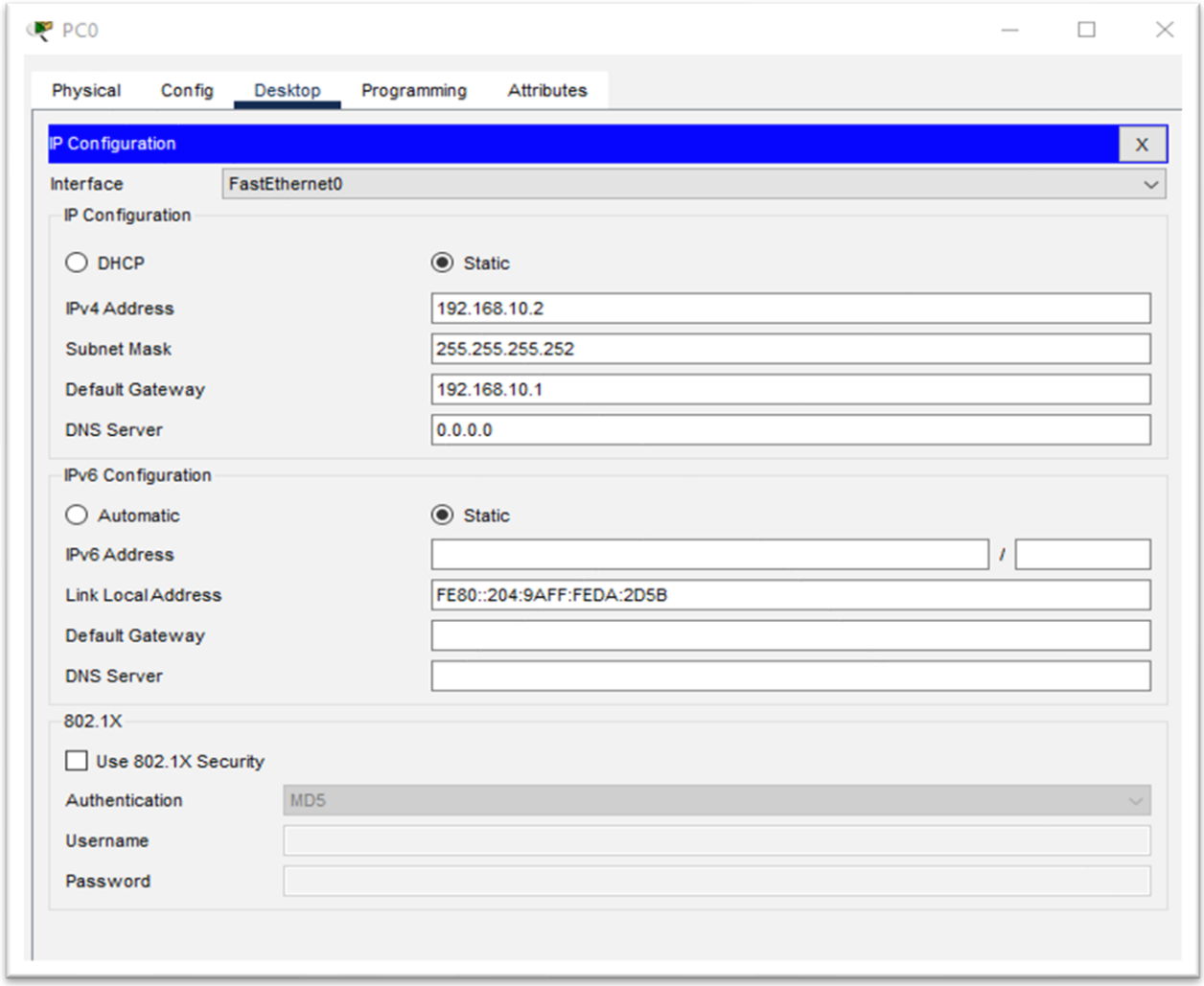
OSPF Configuration Step by Step Guide

- ✓ OSPF (Open shortest path first)
- ✓ Interior gateway protocol
- ✓ Widely used
- ✓ An example of Link state routing protocol
- ✓ It divides an autonomous system into areas
- ✓ Unlimited hop count

Step1: Add place note in all devices for IP address and subnet mask.



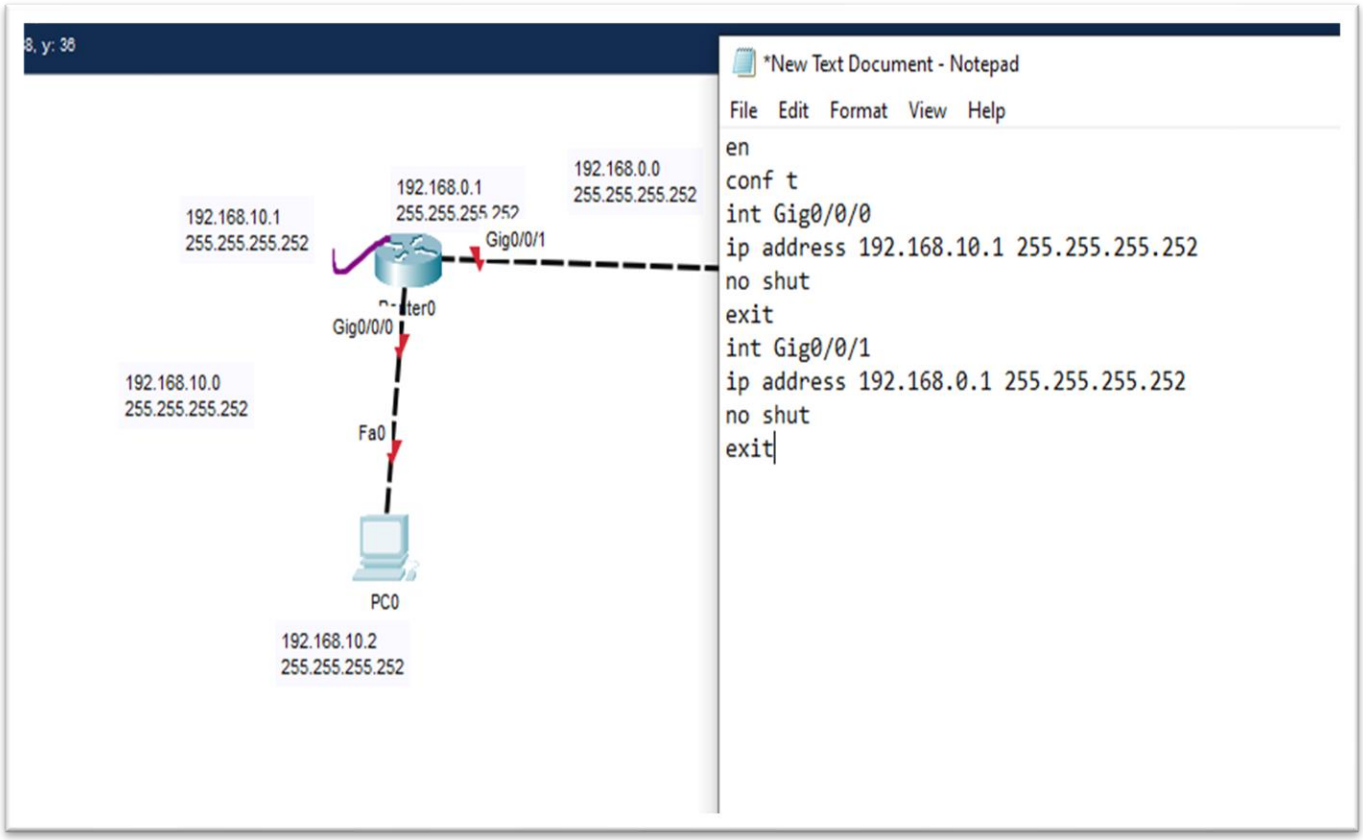
Step2: Configure each end devices (PC, laptop, mobile etc) by adding IP address, subnet mask and default gateway IP.

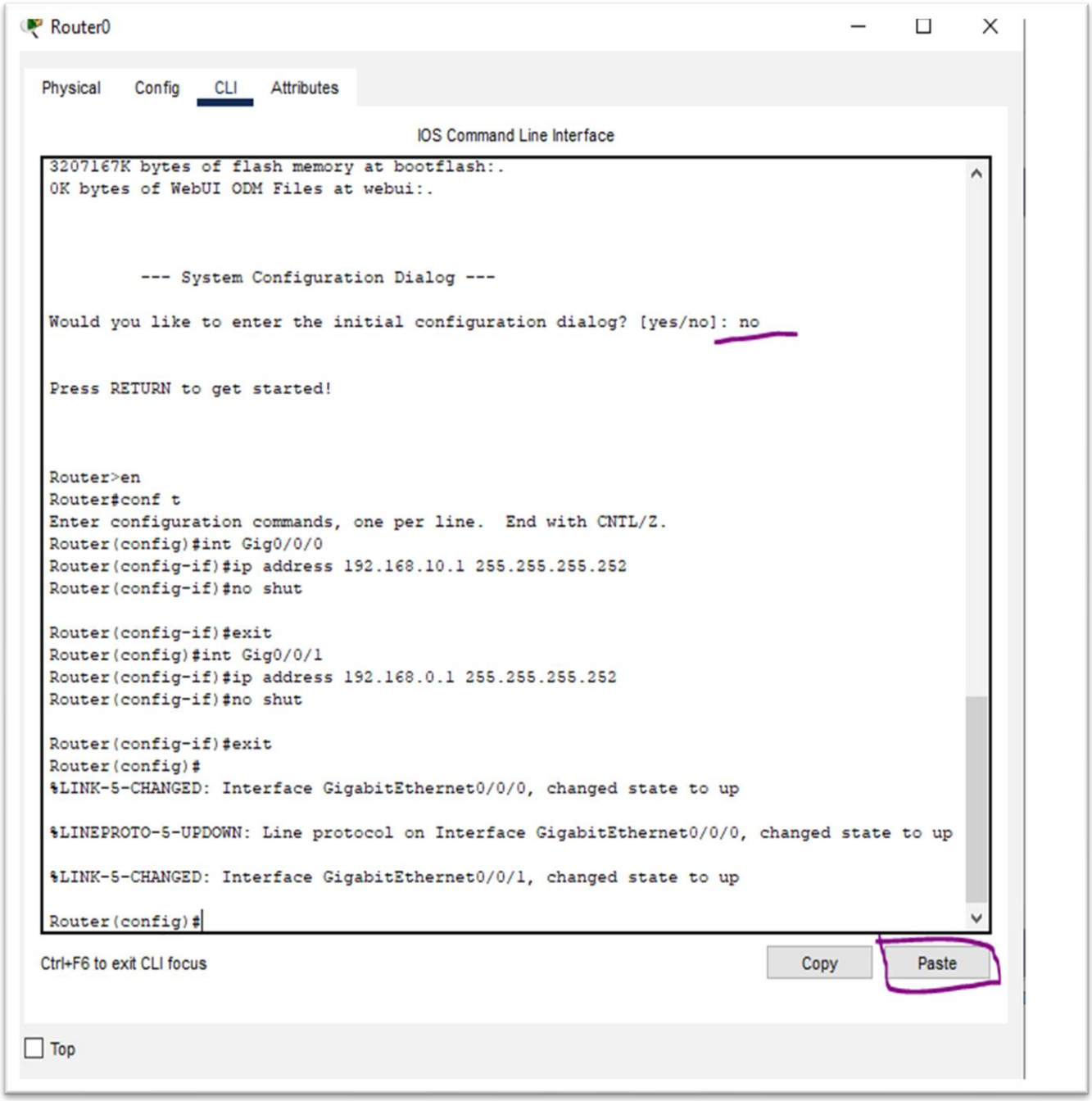


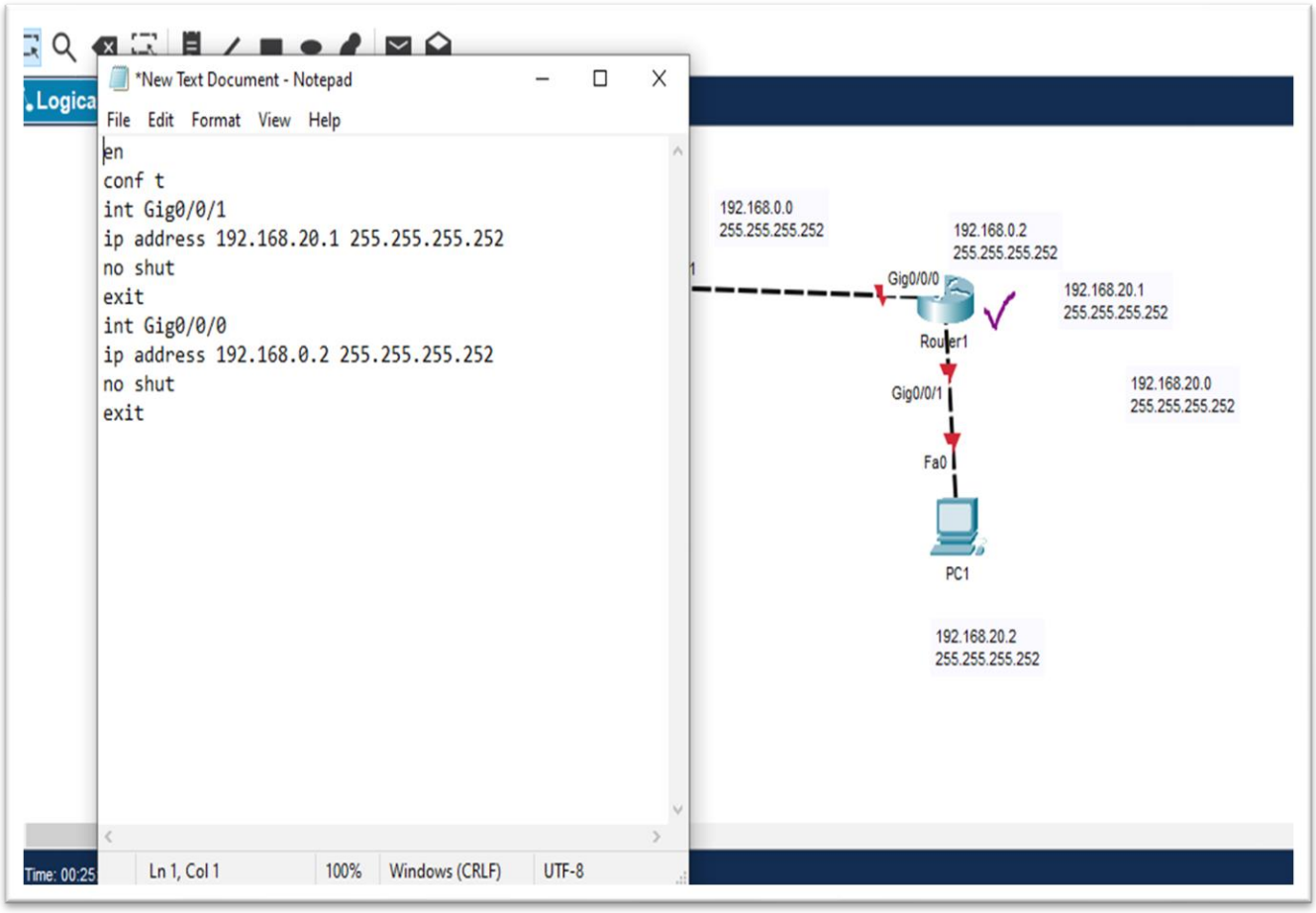
Step3: Configure each router by writing command in CLI.

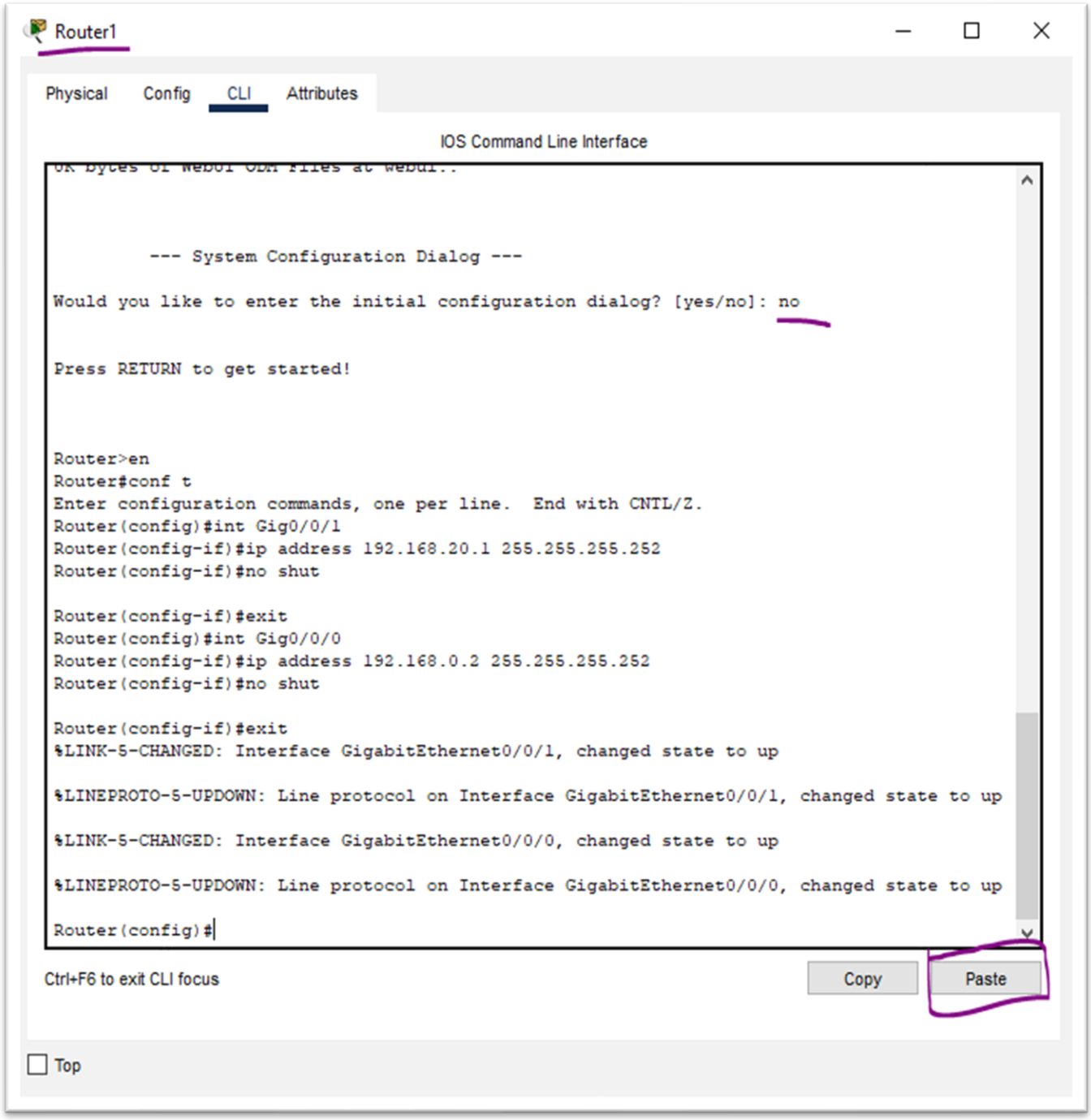
The commands are as follows. Write the same command if more than one port is used in the router.

```
Router>en
Router# conf t
Router(config)# int port_number
Router(config-if)# ip address gateway_ip subnet_mask
Router(config-if)#no shutdown
Router(config-if)#exit
```




Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
3207167K bytes of flash memory at bootflash:.
0K bytes of WebUI ODM Files at webui:.
--- System Configuration Dialog ---
Would you like to enter the initial configuration dialog? [yes/no]: no
Press RETURN to get started!
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int Gig0/0/0
Router(config-if)#ip address 192.168.10.1 255.255.255.252
Router(config-if)#no shut
Router(config-if)#exit
Router(config)#int Gig0/0/1
Router(config-if)#ip address 192.168.0.1 255.255.255.252
Router(config-if)#no shut
Router(config-if)#exit
Router(config)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/0, changed state to up
%LINK-5-CHANGED: Interface GigabitEthernet0/0/1, changed state to up
Router(config)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

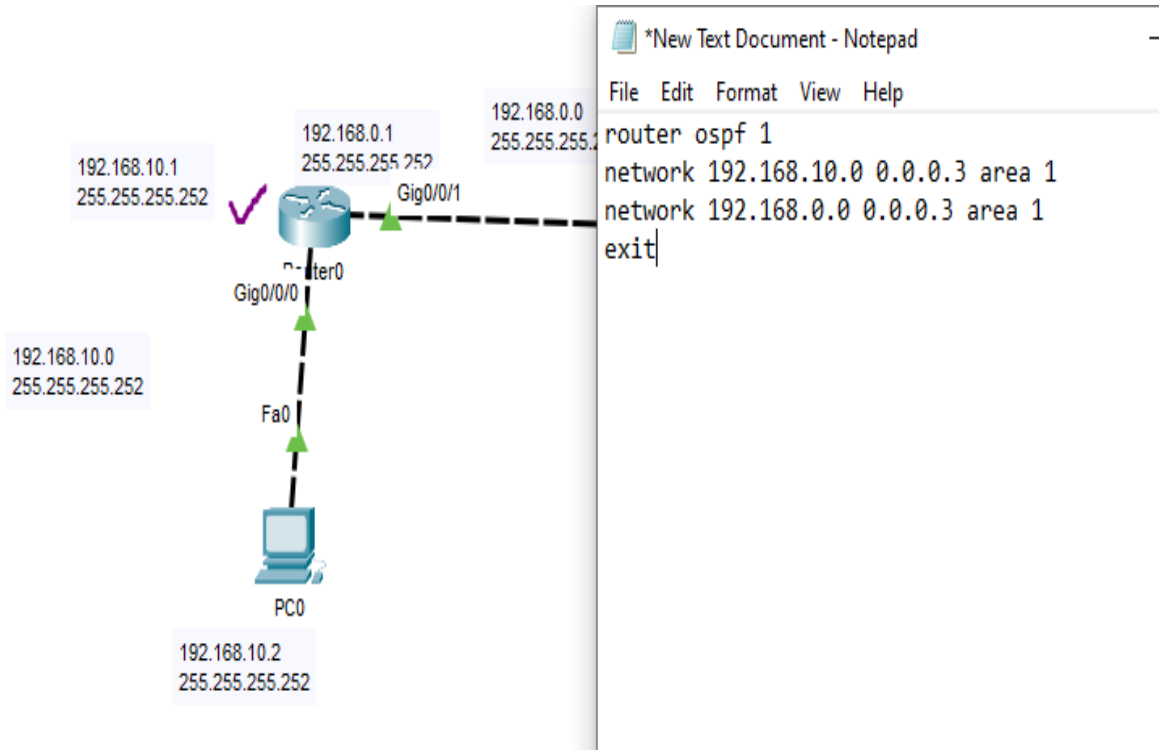

*New Text Document - Notepad
File Edit Format View Help
en
conf t
int Gig0/0/1
ip address 192.168.20.1 255.255.255.252
no shut
exit
int Gig0/0/0
ip address 192.168.0.2 255.255.255.252
no shut
exit
Ln 1, Col 1
100%
Windows (CRLF)
UTF-8
Time: 00:25
192.168.0.0
255.255.255.252
192.168.0.2
255.255.255.252
Gig0/0/0
192.168.20.1
255.255.255.252
Router1
Gig0/0/1
192.168.20.0
255.255.255.252
Fa0
PC1
192.168.20.2
255.255.255.252

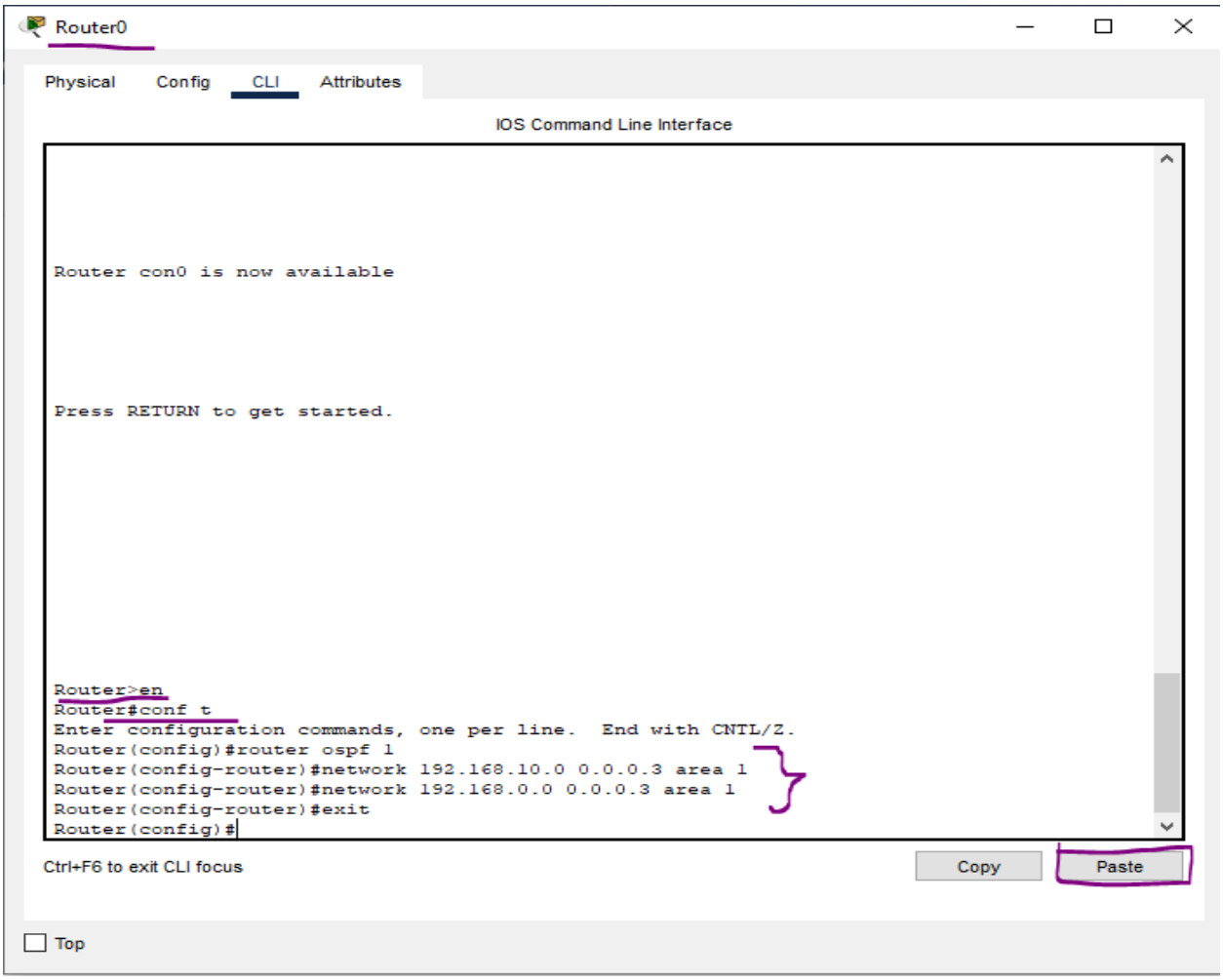

Router1
Physical
Config
CLI
Attributes
IOS Command Line Interface
--- System Configuration Dialog ---
Would you like to enter the initial configuration dialog? [yes/no]: no
Press RETURN to get started!
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int Gig0/0/1
Router(config-if)#ip address 192.168.20.1 255.255.255.252
Router(config-if)#no shut
Router(config-if)#exit
Router(config)#int Gig0/0/0
Router(config-if)#ip address 192.168.0.2 255.255.255.252
Router(config-if)#no shut
Router(config-if)#exit
%LINK-5-CHANGED: Interface GigabitEthernet0/0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/1, changed state to up
%LINK-5-CHANGED: Interface GigabitEthernet0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/0, changed state to up
Router(config)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

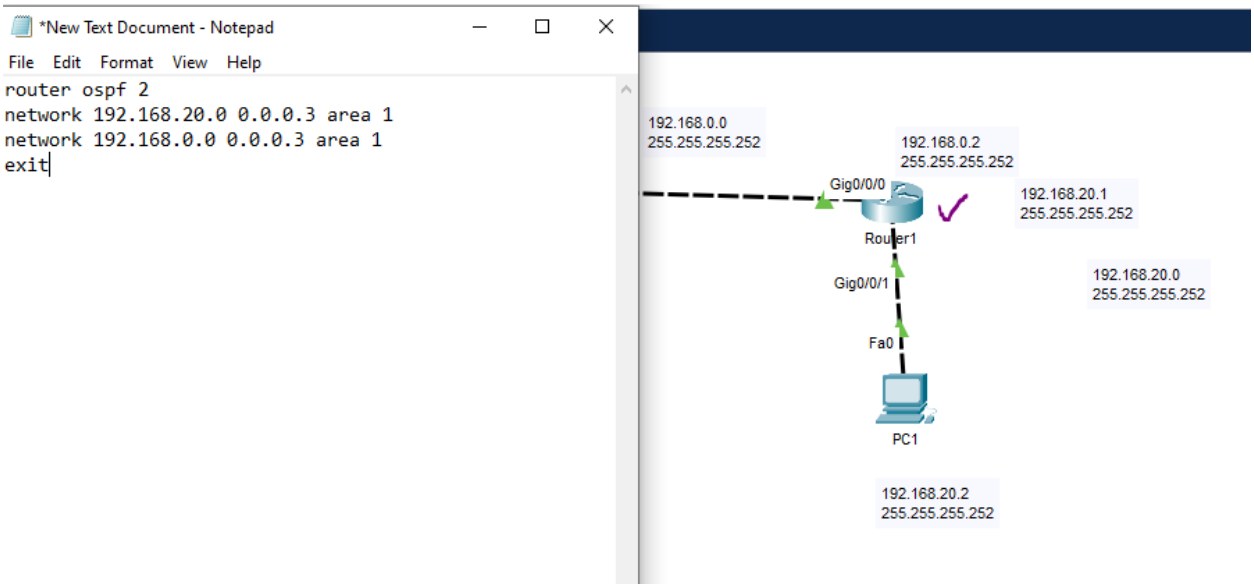
Step4: Configure OSPF protocol for each router in the autonomous system by writing command in CLI.

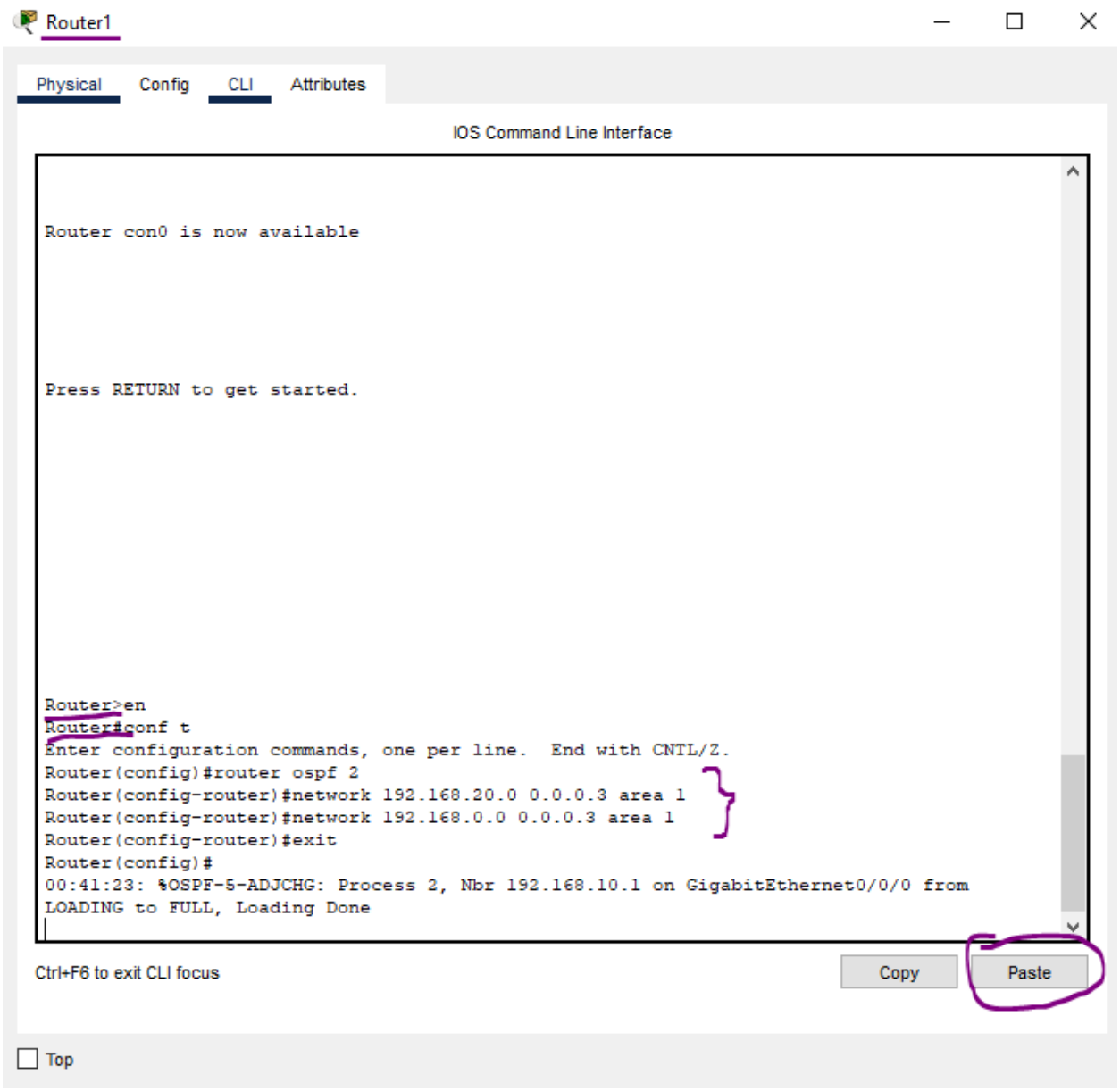
The commands are as follows:

```
Router(config)#router ospf process_ID
Router(config-router)#network network_address wildcard_mask area
area_number
Router(config-router)#exit
```

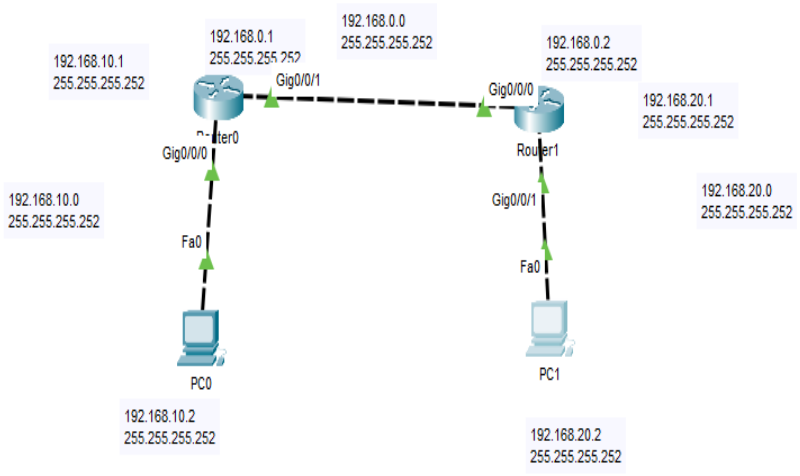


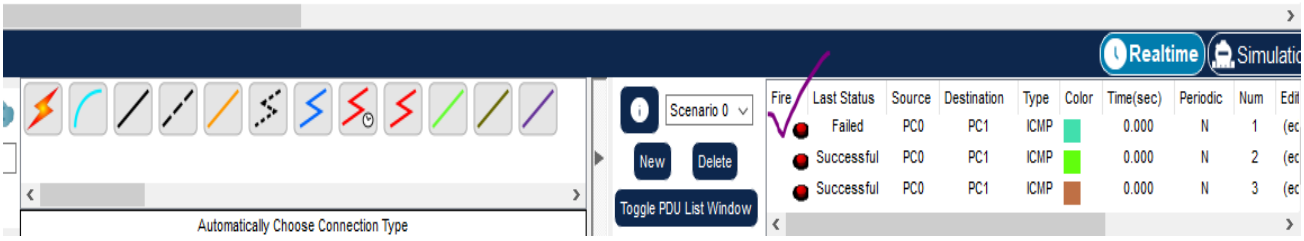

Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router con0 is now available
Press RETURN to get started.
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router ospf 1
Router(config-router)#network 192.168.10.0 0.0.0.3 area 1
Router(config-router)#network 192.168.0.0 0.0.0.3 area 1
Router(config-router)#exit
Router(config)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top


*New Text Document - Notepad
File Edit Format View Help
router ospf 2
network 192.168.20.0 0.0.0.3 area 1
network 192.168.0.0 0.0.0.3 area 1
exit
192.168.0.0
255.255.255.252
192.168.0.2
255.255.255.252
Gig0/0/0
192.168.20.1
255.255.255.252
Router1
Gig0/0/1
192.168.20.0
255.255.255.252
Fa0
PC1
192.168.20.2
255.255.255.252


Router1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router con0 is now available
Press RETURN to get started.
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router ospf 2
Router(config-router)#network 192.168.20.0 0.0.0.3 area 1
Router(config-router)#network 192.168.0.0 0.0.0.3 area 1
Router(config-router)#exit
Router(config)#
00:41:23: %OSPF-5-ADJCHG: Process 2, Nbr 192.168.10.1 on GigabitEthernet0/0/0 from
LOADING to FULL, Loading Done
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

Step5: Pass the packet from one subnet to another subnet and check the status.





Command description:

Command	Description
Router>en	Enable global configuration mode
Router# conf t	Enter in global configuration mode
Router(config)#int Gig0/0/0	Enter interface mode from global configuration mode
Router(config-if)#ip address 192.168.10.1 255.255.255.252	Assign IP to the interface (eg. Gig0/0/0)
Router(config-if)#no shutdown	Bring the interface up
Router(config-if)#exit	Return in global configuration mode
Router(config)#router opsf 1	Enable OSPF routing protocol under process ID = 1. (Process ID can be any number from 1 to 65,535)
Router(config-router)#network 192.168.10.1 0.0.0.3 area 1	Enable OSPF with area 1 on matching interface.

Written by:
Nasima Islam Bithi
Lecturer,
Dept of CSE, DIU