## Assumptions

1. Assume all devices are CISCO.
2. Configure each router, add at least 1 virtual PC to each office.

## Stages

1. First of all, I created a diagram from the draw.io site based on the given tasks and added the ip addresses that I thought to assign to this diagram (APPENDIX-A).
2. Then I drew the diagram in the GNS3 program (APPENDIX-B).
3. After creating the diagram over GNS3, I assigned ip to routers and PCs. You can see the codes on how I made these ip assignments in the picture below.

```
Factory-F3-Router#conf term
Enter configuration commands, one per line.  End with CNTL/Z.
Factory-F3-Router(config)#interface Ethernet0/0
Factory-F3-Router(config-if)#ip add 192.168.4.1 255.255.255.0
Factory-F3-Router(config-if)#no shutdown
Factory-F3-Router(config-if)#end
Factory-F3-Router#writ
*Mar  1 01:07:57.723: %SYS-5-CONFIG_I: Configured from console by console
Factory-F3-Router#write memory
Building configuration...
[OK]
Factory-F3-Router#
```

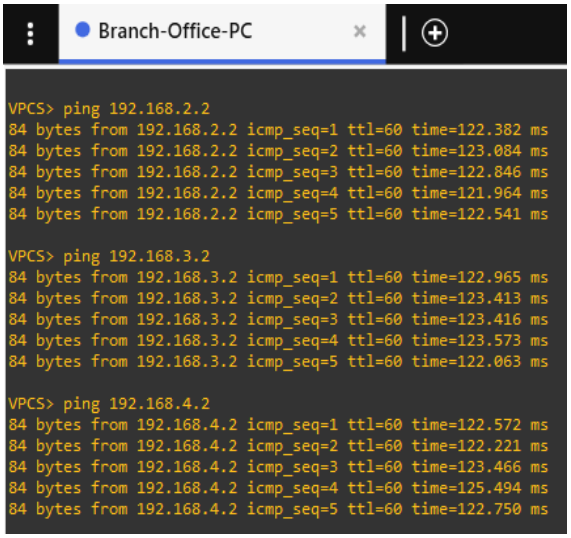
4. I finished the IP assignment process and checked it on all routers and PCs.
5. After this process, I created the ip routes so that all the PCs could communicate with each other. You can see the code sample for this operation below.

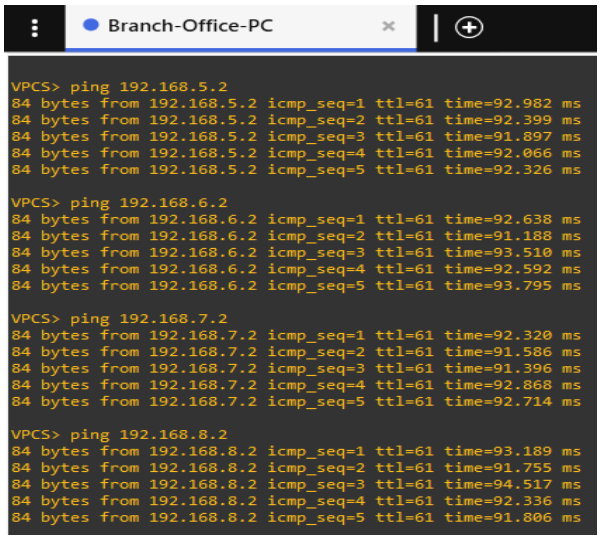
```
Branch-Office-Router#conf term
Enter configuration commands, one per line.  End with CNTL/Z.
Branch-Office-Router(config)#ip route 40.0.0.0 255.0.0.0 50.0.0.1
Branch-Office-Router(config)#ip route 60.0.0.0 255.0.0.0 50.0.0.1
Branch-Office-Router(config)#ip route 70.0.0.0 255.0.0.0 50.0.0.1
Branch-Office-Router(config)#ip route 192.168.5.0 255.255.255.0 70.0.0.2
Branch-Office-Router(config)#ip route 192.168.6.0 255.255.255.0 70.0.0.2
Branch-Office-Router(config)#ip route 192.168.7.0 255.255.255.0 60.0.0.2
Branch-Office-Router(config)#ip route 192.168.8.0 255.255.255.0 60.0.0.2
Branch-Office-Router(config)#ip route 10.0.0.0 255.0.0.0 40.0.0.1
Branch-Office-Router(config)#ip route 20.0.0.0 255.0.0.0 40.0.0.1
Branch-Office-Router(config)#ip route 30.0.0.0 255.0.0.0 40.0.0.1
Branch-Office-Router(config)#ip route 192.168.4.0 255.255.255.0 10.0.0.2
Branch-Office-Router(config)#ip route 192.168.3.0 255.255.255.0 20.0.0.2
Branch-Office-Router(config)#ip route 192.168.2.0 255.255.255.0 30.0.0.2
Branch-Office-Router(config)#end
Branch-Office-Router#
*Mar  1 01:01:06.883: %SYS-5-CONFIG_I: Configured from console by console
Branch-Office-Router#write memory
Building configuration...
[OK]
Branch-Office-Router#
```

6. After all the routes were defined, ping was done to control the communication between all the PCs. You can see the details of this process below.

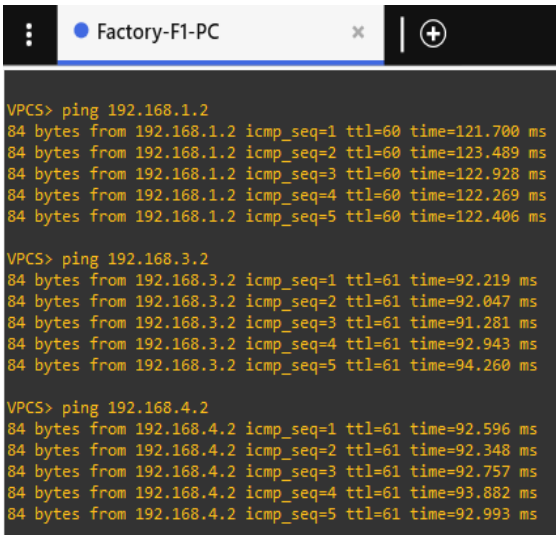
# PINGS

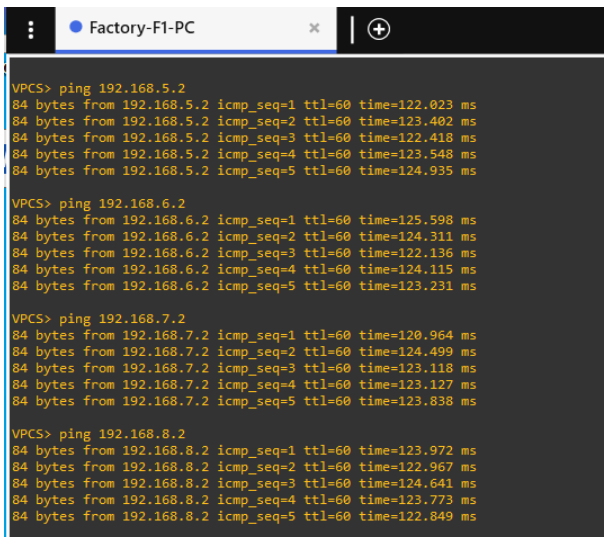
### 192.168.1.2 Branch-Office-PC is pinging:



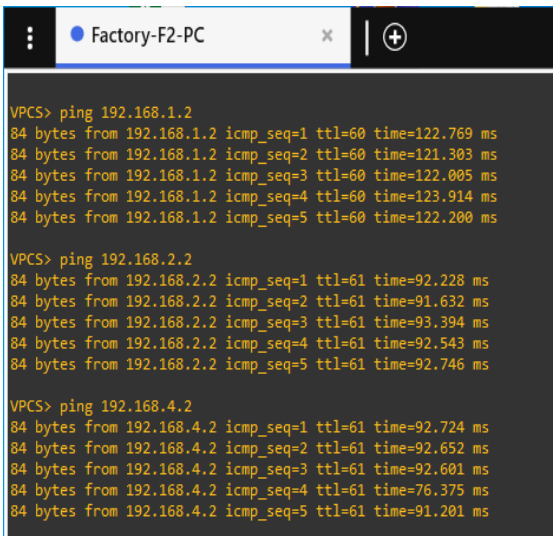



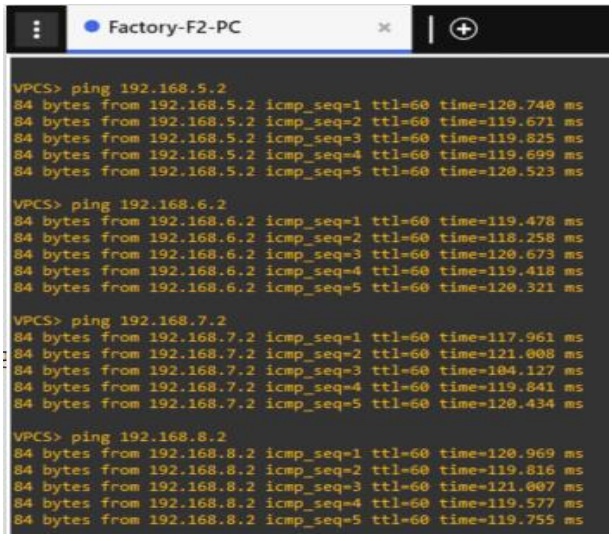

### 192.168.2.2 Factory-F1-PC is pinging:



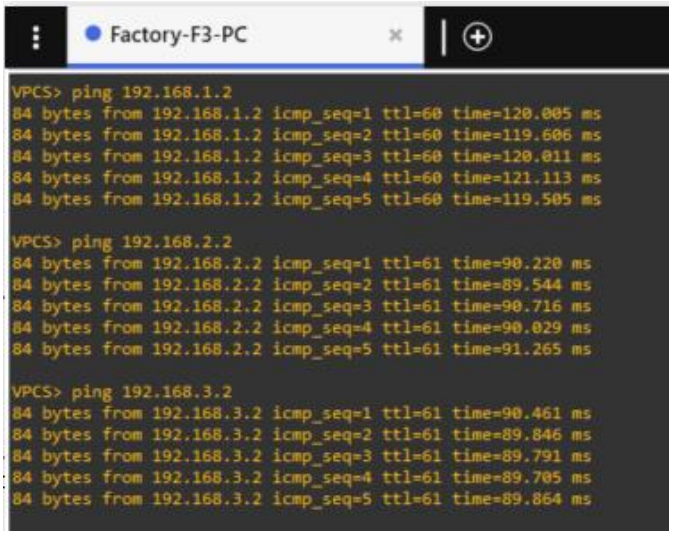



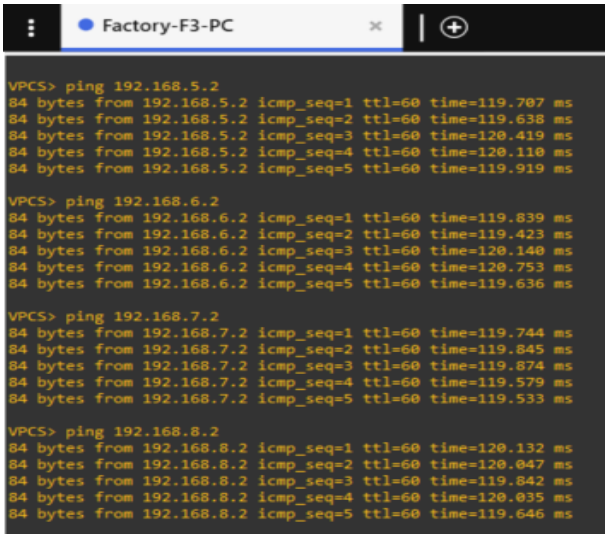

### 192.168.3.2 Factory-F2-PC is pinging:



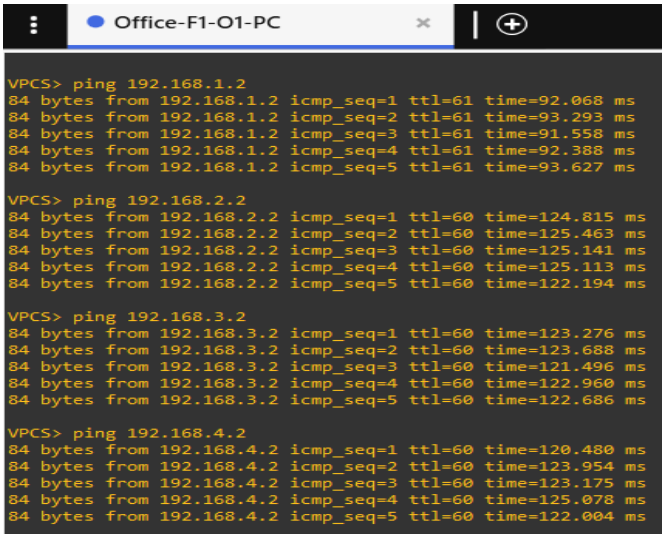



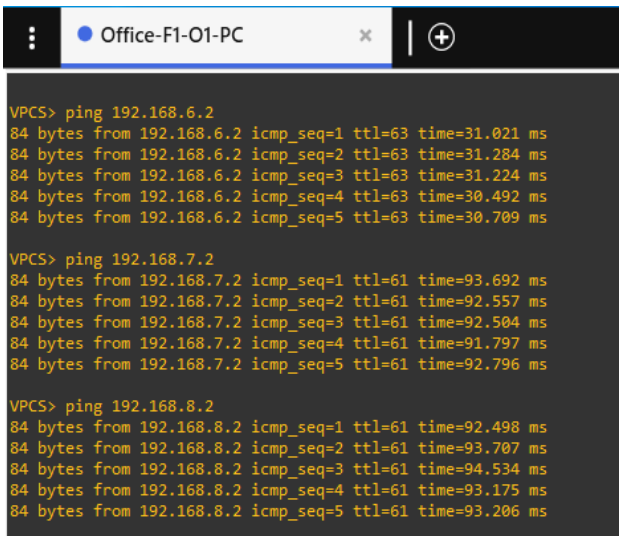
**192.168.4.2 Factory-F3-PC is pinging:**



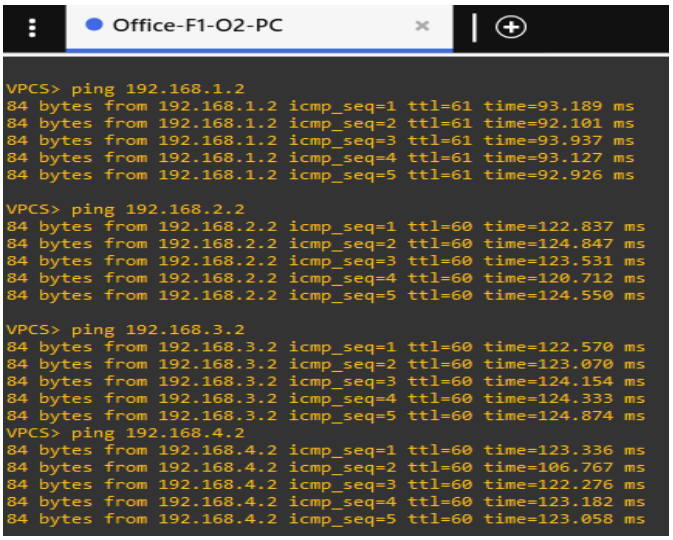



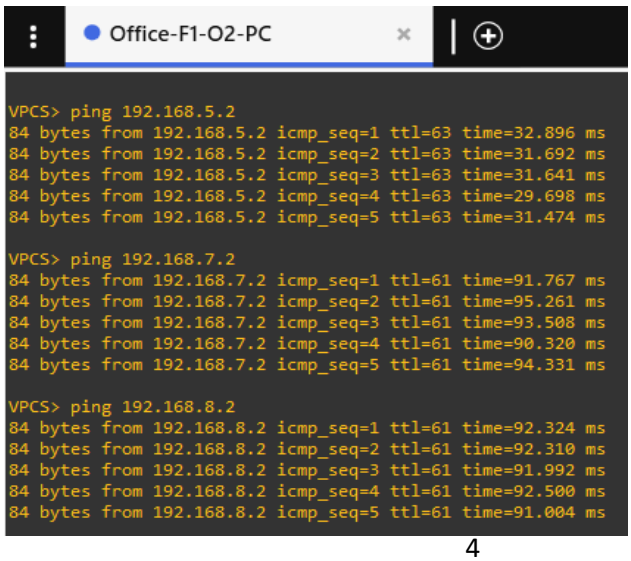

**192.168.5.2 Office-F1-O1-PC is pinging:**



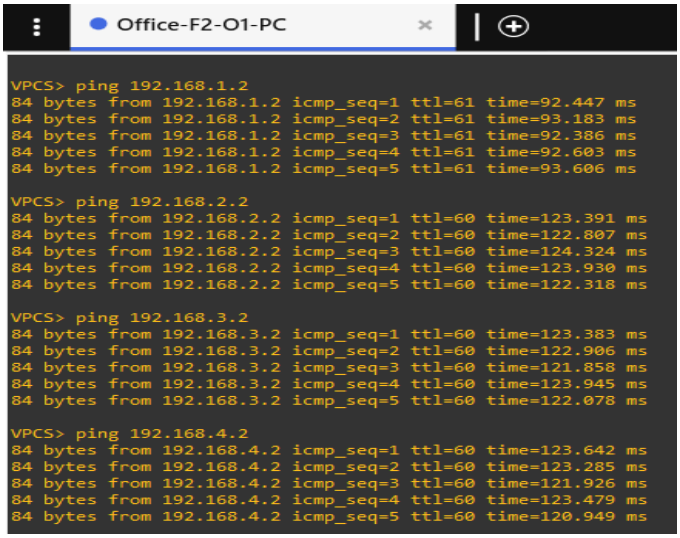



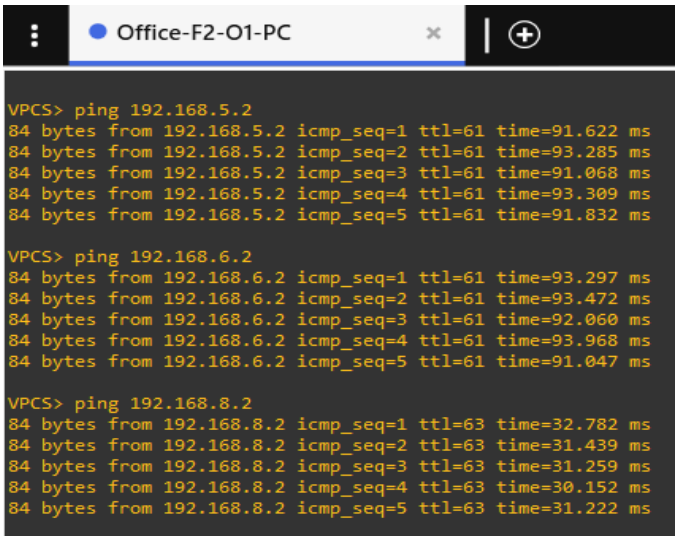

**192.168.6.2 Office-F1-O2-PC is pinging:**



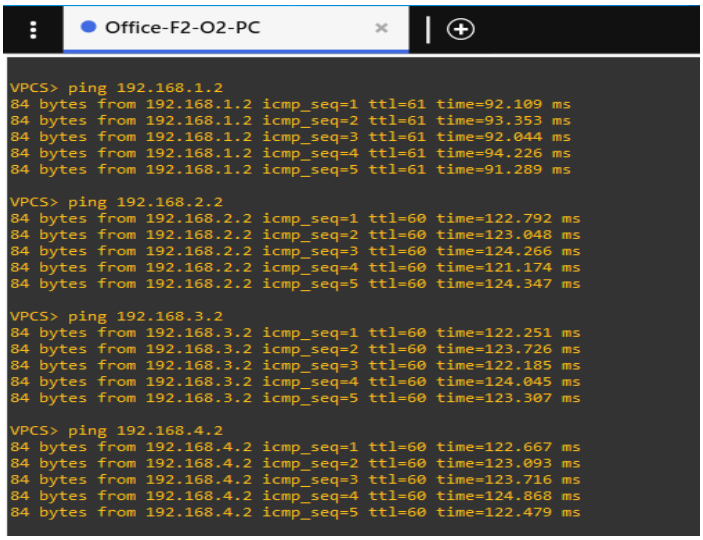



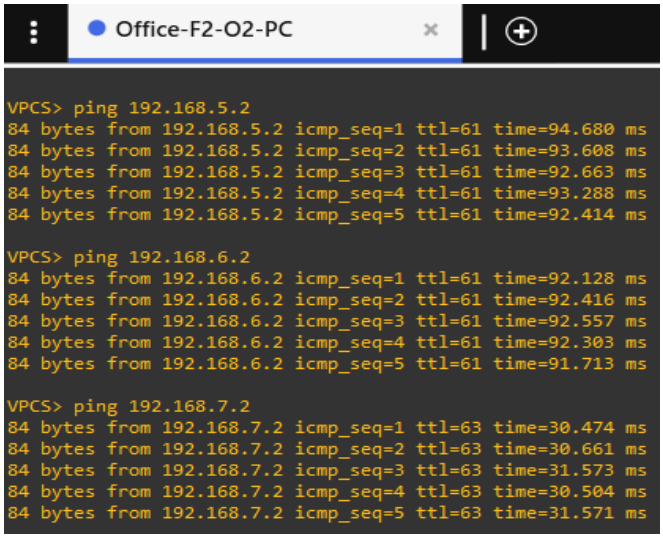
**192.168.7.2 Office-F2-O1-PC is pinging:**




**192.168.8.2 Office-F2-O2-PC is pinging:**




## Project Tasks

Design the network for a company... Assume that the following is true:

1. There are two buildings next to each other: A factory and an office building. There is also a remote branch office located in another town.

   - You can see the design in the Diagram section.

2. The main factory building has 3 floors; each floor needs at least 7 Ethernet ports to connect their devices. Use a router at each floor.

   - In the factory design, the main router was connected in series with the routers on each floor (Factory-F1-Router, Factory-F2-Router, Factory-F3-Router). Switch is connected to floor routers.

3. The office building has 2 floors. Each floor has 2 offices, and each office needs at least 2 Ethernet ports. Use a router at each floor.

    - In the office design, the main router was connected in series with the routers on each floor (Office-F1-Router, Office-F2-Router). Two switches is connected to floor routers for two offices at each floor.

4. The branch itself has a modem, a router, and needs 4 Ethernet ports for the personnel working there.

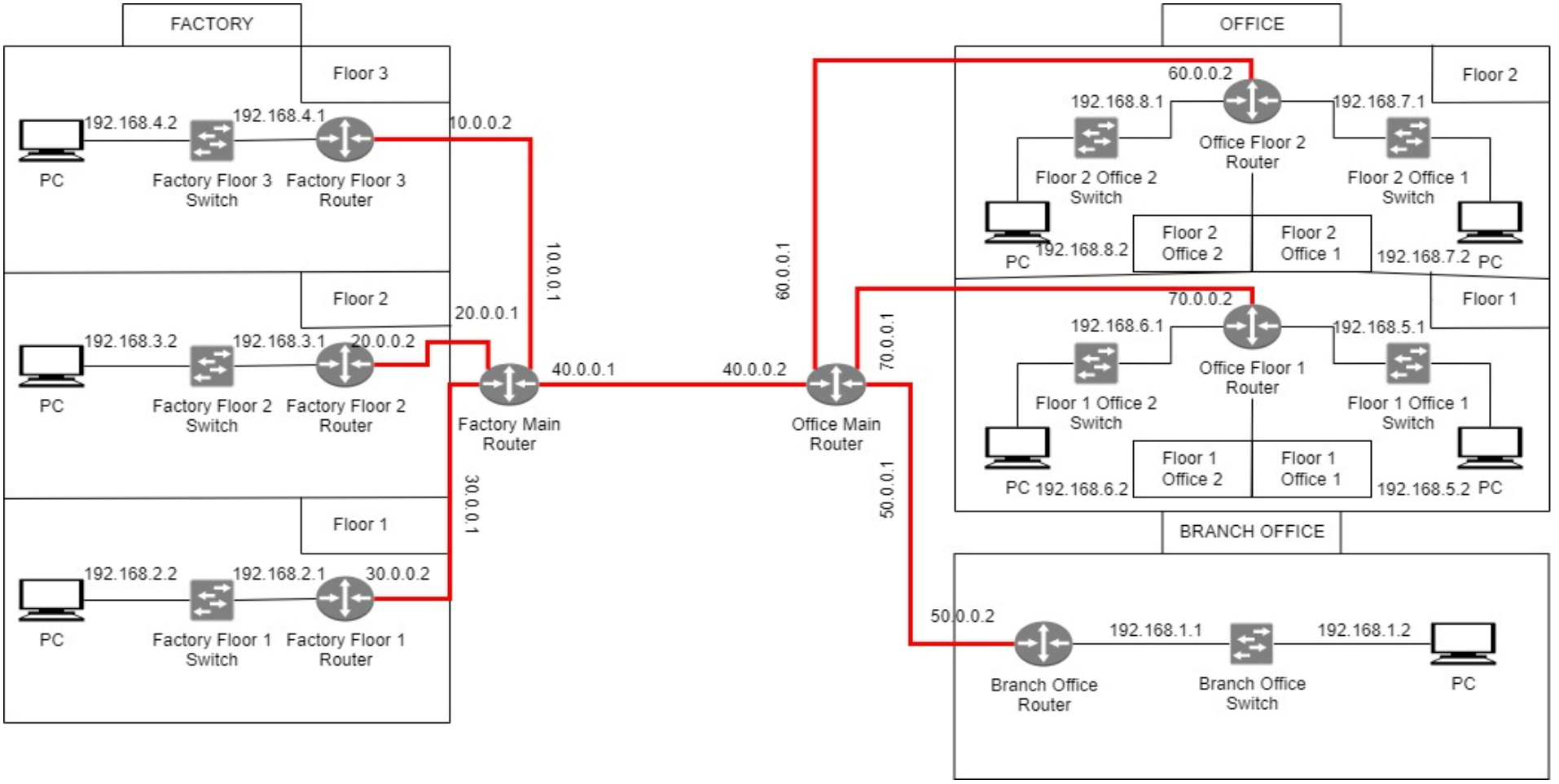
    - In the branch office design, the main router was connected in series with the main office router (Office-Main-Router) . Switch is connected to main branch office router (Branch-Office-Router).

5. The company also has a leased line from one of the offices, to the branch office, connected via a router, a leased line and a modem. (for our simulation, connect the branch to the office via two routers with serial ports, and have the two “talk” to each other via PPP or another protocol of your liking.. you can even ignore the modems, and assume that the two routers are connected directly to each other via that leased line).

    - All routers can communicate with each other. You can see the proof in the PINGS section.
    - All routers are connected to each other via serial ports.

## APPENDIX-A

## IP Addresses and Links (Diagram)



## APPENDIX-B

## IP Addresses and Links (GNS3)