BIRZEIT UNIVERSITY

**Department of Electrical and Computer Engineering**

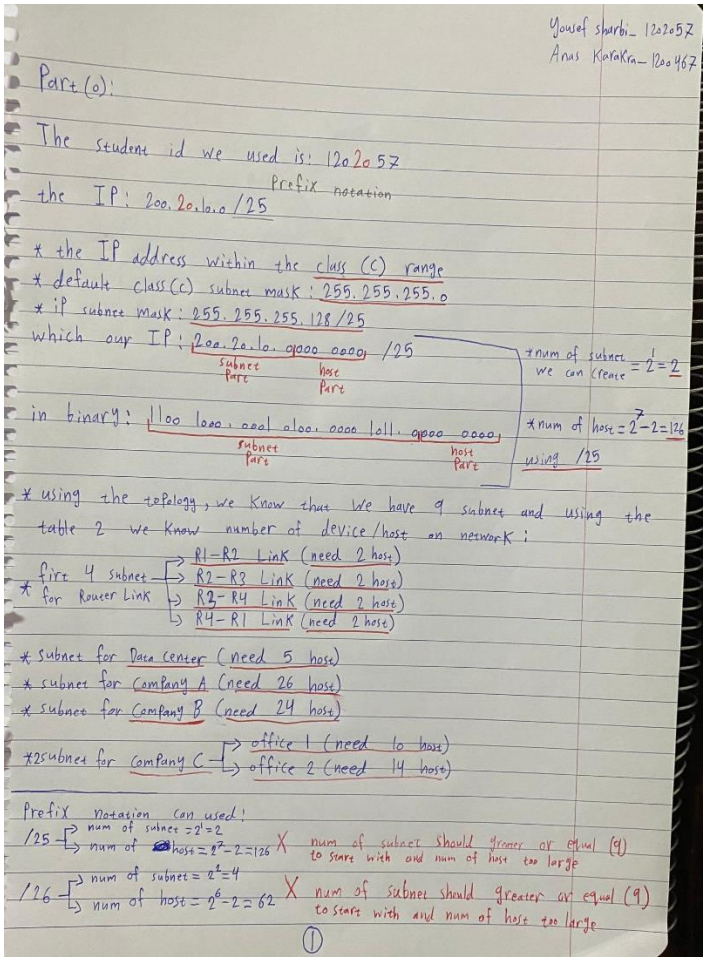
ENCS3320 – Group Number: 46

# Project 2

| | Students Name | Students Number |
|---|---|---|
| 1 | Yousef Sharbi | 1202057 |
| 2 | Anas karakra | 1200467 |

## Part (0):

### The student id we used is: 1202057



/27 → num of subnet = $2^3 = 8$
→ num of host = $2^5 - 2 = 30$ ✓ Can fit with company (A and B) size and can start with

/28 → num of subnet = $2^4 = 16$
→ num of host = $2^4 - 2 = 14$ ✓ Can fit with company C (office (1) and (2)) size

/29 → num of subnet = $2^5 = 32$
→ num of host = $2^3 - 2 = 6$ ✓ Can fit with data center size

/30 → num of subnet = $2^6 = 64$
→ num of host = $2^2 - 2 = 2$ ✓ Can fit with Routers size

subnet mask for /27: 255.255.255.224

* using this formulla: 256 − (forth octet), we can know the itteration for /27 and can use it for other prefix notation

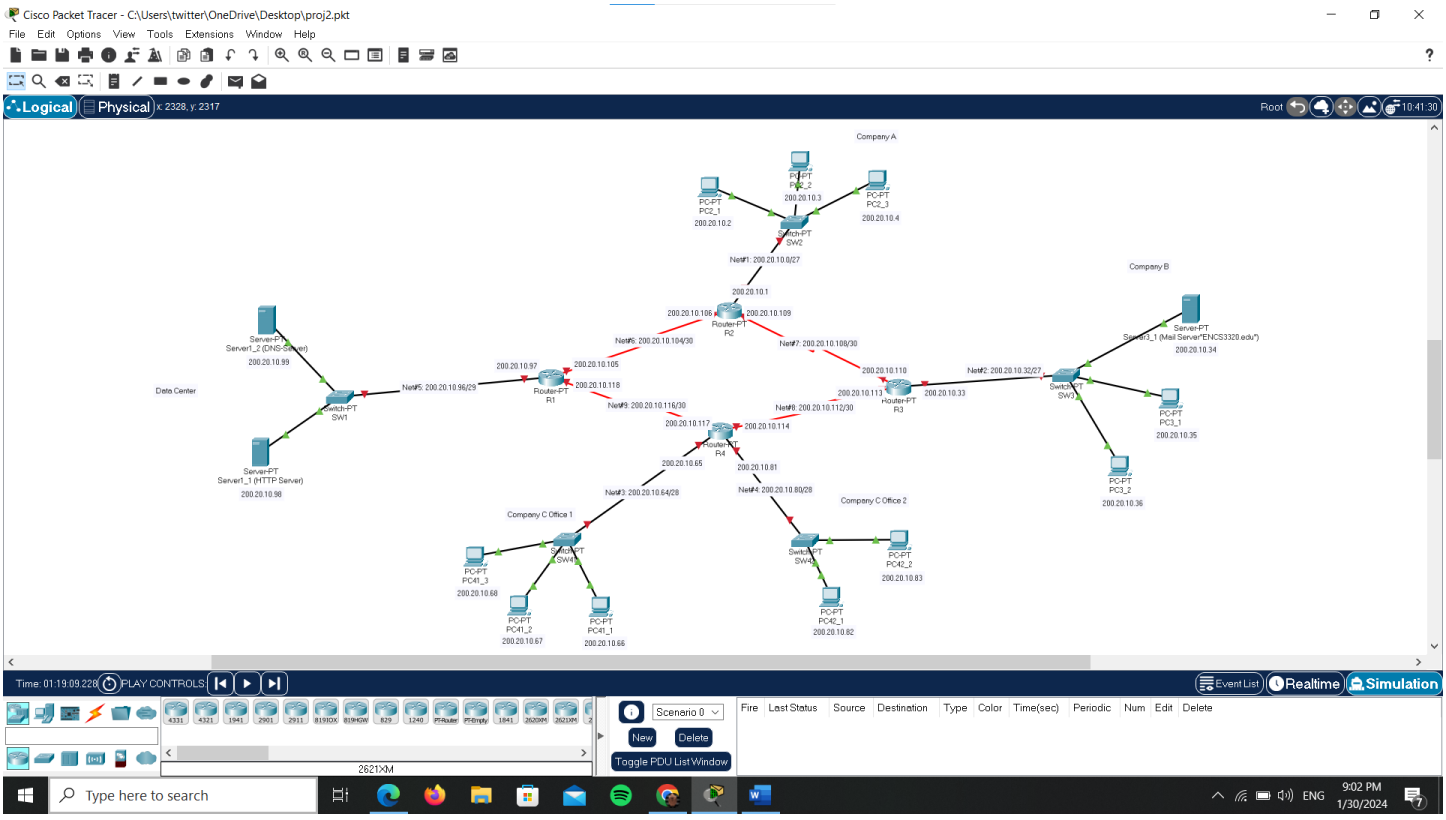
* 256 − 224 = 32 (/27)

① network (company A): 200.20.10.0 /27
② network (company B): 200.20.10.32 /27
③ network (company C office 1): 200.20.10.64 /28
④ network (company C office 2): 200.20.10.80 /28
⑤ network (Data center): 200.20.10.96 /29
⑥ network (R1–R2 Link): 200.20.10.104/30
⑦ network (R2–R3 Link): 200.20.10.108/30
⑧ network (R3–R4 Link): 200.20.10.112/30
⑨ network (R4–R1 Link): 200.20.10.116 /30

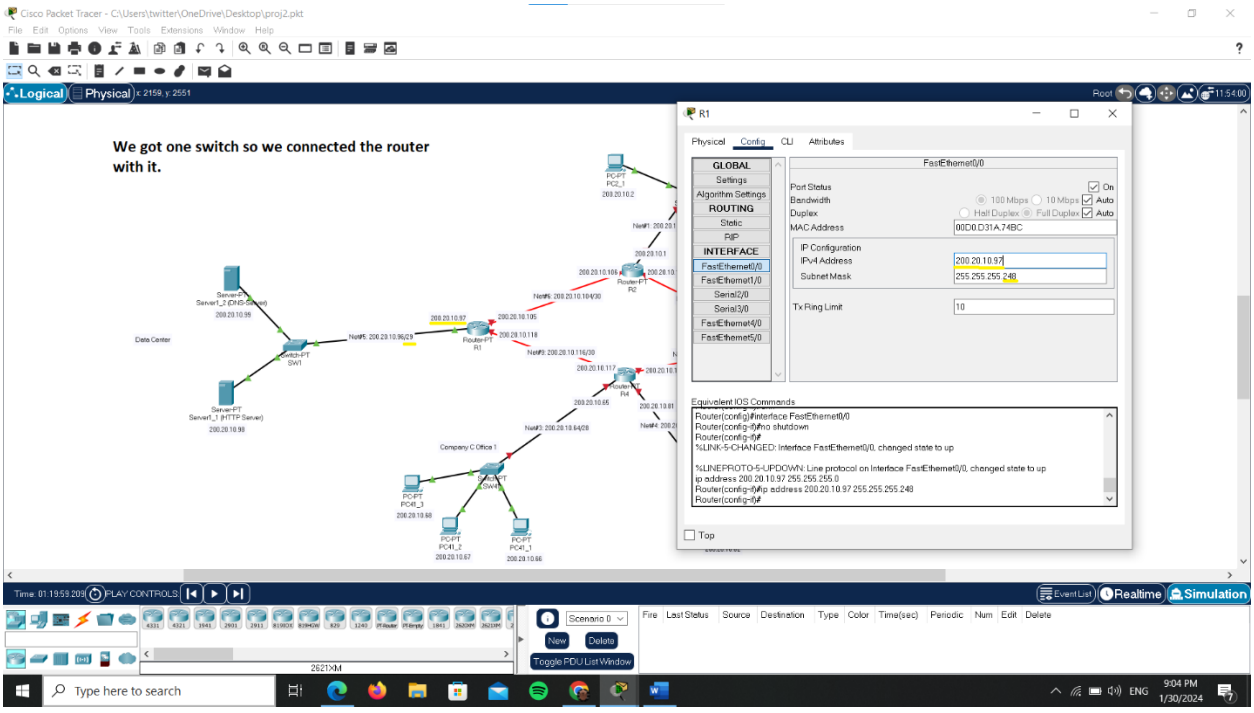
## The table:

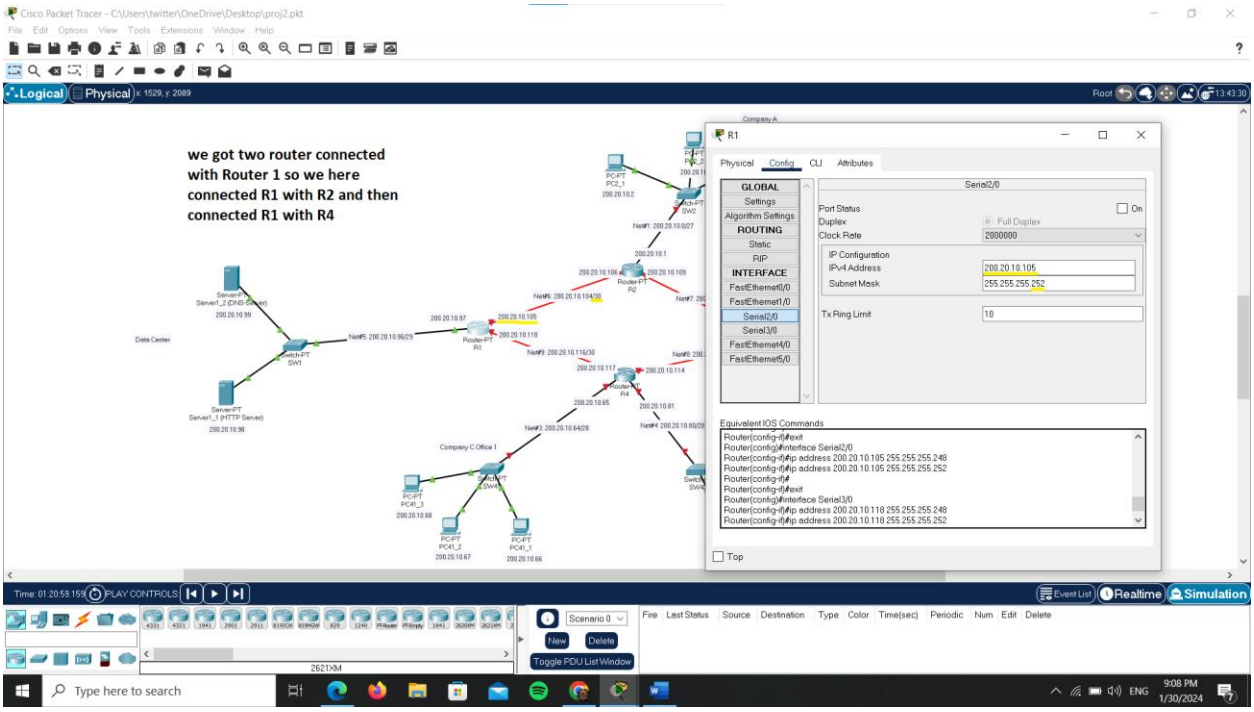
| Subnet | Subnet Mask | Network IP | First IP | Last IP | Broadcast IP | Maximum number of IP's in this subnet |
|---|---|---|---|---|---|---|
| Company A | 255.255.255.224/27 | 200.20.10.0 | 200.20.10.1 | 200.20.10.30 | 200.20.10.31 | 30 |
| Company B | 255.255.255.224/27 | 200.20.10.32 | 200.20.10.33 | 200.20.10.62 | 200.20.10.63 | 30 |
| R3-R4 Link | 255.255.255.240/28 | 200.20.10.64 | 200.20.10.65 | 200.20.10.78 | 200.20.10.79 | 14 |
| R4-R1 Link | 255.255.255.240/28 | 200.20.10.80 | 200.20.10.81 | 200.20.10.94 | 200.20.10.95 | 14 |
| Data Center | 255.255.255.248/29 | 200.20.10.96 | 200.20.10.97 | 200.20.10.102 | 200.20.10.103 | 6 |
| R1-R2 Link | 255.255.255.252/30 | 200.20.10.104 | 200.20.10.105 | 200.20.10.106 | 200.20.10.107 | 2 |
| R2-R3 Link | 255.255.255.252/30 | 200.20.10.108 | 200.20.10.109 | 200.20.10.110 | 200.20.10.111 | 2 |
| Company C Office 1 | 255.255.255.252/30 | 200.20.10.112 | 200.20.10.113 | 200.20.10.114 | 200.20.10.115 | 2 |
| Company C Office 2 | 255.255.255.252/30 | 200.20.10.116 | 200.20.10.117 | 200.20.10.118 | 200.20.10.119 | 2 |

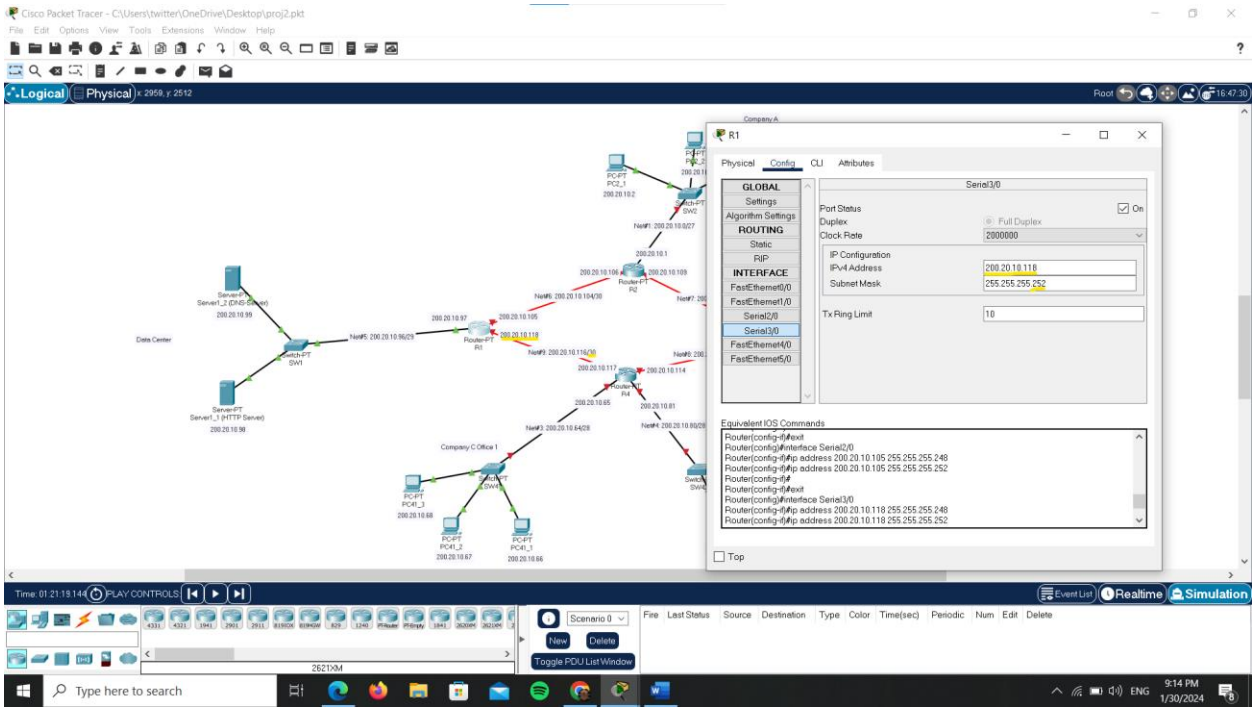
# Part (1):




- Router1:

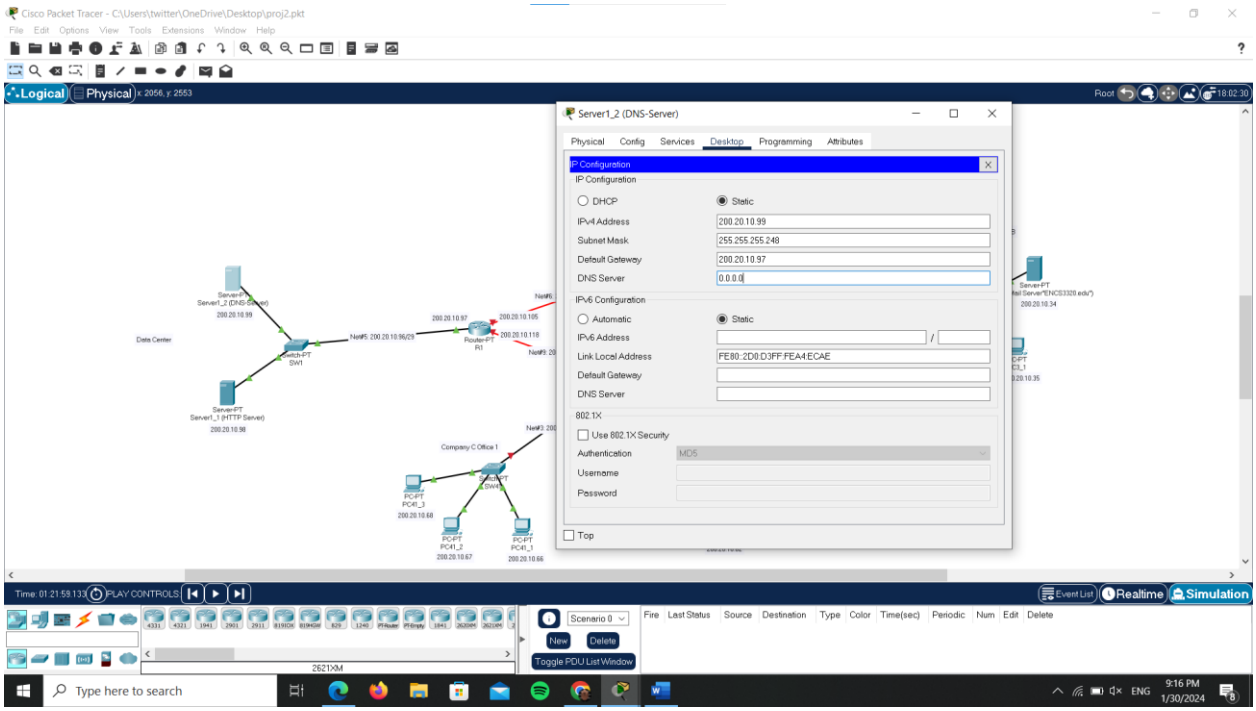




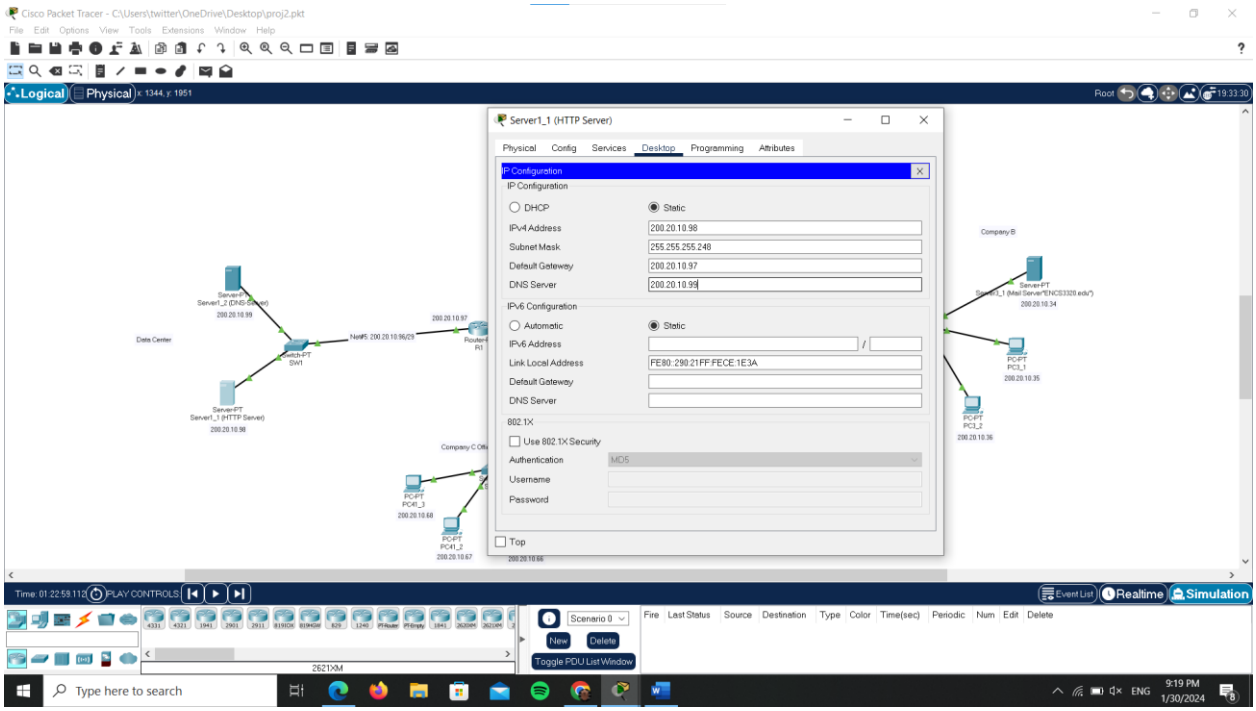



And we made configuration for other router.

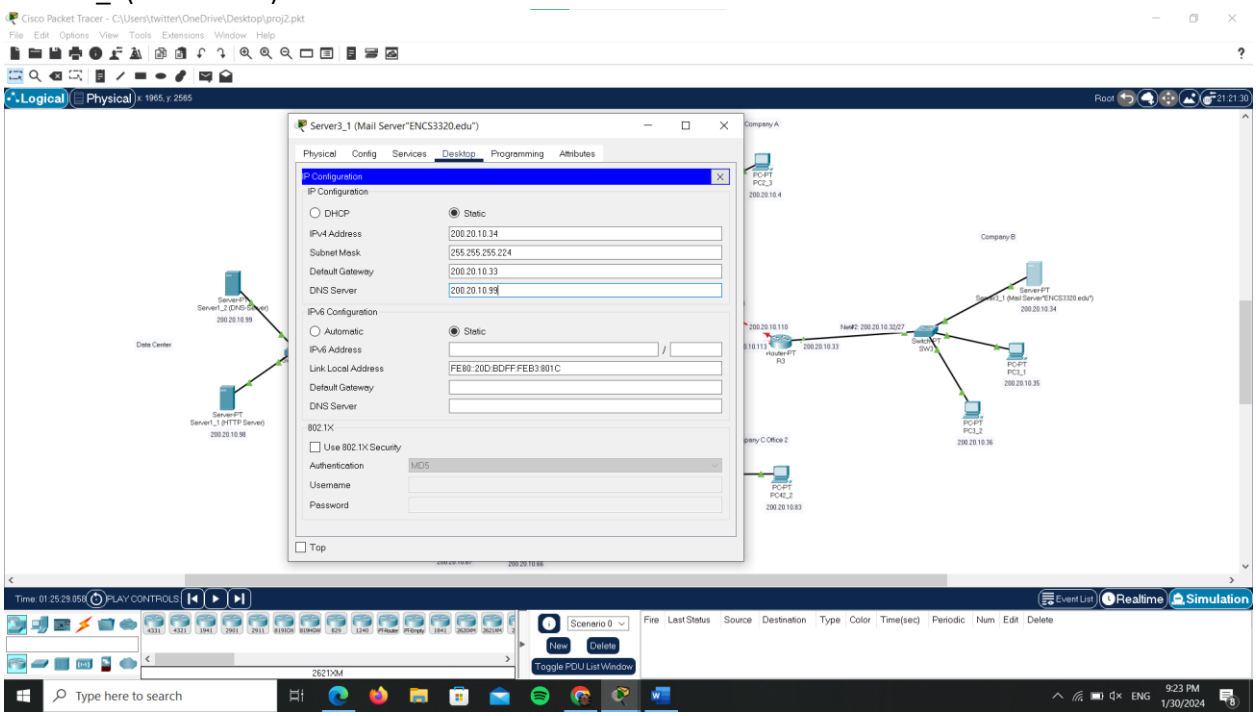
- Server1_2(DNS Server):



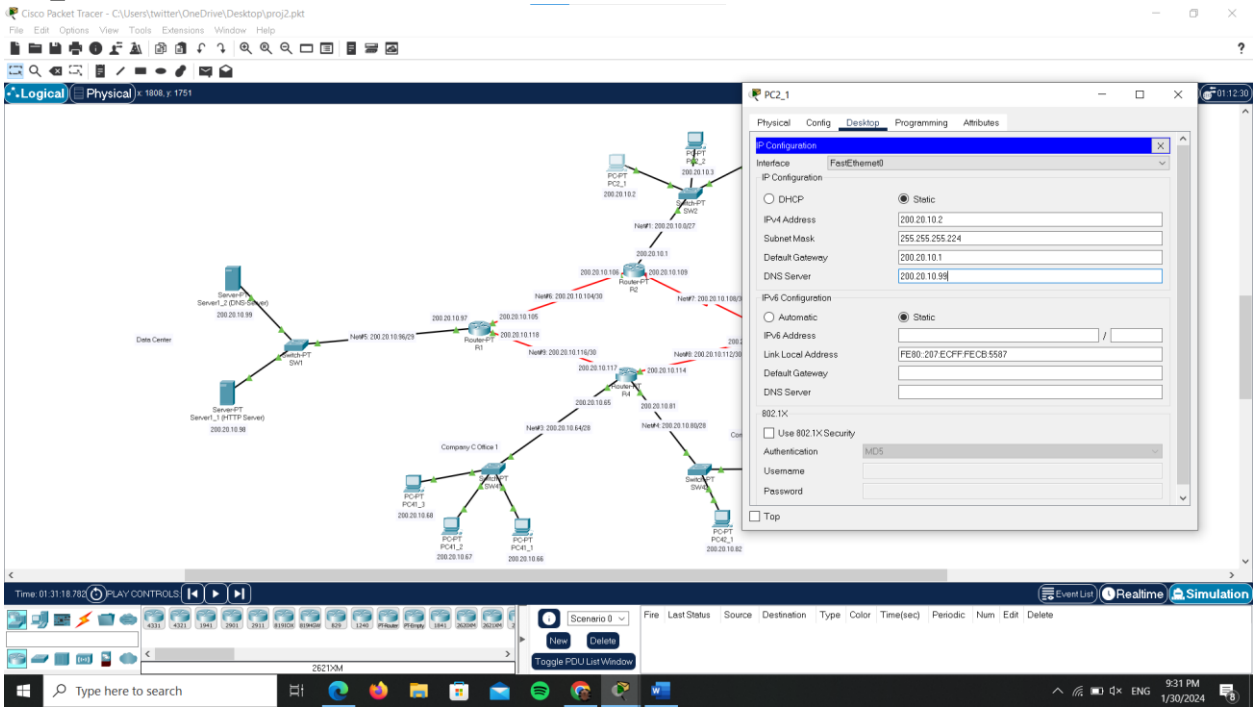

- Server1_1 (HTTP Server):



- Server3_1(Mail Server):



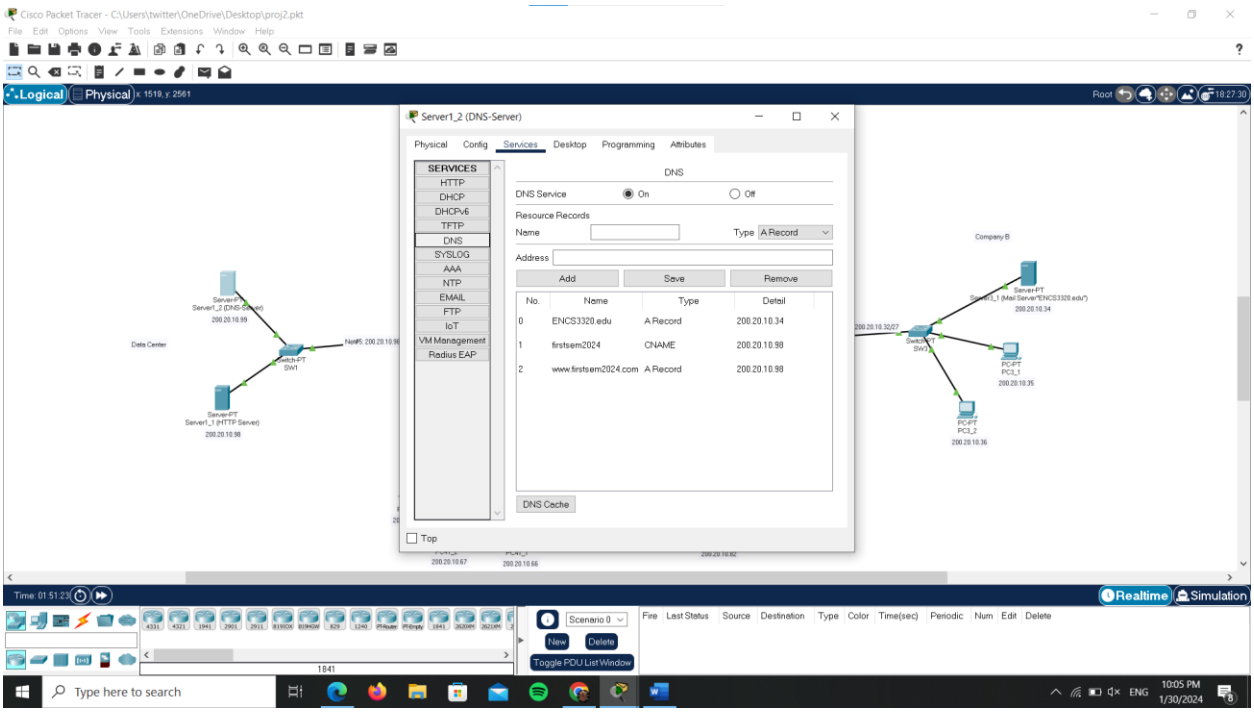

- PC2_1:



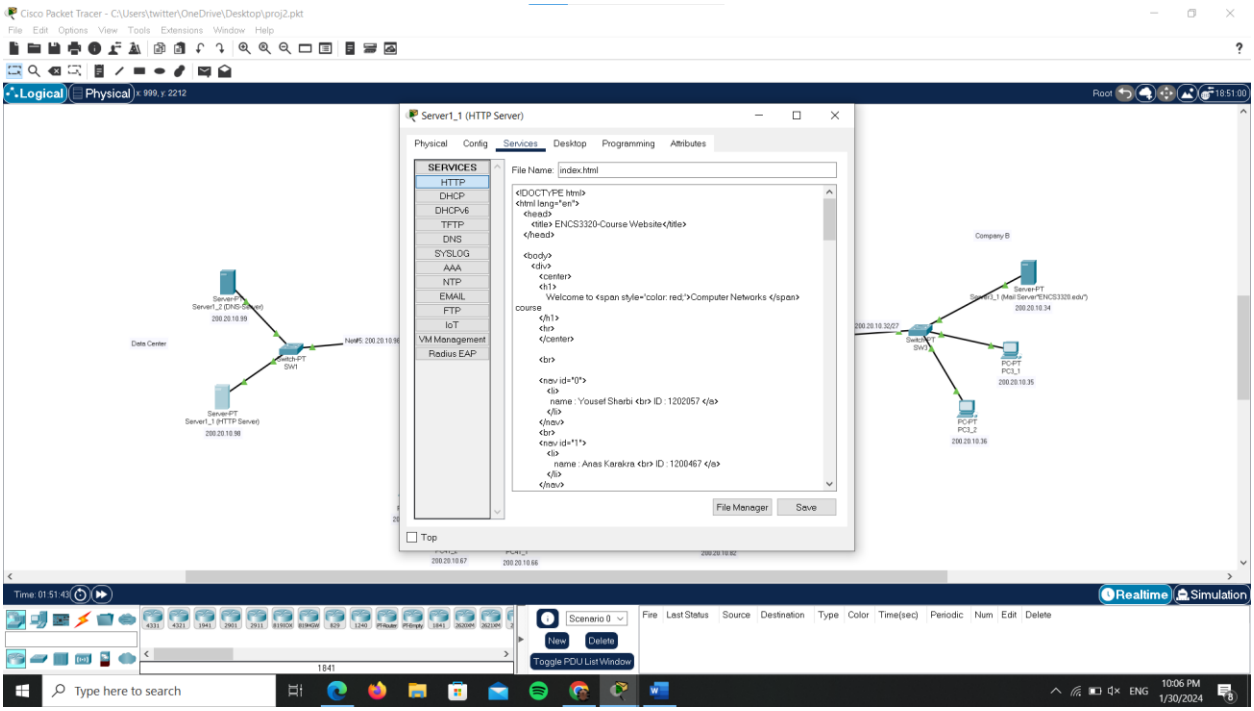

And we made configuration for other pc's

# Part (2):

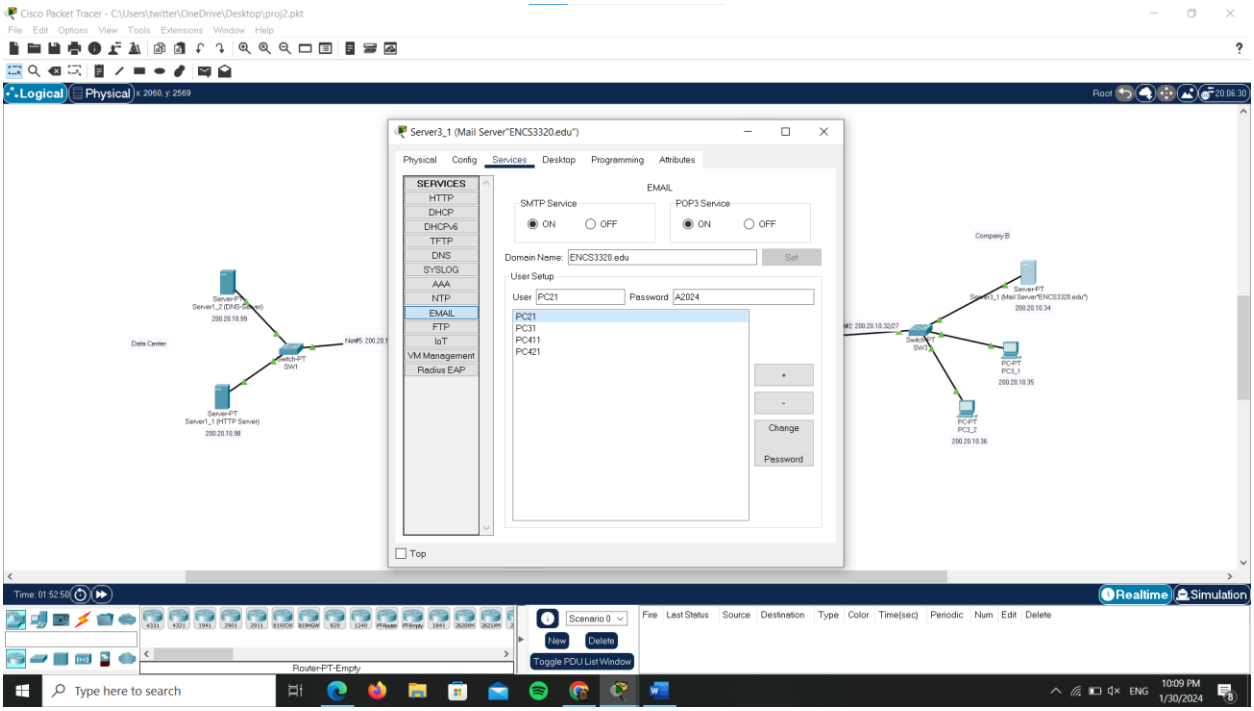
- Server1_2(DNS_Server):



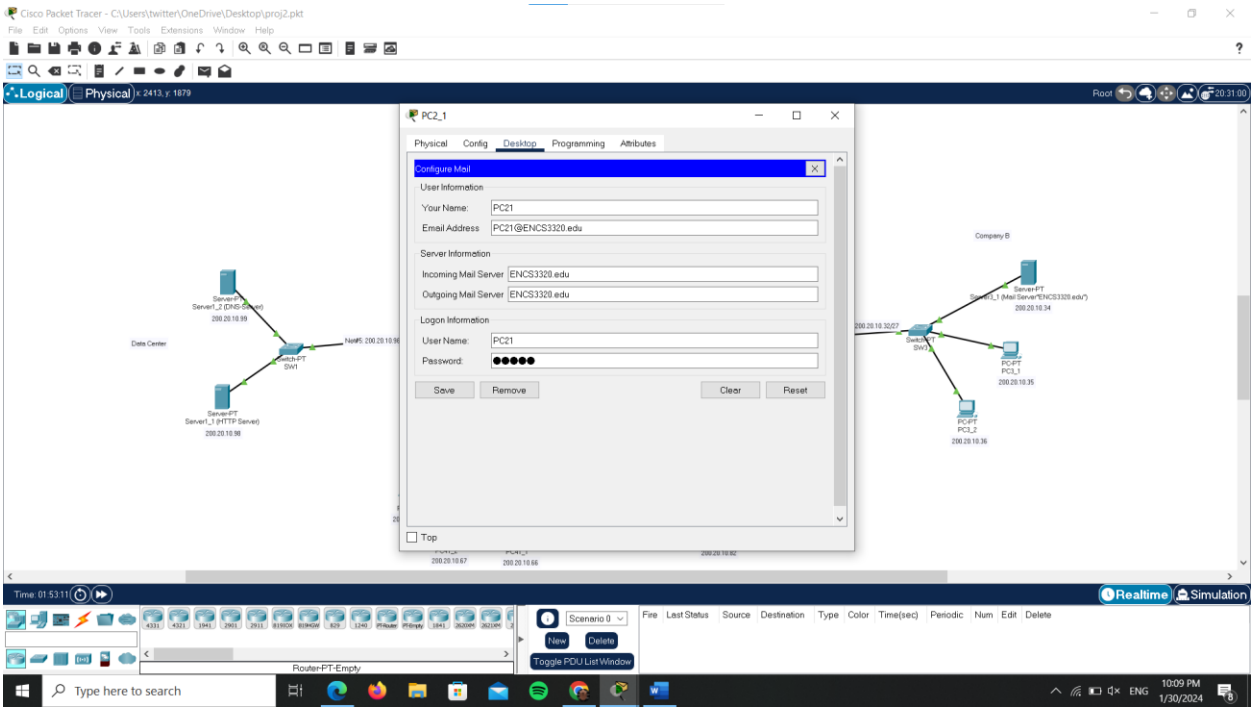

- Server1_1(HTTP Server):



- Server3_1 (Mail Server"ENCS3320.edu"):

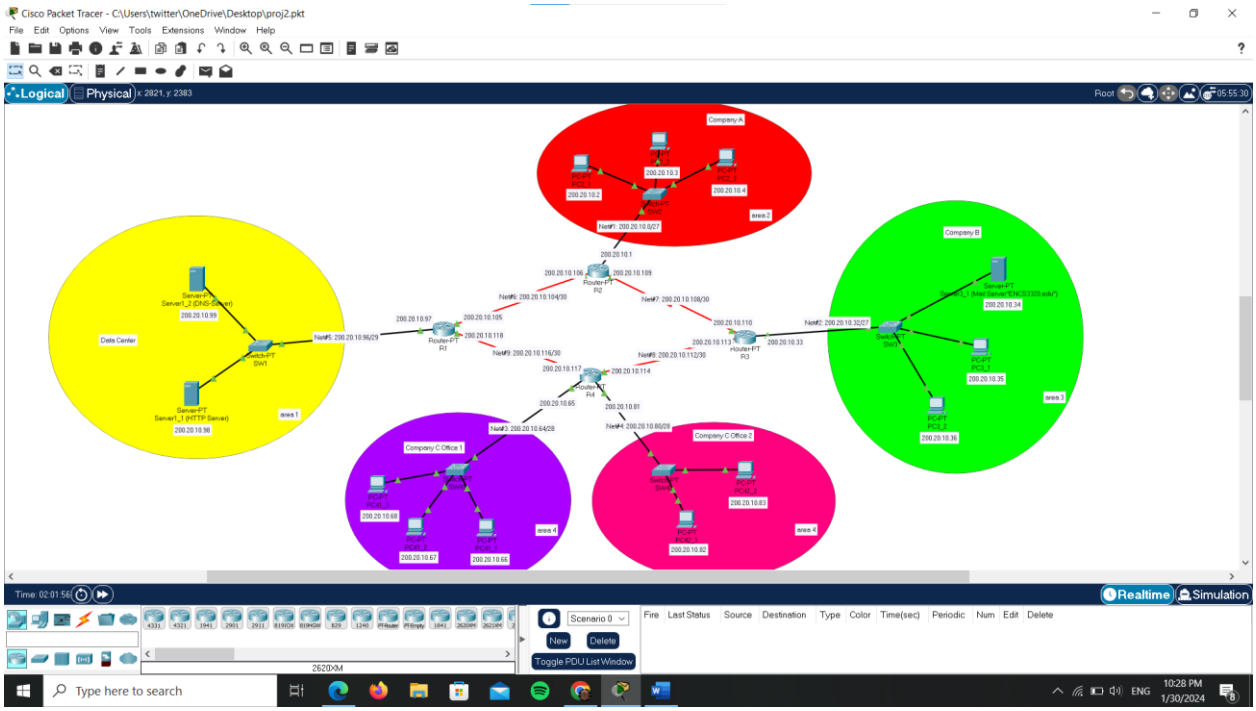



And for PC's:




And we do this to other PC's

# Part (3):



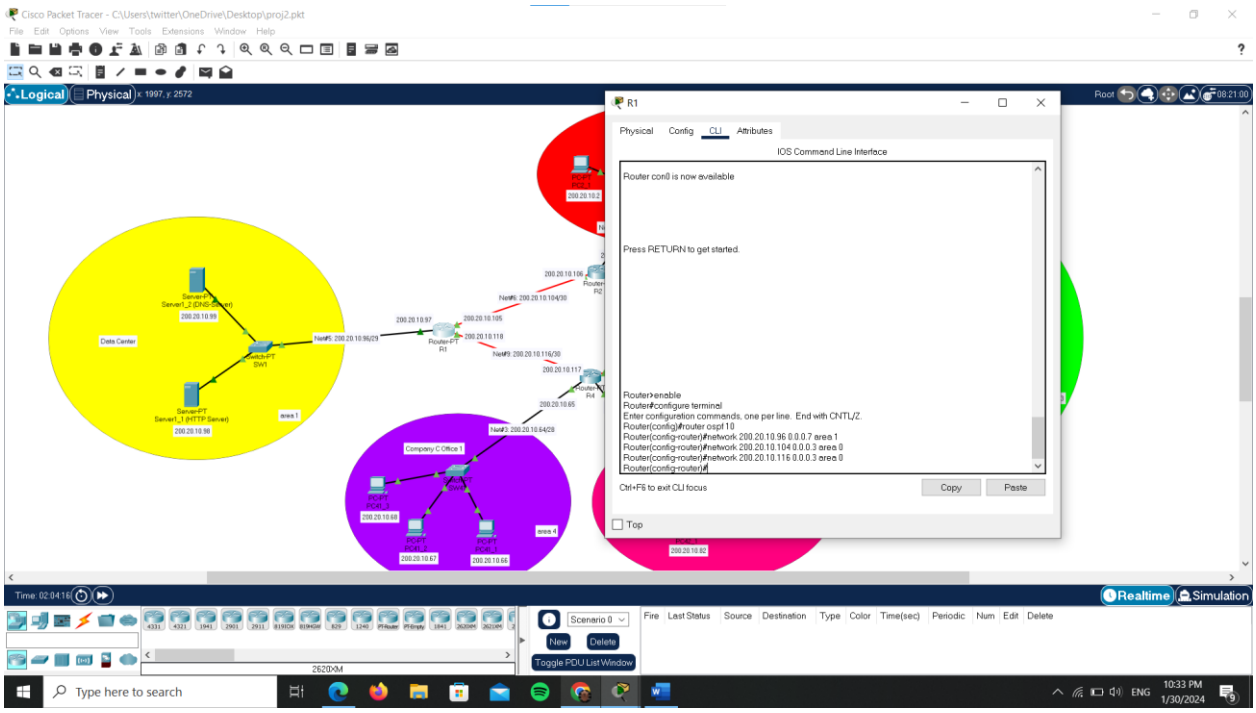
## /30 wild card: 0.0.0.3

## /29 wild card: 0.0.0.7

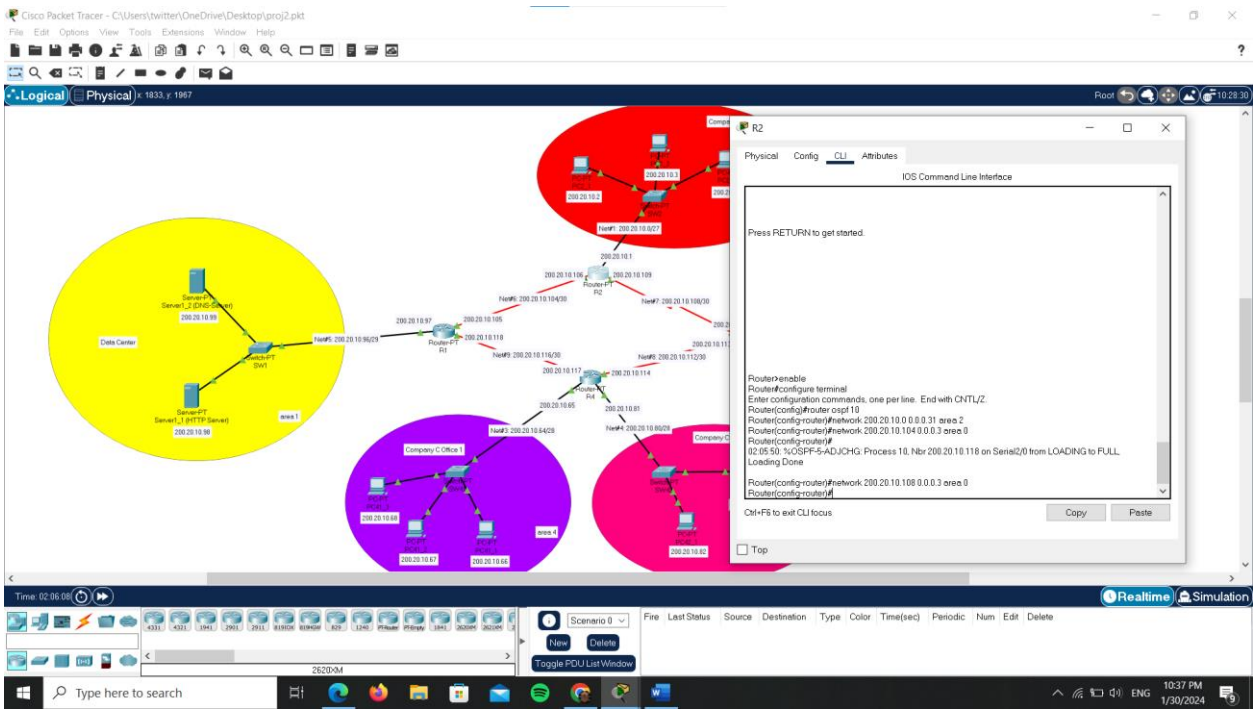
## /28 wild card: 0.0.0.15

## /27 wild card: 0.0.0.31

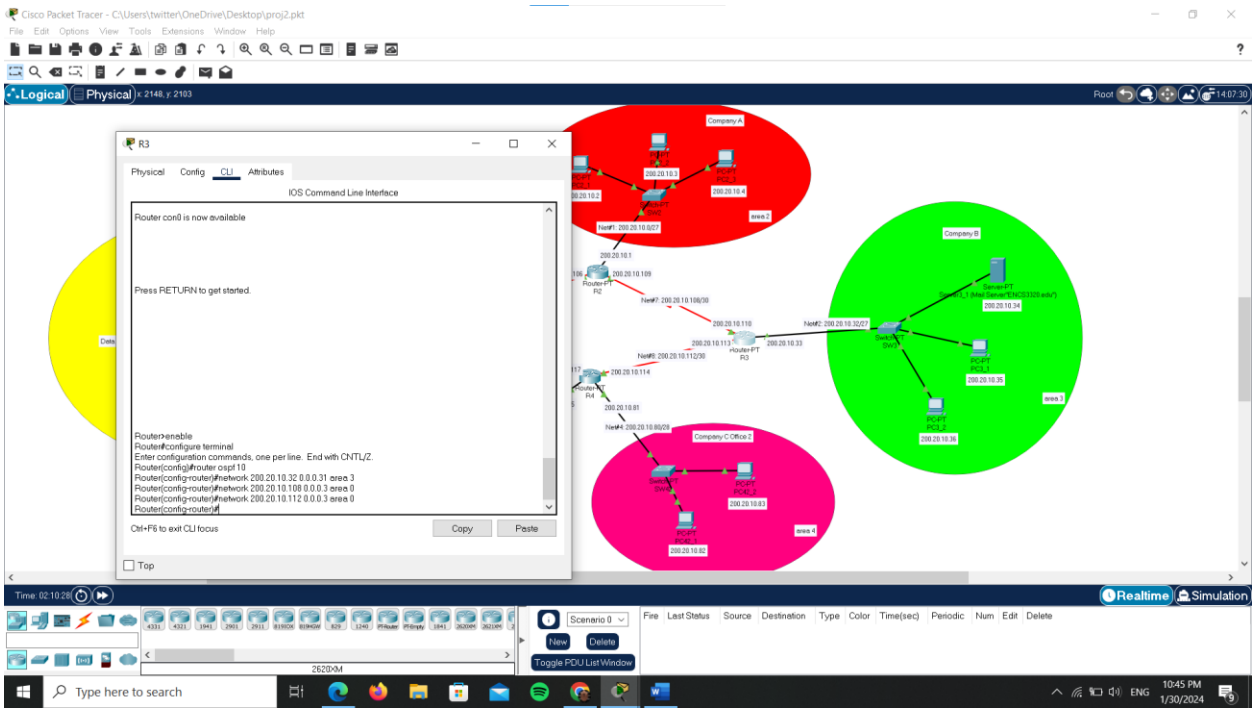
- **Router1:**



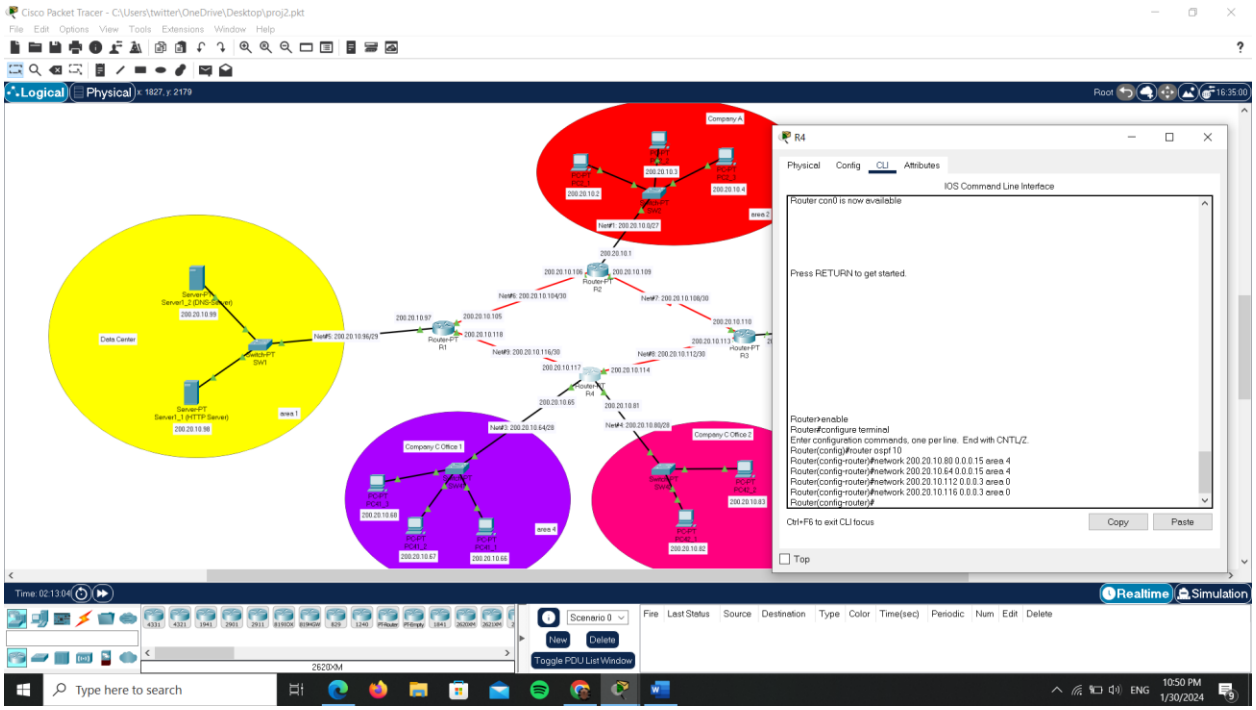
- **Router2:**



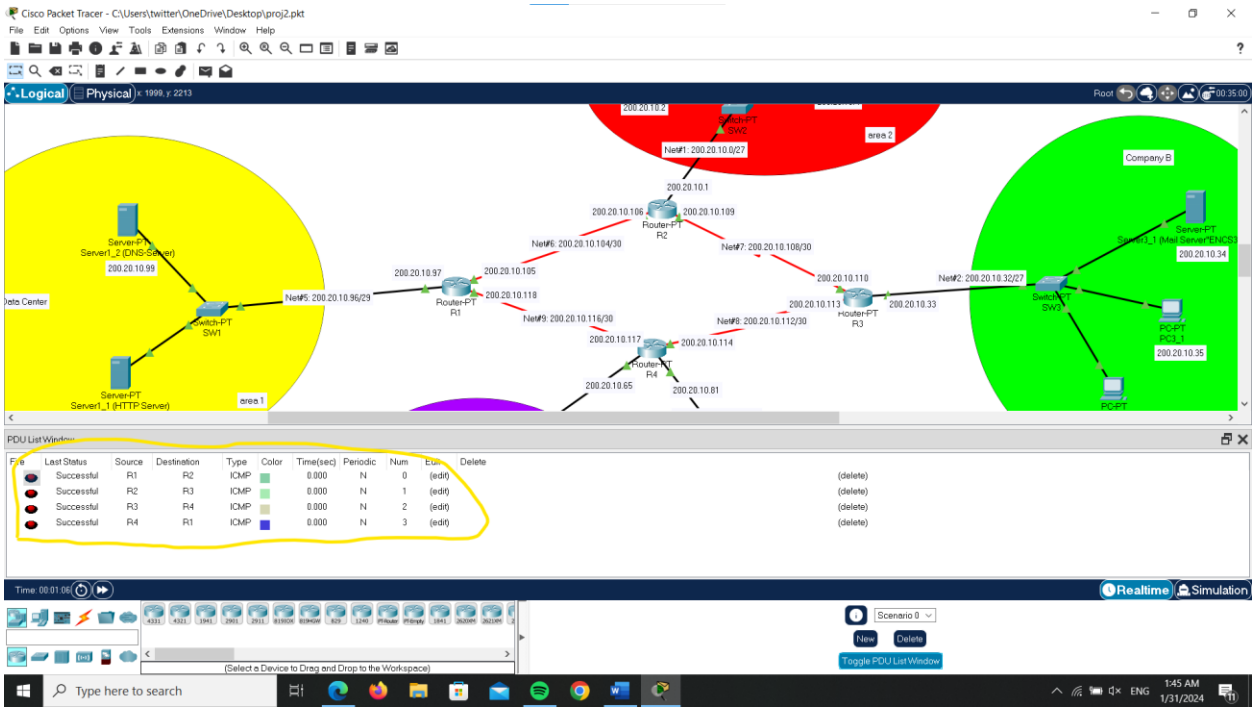

- **Router 3:**



- **Router 4:**




**And now the router connected to each other:**

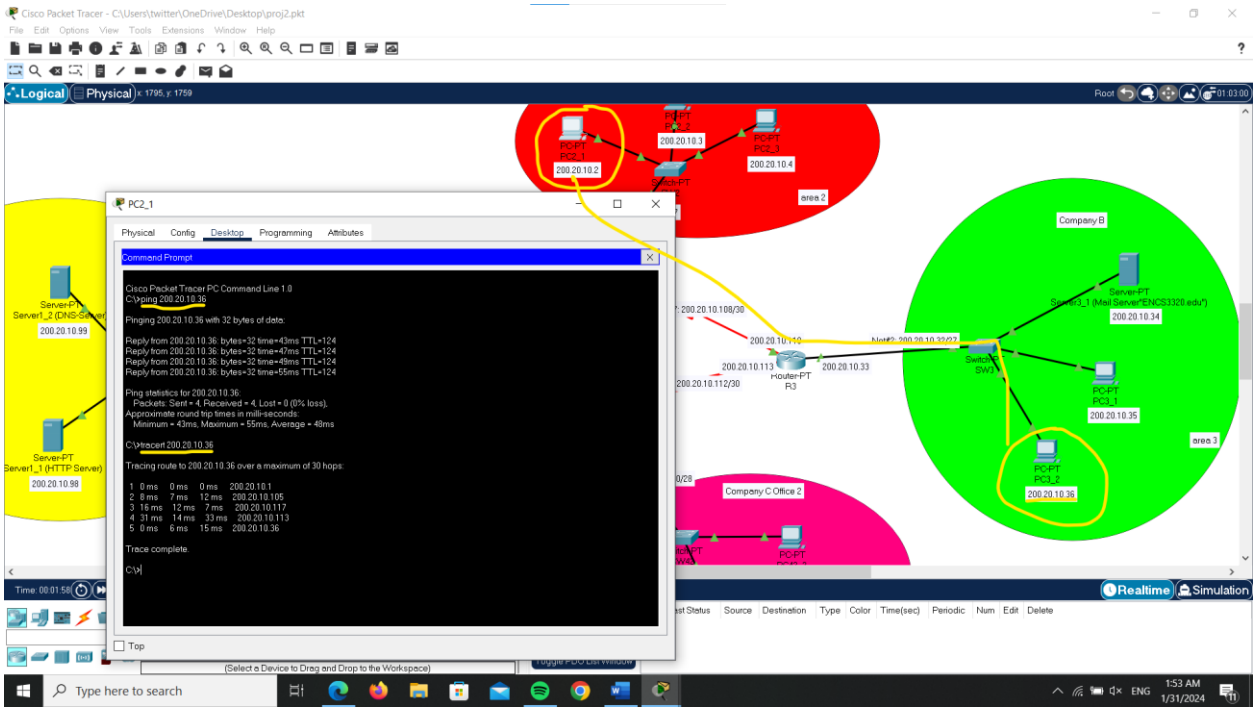


# Part (4):

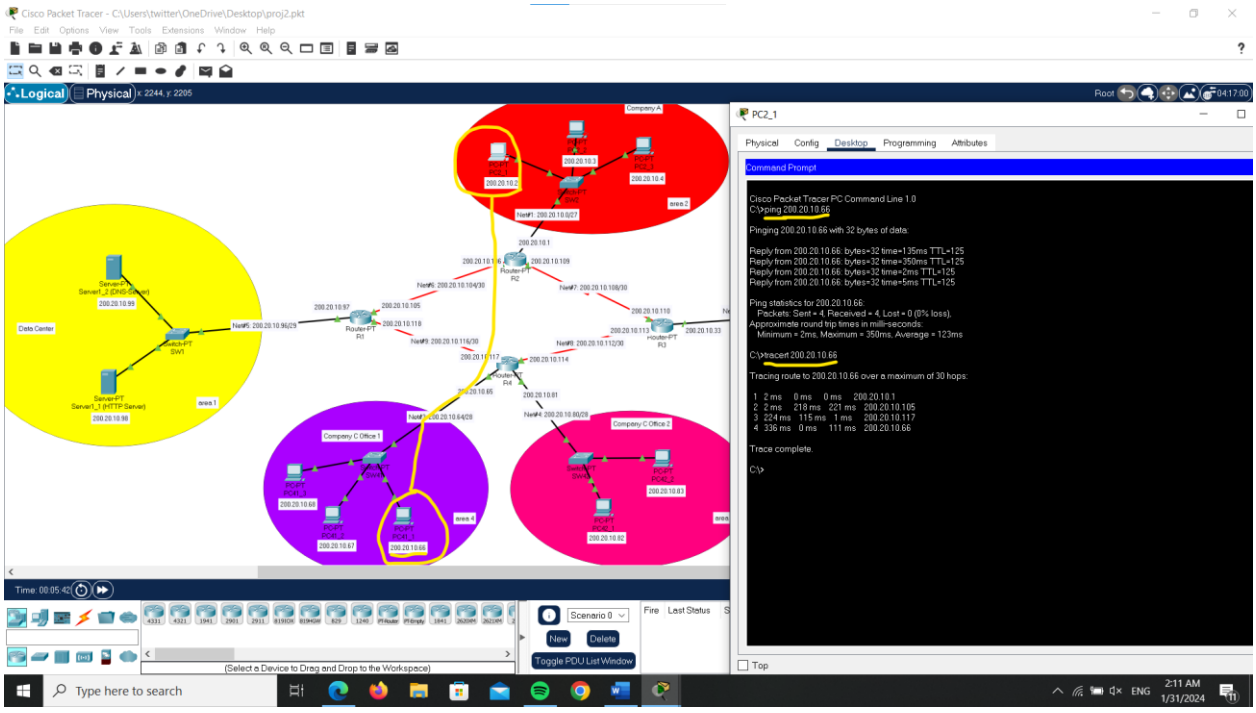
**1) Test the connectivity between all PCs:**

## Area 2 -- > area 3 and area 4(office 1 and office 2)

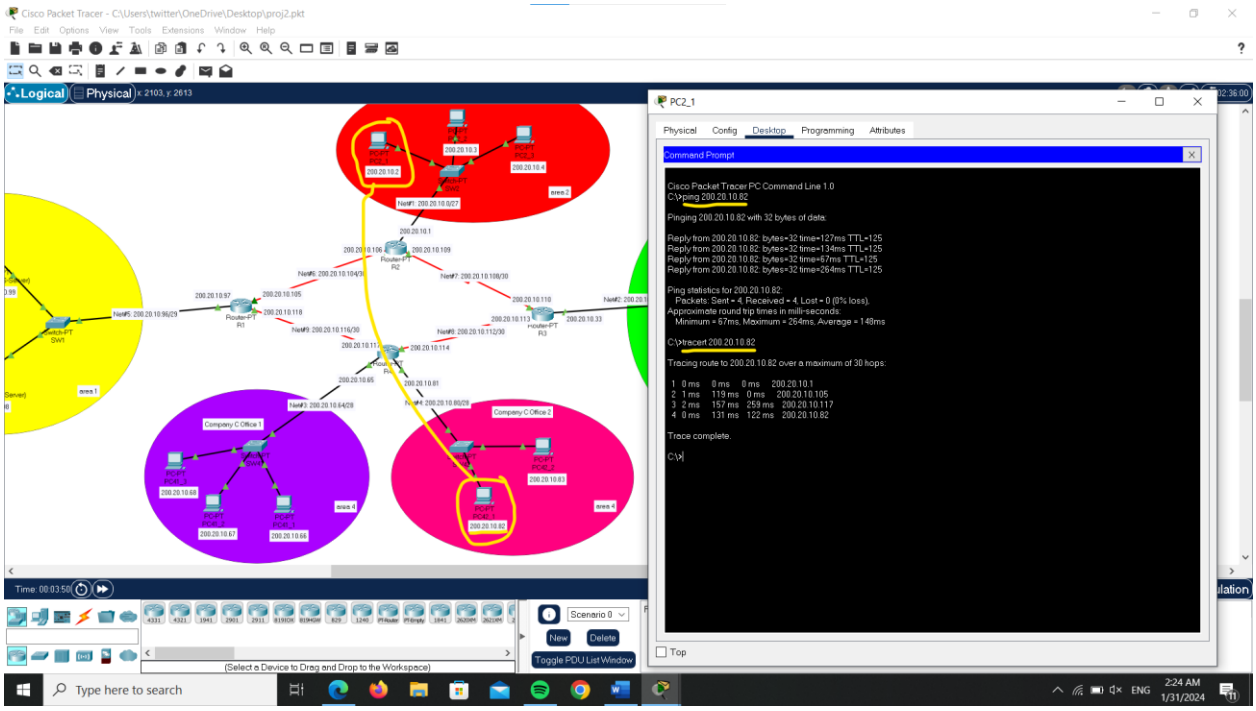
### PC2_1 (area 2) -- > PC3_2 (area 3):




### PC2_1 (area 2) -- > PC41_1 (office 1/area 4):

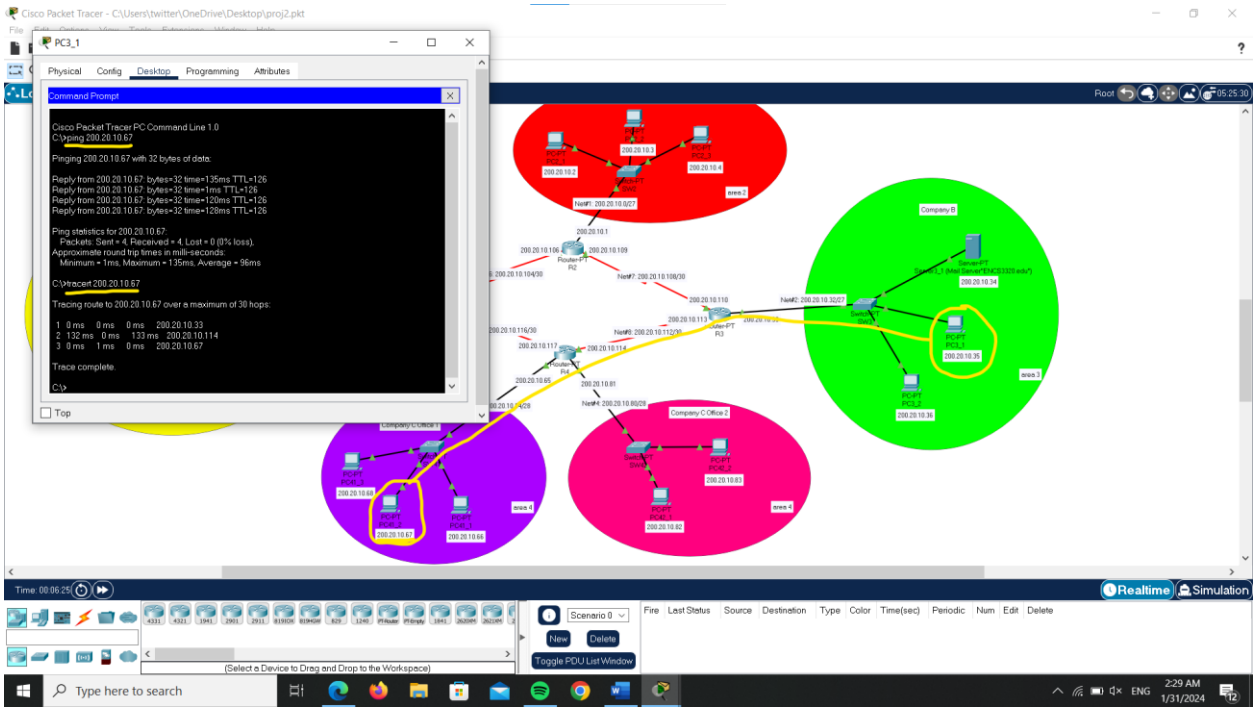


## PC2_1 (area 2) -- > PC42_1 (office 2/area 4):

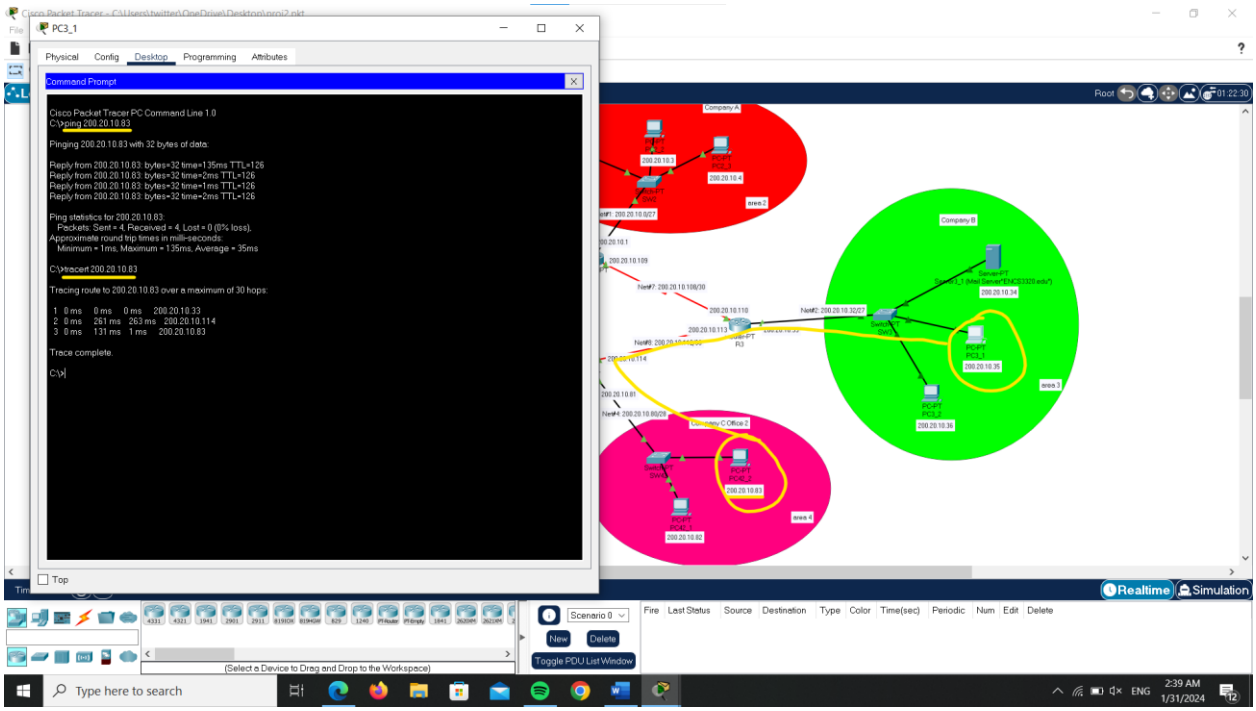


# Area 3 -- > area 4(office 1 and office 2):

## PC3_1 (area 3) -- > PC41_2 (office 1/area 4):

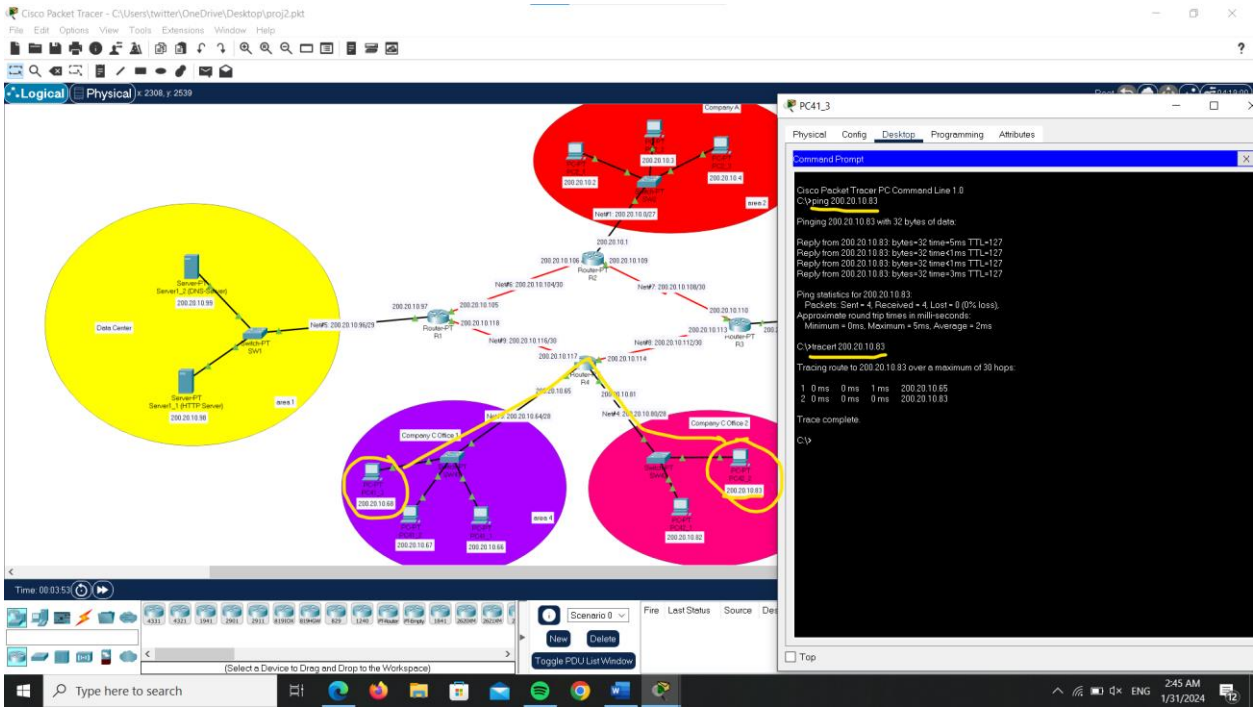



## PC3_1 (area 3) -- > PC42_2 (office 2/area 4):



## Area 4(office 1) -- > Area 4(office 2):

### PC41_3 (office 1/area 4) -- > PC42_2 (office 2/area 4):

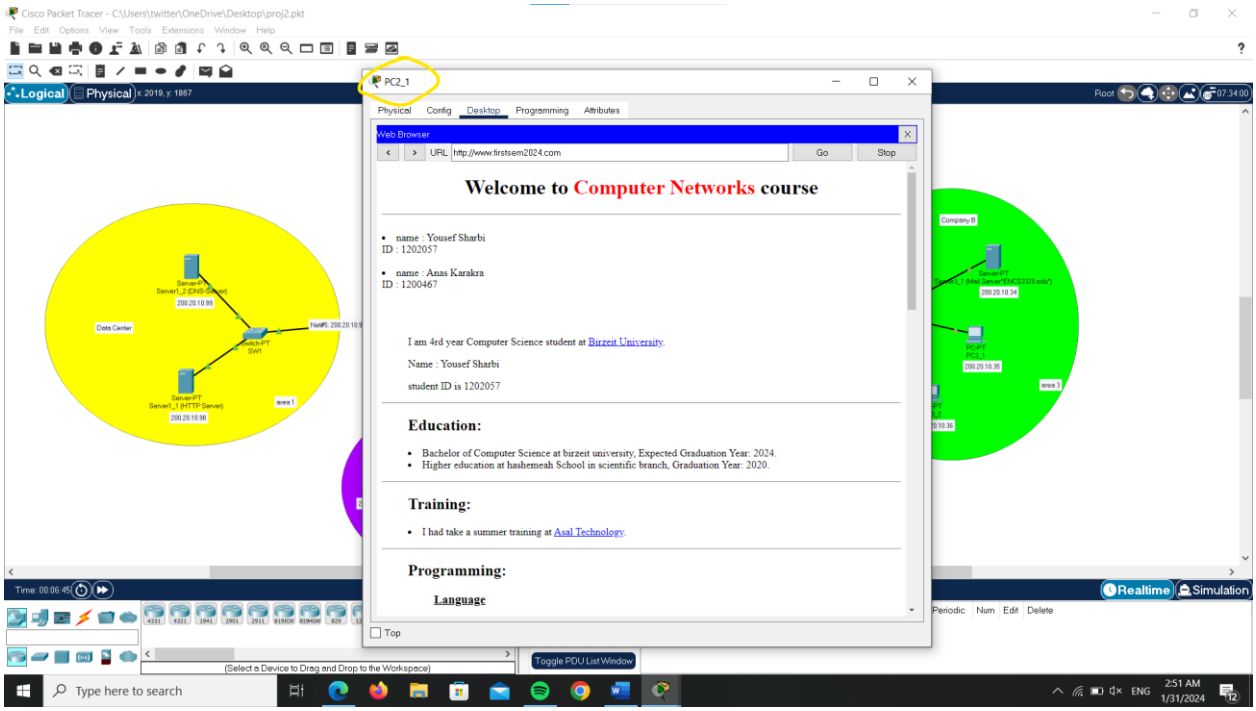



**So after these tests, we had ensure that all PC's connected to the networks.**

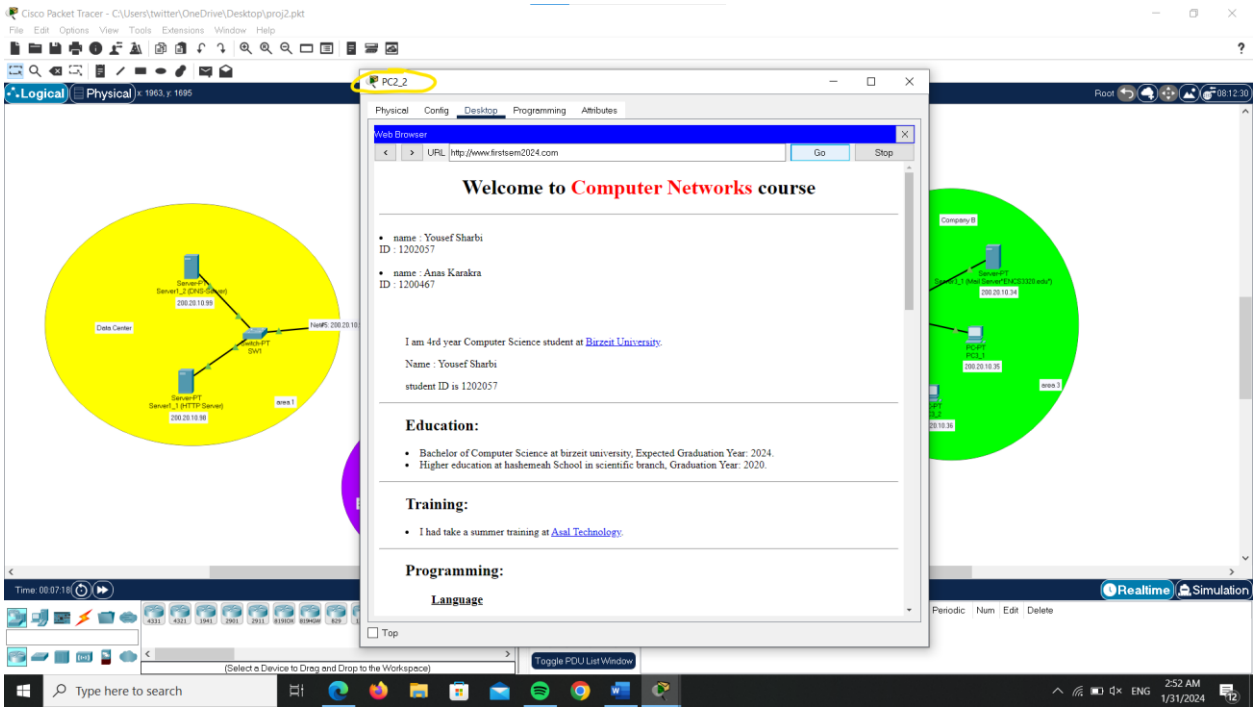
2)

# Area 2:

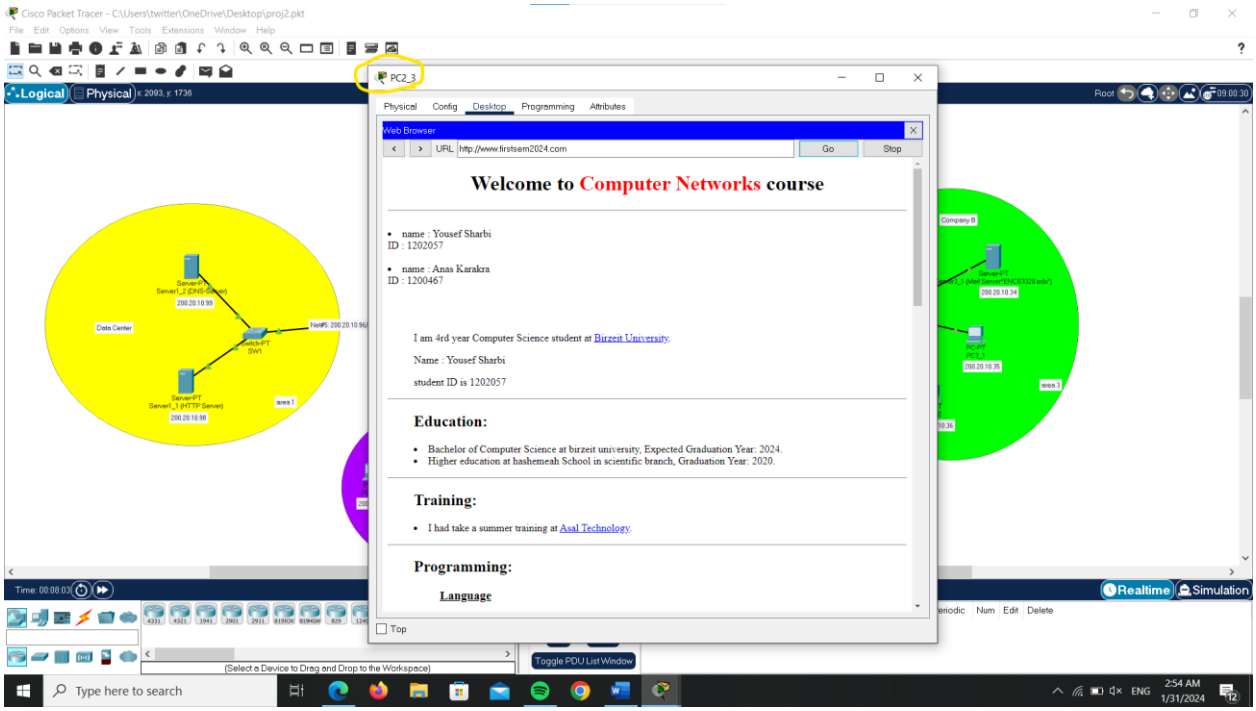
## PC2_1:




## PC2_2:

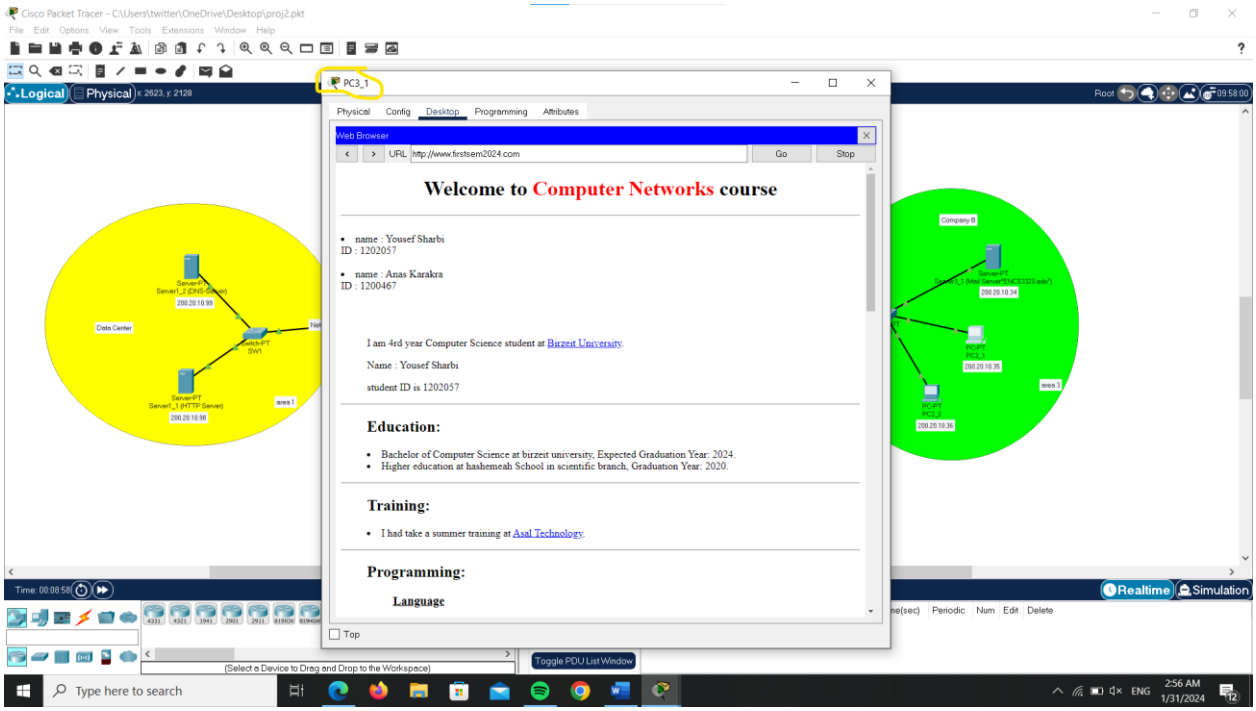


## PC2_3:

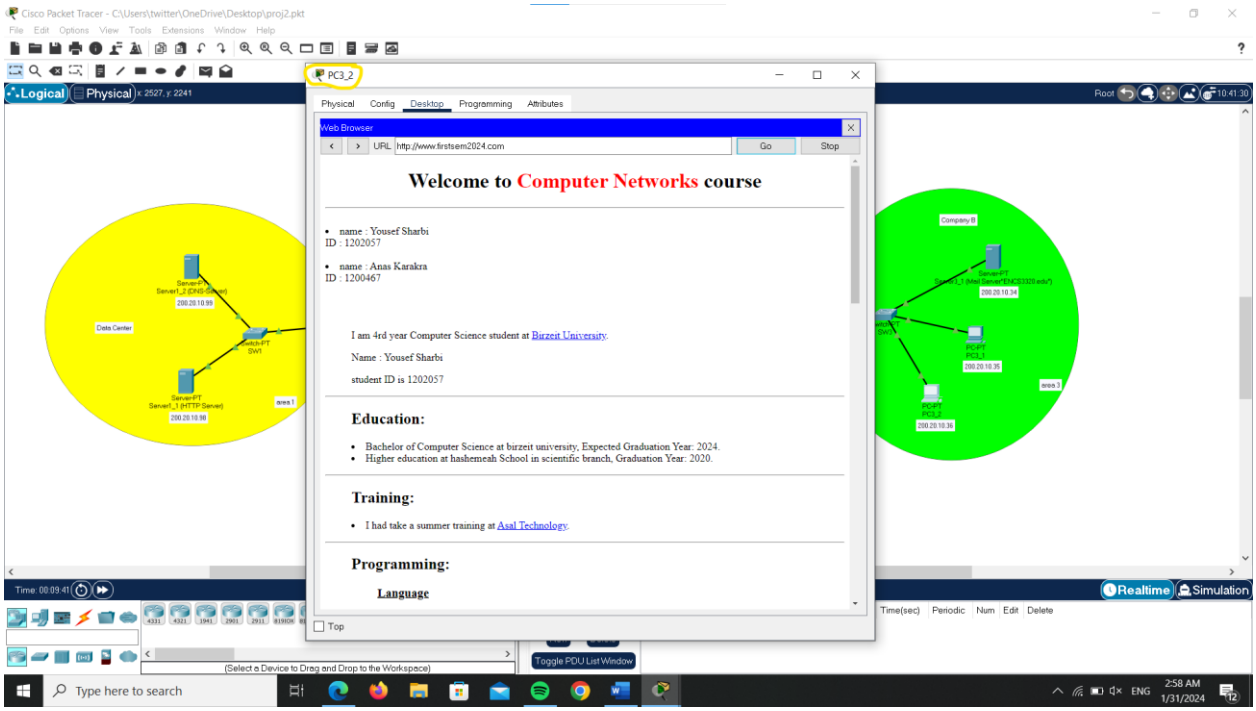

PC2_3
Physical
Config
Desktop
Programming
Attributes
Web Browser
URL
http://www.firstsem2024.com
Go
Stop
Welcome to Computer Networks course
name : Yousef Sharbi
ID : 1202057
name : Anas Karakra
ID : 1200467
I am 4rd year Computer Science student at Birzeit University.
Name : Yousef Sharbi
student ID is 1202057
Education:
Bachelor of Computer Science at birzeit university, Expected Graduation Year: 2024.
Higher education at hashemeah School in scientific branch, Graduation Year: 2020.
Training:
I had take a summer training at Asal Technology.
Programming:
Language
Top
Logical
Physical
Realtime
Simulation
Type here to search
2:54 AM
1/31/2024

# Area 3:

## PC3_1:

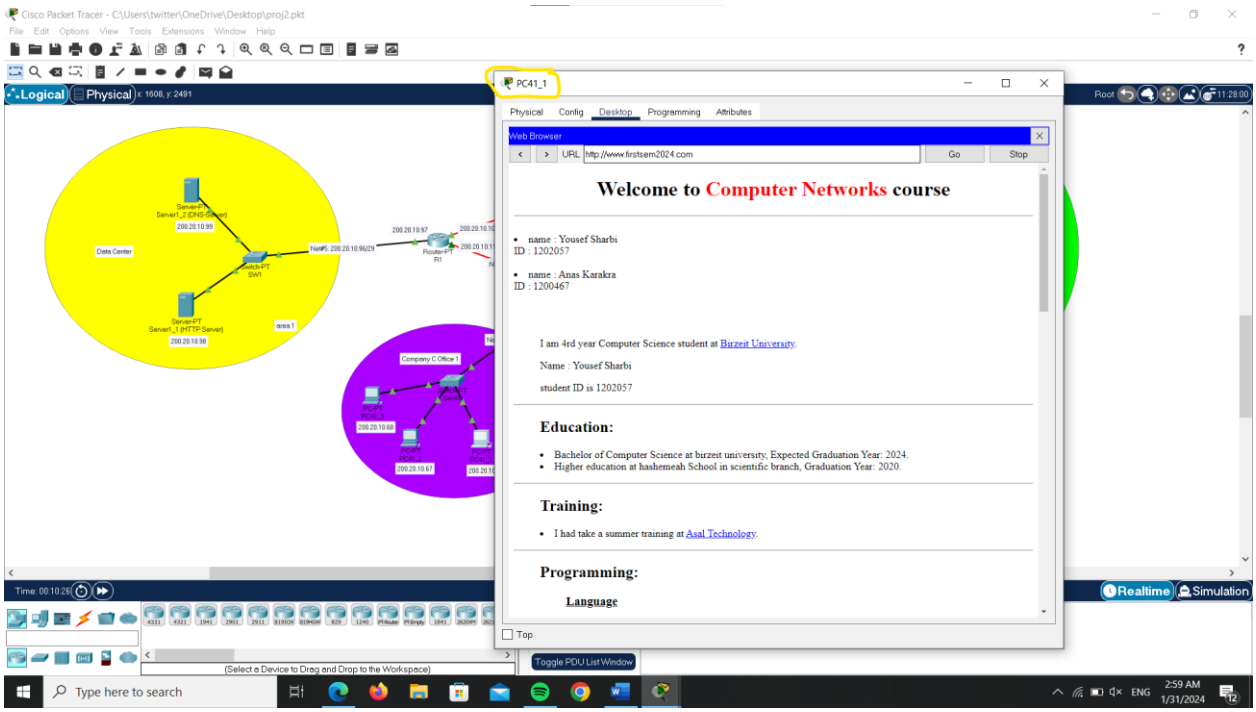



## PC3_2:

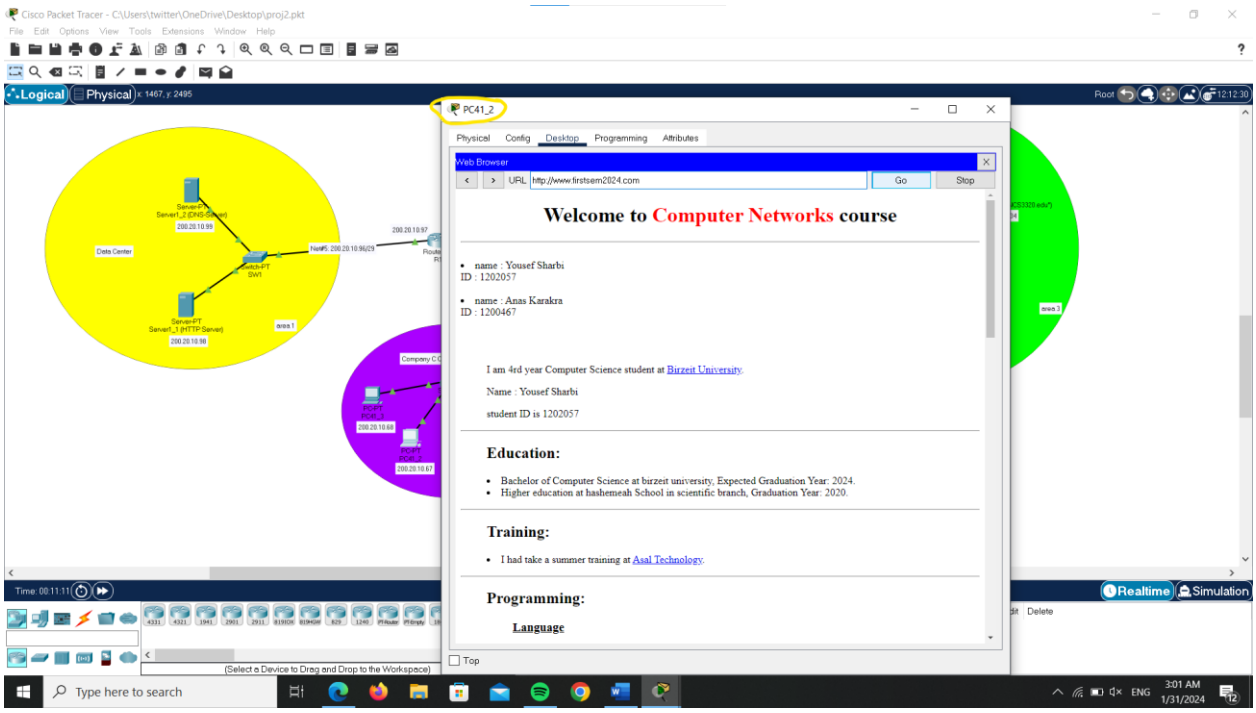


# Area 4(office 1):

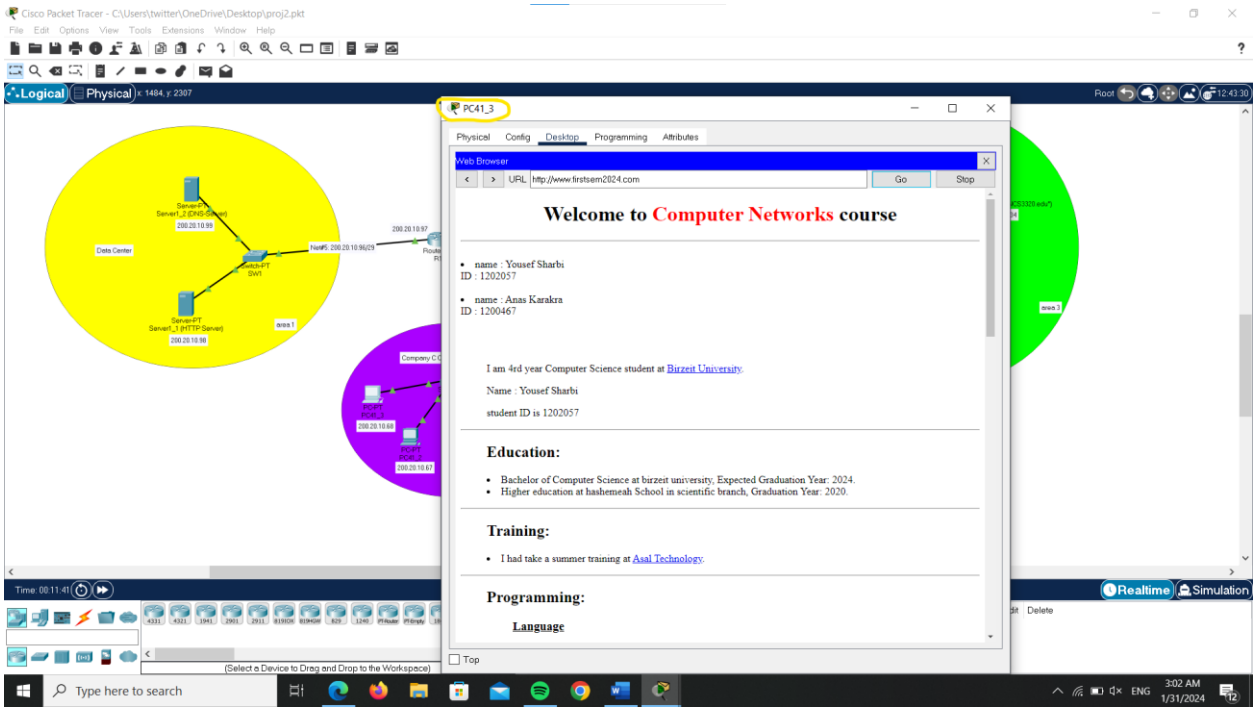
## PC41_1:




## PC41_2:

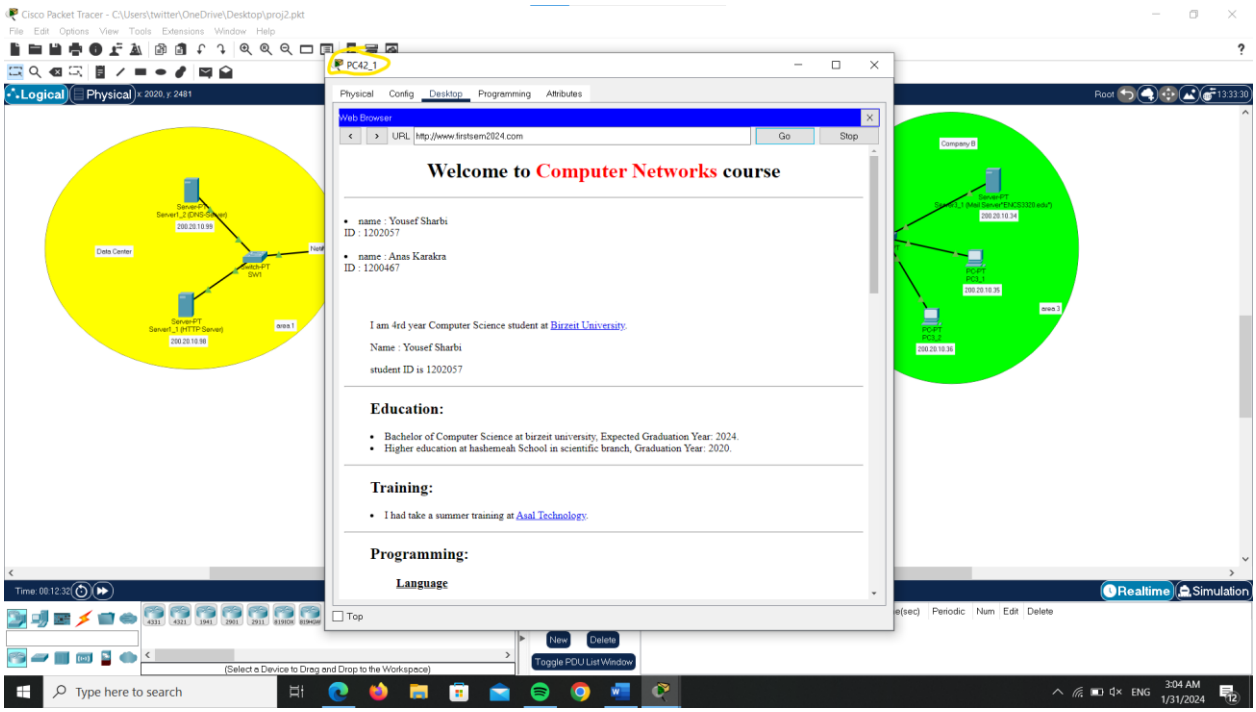


# PC41_3:

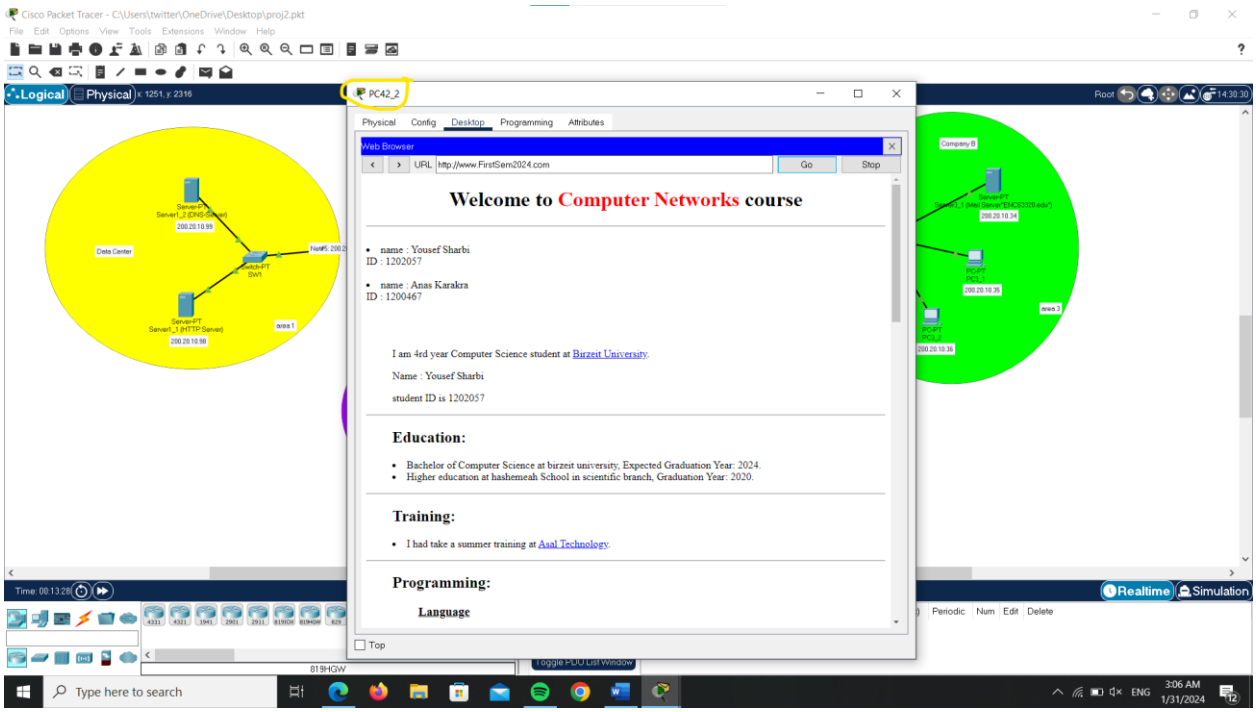

PC41_3
Physical
Config
Desktop
Programming
Attributes
Web Browser
URL
http://www.firstsem2024.com
Go
Stop
Welcome to Computer Networks course
name : Yousef Sharbi
ID : 1202057
name : Anas Karakra
ID : 1200467
I am 4rd year Computer Science student at Birzeit University.
Name : Yousef Sharbi
student ID is 1202057
Education:
Bachelor of Computer Science at birzeit university, Expected Graduation Year: 2024.
Higher education at hasheneah School in scientific branch, Graduation Year: 2020.
Training:
I had take a summer training at Asal Technology.
Programming:
Language
Top
Logical
Physical
Realtime
Simulation
Type here to search
ENG
3:02 AM
1/31/2024

# Area 4(office 2):

## PC42_1:

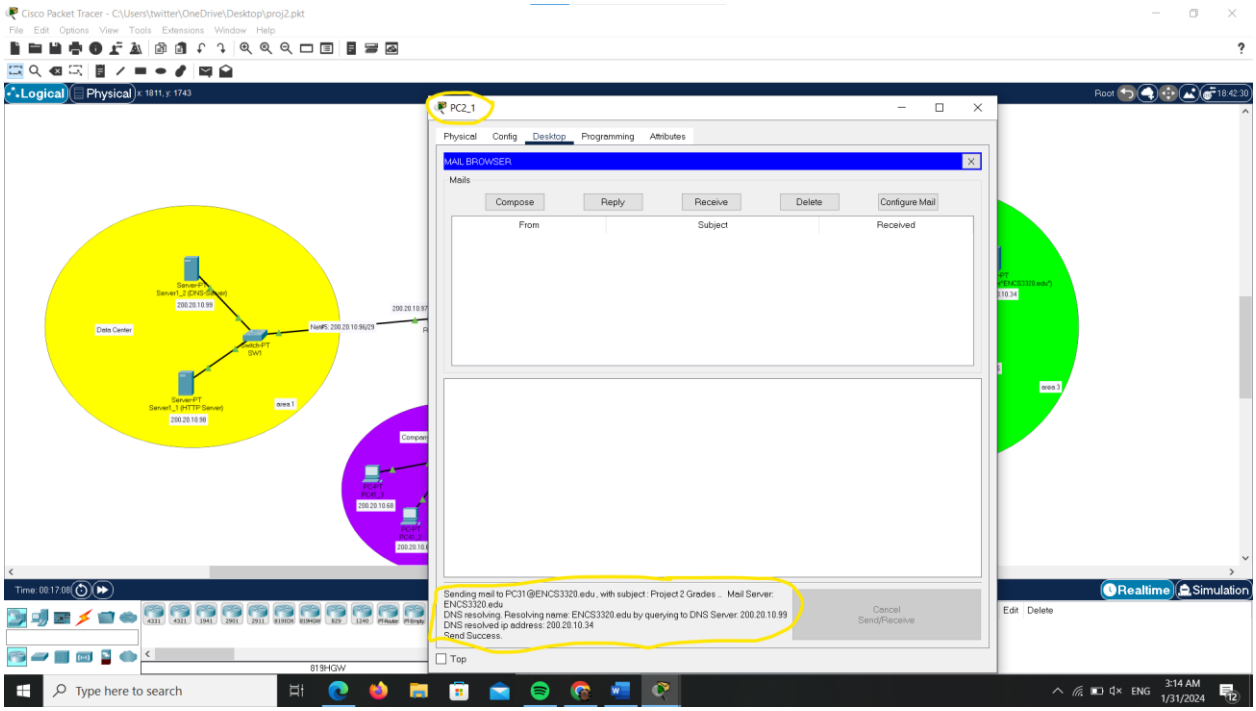


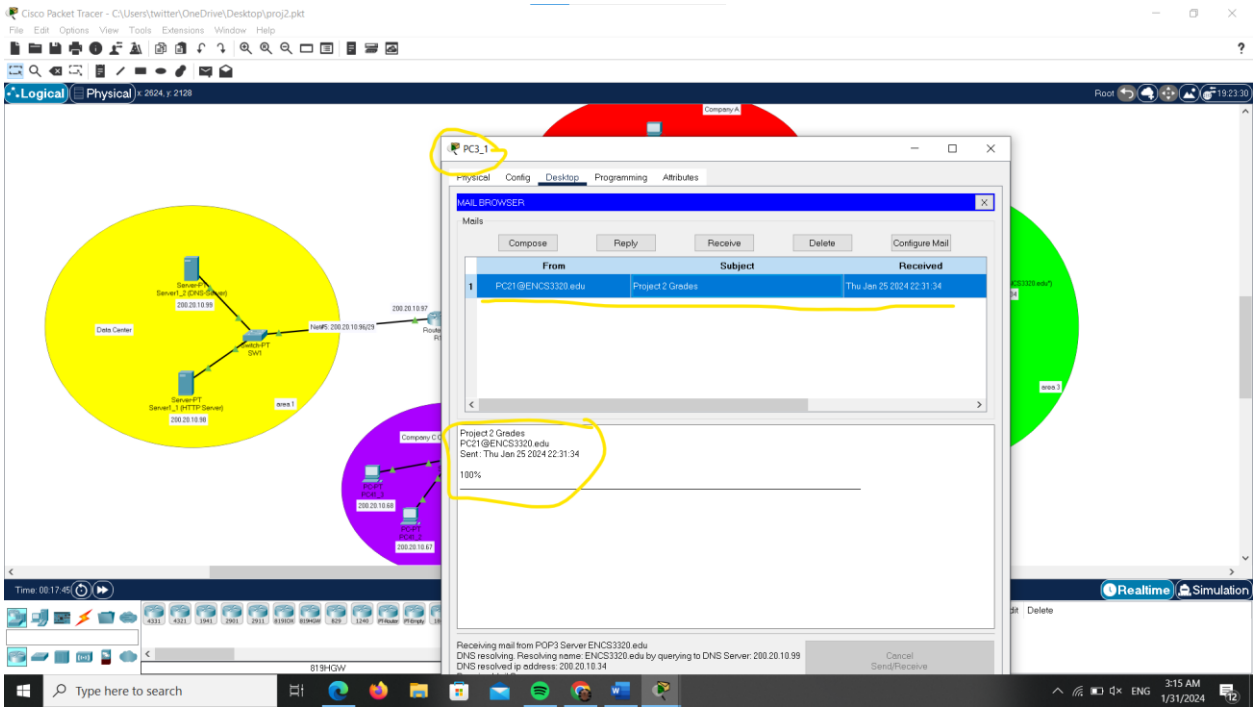

## PC42_2:



**3)**

## PC2_1 to PC3_1:




**PC's (PC2_1, PC3_1, PC41_1, PC42_1) can send email to each other.**