



**Faculty of Engineering & Technology
Electrical & Computer Engineering Department**

ENSC3320

Packet Tracer

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Part P0: IP subnetting and assignment

which is a technique to divide an IP network into smaller subnetworks. Subnetting allows you to manage your IP addresses more efficiently and improve network performance and security.

subnet	Subnet Mask	Network IP	Broadcast IP	First IP	Last IP	Maximum num Ips in this subne
Data center	255.255.255.248	200.01.10.0/29	200.01.10.7	200.01.10.1	200.01.10.6	6
Company A	255.255.255.224	200.01.10.8/27	200.01.10.31	200.01.10.9	200.01.10.30	30
Company B	255.255.255.224	200.01.10.32/27	200.01.10.63	200.01.10.33	200.01.10.62	30
Company Office 1	255.255.252.240	200.01.10.64/28	200.01.10.79	200.01.10.65	200.01.10.78	14
Company Office 2	255.255.255.240	200.01.10.80/28	200.01.10.95	200.01.10.81	200.01.10.94	30
R1-R2 Link	255.255.255.252	200.01.10.96/30	200.01.10.99	200.01.10.97	200.01.10.98	2
R2-R3 Link	255.255.255.252	200.01.10.100/30	200.01.10.103	200.01.10.101	200.01.10.102	2
R3-R4 Link	255.255.255.252	200.01.10.104/30	200.01.10.107	200.01.10.105	200.01.10.106	2
R4-R1 Link	255.255.255.252	200.01.10.108/30	200.01.10.111	200.01.10.109	200.01.10.110	2

Table 1: Subnet Configuration Table

Calculation:

- 1) Subnet mask = $2^{(32 - n)} - 1$, where n is the number of bits borrowed from the host portion to create the subnet mask.
- 2) Number of subnets = 2^n , where n is the number of bits borrowed to make the subnet mask
- 3) Number of hosts per subnet = $2^{(32 - n)} - 2$, where n is the number of bits in the subnet mask
- 4) First IP address of each subnet = Network IP address + 1
- 5) Last IP address of each subnet = Broadcast IP address – 1
- 6) Network IP address of each subnet = The first IP address in the subnet range
- 7) Broadcast IP address of each subnet = The last IP address in the subnet range

- Note: We utilize the IP address 200.1.10.0/25 for Rebal (ID: 1210162).

Part1: Building the topology

In Figure 1 below, the topology is illustrated, featuring PCs, servers, and routers.

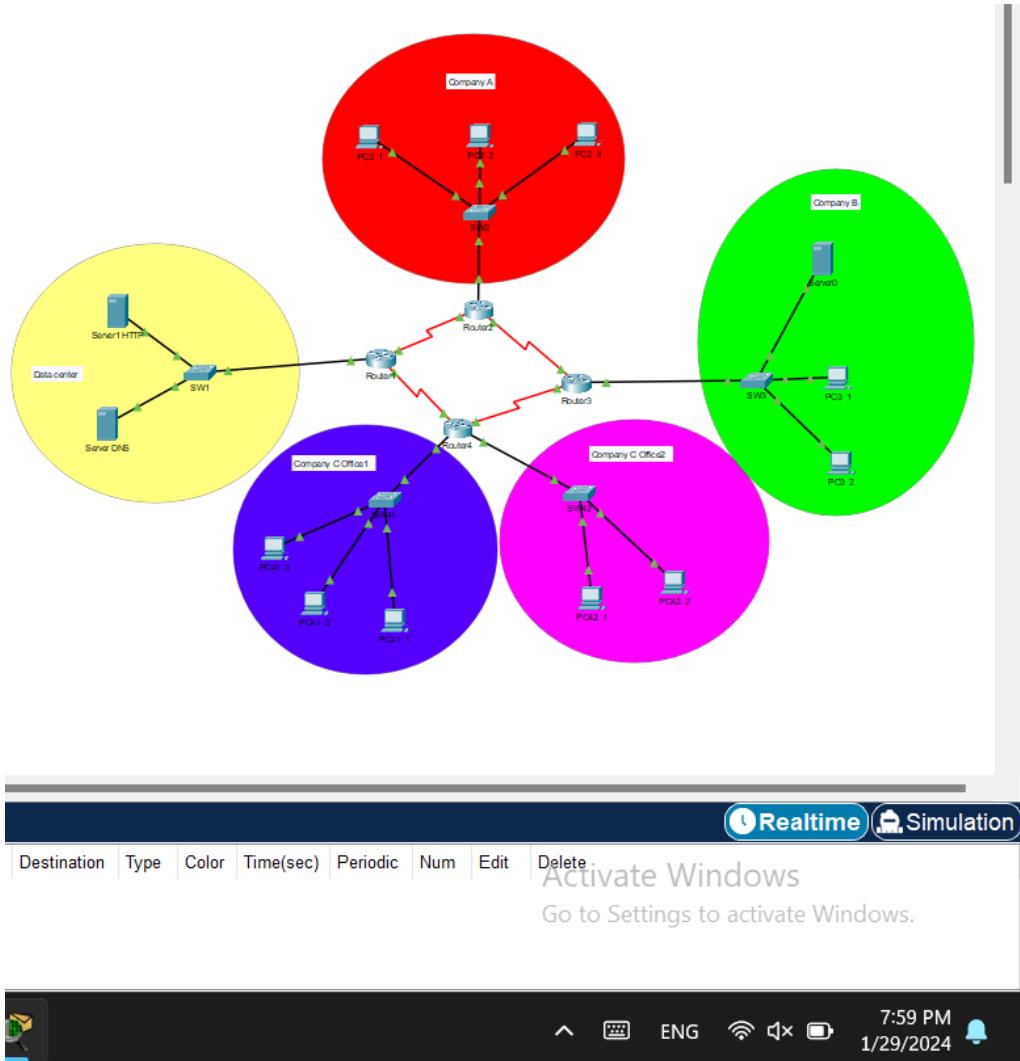


Figure 1: Network Topology

We now need to put static manner based on the assigned network IPs for (PCs, Servers and Routers)

The hosts in the topology are assigned the following IP addresses:

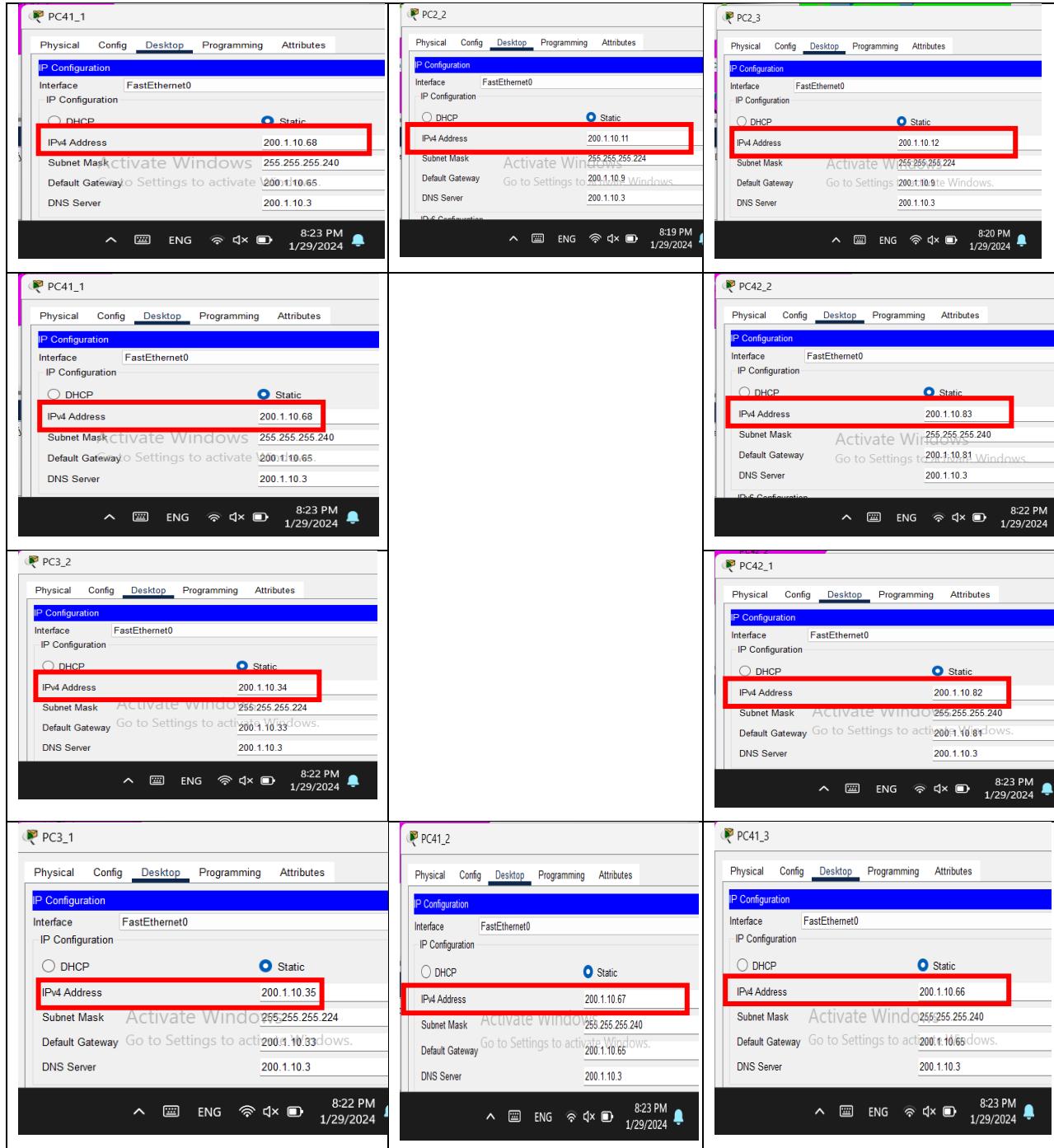


Figure 2: Put IPs for the hosts

The Routers in the topology are assigned the following IP addresses:

Router	Interface	IP Address
Router1	FastEthernet0/0	200.1.10.1
Router1	Serial2/0	200.1.10.97
Router1	Serial3/0	200.1.10.10
Router2	FastEthernet0/0	200.1.10.9
Router2	Serial2/0	200.1.10.98
Router2	Serial3/0	200.1.10.101
Router3	FastEthernet0/0	200.1.10.33
Router3	Serial2/0	200.1.10.102
Router3	Serial3/0	200.1.10.105
Router4	FastEthernet0/0	200.1.10.65
Router4	Serial2/0	200.1.10.106
Router4	Serial3/0	200.1.10.109

Figure 3: FastEthernet0/0

Figure 4: Serial2/0

Figure 5: Serial3/0

In Each router should fill FastEthernet0/0 , serial2/0 and serial3/0

FastEthernet0/0: Often used for connections to local networks. The IP address in this case, 200.01.10.1,200 .01.10.9,200 .01.10.33,200 .01.10.65, is within a private IP range.

Serial2/0: Serial interfaces are commonly used for point-to-point connections between routers. The IP address 200.01.10.97, 200.01.10.98 , 200.01.10.102 , 200.01.10.106 could be part of a private network or a specific subnet used for router-to-router communication.

Serial3/0: Similar to Serial2/0, but using a different IP address range (200.01.10.110, 200.01.10.101, 200.01.10.105, 200.01.10.109). Each serial interface is typically connected to a different router, and the IP addressing reflects the network design.

Give Server0 , Server DNS and Server1 HTTP IPs:

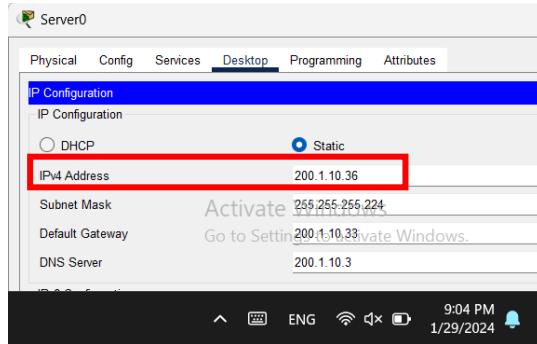


Figure 6: IP for Server0

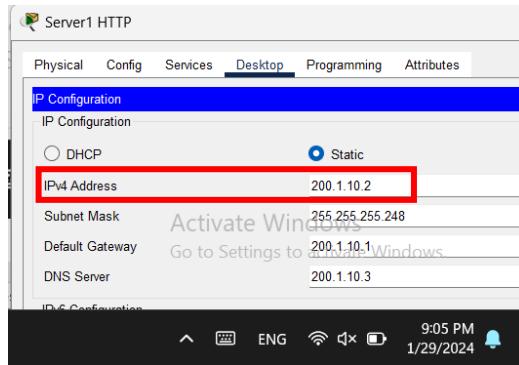


Figure 7: IP for Server1 HTTP

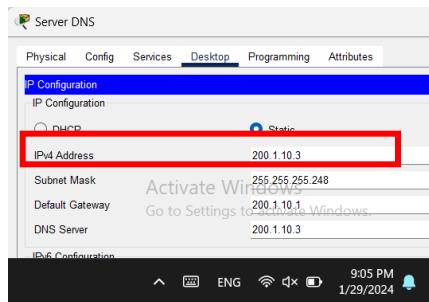


Figure 8: IP for server DNS

Server0: This could be a general-purpose server with the IP address 200.01.10.36, typically used for various services within the local network.

DNS Server: Assigned the IP address 200.01.10.2, this server is specifically configured to provide Domain Name System (DNS) services for translating domain names to IP addresses within the network.

HTTP Server: Assigned the IP address 200.01.10.3, this server hosts a web server, allowing users to access web content or services hosted on this server.

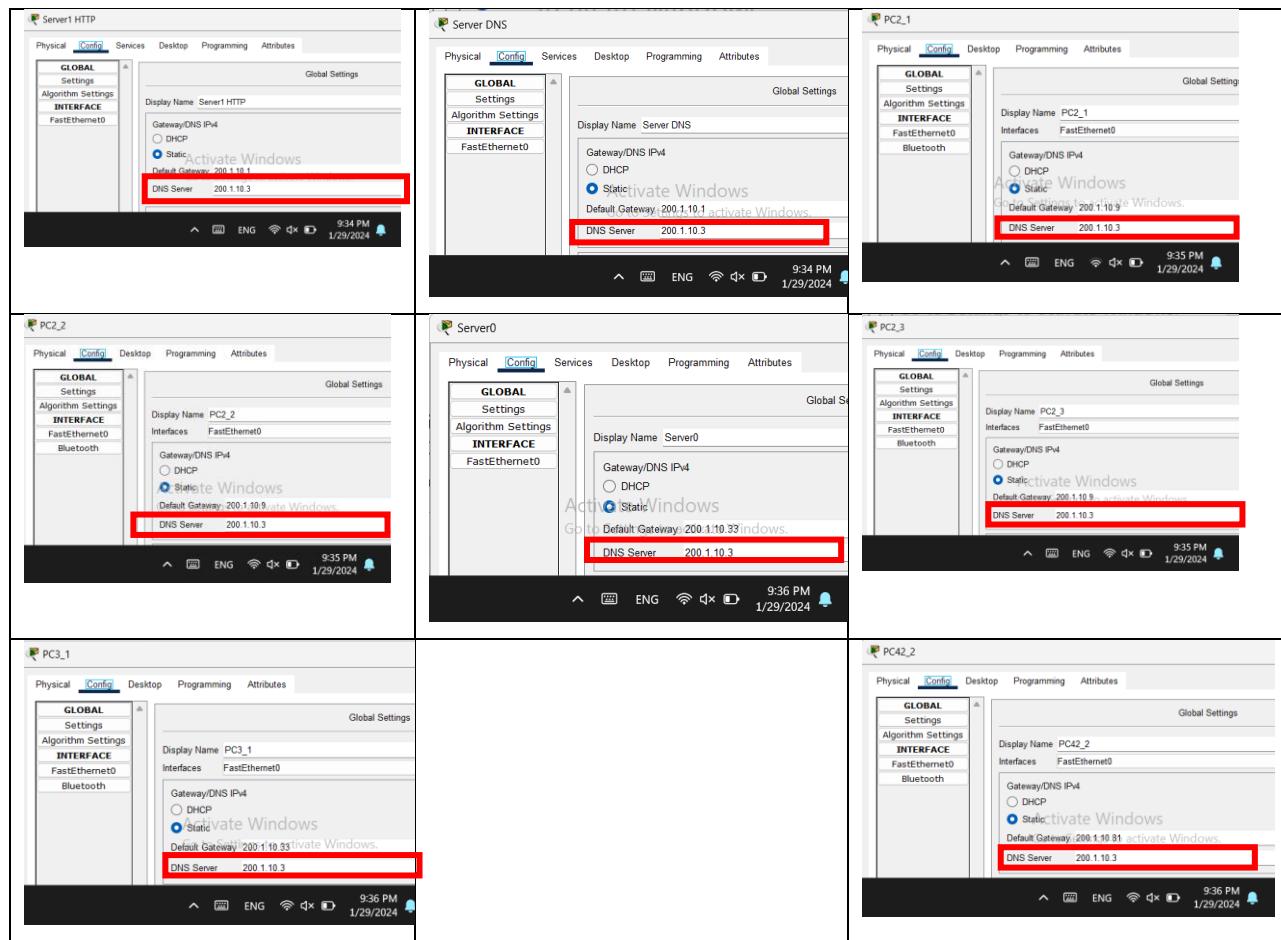
Part2: Configuring servers

In this section, we focus on configuring three essential servers within the network topology. The servers include an HTTP/WEB server and a DNS server located in the Data Center network, as well as a mail server situated in the Company B network.

Servers in the Topology:

HTTP/WEB Server: This server is designated for hosting the website and providing web services within the network.

DNS Server: Responsible for managing domain name resolution, the DNS server plays a crucial role in translating domain names into IP addresses.



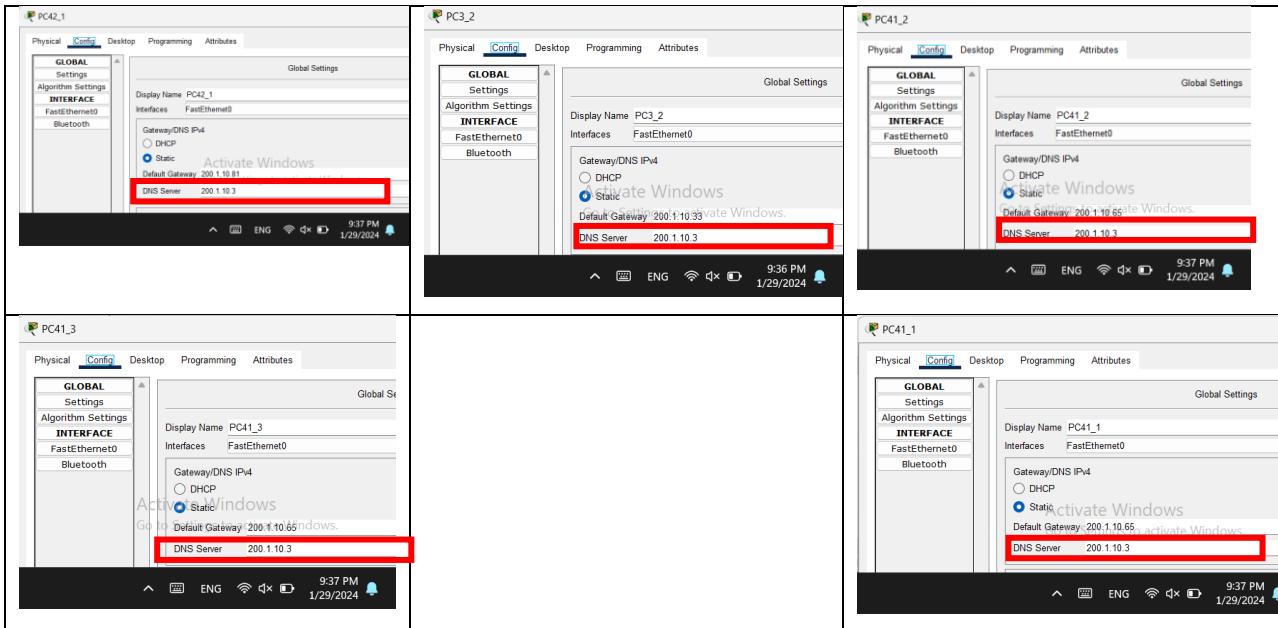


Figure 9: IP for DNS Server

Mail Server (Company B): Functioning as an email server, it facilitates communication within Company B's network.

Configuration Tasks:



Figure 10: Mail Server

DNS and WEB Server Configuration: Both the DNS and WEB servers are to be configured with the domain name www.FirstSem2024.com.

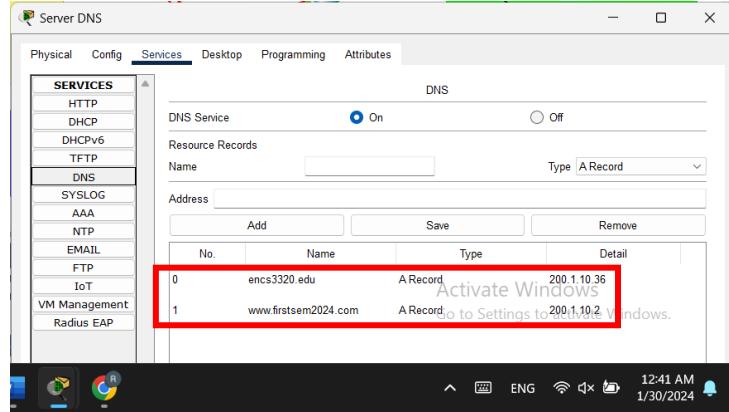


Figure 11: ADD the domains name in the Server DNS

Website Development: A website is to be created on the HTTP server by modifying the index.html file. The website should include specific content, such as the course title, welcome message, group members' names and IDs, along with information about their projects, skills, hobbies, and more. Special emphasis is placed on the visual appeal of the page.

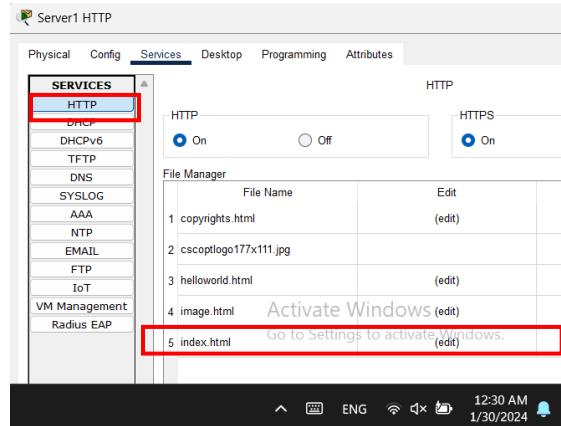


Figure 12: HTTP request and the request is html

```

Server1 HTTP
Physical Config Services Desktop Programming Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP

File Name: index.html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8" />
    <meta http-equiv="X-UA-Compatible" content="IE=edge" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>ENC3320 Course Website</title>
    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/6.0.0/css/all.css" />
    <link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css" />
    <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/js/bootstrap.bundle.min.js" integrity="sha384-geWF76RCwLtnZ0DOnF2jGMMgjNN0dtTG00FTk62bmf4eF2zjBf0cJyV0CQ" crossorigin="anonymous"></script>
</head>
<body>
    <header>
        <div class="header">
            <div class="header-content">
                <h1>Welcome to <span style="color:red">Computer Networks</span> course!</h1>
                <p><span style="color:green">Project Members</span></p>
                <p><span style="color:blue">Group 1</span></p>
                <p><span style="color:purple">Project Description</span></p>
                <p><span style="color:orange">Skills</span></p>
            </div>
        </div>
    </header>

```

Figure 13: Put html code in the Index file

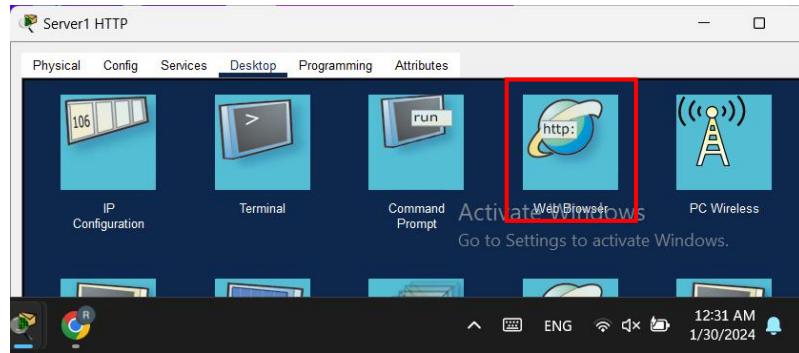


Figure 14: Make request from put URL

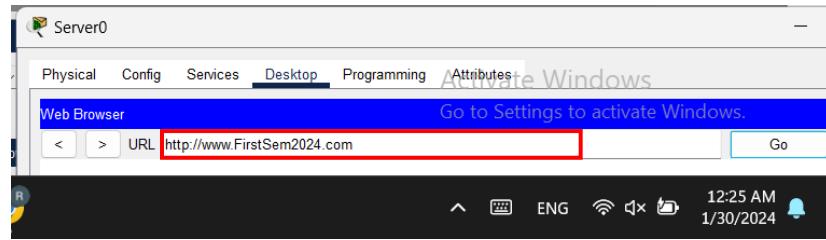


Figure 15: URL (domain name that add it in DNS)

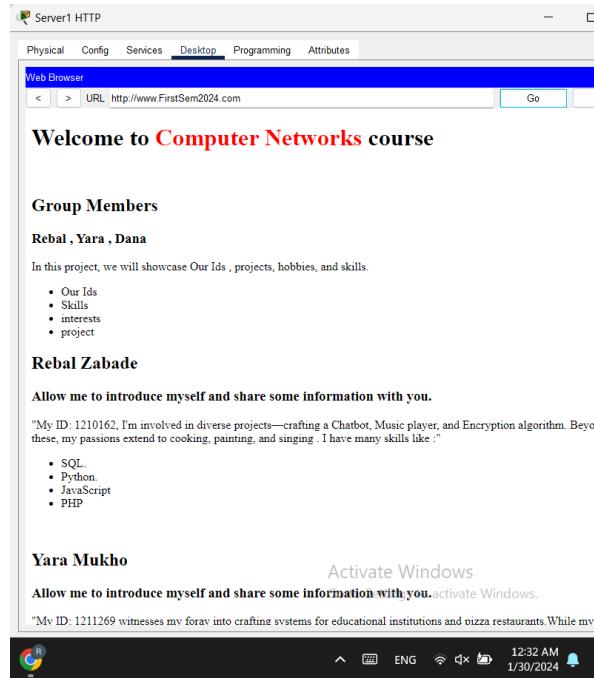


Figure 16: Show the page after the response

User Authentication on Email Server:

Usernames and passwords are to be created for all PCs (PC2_1, PC3_1, PC41_1, PC42_1) on the email server (ENCS3320.edu). The usernames mirror the device names without underscores (PC21, PC31, PC411, PC421). Passwords for all accounts are set as "A2024."

This section outlines the specific tasks associated with configuring servers in the network topology, from establishing domain names for servers to creating a visually appealing course website and configuring user authentication for email services.

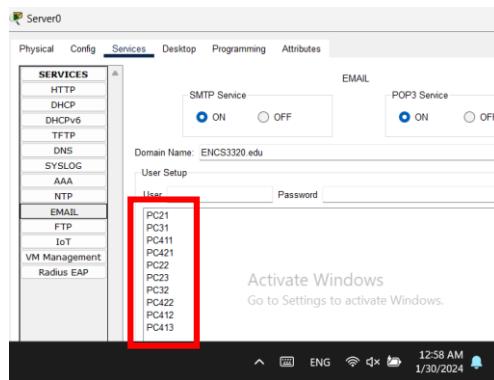


Figure 17: Add usernames in the Server0



Figure 18: Email icon to send the email

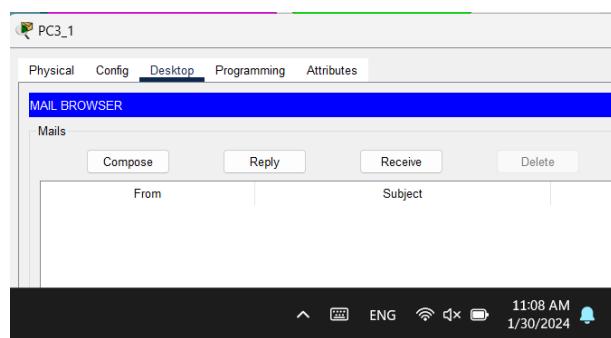


Figure 19: Send and receive email

Part3: Applying routing protocol

In Part 3, where we apply the Open Shortest Path Protocol (OSPF) to enhance our network efficiency.

```
Router1
!
!
!
interface FastEthernet0/0
ip address 200.1.10.1 255.255.255.248
duplex auto
speed auto
!
interface FastEthernet1/0
no ip address
duplex auto
speed auto
shutdown
!
interface Serial2/0
ip address 200.1.10.97 255.255.255.252
clock rate 2000000
!
interface Serial3/0
ip address 200.1.10.110 255.255.255.252
!
interface FastEthernet4/0
no ip address
shutdown
!
interface FastEthernet5/0
no ip address
shutdown
!
router ospf 10
log-adjacency-changes
network 200.1.10.108 0.0.0.3 area 0
network 200.1.10.96 0.0.0.3 area 0
network 200.1.10.0 0.0.0.7 area 1
!
ip classless
!
ip flow-export version 9
!
11:46 AM
1/30/2024

Router2
!
!
!
interface FastEthernet0/0
ip address 200.1.10.9 255.255.255.224
duplex auto
speed auto
!
interface FastEthernet1/0
no ip address
duplex auto
speed auto
shutdown
!
interface Serial2/0
ip address 200.1.10.98 255.255.255.252
!
interface Serial3/0
ip address 200.1.10.101 255.255.255.252
clock rate 2000000
!
interface FastEthernet4/0
no ip address
shutdown
!
interface FastEthernet5/0
no ip address
shutdown
!
router ospf 10
log-adjacency-changes
network 200.1.10.10 0.0.0.31 area 2
network 200.1.10.96 0.0.0.3 area 0
network 200.1.10.100 0.0.0.3 area 0
!
ip classless
!
ip flow-export version 9
!
11:47 AM
1/30/2024
```

Figure 20: OSPF for router 1 and 2

Join us as we navigate the intricacies of OSPF configuration, paying close attention to the specified process ID and area assignments. Together, we pave the way for a robust and well-orchestrated network infrastructure.

```
Router3
!
!
!
interface FastEthernet0/0
ip address 200.1.10.33 255.255.255.224
duplex auto
speed auto
!
interface FastEthernet1/0
no ip address
duplex auto
speed auto
shutdown
!
interface Serial2/0
ip address 200.1.10.102 255.255.255.252
!
interface Serial3/0
ip address 200.1.10.105 255.255.255.252
clock rate 2000000
!
interface FastEthernet4/0
no ip address
shutdown
!
interface FastEthernet5/0
no ip address
shutdown
!
router ospf 10
log-adjacency-changes
network 200.1.10.32 0.0.0.31 area 3
network 200.1.10.100 0.0.0.3 area 0
network 200.1.10.104 0.0.0.3 area 0
!
ip classless
!
ip flow-export version 9
!
11:48 AM
1/30/2024

Router4
!
!
!
interface FastEthernet0/0
ip address 200.1.10.65 255.255.255.240
duplex auto
speed auto
!
interface FastEthernet1/0
ip address 200.1.10.81 255.255.255.240
duplex auto
speed auto
!
interface Serial2/0
ip address 200.1.10.106 255.255.255.252
!
interface Serial3/0
ip address 200.1.10.109 255.255.255.252
clock rate 2000000
!
interface FastEthernet4/0
no ip address
shutdown
!
interface FastEthernet5/0
no ip address
shutdown
!
router ospf 10
log-adjacency-changes
network 200.1.10.104 0.0.0.3 area 0
network 200.1.10.108 0.0.0.3 area 0
network 200.1.10.80 0.0.0.15 area 4
network 200.1.10.64 0.0.0.15 area 4
!
ip classless
!
ip flow-export version 9
!
11:49 AM
1/30/2024
```

Figure 21: OSPF for router 3 and 4

Router1

```

Press RETURN to get started.

Router>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
      i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
      * - candidate default, U - per-user static route, o - ODR
      P - periodic downloaded static route

Gateway of last resort is not set

200.1.10.0/24 is variably subnetted, 9 subnets, 4 masks
O IA 200.1.10.0/27 [110/65] via 200.1.10.98, 01:00:02, Serial2/0
C 200.1.10.0/29 is directly connected, FastEthernet0/0
O IA 200.1.10.32/27 [110/129] via 200.1.10.98, 00:59:52, Serial2/0
      [110/129] via 200.1.10.109, 00:59:52, Serial3/0
O IA 200.1.10.44/28 [110/65] via 200.1.10.109, 01:00:02, Serial3/0
O IA 200.1.10.80/28 [110/65] via 200.1.10.109, 01:00:02, Serial3/0
C 200.1.10.96/30 is directly connected, Serial2/0
O 200.1.10.100/30 [110/128] via 200.1.10.98, 01:00:02, Serial2/0
O 200.1.10.104/30 [110/128] via 200.1.10.109, 01:00:02, Serial3/0
C 200.1.10.108/30 is directly connected, Serial3/0

Gateway of last resort is not set

 10.0.24 is variably subnetted, 9 subnets, 4 masks
C 200.1.10.0/27 [110/65] via 200.1.10.97, 00:57:44, Serial2/0
O IA 200.1.10.32/27 [110/65] via 200.1.10.102, 00:57:44, Serial3/0
O IA 200.1.10.64/28 [110/129] via 200.1.10.102, 00:57:44, Serial3/0
      [110/129] via 200.1.10.97, 00:57:44, Serial2/0
O IA 200.1.10.80/28 [110/129] via 200.1.10.102, 00:57:44, Serial3/0
      [110/129] via 200.1.10.97, 00:57:44, Serial2/0
C 200.1.10.96/30 is directly connected, Serial2/0
C 200.1.10.100/30 is directly connected, Serial3/0
O 200.1.10.104/30 [110/128] via 200.1.10.102, 00:57:44, Serial3/0
O 200.1.10.108/30 [110/128] via 200.1.10.97, 00:57:44, Serial2/0
--More--
```

12:23 PM 1/30/2024

Router2

```

Router>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
      i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
      * - candidate default, U - per-user static route, o - ODR
      P - periodic downloaded static route

Gateway of last resort is not set

 10.0.24 is variably subnetted, 9 subnets, 4 masks
C 200.1.10.0/27 [110/65] via 200.1.10.97, 00:57:44, Serial2/0
O IA 200.1.10.32/27 [110/65] via 200.1.10.102, 00:57:44, Serial3/0
O IA 200.1.10.64/28 [110/129] via 200.1.10.102, 00:57:44, Serial3/0
      [110/129] via 200.1.10.97, 00:57:44, Serial2/0
O IA 200.1.10.80/28 [110/129] via 200.1.10.102, 00:57:44, Serial3/0
      [110/129] via 200.1.10.97, 00:57:44, Serial2/0
C 200.1.10.96/30 is directly connected, Serial2/0
C 200.1.10.100/30 is directly connected, Serial3/0
O 200.1.10.104/30 [110/128] via 200.1.10.102, 00:57:44, Serial3/0
O 200.1.10.108/30 [110/128] via 200.1.10.97, 00:57:44, Serial2/0
--More--
```

12:22 PM 1/30/2024

Router3

```

%LINK-3-UPDOWN: Interface Serial3/0, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to down
01:00:41: %OSPF-5-ADJCHG: Process 10, Nbr 200.1.10.109 on Serial3/0 from FULL to DOWN, Neighbor Down: Interface down or detached
%LINK-5-CHANGED: Interface Serial3/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up

Router>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
      i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
      * - candidate default, U - per-user static route, o - ODR
      P - periodic downloaded static route

Gateway of last resort is not set

200.1.10.0/24 is variably subnetted, 8 subnets, 3 masks
O IA 200.1.10.0/27 [110/65] via 200.1.10.101, 01:00:37, Serial2/0
C 200.1.10.32/27 is directly connected, FastEthernet0/0
O IA 200.1.10.64/28 [110/193] via 200.1.10.101, 00:00:08, Serial2/0
O IA 200.1.10.80/28 [110/193] via 200.1.10.101, 00:00:08, Serial2/0
C 200.1.10.96/30 [110/128] via 200.1.10.101, 01:00:37, Serial2/0
C 200.1.10.104/30 is directly connected, Serial3/0
O 200.1.10.108/30 [110/192] via 200.1.10.101, 00:00:08, Serial2/0

Router>
01:00:55: %OSPF-5-ADJCHG: Process 10, Nbr 200.1.10.109 on Serial3/0 from LOADING to FULL, Loading Done
```

12:24 PM 1/30/2024

Router4

```

%LINK-3-UPDOWN: Interface Serial2/0, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to down
01:00:41: %OSPF-5-ADJCHG: Process 10, Nbr 200.1.10.105 on Serial2/0 from FULL to DOWN, Neighbor Down: Interface down or detached
%LINK-5-CHANGED: Interface Serial2/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
01:00:55: %OSPF-5-ADJCHG: Process 10, Nbr 200.1.10.105 on Serial2/0 from LOADING to FULL, Loading Done

Router>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
      i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
      * - candidate default, U - per-user static route, o - ODR
      P - periodic downloaded static route

Gateway of last resort is not set

200.1.10.0/24 is variably subnetted, 8 subnets, 4 masks
O IA 200.1.10.0/29 [110/65] via 200.1.10.110, 01:01:03, Serial3/0
O IA 200.1.10.32/27 [110/65] via 200.1.10.105, 00:00:34, Serial2/0
C 200.1.10.64/28 is directly connected, FastEthernet0/0
O 200.1.10.80/28 [110/129] via 200.1.10.110, 01:01:03, Serial3/0
O 200.1.10.100/30 [110/128] via 200.1.10.105, 00:00:34, Serial2/0
C 200.1.10.104/30 is directly connected, Serial2/0
C 200.1.10.108/30 is directly connected, Serial3/0
Router>
```

12:24 PM 1/30/2024

Figure 22: To check it works in OSPF

Part4: Testing connectivity, routes, website, and emails

Ensure that devices within the network can communicate with each other seamlessly.

Ping Tests: Verify connectivity between devices using ICMP packets.

Traceroute: Identify the path data takes from source to destination.

Port Scanning: Confirm open ports for services.

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
Successful	PC3_1	PC3_2	ICMP	Green	0.000	N	0	0	(edit)
Successful	PC3_1	PC42_2	ICMP	Brown	0.000	N	1		(edit)
Successful	PC3_1	PC42_1	ICMP	Cyan	0.000	N	2		(edit)
Successful	PC3_1	PC41_1	ICMP	Purple	0.000	N	3		(edit)
Successful	PC3_1	PC41_2	ICMP	Purple	0.000	N	4		(edit)
Successful	PC3_1	PC41_3	ICMP	Purple	0.000	N	5		(edit)
Successful	PC3_1	PC2_1	ICMP	Green	0.000	N	6		(edit)
Successful	PC3_1	PC2_2	ICMP	Brown	0.000	N	7		(edit)
Successful	PC3_1	PC2_3	ICMP	Cyan	0.000	N	8		(edit)
Successful	PC3_1	Server0	ICMP	Orange	0.000	N	9		(edit)
Successful	PC3_1	Server DNS	ICMP	Purple	0.000	N	10		(edit)
Successful	PC3_1	Server1 HTTP	ICMP	Brown	0.000	N	11		(edit)
Successful	PC3_1	Router1	ICMP	Purple	0.000	N	12		(edit)
Successful	PC3_1	Router2	ICMP	Red	0.000	N	13		(edit)
Successful	PC3_1	Router3	ICMP	Cyan	0.000	N	14		(edit)
Successful	PC3_1	Router4	ICMP	Green	0.000	N	15		(edit)

Figure 23: check ping in PC3_1

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
Successful	PC3_2	PC3_1	ICMP	Blue	0.000	N	0	0	(edit)
Successful	PC3_2	PC42_2	ICMP	Cyan	0.000	N	1		(edit)
Successful	PC3_2	PC42_1	ICMP	Green	0.000	N	2		(edit)
Successful	PC3_2	PC41_1	ICMP	Purple	0.000	N	3		(edit)
Successful	PC3_2	PC41_2	ICMP	Brown	0.000	N	4		(edit)
Successful	PC3_2	PC41_3	ICMP	Green	0.000	N	5		(edit)
Successful	PC3_2	PC2_1	ICMP	Blue	0.000	N	6		(edit)
Successful	PC3_2	PC2_2	ICMP	Brown	0.000	N	7		(edit)
Successful	PC3_2	PC2_3	ICMP	Green	0.000	N	8		(edit)
Successful	PC3_2	Server0	ICMP	Cyan	0.000	N	9		(edit)
Successful	PC3_2	Server1 HTTP	ICMP	Purple	0.000	N	10		(edit)
Successful	PC3_2	Server DNS	ICMP	Orange	0.000	N	11		(edit)
Successful	PC3_2	Router1	ICMP	Red	0.000	N	12		(edit)
Successful	PC3_2	Router2	ICMP	Green	0.000	N	13		(edit)
Successful	PC3_2	Router3	ICMP	Cyan	0.000	N	14		(edit)
Successful	PC3_2	Router4	ICMP	Brown	0.000	N	15		(edit)

Figure 24: check ping in PC3_2

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
Successful	PC42_2	PC3_1	ICMP	■	0.000	N	0	(edit)		
Successful	PC42_2	PC3_2	ICMP	■	0.000	N	1	(edit)		
Successful	PC42_2	PC42_1	ICMP	■	0.000	N	2	(edit)		
Successful	PC42_2	PC41_1	ICMP	■	0.000	N	3	(edit)		
Successful	PC42_2	PC41_2	ICMP	■	0.000	N	4	(edit)		
Successful	PC42_2	PC41_3	ICMP	■	0.000	N	5	(edit)		
Successful	PC42_2	PC2_1	ICMP	■	0.000	N	6	(edit)		
Successful	PC42_2	PC2_2	ICMP	■	0.000	N	7	(edit)		
Successful	PC42_2	PC2_3	ICMP	■	0.000	N	8	(edit)		

Figure 25: check ping in PC42_2

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
Successful	PC42_1	PC42_2	ICMP	■	0.000	N	0	(edit)		
Successful	PC42_1	PC41_1	ICMP	■	0.000	N	1	(edit)		
Successful	PC42_1	PC41_2	ICMP	■	0.000	N	2	(edit)		
Successful	PC42_1	PC41_3	ICMP	■	0.000	N	3	(edit)		
Successful	PC42_1	PC3_2	ICMP	■	0.000	N	4	(edit)		
Successful	PC42_1	PC3_1	ICMP	■	0.000	N	5	(edit)		
Successful	PC42_1	PC2_3	ICMP	■	0.000	N	6	(edit)		
Successful	PC42_1	PC2_1	ICMP	■	0.000	N	7	(edit)		
Successful	PC42_1	PC2_2	ICMP	■	0.000	N	8	(edit)		
Successful	PC42_1	PC2_2	ICMP	■	0.000	N	8	(edit)		

Figure 26: check ping in PC42_1

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
Successful	PC41_1	PC42_1	ICMP	■	0.000	N	0	(edit)		
Successful	PC41_1	PC42_2	ICMP	■	0.000	N	1	(edit)		
Successful	PC41_1	PC42_1	ICMP	■	0.000	N	2	(edit)		
Successful	PC41_1	PC41_3	ICMP	■	0.000	N	3	(edit)		
Successful	PC41_1	PC3_2	ICMP	■	0.000	N	4	(edit)		
Successful	PC41_1	PC3_1	ICMP	■	0.000	N	5	(edit)		
Successful	PC41_1	PC2_1	ICMP	■	0.000	N	6	(edit)		
Successful	PC41_1	PC2_2	ICMP	■	0.000	N	7	(edit)		
Successful	PC41_1	PC2_3	ICMP	■	0.000	N	8	(edit)		

Figure 27: check ping in PC42_1

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
Successful	PC41_2	PC41_1	ICMP	■	0.000	N	0	(edit)		
Successful	PC41_2	PC41_3	ICMP	■	0.000	N	1	(edit)		
Successful	PC41_2	PC42_1	ICMP	■	0.000	N	2	(edit)		
Successful	PC41_2	PC42_2	ICMP	■	0.000	N	3	(edit)		
Successful	PC41_2	PC3_2	ICMP	■	0.000	N	4	(edit)		
Successful	PC41_2	PC3_1	ICMP	■	0.000	N	5	(edit)		
Successful	PC41_2	PC2_1	ICMP	■	0.000	N	6	(edit)		
Successful	PC41_2	PC2_2	ICMP	■	0.000	N	7	(edit)		
Successful	PC41_2	PC2_3	ICMP	■	0.000	N	8	(edit)		

Figure 28: : check ping in PC41_2

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
Successful	PC41_2	PC41_1	ICMP	■	0.000	N	0	(edit)		
Successful	PC41_2	PC41_3	ICMP	■	0.000	N	1	(edit)		
Successful	PC41_2	PC42_1	ICMP	■	0.000	N	2	(edit)		
Successful	PC41_2	PC42_2	ICMP	■	0.000	N	3	(edit)		
Successful	PC41_2	PC3_2	ICMP	■	0.000	N	4	(edit)		
Successful	PC41_2	PC3_1	ICMP	■	0.000	N	5	(edit)		
Successful	PC41_2	PC2_1	ICMP	■	0.000	N	6	(edit)		
Successful	PC41_2	PC2_2	ICMP	■	0.000	N	7	(edit)		
Successful	PC41_2	PC2_3	ICMP	■	0.000	N	8	(edit)		

Figure 29: : check ping in PC41_2

PDU List Window										
Fire	Source	Last Status	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	
PC2_1	Successful	PC2_2	ICMP	Orange	0.000	N	0	(edit)		
PC2_1	Successful	PC2_3	ICMP	Green	0.000	N	1	(edit)		
PC2_1	Successful	PC3_1	ICMP	Light Green	0.000	N	2	(edit)		
PC2_1	Successful	PC3_2	ICMP	Blue	0.000	N	3	(edit)		
PC2_1	Successful	PC42_2	ICMP	Dark Green	0.000	N	4	(edit)		
PC2_1	Successful	PC42_1	ICMP	Brown	0.000	N	5	(edit)		
PC2_1	Successful	PC41_1	ICMP	Yellow	0.000	N	6	(edit)		
PC2_1	Successful	PC41_2	ICMP	Dark Blue	0.000	N	7	(edit)		
PC2_1	Successful	PC41_3	ICMP	Dark Green	0.000	N	8	(edit)		

Figure 30: : check ping in PC2_1

PDU List Window										
Fire	Source	Last Status	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	
PC2_2	Successful	PC2_1	ICMP	Light Blue	0.000	N	0	(edit)		
PC2_2	Successful	PC2_3	ICMP	Green	0.000	N	1	(edit)		
PC2_2	Successful	PC41_3	ICMP	Yellow	0.000	N	2	(edit)		
PC2_2	Successful	PC41_2	ICMP	Blue	0.000	N	3	(edit)		
PC2_2	Successful	PC41_1	ICMP	Purple	0.000	N	4	(edit)		
PC2_2	Successful	PC42_1	ICMP	Brown	0.000	N	5	(edit)		
PC2_2	Successful	PC42_2	ICMP	Magenta	0.000	N	6	(edit)		
PC2_2	Successful	PC3_2	ICMP	Dark Green	0.000	N	7	(edit)		
PC2_2	Successful	PC3_1	ICMP	Red	0.000	N	8	(edit)		

Figure 31: : check ping in PC2_2

PDU List Window										
Fire	Source	Last Status	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	
PC2_3	Successful	PC2_2	ICMP	Purple	0.000	N	0	(edit)		
PC2_3	Successful	PC2_1	ICMP	Dark Green	0.000	N	1	(edit)		
PC2_3	Successful	PC3_1	ICMP	Blue	0.000	N	2	(edit)		
PC2_3	Successful	PC3_2	ICMP	Yellow	0.000	N	3	(edit)		
PC2_3	Successful	PC42_2	ICMP	Green	0.000	N	4	(edit)		
PC2_3	Successful	PC42_1	ICMP	Dark Blue	0.000	N	5	(edit)		
PC2_3	Successful	PC41_1	ICMP	Yellow	0.000	N	6	(edit)		
PC2_3	Successful	PC41_2	ICMP	Magenta	0.000	N	7	(edit)		
PC2_3	Successful	PC41_3	ICMP	Purple	0.000	N	8	(edit)		

Figure 32:: check ping in PC2_3

2. Access www.FirstSem2024.com from all PCs

The image displays a 5x2 grid of screenshots, each showing a computer desktop with a web browser window open to <http://www.FirstSem2024.com>. The content of the web page is identical across all screens, featuring a header "Welcome to Computer Networks course", sections for "Group Members" (Rebal, Yara, Dana), and profiles for "Rebal Zabade" and "Yara Mukho". The Windows taskbar at the bottom of each screen shows the date as 1/30/2024.

PC1_1

PC1_2

PC1_3

PC1_4

PC1_5

PC1_6

PC1_7

PC1_8

PC1_9

PC1_10

PC2_1

PC2_2

PC2_3

PC2_4

PC2_5

PC2_6

PC2_7

PC2_8

PC2_9

PC2_10

PC3_1

PC3_2

PC3_3

PC3_4

PC3_5

PC3_6

PC3_7

PC3_8

PC3_9

PC3_10

PC4_1

PC4_2

PC4_3

PC4_4

PC4_5

PC4_6

PC4_7

PC4_8

PC4_9

PC4_10

PC5_1

PC5_2

PC5_3

PC5_4

PC5_5

PC5_6

PC5_7

PC5_8

PC5_9

PC5_10

PC6_1

PC6_2

PC6_3

PC6_4

PC6_5

PC6_6

PC6_7

PC6_8

PC6_9

PC6_10

PC7_1

PC7_2

PC7_3

PC7_4

PC7_5

PC7_6

PC7_7

PC7_8

PC7_9

PC7_10

PC8_1

PC8_2

PC8_3

PC8_4

PC8_5

PC8_6

PC8_7

PC8_8

PC8_9

PC8_10

PC9_1

PC9_2

PC9_3

PC9_4

PC9_5

PC9_6

PC9_7

PC9_8

PC9_9

PC9_10

PC10_1

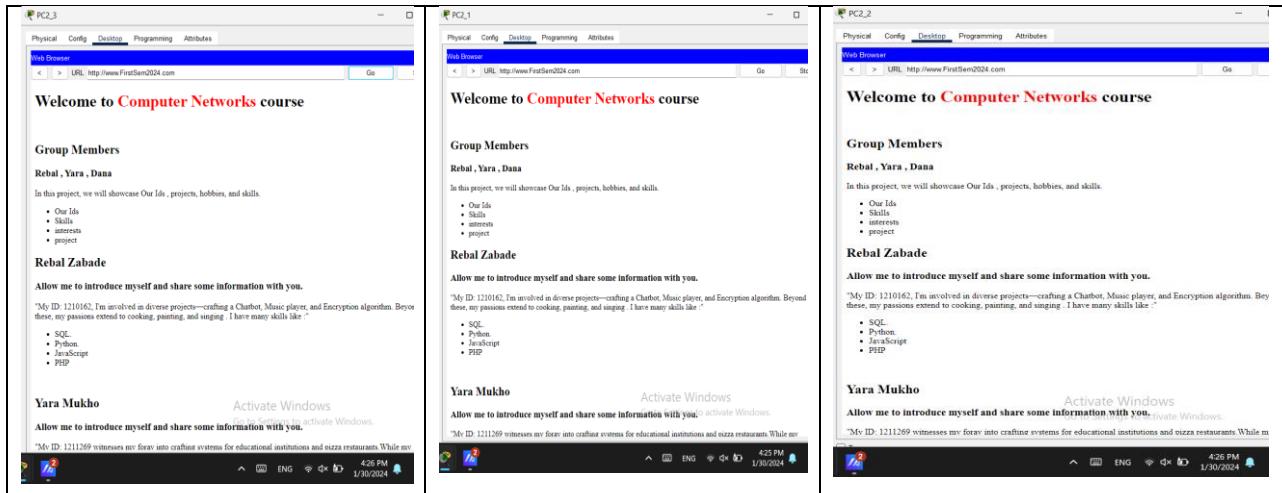
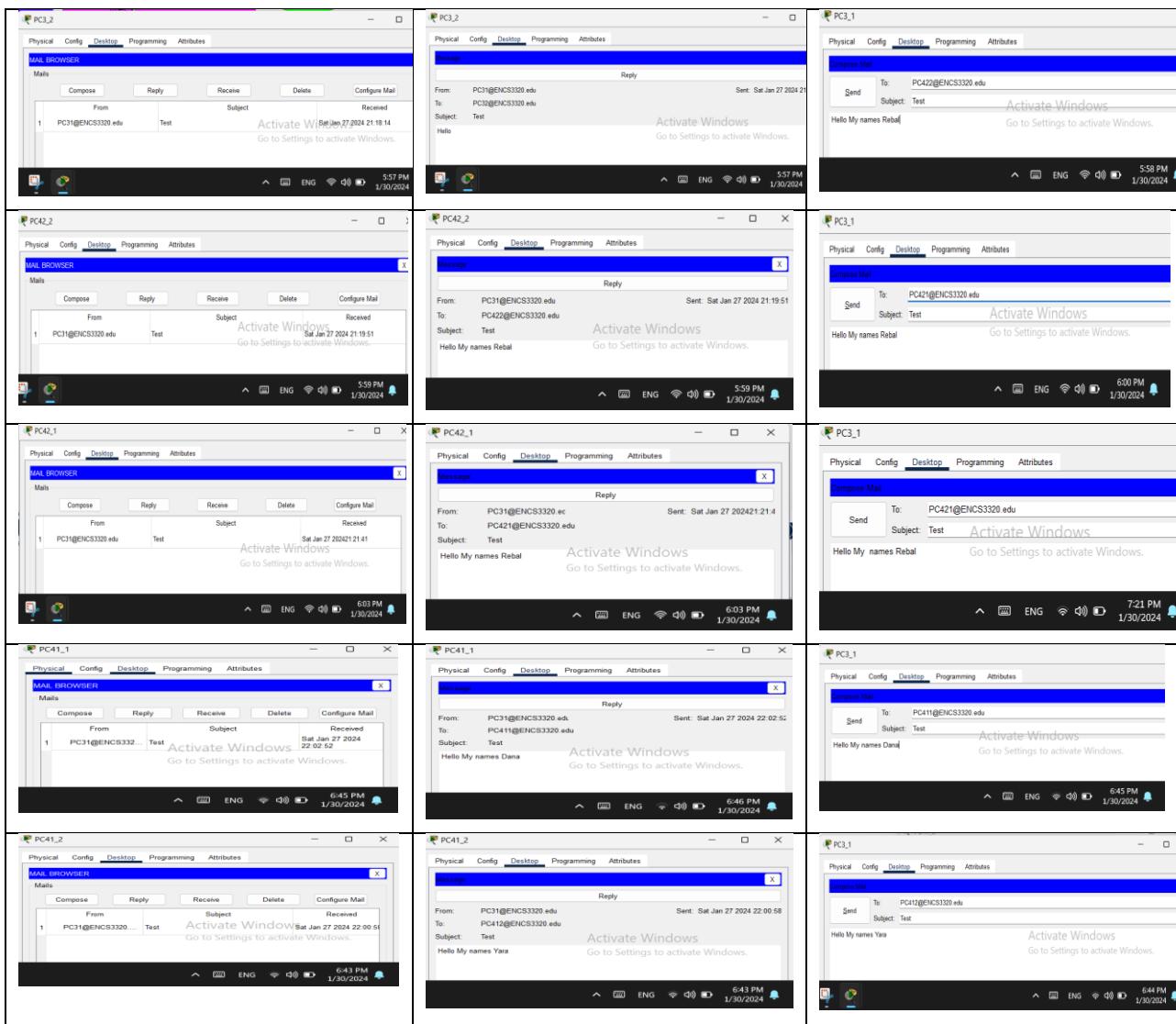


Figure 33: check the HTTP is work in all pc



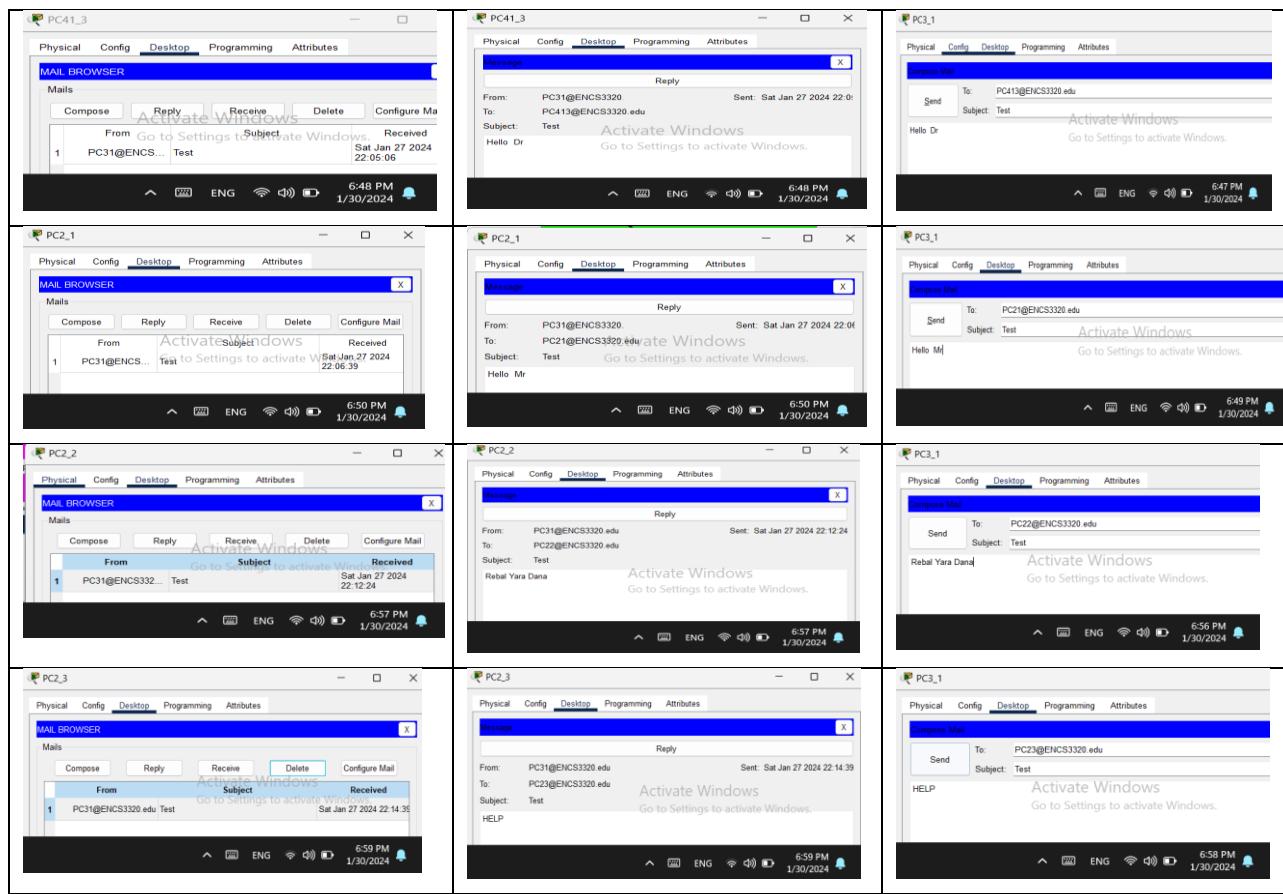


Figure 34: send the email form PC3_1 to all pc

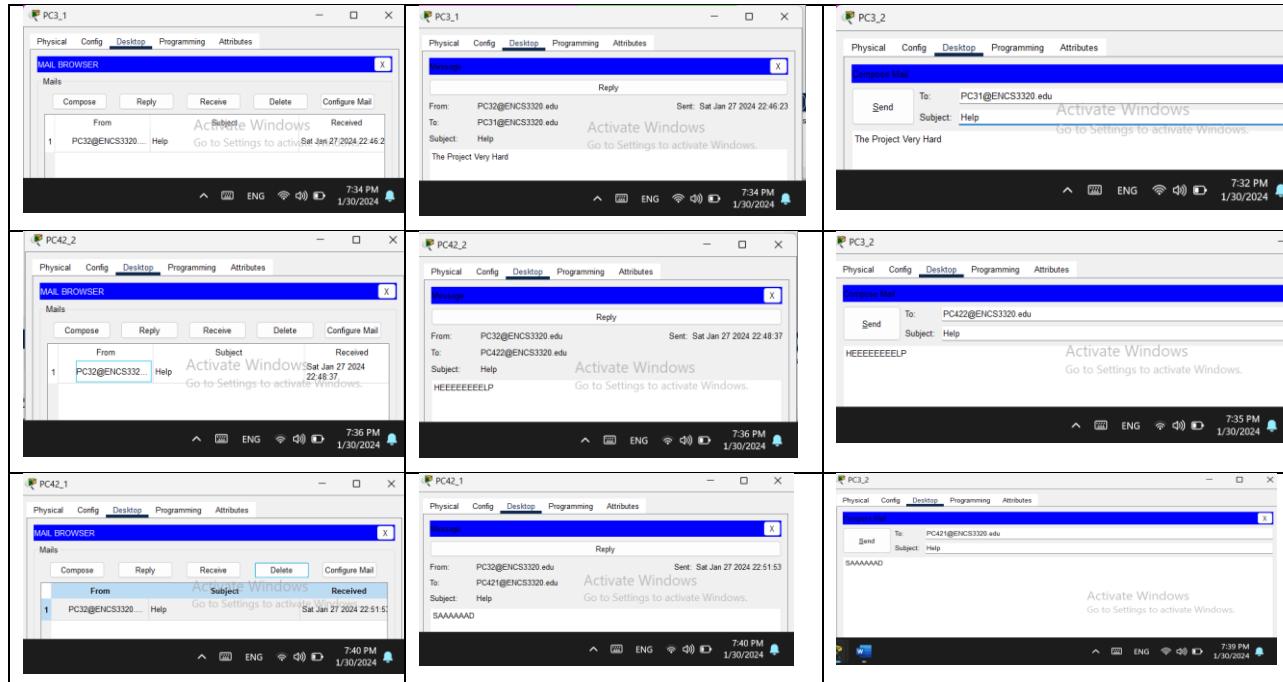
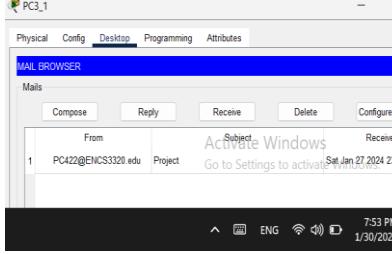
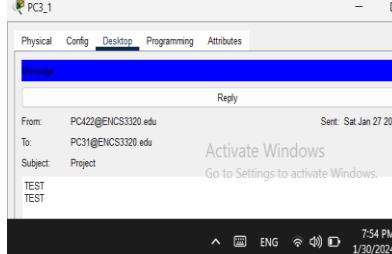
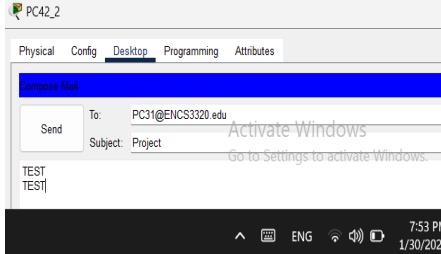
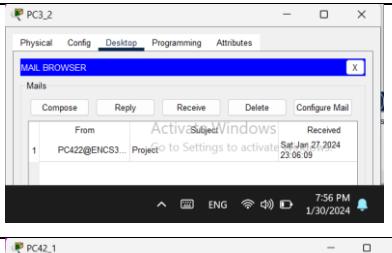
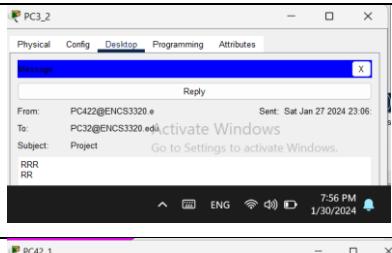
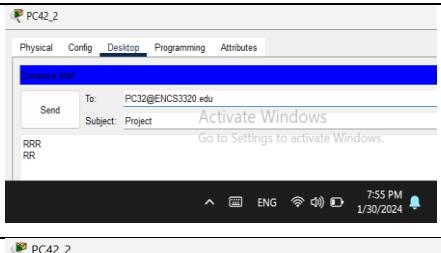
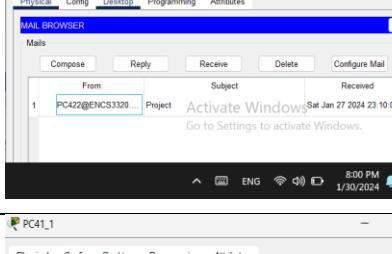
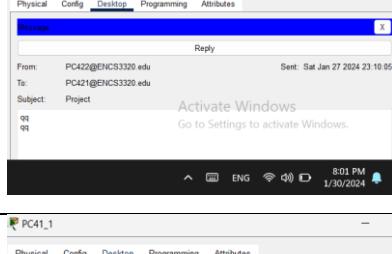
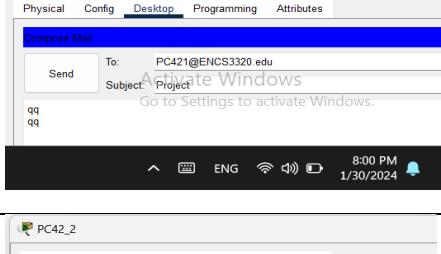
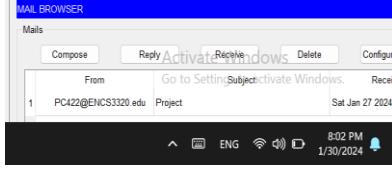
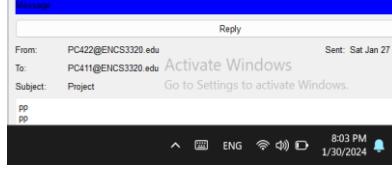
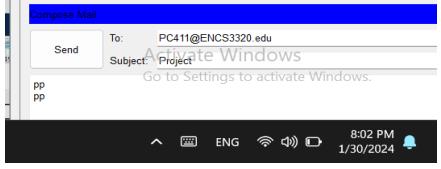
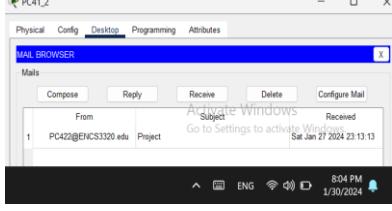
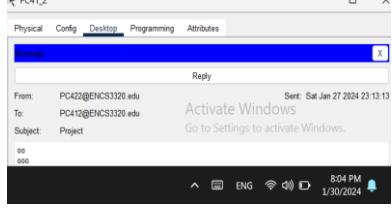
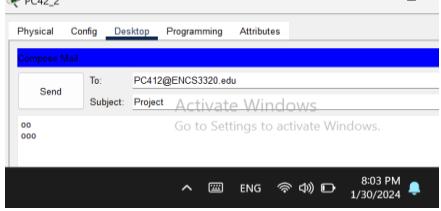
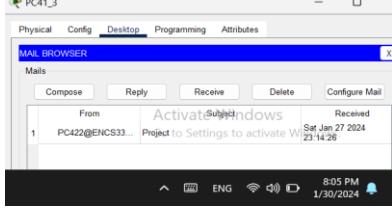
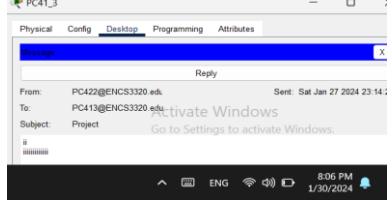
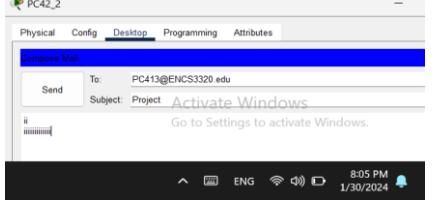
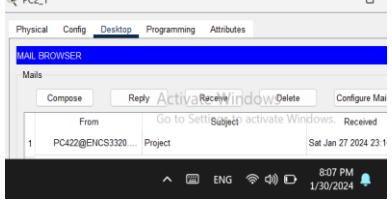
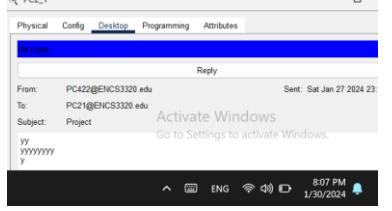
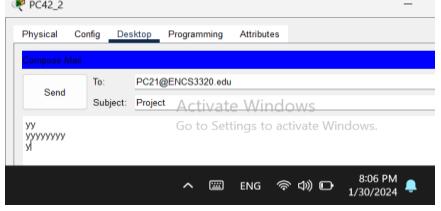




Figure 35: send the email form PC3-2 to all pc

PC3_1	PC3_1	PC42_2
		
PC3_2	PC3_2	PC42_2
		
PC42_1	PC42_1	PC42_2
		
PC41_1	PC41_1	PC42_2
		
PC41_2	PC41_2	PC42_2
		
PC41_3	PC41_3	PC42_2
		
PC2_1	PC2_1	PC42_2
		

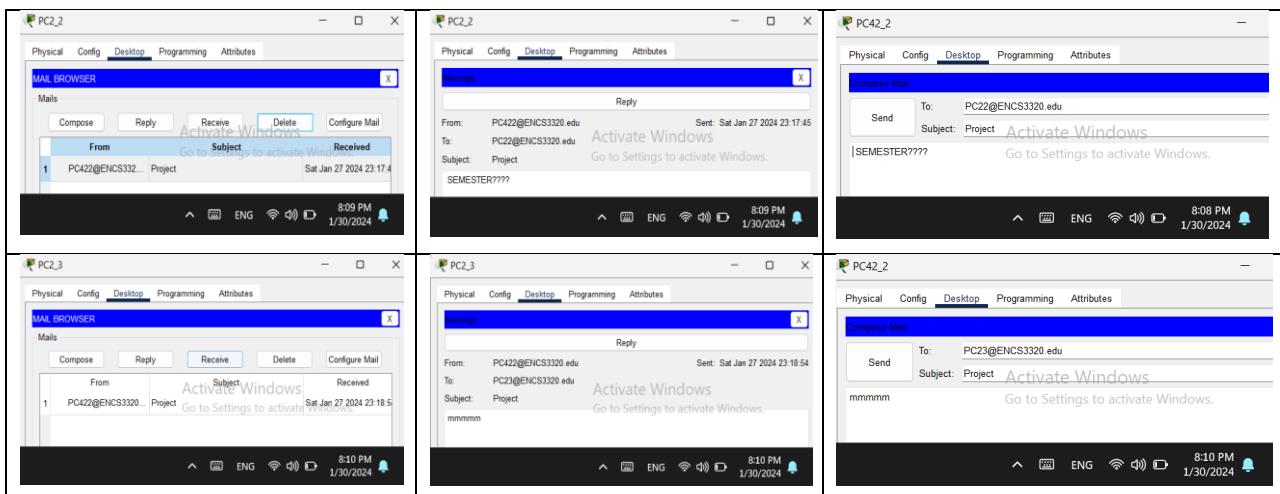
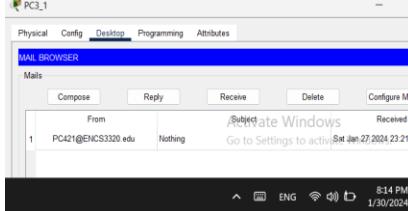
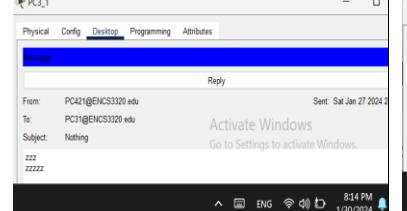
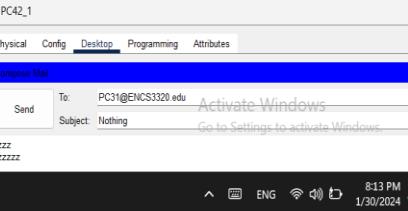
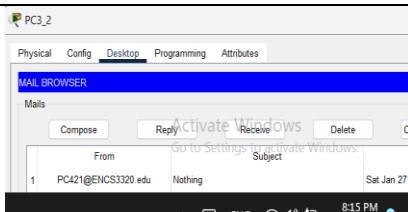
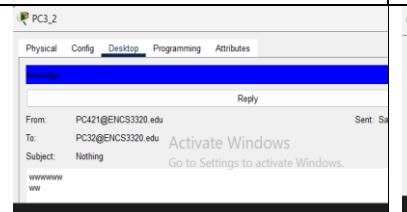
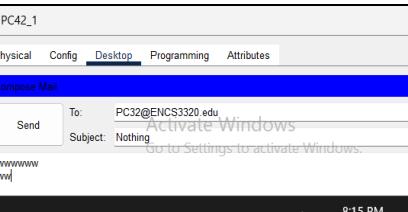
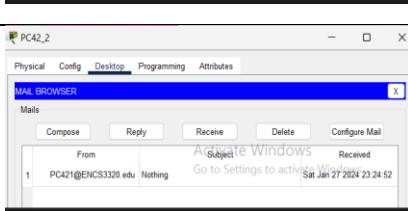
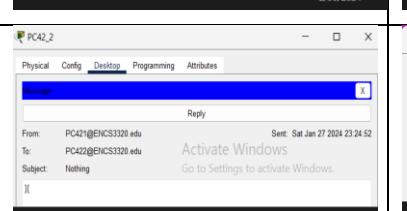
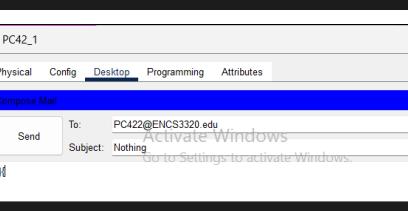
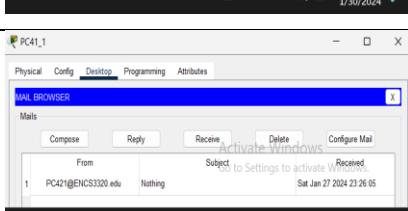
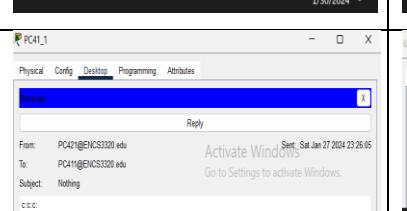
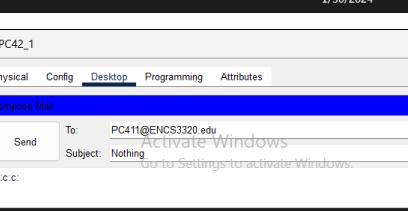
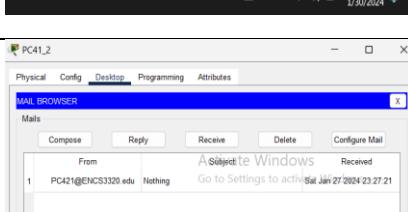
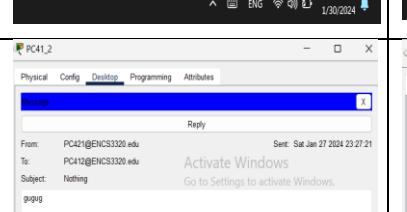
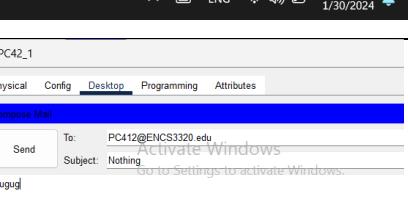
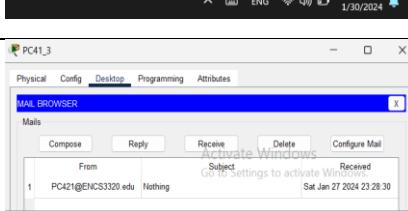
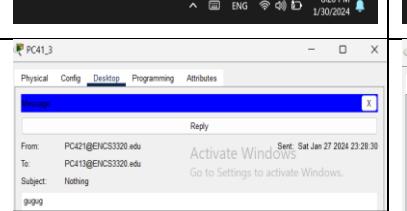
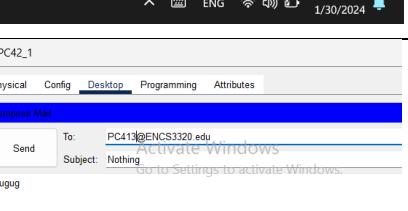
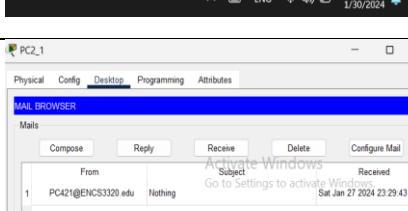
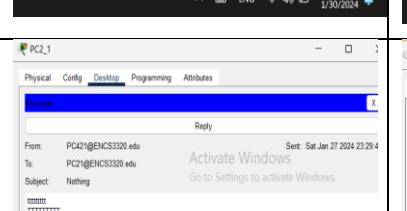
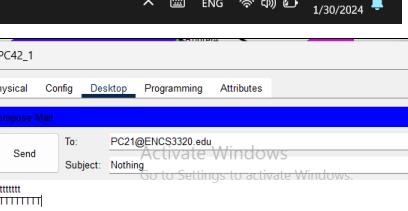


Figure 36: send the email form PC42_2 to all pc

PC3_1	PC3_1	PC42_1
		
PC3_2	PC3_2	PC42_1
		
PC42_2	PC42_2	PC42_1
		
PC41_1	PC41_1	PC42_1
		
PC41_2	PC41_2	PC42_1
		
PC41_3	PC41_3	PC42_1
		
PC2_1	PC2_1	PC42_1
		

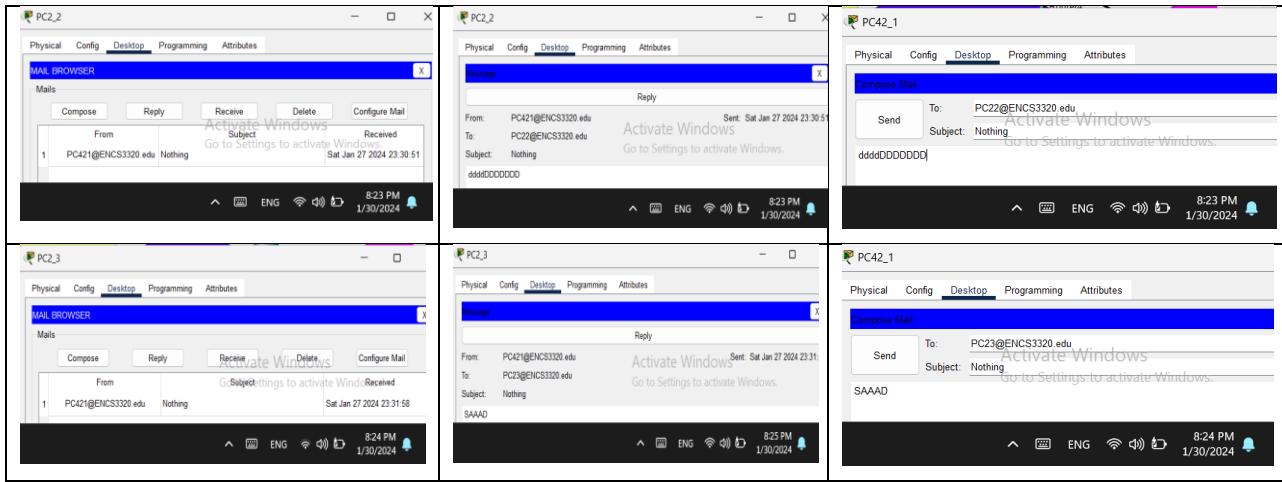
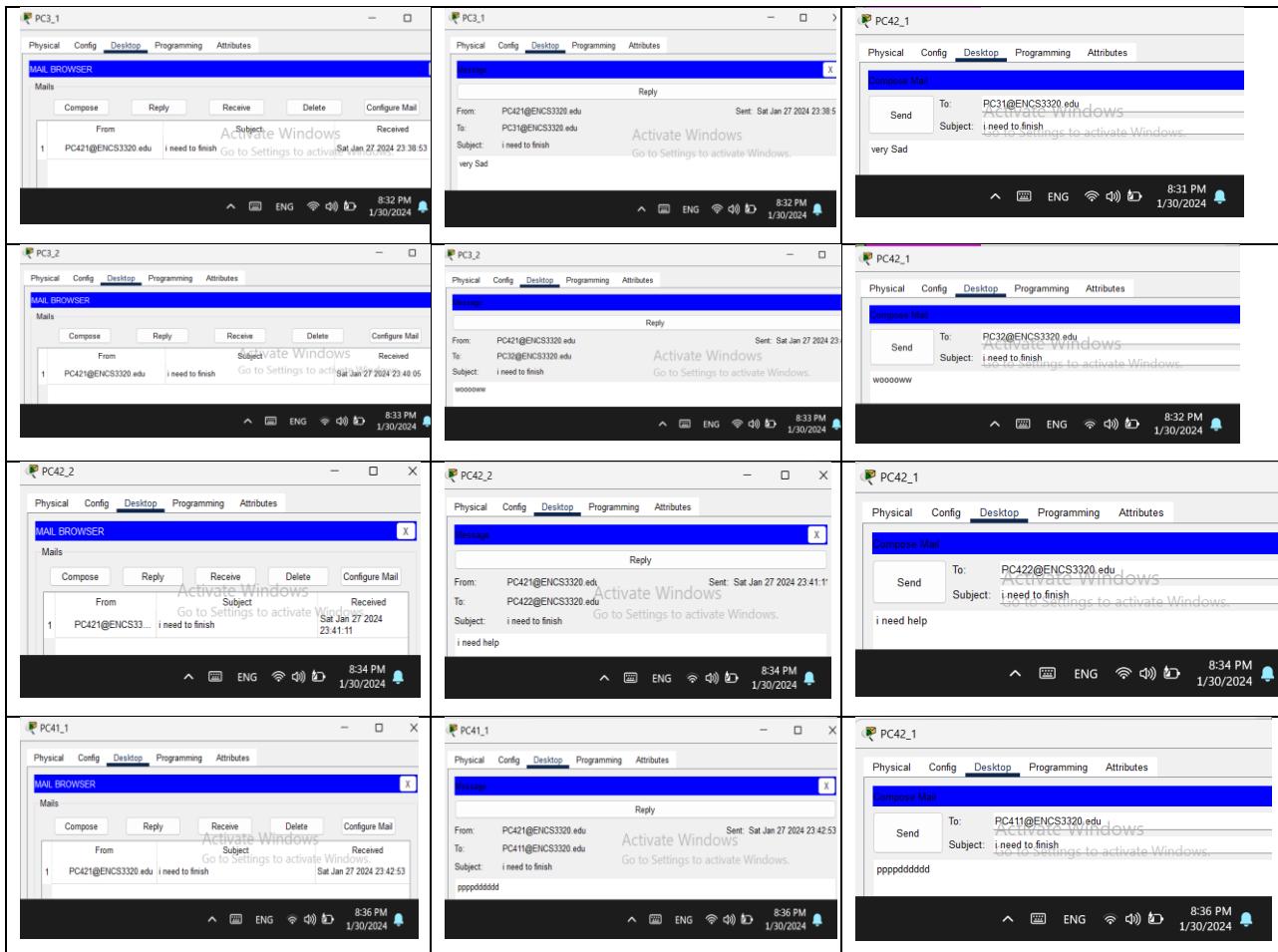


Figure 37: send the email form PC42_1 to all pc



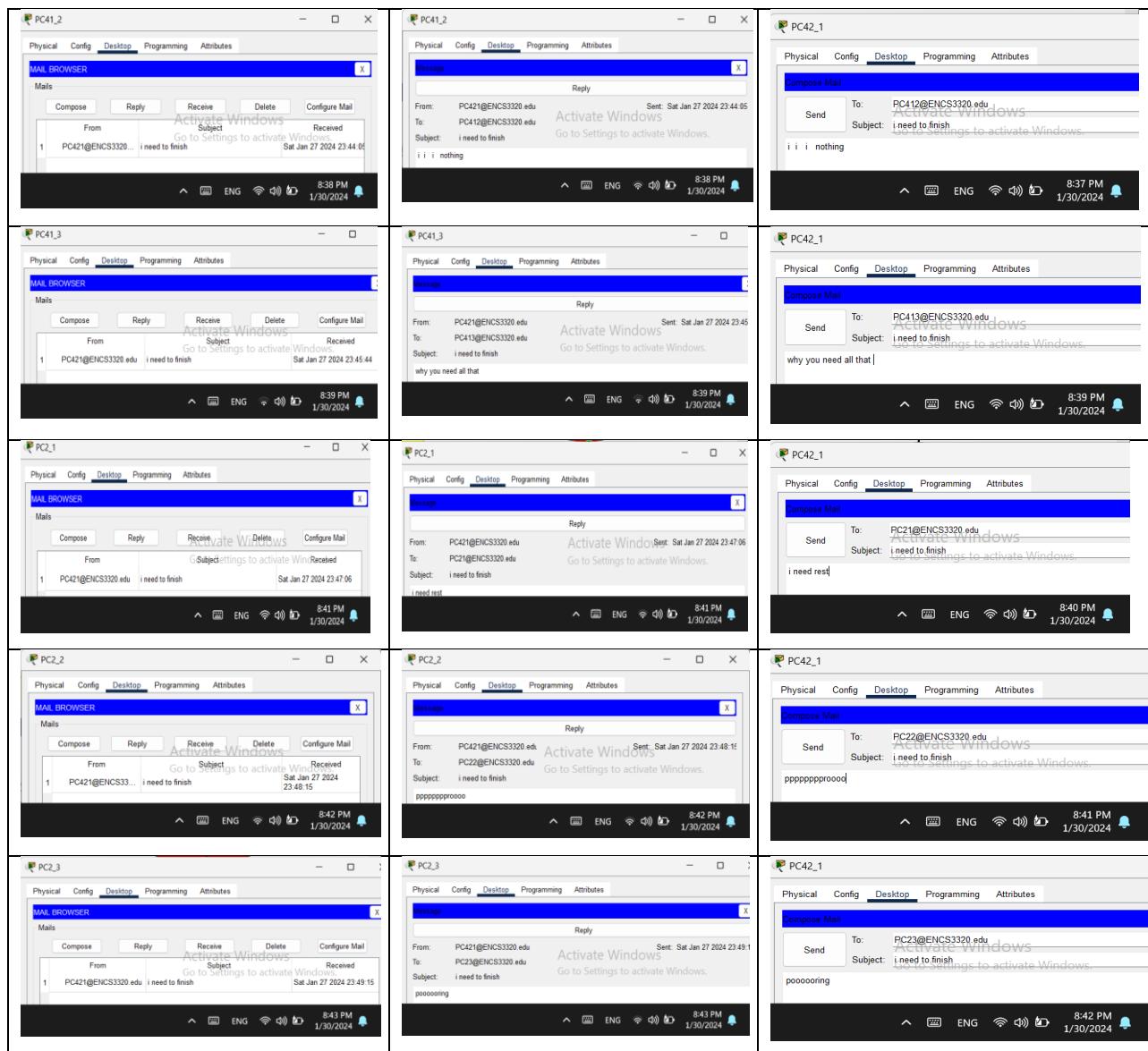
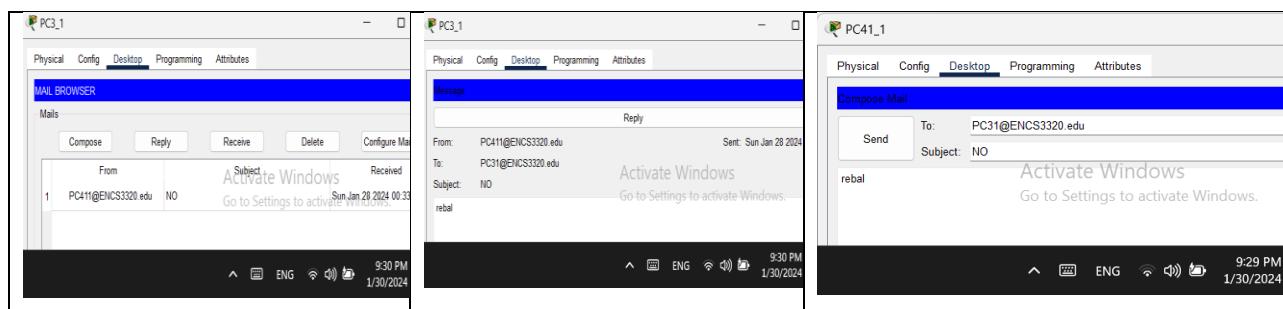
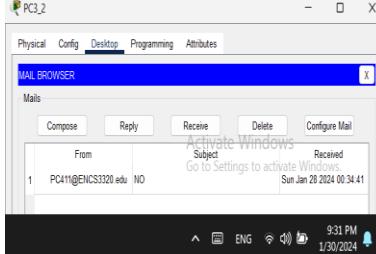
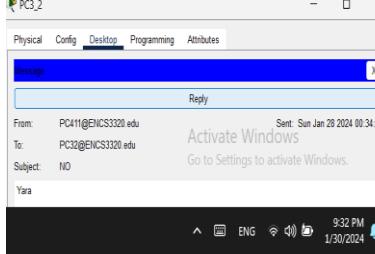
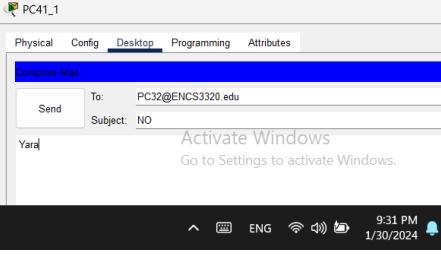
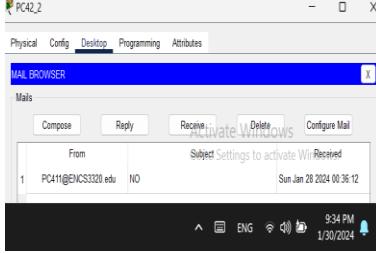
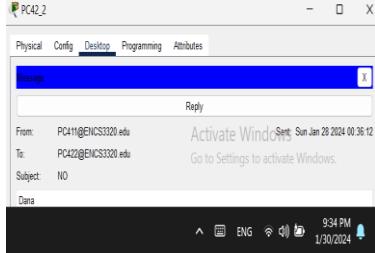
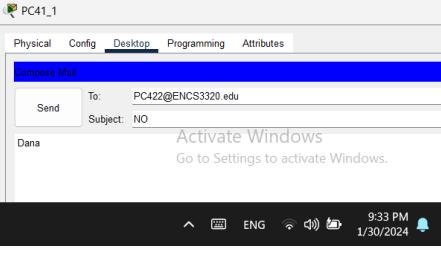
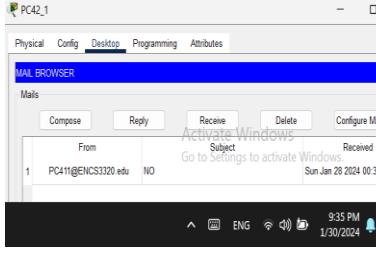
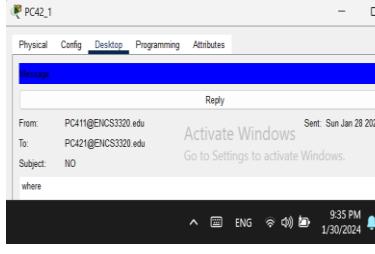
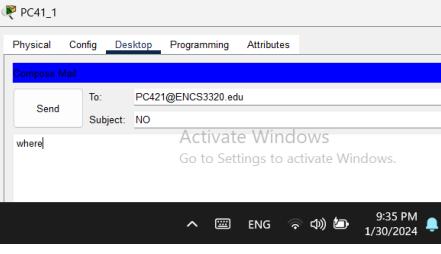
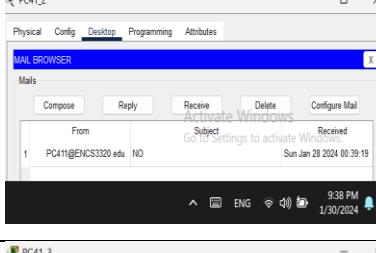
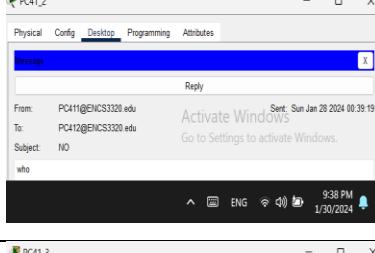
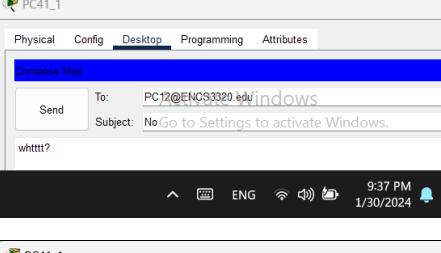
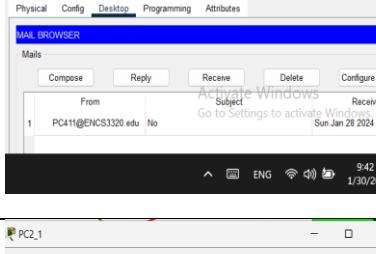
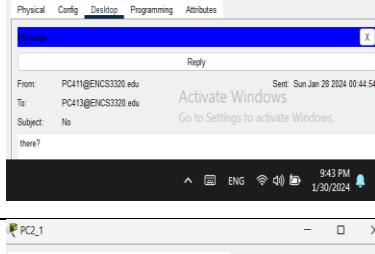
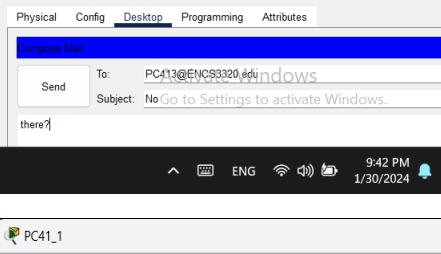
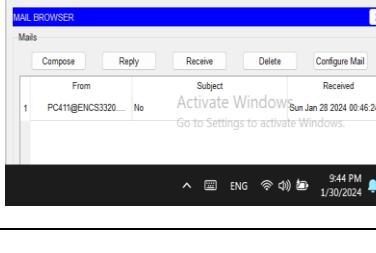
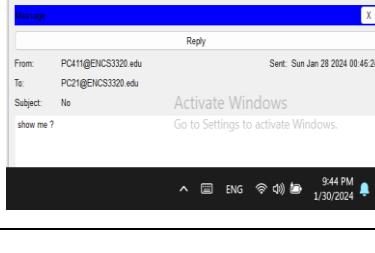
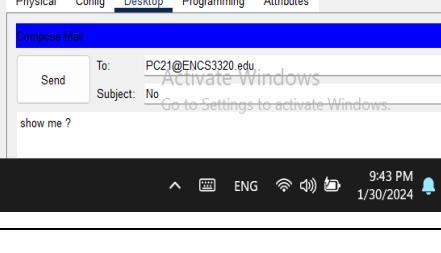


Figure 38:send the email form PC42_1 to all pc



PC3_2	PC3_2	PC41_1
		
PC42_2	PC42_2	PC41_1
		
PC42_1	PC42_1	PC41_1
		
PC41_2	PC41_2	PC41_1
		
PC41_3	PC41_3	PC41_1
		
PC2_1	PC2_1	PC41_1
		

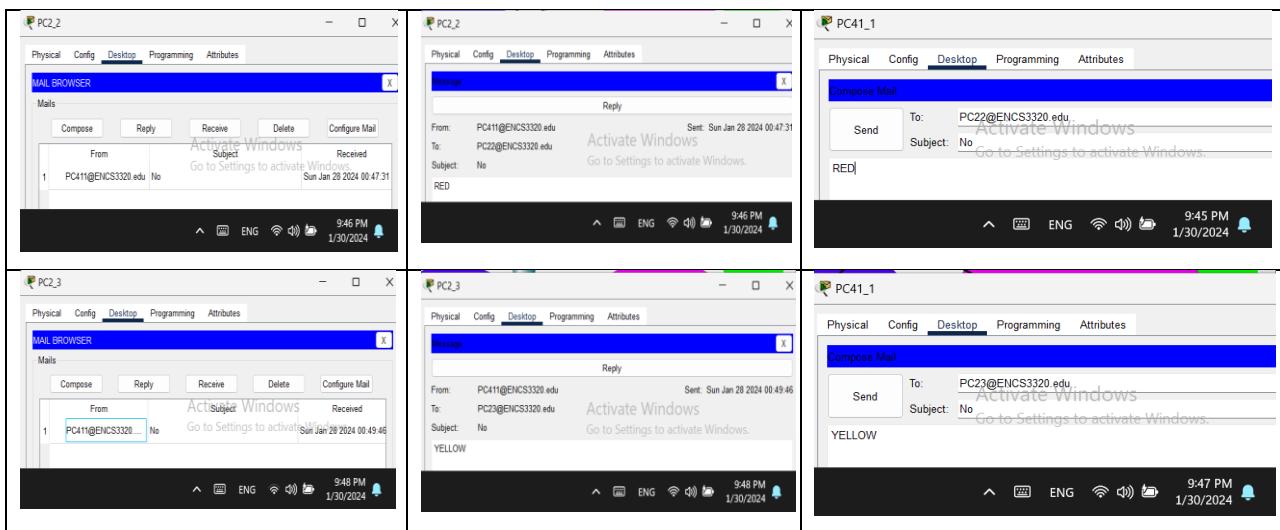
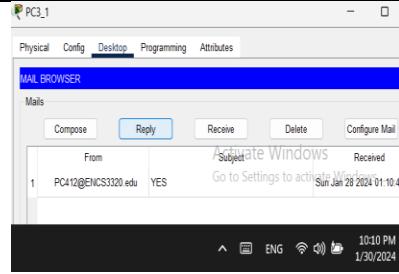
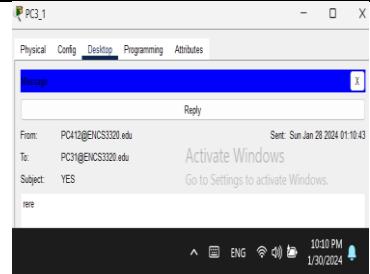
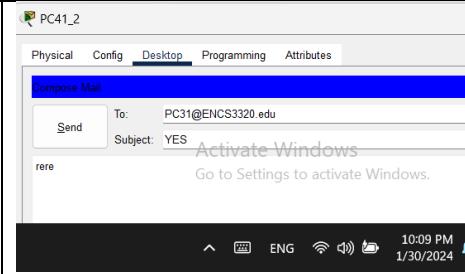
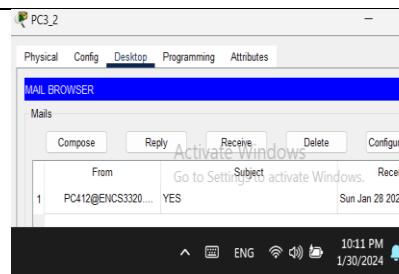
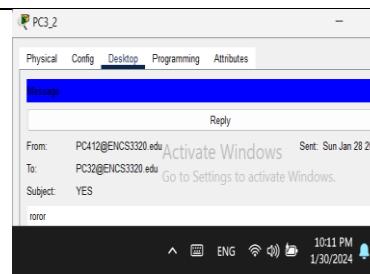
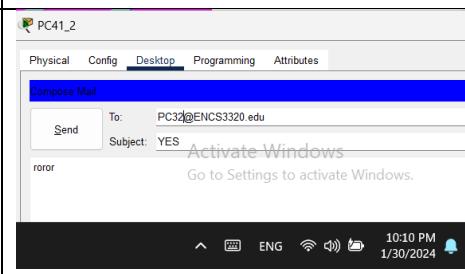
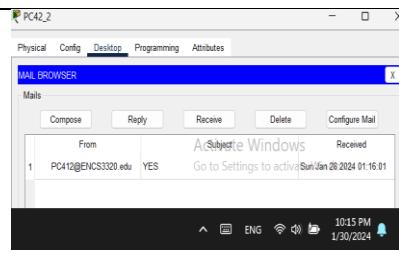
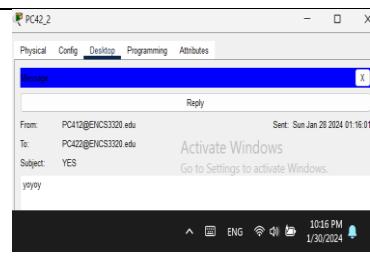
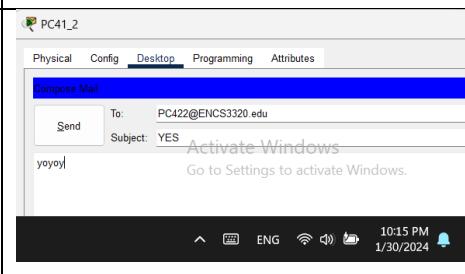
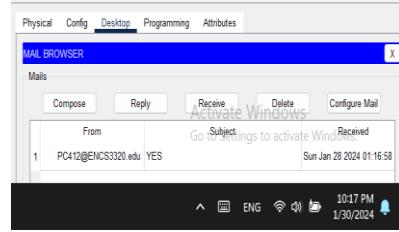
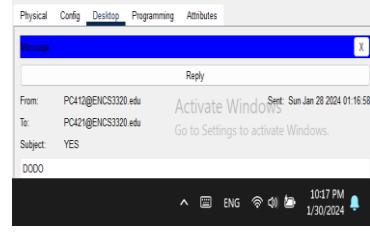
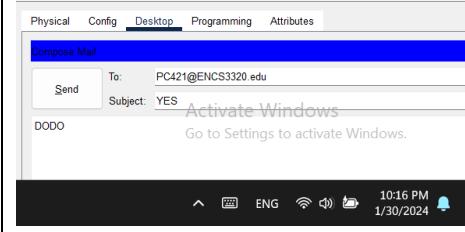
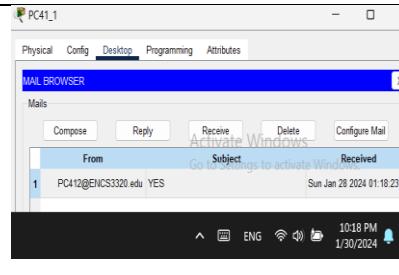
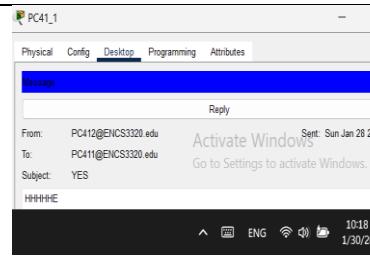
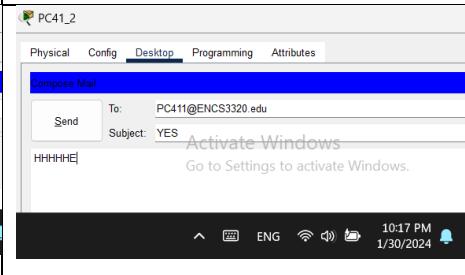
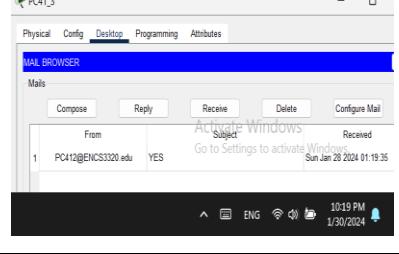
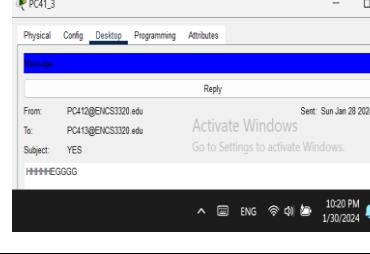
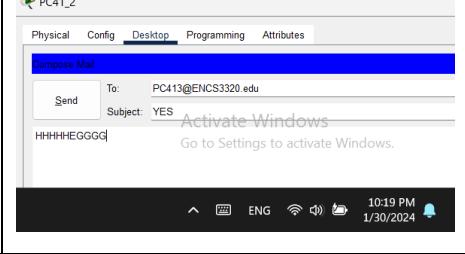


Figure 39: send the email form PC41_1 to all pc

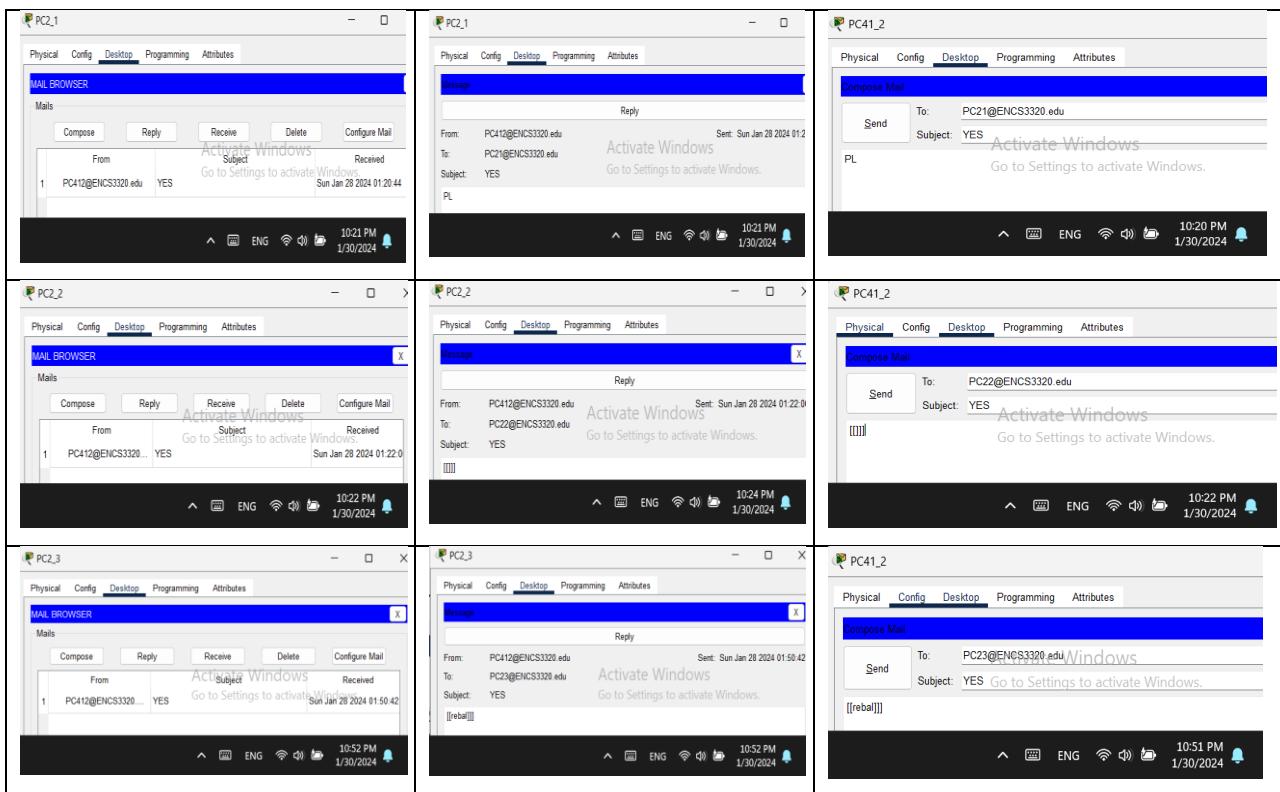


Figure 40: send the email form PC41_2 to all pc

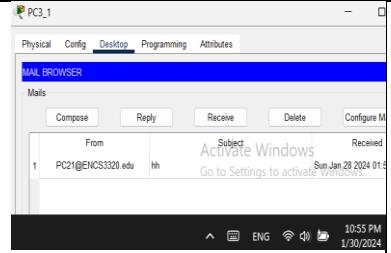
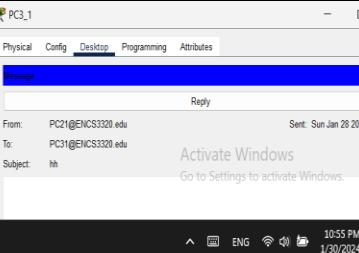
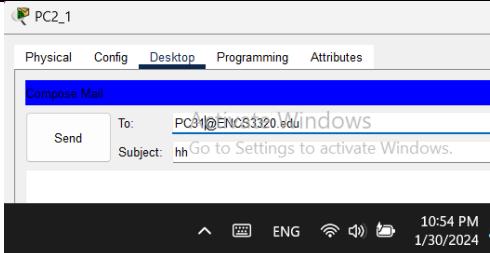
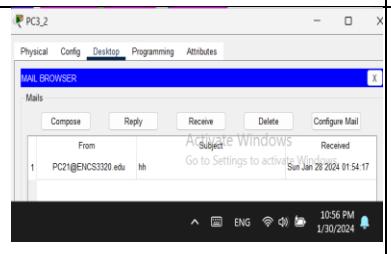
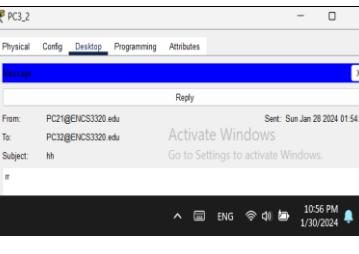
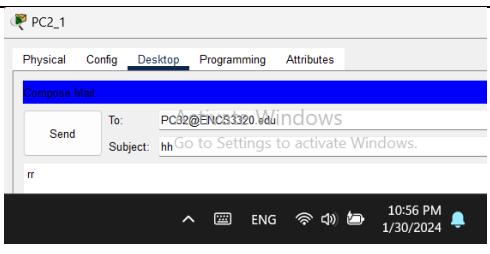
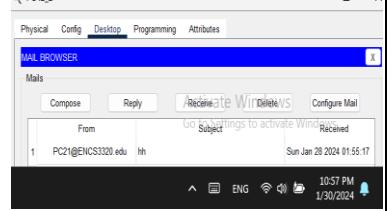
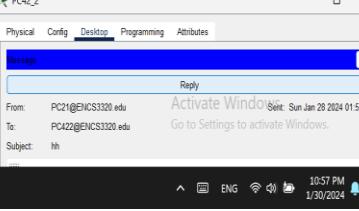
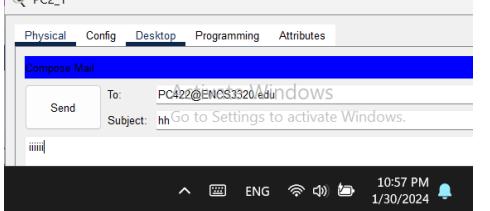
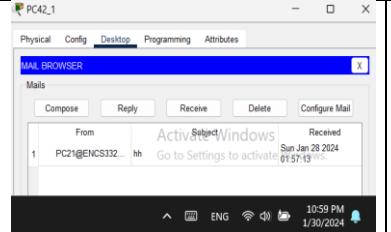
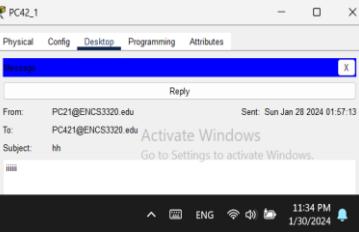
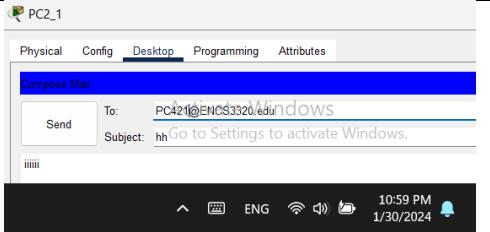
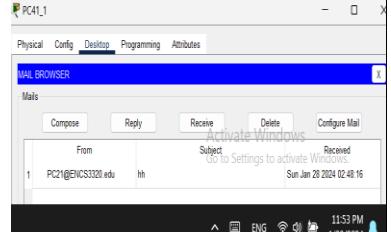
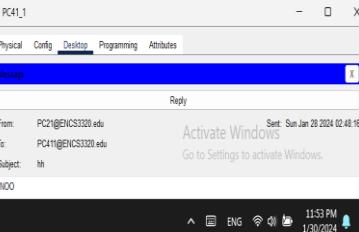
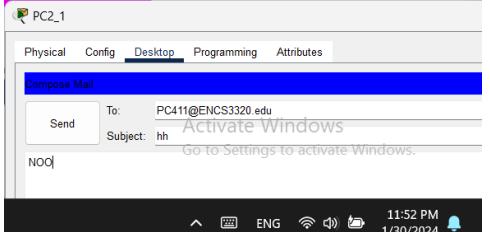
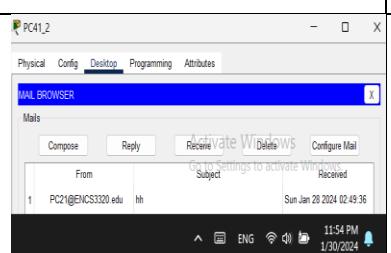
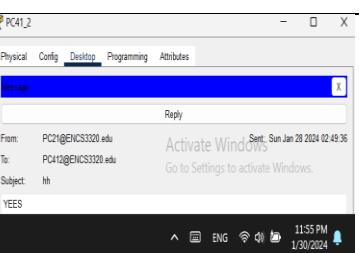
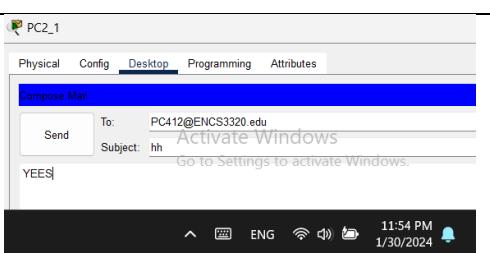
		
		
		
		
		
		



Figure 41: send the email form PC2_1 to all pc