CYBER SHUJAA CLOUD & NETWORK SECURITY

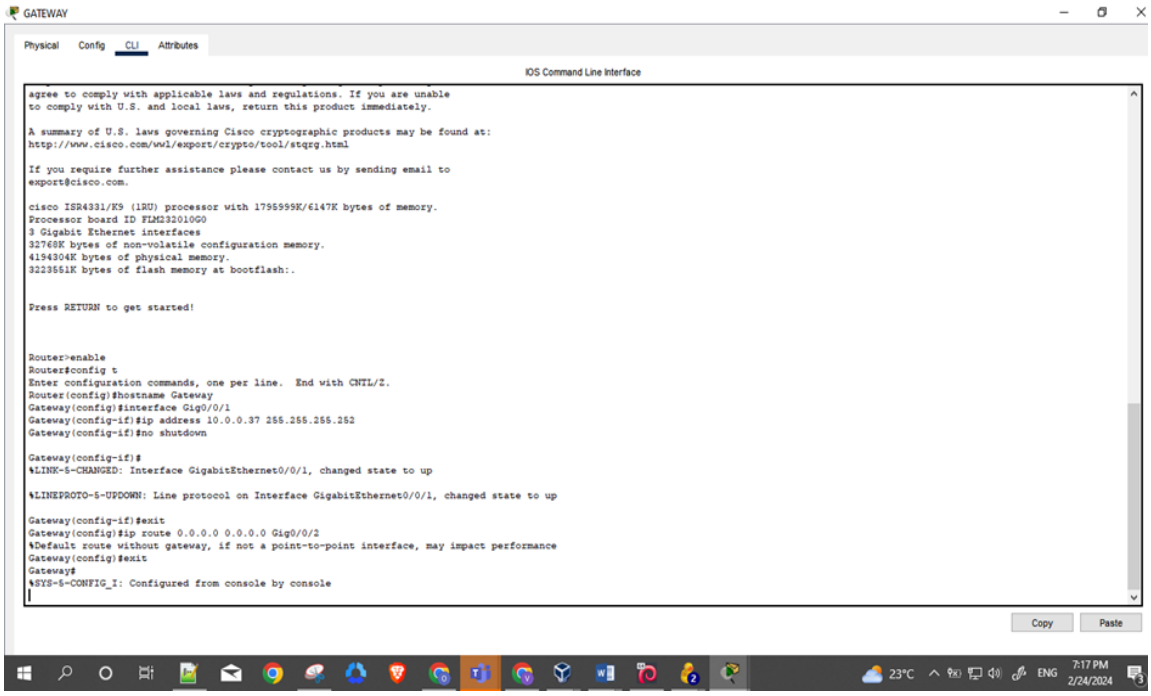
PACKET TRACER MID-EXAM

TIME ALLOWED: 2 HOURS

TOTAL: marks

Instructions:

- Answer **ALL** questions
- The exam should **NOT be** worked on in groups or with assistance from others.
- You **MUST** have your **camera on** throughout the session.
- Use this file as your write-up reporting template as you complete each task outlined and answer the questions.
- **Rename this file with your full names e.g Firstname_Lastname.docx**
- Once you have completed your work, save the file and upload it for marking.
- Before leaving the exam, **ensure you have uploaded the correct file** capturing all the work you have submitted for marking.
- Ensure you compile a **detailed report write-up** that outlines your approach to addressing the various exam challenges. Ensure that your write up is authentic. Show screenshots of the working for all answers showing how you got your answers.
- The screen shots should capture your full screen and display the command you ran to get the answer. Include a taskbar showing your machine taskbar and time stamp as shown below.



- **NOTE: You MUST take FULL SCREEN screenshots for each step(must show the taskbar and time stamp) of how you got your answers and submit the document as a PDF file. If you answer the question without providing the screenshots you WILL NOT be awarded any marks.**

TOTAL: 60mks

Task:

There's a memo that your company received indicating that someone might be trying to hack into it. the network. Your job is to put security measures in place to stop. unapproved entry into the network.

Scenario:

At **Acacia Pharmacy Corporation** you are employed as a network engineer. There are numerous devices on your company's network such as switches, routers and hosts. Six subnets are part of the network architecture.

HQ is connected to the internet via the **HQ ROUTER**.

You must set up the region in a way that the connection is on a need basis as guided below.

NETWORK SETUP IN HQ

- You will configure the **distribution-layer switch** (D/Sw) with DHCP pools for the two subnets under it: **192.168.1.0 /28, 192.168.1.16 /28**. You will as well configure the Gig0/1 interface on the distribution switch to link with the Gig0/0/1 interface of the **HQ-ROUTER** using the IP address space **192.168.1.32 /30**.
- **NOTE**: Avoid typing in quotes (" ") wherever you see one. Instead, ONLY key in the word available within the quotes.

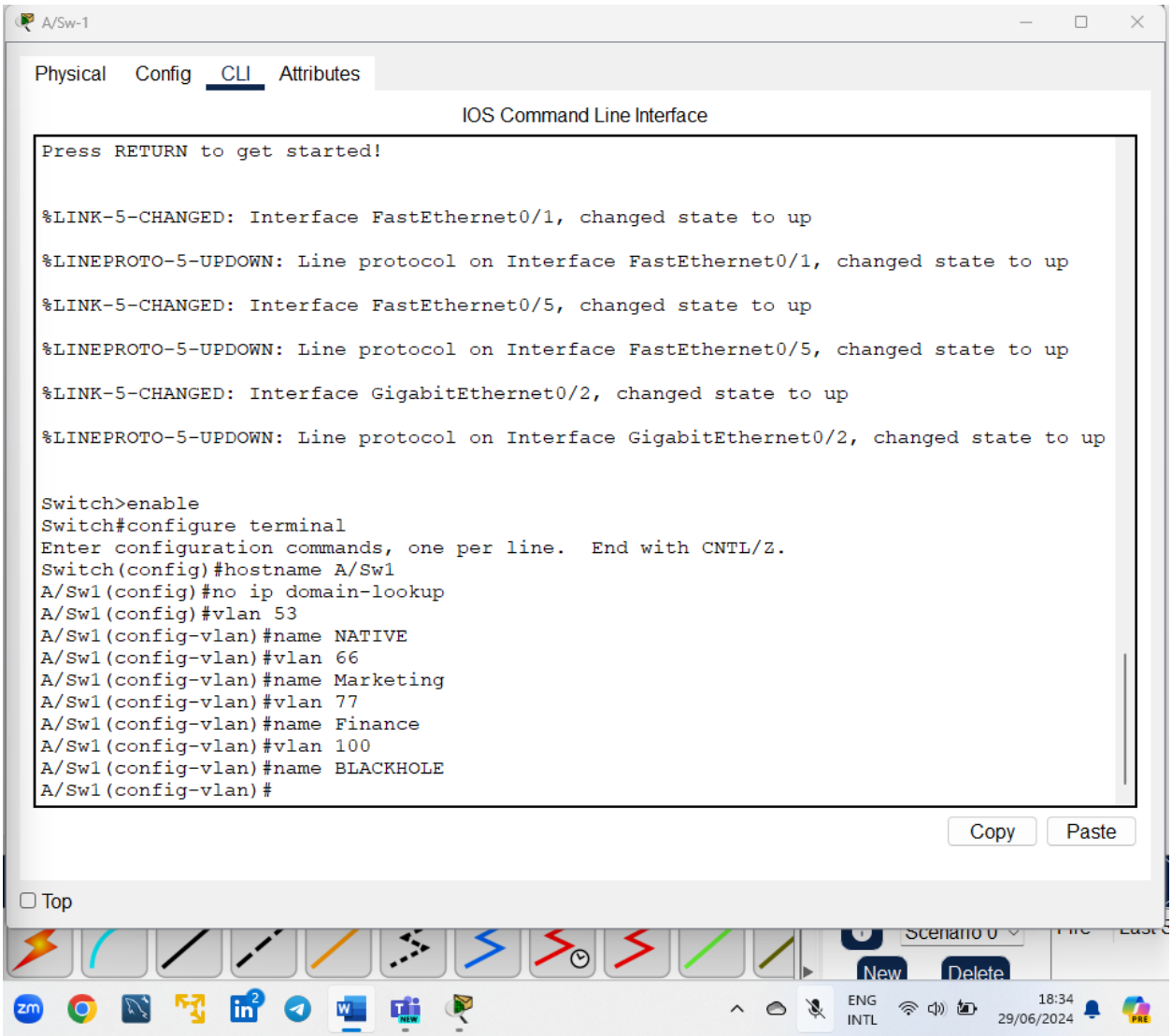
Task 1: Configure the Access Layer Switch (A/Sw1) within HQ. (15mks)

a) Rename the hostname to "A/Sw1"

b) Disable ip domain lookup

c) Create the following vlans:

- Vlan 53 and name it "NATIVE"
- Vlan 66 and name it "Marketing"
- Vlan 77 and name it "Finance"
- Vlan 100 and name it "BLACKHOLE"



d) Configure the following port interfaces accordingly:

- Fa0/1 to have access to vlan 66
- Enable bpdu guard on Fa0/1
- Fa0/5 to have access to vlan 77
- Enable bpdu guard on Fa0/1
- Gig0/2 should be a trunk port and strictly allow traffic from vlans 66, 77, and 53.
- While configuring Gig0/2 as trunk, designate vlan 53 as the native vlan.
- All unused ports to be assigned to vlan 100 and put in a shutdown state.

A/Sw-1

Physical Config CLI Attributes

IOS Command Line Interface

```
A/Sw1(config-vlan)#exit
A/Sw1(config)#interface Fa0/1
A/Sw1(config-if)#switchport mode acess
                                   ^
% Invalid input detected at '^' marker.

A/Sw1(config-if)#switchport mode access
A/Sw1(config-if)#switchport access vlan 66
A/Sw1(config-if)#spanning-tree bpduguard enable
A/Sw1(config-if)#exit
A/Sw1(config)#interface Fa0/5
A/Sw1(config-if)#switchport mode access
A/Sw1(config-if)#switchport access vlan 77
A/Sw1(config-if)#spanning-tree bpduguard enable
A/Sw1(config-if)#exit
A/Sw1(config)#interface Gig0/2
A/Sw1(config-if)#switchport mode trunk

A/Sw1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/2, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/2, changed state to up

A/Sw1(config-if)#switchport trunk allowed vlan 53,66,77
A/Sw1(config-if)#switchport trunk native vlan 53
A/Sw1(config-if)#%SPANTREE-2-RECV_PVID_ERR: Received BPDU with inconsistent peer vlan id 1 on GigabitEthernet0/2 VLAN53.

%SPANTREE-2-BLOCK_PVID_LOCAL: Blocking GigabitEthernet0/2 on VLAN0053. Inconsistent local vlan.

exit
A/Sw1(config)#
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/2 (53), with Switch GigabitEthernet0/2 (1).

A/Sw1(config)#interface range Fa0/2-4, Fa0/6-24, Gig0/
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/2 (53), with Switch GigabitEthernet0/2 (1).
1
A/Sw1(config-if-range)#switchport mode access
A/Sw1(config-if-range)#switchport access vlan 100
A/Sw1(config-if-range)#shutdow
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/2 (53), with Switch GigabitEthernet0/2 (1).
n

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down
```

21°C
Partly cloudy

A/Sw-1

Physical Config CLI Attributes

IOS Command Line Interface

```
%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/13, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/14, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/16, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/17, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/18, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/19, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/20, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/21, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/22, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/23, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/24, changed state to administratively down

%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to administratively down
A/Sw1(config-if-range)#exit
A/Sw1(config)#
```

21°C
Partly cloudy

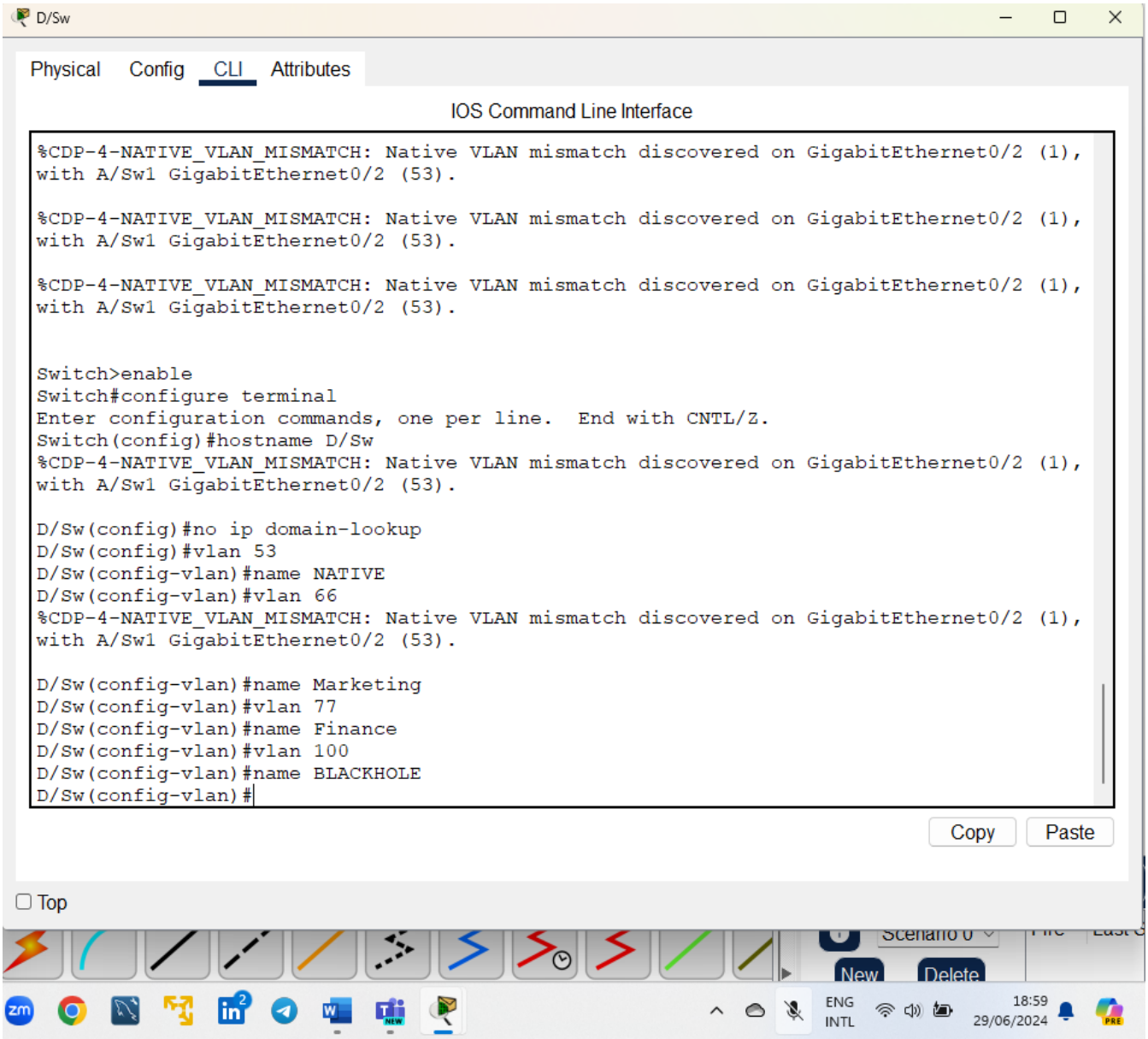
<u>Task 2: Configure the Distribution Layer Switch (D/Sw) within HQ.(20mks)</u>

a) Rename the hostname to “D/Sw”

b) Disable ip domain lookup

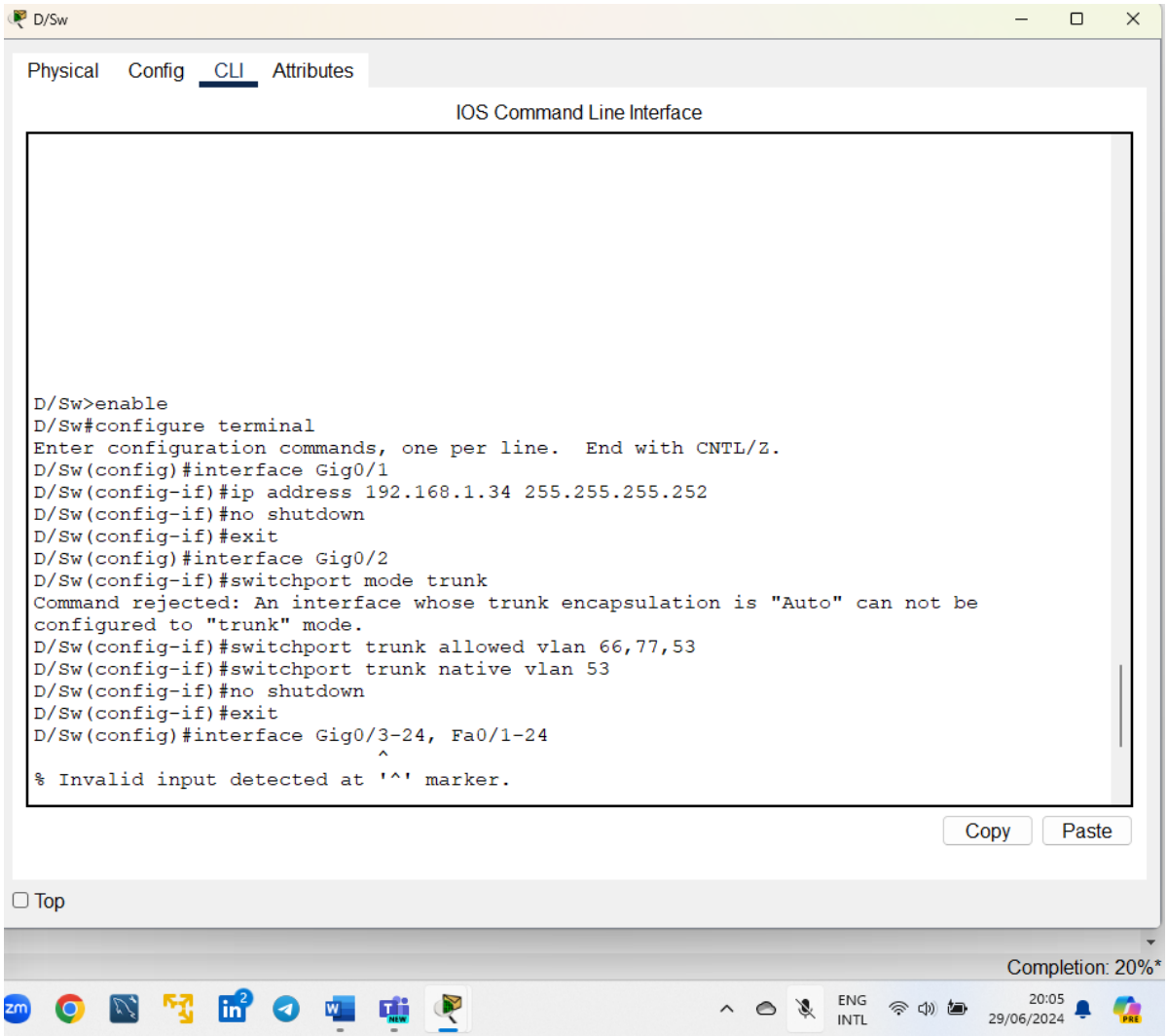
c) Create the following vlans:

- Vlan 53 and name it “NATIVE”
- Vlan 66 and name it “Marketing”
- Vlan 77 and name it "Finance”
- Vlan 100 and name it "BLACKHOLE”

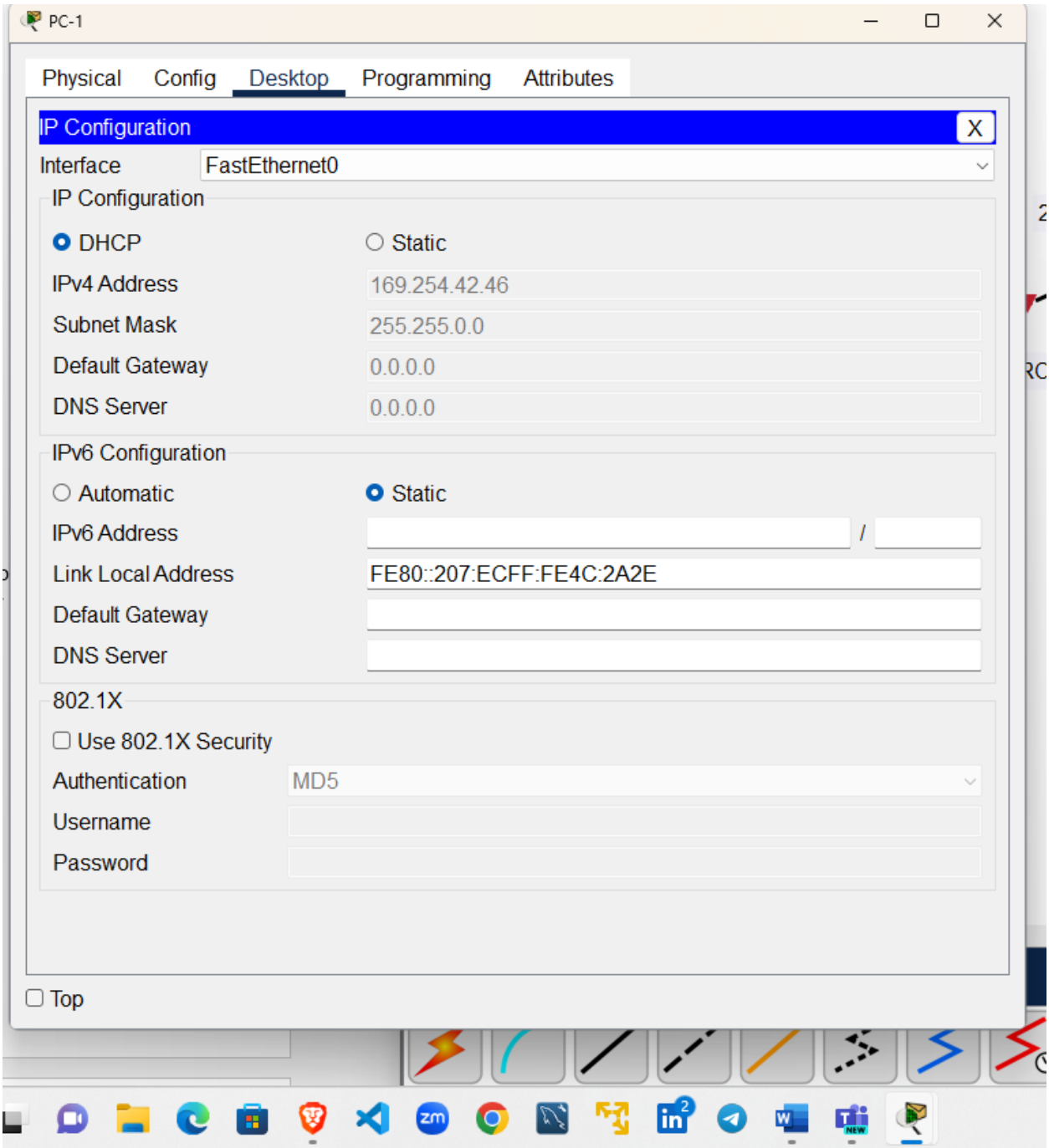


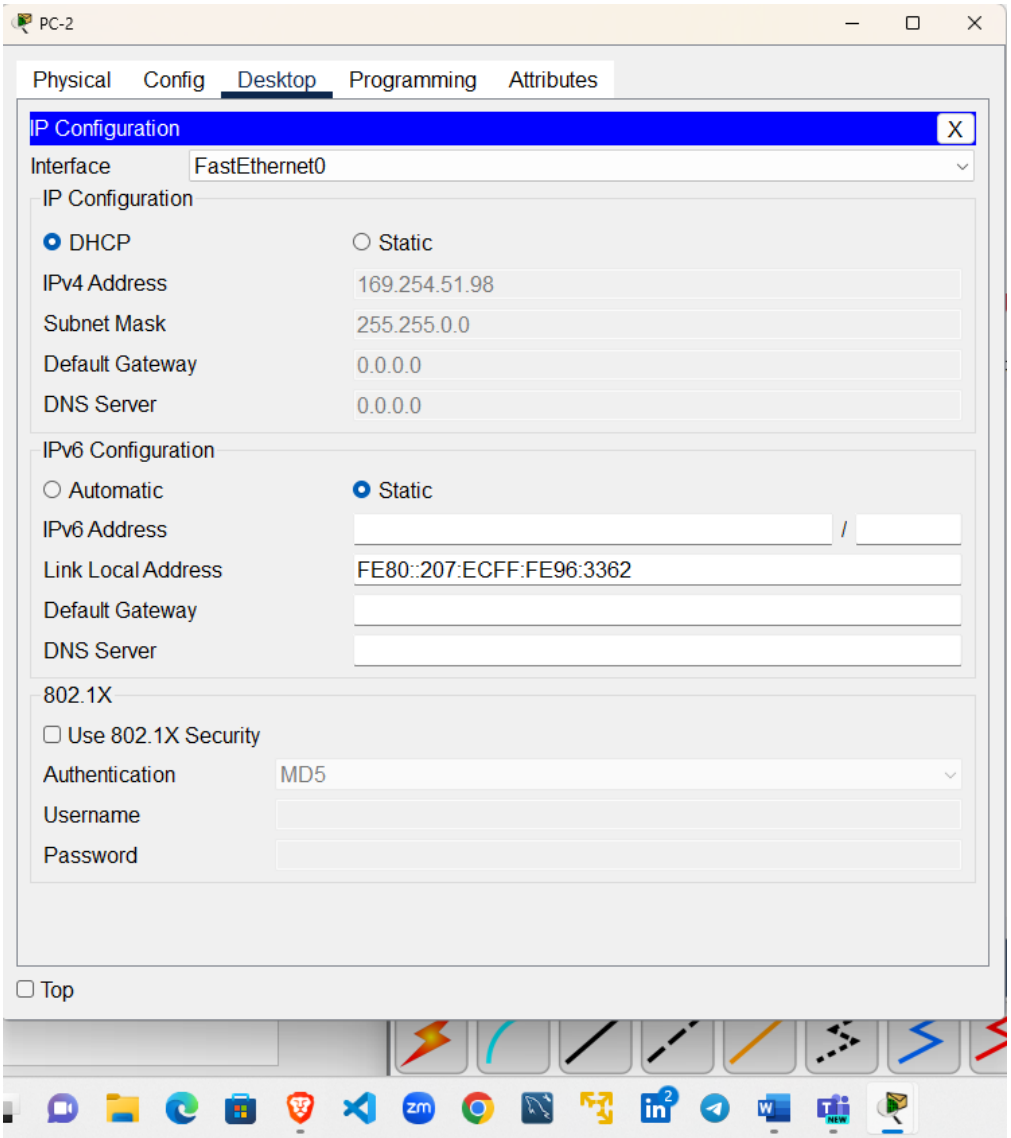
interface Gig0/1

```
ip address 192.168.1.33 255.255.255.252
exit

interface Gig0/2
switchport mode trunk
switchport trunk allowed vlan 53,66,77
switchport trunk native vlan 53
exit

interface range Gig0/3-24, Fa0/1-24
switchport mode access
switchport access vlan 100
shutdown
exit
```



h) Navigate to the desktop of both PC-1 and PC-2. Toggle the IP configuration mode from static to DHCP. Both PCs should now be automatically assigned with IP addresses.


PC-1
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address
169.254.42.46
Subnet Mask
255.255.0.0
Default Gateway
0.0.0.0
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
/
Link Local Address
FE80::207:ECFF:FE4C:2A2E
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top



<u>Task 3: Configure the HQ-ROUTER. (15mks)</u>

a) Rename the hostname to “HQ-RT”

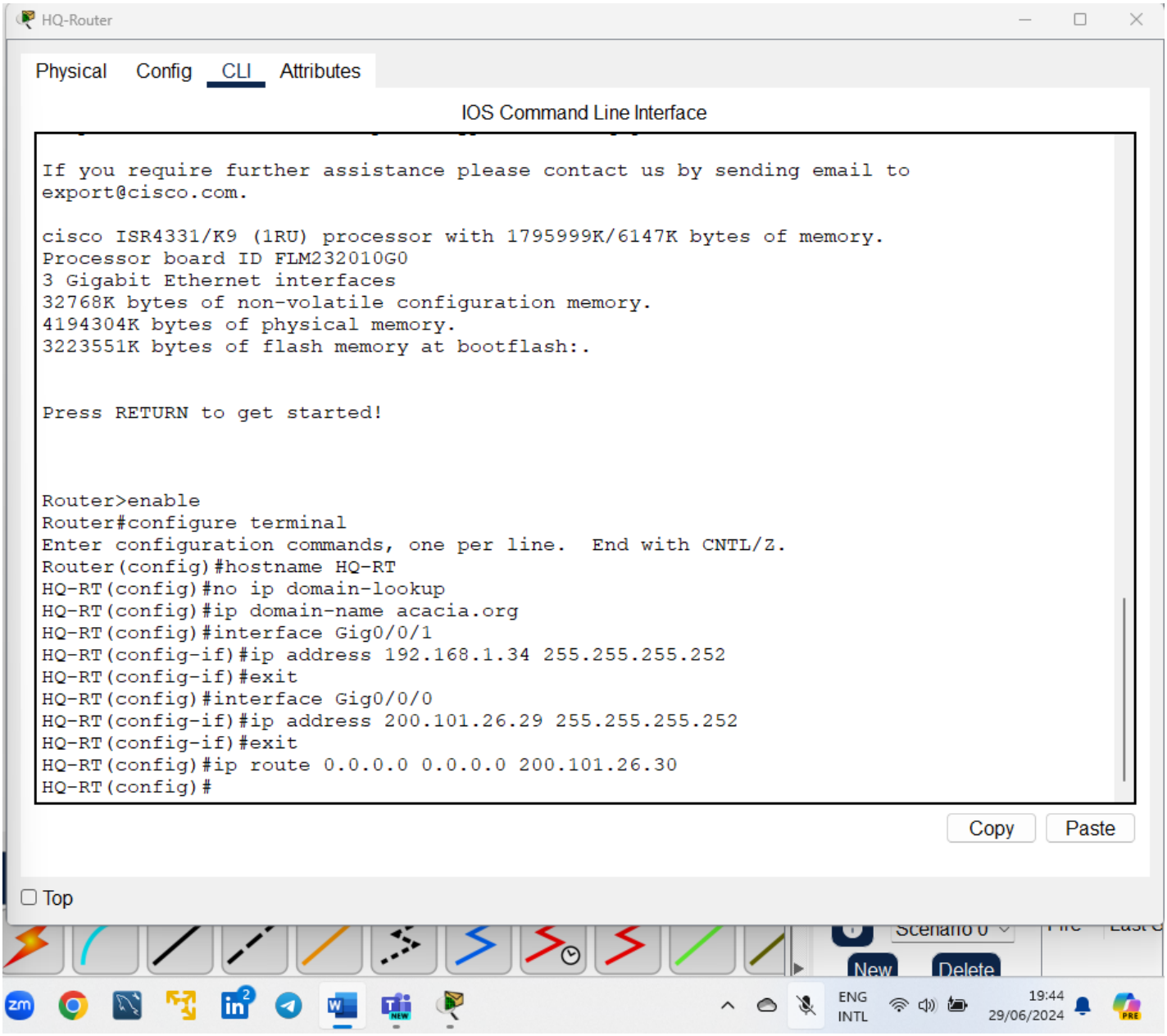
b) Disable ip domain lookup

c) Set up the domain name “acacia.org” on the router.

d) Configure the following port interfaces accordingly:

- Gig0/0/1 to be assigned the first usable IP address in the subnet 192.168.1.32 /30.
- Gig0/0/0 to be assigned the first usable IP address in the subnet 200.101.26.28 /30.

e) Set the default gateway on this router to be 200.101.26.30



Task 4: Setup ABC-ROUTER device security. (10mks)

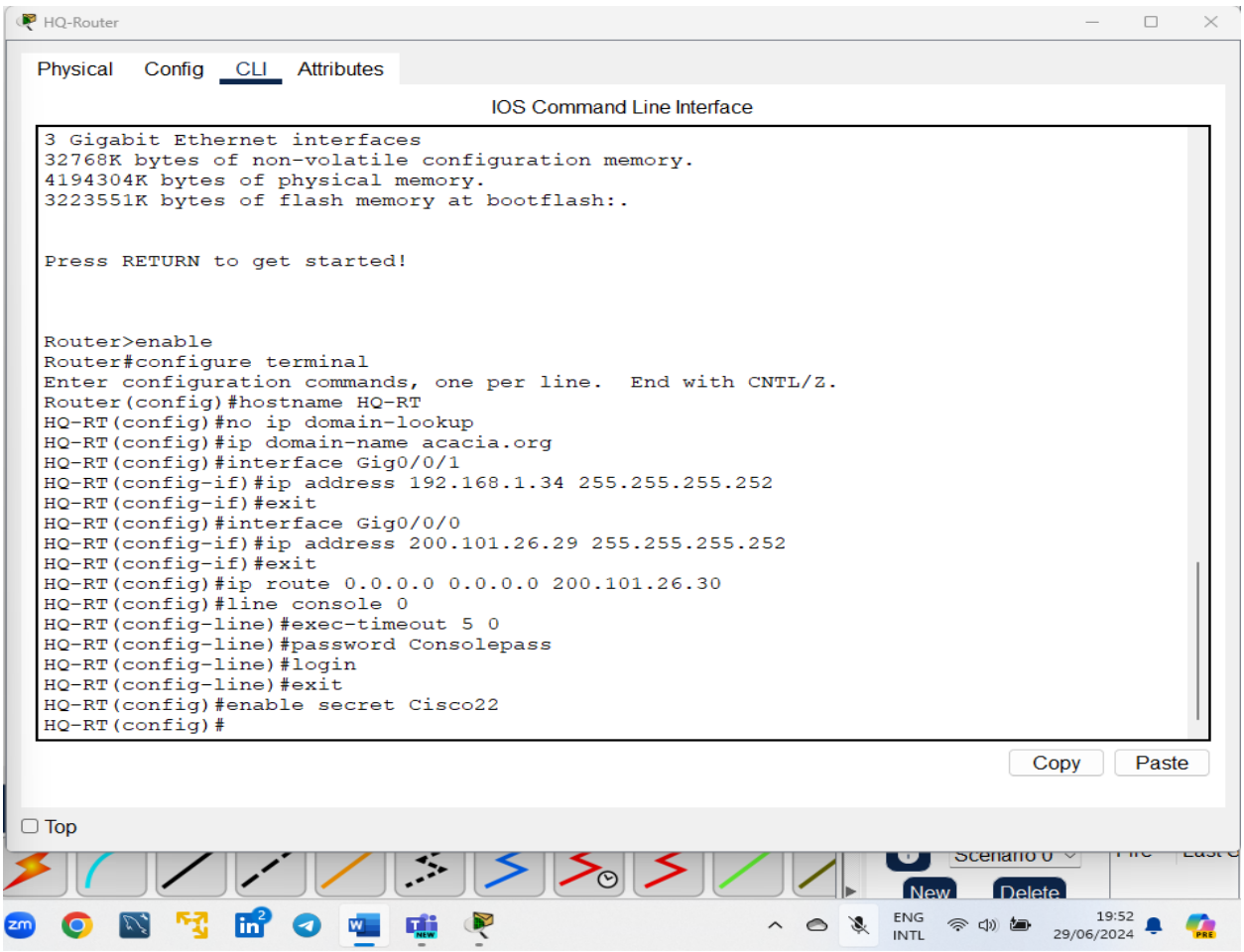
- In this task you will setup device security in the HQ-ROUTER such that a user will be authenticated when accessing the router's CLI.

a) To authenticate at the console level, configure the primary terminal line with the following

parameters:

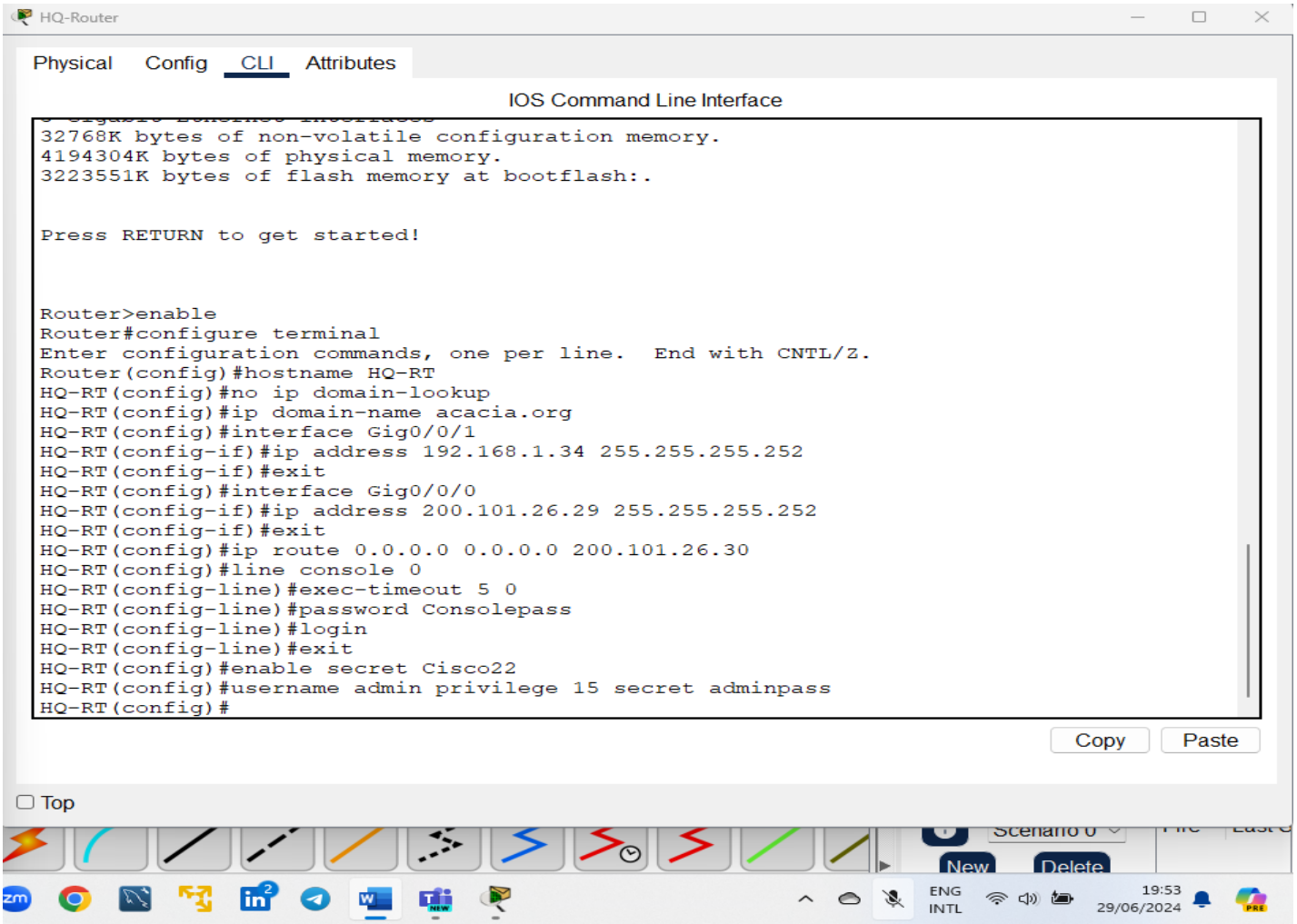
- Exec-timeout = 5 minutes
- Password = "Consolepass"
- Require "login"

b) Assign the privileged level **secret** as "Cisco22" with the exec level as "15".

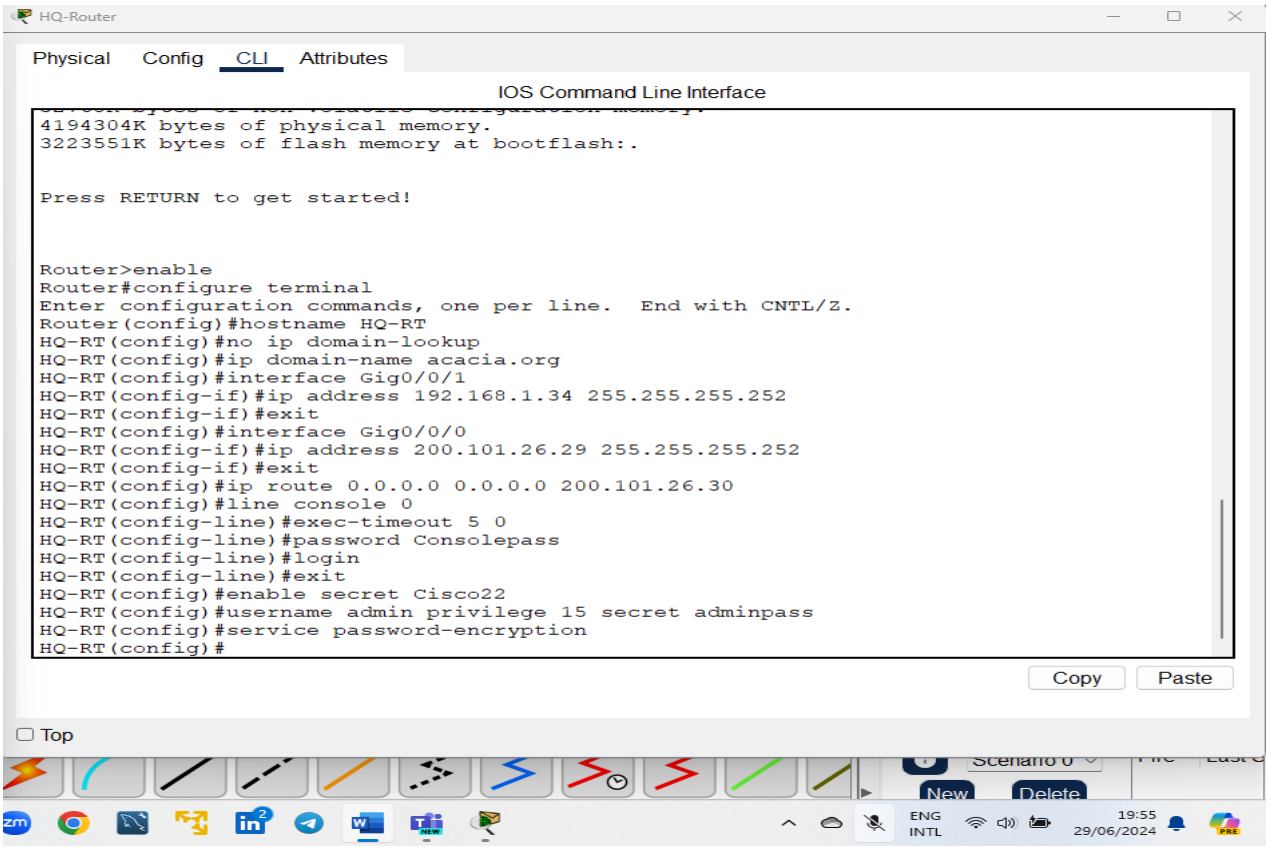


c) Establish User Name authentication with the following parameters:

- Username = “admin”
- Set user privilege level as “15”
- Specify the secret for the user as “adminpass”



d) Encrypt all plain text system passwords (*hint* : service).



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