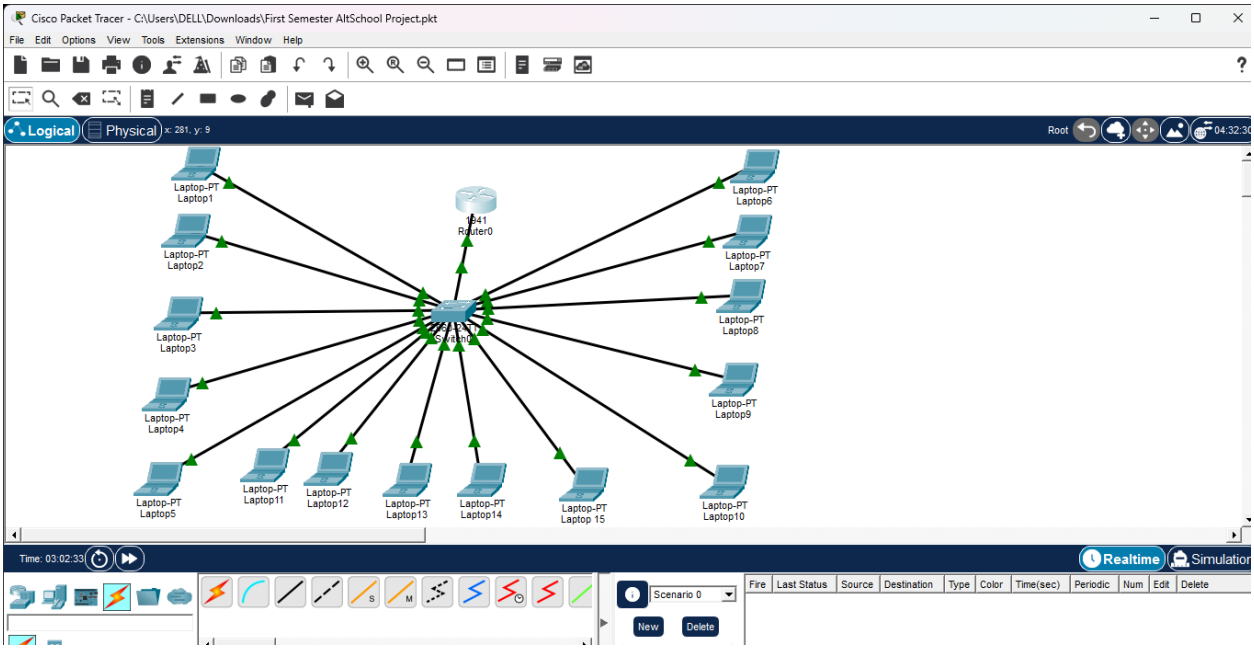
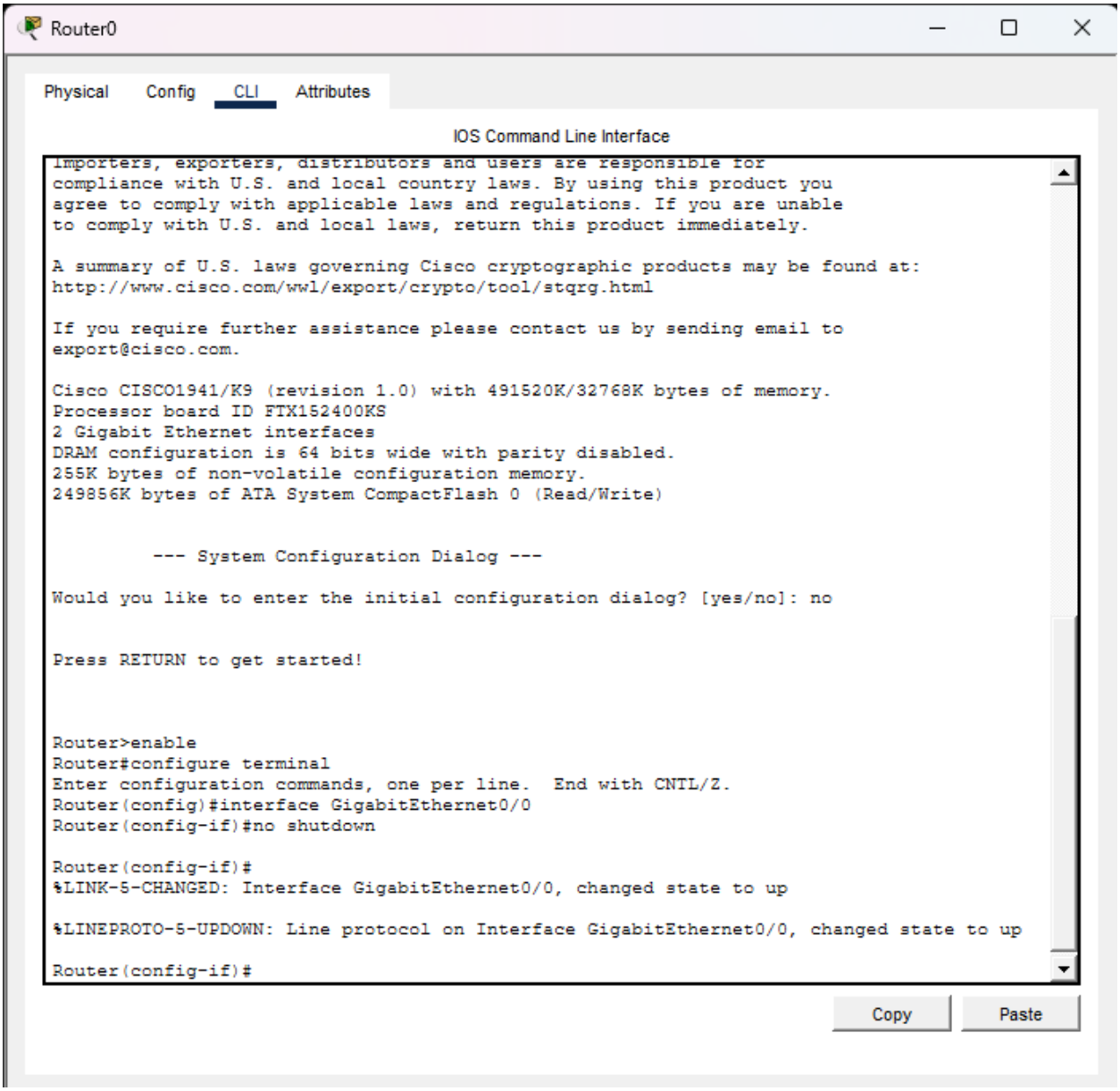
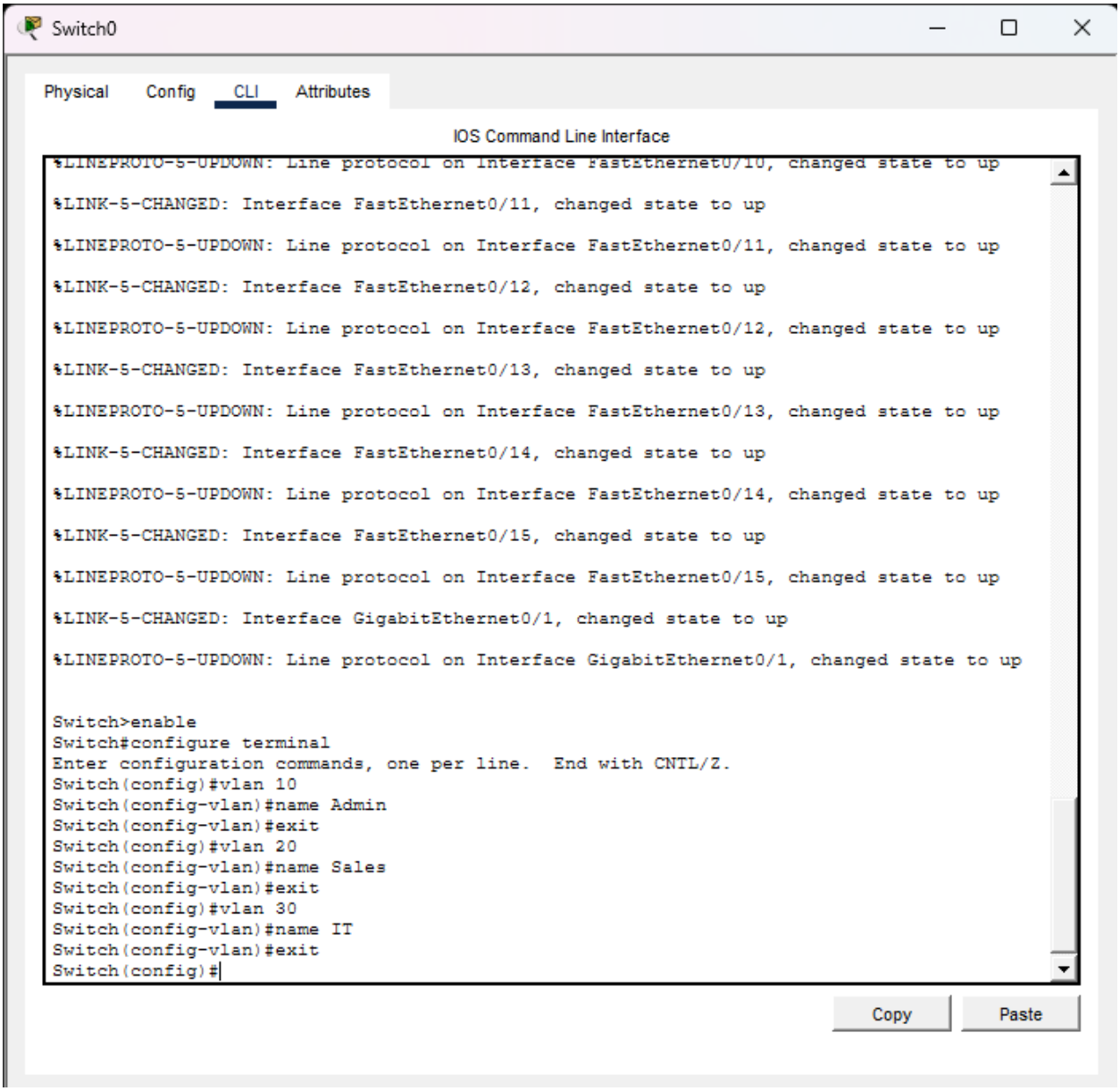
PROJECT QUESTION 2



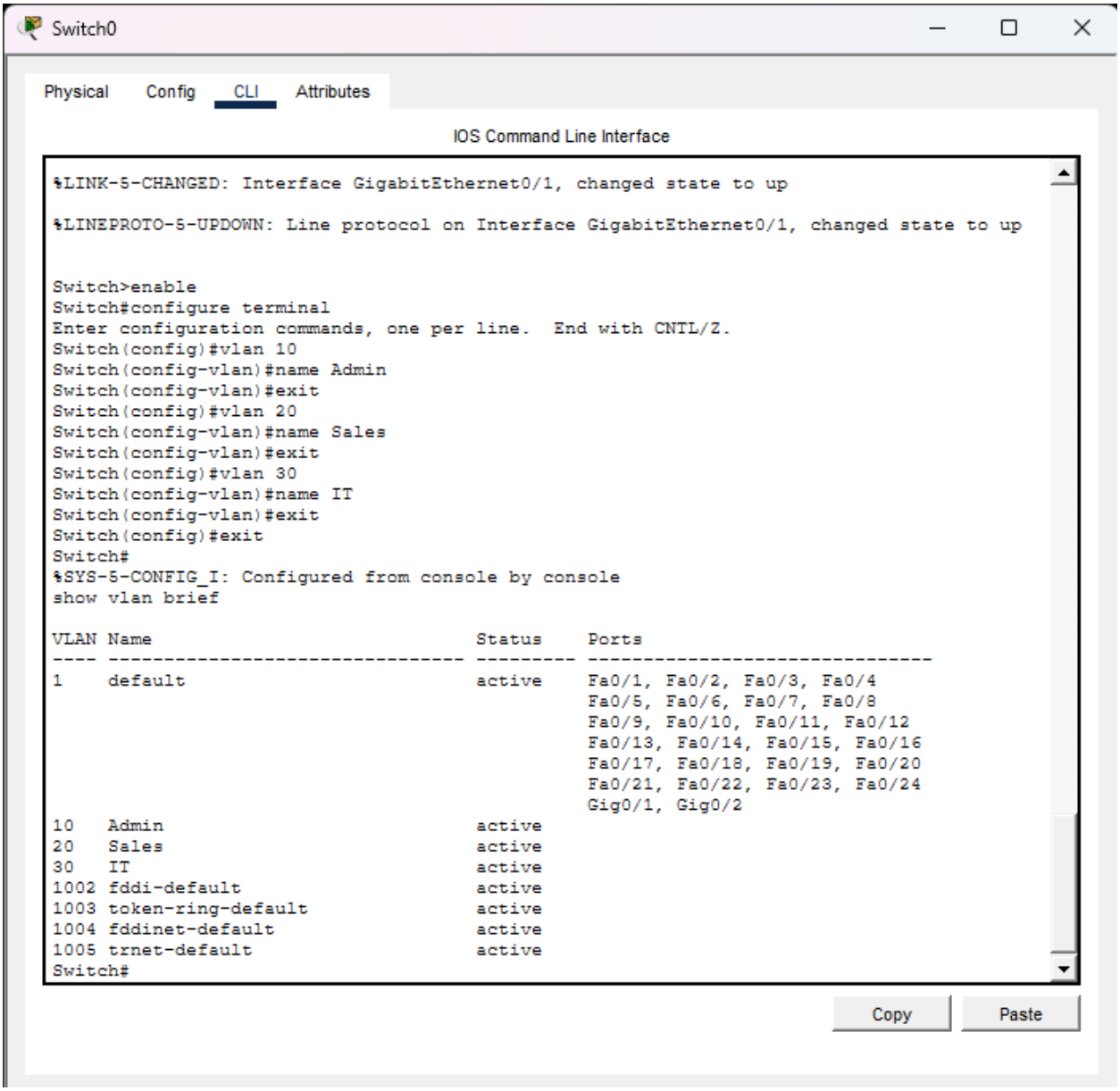
I assigned 5 PCs to each department and connect the PC to Switch using a copper straight wire and use the same to connect the switch to the router.



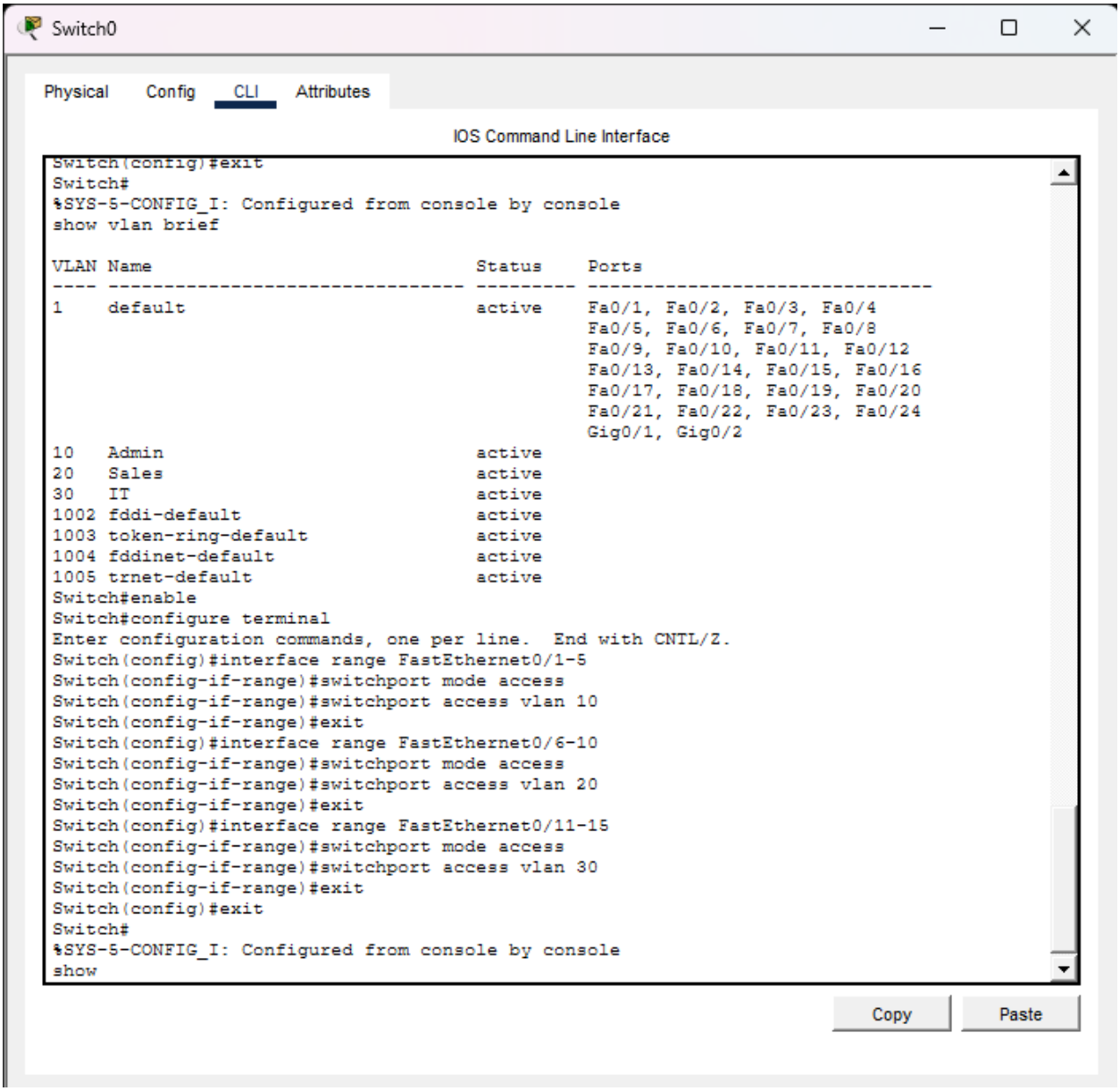
Since the switch was connected to the Router using the Copper straight wire and there is no show of connection so I had to use the no shutdown command



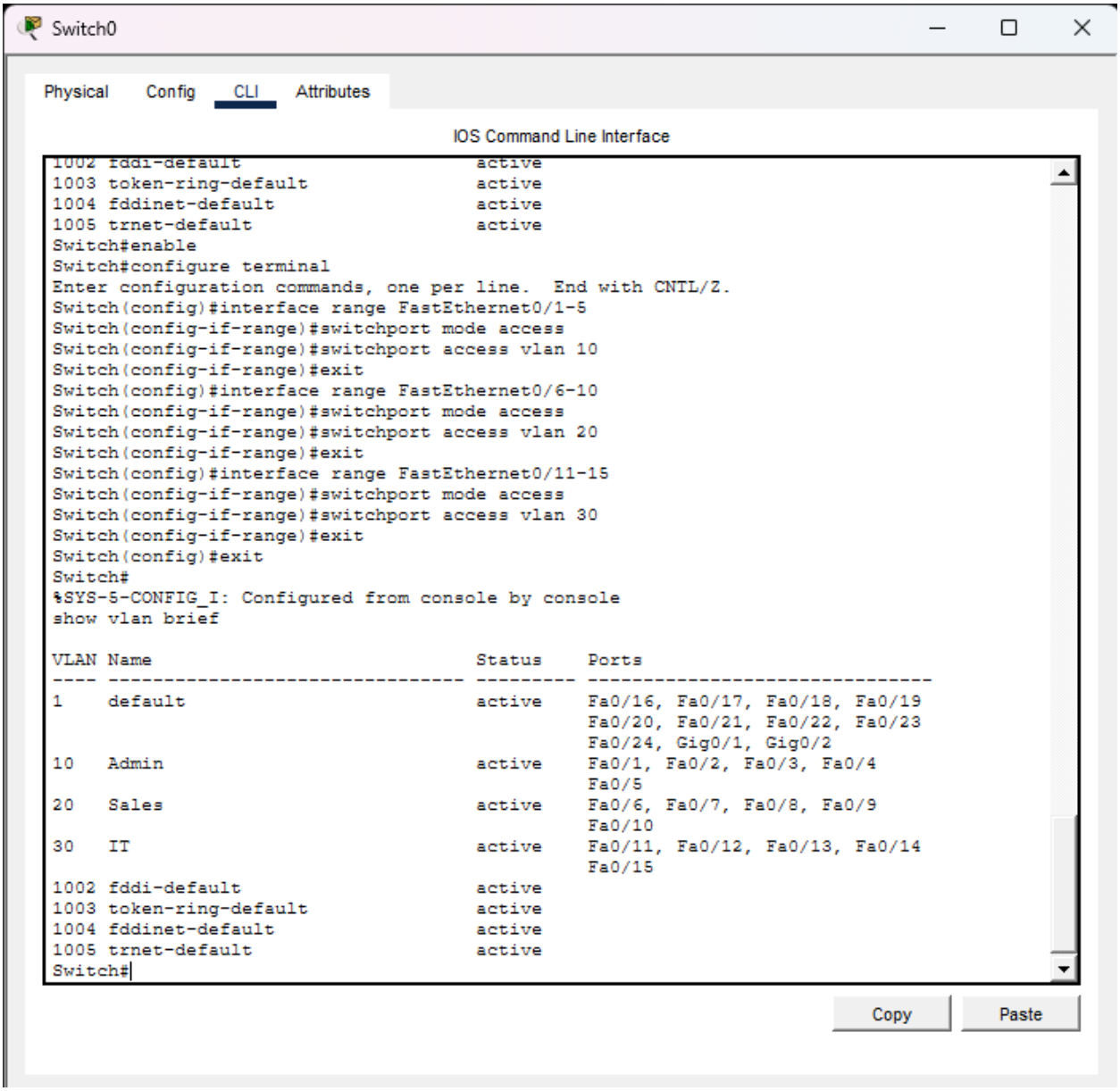
All VLANs for each department was created (Admin, Sales and IT)



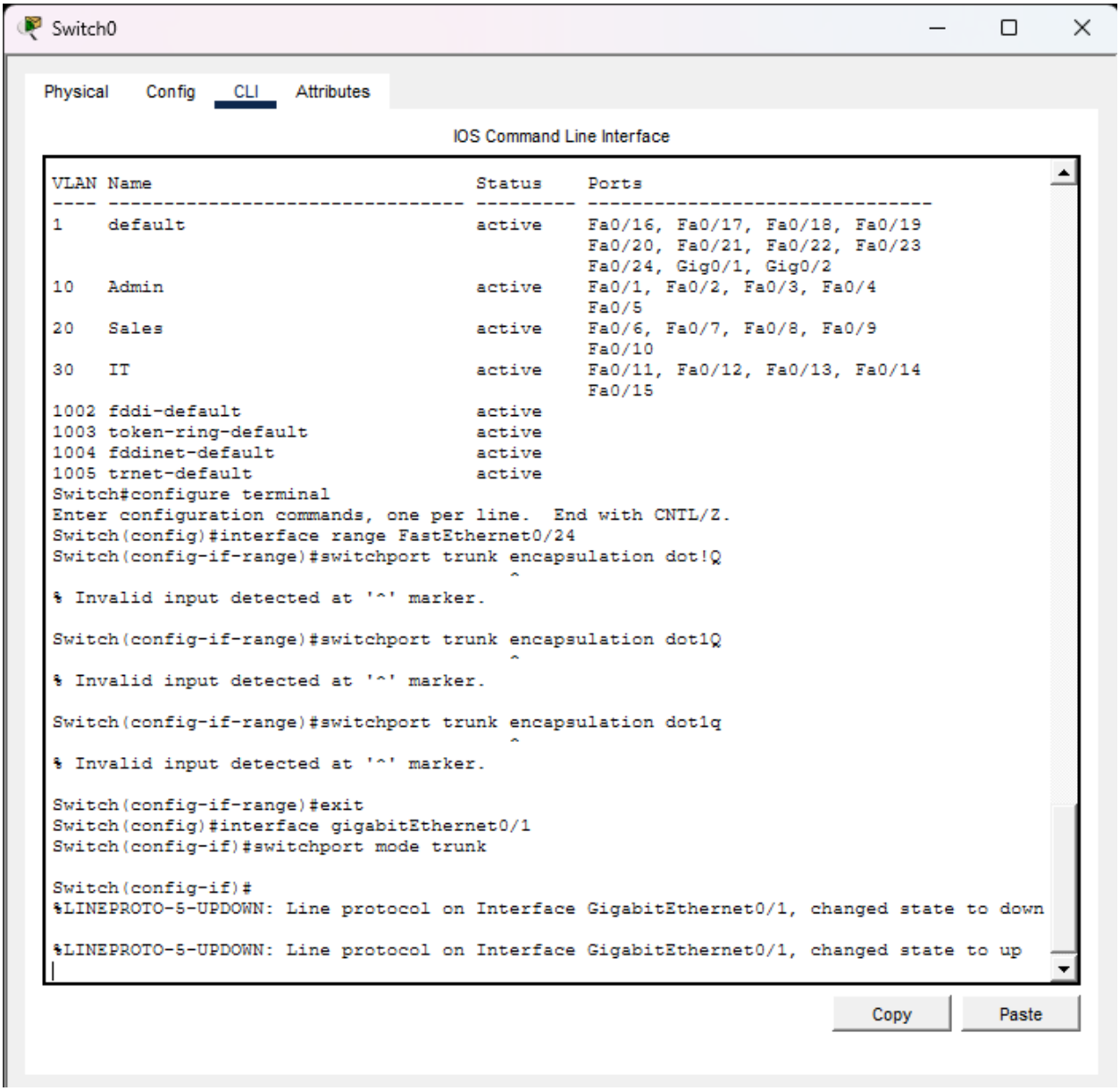
I checked the VLANs created earlier to see if they are active



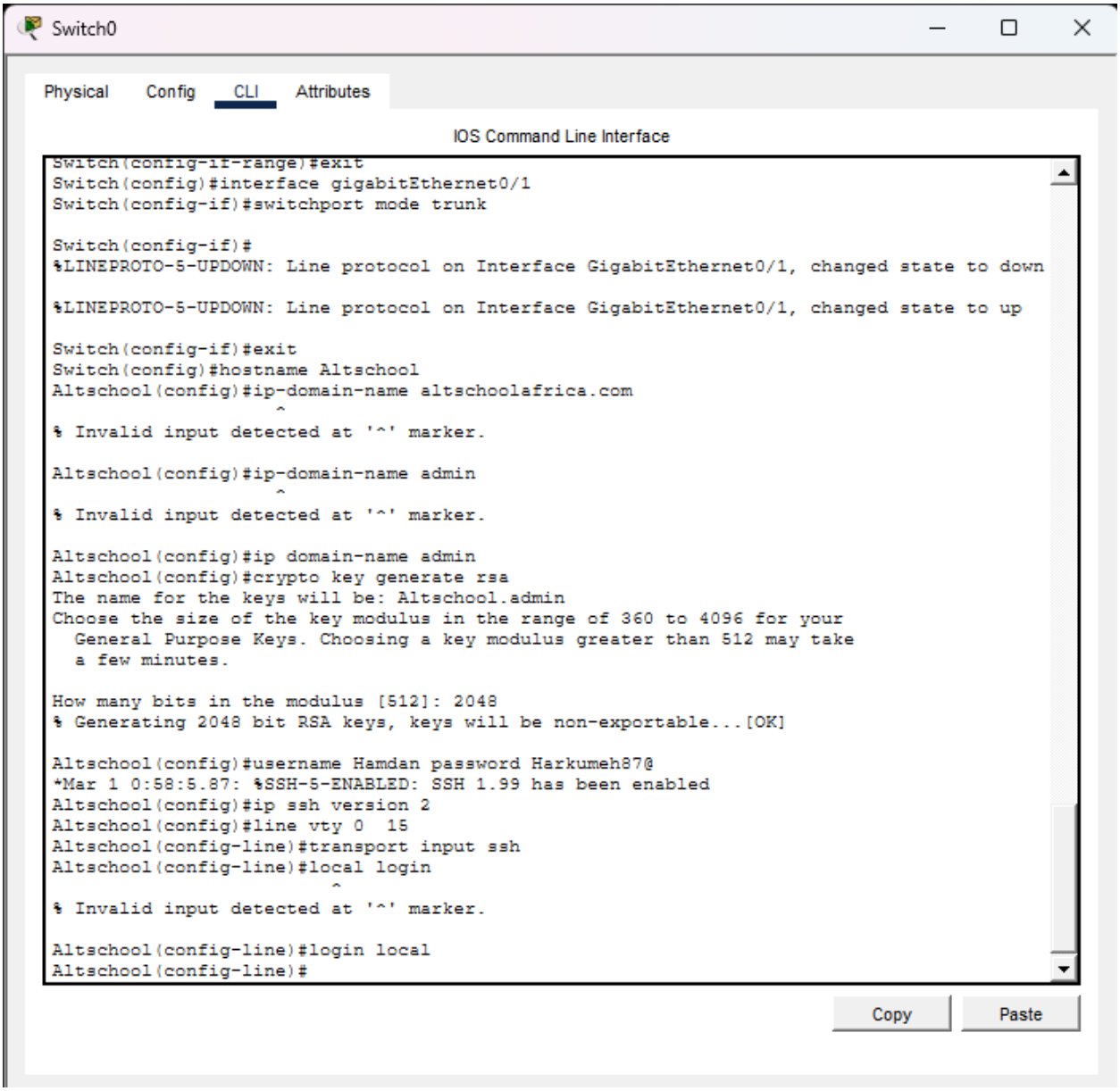
Each PCs was assigned to respective VLANs. Fa0/1-5 was assigned to Admin, Fa0/6-10 was assigned to Admin and Fa0/11-15 was assigned to IT



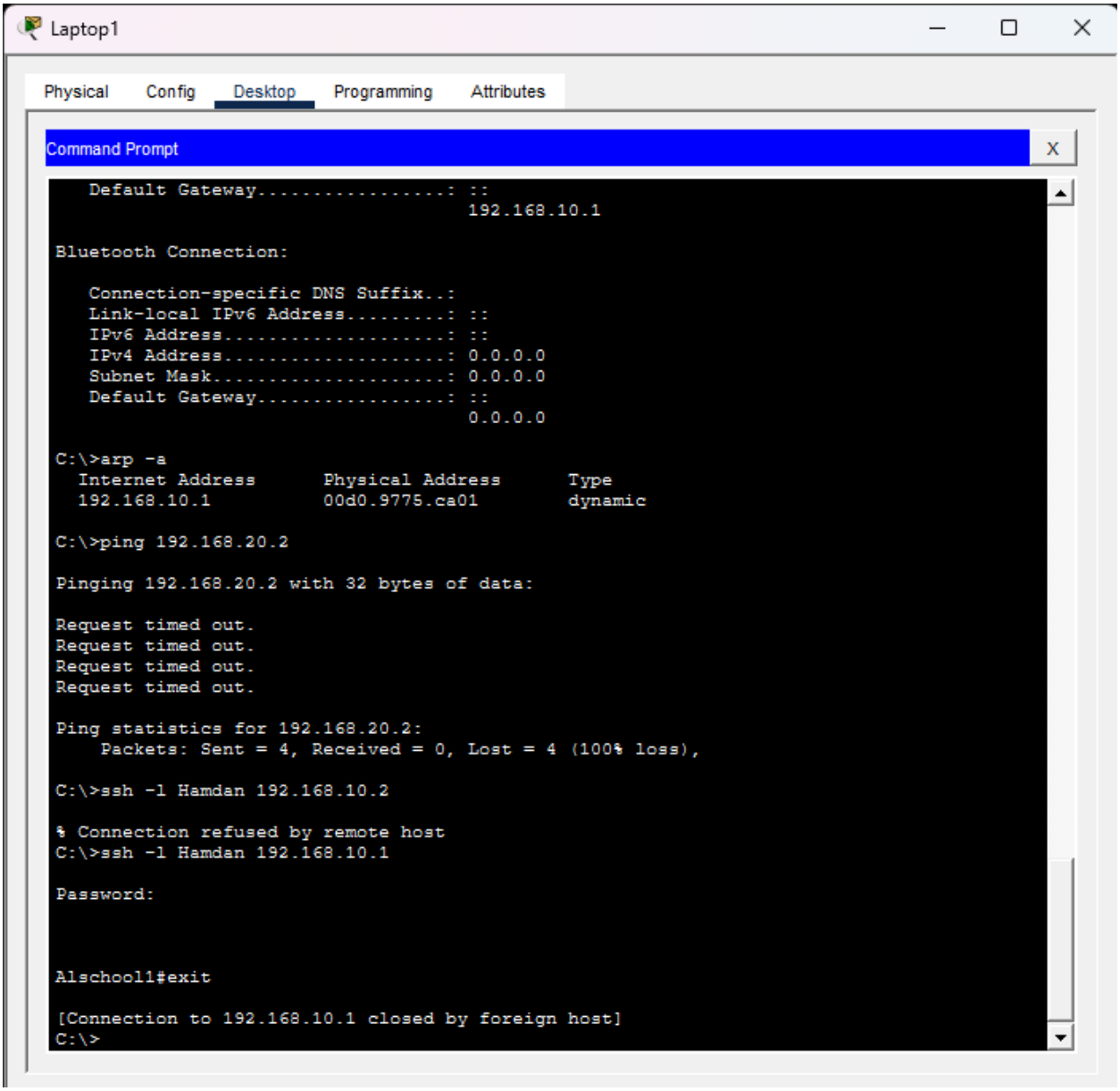
Each device has been assigned to their individual VLANs



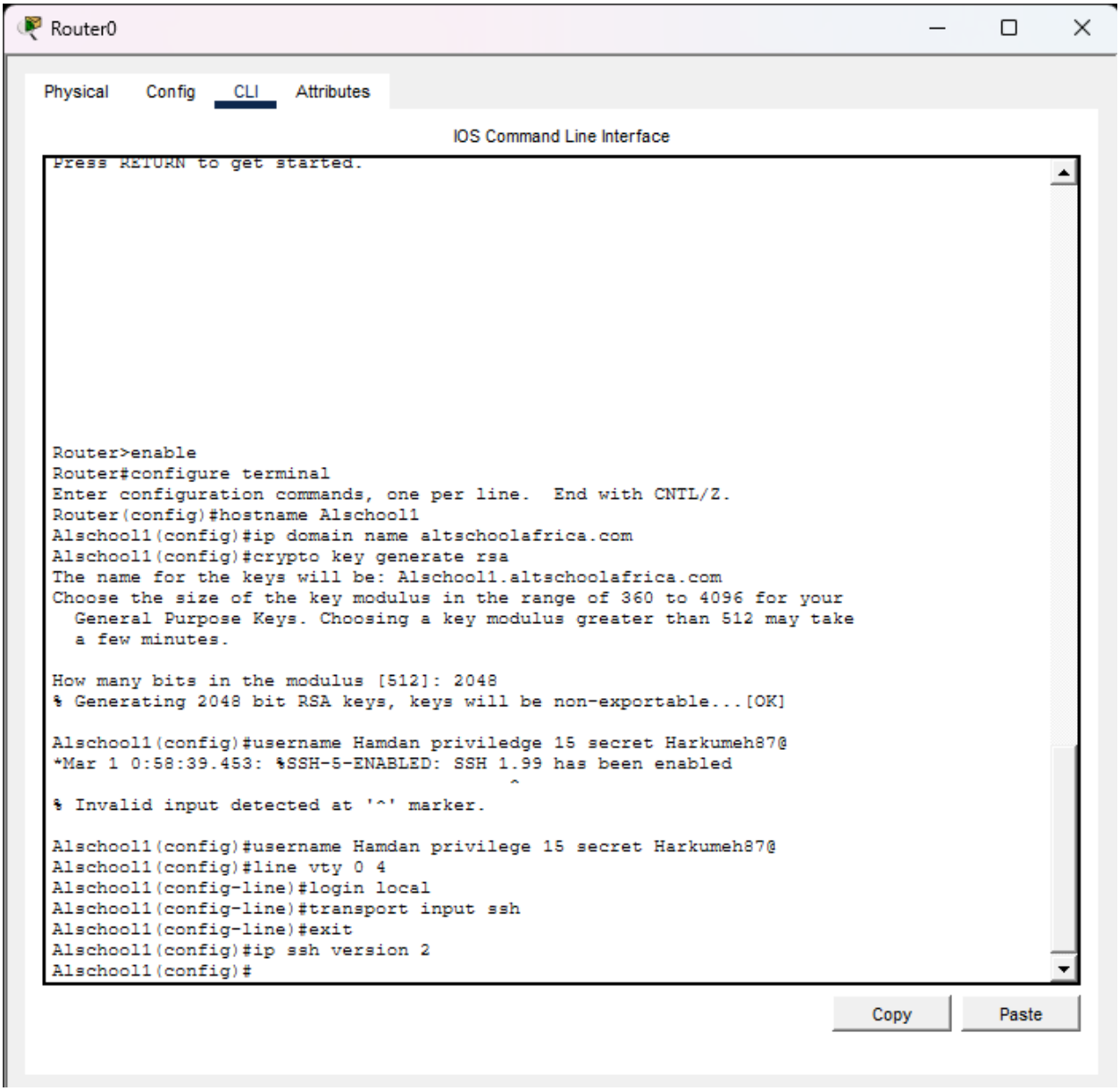
Trunk activated

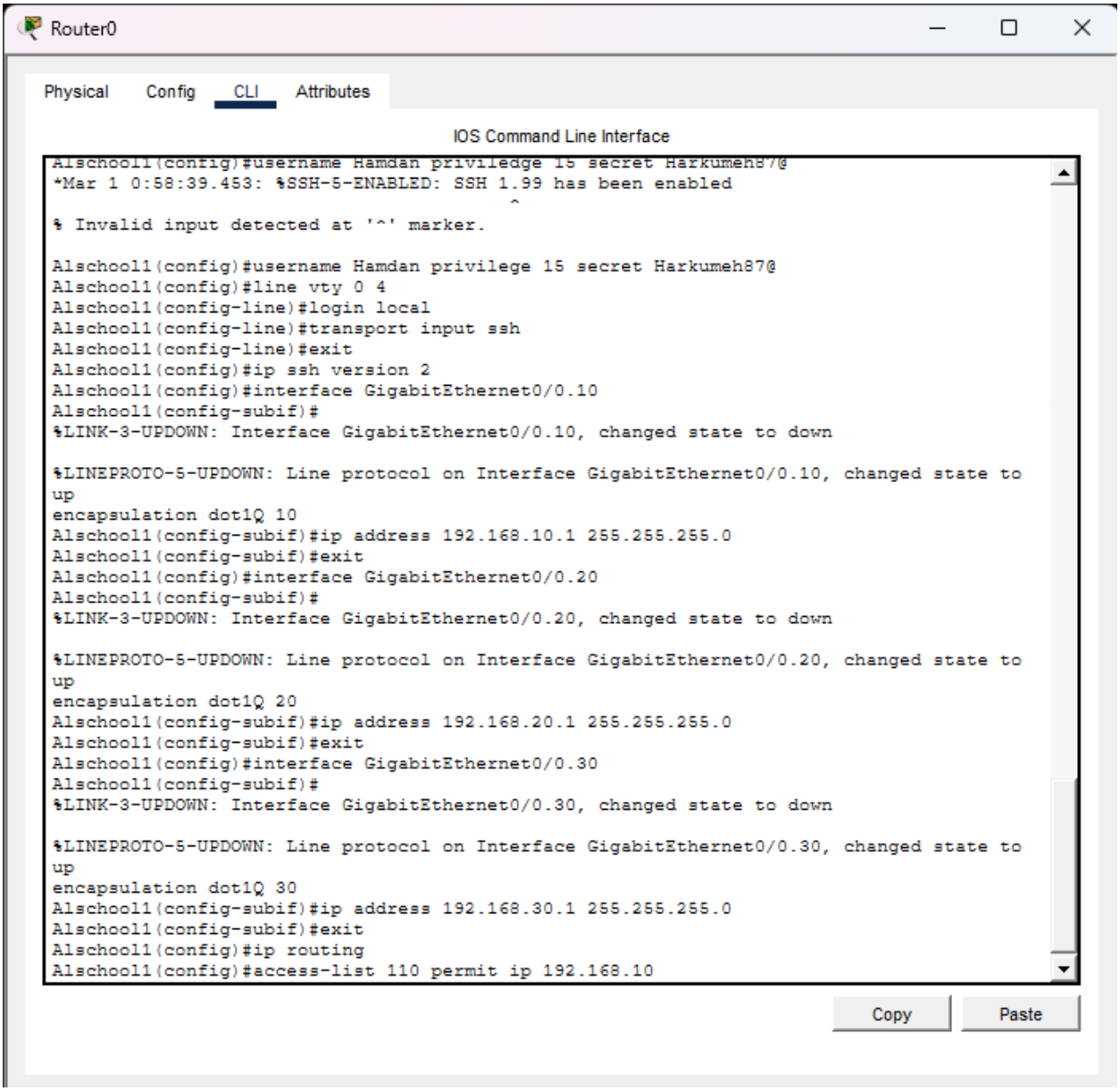


SSH was created successfully

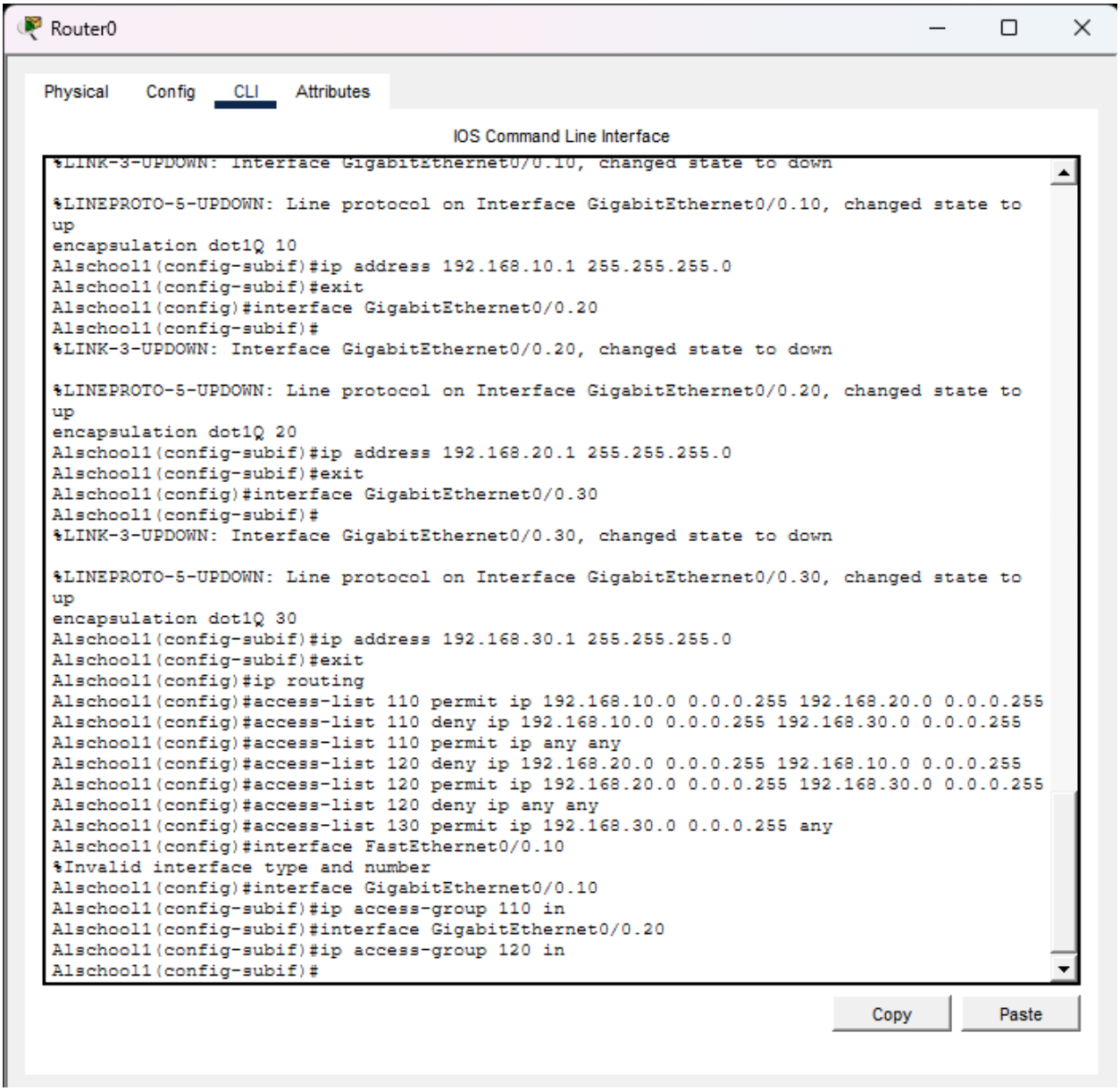


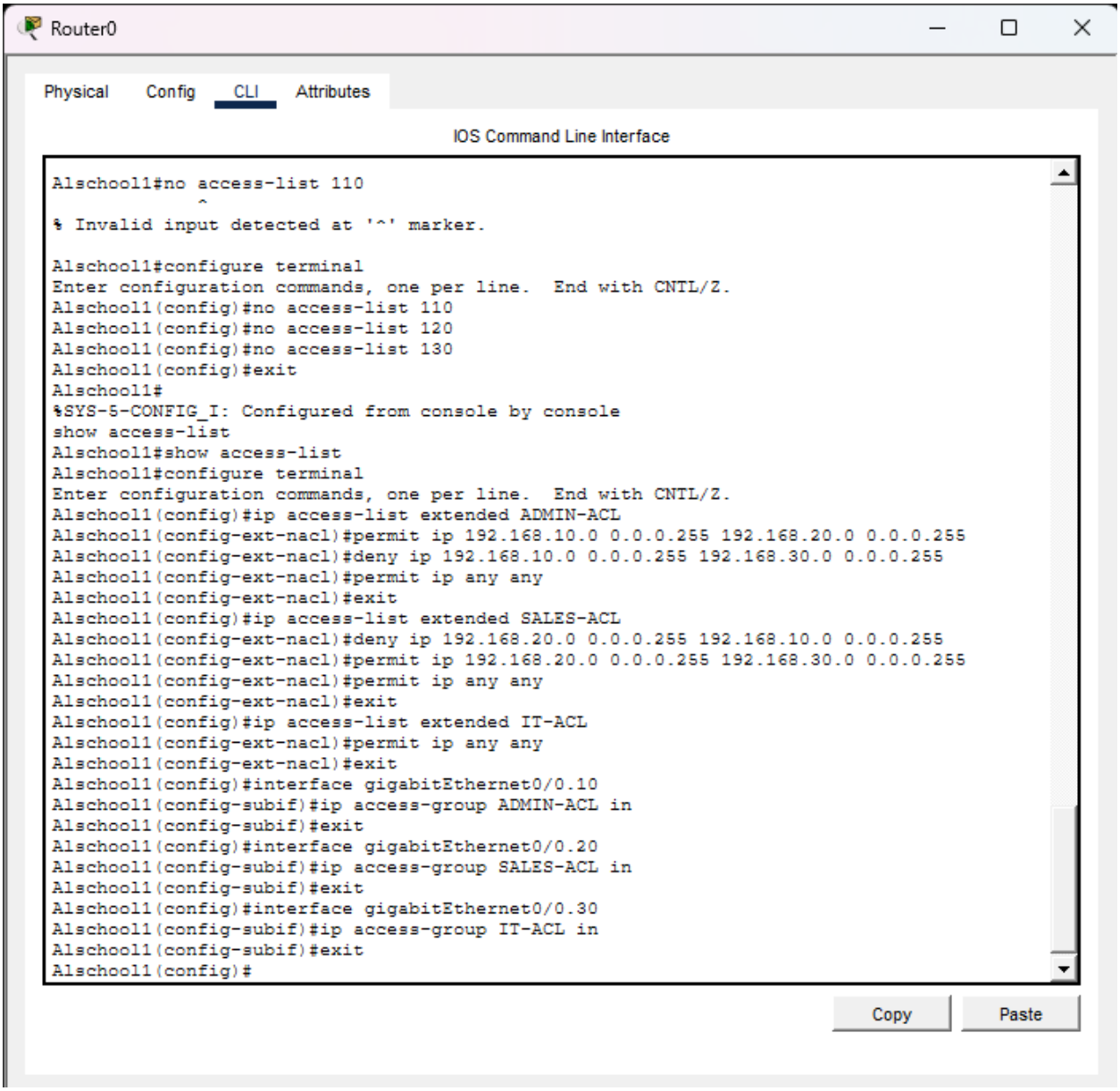
SSH was tested and shows that the SSH is working perfectly.

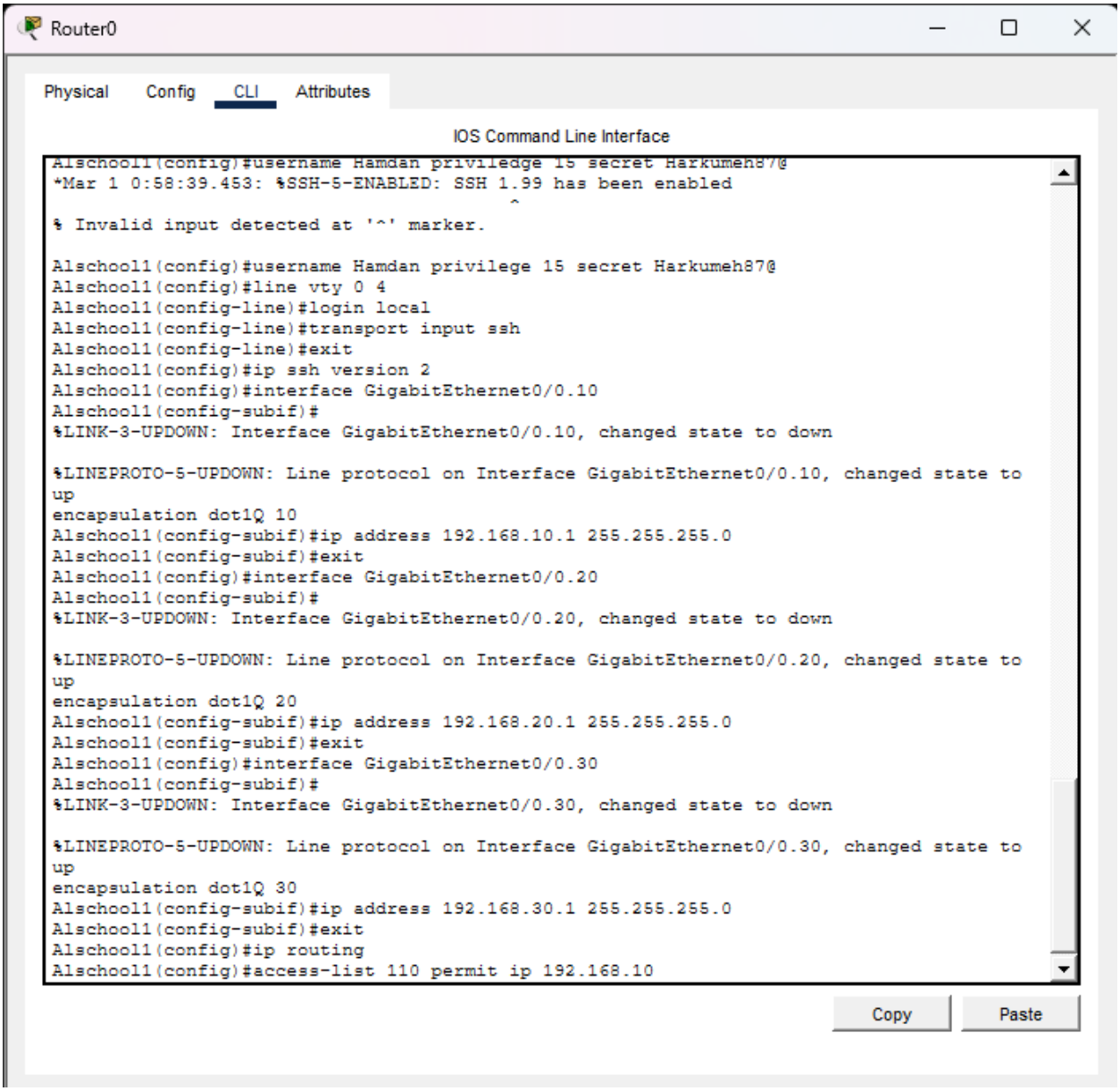

Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
Press RETURN to get started.
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname Alschool1
Alschool1(config)#ip domain name altschoolafrica.com
Alschool1(config)#crypto key generate rsa
The name for the keys will be: Alschool1.altschoolafrica.com
Choose the size of the key modulus in the range of 360 to 4096 for your
  General Purpose Keys. Choosing a key modulus greater than 512 may take
  a few minutes.
How many bits in the modulus [512]: 2048
% Generating 2048 bit RSA keys, keys will be non-exportable...[OK]
Alschool1(config)#username Hamdan priviledge 15 secret Harkumeh87@
*Mar 1 0:58:39.453: %SSH-5-ENABLED: SSH 1.99 has been enabled
% Invalid input detected at '^' marker.
Alschool1(config)#username Hamdan privilege 15 secret Harkumeh87@
Alschool1(config)#line vty 0 4
Alschool1(config-line)#login local
Alschool1(config-line)#transport input ssh
Alschool1(config-line)#exit
Alschool1(config)#ip ssh version 2
Alschool1(config)#
Copy
Paste

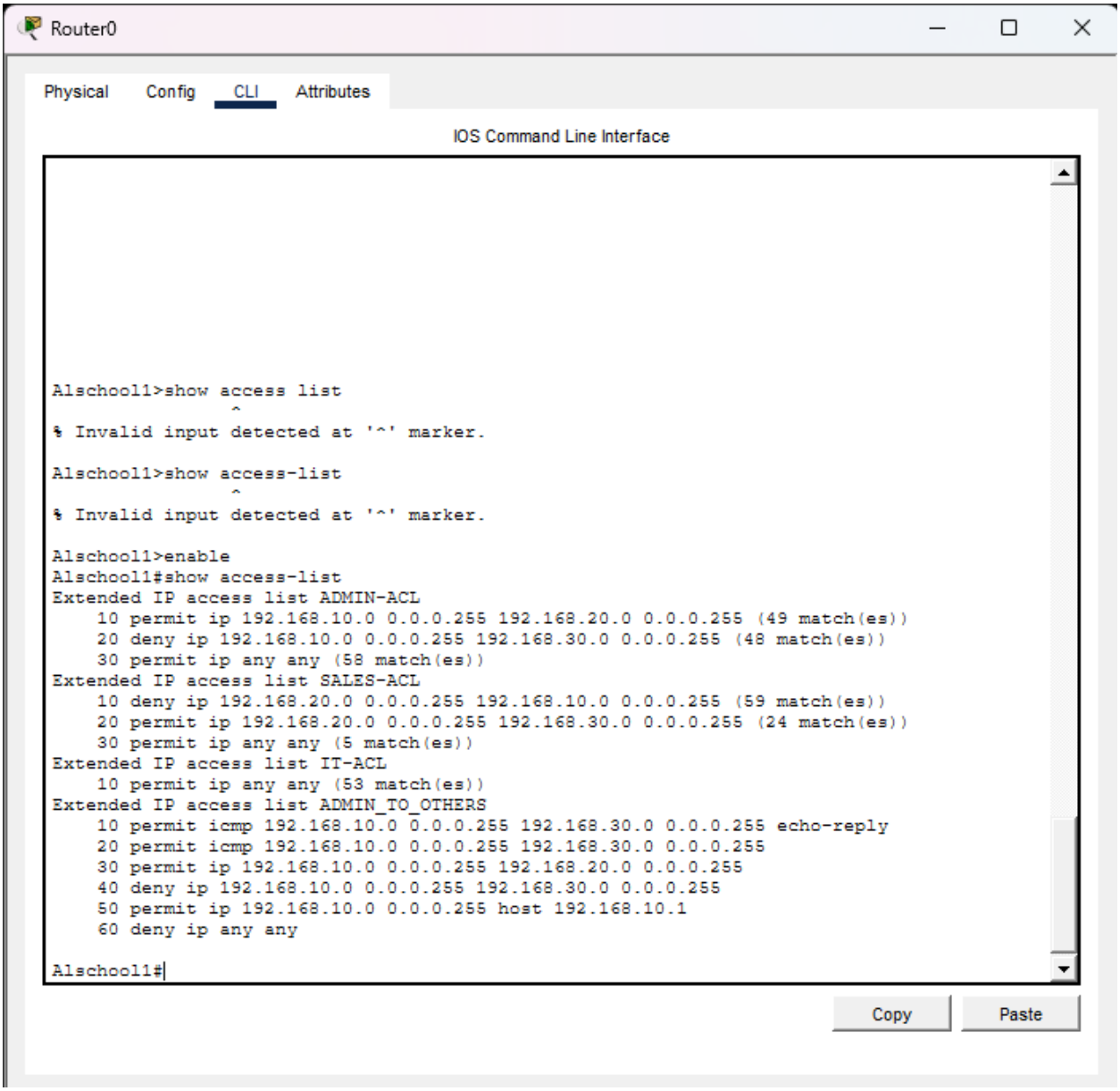


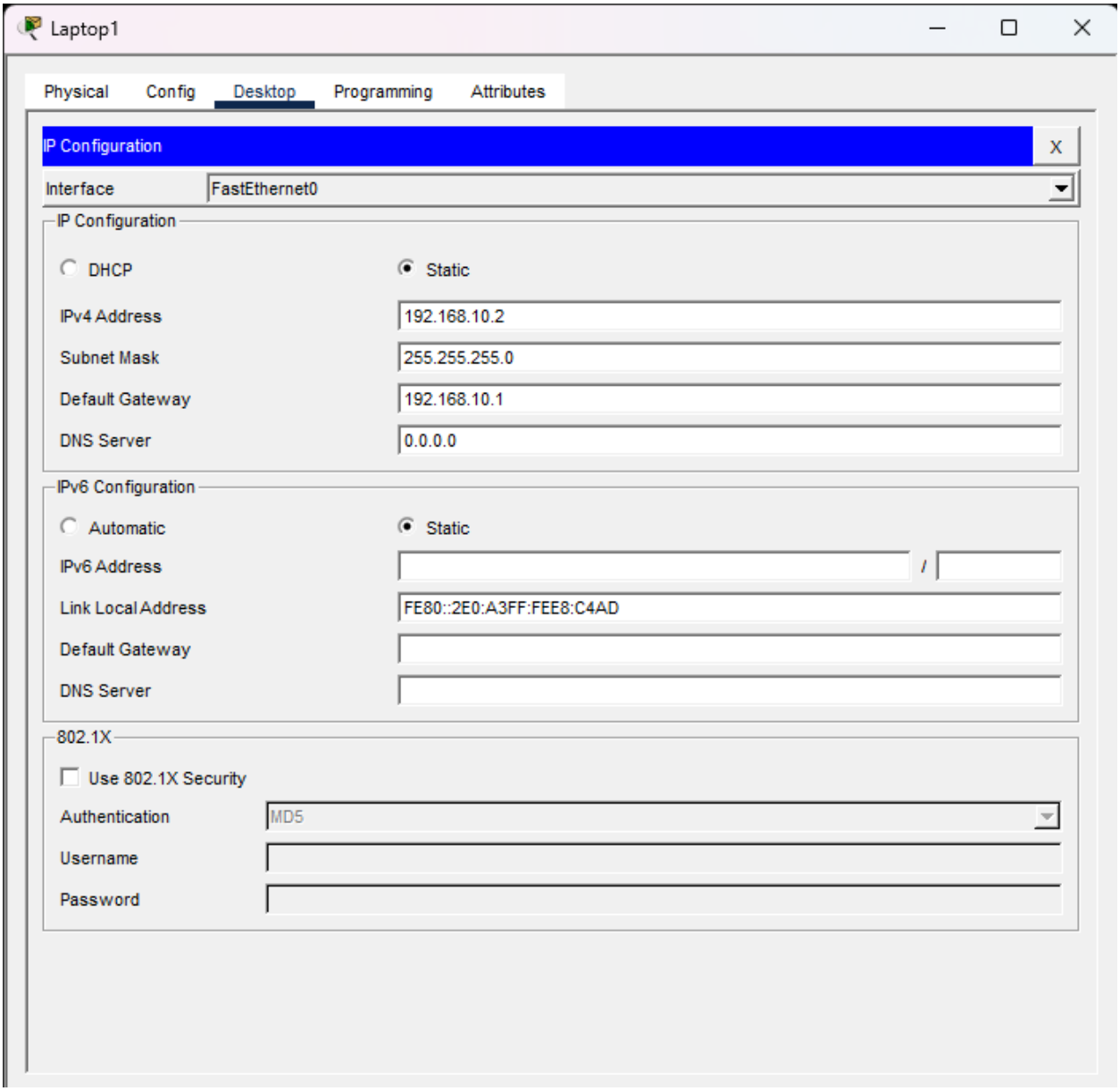
Sub Interfaces was created and assigned to their various IP addresses


Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
%LINK-3-UPDOWN: Interface GigabitEthernet0/0.10, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.10, changed state to up
encapsulation dot1Q 10
Alschool1(config-subif)#ip address 192.168.10.1 255.255.255.0
Alschool1(config-subif)#exit
Alschool1(config)#interface GigabitEthernet0/0.20
Alschool1(config-subif)#
%LINK-3-UPDOWN: Interface GigabitEthernet0/0.20, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.20, changed state to up
encapsulation dot1Q 20
Alschool1(config-subif)#ip address 192.168.20.1 255.255.255.0
Alschool1(config-subif)#exit
Alschool1(config)#interface GigabitEthernet0/0.30
Alschool1(config-subif)#
%LINK-3-UPDOWN: Interface GigabitEthernet0/0.30, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.30, changed state to up
encapsulation dot1Q 30
Alschool1(config-subif)#ip address 192.168.30.1 255.255.255.0
Alschool1(config-subif)#exit
Alschool1(config)#ip routing
Alschool1(config)#access-list 110 permit ip 192.168.10.0 0.0.0.255 192.168.20.0 0.0.0.255
Alschool1(config)#access-list 110 deny ip 192.168.10.0 0.0.0.255 192.168.30.0 0.0.0.255
Alschool1(config)#access-list 110 permit ip any any
Alschool1(config)#access-list 120 deny ip 192.168.20.0 0.0.0.255 192.168.10.0 0.0.0.255
Alschool1(config)#access-list 120 permit ip 192.168.20.0 0.0.0.255 192.168.30.0 0.0.0.255
Alschool1(config)#access-list 120 deny ip any any
Alschool1(config)#access-list 130 permit ip 192.168.30.0 0.0.0.255 any
Alschool1(config)#interface FastEthernet0/0.10
%Invalid interface type and number
Alschool1(config)#interface GigabitEthernet0/0.10
Alschool1(config-subif)#ip access-group 110 in
Alschool1(config-subif)#interface GigabitEthernet0/0.20
Alschool1(config-subif)#ip access-group 120 in
Alschool1(config-subif)#
Copy
Paste

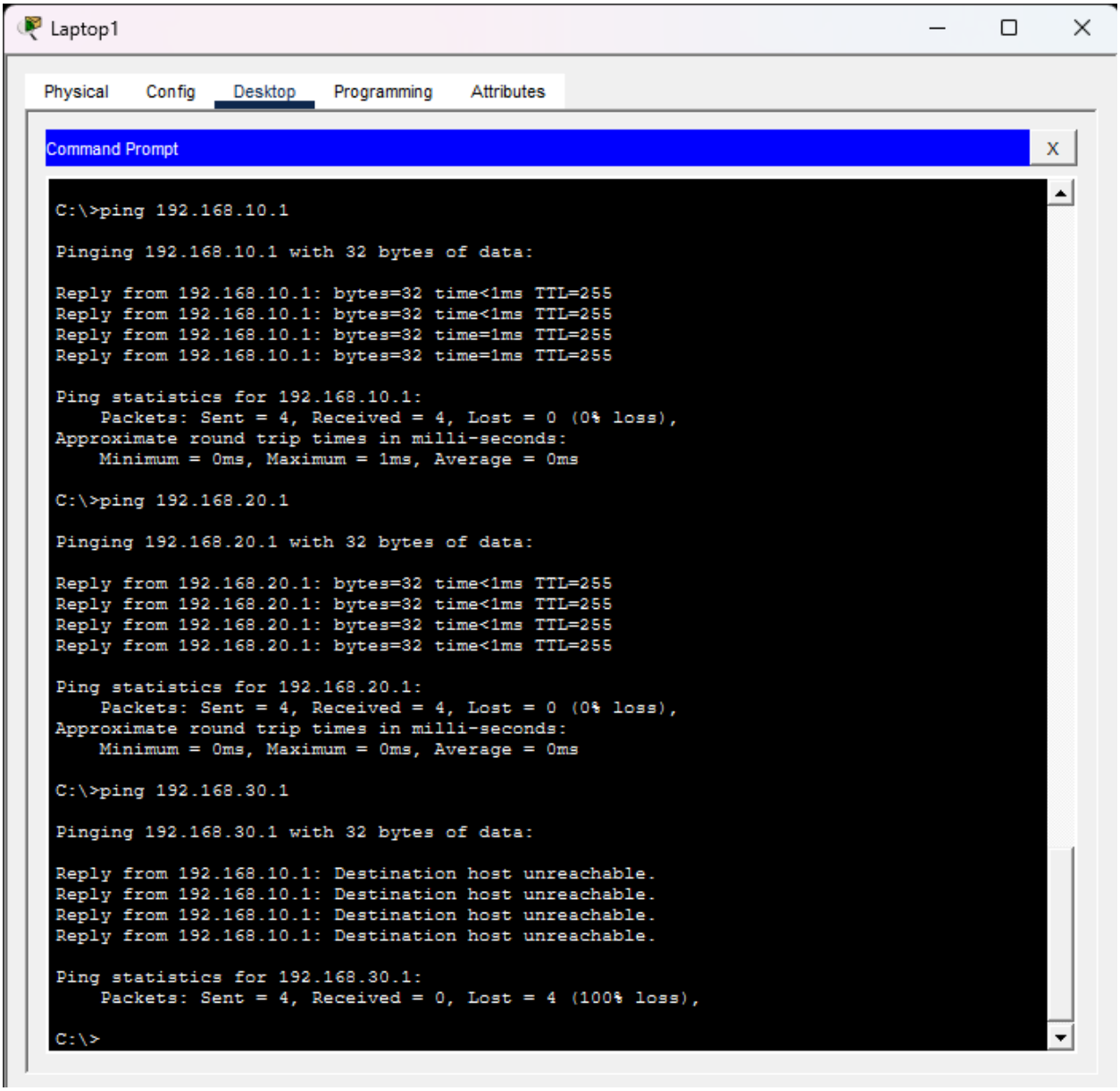

Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
Alschool1#no access-list 110
^
% Invalid input detected at '^' marker.
Alschool1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Alschool1(config)#no access-list 110
Alschool1(config)#no access-list 120
Alschool1(config)#no access-list 130
Alschool1(config)#exit
Alschool1#
%SYS-5-CONFIG_I: Configured from console by console
show access-list
Alschool1#show access-list
Alschool1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Alschool1(config)#ip access-list extended ADMIN-ACL
Alschool1(config-ext-nacl)#permit ip 192.168.10.0 0.0.0.255 192.168.20.0 0.0.0.255
Alschool1(config-ext-nacl)#deny ip 192.168.10.0 0.0.0.255 192.168.30.0 0.0.0.255
Alschool1(config-ext-nacl)#permit ip any any
Alschool1(config-ext-nacl)#exit
Alschool1(config)#ip access-list extended SALES-ACL
Alschool1(config-ext-nacl)#deny ip 192.168.20.0 0.0.0.255 192.168.10.0 0.0.0.255
Alschool1(config-ext-nacl)#permit ip 192.168.20.0 0.0.0.255 192.168.30.0 0.0.0.255
Alschool1(config-ext-nacl)#permit ip any any
Alschool1(config-ext-nacl)#exit
Alschool1(config)#ip access-list extended IT-ACL
Alschool1(config-ext-nacl)#permit ip any any
Alschool1(config-ext-nacl)#exit
Alschool1(config)#interface gigabitEthernet0/0.10
Alschool1(config-subif)#ip access-group ADMIN-ACL in
Alschool1(config-subif)#exit
Alschool1(config)#interface gigabitEthernet0/0.20
Alschool1(config-subif)#ip access-group SALES-ACL in
Alschool1(config-subif)#exit
Alschool1(config)#interface gigabitEthernet0/0.30
Alschool1(config-subif)#ip access-group IT-ACL in
Alschool1(config-subif)#exit
Alschool1(config)#
Copy
Paste

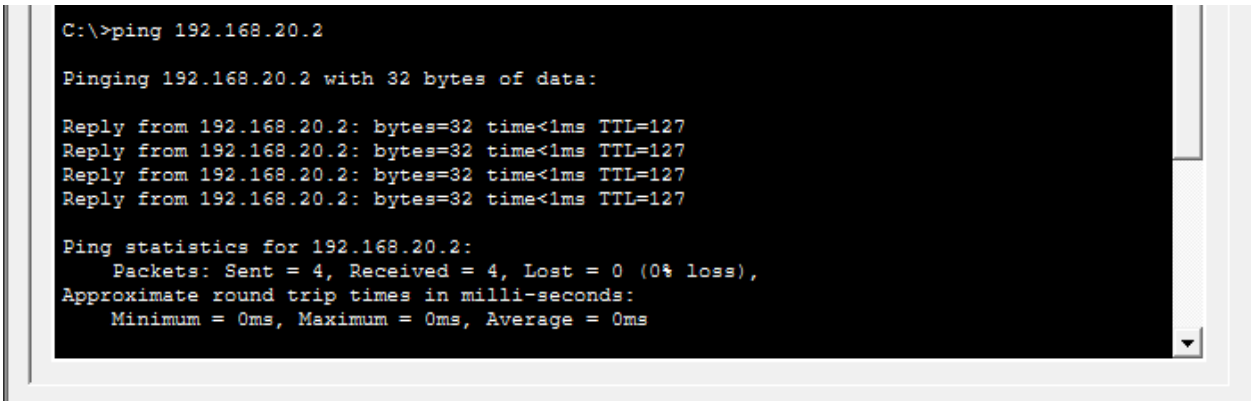

Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
Alschool1(config)#username Hamdan priviledge 15 secret Harkumeh87@
*Mar 1 0:58:39.453: %SSH-5-ENABLED: SSH 1.99 has been enabled
^
% Invalid input detected at '^' marker.
Alschool1(config)#username Hamdan privilege 15 secret Harkumeh87@
Alschool1(config)#line vty 0 4
Alschool1(config-line)#login local
Alschool1(config-line)#transport input ssh
Alschool1(config-line)#exit
Alschool1(config)#ip ssh version 2
Alschool1(config)#interface GigabitEthernet0/0.10
Alschool1(config-subif)#
%LINK-3-UPDOWN: Interface GigabitEthernet0/0.10, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.10, changed state to
up
encapsulation dot1Q 10
Alschool1(config-subif)#ip address 192.168.10.1 255.255.255.0
Alschool1(config-subif)#exit
Alschool1(config)#interface GigabitEthernet0/0.20
Alschool1(config-subif)#
%LINK-3-UPDOWN: Interface GigabitEthernet0/0.20, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.20, changed state to
up
encapsulation dot1Q 20
Alschool1(config-subif)#ip address 192.168.20.1 255.255.255.0
Alschool1(config-subif)#exit
Alschool1(config)#interface GigabitEthernet0/0.30
Alschool1(config-subif)#
%LINK-3-UPDOWN: Interface GigabitEthernet0/0.30, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.30, changed state to
up
encapsulation dot1Q 30
Alschool1(config-subif)#ip address 192.168.30.1 255.255.255.0
Alschool1(config-subif)#exit
Alschool1(config)#ip routing
Alschool1(config)#access-list 110 permit ip 192.168.10
Copy
Paste


Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
Alschool1>show access list
^
% Invalid input detected at '^' marker.
Alschool1>show access-list
^
% Invalid input detected at '^' marker.
Alschool1>enable
Alschool1#show access-list
Extended IP access list ADMIN-ACL
10 permit ip 192.168.10.0 0.0.0.255 192.168.20.0 0.0.0.255 (49 match(es))
20 deny ip 192.168.10.0 0.0.0.255 192.168.30.0 0.0.0.255 (48 match(es))
30 permit ip any any (58 match(es))
Extended IP access list SALES-ACL
10 deny ip 192.168.20.0 0.0.0.255 192.168.10.0 0.0.0.255 (59 match(es))
20 permit ip 192.168.20.0 0.0.0.255 192.168.30.0 0.0.0.255 (24 match(es))
30 permit ip any any (5 match(es))
Extended IP access list IT-ACL
10 permit ip any any (53 match(es))
Extended IP access list ADMIN_TO_OTHERS
10 permit icmp 192.168.10.0 0.0.0.255 192.168.30.0 0.0.0.255 echo-reply
20 permit icmp 192.168.10.0 0.0.0.255 192.168.30.0 0.0.0.255
30 permit ip 192.168.10.0 0.0.0.255 192.168.20.0 0.0.0.255
40 deny ip 192.168.10.0 0.0.0.255 192.168.30.0 0.0.0.255
50 permit ip 192.168.10.0 0.0.0.255 host 192.168.10.1
60 deny ip any any
Alschool1#
Copy
Paste

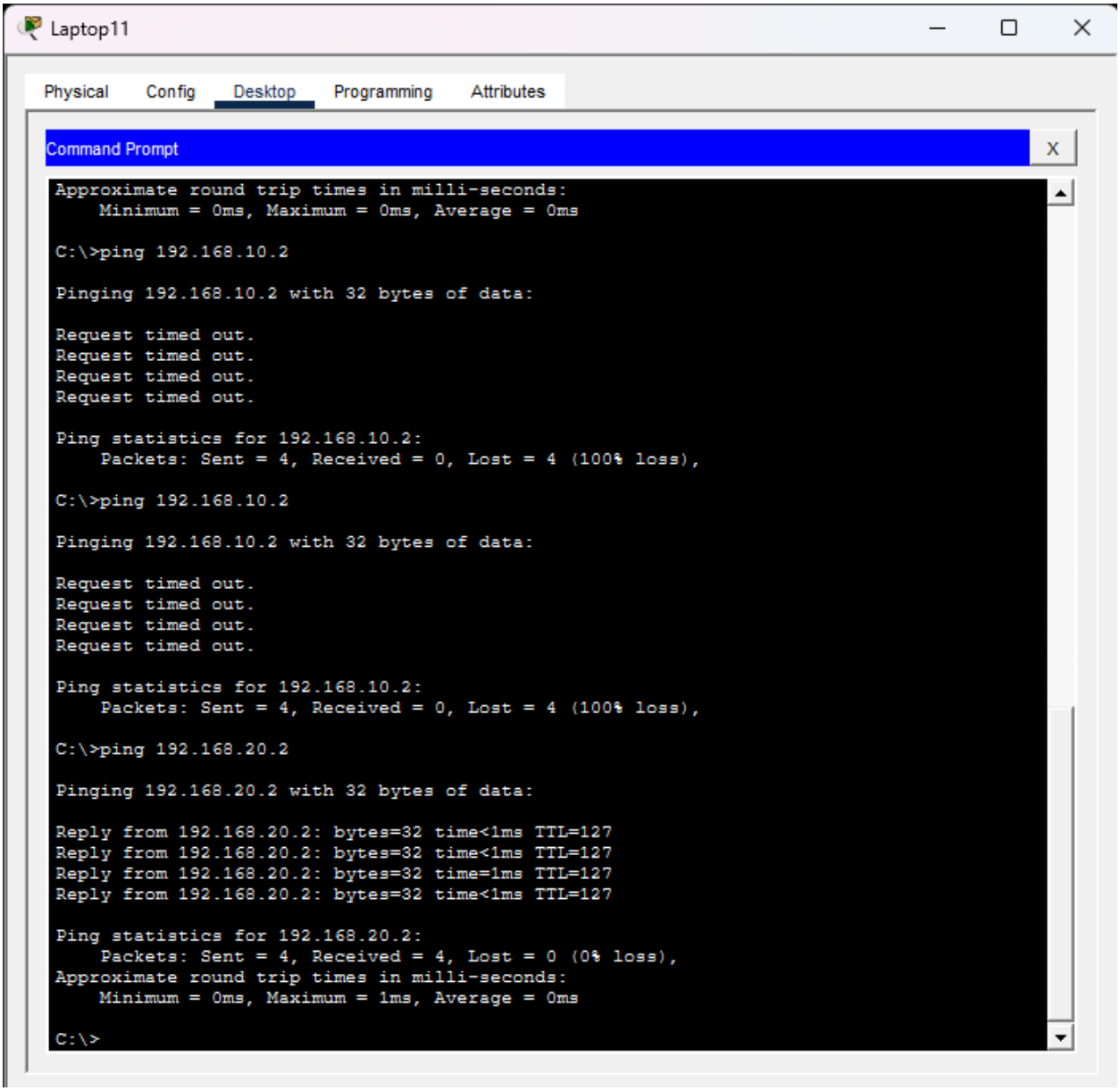


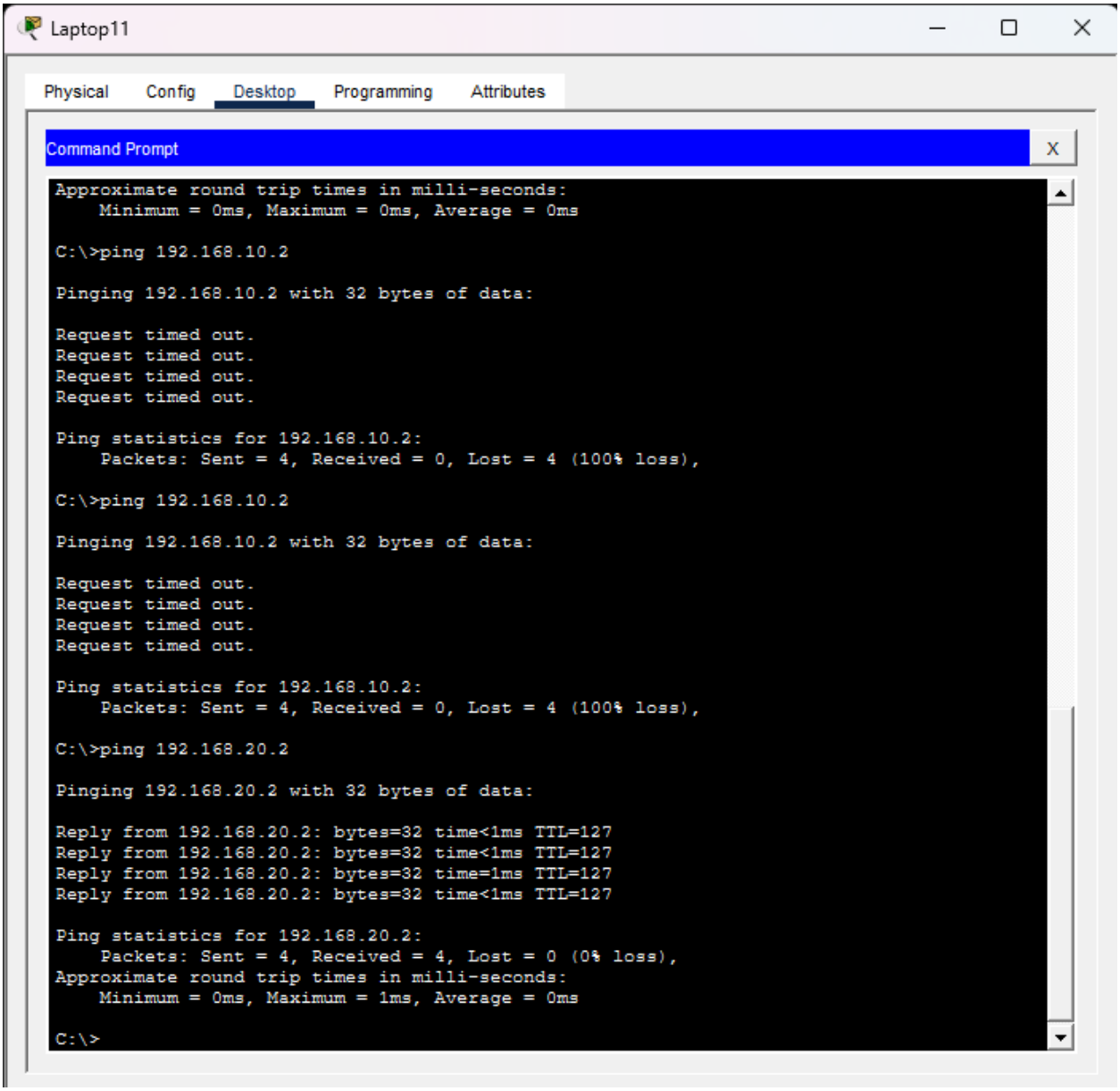
IP Addresses was assigned to all PCs with their respective gateway

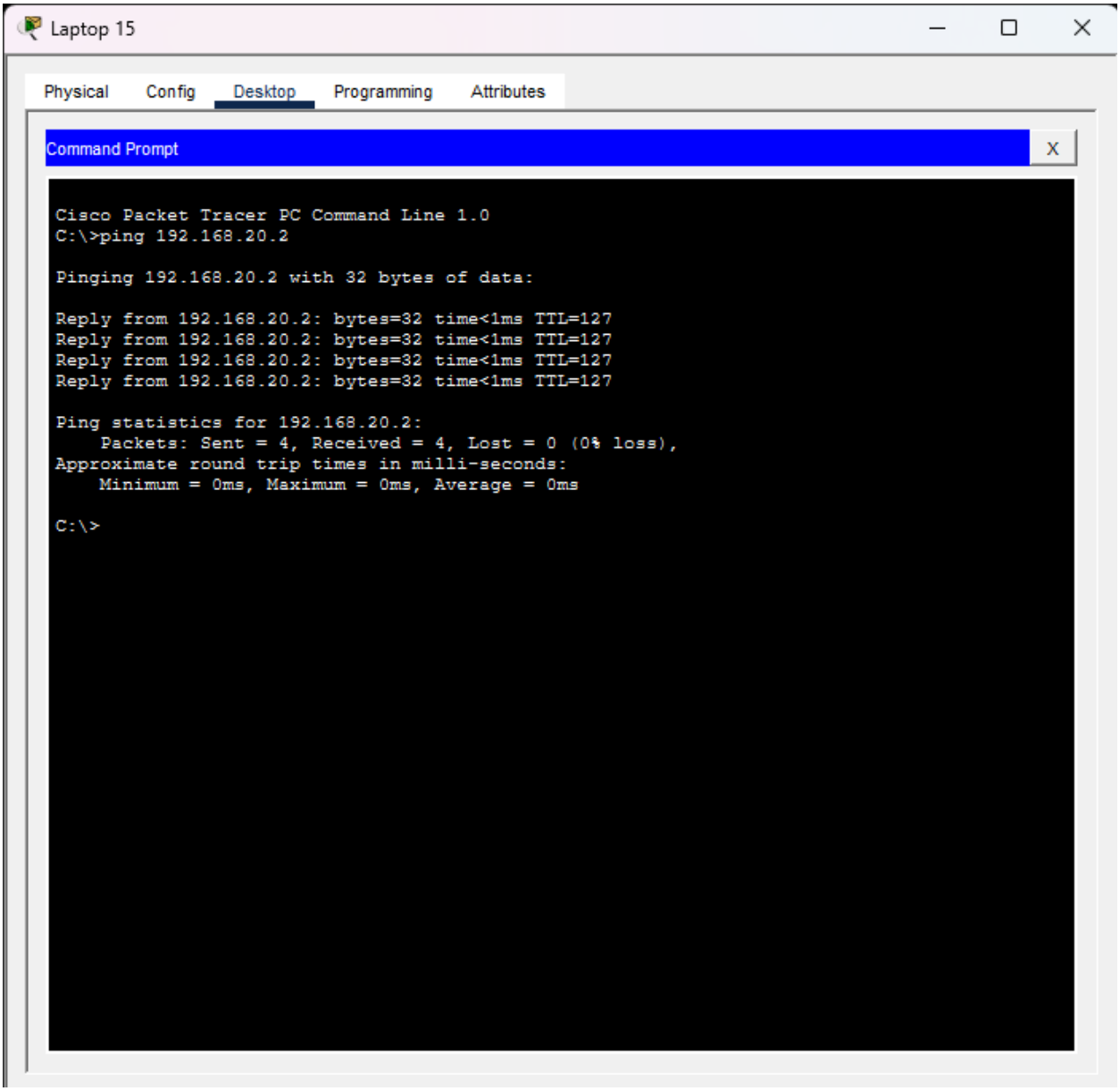

Laptop1
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
C:\>ping 192.168.10.1
Pinging 192.168.10.1 with 32 bytes of data:
Reply from 192.168.10.1: bytes=32 time<1ms TTL=255
Reply from 192.168.10.1: bytes=32 time<1ms TTL=255
Reply from 192.168.10.1: bytes=32 time=1ms TTL=255
Reply from 192.168.10.1: bytes=32 time=1ms TTL=255
Ping statistics for 192.168.10.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
C:\>ping 192.168.20.1
Pinging 192.168.20.1 with 32 bytes of data:
Reply from 192.168.20.1: bytes=32 time<1ms TTL=255
Reply from 192.168.20.1: bytes=32 time<1ms TTL=255
Reply from 192.168.20.1: bytes=32 time<1ms TTL=255
Reply from 192.168.20.1: bytes=32 time<1ms TTL=255
Ping statistics for 192.168.20.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 192.168.30.1
Pinging 192.168.30.1 with 32 bytes of data:
Reply from 192.168.10.1: Destination host unreachable.
Reply from 192.168.10.1: Destination host unreachable.
Reply from 192.168.10.1: Destination host unreachable.
Reply from 192.168.10.1: Destination host unreachable.
Ping statistics for 192.168.30.1:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
C:\>

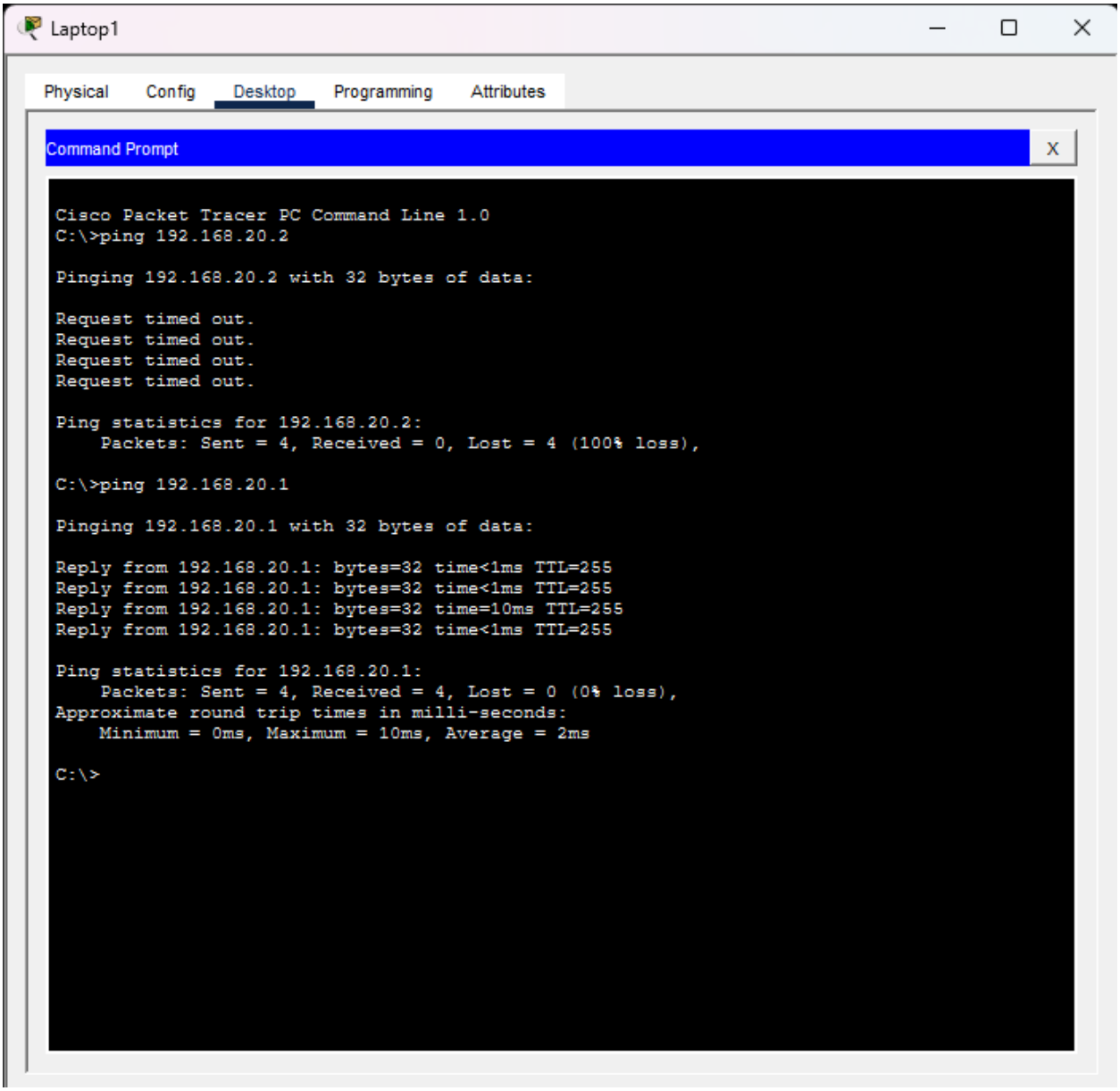

C:\>ping 192.168.20.2
Pinging 192.168.20.2 with 32 bytes of data:
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127
Ping statistics for 192.168.20.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms

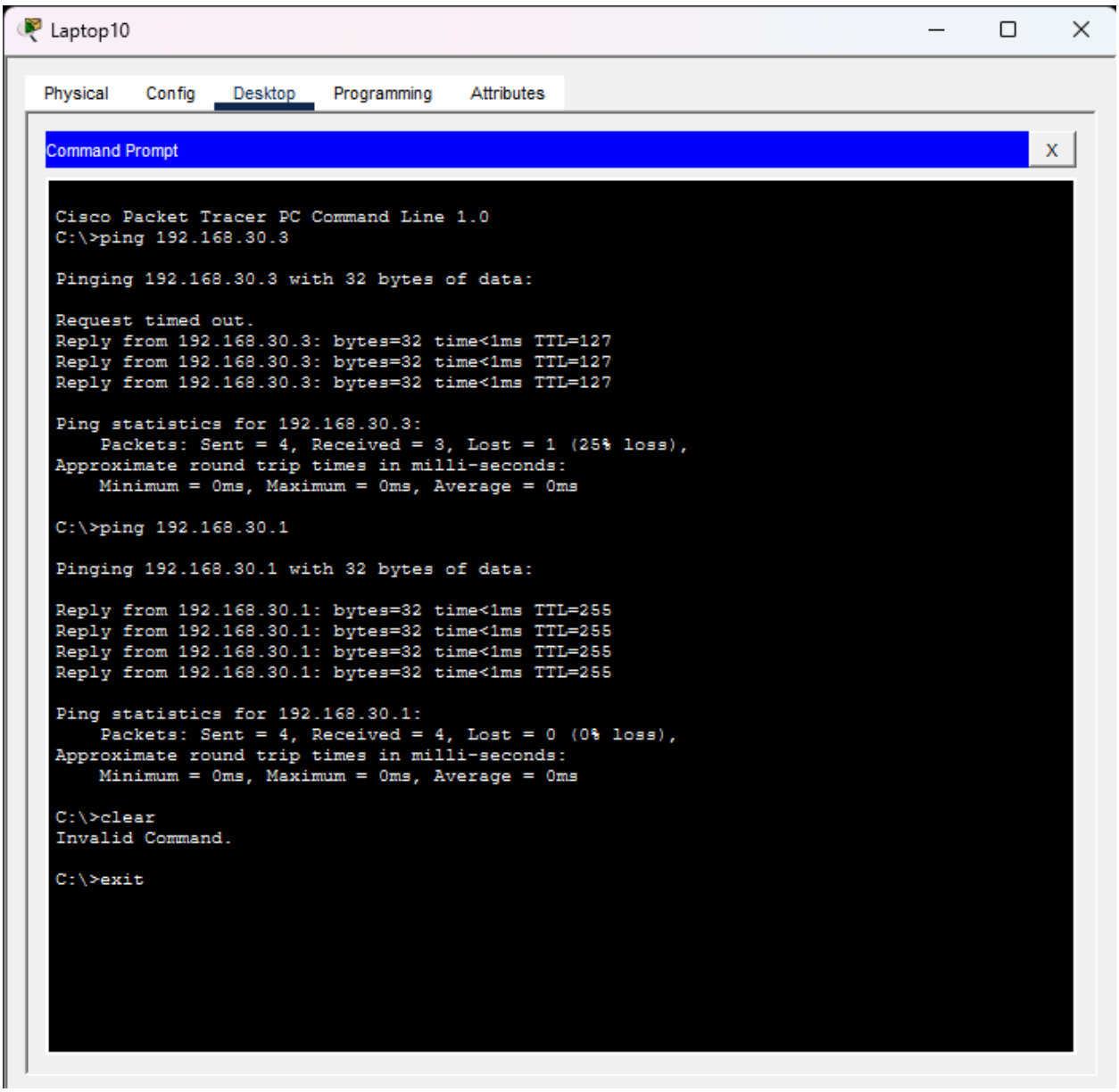
This is successful ping message from Admin to Sale and was denied by IT

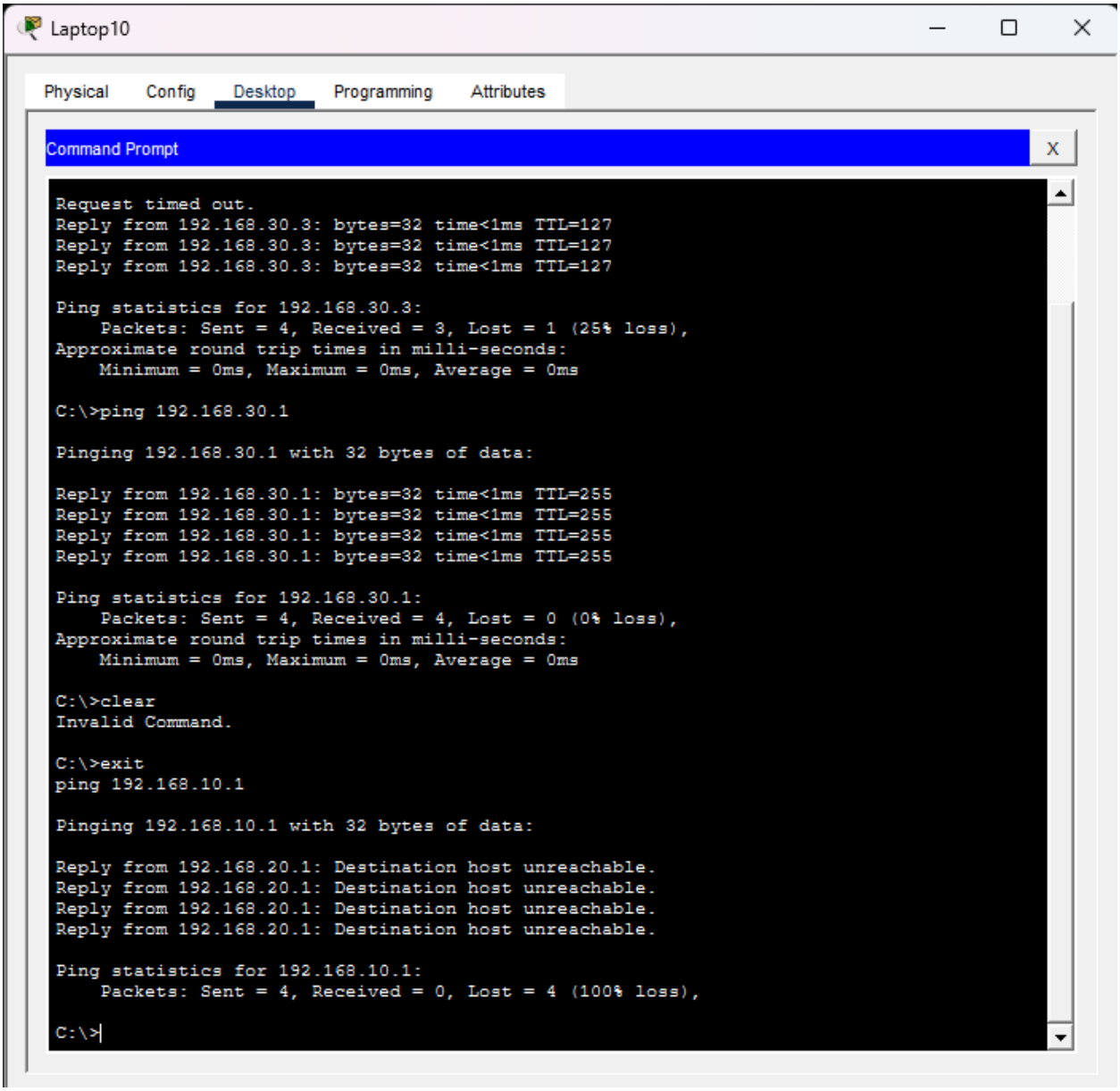



Laptop11
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 192.168.10.2
Pinging 192.168.10.2 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 192.168.10.2:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
C:\>ping 192.168.10.2
Pinging 192.168.10.2 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 192.168.10.2:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
C:\>ping 192.168.20.2
Pinging 192.168.20.2 with 32 bytes of data:
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127
Reply from 192.168.20.2: bytes=32 time=1ms TTL=127
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127
Ping statistics for 192.168.20.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
C:\>


Laptop 15
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.20.2
Pinging 192.168.20.2 with 32 bytes of data:
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127
Ping statistics for 192.168.20.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>


Laptop1
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.20.2
Pinging 192.168.20.2 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 192.168.20.2:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
C:\>ping 192.168.20.1
Pinging 192.168.20.1 with 32 bytes of data:
Reply from 192.168.20.1: bytes=32 time<1ms TTL=255
Reply from 192.168.20.1: bytes=32 time<1ms TTL=255
Reply from 192.168.20.1: bytes=32 time=10ms TTL=255
Reply from 192.168.20.1: bytes=32 time<1ms TTL=255
Ping statistics for 192.168.20.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 10ms, Average = 2ms
C:\>


Laptop10
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.30.3
Pinging 192.168.30.3 with 32 bytes of data:
Request timed out.
Reply from 192.168.30.3: bytes=32 time<1ms TTL=127
Reply from 192.168.30.3: bytes=32 time<1ms TTL=127
Reply from 192.168.30.3: bytes=32 time<1ms TTL=127
Ping statistics for 192.168.30.3:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 192.168.30.1
Pinging 192.168.30.1 with 32 bytes of data:
Reply from 192.168.30.1: bytes=32 time<1ms TTL=255
Reply from 192.168.30.1: bytes=32 time<1ms TTL=255
Reply from 192.168.30.1: bytes=32 time<1ms TTL=255
Reply from 192.168.30.1: bytes=32 time<1ms TTL=255
Ping statistics for 192.168.30.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>clear
Invalid Command.
C:\>exit


Laptop10
Physical
Config
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Programming
Attributes
Command Prompt
X
Request timed out.
Reply from 192.168.30.3: bytes=32 time<1ms TTL=127
Reply from 192.168.30.3: bytes=32 time<1ms TTL=127
Reply from 192.168.30.3: bytes=32 time<1ms TTL=127
Ping statistics for 192.168.30.3:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 192.168.30.1
Pinging 192.168.30.1 with 32 bytes of data:
Reply from 192.168.30.1: bytes=32 time<1ms TTL=255
Reply from 192.168.30.1: bytes=32 time<1ms TTL=255
Reply from 192.168.30.1: bytes=32 time<1ms TTL=255
Reply from 192.168.30.1: bytes=32 time<1ms TTL=255
Ping statistics for 192.168.30.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>clear
Invalid Command.
C:\>exit
ping 192.168.10.1
Pinging 192.168.10.1 with 32 bytes of data:
Reply from 192.168.20.1: Destination host unreachable.
Reply from 192.168.20.1: Destination host unreachable.
Reply from 192.168.20.1: Destination host unreachable.
Reply from 192.168.20.1: Destination host unreachable.
Ping statistics for 192.168.10.1:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
C:\>