

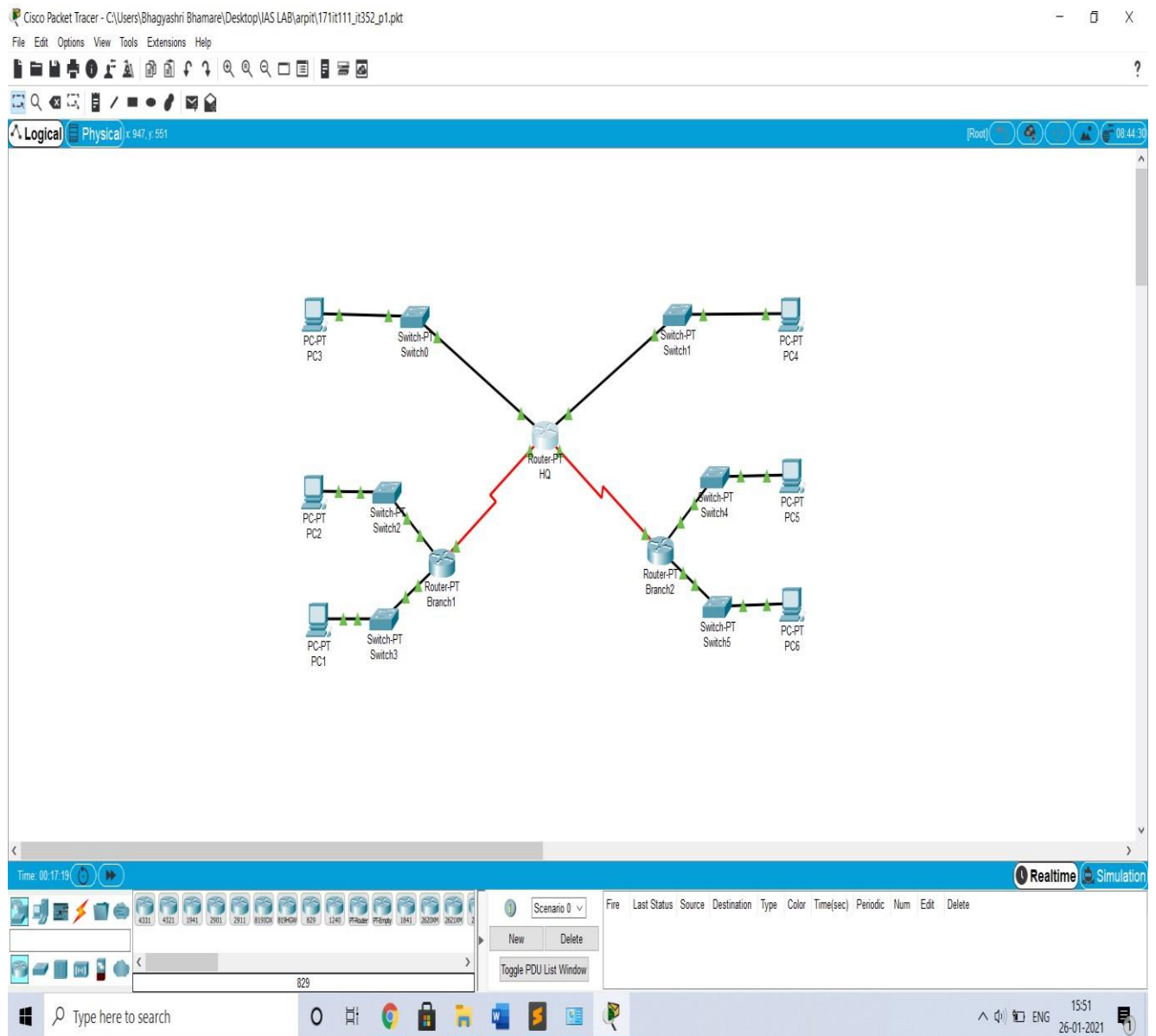
# IT352: Information Assurance and Security

## Lab Program 1

Name: Bhagyashri Nilesh Bhamare

Roll No.: 181IT111

### Network



**Test Case 1 - firewall policy at interface S0/0/0 of HQ Router in the given topology that should block all incoming ICMP Echo requests. Demonstrate the operation by sending message from PC2.**

The screenshot shows a Cisco IOS Command Line Interface (CLI) window titled "HQ". The window has tabs for "Physical", "Config", "CLI", and "Attributes". The "CLI" tab is active, displaying the following text:

```
IOS Command Line Interface

Kings clause at FAR sec. 3522-713 and Superscript
(c) (1) (ii) of the Rights in Technical Data and Computer
Software clause at DFARS sec. 252.227-7013.

cisco Systems, Inc.
170 West Tasman Drive
San Jose, California 95134-1706

Cisco Internetwork Operating System Software
IOS (tm) PT1000 Software (PT1000-I-M), Version 12.2(28), RELEASE SOFTWARE (fc5)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2005 by Cisco Systems, Inc.
Compiled Wed 27-Apr-04 19:01 by miwang

PT 1001 (PTSC2005) processor (revision 0x200) with 60416K/5120K bytes of memory
.
Processor board ID FT0123 (0123)
PT2005 processor: part number 0, mask 01
Bridging software.
X.25 software, Version 3.0.0.
4 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)

Press RETURN to get started!

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
%LINK-5-CHANGED: Interface Serial2/0, changed state to up
%LINK-5-CHANGED: Interface Serial3/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

Router>
Router#enable
Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#access-list 110 deny icmp any any
Router(config)#interface Serial2/0
Router(config-if)#ip access-group 110 in
Router(config-if)#
```

At the bottom of the CLI window, there are "Copy" and "Paste" buttons. Below the CLI window, there is a "Top" button and a Windows taskbar with the search bar "Type here to search" and various application icons. The system clock shows "16:47" and "26-01-2021".

**Fig-1- Blocks all incoming ICMP Echo requests.**

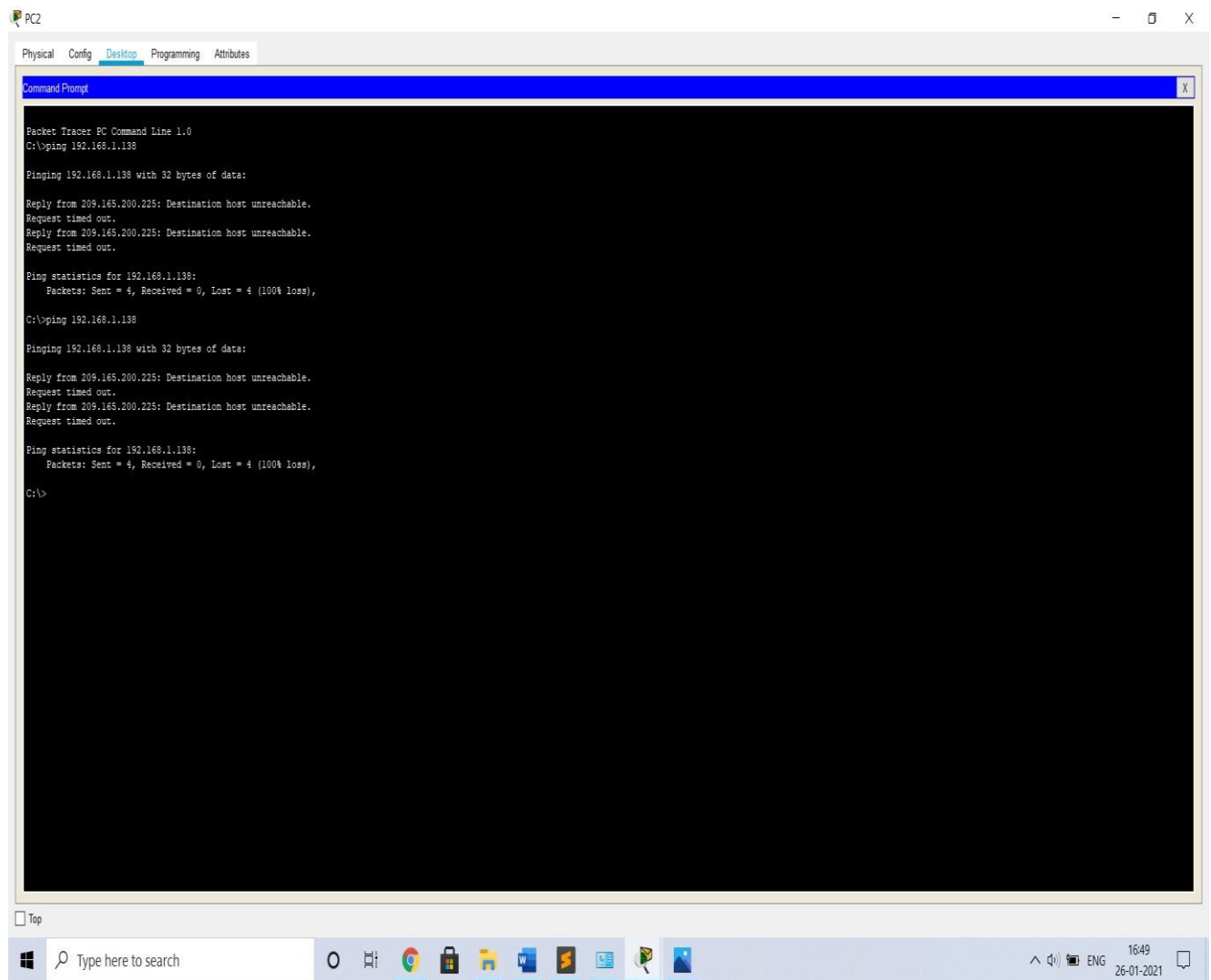
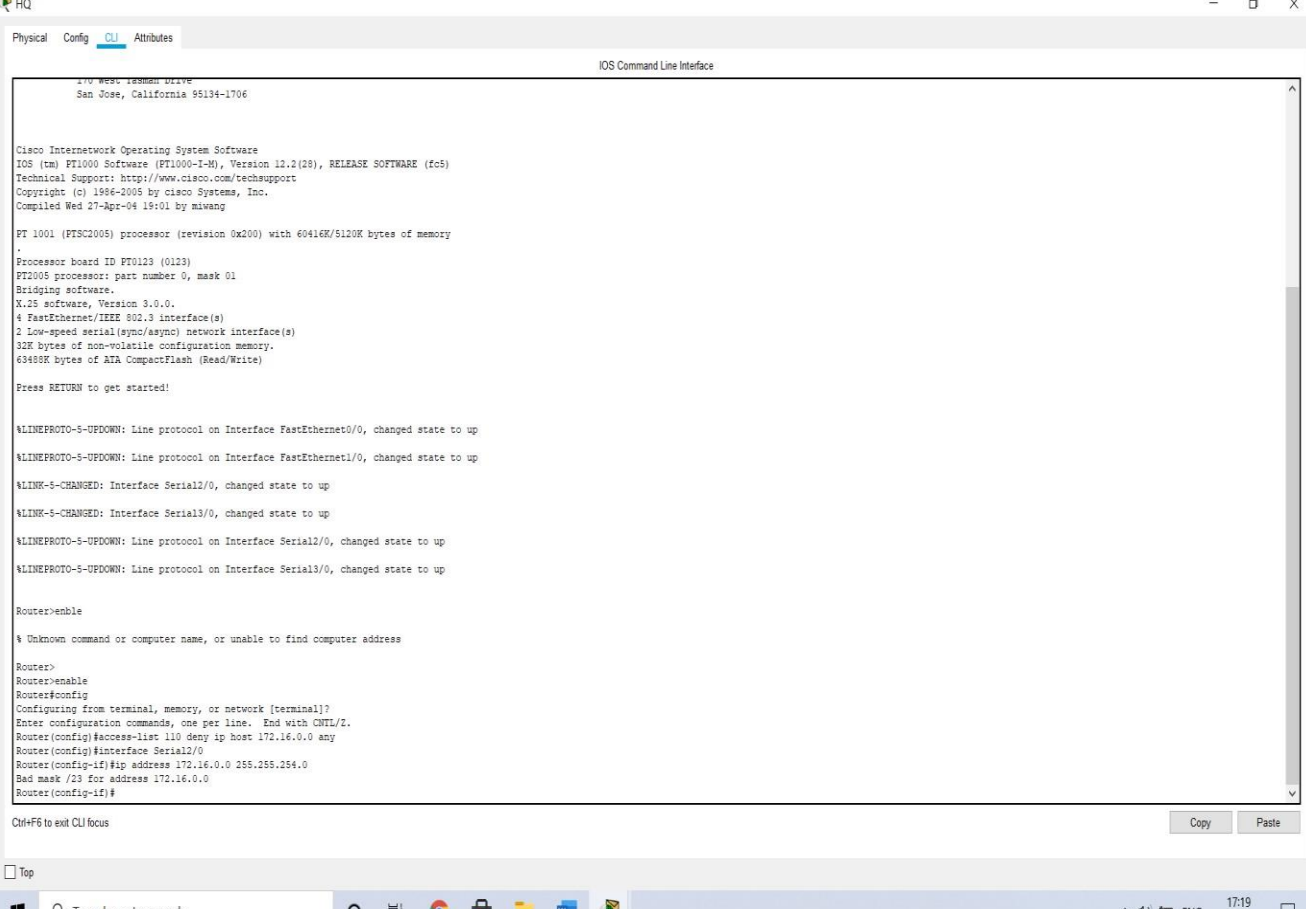


Fig-2-The traffic from PC2 is restricted by HQ Router.

**Test Case 2 -Write a firewall policy at interface S0/0/0 of HQ Router in the given topology that should block any traffic incoming coming from 172.16.0.0/23 network. Demonstrate the blocking operation by sending message from any system from the network 172.16.0.0/23.**



The screenshot shows a Cisco IOS Command Line Interface window titled "HQ". The window has tabs for "Physical", "Config", "CLI", and "Attributes". The "CLI" tab is active, displaying the following text:

```
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San Jose, California 95134-1706

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PT 1001 (PTSC2005) processor (revision 0x200) with 60416K/5120K bytes of memory
.
Processor board ID FT0123 (0123)
PT2005 processor: part number 0, mask 01
Bridging software.
X.25 software, Version 3.0.0.
4 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63489K bytes of ATA CompactFlash (Read/Write)

Press RETURN to get started!

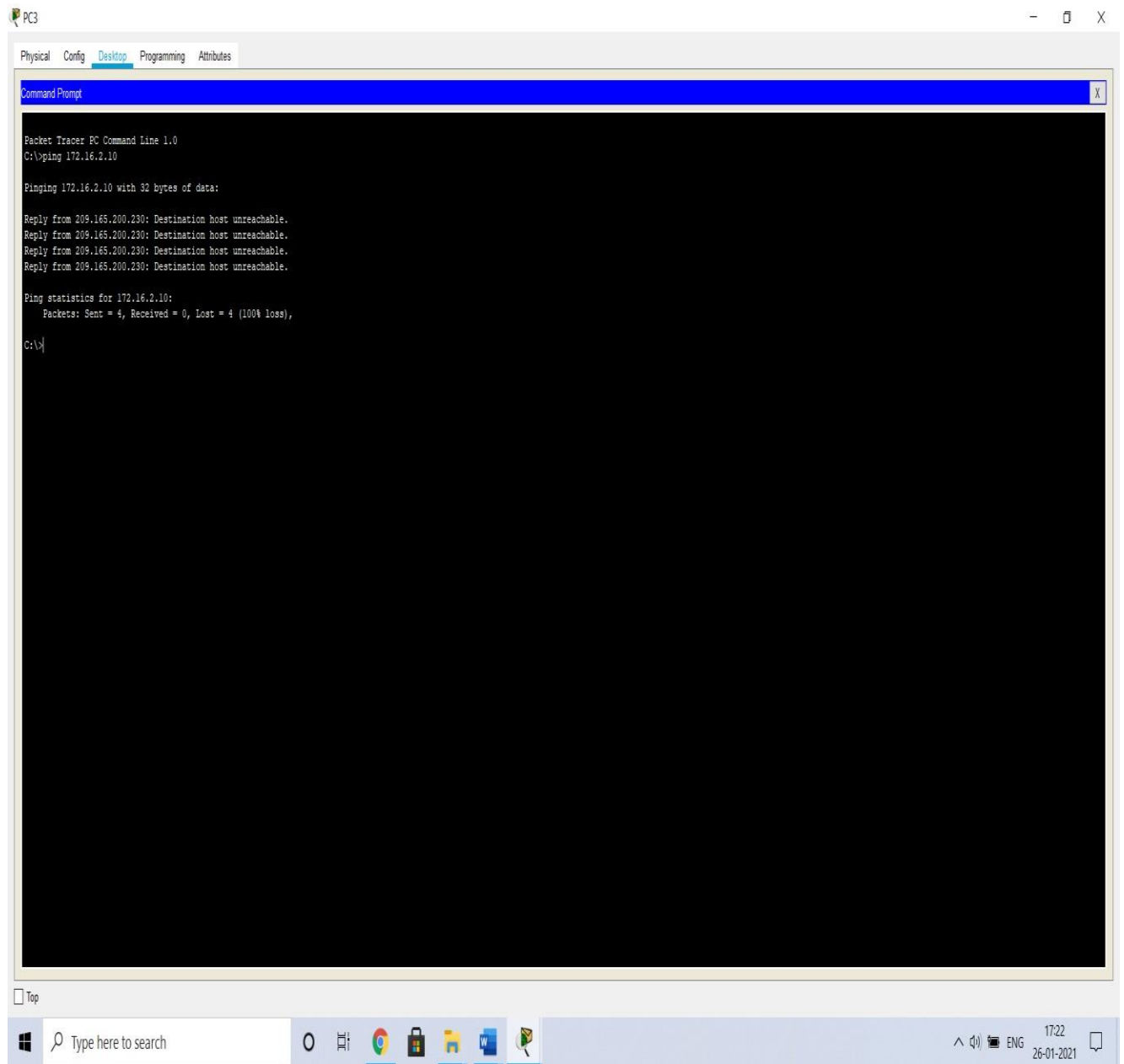
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
%LINK-5-CHANGED: Interface Serial2/0, changed state to up
%LINK-5-CHANGED: Interface Serial3/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up

Router>enable
% Unknown command or computer name, or unable to find computer address

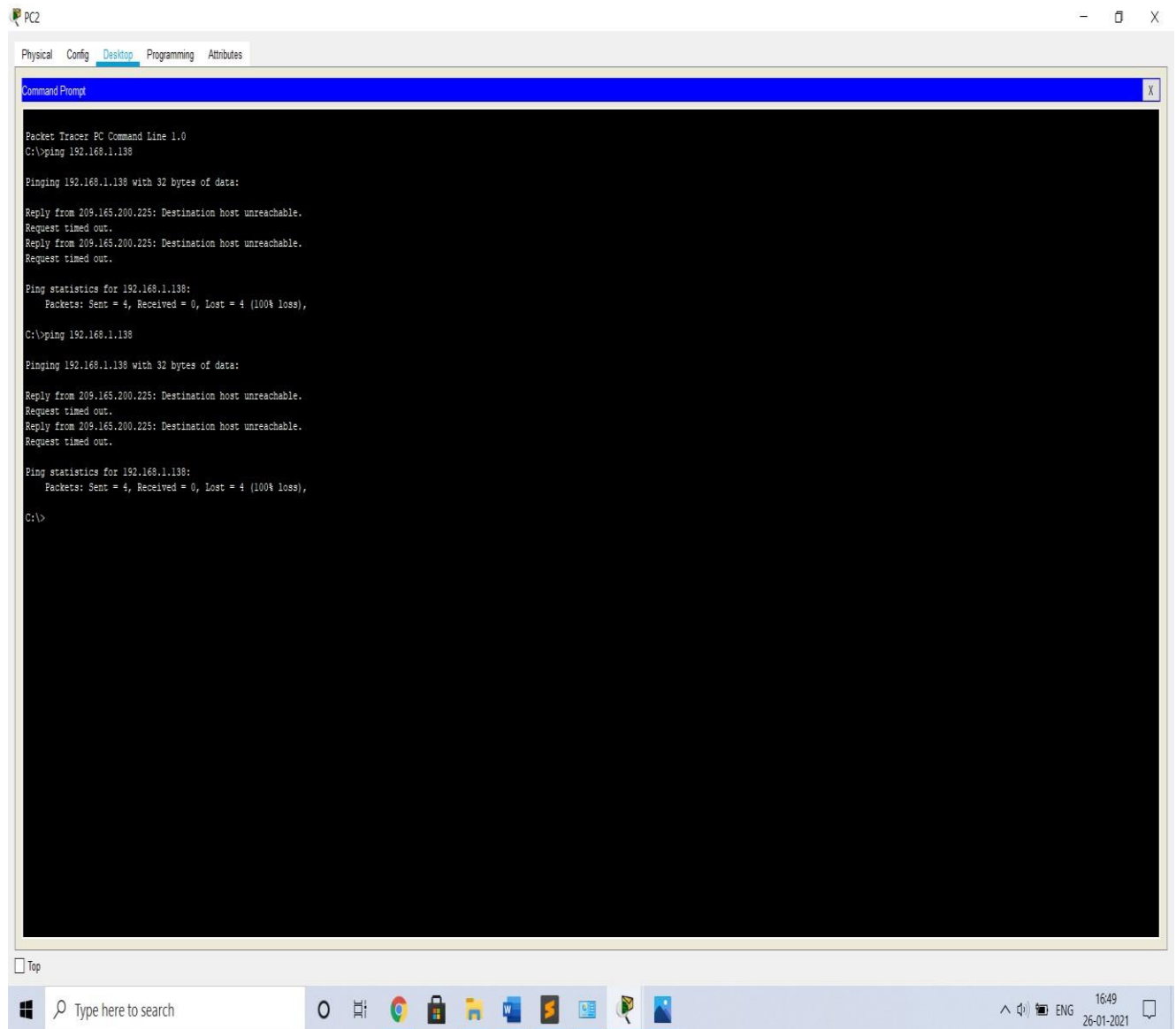
Router>
Router>enable
Router>enable
Router>config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#access-list 110 deny ip host 172.16.0.0 any
Router(config)#interface Serial2/0
Router(config-if)#ip address 172.16.0.0 255.255.254.0
Bad mask /23 for address 172.16.0.0
Router(config-if)#
```

At the bottom of the window, there is a "Top" button and a "Copy" button. The Windows taskbar is visible at the bottom of the screen, showing the search bar, taskbar icons, and system tray with the time 17:19 and date 26-01-2021.

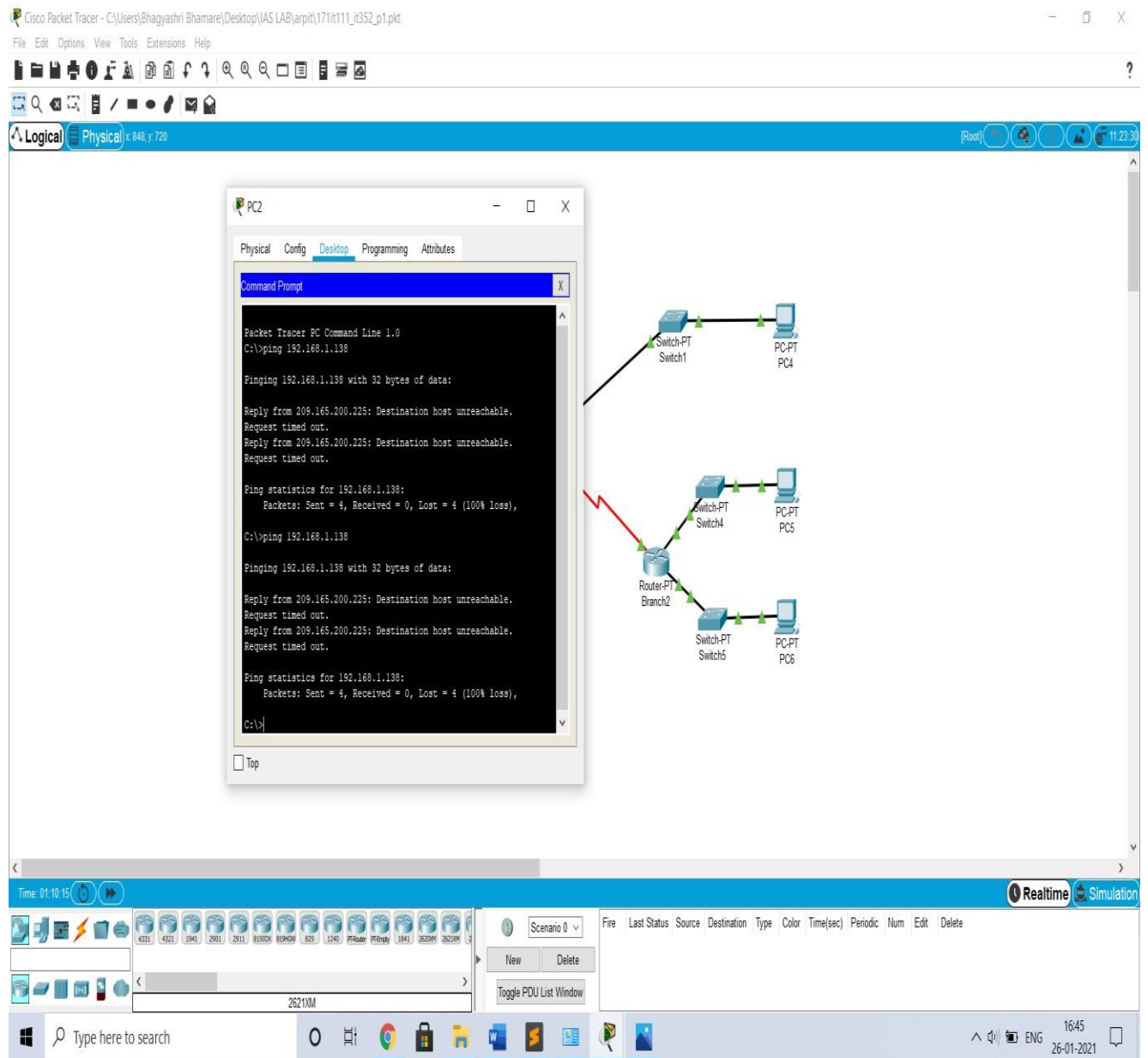
**Fig-3 Blocks any traffic incoming coming from 172.16.0.0/23 network by HQ Router.**



**Fig-4 PC3 is unable to send the message to 172.16.0.0/23 network.**

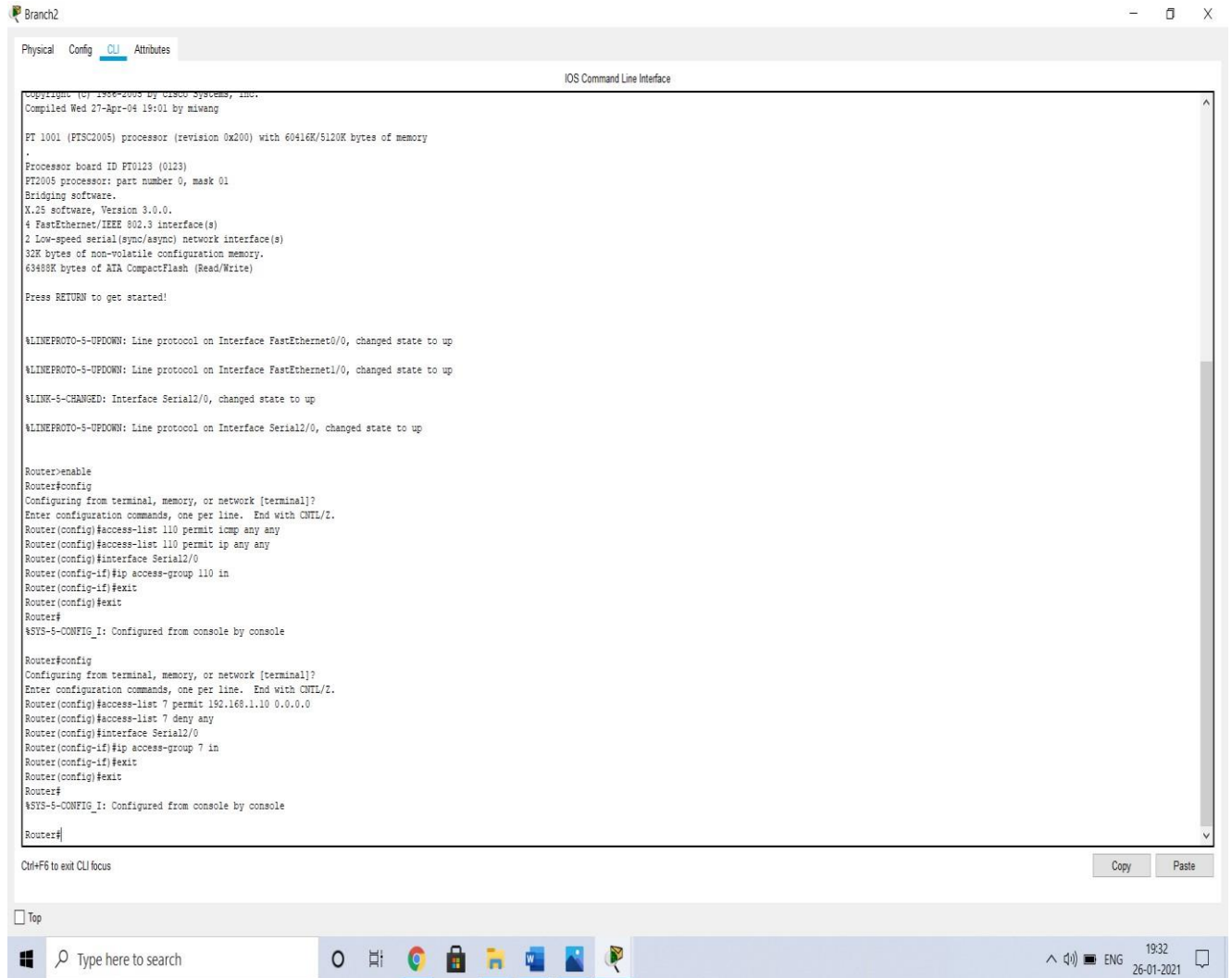


**Fig-5 PC2 is unable to send message to an external network due to the restriction at HQ Router.**



**Fig-6 PC3 can send the message to the network 192.168.1.0/25. HQ Router has no firewall policy against network 192.168.1.0/25.**

**Test Case 3: firewall policy at interface S0/0/1BRANCH2 Router in the given topology that should allow any traffic incoming coming from PC3 and rest of the traffic should be blocked. Demonstrate the operation by sending message from any system from any network and PC3.**



```
Branch2
Physical Config CLI Attributes
IOS Command Line Interface

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PT 1001 (PTSC2005) processor (revision 0x200) with 60416K/5120K bytes of memory
.
Processor board ID FT0123 (0123)
PT2005 processor: part number 0, mask 01
Bridging software.
X.25 software, Version 3.0.0.
4 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)

Press RETURN to get started!

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
%LINK-5-CHANGED: Interface Serial2/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

Router#enable
Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#access-list 110 permit icmp any any
Router(config)#access-list 110 permit ip any any
Router(config)#interface Serial2/0
Router(config-if)#ip access-group 110 in
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#access-list 7 permit 192.168.1.10 0.0.0.0
Router(config)#access-list 7 deny any
Router(config)#interface Serial2/0
Router(config-if)#ip access-group 7 in
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#
```

Ctrl+FG to exit CLI focus

Copy Paste

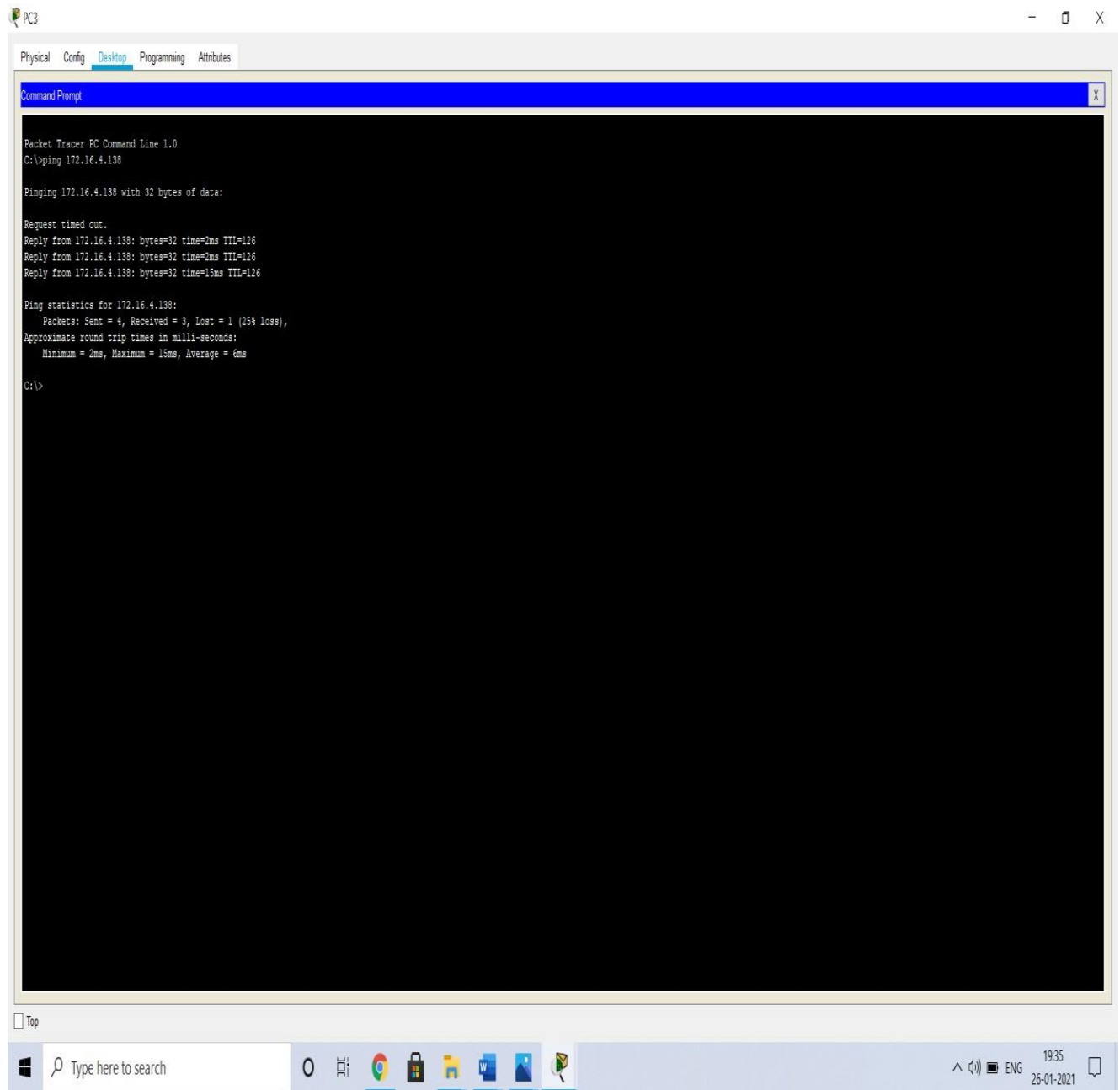
Top

Type here to search

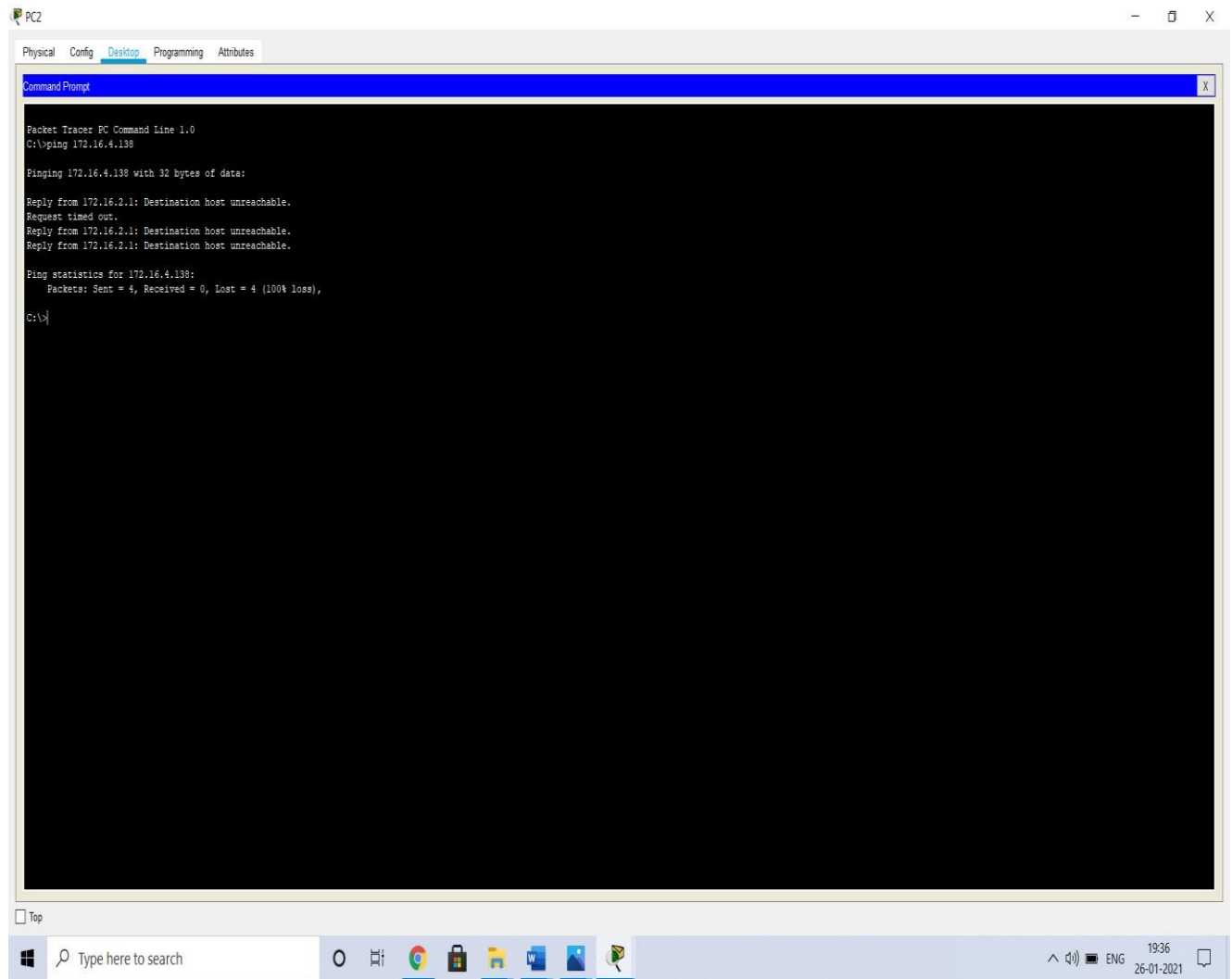
19:32 26-01-2021

**Fig 7 Branch2 Router Firewall Policy: Allow any traffic incoming coming from PC3 and rest of the traffic is blocked.**

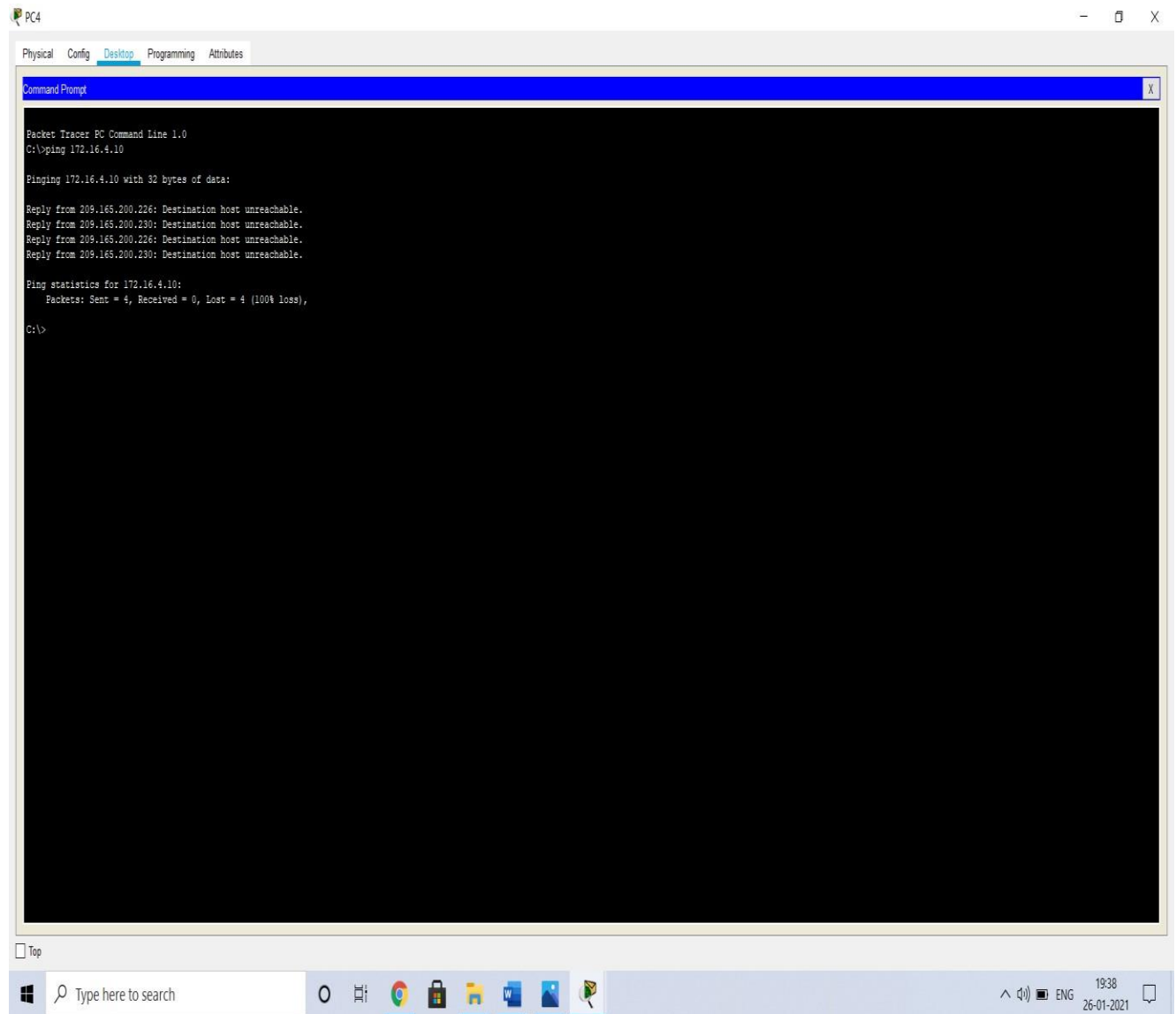




**Fig-8 PC3 can send a message to the network at Branch1 Router.**

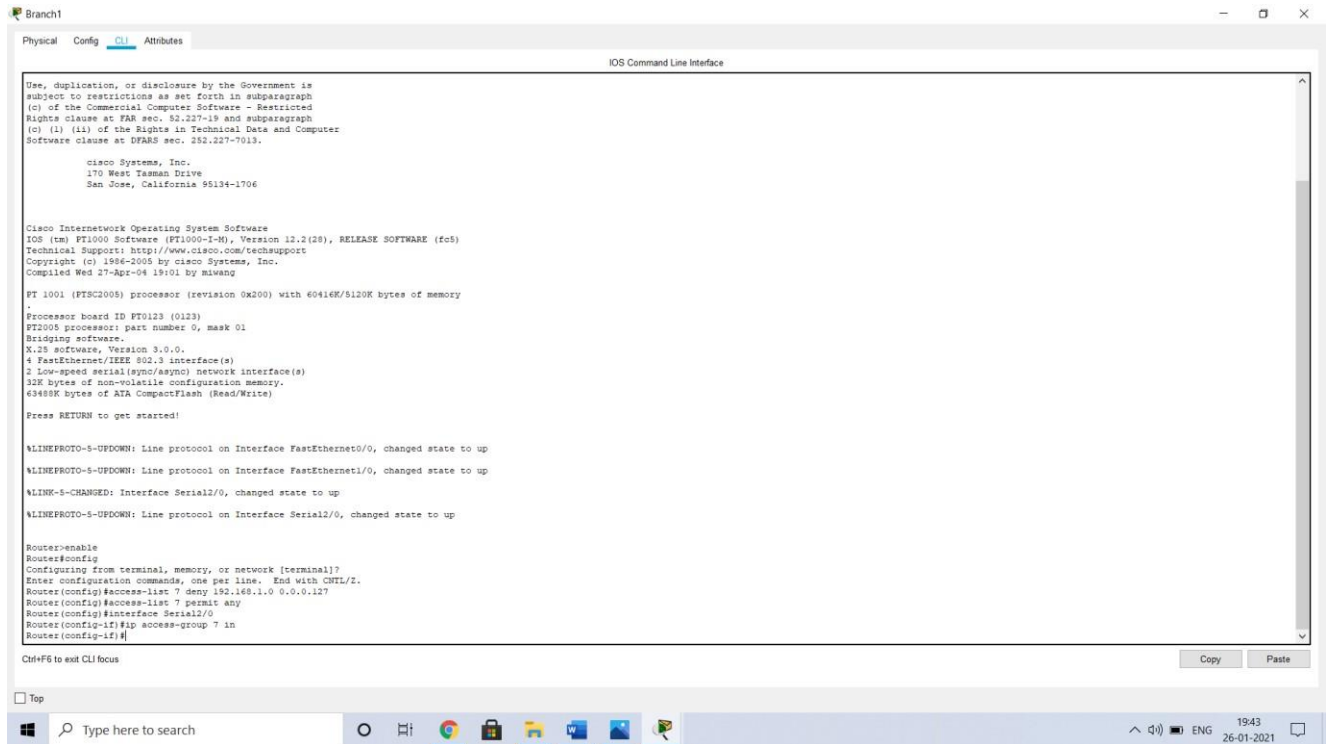


**Fig -9 PC2 cannot send any message to the network at the Branch1 Router due to firewall policy at the router.**



**Fig -10 PC4 cannot send any message to the network at the Branch1 Router due to firewall policy at the router.**

**Test Case 4 - a firewall policy at interface S0/0/0 of BRANCH1 Router in the given topology that should block any traffic incoming coming from any system belong to 192.168.1.0/25 network. Demonstrate the operation by sending message from any system of the network 192.16.0.0.**



```
Branch1
Physical Config CLI Attributes
IOS Command Line Interface

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PT 1001 (PTSC2005) processor (revision 0x200) with 60416K/5120K bytes of memory
.
Processor board ID PT0123 (0123)
PT2005 processor: part number 0, mask 01
Bridging software.
X.25 software, Version 3.0.0.
4 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)

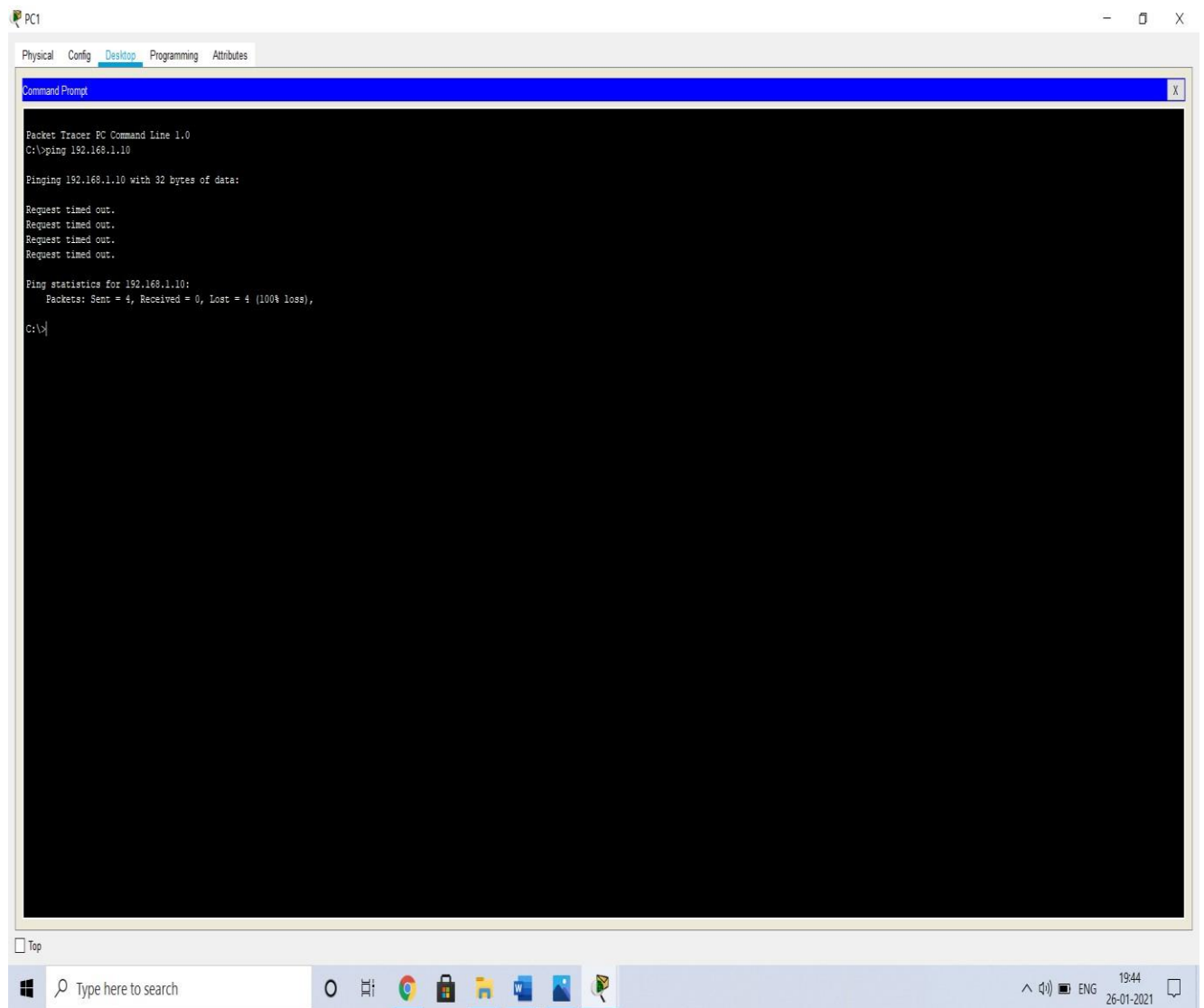
Press RETURN to get started!

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
%LINK-5-CHANGED: Interface Serial2/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

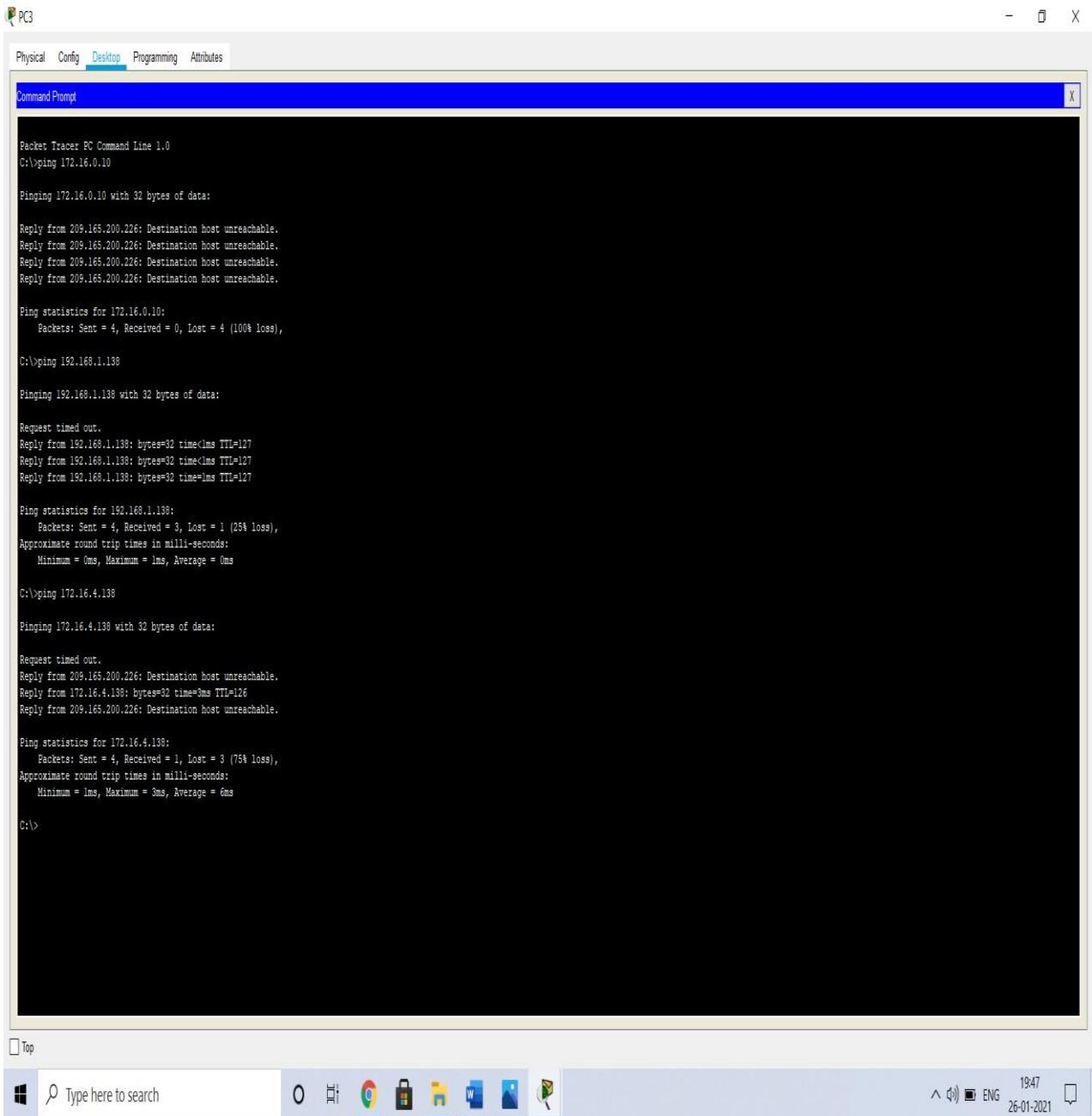
Router>enable
Router#configure
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CTRL/Z.
Router(config)#access-list 7 deny 192.168.1.0 0.0.0.127
Router(config)#access-list 7 permit any
Router(config)#interface Serial2/0
Router(config-if)#ip access-group 7 in
Router(config-if)#

Ctrl+F6 to exit CLI focus
Copy Paste
```

**Fig-11 Branch1 Router Firewall Policy: Block any traffic incoming coming from any system belong to 192.168.1.0/25 network**

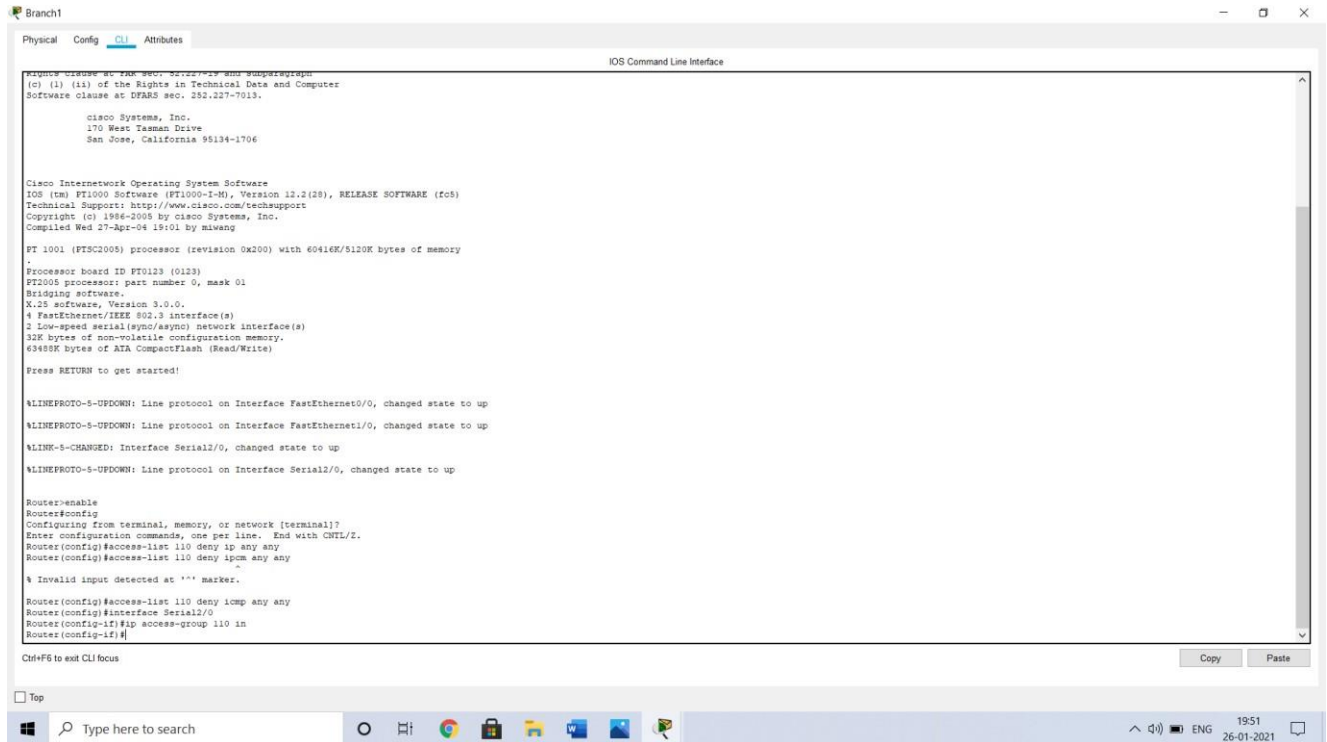


**Fig-12 PC1 to PC3**



**Fig-13 PC3 to PC1 and PC3 to PC4**

**Test Case 5: Write a firewall policy at interface S0/0/0 of BRANCH1 Router in the given topology that should block any traffic incoming coming from any network. Demonstrate the operation by sending message from any system of the network 192.16.0.0.**



```
Branch1
Physical Config CLI Attributes
IOS Command Line Interface

cisco iosrue uc rkr sec: 2222-11 and superstrings
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Compiled Wed 27-Apr-04 19:01 by hlwang

PT 1001 (PTSC2005) processor (revision 0x200) with 60416K/5120K bytes of memory
Processor board ID PT0123 (0123)
PT2005 processor: part number 0, mask 01
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4 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)

Press RETURN to get started!

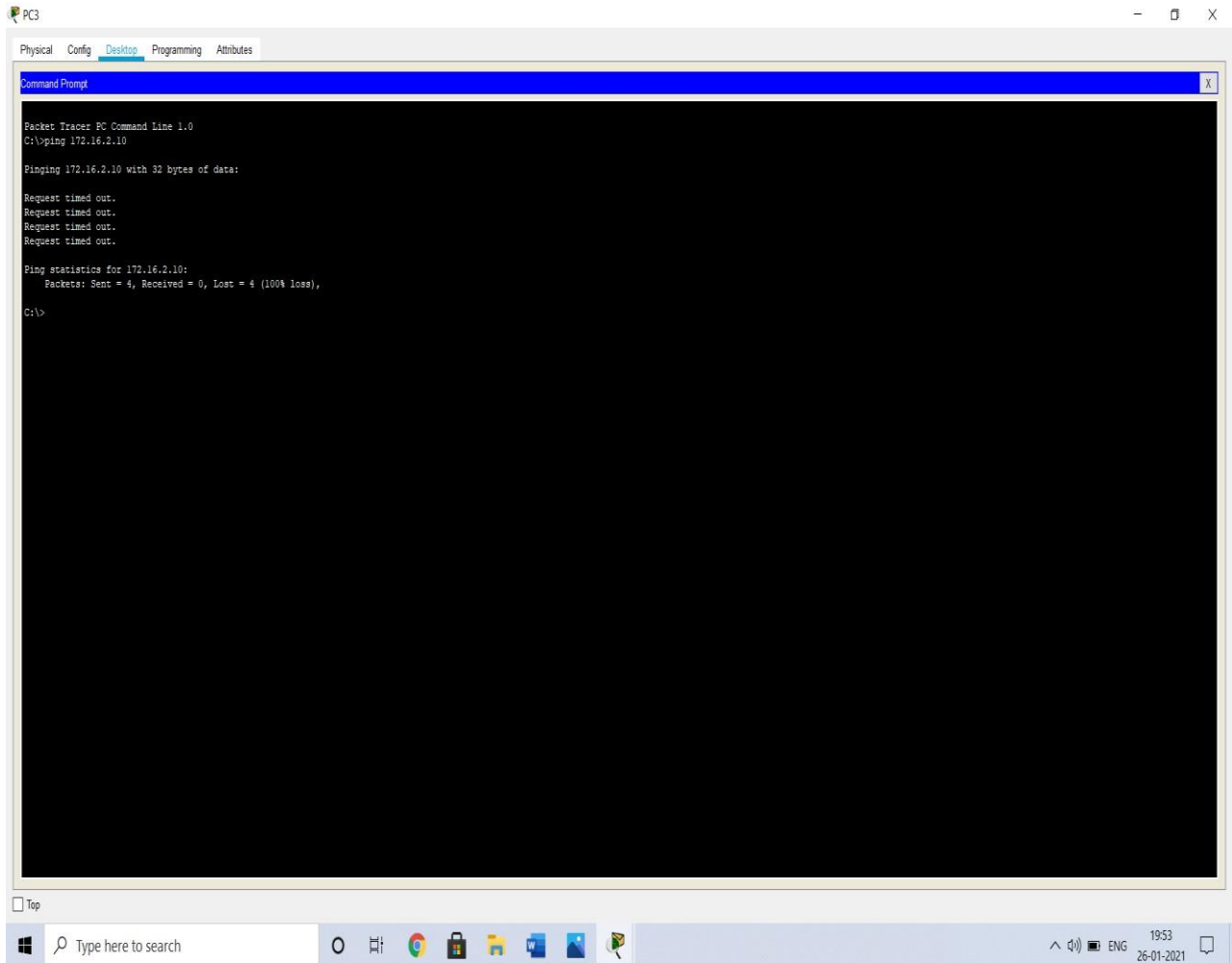
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
%LINK-3-CHANGED: Interface Serial2/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

Router>enable
Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#access-list 110 deny ip any any
Router(config)#access-list 110 deny ipcm any any
% Invalid input detected at '^' marker.
Router(config)#access-list 110 deny icmp any any
Router(config)#interface Serial2/0
Router(config-if)#ip access-group 110 in
Router(config-if)#

Ctrl+F6 to exit CLI focus
```

**Fig-14 Branch1 Router Firewall Policy: Block any traffic incoming coming from any network.**

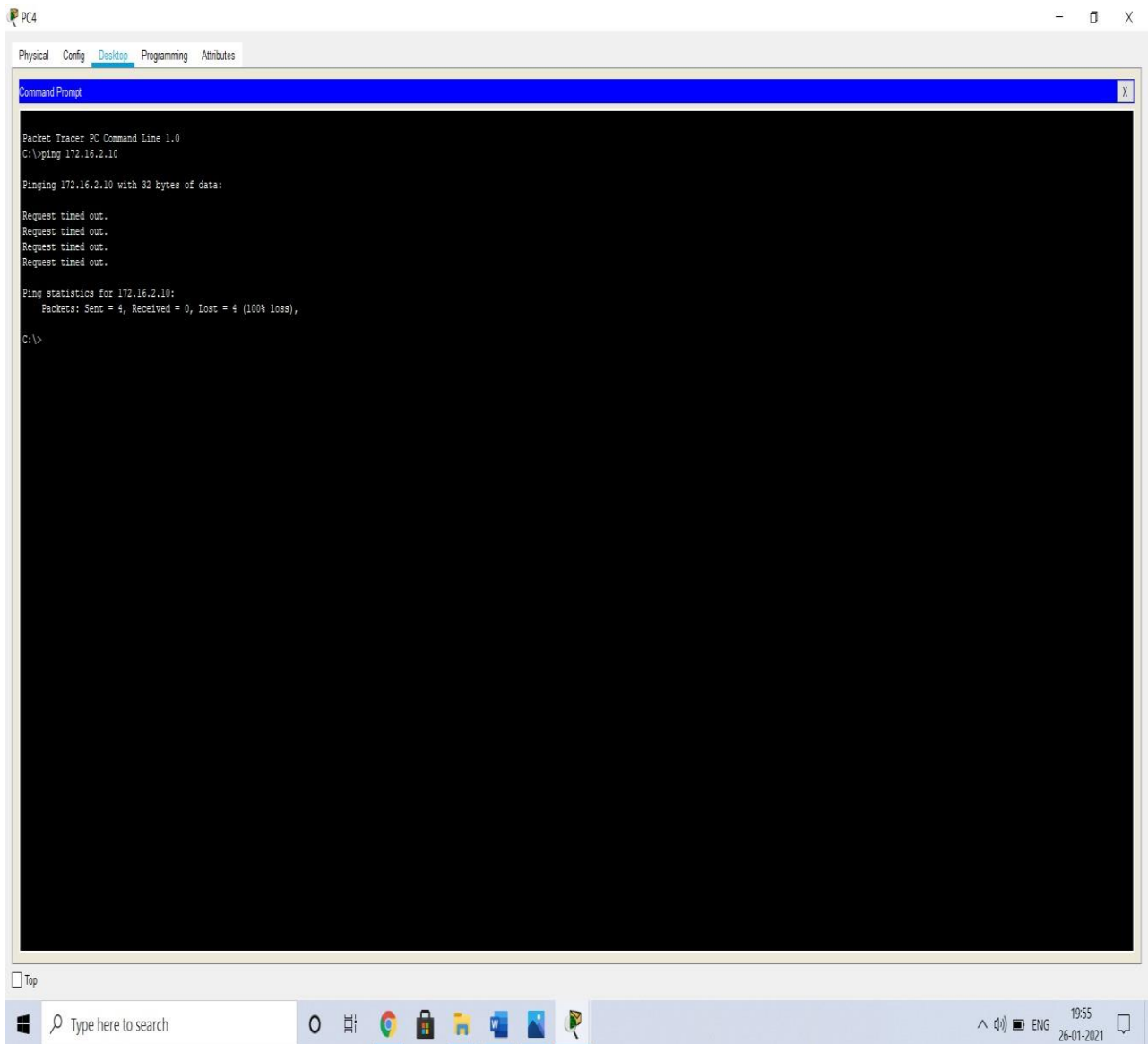
Branch1 Router blocks incoming traffic from PC3.



**Fig-15 Branch1 Router blocks incoming traffic from PC3**

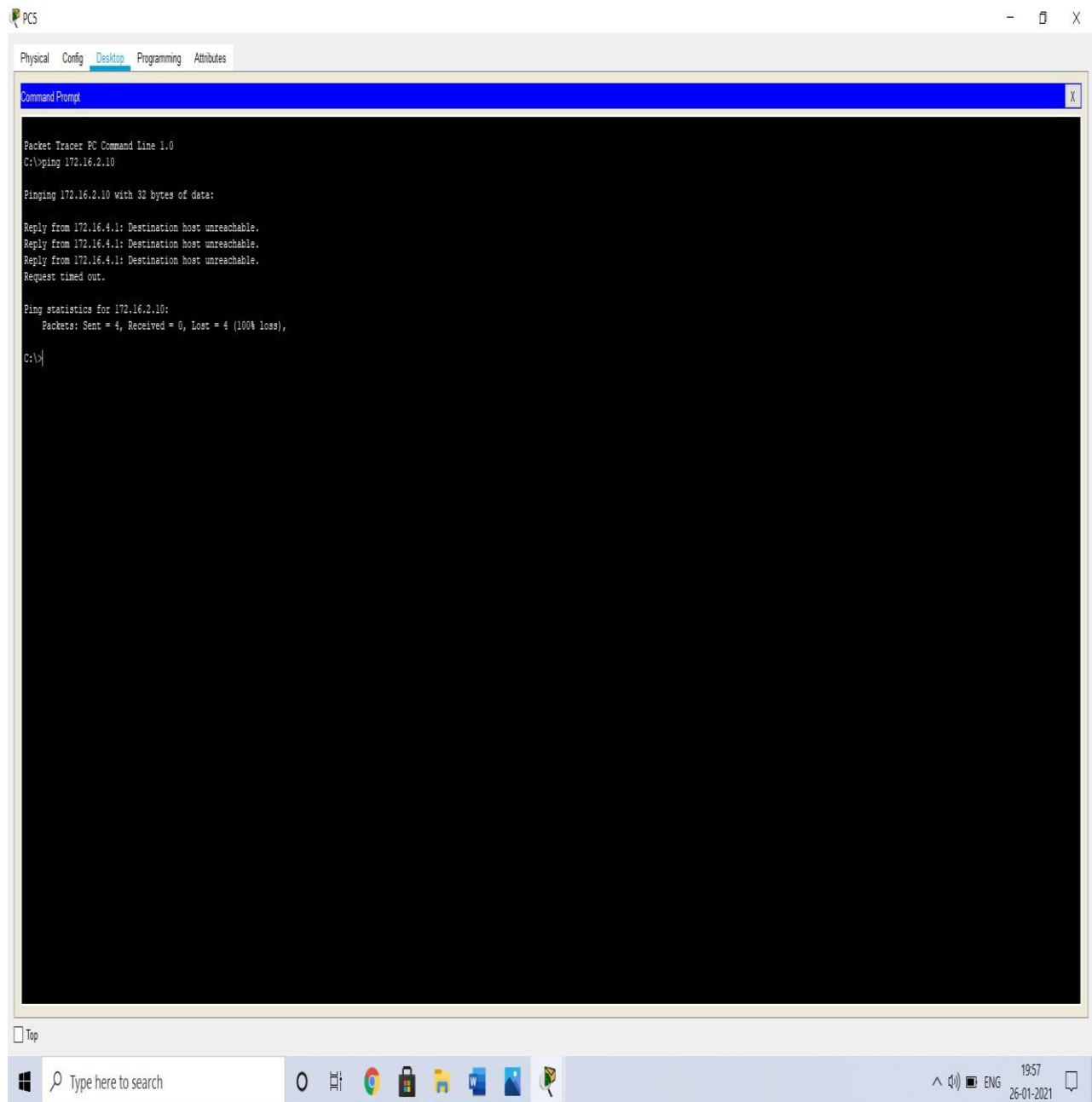


Branch1 Router blocks incoming traffic from PC4.



**Fig-16 Branch1 Router blocks incoming traffic from PC4**

Branch1 Router blocks incoming traffic from PC5.



**Fig-17 Branch1 Router blocks incoming traffic from PC5**