

**CSE3052 - INFORMATION SECURITY  
MANAGEMENT**

**DIGITAL ASSIGNMENT-3**

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# Experiment-5

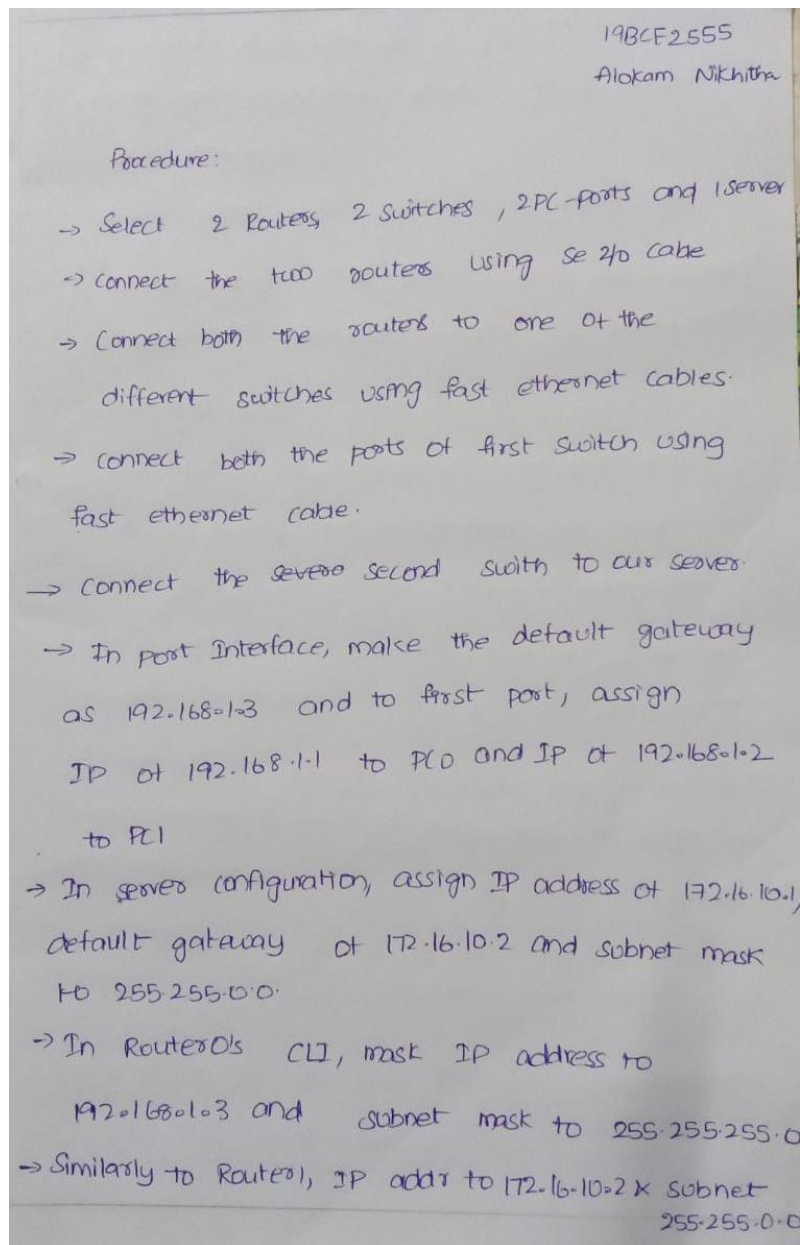
## TITLE:

Network Address Translator

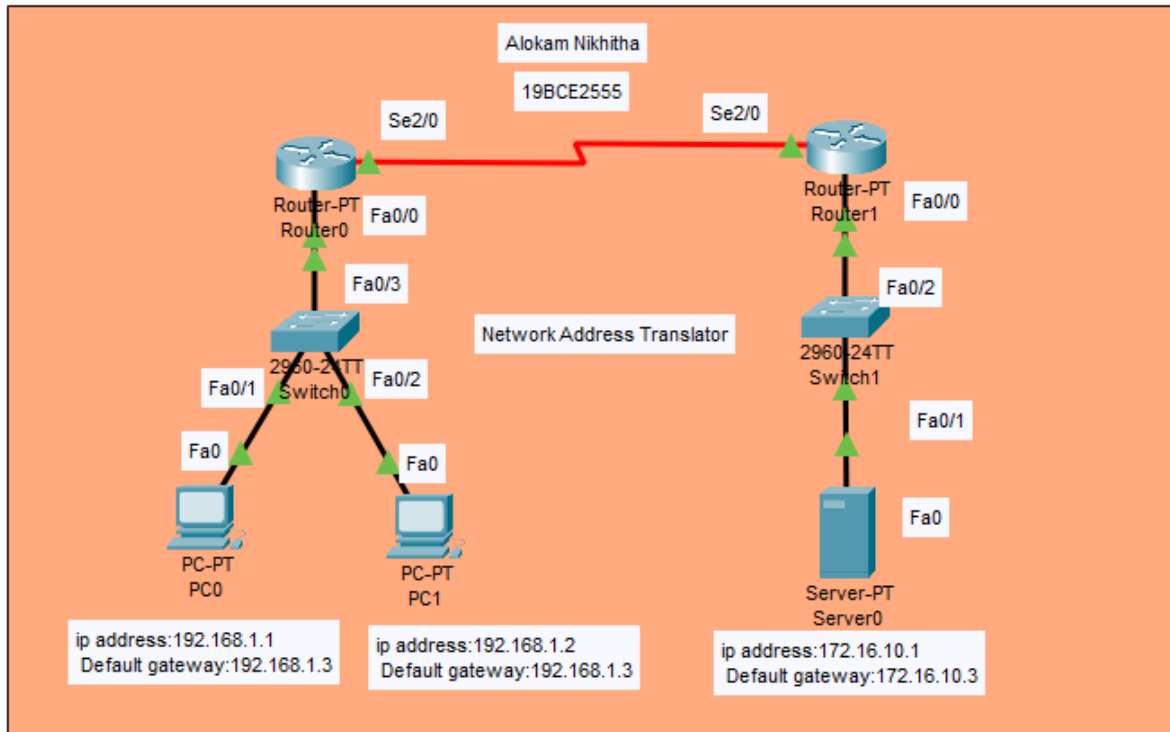
## AIM:

To create a Network Address Translator

## PROCEDURE:



# TOPOLOGY



## PC/ Computer Configuration:

PC0

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IP Address: 192.168.1.1

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.3

DNS Server: 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address: /

Link Local Address: FE80::204:9AFF:FE2C:435C

IPv6 Gateway:

IPv6 DNS Server:

802.1X

☐ Use 802.1X Security

☐ Top

PC1

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IP Address 192.168.1.2

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.3

DNS Server 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address /

Link Local Address FE80::290:CFF:FEA1:7E28

IPv6 Gateway

IPv6 DNS Server

802.1X

☐ Use 802.1X Security

Top

## Server Configuration:

Server0

Physical Config Services **Desktop** Programming Attributes

IP Configuration X

IP Configuration

☐ DHCP ☒ Static

IP Address 172.16.10.1

Subnet Mask 255.255.0.0

Default Gateway 172.16.10.2

DNS Server 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address /

Link Local Address FE80::202:16FF:FED6:23C6

IPv6 Gateway

IPv6 DNS Server

802.1X

☐ Use 802.1X Security

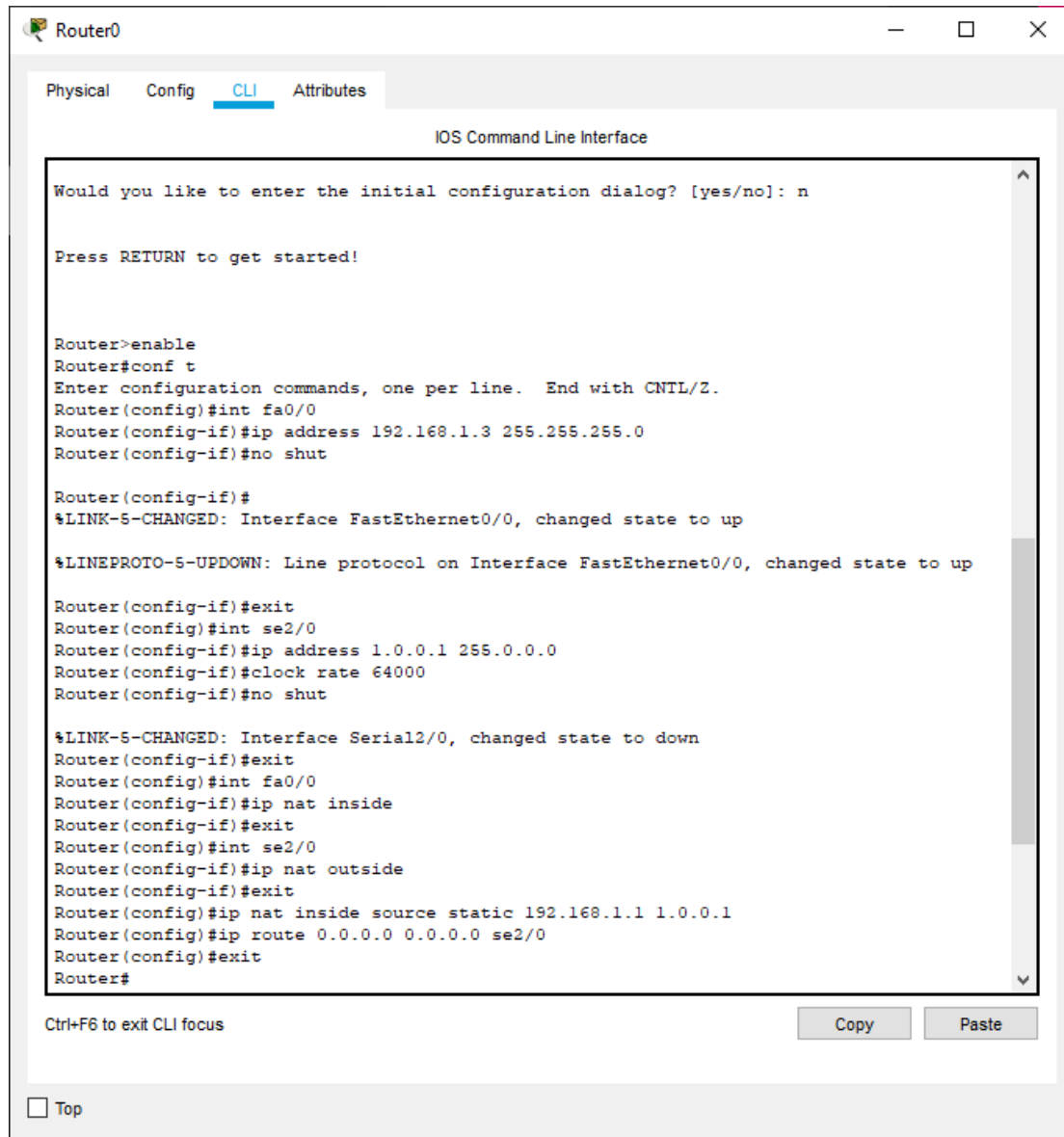
Authentication MD5

Top

# Router Configuration:

## Router 0

### CLI commands



The screenshot shows a window titled "Router0" with a tabbed interface. The "CLI" tab is selected, displaying the "IOS Command Line Interface". The interface shows a series of commands entered at the Router prompt, including enabling the router, entering configuration mode, configuring interface fa0/0 with IP address 192.168.1.3 and no shutdown, and configuring interface se2/0 with IP address 1.0.0.1, clock rate 64000, and no shutdown. The output shows the state of the interfaces changing to up. The window also includes a "Copy" button, a "Paste" button, and a "Top" link.

```
Router0
Physical Config CLI Attributes
IOS Command Line Interface

Would you like to enter the initial configuration dialog? [yes/no]: n

Press RETURN to get started!

Router>enable
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int fa0/0
Router(config-if)#ip address 192.168.1.3 255.255.255.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

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

Router(config-if)#exit
Router(config)#int se2/0
Router(config-if)#ip address 1.0.0.1 255.0.0.0
Router(config-if)#clock rate 64000
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial2/0, changed state to down
Router(config-if)#exit
Router(config)#int fa0/0
Router(config-if)#ip nat inside
Router(config-if)#exit
Router(config)#int se2/0
Router(config-if)#ip nat outside
Router(config-if)#exit
Router(config)#ip nat inside source static 192.168.1.1 1.0.0.1
Router(config)#ip route 0.0.0.0 0.0.0.0 se2/0
Router(config)#exit
Router#
```

Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

IOS Command Line Interface

```
Router(config)#int fa0/0
Router(config-if)#ip nat inside
Router(config-if)#exit
Router(config)#int se2/0
Router(config-if)#ip nat outside
Router(config-if)#exit
Router(config)#ip nat inside source static 192.168.1.1 1.0.0.1
Router(config)#ip route 0.0.0.0 0.0.0.0 se2/0
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip nat inside source static 192.168.1.2 1.0.0.1
Router(config)#ip route 0.0.0.0 0.0.0.0 se2/0
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#show ip nat tr
Pro Inside global      Inside local      Outside local      Outside global
--- 1.0.0.1             192.168.1.2       ---                ---
Router#
```

Ctrl+F6 to exit CLI focus

Copy

Paste

## Router 1:

Router1

Physical Config CLI Attributes

IOS Command Line Interface

```
Router>enable
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip address 172.16.10.2 255.255.0.0
^
% Invalid input detected at '^' marker.

Router(config)#int fa0/0
Router(config-if)#ip address 172.16.10.2 255.255.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed
state to up

Router(config-if)#int se2/0
Router(config-if)#ip address 1.0.0.2 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

Router(config-if)#exu
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state
to up
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#
```

Ctrl+F6 to exit CLI focus

Copy

Paste

# Results

## PC1 to Server 0

Cisco Packet Tracer

File Edit Options View Tools Extensions Help

Logical Physical x 916 y 437

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type
	0.003	Router0	Router1	ICMP
	0.004	Router1	Switch1	ICMP
	0.005	Switch1	Server0	ICMP
	0.006	Server0	Switch1	ICMP
	0.007	Switch1	Router1	ICMP
	0.008	Router1	Router0	ICMP
	0.009	Router0	Switch0	ICMP
	0.010	Switch0	PC1	ICMP

Reset Simulation ☒ Constant Delay Captured to: 0.010 s

Play Controls

Event List Filters - Visible Events

ACL Filter, ARP, BGP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, IoT, IoT TCP, LACP, LLDP, Meraki, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, PPP, PPPoE, PTP, RADIUS, REP, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP

Edit Filters Show All/None

Scenario 0

New Delete

Toggle PDU List Window

Time: 04:45:51.483

PLAY CONTROLS

Serial DCE

### Simulation Panel

#### Event List

Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC1	ICMP
	0.001	PC1	Switch0	ICMP
	0.002	Switch0	Router0	ICMP
	0.003	Router0	Router1	ICMP
	0.004	Router1	Switch1	ICMP
	0.005	Switch1	Server0	ICMP
	0.006	Server0	Switch1	ICMP
	0.007	Switch1	Router1	ICMP
	0.008	Router1	Router0	ICMP
	0.009	Router0	Switch0	ICMP
	0.010	Switch0	PC1	ICMP
	0.490	--	Router1	CDP
	0.490	--	Router1	CDP
	0.491	Router1	Switch1	CDP
	0.491	Router1	Router0	CDP
	0.951	--	Switch0	STP

PDU List Window										
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC1	Server0	ICMP		0.000	N	0	(edit)	

## PC0 to Server 0

Cisco Packet Tracer

File Edit Options View Tools Extensions Help

Logical Physical 1333, y: 448

Network Address Translator

PC-PT PC0  
ip address: 192.168.1.1  
Default gateway: 192.168.1.3

PC-PT PC1  
ip address: 192.168.1.2  
Default gateway: 192.168.1.3

Server-PT Server0  
ip address: 172.16.10.1  
Default gateway: 172.16.10.3

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC0	ICMP
	0.001	PC0	Switch0	ICMP
	0.002	Switch0	Router0	ICMP
	0.003	Router0	Router1	ICMP
	0.004	Router1	Switch1	ICMP
	0.005	Switch1	Server0	ICMP
	0.006	Server0	Switch1	ICMP
	0.007	Switch1	Router1	ICMP
	0.008	Router1	Router0	ICMP
	0.009	Router0	Switch0	ICMP
	0.010	Switch0	PC0	ICMP

Reset Simulation ☒ Constant Delay Captured to: 0.010 s

Play Controls

Event List Filters - Visible Events

ACL Filter, ARP, BGP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, IoT, IoT TCP, LACP, LLDP, Meraki, NDP, NETFLOW, NTP, OSPF, OSPFv6, PaGp, POP3, PPP, PPOED, PTP, RADIUS, REP, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP

Edit Filters Show All/None

Time: 04:47:21.416 PLAY CONTROLS

Scenario 0

New Delete

Toggle PDU List Window

Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete

Successful PC0 Server0 ICMP 0.000 N 0 (edit)



## Simulation Panel



### Event List

Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC0	ICMP
	0.001	PC0	Switch0	ICMP
	0.002	Switch0	Router0	ICMP
	0.003	Router0	Router1	ICMP
	0.004	Router1	Switch1	ICMP
	0.005	Switch1	Server0	ICMP
	0.006	Server0	Switch1	ICMP
	0.007	Switch1	Router1	ICMP
	0.008	Router1	Router0	ICMP
	0.009	Router0	Switch0	ICMP
	0.010	Switch0	PC0	ICMP
	0.207	--	Switch1	STP
	0.208	Switch1	Server0	STP
	0.208	Switch1	Router1	STP

### PDU List Window

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC0	Server0	ICMP		0.000	N	0	(edit)	

## Conclusion

**Here we can see that the message passed from PC0 to Server0 and PC1 to Server0 successfully with the global address instead of showing the right address.**

# Experiment-6

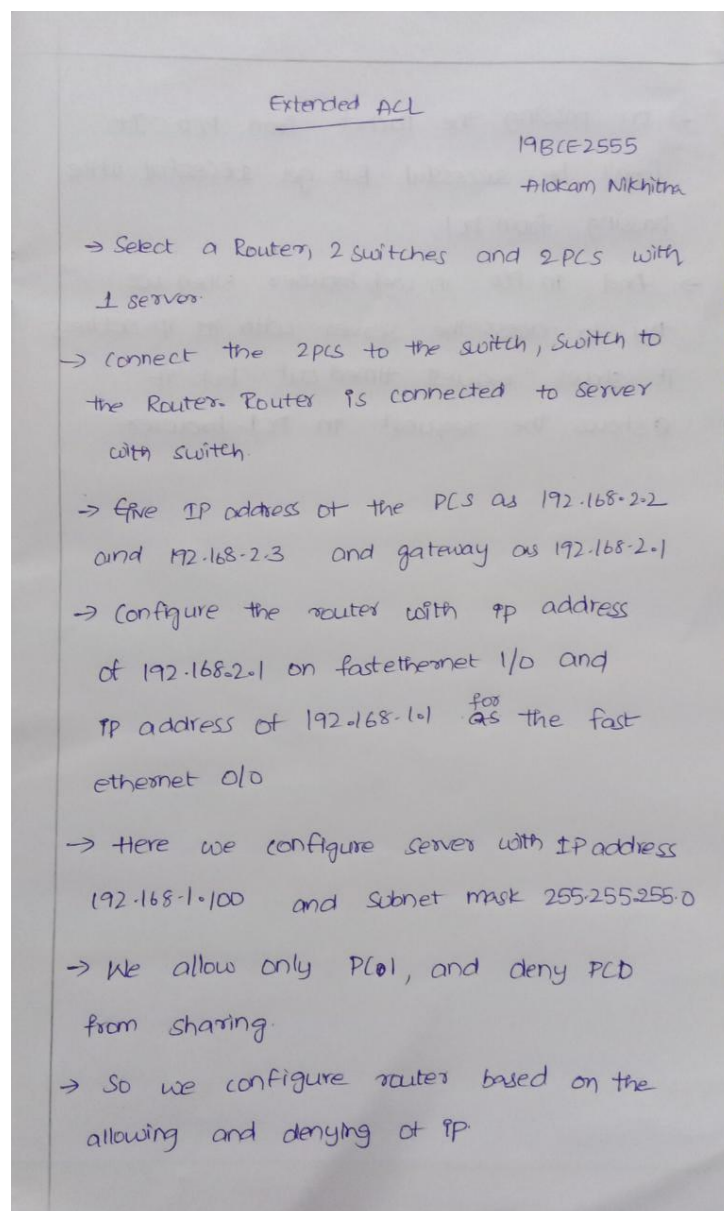
## TITLE:

Extended ACL refer the syntax with beyond 100

## AIM:

To create an Extended ACL refer the syntax with beyond 100

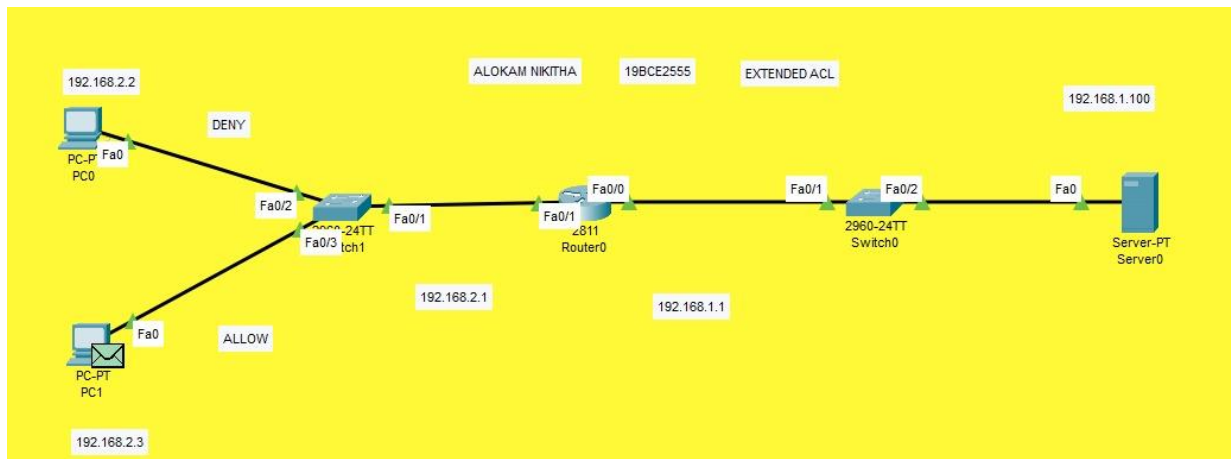
## PROCEDURE:



→ on passing the packet from PC0 .It won't be successful .But get successful while passing from PC1.

→ And in PC0 in web browser . When we try to access the server . With its ip address it shows request timed out . but it shows the request in PC1- browser.

## TOPOLOGY



# PC/ Computer Configuration:

PC0

Physical Config **Desktop** Programming Attributes

**IP Configuration** X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IP Address 192.168.2.2

Subnet Mask 255.255.255.0

Default Gateway 192.168.2.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address /

Link Local Address FE80::201:96FF:FEB5:4A5

IPv6 Gateway

IPv6 DNS Server

802.1X

☐ Use 802.1X Security

☐ Top

PC1

Physical Config **Desktop** Programming Attributes

**IP Configuration** X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IP Address 192.168.2.3

Subnet Mask 255.255.255.0

Default Gateway 192.168.2.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address /

Link Local Address FE80::2D0:BCFF:FE81:3297

IPv6 Gateway

IPv6 DNS Server

802.1X

☐ Use 802.1X Security

☐ Top

# Server Configuration

Server0

Physical

Config

Services

Desktop

Programming

Attributes

IP Configuration

IP Configuration

☐ DHCP

☒ Static

IP Address

192.168.1.100

Subnet Mask

255.255.255.0

Default Gateway

192.168.1.1

DNS Server

0.0.0.0

IPv6 Configuration

☐ DHCP

☐ Auto Config

☒ Static

IPv6 Address

/

Link Local Address

FE80::201:C9FF:FE17:48AD

IPv6 Gateway

IPv6 DNS Server

802.1X

☐ Use 802.1X Security

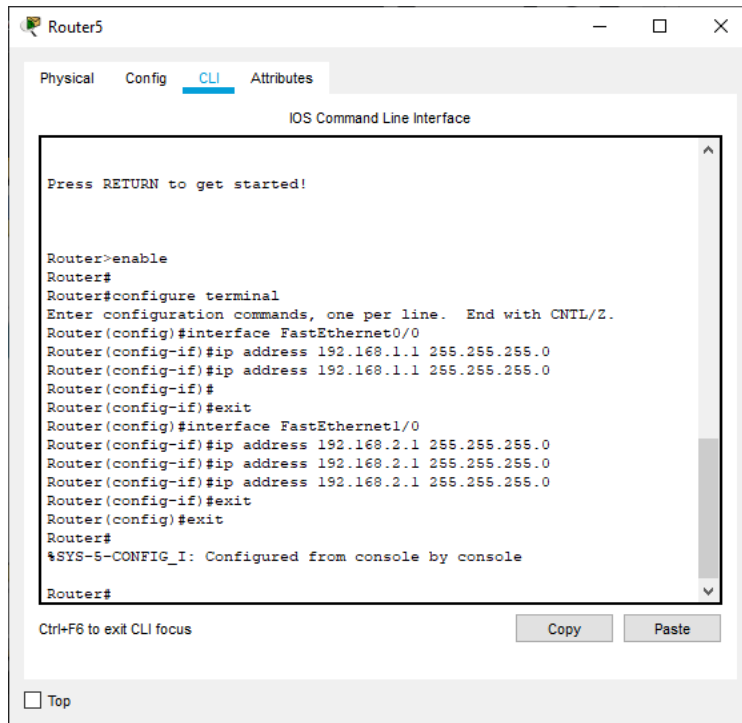
Authentication

MD5

☐ Top

# Router Configuration:

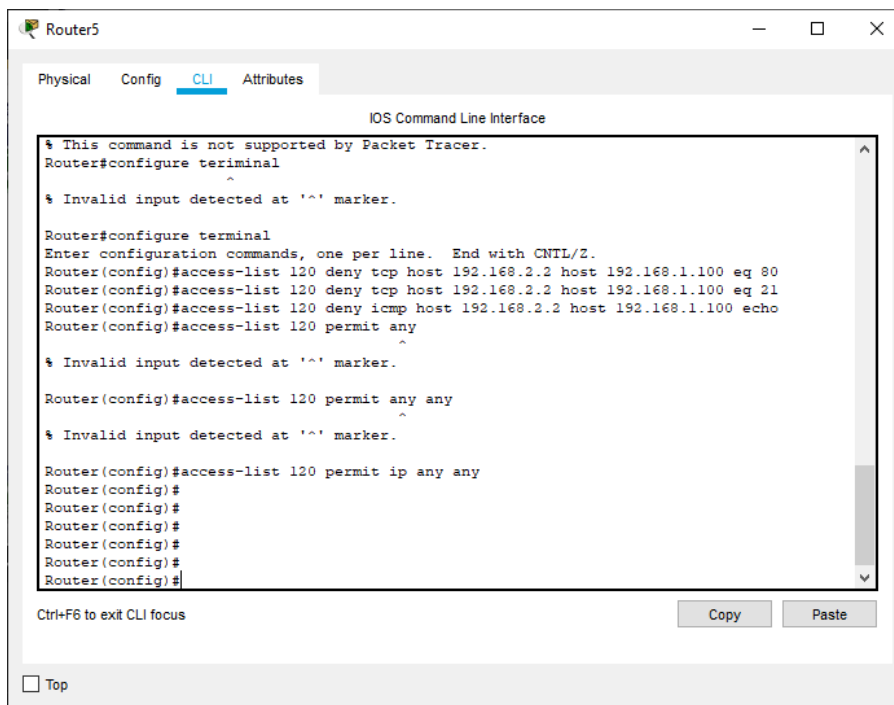
## Router



The screenshot shows the Router5 CLI window with the 'CLI' tab selected. The terminal displays the following commands and output:

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet1/0
Router(config-if)#ip address 192.168.2.1 255.255.255.0
Router(config-if)#ip address 192.168.2.1 255.255.255.0
Router(config-if)#ip address 192.168.2.1 255.255.255.0
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-S-CONFIG_I: Configured from console by console
Router#
```

At the bottom of the window, there is a 'Top' checkbox and 'Copy' and 'Paste' buttons.



The screenshot shows the Router5 CLI window with the 'CLI' tab selected. The terminal displays the following commands and output:

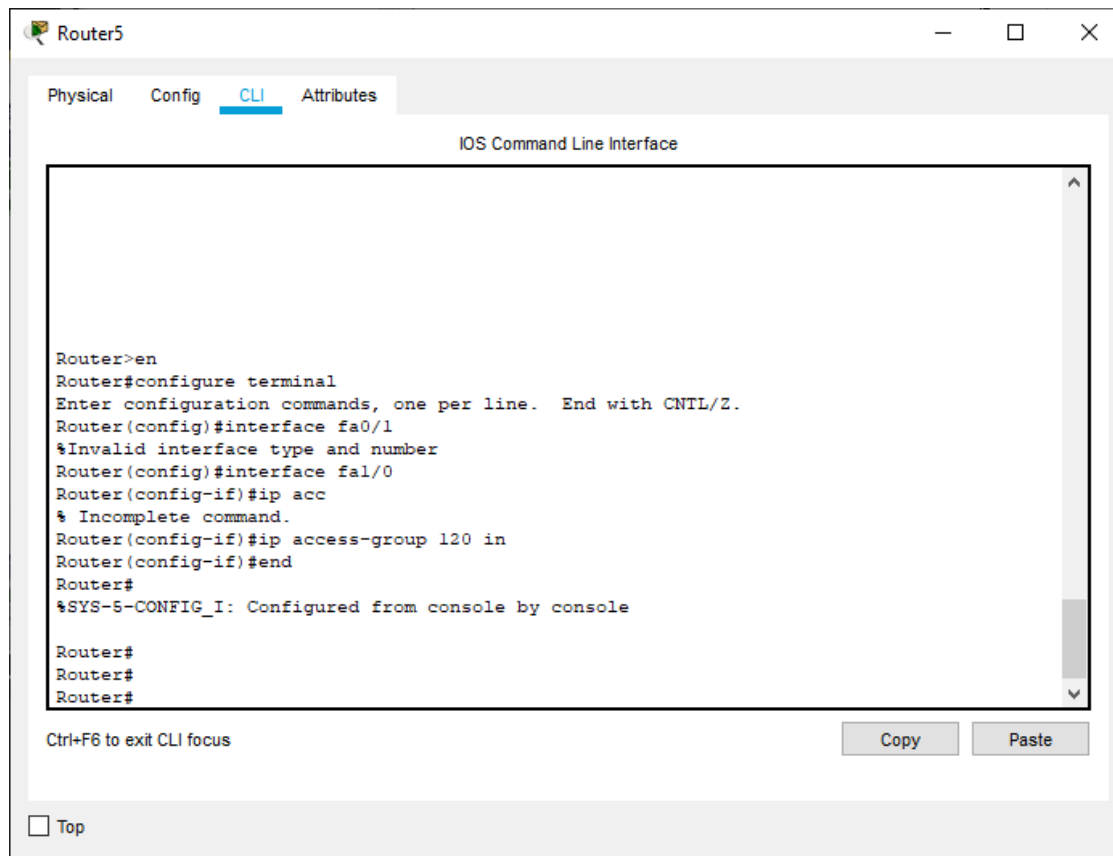
```
% This command is not supported by Packet Tracer.
Router#configure teriminal
^
% Invalid input detected at '^' marker.

Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#access-list 120 deny tcp host 192.168.2.2 host 192.168.1.100 eq 80
Router(config)#access-list 120 deny tcp host 192.168.2.2 host 192.168.1.100 eq 21
Router(config)#access-list 120 deny icmp host 192.168.2.2 host 192.168.1.100 echo
Router(config)#access-list 120 permit any
^
% Invalid input detected at '^' marker.

Router(config)#access-list 120 permit any any
^
% Invalid input detected at '^' marker.

Router(config)#access-list 120 permit ip any any
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
```



At the bottom of the window, there is a 'Top' checkbox and 'Copy' and 'Paste' buttons.



















## Results

### On passing message from PC0 TO SERVER

Simulation Panel				
Event List				
Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC0	ICMP
	0.000	--	PC0	ARP
	0.001	PC0	Switch3	ARP
	0.002	Switch3	PC1	ARP
	0.990	--	Switch4	STP
	0.991	Switch4	Server0	STP
	1.001	--	Switch3	STP
	1.002	Switch3	PC0	STP
	1.002	Switch3	PC1	STP
	2.003	--	PC0	ICMP
	2.989	--	Switch4	STP
	2.990	Switch4	Server0	STP
	3.005	--	Switch3	STP
	3.006	Switch3	PC0	STP
	3.006	Switch3	PC1	STP

PDU List Window										
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Failed	PC0	Server0	ICMP		0.000	N	0	(edit)	

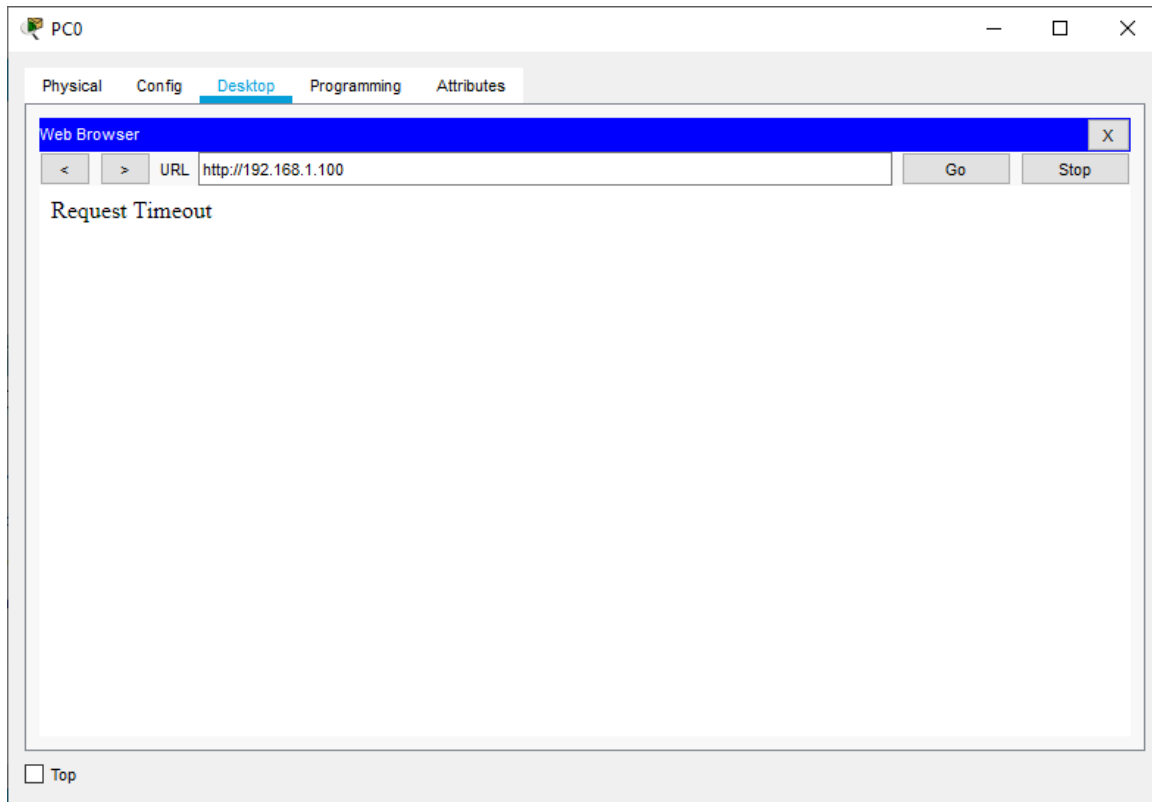
## On passing message from PC1 to Server

Simulation Panel				
Event List				
Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC1	 ARP
	0.001	PC1	Switch3	 ARP
	0.002	Switch3	PC0	 ARP
	1.973	--	Switch4	 STP
	1.974	Switch4	Server0	 STP
	1.979	--	Switch3	 STP
	1.980	Switch3	PC0	 STP
	1.980	Switch3	PC1	 STP
	2.003	--	PC1	 ICMP
	3.976	--	Switch4	 STP
	3.977	Switch4	Server0	 STP
	3.984	--	Switch3	 STP
	3.985	Switch3	PC0	 STP
	3.985	Switch3	PC1	 STP

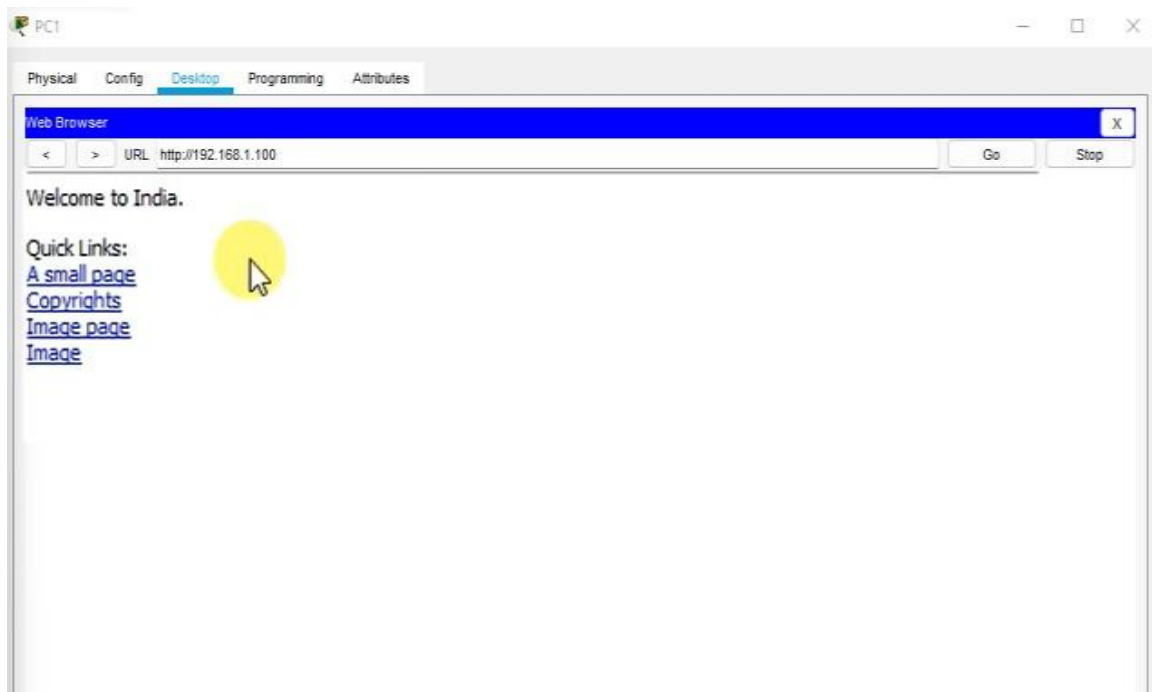
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic
	Successful	PC1	Server0	ICMP		0.000	N



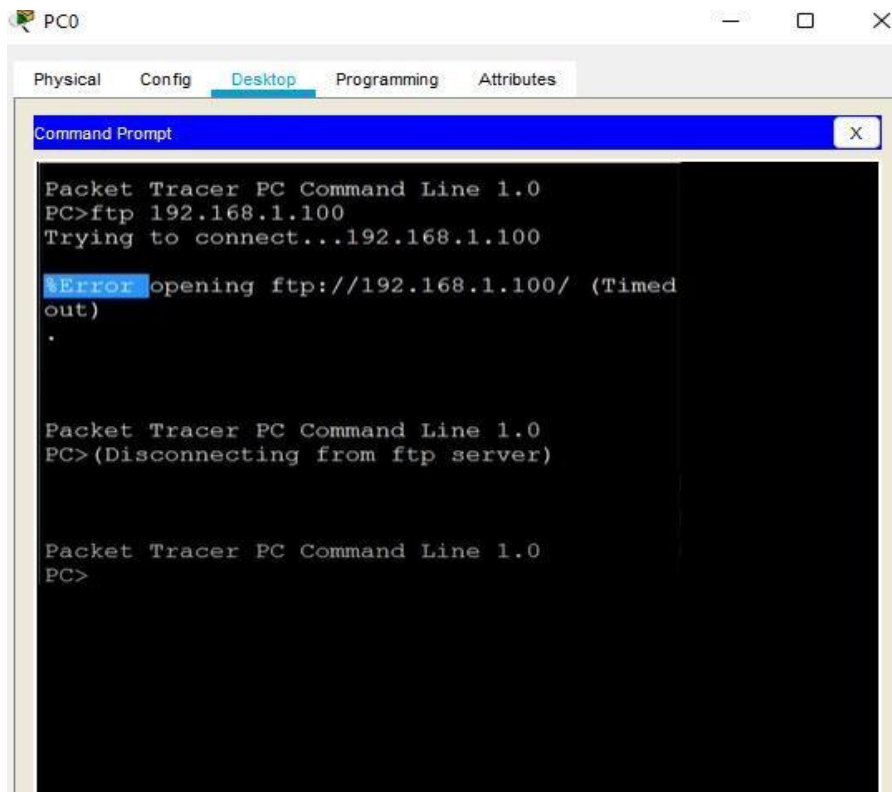
## PC0 Web browser



## PC1 Web browser



## PC0 Command Prompt



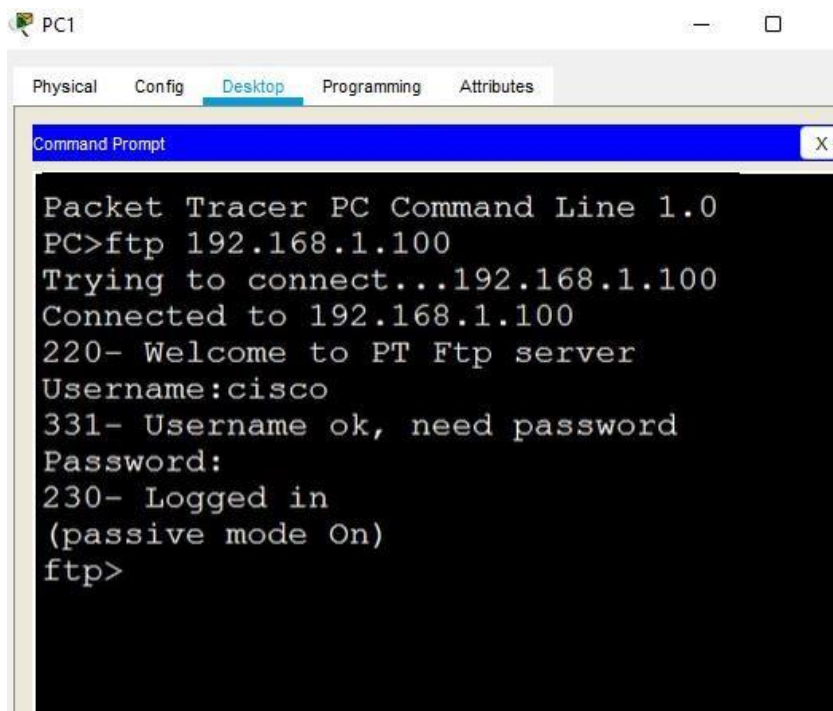
The screenshot shows a Packet Tracer PC Command Line window for PC0. The window has tabs for Physical, Config, Desktop, Programming, and Attributes, with Desktop selected. The Command Prompt shows the following text:

```
Packet Tracer PC Command Line 1.0
PC>ftp 192.168.1.100
Trying to connect...192.168.1.100
Error opening ftp://192.168.1.100/ (Timed out)
.

Packet Tracer PC Command Line 1.0
PC>(Disconnecting from ftp server)

Packet Tracer PC Command Line 1.0
PC>
```

## PC1 Command Prompt



The screenshot shows a Packet Tracer PC Command Line window for PC1. The window has tabs for Physical, Config, Desktop, Programming, and Attributes, with Desktop selected. The Command Prompt shows the following text:

```
Packet Tracer PC Command Line 1.0
PC>ftp 192.168.1.100
Trying to connect...192.168.1.100
Connected to 192.168.1.100
220- Welcome to PT Ftp server
Username:cisco
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>
```

## Conclusion

**Here we can see that we have permitted PC1 and denied PC0 . The message passed from PC0 to server is failed and PC1 to server is successful and we can see that the PC0 web browser shows timeout whereas PC1 web browser shows the request. We have allowed icmp and http on PC0.**