

Name :

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P20-0560

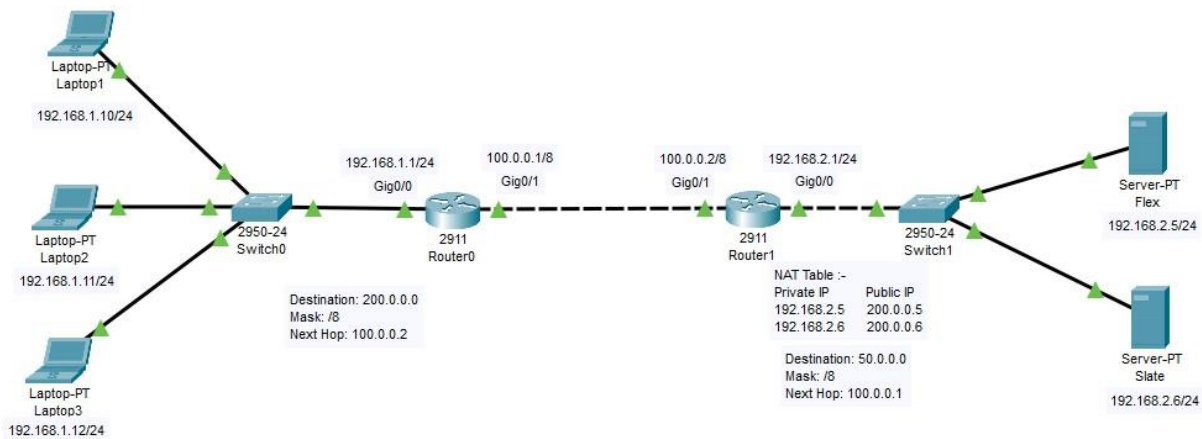
Section : 5-A

Lab : 13

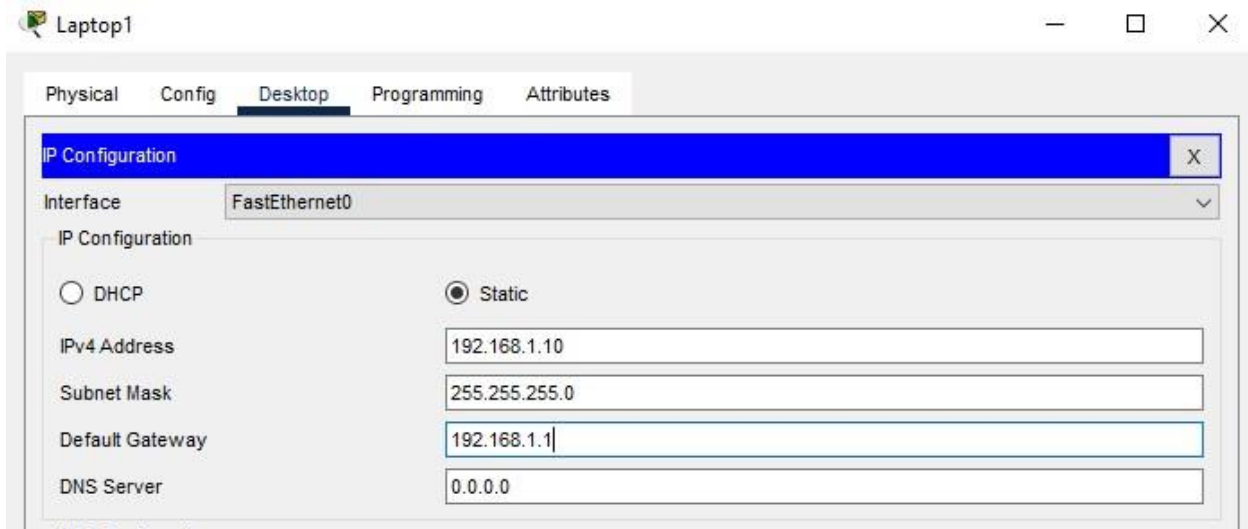
## Lab 13 Task

→ Implement S-NAT for web server of (fl an slat )  
and Dynamic-NAT for Client System in single topology.  
(Use router and switch).

### Topology:



### PC configuration :



Laptop2

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.11

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 0.0.0.0

Laptop3

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.12

Subnet Mask 255.255.255.0

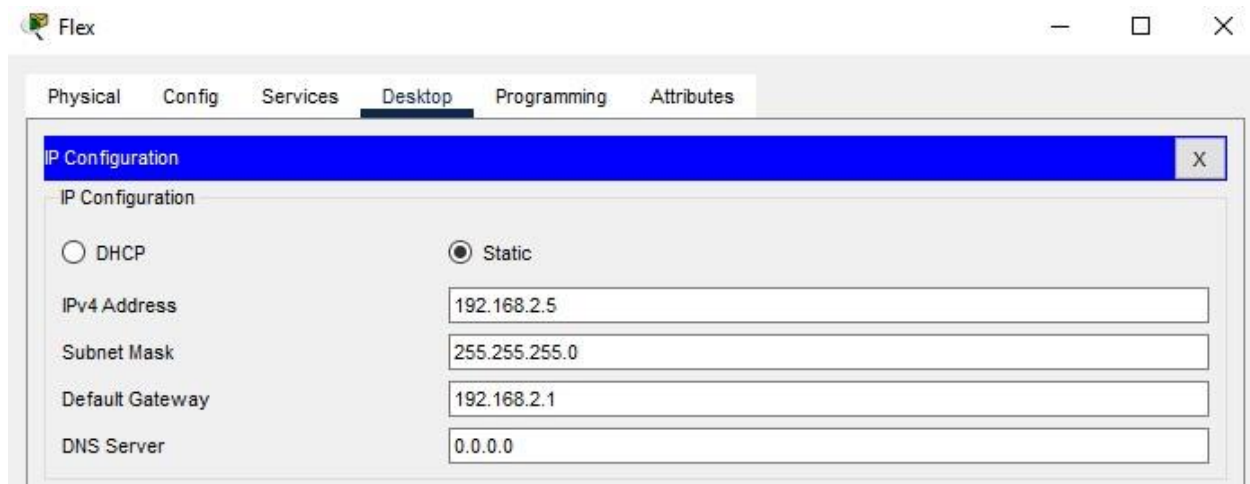
Default Gateway 192.168.1.1

DNS Server 0.0.0.0

IPv6 Configuration

## Server Configuration :

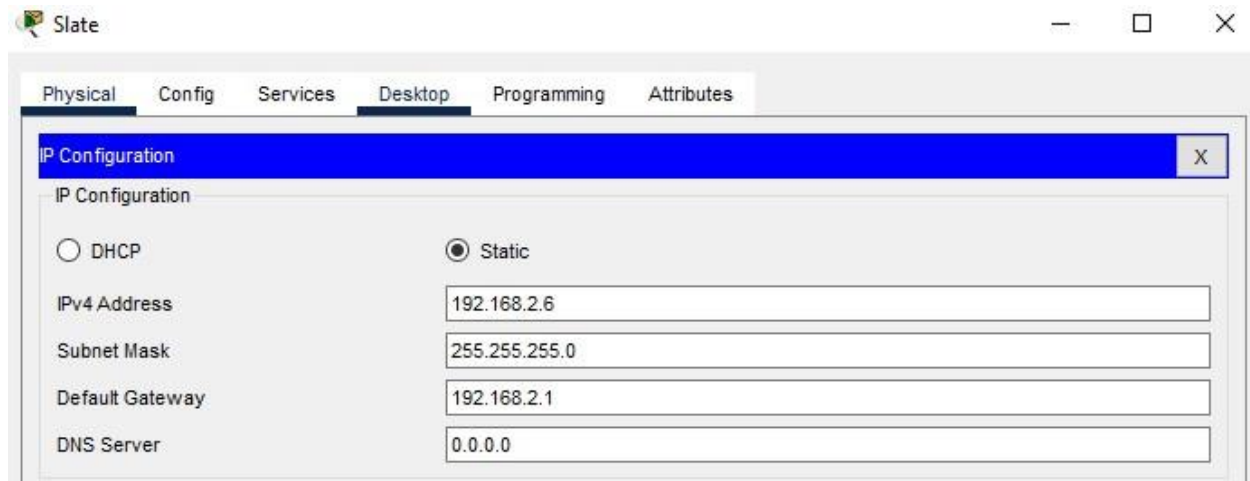
### Flex:



The screenshot shows the 'Flex' application window with the 'Desktop' tab selected. The 'IP Configuration' section is active, showing the following settings:

Setting	Value
IP Configuration	<input checked="" type="radio"/> Static
IPv4 Address	192.168.2.5
Subnet Mask	255.255.255.0
Default Gateway	192.168.2.1
DNS Server	0.0.0.0

### Slate:



The screenshot shows the 'Slate' application window with the 'Desktop' tab selected. The 'IP Configuration' section is active, showing the following settings:

Setting	Value
IP Configuration	<input checked="" type="radio"/> Static
IPv4 Address	192.168.2.6
Subnet Mask	255.255.255.0
Default Gateway	192.168.2.1
DNS Server	0.0.0.0

## Router Configuration :

### Router0 :

Router0

Physical **Config** CLI Attributes

**GLOBAL**

Settings

Algorithm Settings

**ROUTING**

Static

RIP

**SWITCHING**

VLAN Database

**INTERFACE**

GigabitEthernet0/0

GigabitEthernet0/0

Port Status ☒ On

Bandwidth ☐ 1000 Mbps ☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0007.ECC3.9501

IP Configuration

IPv4 Address 192.168.1.1

Subnet Mask 255.255.255.0

Router0

Physical **Config** CLI Attributes

**GLOBAL**

Settings

Algorithm Settings

**ROUTING**

Static

RIP

**SWITCHING**

VLAN Database

**INTERFACE**

GigabitEthernet0/0

GigabitEthernet0/1

GigabitEthernet0/1

Port Status ☒ On

Bandwidth ☒ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0007.ECC3.9502

IP Configuration

IPv4 Address 100.0.0.1

Subnet Mask 255.0.0.0

Tx Ring Limit 10

### Router1 :

Router1

Physical **Config** CLI Attributes

**GLOBAL**

Settings

Algorithm Settings

**ROUTING**

Static

RIP

**SWITCHING**

VLAN Database

**INTERFACE**

GigabitEthernet0/0

GigabitEthernet0/0

Port Status ☒ On

Bandwidth ☐ 1000 Mbps ☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0030.A3C3.0701

IP Configuration

IPv4 Address 192.168.2.1

Subnet Mask 255.255.255.0

Router1

Physical **Config** CLI Attributes

**GLOBAL**

Settings

Algorithm Settings

**ROUTING**

Static

RIP

**SWITCHING**

VLAN Database

**INTERFACE**

GigabitEthernet0/0

GigabitEthernet0/1

GigabitEthernet0/1

Port Status ☒ On

Bandwidth ☒ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0030.A3C3.0702

IP Configuration

IPv4 Address 100.0.0.2

Subnet Mask 255.0.0.0

Tx Ring Limit 10

## Configure Dynamic NAT:

### For Router0 :

Dynamic NAT configuration requires four steps: -

#### 1. Create an access list of IP addresses which need translation:

In this step we will create a standard access list which defines which inside local addresses are permitted to map with inside global address.

To create a standard numbered ACL following global configuration mode command is used:-

**Router(config)# access-list ACL\_Identifier\_number permit/deny matching-parameters**

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# access-list 1 permit 192.168.1.0 0.0.0.255
Router(config)#
```

Copy

Paste

#### 2. Create a pool of all IP address which are available for translation:

In the second step we define a pool of inside global addresses which are available for translation.

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# access-list 1 permit 192.168.1.0 0.0.0.255
Router(config)# ip nat pool pool1 50.0.0.1 50.0.0.2 netmask 255.0.0.0
Router(config)#
```

Copy

Paste

#### 3. Map access list with pool :

In the third step we map access list with pool. Following command will map the access list with a pool and configure the dynamic NAT.

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# access-list 1 permit 192.168.1.0 0.0.0.255
Router(config)#ip nat pool pool1 50.0.0.1 50.0.0.2 netmask 255.0.0.0
Router(config)#ip nat inside source list 1 pool pool1
Router(config)#
```

#### 4. Define inside global interface:

In the fourth step we have to define which interface is connected with the global network and which interface is connected with the local interface. Following command will define interface Gig0/1 as inside global.

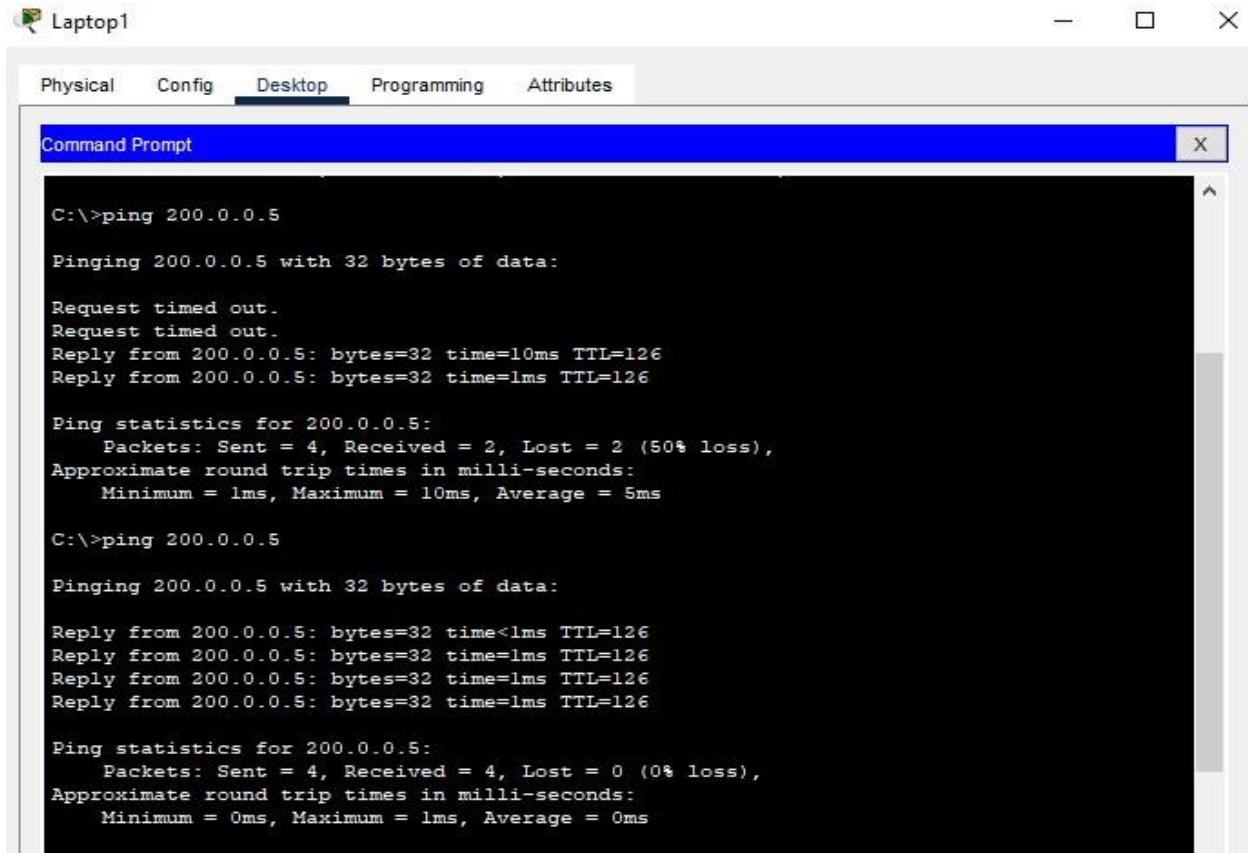
```
Router(config-if)#exit
Router(config)#interface Gig0/1
Router(config-if)#ip nat outside
Router(config-if)#exit
```

### Testing Dynamic NAT Configuration :

To test this setup click Laptop 1 and Desktop and click Command Prompt.

- Run ping 200.0.0.5 command.





The screenshot shows a Cisco Packet Tracer PC Command Line window for a device named 'Laptop1'. The window has tabs for Physical, Config, Desktop, Programming, and Attributes. The Desktop tab is active, displaying a Command Prompt. The user has entered the command 'ping 200.0.0.5'. The output shows that the ping was successful, with 2 packets received out of 4 sent, resulting in 0% loss. The approximate round trip times are: Minimum = 0ms, Maximum = 1ms, Average = 0ms.

```
C:\>ping 200.0.0.5

Pinging 200.0.0.5 with 32 bytes of data:

Request timed out.
Request timed out.
Reply from 200.0.0.5: bytes=32 time=10ms TTL=126
Reply from 200.0.0.5: bytes=32 time=1ms TTL=126

Ping statistics for 200.0.0.5:
    Packets: Sent = 4, Received = 2, Lost = 2 (50% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 10ms, Average = 5ms

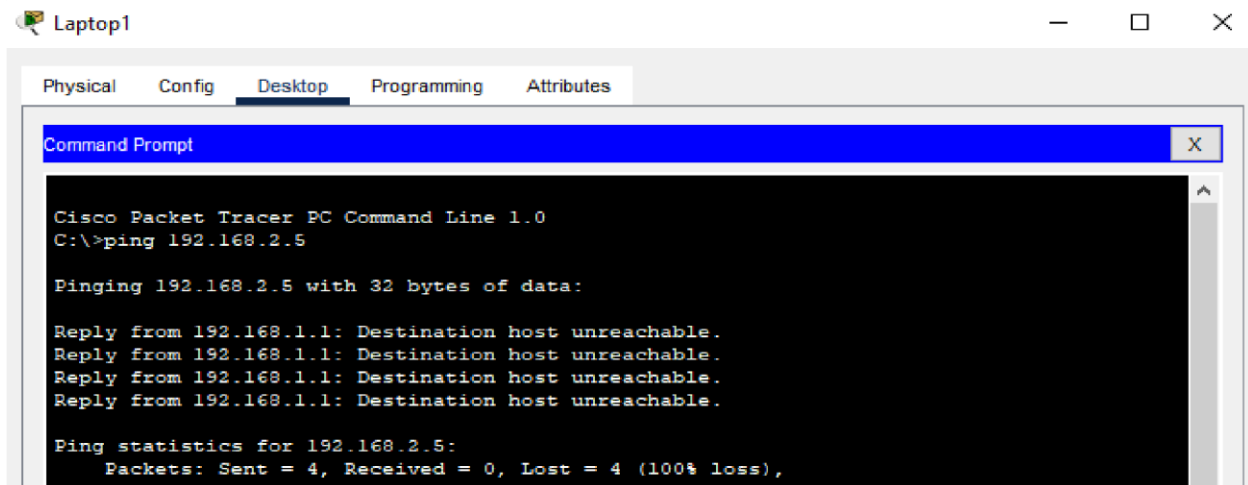
C:\>ping 200.0.0.5

Pinging 200.0.0.5 with 32 bytes of data:

Reply from 200.0.0.5: bytes=32 time<1ms TTL=126
Reply from 200.0.0.5: bytes=32 time=1ms TTL=126
Reply from 200.0.0.5: bytes=32 time=1ms TTL=126
Reply from 200.0.0.5: bytes=32 time=1ms TTL=126

Ping statistics for 200.0.0.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

- Run ping 192.168.2.5 command.



The screenshot shows a Cisco Packet Tracer PC Command Line window for a device named 'Laptop1'. The window has tabs for Physical, Config, Desktop, Programming, and Attributes. The Desktop tab is active, displaying a Command Prompt. The user has entered the command 'ping 192.168.2.5'. The output shows that the ping failed, with 0 packets received out of 4 sent, resulting in 100% loss. The error message is 'Destination host unreachable'.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.2.5

Pinging 192.168.2.5 with 32 bytes of data:

Reply from 192.168.1.1: Destination host unreachable.
Reply from 192.168.1.1: Destination host unreachable.
Reply from 192.168.1.1: Destination host unreachable.
Reply from 192.168.1.1: Destination host unreachable.

Ping statistics for 192.168.2.5:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

This Command gives the error “Destination Host Unreachable” because we are trying to access a remote device on its local IP address which is not possible because we can access remote devices only on their Public ip addresses.

## Creating File & putting it on Flex Server:

Laptop2

```
Physical  Config  Desktop  Programming  Attributes
Command Prompt

Cisco Packet Tracer PC Command Line 1.0
C:\>ftp 200.0.0.5
Trying to connect...200.0.0.5
Connected to 200.0.0.5
220- Welcome to PT Ftp server
Username:cisco
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>cd/http
Invalid or non supported command.
ftp>cd /http
ftp>
Working directory changed to /http successfully
ftp>put Flex.html

Writing file Flex.html to 200.0.0.5:
File transfer in progress...

[Transfer complete - 1762 bytes]

1762 bytes copied in 0.027 secs (65259 bytes/sec)
ftp>
```

Flex

Physical Config Services Desktop Programming Attributes

**SERVICES**

- HTTP
- DHCP
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP

**HTTP**

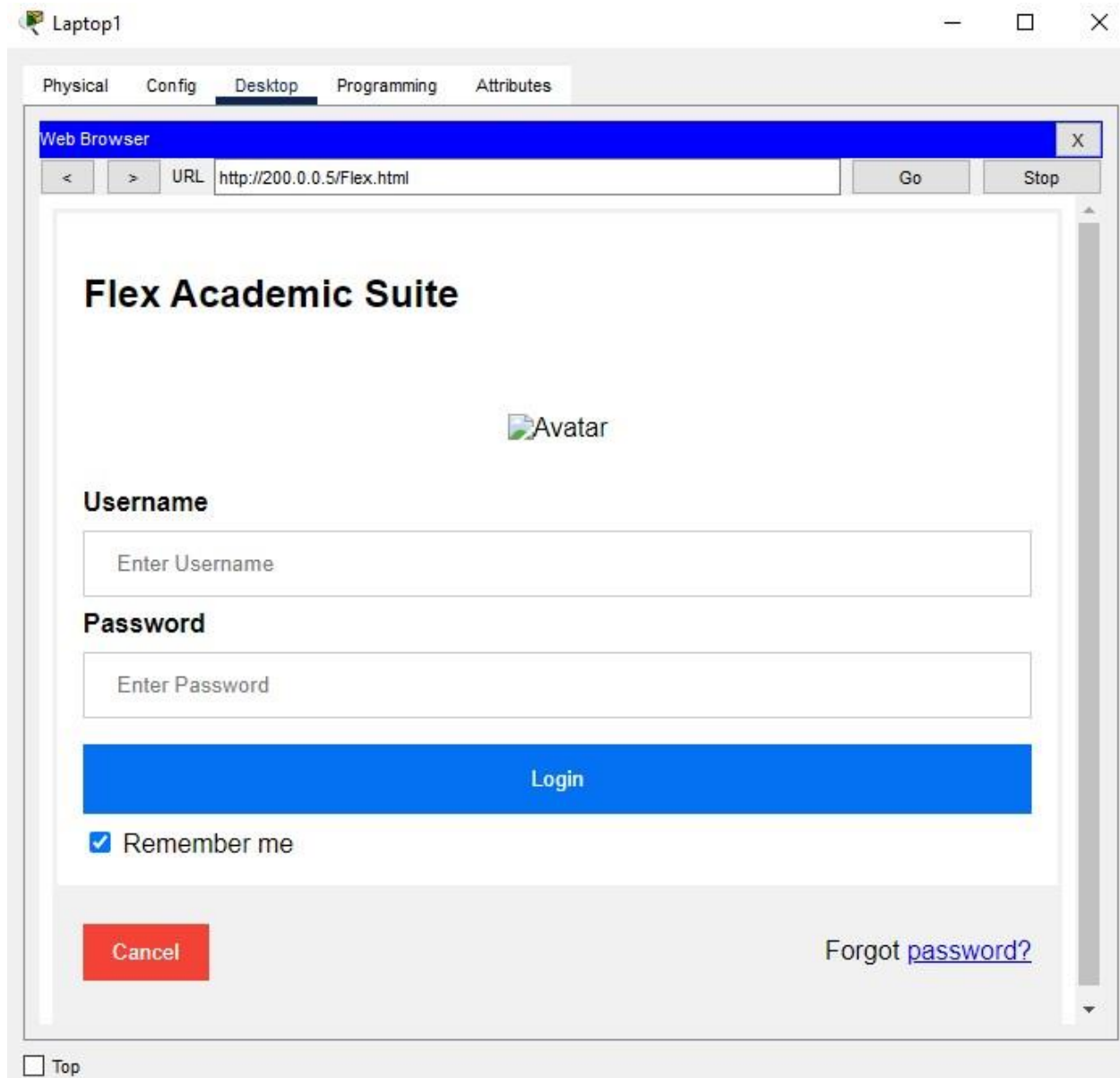
HTTP ☒ On ☐ Off

HTTPS ☒ On ☐ Off

**File Manager**

	File Name	Edit	Delete
1	Flex.html	(edit)	(delete)
2	copyrights.html	(edit)	(delete)

Doing the last testing. Click Laptop1 and click Desktop and click Web Browser and access 200.0.0.5.



Above figure confirms that host 192.168.1.10 is able to access the 200.0.0.5.

