

INSTITUTE OF COMPUTER TECHNOLOGY
B. TECH COMPUTER SCIENCE AND ENGINEERING
Subject: Computer Networks[CN]

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SEM : 5

Class : A

Batch : 52 (CS)

Practical 5

Aim: To configure and utilize Telnet (teletype network), SSH (Secure Socket Shell) and FTP (File Transfer Protocol) in a network

Scenario:

Design the network of an organization having 3 different departments.

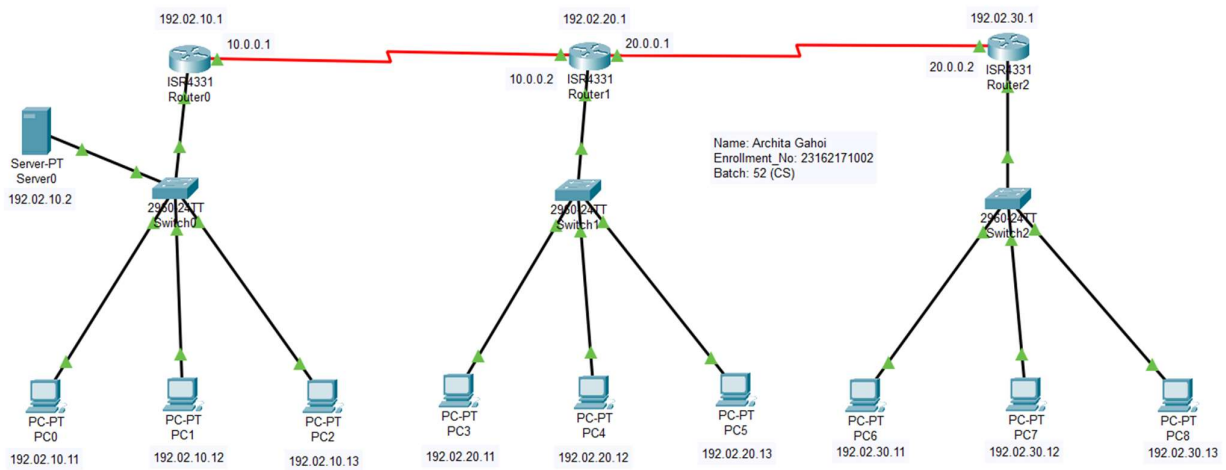
Make sure the below mentioned requirements must be fulfilled.

- 1) Create 3 users which will be able to get the access of the router using Telnet.
- 2) Create a single password to get the access of the router using Telnet. Configure in such a way at a time 2 users can access router at a time.
- 3) Create 3 users which will be able to get the access of the router using SSH. Configure in such a way at a time 2 users can access router at a time.
- 4) Create FTP server and perform the operation to upload and download a file from one department to other department.

Procedure:

- 1) Create network as given below
- 2) Configure IP address (All Devices, Routers)
- 3) Configure dynamic routing table (RIP in routers)
- 4) Configure TELNET on Router0
- 5) Configure SSH on Router1
- 6) Configure FTP on Server

⇒ Main Circuit



Configuration:

IP Address:

⇒ Routers

Router 0

The screenshot shows the 'Router0' configuration window with the 'Config' tab selected. The left sidebar shows a tree view with 'GLOBAL' expanded, containing 'Settings', 'Algorithm Settings', 'ROUTING', 'Static', 'RIP', 'SWITCHING', 'VLAN Database', and 'INTERFACE'. The 'RIP' option is selected. The main area is titled 'RIP Routing' and contains a 'Network' section with a table of network addresses. The table has two rows: '10.0.0.0' and '192.2.10.0'. An 'Add' button is next to the table. Below the table is a 'Remove' button. At the bottom, there is a section for 'Equivalent IOS Commands' with a text area containing the following commands:

```
Router>enable
Password:
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#
```

At the bottom left, there is a 'Top' button.

The screenshot shows the 'Router0' configuration window with the 'Config' tab selected. The left sidebar shows a tree view with 'GLOBAL' expanded, containing 'Settings', 'Algorithm Settings', 'ROUTING', 'Static', 'RIP', 'SWITCHING', 'VLAN Database', and 'INTERFACE'. The 'INTERFACE' option is selected. The main area is titled 'GigabitEthernet0/0/0' and contains a form for configuring the interface. The form has the following fields:

- Port Status: ☒ On
- Bandwidth: ☐ 1000 Mbps ☒ 100 Mbps ☐ 10 Mbps ☒ Auto
- Duplex: ☐ Half Duplex ☒ Full Duplex ☒ Auto
- MAC Address: 0030 F2A1 5001
- IP Configuration: 192.2.10.1
- Subnet Mask: 255.255.255.0
- Tx Ring Limit: 10

At the bottom, there is a section for 'Equivalent IOS Commands' with a text area containing the following commands:

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#end
Router(config-router)#exit
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
$SYS-S-CONFIG_1: Configured from console by console
```

At the bottom left, there is a 'Top' button.

⇒ PCS

PC0

The screenshot shows the 'PC0' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is active, showing settings for the 'FastEthernet0' interface. The 'IP Configuration' section has two sub-sections: 'IP Configuration' and 'IPv6 Configuration'. In the 'IP Configuration' section, the 'Static' radio button is selected, and the 'IPv4 Address' is set to '192.2.10.11'. The 'Subnet Mask' is '255.255.255.0', the 'Default Gateway' is '192.2.10.1', and the 'DNS Server' is '0.0.0.0'. In the 'IPv6 Configuration' section, the 'Static' radio button is also selected, and the 'IPv6 Address' is set to 'FE80::203:E4FF:FE5A:D2E1'. The 'Link Local Address' is 'FE80::203:E4FF:FE5A:D2E1', and the 'Default Gateway' and 'DNS Server' are empty. The '802.1X' section is collapsed, showing 'Use 802.1X Security' as unchecked, 'Authentication' as 'MD5', and 'Username' and 'Password' as empty fields. A 'Top' button is at the bottom left.

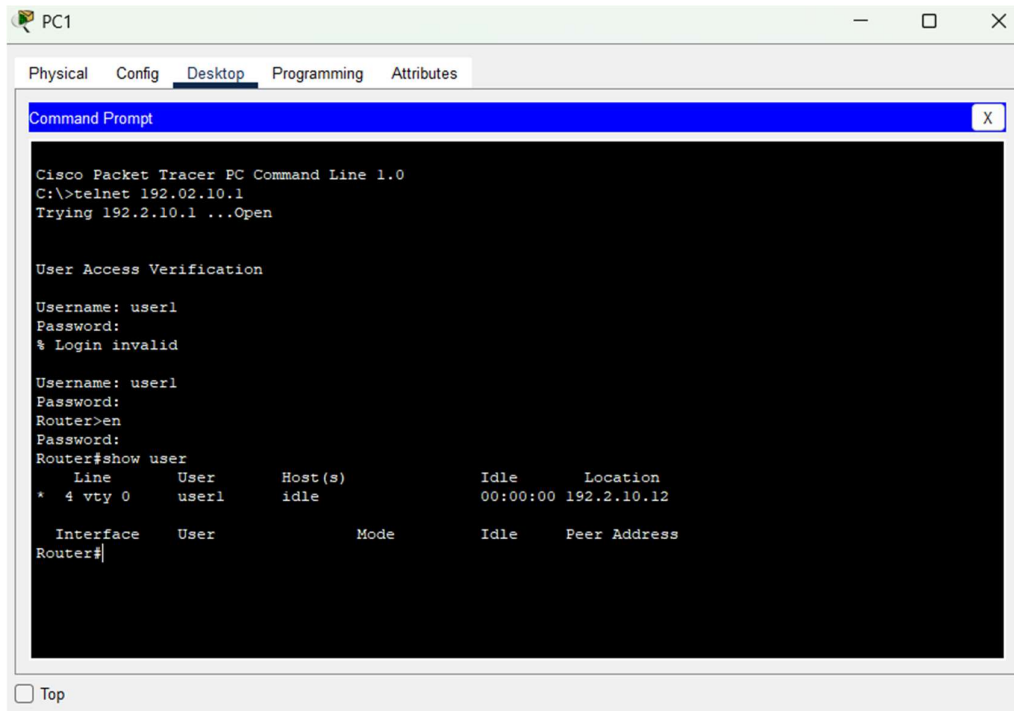
⇒ Configure TELNET on Router 0

The screenshot shows the 'Router0' configuration window with the 'CLI' tab selected. The 'IOS Command Line Interface' is displayed, showing the router's configuration. The configuration includes the following commands:

```
Router>
Router>
Router>
Router>
Router>
Router>
Router>
Router>
Router>enable
Router>config ter
Router>config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#enable secret pass
Router(config)#username user1 password pwd1
Router(config)#username user1 password pwd2
Router(config)#username user1 password pwd1
Router(config)#username user2 password pwd2
Router(config)#username user3 password pwd3
Router(config)#line vty 0 1
Router(config-line)#password pass
Router(config-line)#login local
Router(config-line)#^
% Invalid input detected at '^' marker.
Router(config-line)#login local
Router(config-line)#transport input telnet
Router(config-line)#exit
Router(config)#
```

At the bottom right, there are 'Copy' and 'Paste' buttons. A 'Top' button is at the bottom left.

Output:



PC1

Physical Config Desktop Programming Attributes

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>telnet 192.02.10.1
Trying 192.2.10.1 ...Open

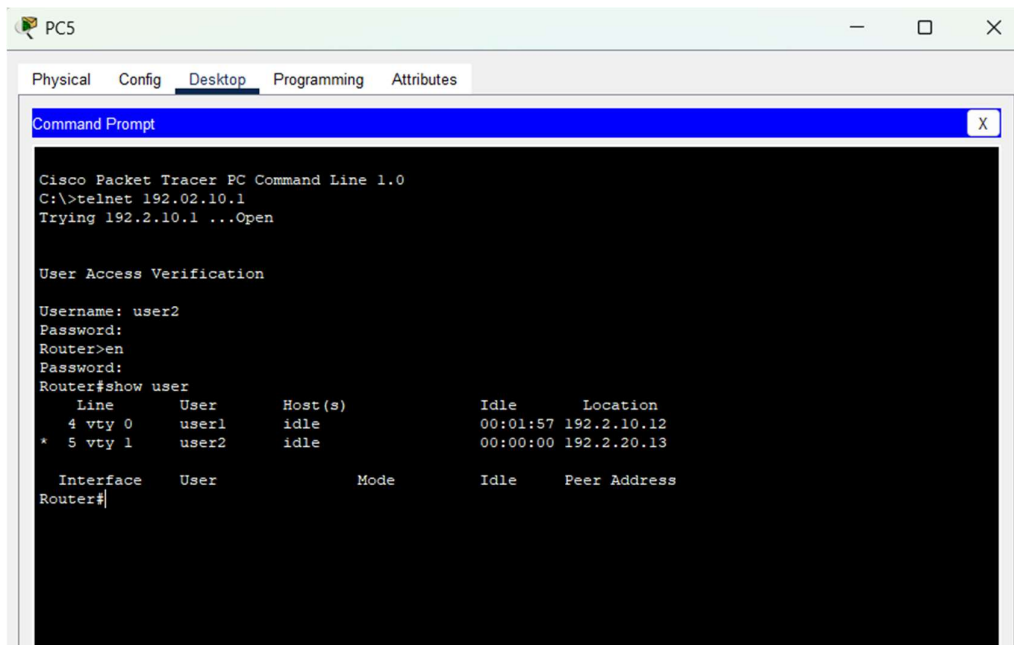
User Access Verification

Username: user1
Password:
% Login invalid

Username: user1
Password:
Router>en
Password:
Router#show user
  Line      User      Host(s)      Idle      Location
*  4 vty 0   user1      idle       00:00:00  192.2.10.12

  Interface  User      Mode      Idle      Peer Address
Router#
```

☐ Top



PC5

Physical Config Desktop Programming Attributes

Command Prompt

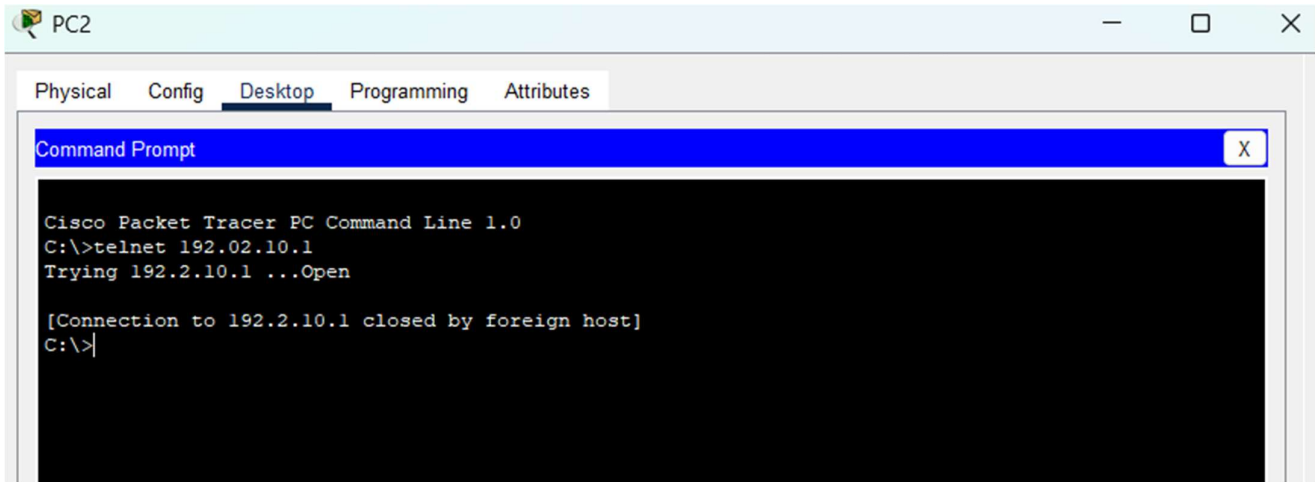
```
Cisco Packet Tracer PC Command Line 1.0
C:\>telnet 192.02.10.1
Trying 192.2.10.1 ...Open

User Access Verification

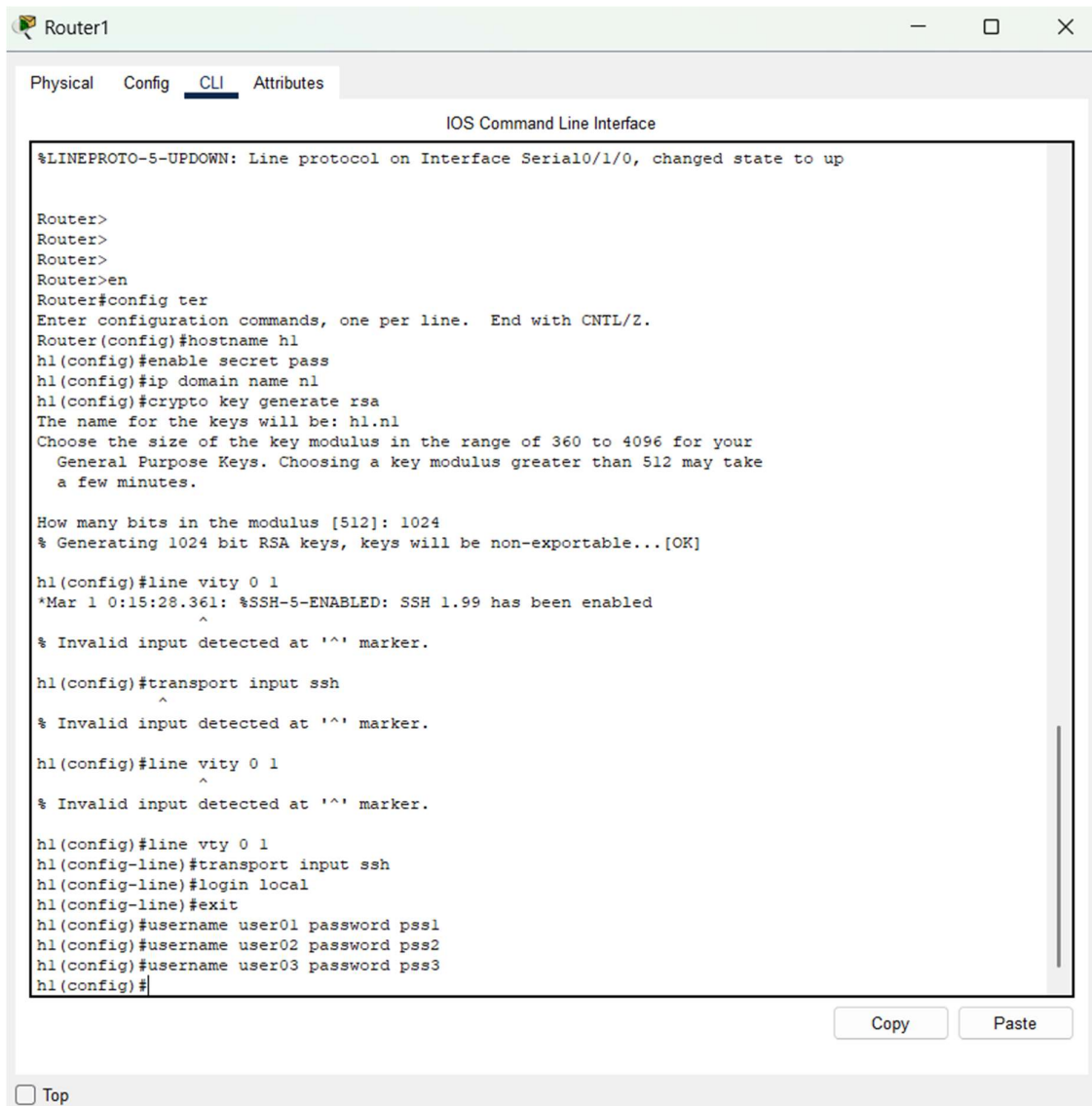
Username: user2
Password:
Router>en
Password:
Router#show user
  Line      User      Host(s)      Idle      Location
  4 vty 0   user1      idle       00:01:57  192.2.10.12
*  5 vty 1   user2      idle       00:00:00  192.2.20.13

  Interface  User      Mode      Idle      Peer Address
Router#
```

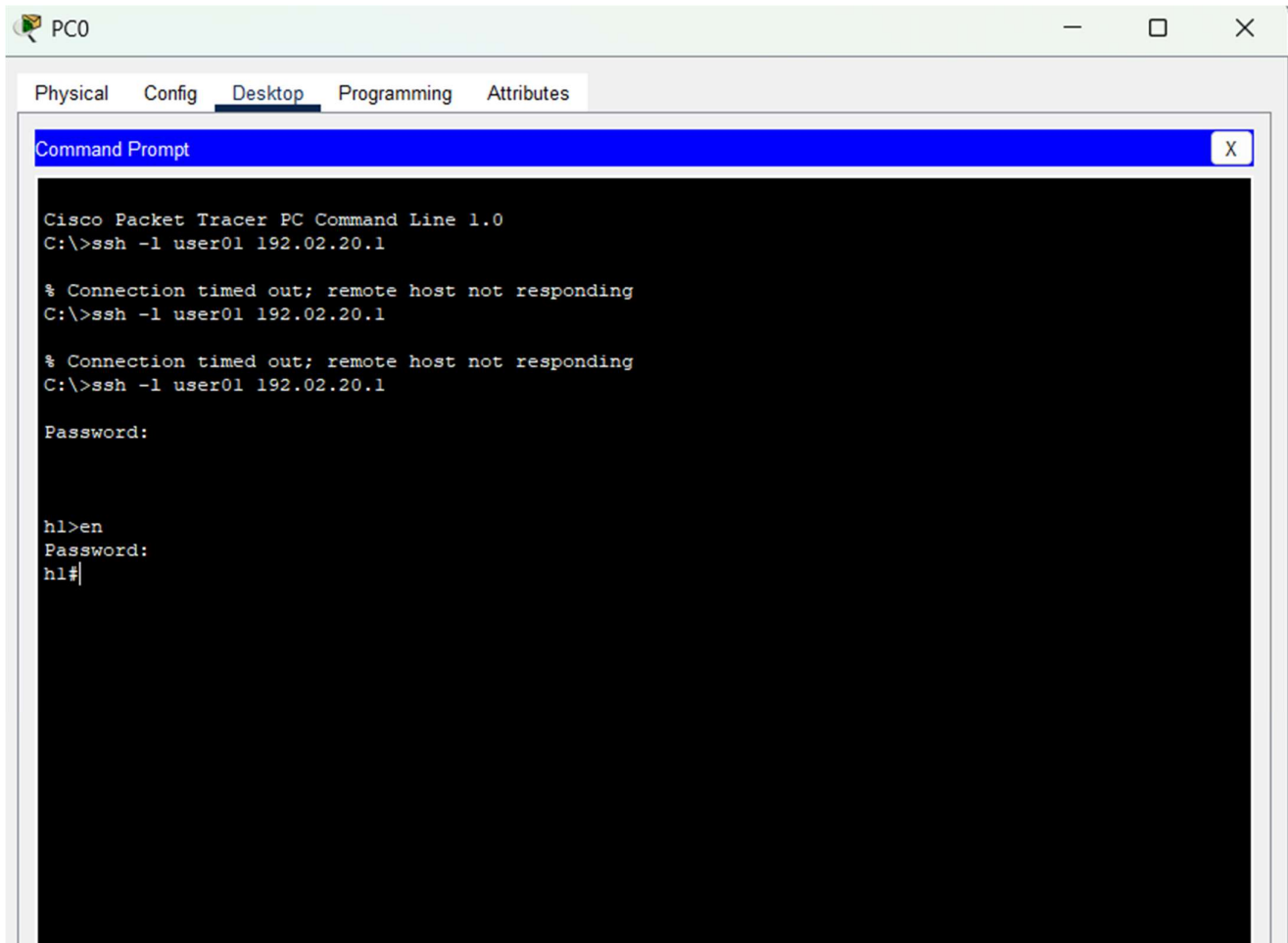
⇒ Only two users can access



⇒ Configure SSH on Router1



Output:



The screenshot shows a window titled 'PC0' with tabs for Physical, Config, Desktop, Programming, and Attributes. The 'Desktop' tab is active, displaying a 'Command Prompt' window. The command prompt shows the following text:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ssh -l user01 192.02.20.1

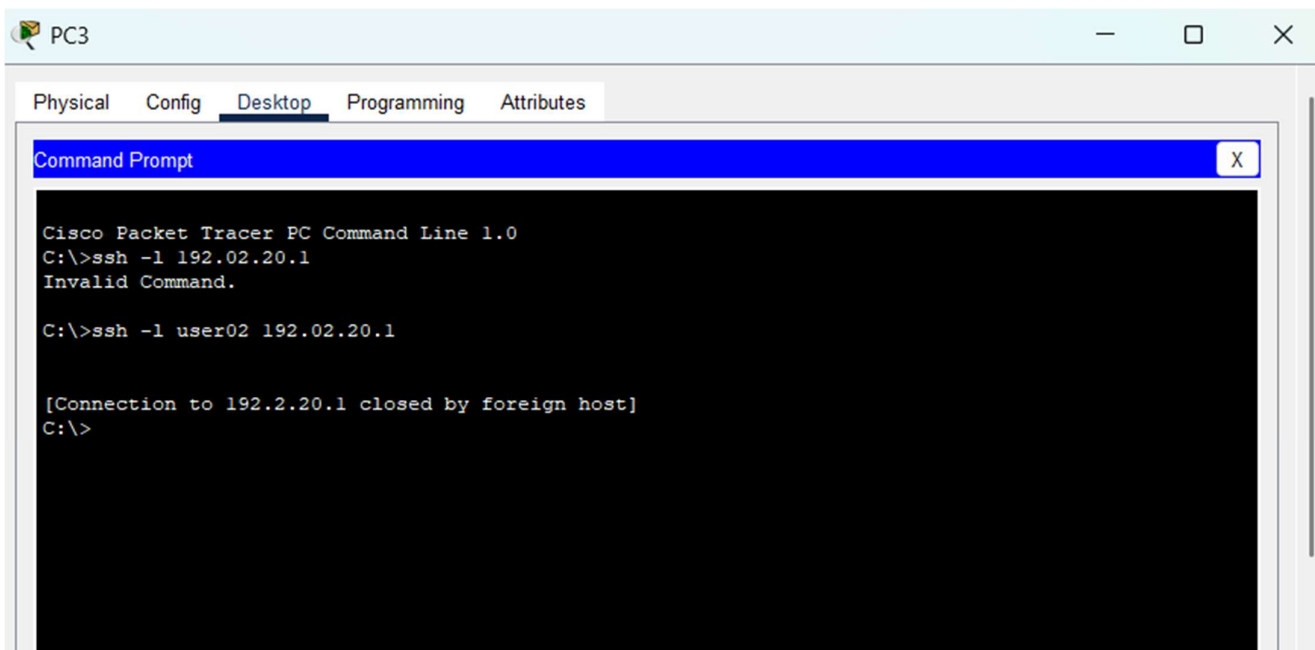
% Connection timed out; remote host not responding
C:\>ssh -l user01 192.02.20.1

% Connection timed out; remote host not responding
C:\>ssh -l user01 192.02.20.1

Password:

hl>en
Password:
hl#
```

⇒ Only two users can access



The screenshot shows a window titled 'PC3' with tabs for Physical, Config, Desktop, Programming, and Attributes. The 'Desktop' tab is active, displaying a 'Command Prompt' window. The command prompt shows the following text:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ssh -l 192.02.20.1
Invalid Command.

C:\>ssh -l user02 192.02.20.1

[Connection to 192.2.20.1 closed by foreign host]
C:\>
```

⇒ Configure FTP on Server

Server0

Physical

Config

Services

Desktop

Programming

Attributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

FTP

Service ☒ On ☐ Off

User Setup

Username archi-ftp Password 248

☒ Write ☒ Read ☒ Delete ☒ Rename ☒ List

	Username	Password	Permission	
1	archi-ftp	248	RWDNL	Add

Save

Remove

File

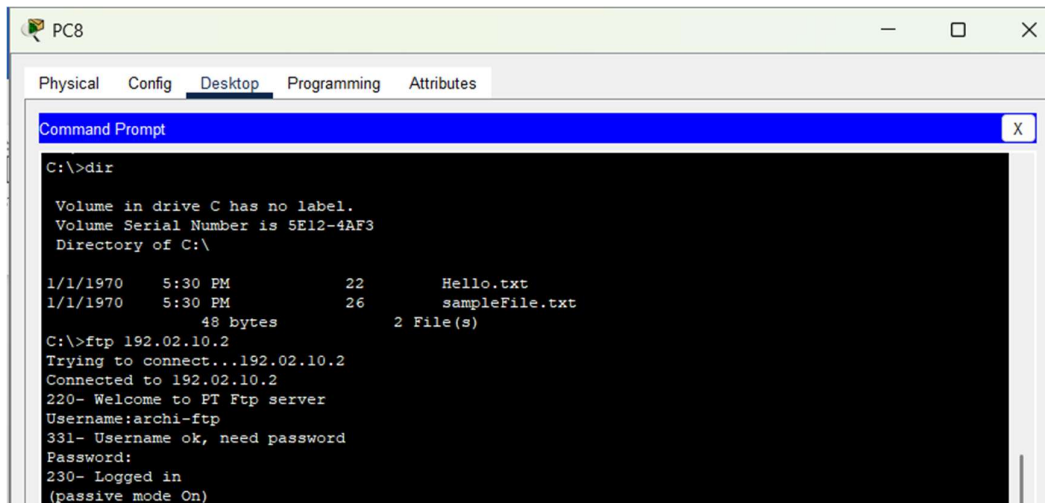
1	asa842-k8.bin
2	asa923-k8.bin
3	c1841-advipservicesk9-mz.124-15.T1.bin
4	c1841-ipbase-mz.123-14.T7.bin
5	c1841-ipbasek9-mz.124-12.bin
6	c1900-universalk9-mz.SPA.155-3.M4a.bin
7	c2600-advipservicesk9-mz.124-15.T1.bin

Remove

Top

Output:

⇒ Uploading file from PC8 in network 3

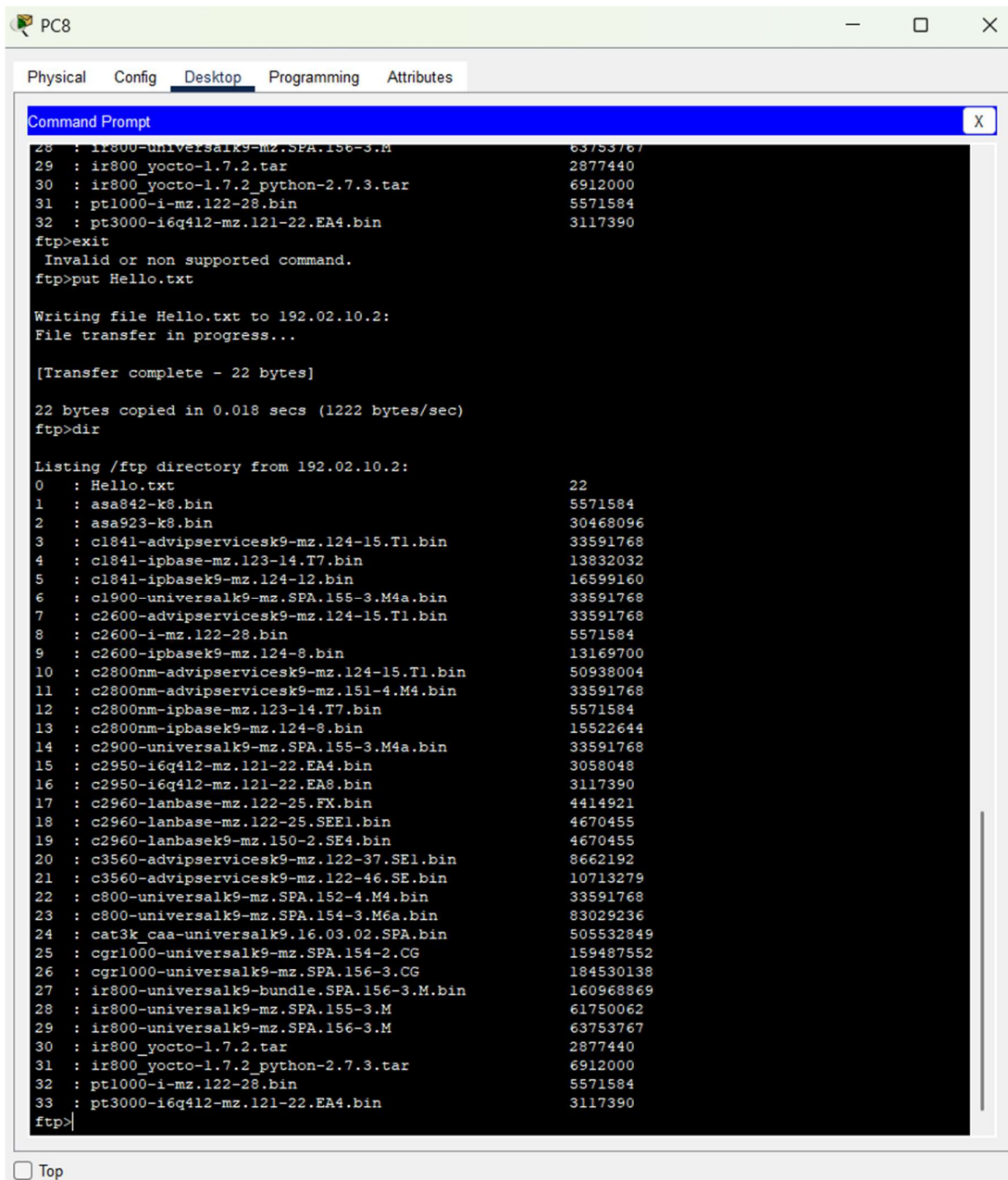


```
PC8
Physical Config Desktop Programming Attributes
Command Prompt
C:\>dir

Volume in drive C has no label.
Volume Serial Number is 5E12-4AF3
Directory of C:\

1/1/1970    5:30 PM           22      Hello.txt
1/1/1970    5:30 PM           26      sampleFile.txt
               48 bytes           2 File(s)

C:\>ftp 192.02.10.2
Trying to connect...192.02.10.2
Connected to 192.02.10.2
220- Welcome to PT Ftp server
Username:archi-ftp
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
```



```
PC8
Physical Config Desktop Programming Attributes
Command Prompt
28 : ir800-universalk9-mz.SPA.156-3.M 63753767
29 : ir800_yocto-1.7.2.tar 2877440
30 : ir800_yocto-1.7.2_python-2.7.3.tar 6912000
31 : pt1000-i-mz.l22-28.bin 5571584
32 : pt3000-i6q4l2-mz.l21-22.EA4.bin 3117390
ftp>exit
Invalid or non supported command.
ftp>put Hello.txt

Writing file Hello.txt to 192.02.10.2:
File transfer in progress...

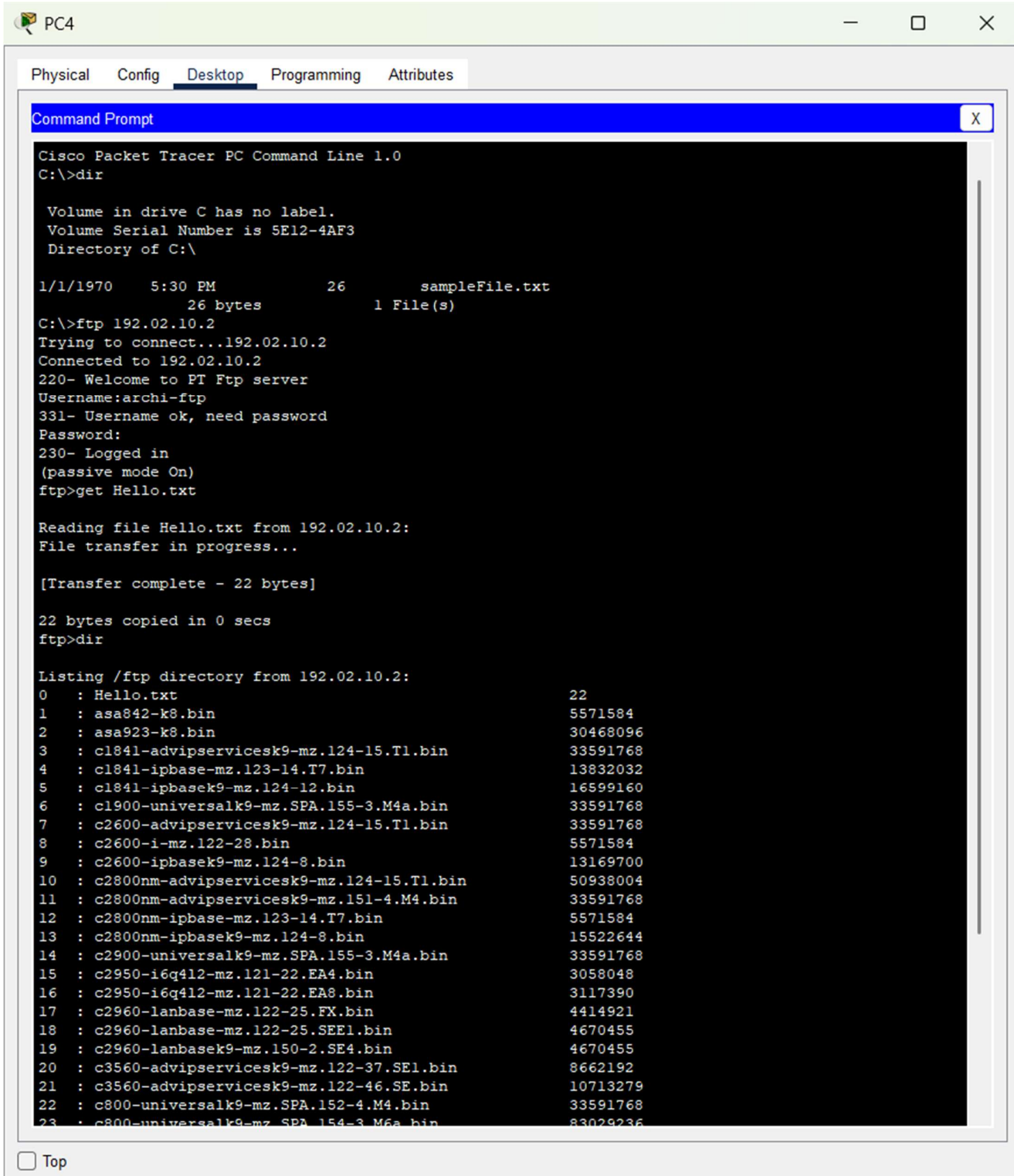
[Transfer complete - 22 bytes]

22 bytes copied in 0.018 secs (1222 bytes/sec)
ftp>dir

Listing /ftp directory from 192.02.10.2:
0 : Hello.txt 22
1 : asa842-k8.bin 5571584
2 : asa923-k8.bin 30468096
3 : c1841-advipservicesk9-mz.l24-15.T1.bin 33591768
4 : c1841-ipbase-mz.l23-14.T7.bin 13832032
5 : c1841-ipbasek9-mz.l24-12.bin 16599160
6 : c1900-universalk9-mz.SPA.155-3.M4a.bin 33591768
7 : c2600-advipservicesk9-mz.l24-15.T1.bin 33591768
8 : c2600-i-mz.l22-28.bin 5571584
9 : c2600-ipbasek9-mz.l24-8.bin 13169700
10 : c2800nm-advipservicesk9-mz.l24-15.T1.bin 50938004
11 : c2800nm-advipservicesk9-mz.l51-4.M4.bin 33591768
12 : c2800nm-ipbase-mz.l23-14.T7.bin 5571584
13 : c2800nm-ipbasek9-mz.l24-8.bin 15522644
14 : c2900-universalk9-mz.SPA.155-3.M4a.bin 33591768
15 : c2950-i6q4l2-mz.l21-22.EA4.bin 3058048
16 : c2950-i6q4l2-mz.l21-22.EA8.bin 3117390
17 : c2960-lanbase-mz.l22-25.FX.bin 4414921
18 : c2960-lanbase-mz.l22-25.SEE1.bin 4670455
19 : c2960-lanbasek9-mz.l50-2.SE4.bin 4670455
20 : c3560-advipservicesk9-mz.l22-37.SE1.bin 8662192
21 : c3560-advipservicesk9-mz.l22-46.SE.bin 10713279
22 : c800-universalk9-mz.SPA.152-4.M4.bin 33591768
23 : c800-universalk9-mz.SPA.154-3.M6a.bin 83029236
24 : cat3k_caa-universalk9.l6.03.02.SPA.bin 505532849
25 : cgr1000-universalk9-mz.SPA.154-2.CG 159487552
26 : cgr1000-universalk9-mz.SPA.156-3.CG 184530138
27 : ir800-universalk9-bundle.SPA.156-3.M.bin 160968869
28 : ir800-universalk9-mz.SPA.155-3.M 61750062
29 : ir800-universalk9-mz.SPA.156-3.M 63753767
30 : ir800_yocto-1.7.2.tar 2877440
31 : ir800_yocto-1.7.2_python-2.7.3.tar 6912000
32 : pt1000-i-mz.l22-28.bin 5571584
33 : pt3000-i6q4l2-mz.l21-22.EA4.bin 3117390
ftp>
```

☐ Top

⇒ Downloading file in PC4 in network 2



The screenshot shows a PC4 window with a green title bar. The Desktop tab is active, displaying a black Command Prompt window. The Command Prompt shows the execution of several commands: 'dir' to list files in the C drive, 'ftp 192.02.10.2' to connect to a remote server, 'get Hello.txt' to download a file, and 'dir' to list files on the remote server. The output shows a directory listing of the C drive with 'sampleFile.txt' and a detailed directory listing of the remote server with 23 files.

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

Volume in drive C has no label.
Volume Serial Number is 5E12-4AF3
Directory of C:\

1/1/1970    5:30 PM                26      sampleFile.txt
                26 bytes                1 File(s)

C:\>ftp 192.02.10.2
Trying to connect...192.02.10.2
Connected to 192.02.10.2
220- Welcome to PT Ftp server
Username:archi-ftp
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>get Hello.txt

Reading file Hello.txt from 192.02.10.2:
File transfer in progress...

[Transfer complete - 22 bytes]

22 bytes copied in 0 secs
ftp>dir

Listing /ftp directory from 192.02.10.2:
0   : Hello.txt                22
1   : asa842-k8.bin            5571584
2   : asa923-k8.bin            30468096
3   : c1841-advipservicesk9-mz.124-15.T1.bin  33591768
4   : c1841-ipbase-mz.123-14.T7.bin  13832032
5   : c1841-ipbasek9-mz.124-12.bin  16599160
6   : c1900-universalk9-mz.SPA.155-3.M4a.bin  33591768
7   : c2600-advipservicesk9-mz.124-15.T1.bin  33591768
8   : c2600-i-mz.122-28.bin      5571584
9   : c2600-ipbasek9-mz.124-8.bin  13169700
10  : c2800nm-advipservicesk9-mz.124-15.T1.bin  50938004
11  : c2800nm-advipservicesk9-mz.151-4.M4.bin  33591768
12  : c2800nm-ipbase-mz.123-14.T7.bin  5571584
13  : c2800nm-ipbasek9-mz.124-8.bin  15522644
14  : c2900-universalk9-mz.SPA.155-3.M4a.bin  33591768
15  : c2950-i6q412-mz.121-22.EA4.bin  3058048
16  : c2950-i6q412-mz.121-22.EA8.bin  3117390
17  : c2960-lanbase-mz.122-25.FX.bin  4414921
18  : c2960-lanbase-mz.122-25.SEE1.bin  4670455
19  : c2960-lanbasek9-mz.150-2.SE4.bin  4670455
20  : c3560-advipservicesk9-mz.122-37.SE1.bin  8662192
21  : c3560-advipservicesk9-mz.122-46.SE.bin  10713279
22  : c800-universalk9-mz.SPA.152-4.M4.bin  33591768
23  : c800-universalk9-mz.SPA.154-3.M6a.bin  83029236
```

☐ Top

Conclusion:

In this practical, we successfully configured and utilized Telnet, SSH, and FTP in a network environment. Telnet was implemented to enable remote device access and management, while SSH provided a more secure alternative through encrypted communication. An FTP server was also configured to allow reliable file transfer operations between network devices. The experiment demonstrated the importance of remote access, secure communication, and data sharing in organizational networks. Overall, the objectives were achieved, highlighting how Telnet, SSH, and FTP can be effectively used to ensure connectivity, security, and efficient resource management in real-time scenarios.