COMPUTER NETWORKS

PRACTICAL -5

TITLE: Utilize Telnet, SSH and FTP in a network of an organization.

SCENARIO:

Design the network of an organization having 5 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.

3) Create 3 users which will be able to get the access of the router using SSH.

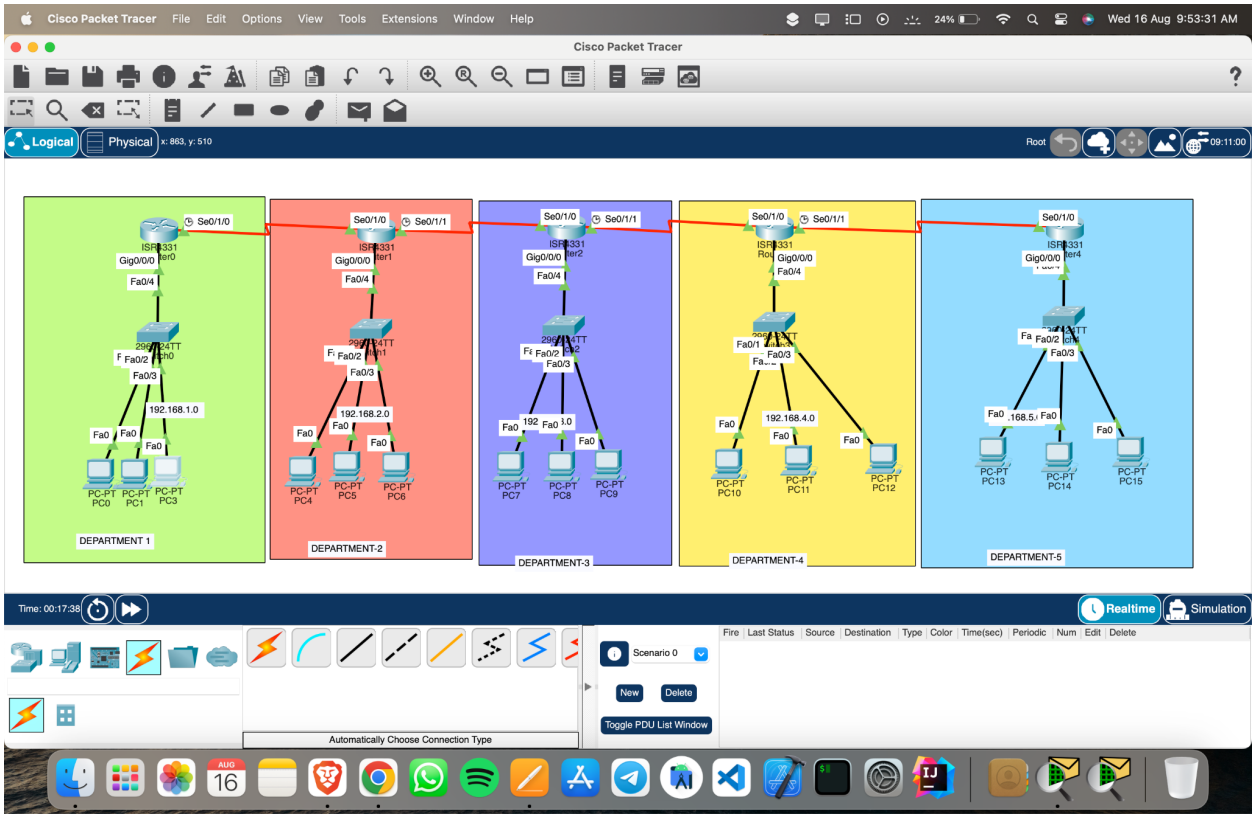
4) Create a FTP server and perform the operation to upload and download a file. And explore all the operations available with the ftp server.

PROCEDURE:

Networks Decided for all the departments are:

Department 1: 192.168.1.0
Department 2: 192.168.2.0
Department 3: 192.168.3.0
Department 4: 192.168.4.0
Department 5:192.168.5.0

Created topology as shown below.
Connected all the PC's and servers with the respective switches and then with the respective Routers. To connect router to router I have added NIM2T in each router and connected them with serial DTE wire.



Assigned all the IP addresses to PC's and Routers.

Open Router0 and Follow commands:

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/0, changed state to up

Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#ip address 10.0.0.1 255.0.0.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up

Router(config-if)#hostname department1
department1(config)#enable secret secret1
department1(config)#line vty 0 4
department1(config-line)#password password1
department1(config-line)#exit
department1(config)#username
% Incomplete command.
department1(config)#username user1 password password1
department1(config)#username user2 password password2
department1(config)#username user3 password password3
department1(config)#line vty 0 4
department1(config-line)#transport input telnet
department1(config-line)#login
department1(config-line)#login local
department1(config-line)#
```

Now open the PC and try using the telnet command.

```
C:\>telnet 192.168.1.1
Trying 192.168.1.1 ...Open


User Access Verification

Username: user1
Password:
department1>enable
Password:
department1#!interface serial 0/1/0
department1#!config terminal
department1#!config t
department1#config t
Enter configuration commands, one per line.  End with CNTL/Z.
department1(config)#interface serial 0/1/0
department1(config-if)#ip address 10.0.0.1 255.0.0.0
department1(config-if)#no shutdown
department1(config-if)#!!
```

Configuring for ssh

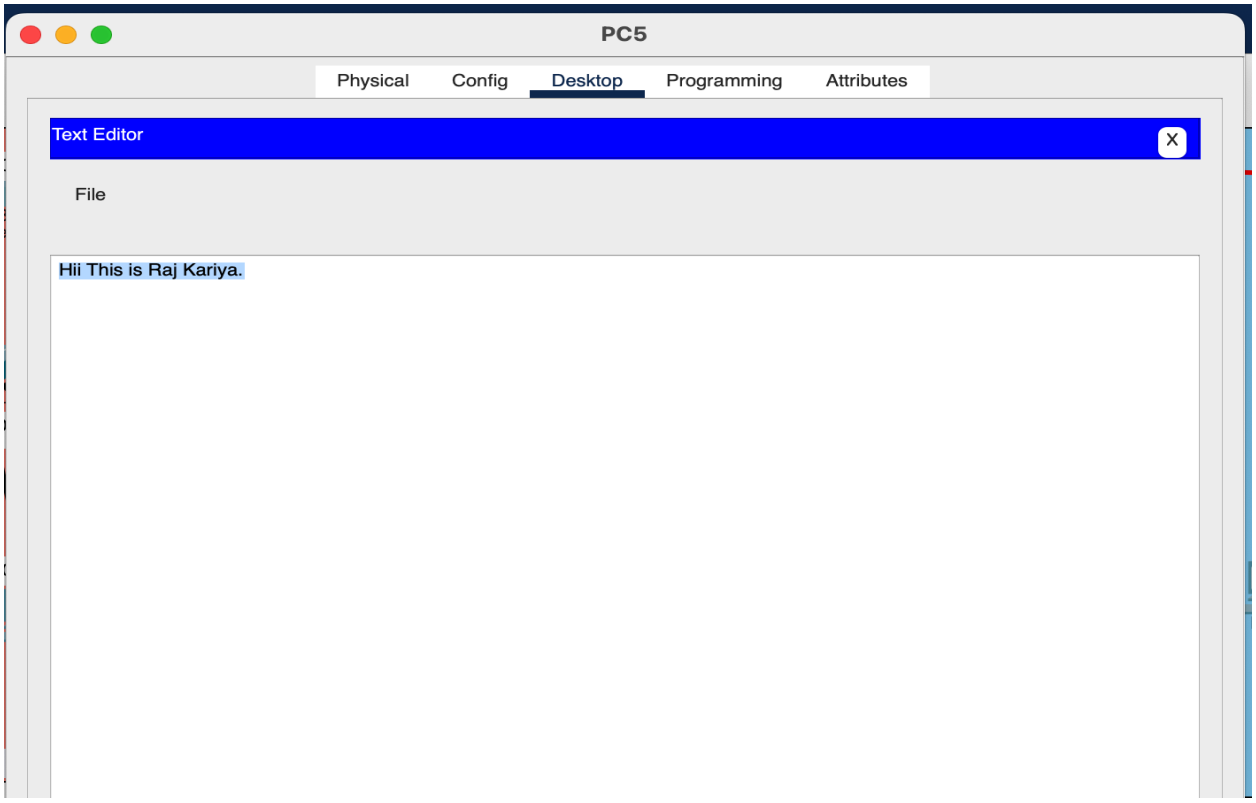
Open router4 and perform the following commands.

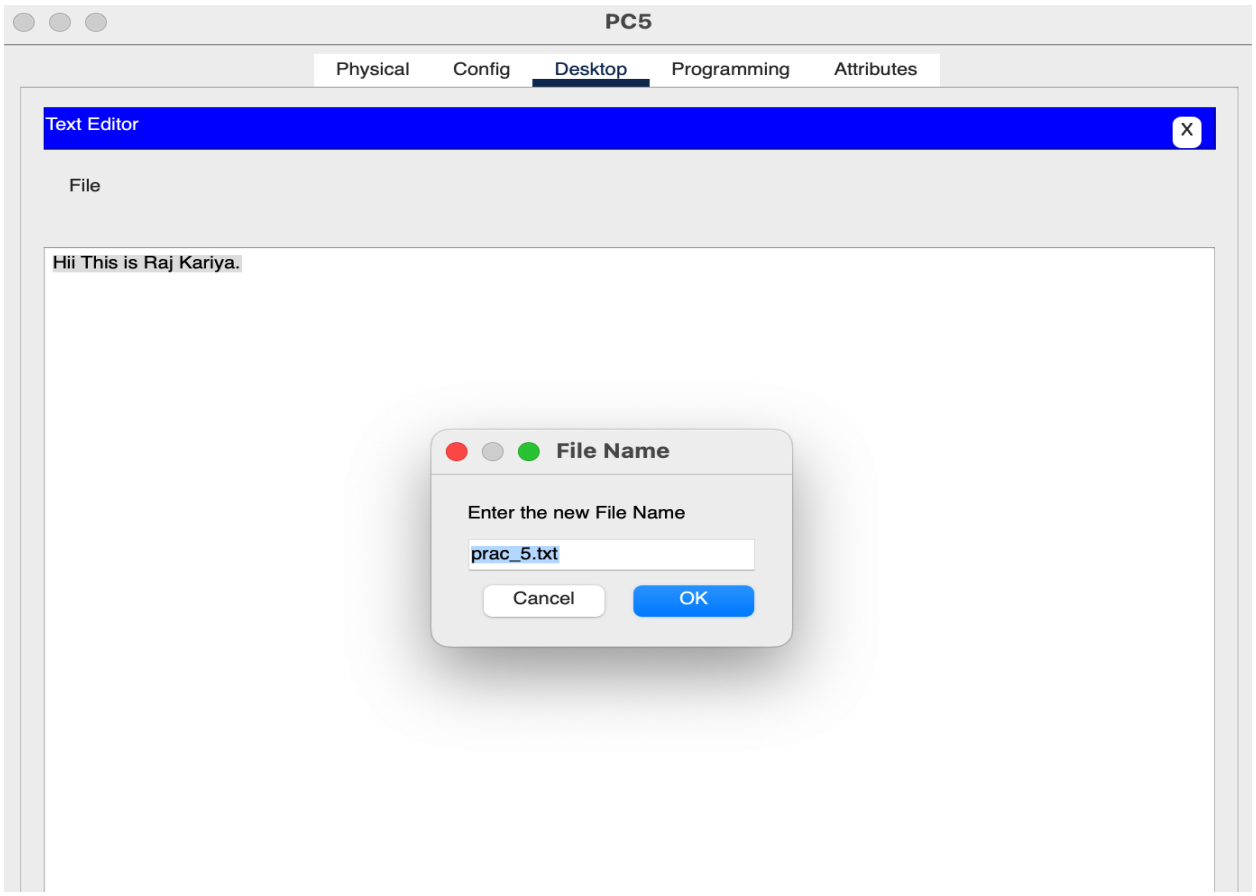
```
Router>
Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname department4
department4(config)#crypto ?
  dynamic-map  Specify a dynamic crypto map template
  ipsec        Configure IPSEC policy
  isakmp       Configure ISAKMP policy
  key          Long term key operations
  map          Enter a crypto map
department4(config)#crypto crypto key generate rsa ?
% Unrecognized command
department4(config)#crypto crypto key generate rsa ?
% Unrecognized command
department4(config)#crypto crypto key generate rsa?
% Unrecognized command
department4(config)#crypto crypto key generate rsa
                           ^
% Invalid input detected at '^' marker.

department4(config)#crypto key generate rsa
% Please define a domain-name first.
department4(config)#ip domain name ict
department4(config)#crypto key generate rsa
The name for the keys will be: department4.ict
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]: 1024
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]

department4(config)#enable secret secret1
*Mar 1 0:28:27.581: %SSH-5-ENABLED: SSH 1.99 has been enabled
department4(config)#username user1 password password1
department4(config)#username user2 password password2
department4(config)#username user3 password password3
department4(config)#line vty 0 15
department4(config-line)#transport input ssh
department4(config-line)#login local
department4(config-line)#
```

Open PC and run the commands.

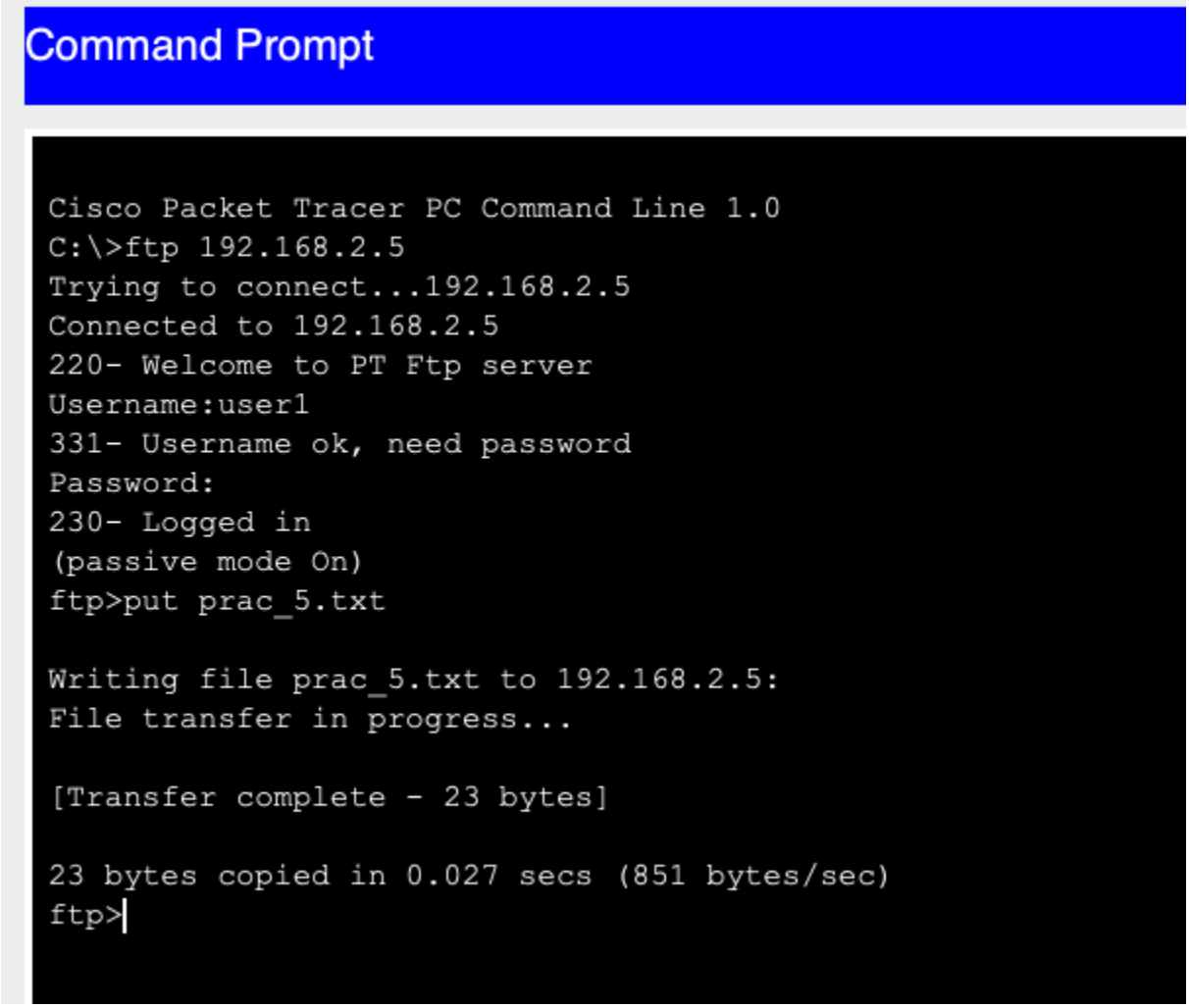
```
Invalid command.

C:\>
C:\>ssh -l user1 192.168.5.1

Password:
% Login invalid


Password:



department4>!enable
department4>enable
Password:
Password:
department4#config t
Enter configuration commands, one per line.  End with CNTL/Z.
department4(config)#interface serial 0/1/0
department4(config-if)#ip address 40.0.0.2 255.0.0.0
department4(config-if)#!no shutdown
department4(config-if)#
department4(config-if)#exit
department4(config)#!
```

Now go to the editor and write the data in file and save the file.


PC5
Physical
Config
Desktop
Programming
Attributes
Text Editor
File
Hii This is Raj Kariya.


PC5
Physical
Config
Desktop
Programming
Attributes
Text Editor
File
Hii This is Raj Kariya.
File Name
Enter the new File Name
prac_5.txt
Cancel
OK

Now go to the terminal command prompt and login to ftp and upload the file.



By writing dir command we can see the files present on the server.

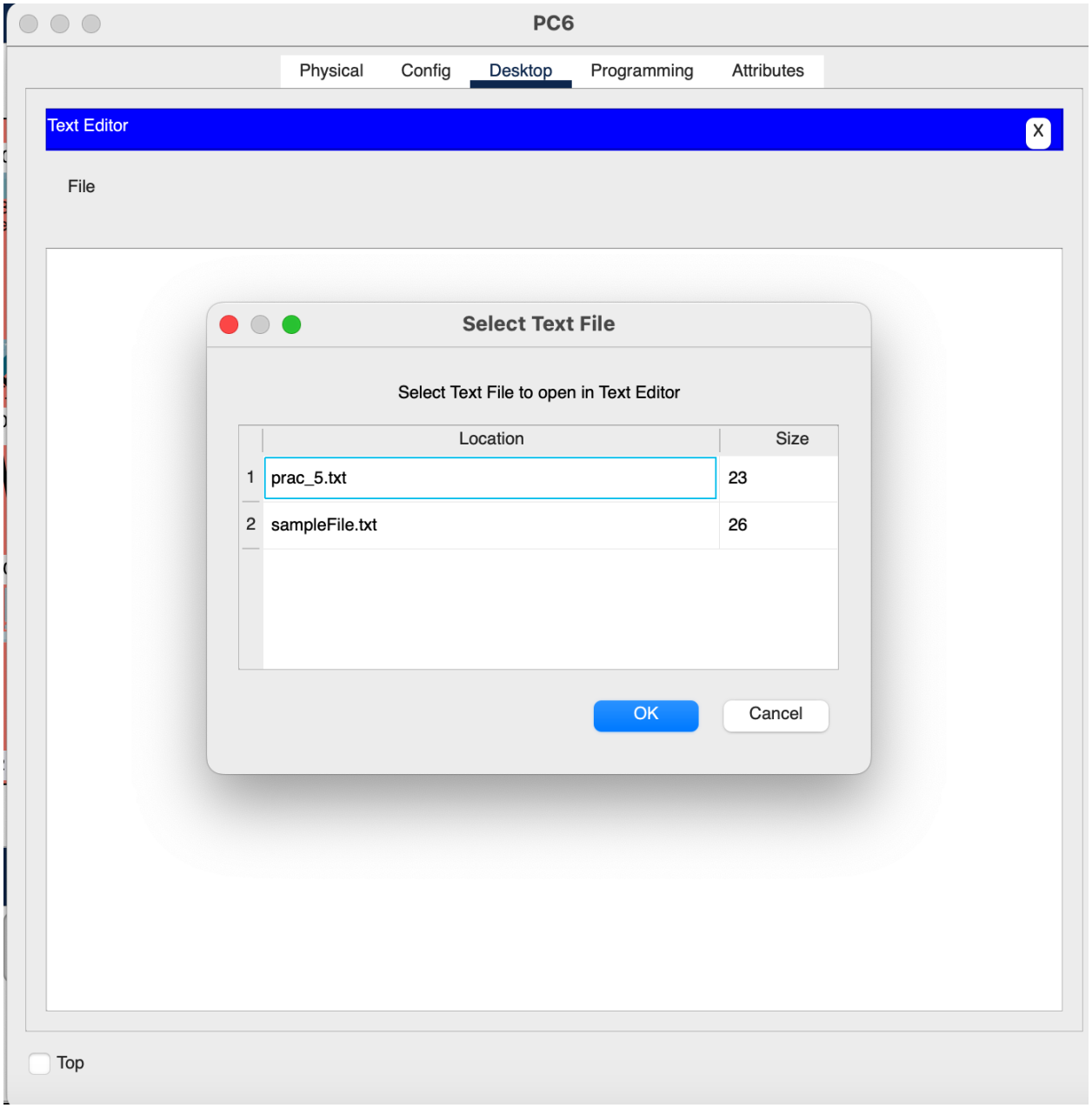
```
Listing /ftp directory from 192.168.2.5:
0    : asa842-k8.bin                                5571584
1    : asa923-k8.bin                                30468096
2    : c1841-advipservicesk9-mz.124-15.T1.bin       33591768
3    : c1841-ipbase-mz.123-14.T7.bin                13832032
4    : c1841-ipbasek9-mz.124-12.bin                 16599160
5    : c1900-universalk9-mz.SPA.155-3.M4a.bin       33591768
6    : c2600-advipservicesk9-mz.124-15.T1.bin       33591768
7    : c2600-i-mz.122-28.bin                        5571584
8    : c2600-ipbasek9-mz.124-8.bin                  13169700
9    : c2800nm-advipservicesk9-mz.124-15.T1.bin     50938004
10   : c2800nm-advipservicesk9-mz.151-4.M4.bin      33591768
11   : c2800nm-ipbase-mz.123-14.T7.bin              5571584
12   : c2800nm-ipbasek9-mz.124-8.bin                15522644
13   : c2900-universalk9-mz.SPA.155-3.M4a.bin       33591768
14   : c2950-i6q412-mz.121-22.EA4.bin               3058048
15   : c2950-i6q412-mz.121-22.EA8.bin               3117390
16   : c2960-lanbase-mz.122-25.FX.bin               4414921
17   : c2960-lanbase-mz.122-25.SEE1.bin             4670455
18   : c2960-lanbasek9-mz.150-2.SE4.bin             4670455
19   : c3560-advipservicesk9-mz.122-37.SE1.bin      8662192
20   : c3560-advipservicesk9-mz.122-46.SE.bin       10713279
21   : c800-universalk9-mz.SPA.152-4.M4.bin         33591768
22   : c800-universalk9-mz.SPA.154-3.M6a.bin        83029236
23   : cat3k_caa-universalk9.16.03.02.SPA.bin       505532849
24   : cgr1000-universalk9-mz.SPA.154-2.CG          159487552
25   : cgr1000-universalk9-mz.SPA.156-3.CG          184530138
26   : ir800-universalk9-bundle.SPA.156-3.M.bin     160968869
27   : ir800-universalk9-mz.SPA.155-3.M             61750062
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   : prac_5.txt                                   23
32   : pt1000-i-mz.122-28.bin                       5571584
33   : pt3000-i6q412-mz.121-22.EA4.bin              3117390
ftp>
```

As we can see we have successfully uploaded the file on the server.

Now go to any other pc and login to get the server file.

```
C:\>ftp 192.168.2.5
Trying to connect...192.168.2.5
Connected to 192.168.2.5
220- Welcome to PT Ftp server
Username:user2
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>get prac_5.txt

Reading file prac_5.txt from 192.168.2.5:
File transfer in progress...

[Transfer complete - 23 bytes]

23 bytes copied in 0 secs
ftp>
```

Here we can see that file is downloaded on PC 6.



CONCLUSION: I learned about how we can implement telnet, ssh and ftp.