Program 5 Report

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The program should be invoked with ftp with host name. It connects a session to the remote hostname server using the default port 21 and transfers files in passive mode. If no argument is given, the client program does not establish any connection until it receives an open command.

ftp mainly designs the functionality of file transfer protocol. It establishes connections remotely between client and server over default port 21.

In FTPClient.cpp, design an openIpPort function to establish a TCP connection to ip on port, check if the hostname and port valid. Then use username and password to login as tried in tripod.com with css432 and password UWB0th3ll, the client will wait for the server response. If the username does not match, it will prompt incorrect notice. If it success, it will establish a remote connection from the server.

cdSubdir will cd the directory to a sub-directory list cd command. It will change the working directory to the directory chosen if it exists. If it doesn't exist; it will prompt saying no such directory.

ls will show all the existing files in the working directory with their create date and permission using ls command.

After viewing files, user can use getFile to download files from the directory or use putFile to upload and store file in directory.

getFile: client send request for downloading file, if the file does not exist, it will prompt user with error message. Otherwise, a passive command will be sent and passed back. A child process will open a data channel to the ftp client, control channel passes the RETR command to tell the server begin passing file data through channel. The child process will start receiving the file and save it in directory.

putFile: ftp server must first receive a PASV command and return a new poet number for the data channel to connect and receive the file. Then child process writes to the data channel, the parent makes the STOR call. Informed ftp server using sending data now over the channel and server will listen for incoming data.

After finish operation, user can close the connection without quit ftp. Or quit ftp with quit function.

```
[lulu1031@csslab2 P5]$ g++ FtpClient.cpp main.cpp >a.out
```

Examples using command:

```
[lulu1031@csslab2 ~]$ ftp ftp.tripod.com
Connected to ftp.tripod.com (209.202.252.54).
220 Welcome to Tripod us FTP.
Name (ftp.tripod.com:lulu1031): css432
331 Username set to css432. Now enter your password.
Password:
230- ================================================================
230-                        IMPORTANT NOTICE
230- ================================================================
230-
230- Powerful building tools. Traffic-generating, money-making
230- programs. It's all waiting for you at Tripod.
230-
230-    http://www.tripod.lycos.com/
230-
230- ================================================================
230-
230- Got a great idea for a website?  Then don't
230- wait, get your own web address today!
230-
230-    http://www.tripod.lycos.com/domains/
230-
230- ================================================================
230-
230- We heard you loud and clear! You love your site, but
230- you don't like the ads.  Remove those pesky popups
230- forever!
230-
230-    http://www.tripod.lycos.com/web-hosting/compare_plans.pl
230-
230- ================================================================
230 User 'css432' logged on.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> ls
227 Entering Passive Mode (209,202,252,54,28,35)
150 Opening ASCII mode data connection for LIST.
-rw-r--r--    1 css432   Tripod          0 Dec 13  2012 test5.txt
-rw-r--r--    1 css432   Tripod         24 Dec  2  2014 cmaTest.txt
-rw-r--r--    1 css432   Tripod          0 Dec 10  2012 test1
drwxr-xr-x    1 css432   Tripod          0 Jun  8  2019 jecho
-rw-r--r--    1 css432   Tripod          0 Dec 10  2012 testest5.txt
-rw-r--r--    1 css432   Tripod        145 Dec 13  2012 jechorenametext.txt
drwxr-xr-x    1 css432   Tripod          0 Jun  8  2019 secretDungeon
drwxr-xr-x    1 css432   Tripod          0 Jun  8  2019 hello2
-rw-r--r--    1 css432   Tripod        694 Dec 13  2012 jecho.txt
```

```
ftp> get Socket2.cpp
local: Socket2.cpp remote: Socket2.cpp
227 Entering Passive Mode (209,202,252,54,32,35)
150 Opening BINARY mode data connection for 'Socket2.cpp'.
226 Transfer complete.  (2735 bytes sent.)
2735 bytes received in 0.0476 secs (57.48 Kbytes/sec)
```

```
ftp> cd project
250 Directory set to '/project'.
ftp> ls
227 Entering Passive Mode (209,202,252,54,184,95)
150 Opening ASCII mode data connection for LIST.
-rw-r--r--    1 css432    Tripod          0 Mar 11  2016 ttt
-rw-r--r--    1 css432    Tripod          1 Mar 15  2016 bigfile
-rw-r--r--    1 css432    Tripod          0 Dec 11  2014 Main.L68
-rw-r--r--    1 css432    Tripod     513275 Dec 11  2014 CSS432_Discussion1.pdf
-rw-r--r--    1 css432    Tripod         41 Dec 12  2014 lolbutts.txt
-rw-r--r--    1 css432    Tripod          4 Dec 11  2014 MSaleh.txt
-rw-r--r--    1 css432    Tripod         15 Dec 12  2014 towel.txt
-rw-r--r--    1 css432    Tripod        571 Dec 12  2014 doge.png
-rw-r--r--    1 css432    Tripod         60 Dec 12  2014 sampleData.txt
-rw-r--r--    1 css432    Tripod         61 Dec 12  2014 newData.txt
-rw-r--r--    1 css432    Tripod         42 Mar 14  2016 testfile.txt
-rw-r--r--    1 css432    Tripod         50 Sep 11  2019 MFukuda.txt
-rw-r--r--    1 css432    Tripod         62 Mar 13  2016 myderp.txt
-rw-r--r--    1 css432    Tripod         15 Dec 12  2014 message.txt
-rw-r--r--    1 css432    Tripod          0 Mar 15  2016 ftp
-rw-r--r--    1 css432    Tripod          0 Mar  3  2016 DimpseyIsMyHero
-rw-r--r--    1 css432    Tripod          8 Jun  2 01:12 test.txt
-rw-r--r--    1 css432    Tripod          0 Mar 11  2016 BigV.txt
-rw-r--r--    1 css432    Tripod          0 Mar  8  2016 Testing
-rw-r--r--    1 css432    Tripod          0 Mar  8  2016 q
-rw-r--r--    1 css432    Tripod         71 Mar 13  2016 herpalerp.txt
-rw-r--r--    1 css432    Tripod          0 Mar 11  2016 Tuff.txt
drwxr-xr-x    1 css432    Tripod          0 Mar  9  2016 TeddyBear
-rw-r--r--    1 css432    Tripod          0 Mar 11  2016 name
-rw-r--r--    1 css432    Tripod         16 Mar 14  2016 testo.txt
-rw-r--r--    1 css432    Tripod         62 Mar 14  2016 FEEL_THE_BERN.txt
-rw-r--r--    1 css432    Tripod     172657 Mar 15  2016 PictureOfYourMom.png
-rw-r--r--    1 css432    Tripod         53 Mar 17  2016 andrewTest.txt
-rw-r--r--    1 css432    Tripod         16 Mar 17  2016 myFreshV.txt
-rw-r--r--    1 css432    Tripod      50114 Mar 16  2016 HunterTest.txt
-rw-r--r--    1 css432    Tripod     201945 Mar 15  2016 bushesOfLove.png
-rw-r--r--    1 css432    Tripod     101186 Mar 15  2016 HunterRename.txt
-rw-r--r--    1 css432    Tripod     101186 Mar 15  2016 HunterRenamedata.txt
-rw-r--r--    1 css432    Tripod         16 Mar 17  2016 myV.txt
-rw-r--r--    1 css432    Tripod      50114 Mar 15  2016 H-data.txt
-rw-r--r--    1 css432    Tripod          0 Mar 15  2016 myBigV.txt
-rw-r--r--    1 css432    Tripod      50114 Mar 16  2016 HunterTest2.txt
-rw-r--r--    1 css432    Tripod         16 Mar 17  2016 myLilV.txt
-rw-r--r--    1 css432    Tripod       8841 Mar 15  2016 ChrisTestWrite.txt
-rw-r--r--    1 css432    Tripod        581 Mar 15  2016 ubuntuLogo.txt
-rw-r--r--    1 css432    Tripod       2947 Mar 15  2016 linux.txt
-rw-r--r--    1 css432    Tripod          0 Mar 16  2016 linux2.txt
-rw-r--r--    1 css432    Tripod         14 Mar 15  2016 ChrisText.txt
-rw-r--r--    1 css432    Tripod         14 Mar 15  2016 ChrisTest
-rw-r--r--    1 css432    Tripod        220 Mar 16  2016 linux3.txt
-rw-r--r--    1 css432    Tripod       2622 Mar 17  2016 paul.jpg
-rw-r--r--    1 css432    Tripod       8862 Mar 16  2016 ChrisTest.txt
-rw-r--r--    1 css432    Tripod         44 Mar 16  2016 linux4.txt
```

```
250 Directory set to '/project'.
ftp> put
(local-file) Socket2.cpp
(remote-file) ttt
local: Socket2.cpp remote: ttt
227 Entering Passive Mode (209,202,252,54,21,25)
150 Opening BINARY mode data connection for 'ttt'.
226 Transfer complete.  (2735 bytes sent.)
2735 bytes sent in 8.3e-05 secs (32951.81 Kbytes/sec)
```

```
ftp> ls
227 Entering Passive Mode (209,202,252,54,21,31)
150 Opening ASCII mode data connection for LIST.
-rw-r--r--   1 css432     Tripod           2735 Jun  8 02:29 ttt
-rw-r--r--   1 css432     Tripod              1 Mar 15  2016 bigfile
-rw-r--r--   1 css432     Tripod              0 Dec 11  2014 Main.L68
-rw-r--r--   1 css432     Tripod         513275 Dec 11  2014 CSS432_Discussion1.pdf
-rw-r--r--   1 css432     Tripod             41 Dec 12  2014 lolbutts.txt
-rw-r--r--   1 css432     Tripod              4 Dec 11  2014 MSaleh.txt
-rw-r--r--   1 css432     Tripod             15 Dec 12  2014 towel.txt
-rw-r--r--   1 css432     Tripod            571 Dec 12  2014 doge.png
-rw-r--r--   1 css432     Tripod             60 Dec 12  2014 sampleData.txt
-rw-r--r--   1 css432     Tripod             61 Dec 12  2014 newData.txt
-rw-r--r--   1 css432     Tripod             42 Mar 14  2016 testfile.txt
-rw-r--r--   1 css432     Tripod             50 Sep 11  2019 MFukuda.txt
-rw-r--r--   1 css432     Tripod             62 Mar 13  2016 myderp.txt
-rw-r--r--   1 css432     Tripod             15 Dec 12  2014 message.txt
-rw-r--r--   1 css432     Tripod              0 Mar 15  2016 ftp
-rw-r--r--   1 css432     Tripod              0 Mar  3  2016 DimpseyIsMyHero
-rw-r--r--   1 css432     Tripod              8 Jun  2 01:12 test.txt
-rw-r--r--   1 css432     Tripod              0 Mar 11  2016 BigV.txt
-rw-r--r--   1 css432     Tripod              0 Mar  8  2016 Testing
-rw-r--r--   1 css432     Tripod              0 Mar  8  2016 g
```

```
ftp> close
421 There has been an unrecoverable error!  Bug reports can be sent to http://tr
ipod.com/help.
```

```
ftp> quit
[lulu1031@csslab2 ~]$
```

```
[lulu1031@csslab2 ~]$ ftp ftp.tripod.com
Connected to ftp.tripod.com (209.202.252.54).
220 Welcome to Tripod us FTP.
Name (ftp.tripod.com:lulu1031): ^C[lulu1031@csslab2 ~]$
[lulu1031@csslab2 ~]$ telnet ftp.tripod.com 21
Trying 209.202.252.54...
Connected to ftp.tripod.com.
Escape character is '^]'.
220 Welcome to Tripod us FTP.
```