COMP 3015 Project Design Report

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Main Functions

1. Log In:
   * 1. Import the IP address of server
     2. Import the port number of server
     3. Import the password to get access to the files
2. File Download:
   * 1. Download a specific single file
     2. Download All files
     3. Brows a folder
     4. Back to the upper level
     5. Help

Detail description of protocols of different functions

**Log In:**

**Server Side:**

The TCP protocol is used for this file download project. Firstly, Server need set a password. Then Server would create a sSocket to wait for other Client to access. If there is a Client tried to access the shared files, Server would check the password sent by Client. If the password is correct, Server would send an admitted acknowledge packet to allow client get into next step. However, if the password is not correct, Server would send a reject packet to client. After sending reject packets for three times, Server would stop the connection.

**Client Side:**

First, client should input the IP address and port number of the server, and then input the password throw the DataOutputStream(cSocet.getOutputStream()).

Then Client would receiver a packet from Server, if it is an admitted acknowledge packet, Client could continue downloading the files. Whereas, if it is a reject packet, Client can input the password again, Client have at most three times to try the password, after three times, if Client still receive a reject packet, Client should stop the connection and try to think out the password for a while.

**Download File:**

**Server Side:**

If the password sent by client is correct, an DataInputStream is keep waiting for the command sent by Client, if currently no command received, it would sleep for a while. Those command sent by client is from 1 to 5.

1-Search File:

If server receive 1 from Client, server would execute the search file function. First it would send back an acknowledge packet to Client to be ready for receiving content. Then Serve use the File List method to browse the directory set by server. Also the size of each file is sent following the name. Next those tuples are sent to the Client, the size of the array would be sent first, and then each tuple would be sent with a out.write function. After finishing sending the File list, Server also count how many files are there in current directory, the number would be stored in a static variable which is prepared for the Download all function. Then Server go back to wait for next command.

2-Send a file

If the server receives 2, it will call the send function to send the file that the client wants to download. First it will send an acknowledgement packet to tell client to get ready for downloading, and then server would receive the name of the file that the client wants to download. The server would read that file and send the file size first to the client. Then it uses a buffer to read 1024k the file each time and send the content to the client each time. It uses a counter to count how much file has already sent and compare with the file size to know when to stop. After sending the entire file. Server go back to wait for next command.

3-Browse a folder

If the server receives 3, it will start waiting for the path name, after receiving the path name, it will pass it into the open folder method. In the open folder method, it actually changes the current address which is a static variable to the new path. Then, after receiving 1, it will do the Search File function again to refresh the file list. At the same time, server also store the path into an array preparing for back to the upper level function. The pointer will increase one to point to the current path. After that, Server go back to wait for next command.

4-Back to the upper level

If the server receives 4, it will call back\_level function, it finds the current path which stored in an array before and delete the path in the static variable address and then after receiving 1, it will do the Search File function again to refresh the file list. The pointer in the array will also decrease one. After that, Server go back to wait for next command.

5-Send All

If the server receives 5 from the client. Server would send the size of file\_name list first, and send the file names one by one to the client. After that, Server go back to wait for next command.

**Client Side:**

After receiving admitted acknowledge packet from Server, client could enter next interface to download file.

1-Search File:

In order to know what files are available, Client would send 1 to server side to browse the directory. After receiving the acknowledge packet, client would start receiving the tuples and store them into a 2D array (one dimension for the name and the second dimension for the file size). After finishing receiving the file list. The 2D array would be passed into a gui function to build an interface for Client. I build a JList in the JPanel to represent each file name and size one by one. In addition, if the file is a folder, the size would not be shown and in contract, a “Folder” would be shown because this program do not support you to download the folder directly, if you want to download the files inside the folder, go inside the folder and check what you want to download, if you want every thing in the folder, there is also a download all function to download everything inside the folder.

2-Download a file

After select a file and click Download, it will pop up a window to allow you select the download destination with a JFileChooser(). If you select a directory and press save, the path will be passed into Download Function. Also, the selected file name will be passed into download function, after sending 1 to the server, client would receive an acknowledgment packet. Then client would send the name of the selected file and get ready to receive the file, first client would receive the file size, and then client would use a buffer to store the file sent by server each time. Also write into the file created before. Finally close the file and the download function is finished. However, if you select a folder and click download button, there would be no reaction because you can not download a folder directly.

3-Browse a folder

After you double clicking the folder tuple, it will call the open\_folder function, the selected folder name would be passed into open\_folder function. Client would send 3 to the server and then send the size of the folder name and the name. Also the level will increase one which means you are in a deeper level. Then client send 1 to the server and call the search file function. Those old tuples in the list would be deleted and new tuples will be stored in the list. If you double click a file, there would be no reaction because you can not open the file.

4-Back to the upper level

After you clicking the Back to the upper level button, client would send 4 to the server. The level will decrease one. Then Client send 1 to the server and call the search file function. Those old tuples in the list would be deleted and new tuples will be stored in the list. If it is already the first level, after clicking the back to the upper level button, there will be a reminder in the console to tell you that is already the first level.

5-Download All Files

After you clicking the Download All button, it will pop up a window to allow you select the download destination with a JFileChooser(). If you select a directory and press save, the path will be passed into Download Function. Also client would send 5 to the server, then client would receive the size of the file name list, and use a for loop to receive those names and call a download File function each time. Finally all files would be downloaded to the directory you set before.

6-Help

After you clicking the Help function, it will pop up a window to introduce you each function.

**P**

Over packaging analysis

Reference