

Assignment Report

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1. Program design

The program is written by python version 3.7.3, this assignment is about build up a discussion forum, hence it needs to deal with many files and file content, python has number of built-in functions, it will be easier to operate and manage program. Technically, the main theory is interactions between clients and server using TCP sockets, there are two main files (server.py,client.py) for this implementation.

2. Application layer

Basically, client and server will connect with each other using TCP sockets, multithreading also applied to connect many clients. authentication and discussion forum operations firstly send essential message from client to server by TCP socket, server will receive message and perform relevant task. For example, create thread operation (CRT), client will send "CRT + username + thread name" to server, then server will create the corresponding thread.

3. How sys works

Start command:

Python3 server.py 5000 destroyforum

Python3 client.py 127.0.0.1 5000

Server will enter the while loop of accepting for clients to connect, once client connect to the server, client will ask user to log in. After user successfully log in, server will create a login.txt to store the log in user, if it is a new user, server will append it to the credential.txt, client will keep providing a list of available operations until user enters XIT command or admin enter SHT with correct password command. Client will send operation command and corresponding information to server by TCP socket, each operation is handled by separate function in server, the operation result will simply be displayed on the server terminal and client terminal.

4. Design trade-offs

The main trade off is lack of using classes, classes provide an easy way to keep data and methods together which helps program more organized, improves the code reuse greatly. The structure will be more simplify and readable. In my perspective building up classes may be very abstract for this assignment; it is easier to build up server and client program without classes. Do not need to deal with any class methods which may confuse the real functionality, the reason is that there are lots of discussion operations to implement.

5. Possible improvements

Known error: (**Multiclient**) If one client enters SHT command, server will shut down and only the client which send the SHT command will shut down, other clients cannot shutdown correctly.

Improvements: Apply select module to solve known error or use one more thread at client send message "Are you alive" to server, if server does not respond, close the socket. Apply better logic and refactor the code, use many if statements and check flags.