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COMP3331 Assignment report

Python version used: 3.7

Files:

- client.py contains implementation of the client's functionality
- server.py contains implementation of the server's functionality
- _user.py contains an object that represents an individual user
- _client_thread.py contains an object that represents an individual thread that communicates to a client connected to the server

Data structure design

All relevant data associated with a user is stored inside the User class inside _user.py.

Program design

2 TCP connections (one in each direction) are used for each p2p connection.

To implement off-line messaging, messages received while a user is offline is stored inside the user class. Upon successful login, those messages are pushed to the client.

Application layer message format

Json is used to send/receive application layer messages

Every message contains a 'header', which tells the application the intention of the message.

There are also other fields which are specific to the header.

For example, a message with the 'broadcast' header also includes a 'message' field that contains the content of the broadcast as a string.

I used the multi-threaded Code (Python) provided on 3331 webcms as the starter code for the assignment. I modified the multithread functionality by extracting the client thread class into a separate file, as well as adding threading capability to the server class, which refreshes itself every second.

The server and client will not function properly if a client is exit-ed through control-c, or any method other than the logout command.

The style of the code could be improved. Could have used OOP to avoid the numerous else if statements.