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CS544-Network Protocol Implementation

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1) Requirements to compile and run the code:

* Operating System: Linux (Ubuntu 16.04 LTS)
* Compiler: GCC (version 5.4.0)

2) How to compile and run the code:

* Open terminal on Linux.
* Send the command: gcc server.c -pthread
* Run the server: ./a.out 1234
* Open a new terminal.
* Send the command: gcc client.c -pthread
* Run the client: ./a.out <username> 1234
* Send "Hello"
* Send userID: admin
* Send password: asdf1234
* Open a third terminal and repeat the process for running the client using ./a.out <username> 1234. You don't need to compile the client again.
* The ID and password are same for all clients.
* Start chatting.

3) Robustness of the Code:

The code only checks for the correctness of the userID and password which is hardcoded in the protocol. So, the protocol is fairly robust. Such as when initiating a hello, unless the client sends a hello, the server keeps on listening to that client, however, it will only start the authentication process only after a correct hello is received. Also, the protocol only authenticates the correct userID and password and gives 2 attempts for a correct password otherwise re-initiates the connection to sending a hello. All in all, for the first version of the protocol, it is a pretty robust protocol.

To test the robustness of the protocol, I sent invalid inputs at the hello initiation stage and provided invalid ID and password to the protocol.

4) The extra credit is NOT implemeted.