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MP 1

2/10/23

Design Document:

See Attached PDF for Diagram

In summary: The Chatroom Server design follows a Multi-threaded Select-based approach

The general structure of the program is as follows:

- Client and Server programs run in loops that accept/attempt connections through sockets.
- When the server makes a connection with a client, a thread is launched that listens at the given socket for the new client until the client requests a command, at which point the command is processed: The server will simultaneously process requests for connections and commands from connected clients.
- All commands return as expected and change the state of the server, with proper and reasonable error checking on commands with corresponding replies from the server. Delete and Join, more specifically, have special behaviors:
  - **Join:** When a client sends a Join command, a new thread is launched that handles all communications from that client to the room (list of other clients in the associated room), sending and receiving messages, as well as broadcasting a warning when a client deletes the chat room, and closing all corresponding connections.
  - **Delete:** The Delete function can only be called by a client who is not in chat mode (not in a room), and will call a separate instance of the function used by the client threads to broadcast the warning to all clients in the room, and then close all connected sockets. The available rooms and clients connected to the server reflect these updates dynamically.