P2P Chatroom Using Sockets in C++

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For our final project we decided to do a chatroom application using a peer to peer structure. This means we had to find a method to make the room server not run on a dedicated computer. So instead we had one of the clients act as server hosting the messages for the room. When a room is created the client that requests the creation logs its IP information on an entry server and creates a thread acting as a server for the room. Then each subsequent room requests the information by room name from the static server and requests to connect to the chat room.

From here on the static server isn’t used, and all communications take place between the clients. When any client (including the host) wishes to send a message, a string containing a marker character, the username, and the message is sent to the host who then distributes the message to the other clients by iterating through a hash map of their IP information. The messages sent between peers are sent using a UDP connection to minimize the number of threads needed for listening on the host peer.

Further plans to make this project better include using symmetric key encryption using the password to increase the security of the room, not by denying access but by allowing all messages to be scrambled, creating a GUI for easier usage, host migration so the host peer can leave without having to create a new room, and adding file sharing capabilities.