Chatty Room is a web application that a user can:

1. Type in their name when they first arrive. Users cannot have the same name as a person who is already in the room.
2. Enter just one single room where people can chat
3. People can send messages, images, pdfs, and emotes
4. Once the user exits, they will exit from the chat room (notifies the chat as well that some person has left)

Technologies and concepts to be learned: multi-threading (concurrency), socket programming, server-side scripting, front end, and back end (using Python -> Flask for web application, HTML, CSS, Jinja (web template engine for Python))

Code Architecture: We will build the website through using Flask, building a front-end using HTML, CSS (possibly Bootstrap), and JavaScript.

Folders -> Website folder for a Python package containing all of the web application code and files, Tests folder containing the testing modules and testing of code

Database / Storage: the database (possibly SQLite) will store the current logs / state of messages. It will refresh and delete past messages after a 24-hour period.

What is a socket programming?

A means of communicating data between two computers across a network.

Connections can be made using either a connection-oriented protocol or a connection-less protocol.

What is a socket?

A socket is a one endpoint of a two-way communication link between two programs running on the network. A socket is bound to a port number so that TCP layer can identify the application that data is destined to be sent to.

How does the application work?

Client main functions: send messages to the server, receive messages from server

Server main functions: Keep listening for any new client connections, receiving messages from the clients, sending messages to other clients

Flow of application:

Server starts with IP address and port -> Client tries to connect to the server -> server accepts the connection -> client and server start listener thread -> user sends a message -> server sends the message to all clients, server sends the same message to the client as well

The server will keep listening for any messages from any client.

What is flask-socketio?

Flask-socketio gives Flask applications access to bi-directional communications between the clients and the server. I could have used the standard socket module, but Flask-socketio is an easy and great tool to use to give us that connection.