

# **Developer's Manual**

## **Client Side Code (client.py)**

- The chat\_client() function is the main function that incorporates the functionality.
- Initially we check for proper arguments and assign host address as first argument and port number as second.
- We then connect to remote host and on failure(if so) we send a message and exit.
- This is followed by authentication of the client.
- The data is converted to json format so that it can be sent over the TCP socket.
- The maximum data size that it can receive is 4096 bytes. (Can be changed by the recv function of the socket in the client code)
- Till the time the client is not authenticated we try again.
- Once authenticated the client is taken to the main screen and the details are sent to the server. The server responds by giving the message instructions to the client.
- The global variables user\_list, group\_list and flag\_user\_group are used for the list of users and groups to which we are sending and the flag is for checking whether the message that we are sending is for a particular group or not.
- Socket\_list is a list of 2 elements containing socket of text over terminal and socket which is opened over the server for this particular client
- We are using select because it helps in giving a list of sockets which are sending data to the user.
- Messages are read from the terminal using the readline function.
- Following this, there are commands which the client uses to communicate with the server and perform several functions.
- Whenever the client enters some data into the terminal enters, sys.stdin changes
- The chat\_client() is then started.

## **Server Side Code(server.py)**

- Whenever a new connection request arrives then the server accepts it and then calls the recv function.
- The message that it gets has the attribute action which is authenticate for the first time.
- The chat\_server() function is the main function used on the server side.
- Corresponding to each command used by the user there is an attribute action. This is checked in the various if conditions.
- Depending on the value of the attribute, a suitable action is performed.
- The sendusers and the sendgroups functions are used as helper functions to send messages to individual users and groups respectively.

## Database Implementation(database.py)

- There are five main tables in the database file.
- The first of those tables is userlist. This basically lists down the attributes of the client, namely username, last seen, online and the socket number. Corresponding to every socket(every client), there is a socket number.
- Second we have the grouplist table which assigns a unique row id to each groupname. This helps resolve any conflicts that arise out of non-unique group names.
- The group\_user table is used especially to create a mapping between the clients and the groups that the client is in. Hence it has  $\Sigma num\ of\ clients\ in\ each\ group$  number of entries. This is accomplished with the help of foreign keys to the userlist and the grouplist tables.
- The message list and the file list tables are quite similar and are used for storing the message history and the file history of the client.