Instructions for the Server Side

- Before starting the server, the database for the chat application must be created. This is done by running the command '*python3 database.py'*.
- Replace the IP address of the server in the server.py file to the current IP address. At the moment it is set to the loopback address.
- Following the creation of the database, the server is started. This is done by running the command '*python3 server.py'*. This starts the server of the chat application. If the server is successfully started, the message '*Chat server started on port 9001*' is displayed.
- This concludes operations on the server. Further the clients will contact the server and all operations are handled internally.

Instructions for the Client Side

- The client must establish a connection to the server. Consider the IP address of the server to be XX.XX.XX.XX. The port in use at the server is 9001. The above connection is established by '*python3 client.py XX.XX.XX.XX 9001*'.
- Eg. If the server IP address is 10.42.0.1, then the command is *'python3 client.py 10.42.0.1 9001'.*
- After the above command is run, the client is prompted for login credentials. At the prompt '*Enter LDAP id ->*', the client is expected to enter it's LDAP username. Following this, the client is prompted for the password '*Enter password ->*' on which the password should be entered. If the client is authenticated, the message '*You are authenticated. You can begin to chat!* ' is displayed. If not authenticated the message '*Incorrect LDAP credentials*' is displayed and the client is prompted for the credentials until successful.
- Following the authentication of the client, the client is able to chat with the other registered users of the chat application with the aid of the below mentioned commands:
  - **<--exit-->** This command is used if the user wishes to terminate the chat client. It has no parameters. Eg. <--exit-->

  - **<--help-->** This command is used when the client requires help regarding the commands used in the chat client. Eg. <--help-->

  - **<--main-screen-->** This command is used to bring the screen of the client back to the screen (The screen seen after the client is authenticated). Eg. If the client wants to go the main screen then the command used is '<--main-screen--> '.

  - **<--send-to-users-->** This command is used if the user wishes to send a message to one or more than one users(Note that more than one users here does not imply that it is a group). The command has the list of users as a parameter. Eg. If the user wishes to send a message to client1 and client2, the command would be <--send-to-users--> client1 client2. Once this command is entered, the user is prompted for the message to be sent.

- **<--send-to-groups-->** This command is used if the user wishes to send a message to one or many groups. The command has the list of groups as a parameter. Eg. If the user wishes to send a message to the groups group1 and group2, the command would be <--send-to-groups--> group1 group2. Once this command is entered, the user is prompted for the message to be sent.

- **<--add-users-to-group-->** This command is used if the user wishes to add another user to a group the said user is already present in. This command has two parameters namely the name of the group in question and the list of users to be added(One or more). Eg. If the group in question is group1 and the users to be added are client1 and client2, then the command would be ‘<--add-users-to-group--> group1 client1 client2’.

- **<--create-group-->** This command is used if the user wishes to create new groups(One or more). The command has one parameter namely the list of groups. Eg. If the user wishes to create the new groups group1 and group2, the command would be ‘<--create-group--> group1 group2’.

- **<--leave-group-->** This command is used if the user wishes to leave groups(One or more). The command has one parameter, namely the list of groups the user wishes to leave. Eg. If the client wishes to exit the groups group1 and group2, then the command would be
‘<--leave-group--> group1 group2’.

- **<--show-messages-group-->** This command is used if the user wishes to see the previous messages in the particular group. The command has two parameters, namely the number of messages to be seen and the name of the group in question. Eg. If the user wishes to see the latest 10 previous messages in the group ‘group1’, then the command used would be
‘<--show-messages-group--> 10 group1’.

- **<--show-messages-user-->** This command is used if the user wishes to see the previous messages sent to a particular client. The command has two parameters, namely the number of messages to be seen and the name of the client in question. Eg. If the user wishes to see latest 10 previous messages in the chat conversation with the client client1, the command would be <--show-messages-user--> 10 client1.

- **<--show-all-groups-->** This command is used if the user wishes to see the list of users present in the list of groups the said user is present in. This command does not have a parameter. Eg. If the user wishes to see the list of users present in the list of groups the said user is present in, the command would be '<--show-all-groups-->'.

- **<--show-specific-group-->** This command is used if the user wishes to see the number of users who are online and present in the group in question at the current time. This command has one parameter namely the list of groups. Eg. If the user wishes to see the number of users online in the groups 'group1' and 'group2', then the command would be '<--show-specific-group--> group1 group2'

- **<--show-all-users-->** This command is used if the user wishes to see if other clients of the chat application are online or otherwise. If a particular client is not online, then the last seen time of the client is displayed. Eg. If the client wishes to see the last seen status of all the registered users the command would be '<--show-all-users-->'.

- **<--show-specific-group_id-->** This command is used if in the command '<--show-specific-group--> ' the user is present in two groups of the same name, with possibly different users in both the groups. In that case the user is given the number of users present in either group and is asked to enter a specific number which is a unique group identifier also displayed to the user. This group identifier is the parameter of this command. Eg. If the unique group identifier of the group in question is 5, then the command would be '<--show-specific-group_id--> 5'.

- **<--send-multimedia-to-users-->** This command is used if the user wishes to transfer multimedia files to other users. The files transferred could be of varying formats like .pdf, .zip, .tar.gz, .png, .py, etc. This command has one parameter namely the user to which the file is to be transferred. Eg. If the user wishes to transfer the file 'default.pdf' to the client client1, then the command would be

‘<--send-multimedia-to-users--> client1.

Once this command is entered, the user is prompted for the file name of the file to be transferred. Considering the above example, the user would enter default.pdf twice. i.e the user would be prompted twice to enter the file name (Which quite obviously should be the same). Please note that this is a slightly buggy implementation and has been placed in a separate folder, with the same instructions as the above.

The files in the folder are run as python3 server.py and python3 client.py. The file name is inputted twice as above. This is placed in the multimedia directory.

- The above list summarises all the commands in the chat application. It is advised to follow the format as described above to avoid unexpected behaviour and any unwanted errors that may creep in.
- If the user wishes to not carry out a command after typing out the command then do use the **<--main-screen-->** command to start afresh.