**Overview:**

This protocol describes a chat system involving one server and multiple users.

**Sections:**

1. Users
2. Channels
3. Messages
4. User commands
5. Operator commands
6. Server commands

**1- Users.**

1.1 - Unique nickname/identifier

When a new client/user connects to the server, the server will prompt the user to enter a unique nickname by sending the Prompt username command (6.1). The client will respond with a string; the string may not begin with a (!), (/) or (.) character, as these prefixes are reserved for commands. Nicknames are not case sensitive and may not contain spaces. They can contain lowercase and uppercase a-z as well as numbers 0-9 and underscores (\_).

If the username is not unique or does not follow the above rules, the server will respond with the Prompt new username command (6.2). This continues until the user finds a unique nickname.

Once the user finds a unique nickname, the server sends the “List available commands” command (6.3).

1.2 - Users

This is the default type of users. These users can send plain messages (3.1) and also use User commands (4).

1.3 - Operators

Some users may be operators, these operators have access to additional commands that regular users to not have access to use (5). This is to control help the server and get rid of any users causing issues. Operators also have access to all user commands.

**2 - Channels.**

2.1 Channel names

Each channel will have a unique name. Channel names are stored in strings and will begin with the octothorpe (#) character. This is to distinguish them from other string. E.g:

#General

#Code

#Help

**3 - Messages.**

3.1 - Sending a message

Messages can be sent from the client to the server. All messages are sent containing the unique identifier of the user and the message the user is sending. The message may not begin with a (!), (/), (#) or (.) character. If the message does not begin with one of these characters (and is therefore not a command), the server will print the user’s unique identifier followed by a colon, a space and then the message.

Nickname: Message

**4 - User commands**

All commands will begin with an exclamation mark (!) character. This is to distinguish them from regular messages; if a message begins with a ! the server recognises it as a user command.

4.1 - Switching rooms

The user can be in only one room at a time. In order to switch a room the user will send a message which begins with the (!) character followed by the word “join”, a space and then the channel name (Including the (#) character).

!join #general

This will switch the user to the room they have specified in the command.

4.2 - Private message

To send a private message to another user, the user will send a message which beings with the (!) character followed by the word “message”, a space then the user’s name. This will open a separate chat with the specified user.

!message nickname

4.3 - Ignore users

Users will have the ability to ignore other users, if a user ignores another user, no messages from the ignored user will be shown to the user who ignored them. In order to ignore another user, the user will send a message which begins with the (!) character, followed by the word “ignore”, and space and then the username of the user they wish to ignore.

!ignore nickname

4.4 - Help

Users can use the Help command to see a list of all commands available to them; this will list all user commands with a short description of what they do. If the user is also an operator, it will also list all operator commands. To send the help command, a user sends a message beginning with the (!) character, followed by the world “help”.

!help

4.5 - Rooms

Users can use the Rooms command to see a list of all available rooms, this will be printed to the clients chat window. To use the Rooms command, the user will send a message beginning with the (!) character followed by the word “rooms”.

!rooms

**5 - Operator commands**

Operators have unique commands which regular users cannot use. These Operator commands begin with a (/) prefix.

5.1 - Mute/unmute users

The mute command allows an operator to prevent a user from being able to send plain messages in any channels. If a user is muted and sends a message, the server will not display/send this messages to other users. Muted users cannot talk in any channels, but can still private message other users. A user will be unable to speak until they are unmuted. Once unmuted, any messages the user sent whilst they are muted will remain hidden and not-visible to other users.

Operators can mute Users but Cannot mute other Operators.

To mute a user, an operator can send a message which beings with the (/) character, followed by the word “mute”, a space and then the user’s name.

/mute nickname

In order to unmute a user, they can follow the (/) with “unmute”.

/unmute nickname

5.2 - Kick users

Kicking a user will disconnect this user from the server. Operators can kick Users but cannot kick other Operators.

To kick a user, an operator can send a message which beings with the (!) character, followed by the word “kick”, a space and then the user’s name.

/kick nickname

**6 - Server commands.**

All server commands are prefixed with a dot (.). This is to distinguish them from User and Operator commands.

6.1 - Prompt username

To prompt a user to enter a username, the server will sent a Prompt username command, this is the server command prefix (.) followed by “USER”.

.USER

This will prompt the user to enter a username.

6.2 - Prompt new username

This will prompt the user to enter a new username if their current one is taken/invalid. This is the server command prefix (.) followed by “NEWUSER”.

.NEWUSER

6.3 - List available commands

When the client receives this command, the client will print in chat all available commands the user in the client. This command is the server command prefix(.) followed by “COMMANDS”.

.COMMANDS