Networking Assignment One

For this assignment I have been tasked with designing and creating an application protocol document for a chat system. The chat system must be a single server that can host multiple users, and allow each users to specify the name they want to use.

The chat system will be relatively similar to chat systems such as Ventrillo and Team Speak 3.0 in their design and commands.

Upon requesting to join the server the first thing that the user will receive is a prompt requesting the entry of a user name. For the user name the user can use any letter or number combination, including both upper-case and lower-case, and also can include an underscore. Any other characters with return in a rejected user name, this will be repeated until the user has a unique user name containing the characters specified.

The users who join the server can be one of two ranks, the first is just a default user, refereed to as User. The second type of user is an admin, refereed to as Admin. The admin is able to use all commands where as the user is only able to use the commands that are available to that rank.

The user ranks are used to specify the permissions and commands that user is able to use. All commands start with the (/) key and all responses from the server use the (#) key. Should the command the client is entering be an error, entered incorrectly, or they are not of the rank required to use it, the sever will use the (!) key in front of the response.

The server will initially have a single room the users will be automatically placed into upon connection to the server, however Admin level users can create new rooms with a command.

For example

/Create\_Room General

The server then responds

#Room\_Created

or

!Invalid\_Permissions (if the user is of rank User)

Rooms should have unique names and the will only allow a user to be in one room at any one time, in order to change room there the following command is used, this command is available to all user ranked.

For example

/Join General

The server respond with

#Successfully\_Joined\_General

or

!Room\_Not\_Found

Once in a room the users can send messages by just typing normally, however no messages can start with any of the keys used for commands (/), (#) (!), and if they are used then the server will respond an error. Should the message fail to send then the server will reply with !Message\_Failed\_To\_Send.

Users can also talk between each other with private messages, these are done using the following command, that is usable by all user ranks.

For example

/Message Bobby\_User don't you love this chat system

The message will display for both users involved and be in a different colour to the default chat, these messages can also be sent to users who are not in the same room, as long as they are both connected to the server.

Should one user no longer want to see the messages from another user then users of any rank can use the command /Ignore. This will prompt a message back from the server and block all communication between the two users. To no longer ignore someone a user can type /Unignore to remove them from the ignore list.

For example

/Ignore Bobby\_User

#User\_Ignored

/Unignore Bobby\_User

#User\_No\_Longer\_Ignored

Should a user try and message a user who is ignoring them then the server will reply with.

#User\_Ignoring\_You

Should this happen then the message sent will not be received and will not show in the chat for either user.

The commands that an Admin level user can use are commands for controlling the server, and will return an error response from the server should a User level user try and use them.

These include the ability to kick, mute, ban and move other users, however these commands cannot be used on other Admin level users.

The kick command will remove the user from the server and display a message for the kicked user, telling them they have been removed from the server.

For example

/Kick Bobby\_User

#User\_Kicked

or

!User\_Cannot\_Be\_Kicked

The message received from the server by the kicked user will say

#Kicked\_From\_Server

The mute command is used to mute that user and prevent them from sending messages in chat and personal messages to other users, however they can still see the chat and receive personal messages.

For example

/Mute Bobby\_User

#User\_Muted

or

!User\_Cannot\_Be\_Muted

The user will receive a message from the server

#You\_Have\_Been\_Muted

The ban command will remove the user from the server and permanently ban them from joining again. In order to unban the user then the Admin can type, the unban command.

For example

/Ban Bobby\_User

#User\_Banned

or

!User\_Unbannable

The user will receive a message from the server

#Banned\_From\_Server

/Unban Bobby\_User

#User\_Unbanned

The move user command is used to force a user to change room, for example this can be used by the admins if they want to talk to someone in private. The admin must use the following order for the command, the command, the user and then the room you want to move them too.

For example

/Move Bobby\_User General

#User\_Moved

or

!User\_Cannot\_Be\_Moved

Should the user already be in that room or should that room not exist the server will respond

!User\_In\_Room

!Room\_Not\_Found

Room permissions are also something that can be set up by the admins, this will allow the admins to create a room that is only usable by the admins themselves. To create an admin room the following command should be used.

For example

/Create\_Admin\_Room Admin\_Only

#Room\_Created

Should a normal user try and join one of these rooms the server will respond

!Invalid\_Permissions

However an admin can move a user into a channel of this type using a move command.

The final command, which is available to anyone, will list the rooms available. This command will also state whether the rooms are admin only.

For example

/Rooms

#General

#Admin\_Only (Admin)

References:

Kalt, C. "RFC 2812 - Internet Relay Chat: Client Protocol". *Tools.ietf.org*. N.p., 2000. Web. 1 Dec. 2016.