

CS594 Internetworking Protocols
Internet Relay Chat project
RFC

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1. Introduction:

This RFC stipulates a protocol that enables inter-client communication. Users can create, join, and leave rooms as well as send personal messages to other users, with a server that sends and receives messages from various users. Any message sent by one user is received by all the users in the room if the room contains a group of users.

2. Server and Client:

A single server operates as the core of this IRC and serves as the connection point for all clients. The purpose of this is simplicity. The client's name, which is used for its identification, may contain alphanumeric characters and special characters.

3. Functionality:

The application's principal objective is facilitating client-to-client communication through server-created and -joined rooms and additional options including giving a list of rooms, exiting a room, and sending private/direct messages.

4. Way of communication:

Rooms and one-on-one chats are the primary means of communication. The server will receive messages sent by users in the room and distribute them to everyone else in the room, except the sender.

5. Features:

5.1 Guide:

A guide for users to navigate their way through the application is available.

Usage: \$guide

Response: Displays the user command guide as follows:

User Command Guide

\$rooms: Gives a list of rooms you can join

\$join <room_name>: To join an existing room or start one

\$dm <user_name>: To have a private conversation with another user

\$switch <room_name>: To switch between rooms

\$leave <room_name>: To leave a room

\$exit: To exit the application

If you have already joined a room, you can go ahead with your messages.

5.2 Listing rooms:

A list of available rooms is provided for user's' reference.. An alternative message will be shown when there are no created rooms.

Usage: \$rooms

Response: <List_of_rooms>

5.3 Creating rooms:

The first client/user will be the one to create the first room, as there will be no existing rooms initially. This name of the room will be seen by the remaining clients who can join it and interact with each other.

Usage: \$join <room_name>

Response: Welcoming <user_name> to room <room_name>

5.4 Joining rooms:

Any user will be able to join and access their room of choice among the listed rooms when they are open. Everyone in the group will be aware of the new user and can initiate a conversation once contact has been established.

Usage: \$join <room_name>

Response: Welcoming <user_name> to room <room_name>

5.5 Direct Messages:

The users can message other users privately.

Usage: \$dm <user_name>

Result: Lets the user message another user of their choice.

5.6 Switching rooms:

The users can switch between the rooms as they wish.

Usage: \$switch <room_name>

Result: The user switches to the mentioned room.

5.7 Leaving rooms:

Participants in the room will have the option to depart at any moment of time using a given command.

Usage: \$leave <room_name>

Response: <user_name> left room <room_name>

5.8 Exiting the IRC:

The users can exit the application at their own accord.

Usage: \$exit

Response: Exiting the server

6. Handling of Errors:

- The client will not be permitted to send messages if there is no existence of that room or if the user attempts to link to a room that they are not a participant of.

Handler: NotPresentInRoomError

- Each client will be logged off and a text will be displayed to them signifying that server is not available, in the event of server crash.

Response: Sorry for the convenience, the server is down.

- A note will appear saying that the requested user is not found when someone attempts to talk to a user who either does not exist or whose name is entered incorrectly.

Handler: InvalidUserError

- We have integrated an indication to the user with an error message which will be displayed whenever a user tries to exit a room that they are not a part of.

Handler: WrongRoomLeaveError

- The user will have to conform to the application command syntax. Invalid commands entered are handled by directing the user to the command guide.

Handler: InvalidCommandError

- Users switching between non-existent rooms isn't allowed. The users can switch to any existing rooms of their choice.

Handler: InvalidSwitchError

7. Security Considerations:

The messages shared on this application are unencrypted, vulnerable to inspection, tampering and can be subjected to misuse. Redundant users can pose a threat via impersonation.

8. Conclusion and future work:

This IRC application serves the purpose it was intended: To facilitate communication between various users. Further developments can be made by incorporating multiple servers for handling concurrent requests, encrypting messages for conversational privacy, A graphical user interface (GUI) for application aesthetics.