



Chesster Chat

An instant messaging application with an integrated chess game

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Glossary

Account: Stores user's personal info.

Client: The user that initiates a message by sending a request to the server.

Command line: Where one enters a command that Linux will execute.

Contacts: A list of other users that you are friends with.

Emoji: An image that conveys a feeling or object.

Friend: A user that you are able to chat with.

Log in: In order to access your account, you have to provide your credentials (username and password) to send and receive messages.

Linux: An open-source operating system based on the UNIX architecture.

Multiplayer: More than one player.

Online status: Displays whether or not a user is online.

Password: A string of characters that allows access to an online service.

Server: The user that handles the client's request and passes that message to another user.

Sockets: A particular endpoint for sending and receiving data over an internet network.

User: One who is able to use the chat program.

Username: An identification used by the user in order to access their account.

1. Instant Messaging

1.1. Usage scenario

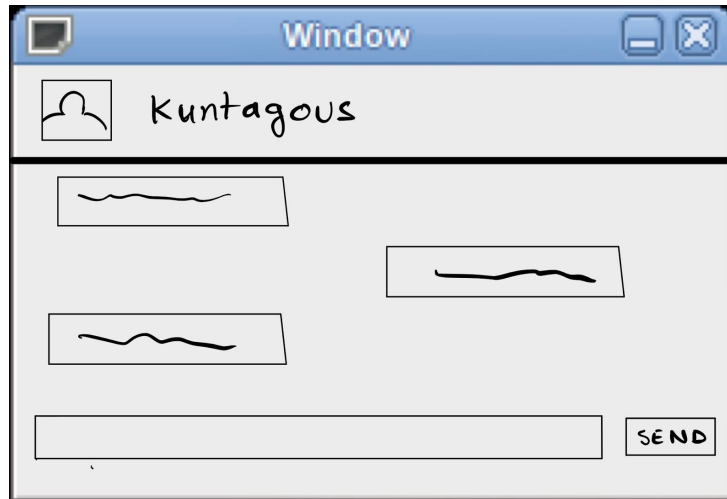


Figure 1: Main chat screen

The screenshot in *Figure 1* is an illustration of a typical chat, with the user profile at the top, a button on the left side that initiates chess, and messages flowing in from the other user on the left hand side of the screen, with messages from the current user coming in on the right hand side. A text composition window and a send button is shown on the bottom.

1.2. Goals

- Extend the chess game that was created by adding a multiplayer functionality over a network.
- Create a chat application, in which a user can send messages and react to other users' messages.
- Integrate a single-window chess program that updates in real time based on the moves that players make.

1.3 Features

- Allow the user to sign up for a chat account and log into their chat account.
- Allow the user to add friends to their contacts and be able to chat with their friends.
- Allow the user to remove friends.
- Allow the user to accept and decline friend requests.
- Allow users to play a game of chess through the chat.
- Allow the user to see if their friend has read their message.
- Allow the user to see their friend's online status.
- Allow the user to send photos and emojis.
- Encrypt messages to prevent abuse.

2. Installation

2.1. System requirements

- Linux environment with support for command line interface
- Processor with x86 architecture on server running in Linux environment
- Minimum free disk space: 1 GB
- Minimum memory: 512 MB

2.2. Setup and configuration

1. Open a window in your preferred Linux terminal program.
2. Using the command line, search through your filesystem to find the folder with the archive file. For example:
`cd computer`
`cd downloads`
3. Extract the software file from the archive file using the following command:
`tar -xvzf P2_V1.0.tar.gz`
4. Run the program:
`cd ChatFinalUser/bin`
`./Chess`

2.3. Uninstalling

1. Open a window in your preferred Linux terminal program.
2. Using the command line, search through your filesystem to find the ChatFinalUser folder.
3. Delete the program folder using the following command:
`rm -rf ChatFinalUser`

3. Functions and Features

3.1. Detailed description of client-server communication

Chatting with another user:

User input: A text-based message to send to another user.

Program output: If the other user replies, a message will be shown on the current user's screen.

See *Figure 1* for a screenshot of the chat interface and more information. This interface allows the user to send text-based messages to other users. The user initiating a message is called the client, and their message is transmitted to the server securely and over the designated socket. Then, the server uses the same socket to transmit that message to another client, namely, the client that the current user is chatting with. The same process is repeated in reverse when the recipient chooses to send a reply.

3.2. Detailed description of login and registering algorithms

Login:

User input: A valid username and its corresponding correct password.

Program output: Window that leads to the chat application via the friends screen, or an error.

See *Figure 2*. Clicking “Login” will login a user based on the credentials they have entered, if they are valid.

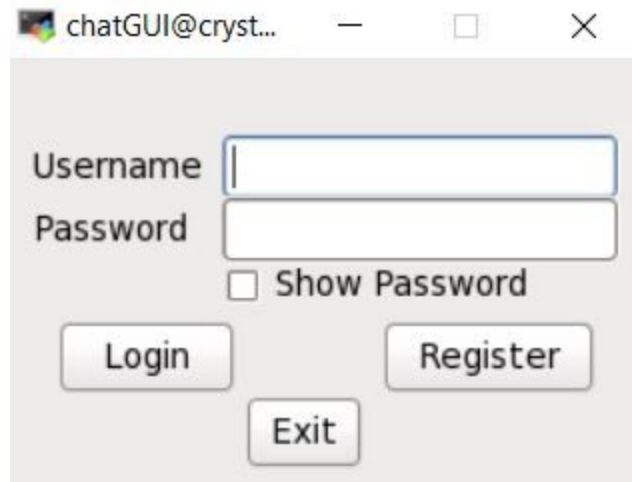


Figure 2: Launch screen with login, register, and exit options

Registering:

User input: A new username and password.

Program output: Window that leads to the chat application via the friends screen, or an error.

See *Figure 2*. Clicking “Register” will register a user based on the desired credentials they have entered. If the username a user desires matches that of another user, or if the username and/or password contain invalid characters, the program will output an error (see the Error Messages section for more details).

Adding/Removing a Friend:

User input: User ID of the user you want to add/remove.

Program output: Sends target user a friend request or removes them from current user’s friends list.

Figure 3a shows the current user's list of friends, with options to play one of them in chess or just chat them. Figure 3b shows the window that allows a user to add a friend (or remove a friend).



Figure 3a: Friends list

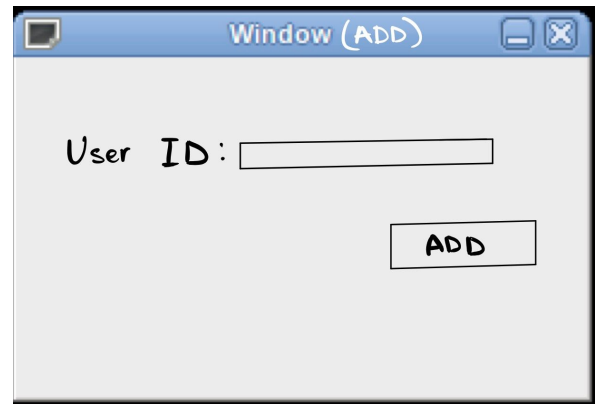


Figure 3b: Adding screen

3.3. Detailed description of chess game integration

User input: Click on the chess button during a chat (see figure 1, chess button will be implemented).

Program output: Playable chess game.

Figure 4 shows the (interim) chess board setup for playing chess while chatting with another user. The chess game will open in another window which operates concurrently to the current chat. Please see the *Chesster User Manual (for the chess program)* for more detailed information about the chess program.

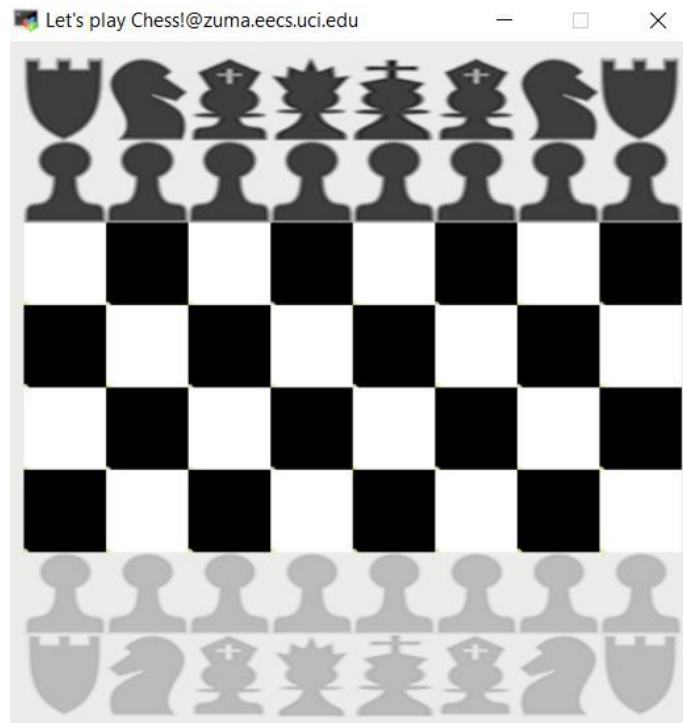


Figure 4: Chess board setup

Copyright

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Error Messages

To see all chess-related error messages, please see the Chesster User Manual (for the chess program).

“The username you have provided is already taken.”

You will encounter this error if you are registering for an account (see section 3.2), but your desired username matches that of an existing user. At this point, the program will prompt you to either log in as that user or create a new account with a different username (that is not taken).

“You have entered an invalid username or password. Please try again.”

You will encounter this error if you are logging in with a username that does not exist or entered the incorrect password for a username that exists. Also, when registering, this error may occur if you enter a username that is invalid (such as one that starts with a number) or password that is blank. The program will at this point prompt you to enter a new username and password for logging in or registering.

“Unable to reach the server.”

You will encounter this error if your internet connection is lost, or your client connection with the server is lost.

“The other user has left the chat.”

You will encounter this error if the user you are chatting with has logged out or otherwise terminated their chat program. At this point, you will not be able to chat with them until they return online.

“The friend username you entered does not exist. Please try again.”

You will encounter this error if the username of the user you are trying to add as a friend is invalid. At this point, the program will prompt you to enter a different username.

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