

# Kings of Chess

Version 3.1



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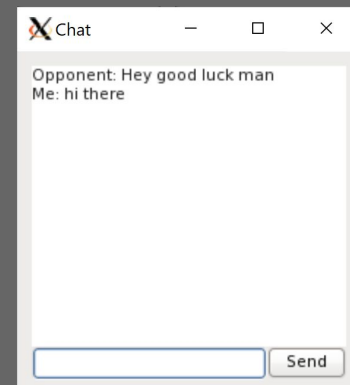
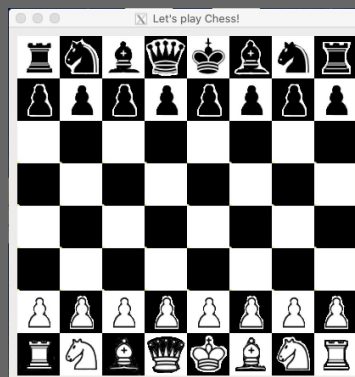
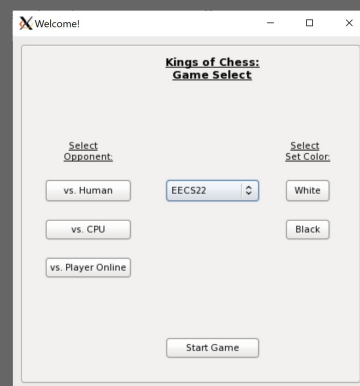
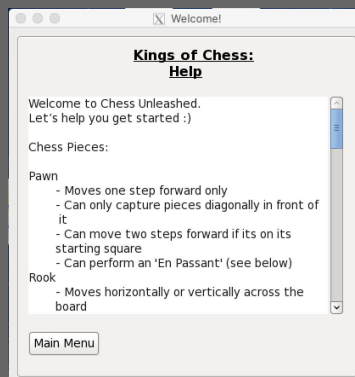
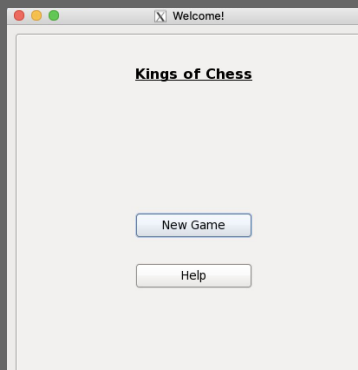
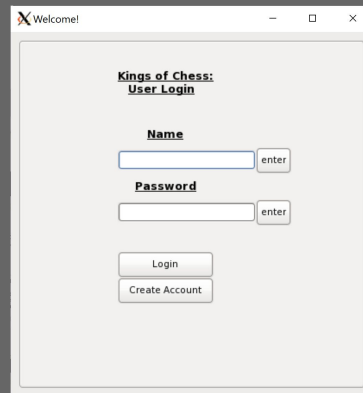




# Chess Kings

## Usage Scenario of App:

This is an example of what standard gameplay will look like. A player will login or create an account. Then they will select a new game and select their set color and their opponent. Then they will take turns playing against their opponent until the game is completed or the player quits the game. While playing, the user can also view their previously made moves as well as chat with the other opponent.



## Usage Scenario Provider:

This is an example of what the server side should look like when starting up. Login credentials should show up and if failed a notification will pop up on the server side. Messages passed between two clients should also be shown as well as moves when a game is running.

```
./ChessServer
Chess Kings: Starting...
Chess Kings: Using port 15000...
Chess Kings: Creating a socket to serve clients...
Chess Kings: Preparing the server address...
Chess Kings: Assigning the server name to the socket...
Chess Kings: Listening on port 15000...
Chess Kings: Accepted connection from client.
Chess Kings: Sending greeting: hello.
Chess Kings: Received message: WHITE (4, 1) -> (4, 2)

WHITE (4, 1) -> (4, 2)

server echo WHITE (4, 1) -> (4, 2)
Chess Kings: Sending response: server echo WHITE (4, 1) -> (4, 2).
Chess Kings: Received message: bye

server bye
Chess Kings: Sending response: server bye.
Chess Kings: Received last message from client, closing data connection.
Chess Kings: Accepted connection from client.
Chess Kings: Sending greeting: WHITE (4, 1) -> (4, 2).
Chess Kings: Received message: bye

server echo
Chess Kings: Sending response: server echo .
Chess Kings: Received last message from client, closing data connection.
Chess Kings: Accepted connection from client.
Chess Kings: Sending greeting: WHITE (4, 1) -> (4, 2).
Chess Kings: Received message: WHITE (3, 6) -> (3, 5)

WHITE (3, 6) -> (3, 5)

server echo WHITE (3, 6) -> (3, 5)
Chess Kings: Sending response: server echo WHITE (3, 6) -> (3, 5).
Chess Kings: Received message: bye

server bye
Chess Kings: Sending response: server bye.
Chess Kings: Received last message from client, closing data connection.
Chess Kings: Accepted connection from client.
Chess Kings: Sending greeting: WHITE (3, 6) -> (3, 5).
Chess Kings: Received message: BLACK (2, 1) -> (2, 2)
```

## Goals

Primary Objective - To be able to play a game of chess with real-time communication with your opponent

Secondary Objective - To capture your opponent's king, putting it in a checkmate and avoid your own king from getting captured

## Features

- Fully Functional Online Gameplay
- Instant Messaging Capability
- Human vs Human
  - Offline and Online Opponents





# Installation

## System Requirements

- Windows, Mac, or Linux OS
- GCC Compiler
- Math Library
- Stable Internet Connection
- Storage space to store game files
- Access to the UCI EECS Servers

## Setup and Configuration

Game:

Load up your GCC Compiling software.

Create a directory to hold the project (if desired).

Download the game .tar package into your desired folder.

Extract all the game files from the .tar package

- `gtar -xvzf Chess_Kings.tar.gz`

Read the readme if you need additional help

- `vi README.md`

Go to the bin folder

- `cd bin`

Now you can run the game whenever you want from bin folder by typing

- `./ChessKings`

Provider:

Load up your GCC Compiling software.

Create a directory to hold the project (if desired).

Download the game .tar package into your desired folder.

Extract all the game files from the .tar package

- `gtar -xvzf Chess_Kings.tar.gz`

Read the readme if you need additional help

- `vi README.md`

Go to the bin folder

- `cd bin`

Now you can run the server whenever you want from bin folder by typing

- `./ChessServer`

## Uninstalling

Go to the root directory (if you are in /bin)

- `cd ..`

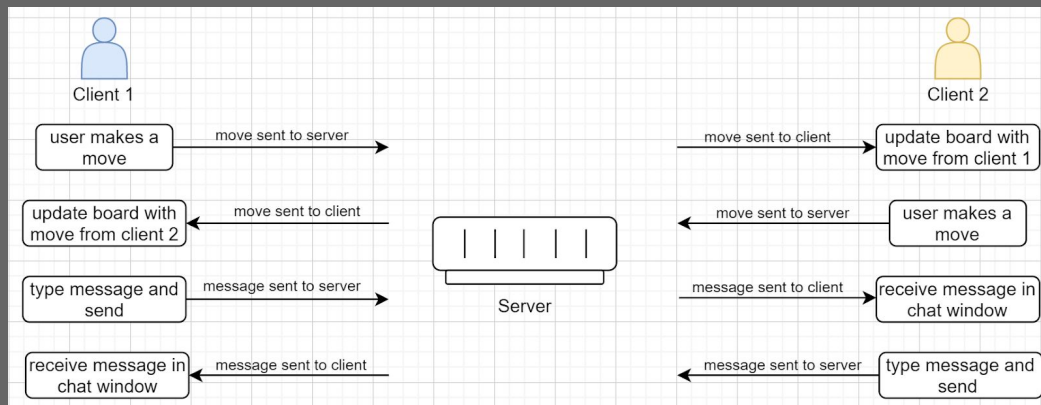
Remove generated game files

- `rm -rf *`

# Chat Functions and Features

Basic Function Calls:

Communication Flow:



Login Menu:

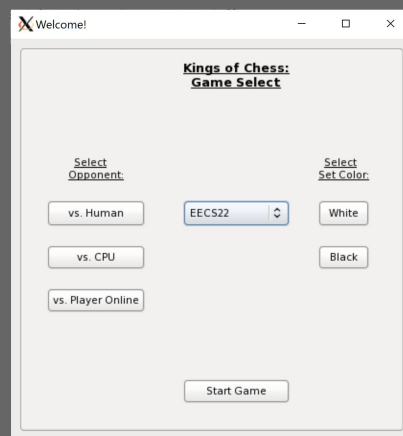
The screenshot shows a window titled 'Welcome!' with a login form. The form has the title 'Kings of Chess: User Login'. It contains two input fields: 'Name' and 'Password'. Each field has an 'enter' button next to it. Below the input fields are two buttons: 'Login' and 'Create Account'.

- Username/Password:
  - Input:
    - Username: Plain-text Field Input
    - Password: Hidden-text Encrypted Field Input
  - Output:
    - None
- Login:
  - Input: Button Click



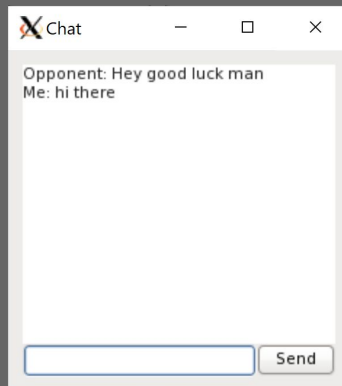
- User Not Found: Will notify the user that the contact to be added does not exist, and will prompt the user to try again.
- Delete Contact
  - Input: Button Click
    - Creates a popup in which the user can enter another username to delete from their contacts
  - Output: Removes the contact from the user's contact list
  - Error:
    - User Not Found: Will notify the user that the contact to be added does not exist, and will prompt the user to try again.

#### New Game Menu (Online Version):



- Select Opponent:
  - Input: Clickable Dropdown Menu
    - Select your opponent from a list of contacts
  - Output: None
- Select Set Color:
  - Input: Button Click - Select Black or White
  - Output: None
  - NOTE: This function is only valid for the user starting the game, the opponent will automatically be assigned the other color
- Start Game
  - Input: Button Click
  - Output: Starts New Game
  - Error
    - Invalid Server Connection: Will notify the player that the server is down and return them to main Login Screen

## Game Chat:

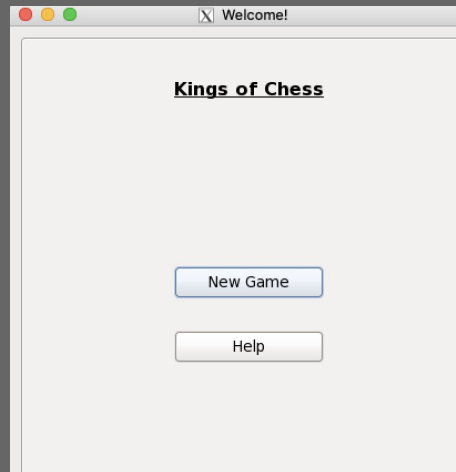


- Send Message:
  - Input:
    - Single Line Text Field Input
    - Send Button
  - Output: (FOR BETA: The chat message is sent to server, but not back to opponent)
    - Sends a Message to the Opponent and Displays it in the Chat Box
- Errors:
  - Invalid Server Connection:
    - Will notify the user that the server connection is not working

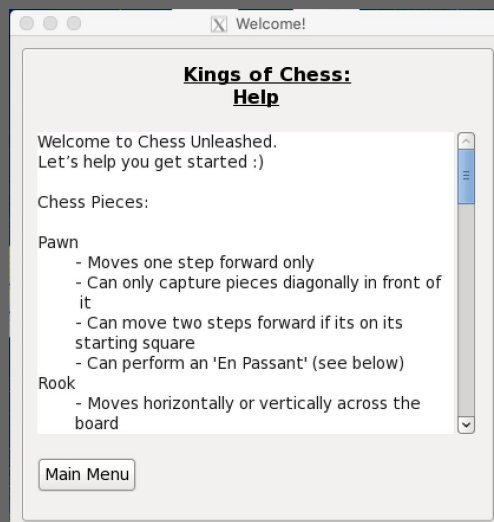
# Chess Functions and Features

Basic Function Calls:

Menu (Offline)



- Start Game:
  - INPUT: Select Buttons
    - Users will press New Game to start a game, which will lead them to the game select menu
    - Users will press Help to enter the help screen
  - OUTPUT:
    - Move onto Game Select menu or Help menu



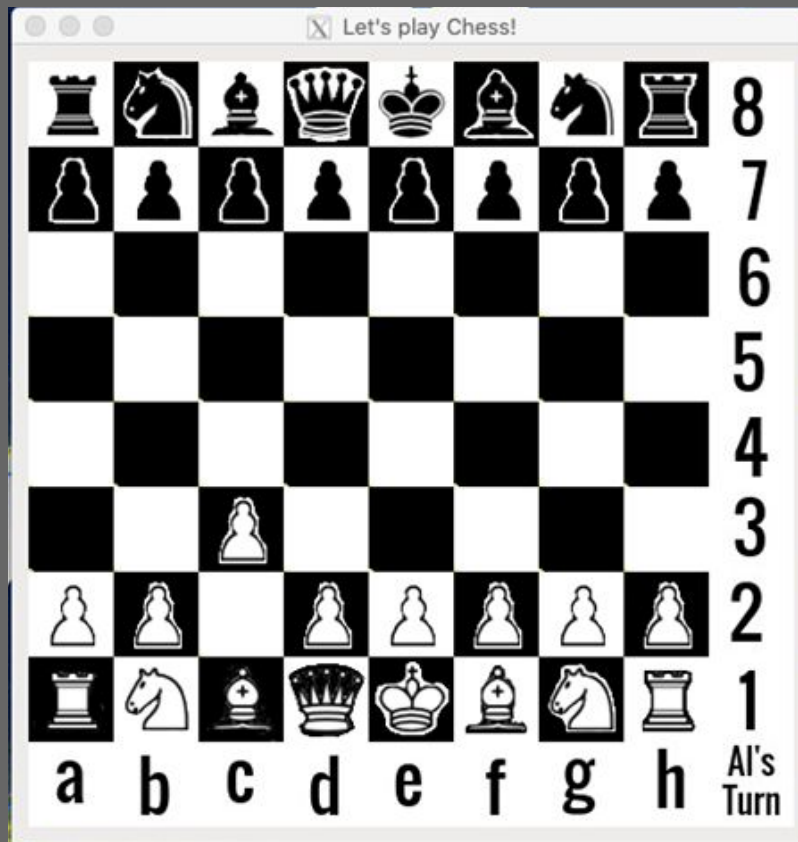
- Help:
  - A list of Chess Pieces, Terms, and Special Moves
  - INPUT: Press Main Menu to Exit

- OUTPUT: Return to Main Menu



- Set Color Select: Player decides if they want to play as White or Black
  - INPUT: Press White or Black
  - OUTPUT: None
- Opponent Select: Player selects who they want to play against
  - INPUT: Press Human to play against a Human Opponent or CPU to play against the CPU
  - Press Start Game to start playing
  - OUTPUT: None
- Difficulty Select: Player sets the difficulty of the AI
  - Input: Click on Easy, Medium, or Hard
  - OUTPUT: None
- Start Game: Button to start the game
  - INPUT: Click the Start Game button after clicking other menu buttons to select opponent, color, and difficulty
  - OUTPUT: Starts Game

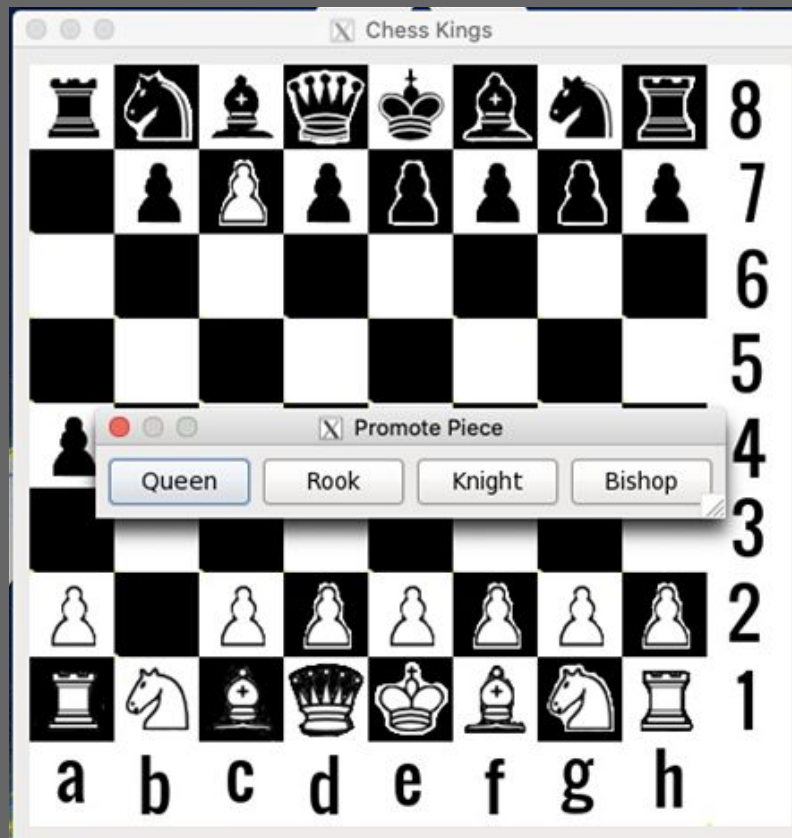
## Game



- Piece Select: Player selects what piece they would like to move
  - INPUT: Click the piece you want to move
  - OUTPUT: None
- Move Piece: Player selects what position they would like to move to
  - INPUT: Click the square you want to move to
  - OUTPUT:
    - Piece is moved
    - If the piece captures another piece when it moves, a capture message is displayed "(PIECE 1) has captured (PIECE 2)"
  - ERRORS:
    - Illegal Move Error: will result in a redo of the move
- AI Move: When the player desires the AI to make its move
  - INPUT: Click the AI's Turn square in the bottom right
  - OUTPUT:
    - Piece is moved



- If the piece captures another piece when it moves, a capture message is displayed "(PIECE 1) has captured (PIECE 2)"



- Promote: If a pawn reaches the 8th rank, then player can choose what piece to promote to
  - INPUT: Click on piece type you wish to promote your pawn to
  - OUTPUT: Piece is changed to the desired piece type
- En Passant: Pawn is able to capture another pawn that just double stepped "in passing" as if it only moved one space.
  - PRECONDITIONS: opposing pawn just double stepped right next to a pawn
  - INPUT: Click the pawn you want to use to capture, then click the diagonal square that the opposing pawn just double stepped over.
  - OUTPUT: Pawn moves to the diagonal square and captures the opposing pawn past it.







