Team 13 User Manual

Version: v 2.0.0
Beta Release

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EECS 22L

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Glossary

Add User - function where user can add other users to their contacts list

Contacts List - a list of users maintained by the server to keep track of who added who using the "Add User" function

GUI (Graphical User Interface) - allow users to interact with electronic devices through graphical icons and indicators instead of command labels.

GTK (GIMP Toolkit) - free and open-source cross-platform widget toolkit that is used to create graphical user interfaces

Instant Messaging - online chat function that allows for real-time text transmission. Short messages are transmitted over the server and sent back with little to no lag.

Log in - user enters information from registration and server checks if information matches original registration information.

Register - user enters information and a record is sent and kept on the server
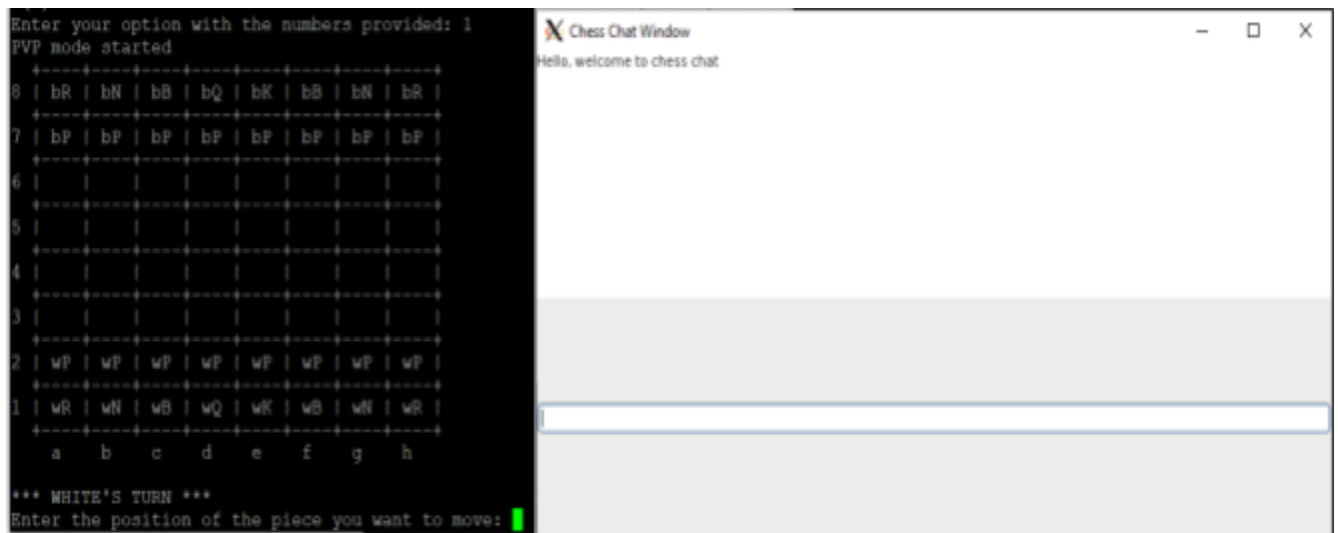
Usage Scenario - An example of how our software will run from the user's perspective

Usage Scenario
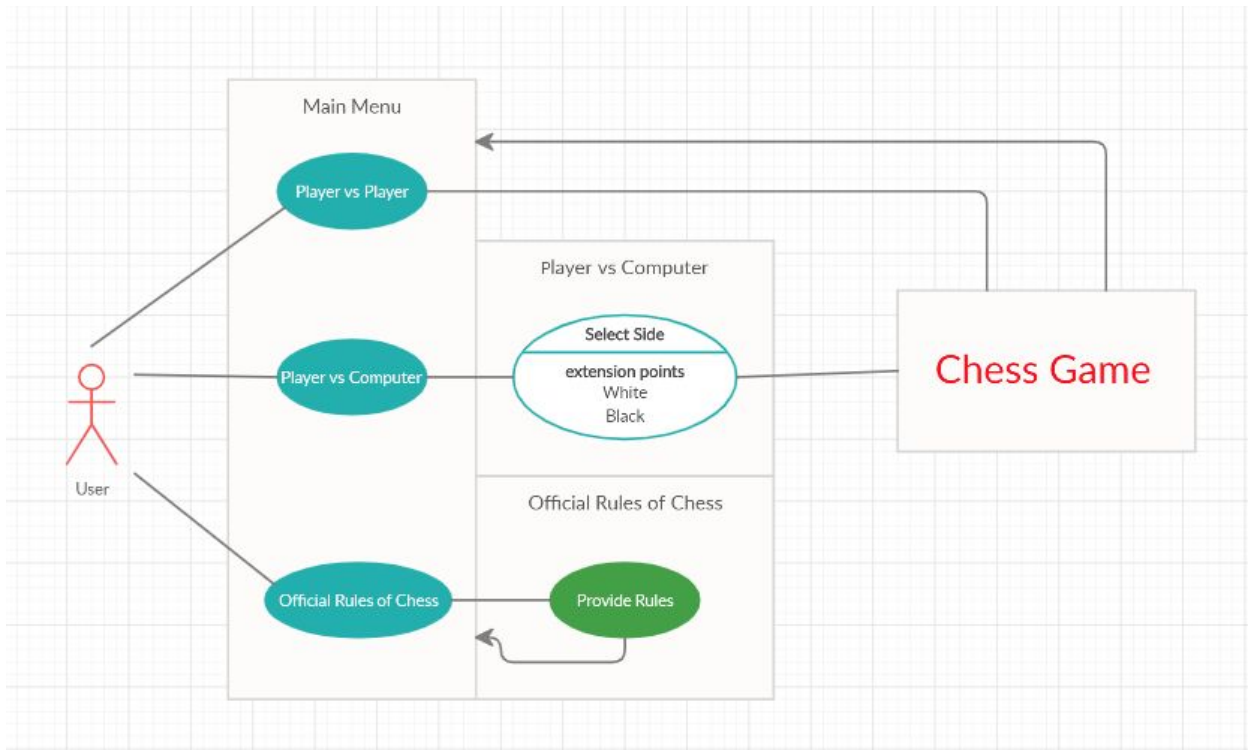
Chess Program Use Cases drawn on *creately.com*.

- Same use cases as Project 1 but chat functions are on another window during game

Goals:

- Extend the functionality of Project 1's Chess Game to include multiplayer features
- Enable chat and account creations
- Users are able to add each other to their contacts
- Manage a server that waits for queries by users
    - Sends back a response upon user input
    - Stores all information about users (username, password, IP address, port number)
- Implement GUI using GTK functions

Features:

- Upon running, software provides account and password input fields to allow users to register or log in
    - Provided information should be stored in server
        - Everytime there is a login/registration, software will check the given username and password
- Enables users to add/delete each other to contacts
    - A list of contacts will be shown in software
- Users may interact with each other to play a game of chess
    - Users can accept or reject invitations
- Can set to accept or reject non-contact users
- Left click on the chat and be able to send instant messages
    - Message should send with little to no lag

Installation

System Requirement:

- Any OS that allows you to SSH into linux servers
- Standard Library (C Programming)
- Math Library
- C programming compiler (e.g. gcc)

Setup and configuration:

- Download Chat_Beta.tar.gz from the Team13 repository in Github
- Log into zuma.eecs.uci.edu
- Create a directory locally (type mkdir <name_of_directory>)
- Type in the linux terminal:
  > cd <name_of_directory>
  > tar -xzvf Chat_Beta.tar.gz
  > make
  > ./bin/chat_server
  　　　-This is to run the server so that the clients will have something to connect to
  > ./bin/GUIclient <your_name>
  　　　-You can open multiple clients and talk between the users. You need to open a
  client with a name after you run ./client so its know your username
 Ex.
  ./GUIclient Bobby

Uninstalling:

- Login to any linux server on an ssh client (putty, etc)
- Go to the directory where the project was extracted
- Then type
  > make clean
  > rm -rf <your_directory_here>

Chat Program Functions and Features
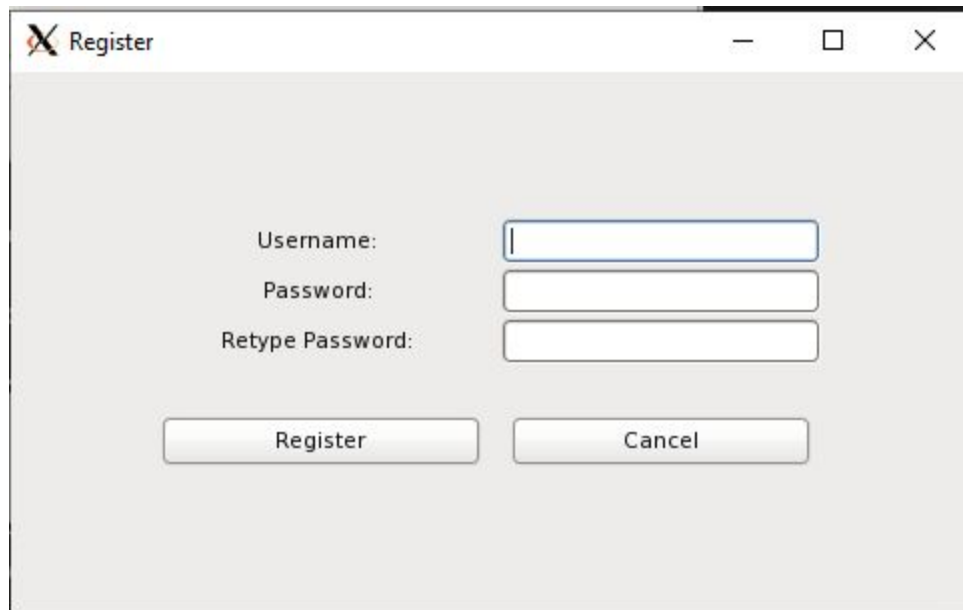
Main Chat Window
- ● User input: Left click on the message box, any keyboard inputs, pressing "Enter"
- ● Program Output: String of Keyboard inputs appear on chat window upon the user's "Enter" key
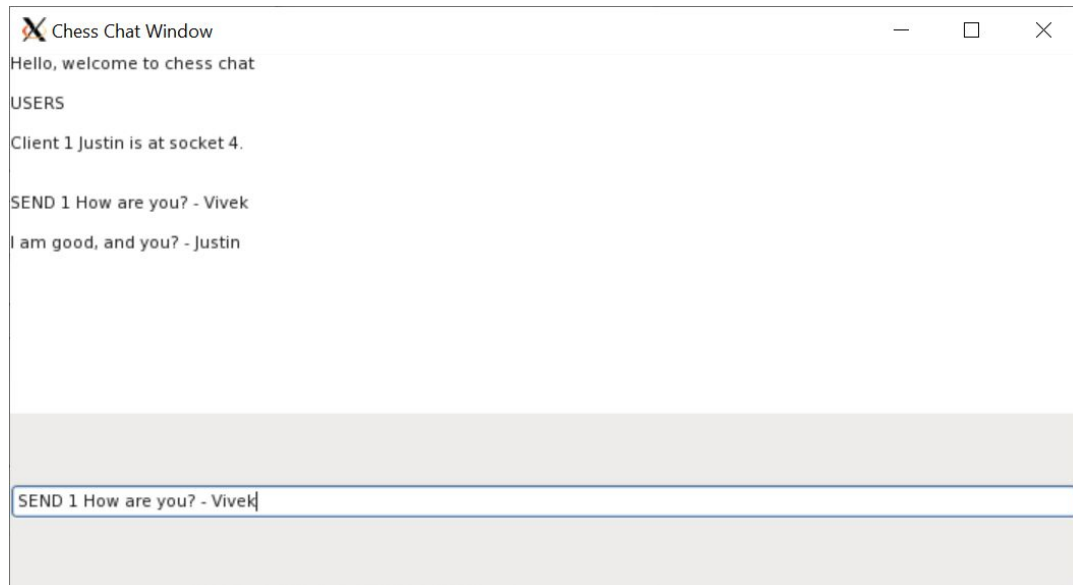
Registration Window
- ● Register button above the main chat window
- ● User input: Left mouse click on "Register" button
- ● Program Output: New window pops up asking for information regarding username and password
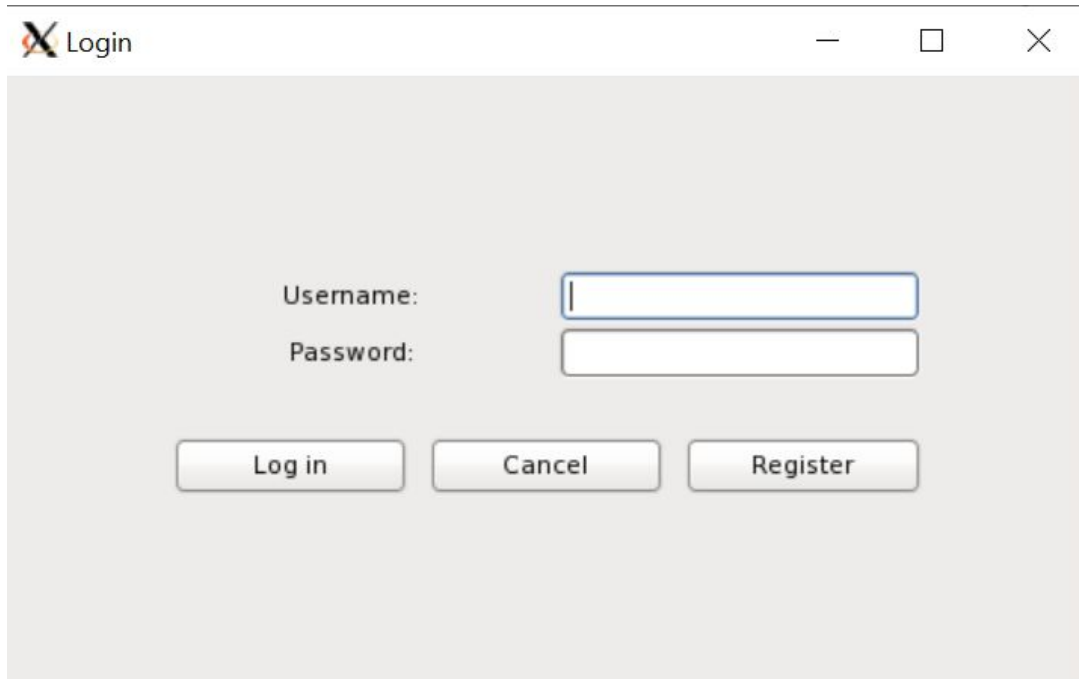
   Left click on Register and window pops up:

Login Window
- Log in button above the main chat window and next to "Register" button
- User Input: Left Mouse Click on the "Log in" button
- Program Output: Another window pops up asking for "Username" and Password", each in separate text boxes.
  After left clicking on login:

Add User Window
- "Add User" button available above chat box

- User Input: Left Mouse Click on the "Add User" button
- Program Output: New window pops with a textbox
  - Textbox takes any keyboard input and adds the user that matches the string of inputs
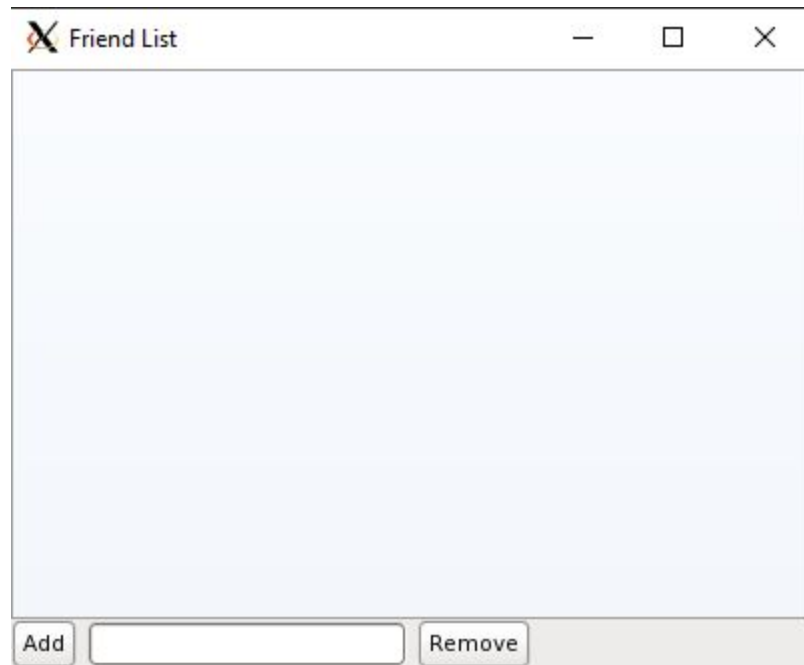
Contacts List Window (Incomplete)
- List of contacts on the right hand side of chess game and chat
- User Input: Left Click on user in contacts
- Program Output: Buttons are shown on the bottom whether to delete or block the selected user.
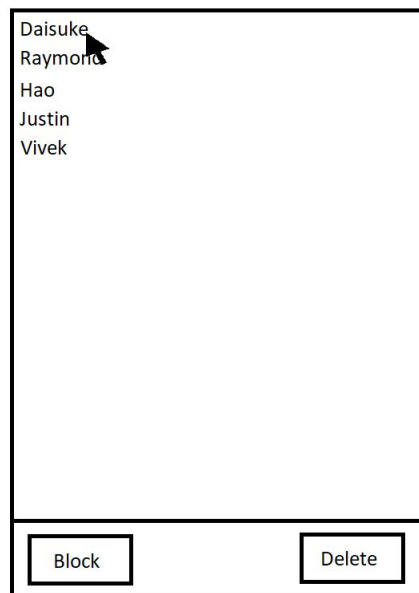
Chess Integration
- Chess game will play out on the linux terminal
- A separate window with the chat, add user, register, and login features will be shown in another window

Main Chat Function
- User Input: Left click on text field, text field will take any keyboard input, Enter to send
- Program Output: Displays the keyboard input user inputted in text field onto the chat window. Both players can see this text.

Register Function (incomplete)
- User Input: Keyboard input in username and password fields
- Program Output: Checks for overlapping usernames and asks if it does.
  - Otherwise sends information to server and saves it

Add User Function (incomplete)
- User Input: Keyboard input in text field
- Program Output: Sends query to server with inputted information
  - Checks too see if there are any usernames that match input
  - Calls the Contacts function and lists the added user in contacts

Log in Function (incomplete)
- User Input: Keyboard input in username and password fields
- Program Output: Sends query to server and finds user's IP address
  - If the username and password under the IP address matches, login is successful

Chess Game integration
- While playing chess, you can click on the friends list for any of the friends to talk with them. After double clicking on a name, a window to chat to them will pop up below the chess game and there you can talk to the different people on your friends list

GUI (GTK 2.0) Function
- The ASCII Chessboard will be shown through the linux terminal
- Log in window will show upon running the program
- After Login/Register, user is guided to main menu where they can:
  - Chat
  - Add/Remove a friend
- Program Output: Main chat window and ASCII chess board

Chess Program Functions and Features

Main Menu (Selection Interfaces)
- User input: choose an option
- Program output: pan to the next selection interface

```
***Main Menu***
  (1)Player vs Player mode
  (2)Player vs Computer mode
  (3)Rules of Chess
Enter your option with the numbers provided:
```

- Player vs player
  - Enter 1 to select "player vs player" option and game will automatically start
  - A new board with an user interface will be displayed in algebraic notation will show up on the sides

```
Enter your option with the numbers provided: 1
PVP mode started
   +----+----+----+----+----+----+----+----+
 8 | bR | bN | bB | bQ | bK | bB | bN | bR |
   +----+----+----+----+----+----+----+----+
 7 | bP | bP | bP | bP | bP | bP | bP | bP |
   +----+----+----+----+----+----+----+----+
 6 |    |    |    |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
 5 |    |    |    |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
 4 |    |    |    |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
 3 |    |    |    |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
 2 | wP | wP | wP | wP | wP | wP | wP | wP |
   +----+----+----+----+----+----+----+----+
 1 | wR | wN | wB | wQ | wK | wB | wN | wR |
   +----+----+----+----+----+----+----+----+
     a    b    c    d    e    f    g    h

*** WHITE'S TURN ***
Enter the position of the piece you want to move:
```

- Player vs computer
  - Select Side (Program output: highlight selection)
    - Black
    - White

```
Enter your option with the numbers provided: 2
What color do you want to play as?
(1)White
(2)Black
Make your choice: 1
```

- ○ Start Game (Program output: starts the game with the player's side on the bottom of the screen and computer side on top.

```
Player vs Computer mode started
   +----+----+----+----+----+----+----+----+
8  | bR | bN | bB | bQ | bK | bB | bN | bR |
   +----+----+----+----+----+----+----+----+
7  | bP | bP | bP | bP | bP | bP | bP | bP |
   +----+----+----+----+----+----+----+----+
6  |    |    |    |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
5  |    |    |    |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
4  |    |    |    |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
3  |    |    |    |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
2  | wP | wP | wP | wP | wP | wP | wP | wP |
   +----+----+----+----+----+----+----+----+
1  | wR | wN | wB | wQ | wK | wB | wN | wR |
   +----+----+----+----+----+----+----+----+
     a    b    c    d    e    f    g    h
Enter the x y coordinates of the piece you want to move(in the form " x y":
```

- Official Rules
  - ○ Enter 3 to see the official rules of chess printed out
  - ○ A list of rules will be displayed in text

```
***Main Menu***
 (1)Player vs Player mode
 (2)Player vs Computer mode
 (3)Rules of Chess
Enter your option with the numbers provided: 3
* White is always first to move and players take turns alternately moving one pie
ce at a time. Movement is required.
* If a player's turn is to move, he is not in check but has no legal moves, this
situation is called Stalemate and it ends the game in a draw.
* Stalemate also occurs when a player makes the same move three times.
* Each type of piece has its own method of movement. Go to the glossary to check
the moves of each of the pieces.
* A piece may be moved to another position or may capture an opponent's piece, re
placing on its square (en passant being the only exception, check  special moves
section).
* With the exception of the knight, a piece may not move over or through any of t
he other pieces.
* When a king is threatened with capture but can protect himself or escape, it's
called check. If a king is in check, then the player must make a move that elimin
ates the threat of capture and cannot leave the king in check.
* Checkmate happens when a king is placed in check and there is no legal move to
escape. Checkmate ends the game and the side whose king was checkmated loses.
```

In-game Mechanics

- Move a Piece - to move a piece you first enter the coordinates of the piece you want to select and then you enter the coordinates of where you want to move the selected piece. The coordinates must be as following: letter first, then number
  - User input: two coordinates inputs with a keyboard

```
*** WHITE'S TURN ***
Enter the position of the piece you want to move: e2
Enter the position you want to move to: e4
```

  - Program output: Prints out a statement to determine whether the king is in check or not. Prints out the board with the moved chess piece. Prints out the following statement: "*Piece* at *initial_position* moved to *final_position.*" And then it prints out which player's turn it is.

```
Neither side is in check.
   +----+----+----+----+----+----+----+----+
 8 | bR | bN | bB | bQ | bK | bB | bN | bR |
   +----+----+----+----+----+----+----+----+
 7 | bP | bP | bP | bP | bP | bP | bP | bP |
   +----+----+----+----+----+----+----+----+
 6 |    |    |    |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
 5 |    |    |    |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
 4 |    |    |    |    | wP |    |    |    |
   +----+----+----+----+----+----+----+----+
 3 |    |    |    |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
 2 | wP | wP | wP | wP |    | wP | wP | wP |
   +----+----+----+----+----+----+----+----+
 1 | wR | wN | wB | wQ | wK | wB | wN | wR |
   +----+----+----+----+----+----+----+----+
     a    b    c    d    e    f    g    h
*** Pawn at e2 moved to e4. ***

*** BLACK'S TURN ***
Enter the position of the piece you want to move:
```

- Capture a Piece - if a piece is in the position to capture an opponent's piece, enters coordinates the same way as you would move a piece
  - User input: two coordinates inputs with a keyboard
  - Program output: removes the captured piece and prints out the board with the capture piece removed.

```
    +----+----+----+----+----+----+----+----+
8 | bR | bN | bB | bQ | bK | bB | bN | bR |
    +----+----+----+----+----+----+----+----+
7 | bP |    | bP |    |    | bP | bP | bP |
    +----+----+----+----+----+----+----+----+
6 | wP |    |    |    | bP |    |    |    |
    +----+----+----+----+----+----+----+----+
5 |    | bP |    | bP |    |    |    |    |
    +----+----+----+----+----+----+----+----+
4 |    | wP | wP |    |    |    |    |    |
    +----+----+----+----+----+----+----+----+
3 |    |    |    |    |    |    |    |    |
    +----+----+----+----+----+----+----+----+
2 |    |    |    | wP | wP | wP | wP | wP |
    +----+----+----+----+----+----+----+----+
1 | wR | wN | wB | wQ | wK | wB | wN | wR |
    +----+----+----+----+----+----+----+----+
     a    b    c    d    e    f    g    h
Enter the x y coordinates of the piece you want to move(in the form " x y":
f8
The chess piece selected is at location f8
Enter the x y coordinates of the place you want the piece to end up( in the form " x y ": b4
    +----+----+----+----+----+----+----+----+
8 | bR | bN | bB | bQ | bK |    | bN | bR |
    +----+----+----+----+----+----+----+----+
7 | bP |    | bP |    |    | bP | bP | bP |
    +----+----+----+----+----+----+----+----+
6 | wP |    |    |    | bP |    |    |    |
    +----+----+----+----+----+----+----+----+
5 |    | bP |    | bP |    |    |    |    |
    +----+----+----+----+----+----+----+----+
4 |    | bB | wP |    |    |    |    |    |
    +----+----+----+----+----+----+----+----+
3 |    |    |    |    |    |    |    |    |
    +----+----+----+----+----+----+----+----+
2 |    |    |    | wP | wP | wP | wP | wP |
    +----+----+----+----+----+----+----+----+
1 | wR | wN | wB | wQ | wK | wB | wN | wR |
    +----+----+----+----+----+----+----+----+
     a    b    c    d    e    f    g    h
f8 moved to b4
```

In-game Conditions
- Check - the user's king is in position to be captured. The user must make a move that puts the king in a safe position.
  - User input: none
  - Program output: Log will output: "Black is in check" or "White is in check" and will prompt the player to make a legal move in order to protect the king.

```
Enter the x y coordinates of the place you want the piece to end up( in the form " x y ": d2
Not able to move a piece.
Enter the x y coordinates of the piece you want to move(in the form " x y":
d4
The chess piece selected is at location d4
Enter the x y coordinates of the place you want the piece to end up( in the form " x y ": f3
White is in check.
     +----+----+----+----+----+----+----+----+
8  | bR |    | bB | bQ | bK |    | bN | bR |
     +----+----+----+----+----+----+----+----+
7  | bP |    | bP |    |    | bP | bP | bP |
     +----+----+----+----+----+----+----+----+
6  | wP | wN |    |    | bP |    |    |    |
     +----+----+----+----+----+----+----+----+
5  |    | bP |    | bP |    |    |    |    |
     +----+----+----+----+----+----+----+----+
4  |    |    |    |    |    |    |    |    |
     +----+----+----+----+----+----+----+----+
3  |    |    |    |    |    | bN |    |    |
     +----+----+----+----+----+----+----+----+
2  |    |    |    |    | wP | wP | wP | wP |
     +----+----+----+----+----+----+----+----+
1  | wR |    | wB | wQ | wK | wB | wN | wR |
     +----+----+----+----+----+----+----+----+
     a    b    c    d    e    f    g    h
d4 moved to f3
```

- Checkmate - if there is no possibility for the user to get their king out of "check." The
  user loses.
  - User input: none
  - Program output: Log will output text "Black Wins!" or "White Wins!"

```
*** WHITE'S TURN ***
Enter the position of the piece you want to move: a3
Enter the position you want to move to: a4
    +----+----+----+----+----+----+----+----+
8  | bR | bN | bB |    | bK |    | bN | bR |
    +----+----+----+----+----+----+----+----+
7  | bP | bP | bP | bP |    | bP | bP | bP |
    +----+----+----+----+----+----+----+----+
6  |    |    |    |    |    |    |    |    |
    +----+----+----+----+----+----+----+----+
5  |    |    | bB |    | bP |    |    |    |
    +----+----+----+----+----+----+----+----+
4  | wP | wP |    |    |    |    |    | bQ |
    +----+----+----+----+----+----+----+----+
3  |    |    |    |    |    |    |    | wP |
    +----+----+----+----+----+----+----+----+
2  |    |    | wP | wP | wP | wP | wP |    |
    +----+----+----+----+----+----+----+----+
1  | wR | wN | wB | wQ | wK | wB | wN | wR |
    +----+----+----+----+----+----+----+----+
      a    b    c    d    e    f    g    h
*** Pawn at a3 moved to a4. ***
```

```
*** BLACK'S TURN ***
Enter the position of the piece you want to move: c5
Enter the position you want to move to: f2
White is in check.
Black Wins!
  +----+----+----+----+----+----+----+----+
8 | bR | bN | bB |    | bK |    | bN | bR |
  +----+----+----+----+----+----+----+----+
7 | bP | bP | bP | bP |    | bP | bP | bP |
  +----+----+----+----+----+----+----+----+
6 |    |    |    |    |    |    |    |    |
  +----+----+----+----+----+----+----+----+
5 |    |    |    |    | bP |    |    |    |
  +----+----+----+----+----+----+----+----+
4 | wP | wP |    |    |    |    |    | bQ |
  +----+----+----+----+----+----+----+----+
3 |    |    |    |    |    |    |    | wP |
  +----+----+----+----+----+----+----+----+
2 |    |    | wP | wP | wP | bB | wP |    |
  +----+----+----+----+----+----+----+----+
1 | wR | wN | wB | wQ | wK | wB | wN | wR |
  +----+----+----+----+----+----+----+----+
    a    b    c    d    e    f    g    h
*** Bishop at c5 moved to f2. ***
Black Wins!
```

Special Rules

- Castling - enter the coordinates of the king's position (e1 or e8) and then enter the coordinates of the final position where your king will be after the castling.
    - For instance, the white king will castle from e1 to g1 or from e1 to c1. In addition, these are the coordinates to input into the keyboard if the white player wants to perform castling.

```
  +----+----+----+----+----+----+----+----+
8 | bR |    | bB | bQ | bK | bB | bN | bR |
  +----+----+----+----+----+----+----+----+
7 | bP | bP | bP | bP | bP | bP | bP | bP |
  +----+----+----+----+----+----+----+----+
6 | bN |    |    |    |    |    |    |    |
  +----+----+----+----+----+----+----+----+
5 |    |    |    |    |    |    |    |    |
  +----+----+----+----+----+----+----+----+
4 |    |    |    |    |    |    |    |    |
  +----+----+----+----+----+----+----+----+
3 |    |    |    |    |    | wN | wP |    |
  +----+----+----+----+----+----+----+----+
2 | wP | wP | wP | wP | wP | wP | wB | wP |
  +----+----+----+----+----+----+----+----+
1 | wR | wN | wB | wQ | wK |    |    | wR |
  +----+----+----+----+----+----+----+----+
    a    b    c    d    e    f    g    h
Enter the x y coordinates of the piece you want to move(in the form " x y":
e1
The chess piece selected is at location e1
Enter the x y coordinates of the place you want the piece to end up( in the form " x y ": g1
```

```
White King is not on the board.
King side castling for white is legal.
    +----+----+----+----+----+----+----+----+
  8 | bR |    | bB | bQ | bK | bB | bN | bR |
    +----+----+----+----+----+----+----+----+
  7 | bP | bP | bP | bP | bP | bP | bP | bP |
    +----+----+----+----+----+----+----+----+
  6 | bN |    |    |    |    |    |    |    |
    +----+----+----+----+----+----+----+----+
  5 |    |    |    |    |    |    |    |    |
    +----+----+----+----+----+----+----+----+
  4 |    |    |    |    |    |    |    |    |
    +----+----+----+----+----+----+----+----+
  3 |    |    |    |    |    | wN | wP |    |
    +----+----+----+----+----+----+----+----+
  2 | wP | wP | wP | wP | wP | wP | wB | wP |
    +----+----+----+----+----+----+----+----+
  1 | wR | wN | wB | wQ |    | wR | wK |    |
    +----+----+----+----+----+----+----+----+
      a    b    c    d    e    f    g    h
e1 moved to g1
```

- En Passant
  - User input: After an opposing team's pawn moves 2 spaces forward, enter the coordinates of the user's pawn that is capable of performing an en passant. Then enter the coordinates
  - Program output: the pawn will be captured and the event will be noted in the game log

```
*** WHITE'S TURN ***
Enter the position of the piece you want to move: b2
Enter the position you want to move to: b4
    +----+----+----+----+----+----+----+----+
  8 | bR | bN | bB | bQ | bK | bB | bN | bR |
    +----+----+----+----+----+----+----+----+
  7 |    | bP | bP | bP | bP | bP | bP | bP |
    +----+----+----+----+----+----+----+----+
  6 |    |    |    |    |    |    |    |    |
    +----+----+----+----+----+----+----+----+
  5 |    |    |    |    |    |    |    |    |
    +----+----+----+----+----+----+----+----+
  4 | bP | wP | wB |    | wP |    |    |    |
    +----+----+----+----+----+----+----+----+
  3 |    |    |    |    |    |    |    |    |
    +----+----+----+----+----+----+----+----+
  2 | wP |    | wP | wP |    | wP | wP | wP |
    +----+----+----+----+----+----+----+----+
  1 | wR | wN | wB | wQ | wK |    | wN | wR |
    +----+----+----+----+----+----+----+----+
      a    b    c    d    e    f    g    h
*** Pawn at b2 moved to b4. ***
```

```
*** BLACK'S TURN ***
Enter the position of the piece you want to move: a4
Enter the position you want to move to: b3
   +----+----+----+----+----+----+----+----+
8 | bR | bN | bB | bQ | bK | bB | bN | bR |
   +----+----+----+----+----+----+----+----+
7 |    | bP | bP | bP | bP | bP | bP | bP |
   +----+----+----+----+----+----+----+----+
6 |    |    |    |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
5 |    |    |    |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
4 |    |    | wB |    | wP |    |    |    |
   +----+----+----+----+----+----+----+----+
3 |    | bP |    |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
2 | wP |    | wP | wP |    | wP | wP | wP |
   +----+----+----+----+----+----+----+----+
1 | wR | wN | wB | wQ | wK |    | wN | wR |
   +----+----+----+----+----+----+----+----+
     a    b    c    d    e    f    g    h
*** Pawn at a4 moved to b3. ***
```

- Promotion - When a pawn reaches the opponent's last row, it can promote to either a queen, rook, bishop, or knight based on the user's choice.
  - User Input 1: A pawn moves to the last row of the opponent's side
  - User Input 2: User inputs which piece they want to replace the pawn with that was captured in previous moves
  - Program output: Pawn is replaced with chosen piece

```
*** WHITE'S TURN ***
Enter the position of the piece you want to move: b6
Enter the position you want to move to: b7
   +----+----+----+----+----+----+----+----+
8 | bR |    | bB | bQ | bK | bB | bN | bR |
   +----+----+----+----+----+----+----+----+
7 |    | wP | bP | bP | bP | bP | bP | bP |
   +----+----+----+----+----+----+----+----+
6 |    |    | bN |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
5 | bP |    |    |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
4 |    |    |    |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
3 |    |    |    |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
2 |    | wP | wP | wP | wP | wP | wP | wP |
   +----+----+----+----+----+----+----+----+
1 | wR | wN | wB | wQ | wK | wB | wN | wR |
   +----+----+----+----+----+----+----+----+
     a    b    c    d    e    f    g    h
*** Pawn at b6 moved to b7. ***
```

```
*** WHITE'S TURN ***
Enter the position of the piece you want to move: b7
Enter the position you want to move to: b8
*** White Pawn Promotion! ***
Select a piece to replace your Pawn at b8 (Q - queen, R - rook, B - bishop, N - knight): Q
   +----+----+----+----+----+----+----+----+
8 |    | wQ | bB | bQ | bK | bB | bN | bR |
   +----+----+----+----+----+----+----+----+
7 |    |    | bP | bP | bP | bP | bP | bP |
   +----+----+----+----+----+----+----+----+
6 | bR |    | bN |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
5 | bP |    |    |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
4 |    |    |    |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
3 |    |    |    |    |    |    |    |    |
   +----+----+----+----+----+----+----+----+
2 |    | wP | wP | wP | wP | wP | wP | wP |
   +----+----+----+----+----+----+----+----+
1 | wR | wN | wB | wQ | wK | wB | wN | wR |
   +----+----+----+----+----+----+----+----+
     a    b    c    d    e    f    g    h
*** Queen at b7 moved to b8. ***
```

Copyright Notice

Error Messages

- all the error messages will be printed out in the log
- Each error will have a printed message following the error

<u>Example</u>:
If a player attempts to send a message and loses connection
"Message not sent, please check your connection and try again."

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