MULTIPLAYER CHESS

User Manual

Version 1.1

By:

Electric Lizards

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Glossary

IP address: a unique string of characters that identifies each computer using the Internet Protocol to communicate over a network.

Port number: A port number is a way to identify a specific process to which an Internet or other network message is to be forwarded when it arrives at a server.

Server: A computer or computer program which manages access to a centralized resource or service in a network.

Chess: a board game of strategic skill for two players, played on a checkerboard. Each player begins the game with sixteen pieces that are moved and used to capture opposing pieces according to precise rules. The object is to put the opponent's king under a direct attack from which escape is impossible (*checkmate*).

Client: A user who initiates the communication - sending a request to connect to the server.

1 Installation

1.1 System Requirements

Operating System: Linux
Internet connection is necessary for online play

1.2 Setup and Configuration

1. Download the release tarball from
https://github.uci.edu/EECS-22L-S-21-Team-Projects/Team03
2. Navigate to the bin folder using “cd bin”
3. To run the client, type `./gameClient`
4. To run the server, type `./chessGame`

1.3 Uninstalling

1. Navigate to the folder containing the chess game folder
2. Run the delete command `rm -rf chess_client chess_server`

2 Chess V2 - Client

2.1 Overview of Features

Users can log in with a given account (test1 or test2).

Once the client is logged in, he/she can start the chess game immediately. Client can make a move by using command -a <username> <move>

Client can send messages to another client while playing the game by using the messaging feature -m <message>.

2.2 Logging in/registering

By opening up the chess application, you are presented with two options: log in with a given account or exit. Press the ‘1’ option to log in with an existing username. Press ‘2’ to exit.. You may enter in an username, “test1” or “test2.”

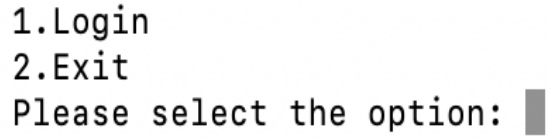

Figure 1: Login and Exit
Displays the option to log in with a given account or exit.

2.3 Getting Started

Once logged in, the client can start the game immediately. There will be commands where the client can use to send move or message the other client or close the server.

```
Succesful Login!

Player vs. Player Game Start

    +----+----+----+----+----+----+----+----+
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
Input (–a <username> <move>, –m <message>, –q to close server):
```

Figure 2: Chess Game Board

Displays the layout of the chess board in game with the chess pieces in its initial positions and commands in the game.

2.4 Usage Scenario

By opening up the chess application, you have to enter a username - “test1” or “test2.” When in any chess game, each player will be presented with the game board at the very beginning of the game. Whenever it is one person’s turn, he/she will enter -a <username> <move>. The username will be the username you logged in with - either “test1” or “test2.” The move is to enter two coordinates with capital letters in chess notation For example, “A2A3” for moving a white pawn forward two spaces. After inputting the two coordinates with a chess unit on it, the chess board will be updated and printed. In order to castle, you have to move the king to its location - like E1G1 for a white king’s side castle; the king will move along with the rook. Each player will go through this process. Messages could be sent with -m <message>. The message will be sent to another client in the game server. A confirmation message from the server will be printed out to the client. Clients can also close the server with -q when it is their turn during the game as seen in figure 4. As seen in figure 3, a message could be sent with a confirmation message, and you could enter a move. The message and move will be received by the other client and server.

```
[Input (-a <username> <move>, -m <message>, -q to close server): -m Hi
Message sent successfully

[Input (-a <username> <move>, -m <message>, -q to close server): -a test1 A2A3
Move Received


    +----+----+----+----+----+----+----+----+
8   | bR | bN | bB | bQ | bK | bB | bN | bR |
    +----+----+----+----+----+----+----+----+
7   | bP | bP | bP | bP | bP | bP | bP | bP |
    +----+----+----+----+----+----+----+----+
6   |    |    |    |    |    |    |    |    |
    +----+----+----+----+----+----+----+----+
5   |    |    |    |    |    |    |    |    |
    +----+----+----+----+----+----+----+----+
4   |    |    |    |    |    |    |    |    |
    +----+----+----+----+----+----+----+----+
3   | wP |    |    |    |    |    |    |    |
    +----+----+----+----+----+----+----+----+
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
```

Figure 3: Move Selection and Message
Displays the user input move, message to another player and confirmation message.

```
    +----+----+----+----+----+----+----+----+
8   | bR | bN | bB | bQ | bK | bB | bN | bR |
    +----+----+----+----+----+----+----+----+
7   | bP | bP | bP | bP | bP | bP | bP | bP |
    +----+----+----+----+----+----+----+----+
6   |    |    |    |    |    |    |    |    |
    +----+----+----+----+----+----+----+----+
5   |    |    |    |    |    |    |    |    |
    +----+----+----+----+----+----+----+----+
4   |    |    |    |    |    |    |    |    |
    +----+----+----+----+----+----+----+----+
3   | wP |    |    |    |    |    |    |    |
    +----+----+----+----+----+----+----+----+
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
[Input (-a <username> <move>, -m <message>, -q to close server): -q
Quitting server
Quitting client
```

Figure 4: Quitting server and client
Displays quitting message

3 Chess V2 - Server

3.1 Overview of Features

Server can manage the user account name.
Server can check the client's move and send the updated board to another client if it's valid and send back an "Invalid Move" message to the client if it is not valid.
Server can check the message and send it to another client.

3.2 Usage Scenario

Once the server has started, it will start to listen on that port for connections from clients.

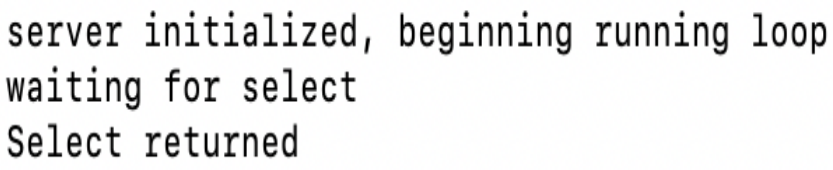

Figure 5. Server initialization
Displays server is looking for a connection

3.3 Logging in

The username will be created as "test1" and "test2" on the server. Once the user enters his/her username, the server will check if it's valid. If it is valid, the server will indicate that the user has successfully logged in, if it's not valid, the client needs to re-input another username. On the server side, it is able to determine how many users are currently logged in with a linked list. The account struct will also hold the information of the username and socket number.

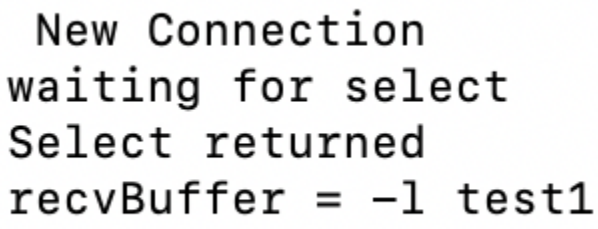

Figure 6. Server received logged in information
Displays the server terminal when received login information from the client

3.4 Detailed description of chess integration

In a multiplayer chess game, the white player is the first client to connect to the server. From the black player's client, it will be waiting for the white side's input. Once a player enters their move, the input move from the side's client will be sent to the server. From the server, it will handle all the board pieces. That side's input move will be sent to the other side's client. On both sides, the board will get updated with the corresponding move that the other player has made. The same process will occur for each side's turn. The server handles all of the moves. If there is an invalid input, the same client has to input again. Clients authenticate for only usernames and send their usernames every time they make a move. When 2 clients are simultaneously connected to the server, a game starts with both players. The server will also handle the message from the client and send it to another client during the game.

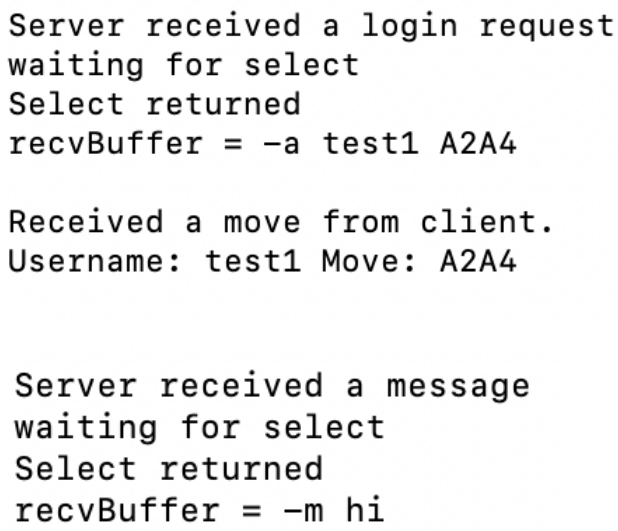

Figure 7. Server received move and message
Displays the server terminal when received move and message from the client.

Back Matter

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Error Messages

- Incorrect user name.
  When inputting a username that does not match “test1” or “test2,” the client will ask to input the username again.
- Incorrect command.
  When inputting an incorrect command,there will be an error message “Invalid” and ask the user to input the command again. See figure 8.
- Invalid move.
  When inputting an incorrect move, there will be an error message “Invalid Move” and ask the user to input the move again. See figure 9.

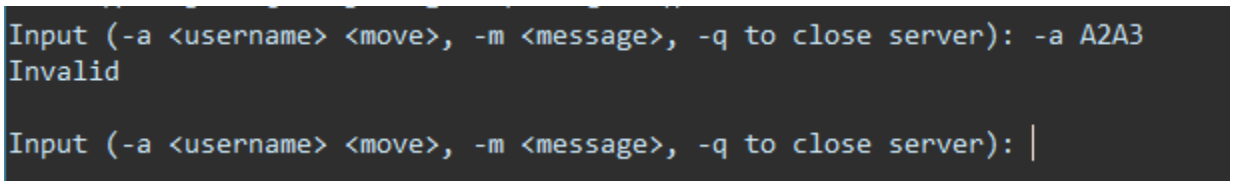

Figure 8: Invalid command
The command -a <move> does not match -a <username> <move> in the image above. The client will be asked to input again.

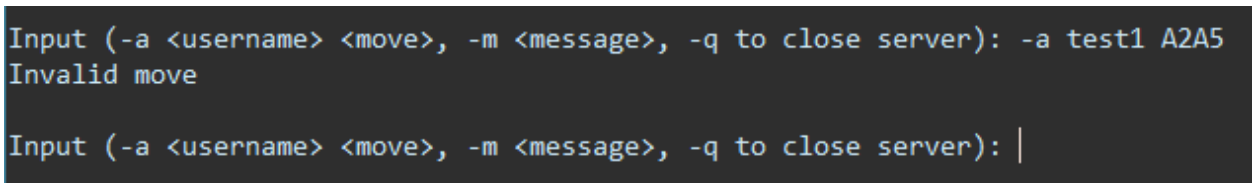

Figure 9: Invalid Move
The move that is inputted in the image above is an illegal move, so the client will be asked to input again.

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