Requirements and Specification Document

Chess.com

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2023-12-11, version 1.2

Project Abstract

The Intuitive Chess GUI (Graphical User Interface) is a user-friendly platform designed to allow chess enthusiasts and learners to play, analyze, and enjoy chess. It serves as a visual and interactive medium between the users and the underlying chess logic, allowing for seamless navigation, game play, and analysis.

Document Revision History

Rev. 1.0 2023-09-26: initial version
Rev. 1.1 2023-11-28: minor changes
                Add Entity Relationship Diagram
                Modify Requirements for Homepage
                Update design for playing pages
Rev 1.2 2023-12-05: minor changes
                Remove OAuth from login

Customer

The customer for this app is anyone who wants to be able to play and analyze chess on their computer. This includes those wishing to play against an engine, or against other players. Our app could be very helpful for mobilizing chess, since most people won't be carrying around a chess board with them. It also allows the customer to play when they don't have another person with them physically to play with.

This app will also target customers trying to improve their chess skills. They will be able to analyze their previous games and understand what they did well, and where they could improve. This will be done by showing best next moves, as well as future moves that the chess engine would consider to be optimal.

User Requirements

1. **Login/sign-up page**
   a. This page will allow the users to create an account or log into their existing account.
   b. When creating an account, users will provide the following information:
      i. Name
      ii. Email
      iii. Password
      iv. Username
   c. When signing in, users will have the following options:
      i. Email & password
2. **Home page**
   a. This page will allow users to choose what mode of operation they would like to use. These modes include:
      i. Player vs Engine
      ii. Player vs Player (local)
      iii. Analysis of previous games
   b. This page will have an icon indicating which user is currently logged in.
   c. The user will also be able to log out from this page
3. **Player vs Engine page**
   a. This page will consist of a chess board and a menu for game control. Users will be able to:
      i. Make legal moves on the chess board
      ii. Resign
      iii. Restart
      iv. Go back to the home page
      v. Log out
4. **Player vs Player (local) page**
   a. This page will consist of a chess board and menu for game control. Users will be able to:
      i. Make legal moves on the chess board
      ii. Resign
      iii. Restart
      iv. Go back to the home page
5. **Game History page**
   a. This page will have a list of previous games played by the user. For each game played, this page will show:
      i. Game type (played vs engine or player)
      ii. Date/time played
      iii. Outcome (W/D/L)
   b. When a game is selected, a page with a chess board will appear. This page will allow the user to:
      i. Step through the selected game move-by-move
      ii. See the engine-suggested move
      iii. See a centipawn evaluation of the current position

Use Cases

Name	Account Creation
Importance	Must Have
Actors	Player
Triggers	Clicking on Create Account Button
Events	Player will enter their name and email. They will be prompted to decide on a username and password.
Exit Conditions	Account creation information is valid.
Post Conditions	Player can now login with their login information.
Acceptance Test	The new user will be updated in the database.

Name	Select Playing Mode
Importance	Must Have
Actors	Chess Player
Triggers	Once logged in, user will be presented with the home page.
Events	Player will be on the home page and select their desired mode of play.
Exit Conditions	User clicks on their desired mode of play.
Post Conditions	Player is now brought to the corresponding page that aligns with the mode of play that they selected.
Acceptance Test	User will leave the home page and move to correct page based on which mode they selected.

Name	Player versus Engine
Importance	Must Have
Actors	Chess Player
Triggers	User selects mode to play against engine.
Events	Player will determine the settings for the game and play against the engine in a legal game of chess.
Exit Conditions	The game is completed either by resignation or a definitive result (somebody wins or both player and engine draw).
Post Conditions	Once the game is completed, the user will be presented with the original Player v. Engine page.
Acceptance Test	The game, including its outcome, move list, and date played, will be recorded in the database.

Name	Player versus Player
Importance	Must Have
Actors	P1, P2
Triggers	P1 or P2 selects Player versus Player mode.
Events	Players can agree on settings for game and play legal game of chess, locally.
Exit Conditions	The game is completed either by resignation or a definitive result (somebody wins or both players draw).
Post Conditions	Once the game is completed, the user will be presented with the original Player v.

	Player page.
Acceptance Test	The game, including its outcome, move list, and date played, will be recorded in the database.

Name	View Game History
Importance	Must Have
Actors	Player
Triggers	Player can select to view game history option from home page.
Events	- User can step through moves of previous games. - User can view the recommended moves supplied by the chess engine - User can see the evaluation of the current position on the board.
Exit Conditions	The analysis of the game is finished once the user returns to the home page, or the user selects another game they wish to be analyzed.
Post Conditions	The player will either return to the home page or they will be analyzing another game in a similar fashion to how they analyzed the game they just finished analyzing.
Acceptance Test	The game, with all the details that were in the database before analysis, will still be in the database and can be analyzed once again if the player desires to do so.

User Interface Requirements

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Login

Username

Password

Register

The login page allows a user to login and register if they don't already have an account.

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Player v. Engine

Player v. Player

Analysis

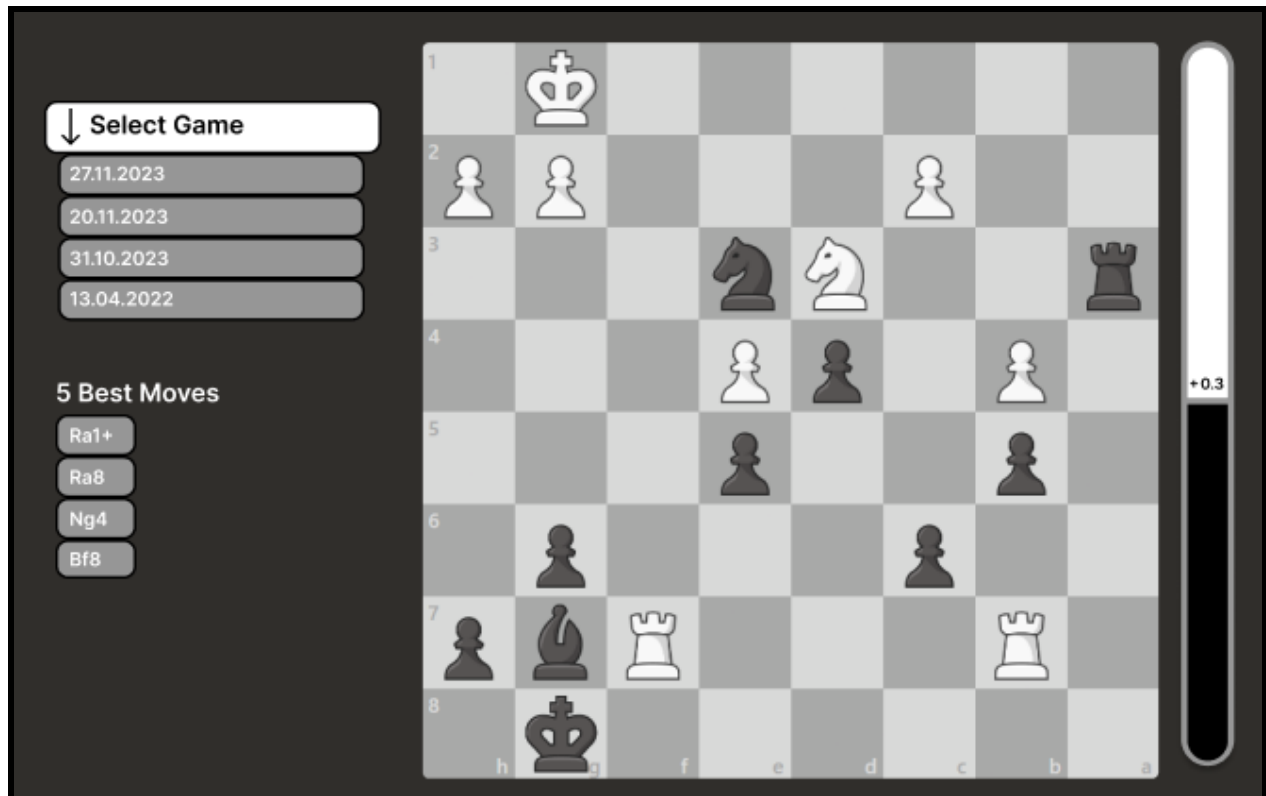The home page allows users to select the mode with which they want to interact in.

The Player v. Engine page allows players to determine settings and start playing against the engine.

The Player v. Player page allows players to determine settings and start playing against another player, locally.

The Analysis page will allow a player to view their previous games and anlayze them using a chess engine.

Security Requirements

Security in this app will mainly revolve around what user information is viewable by other users. For example, usernames may be visible to others, while emails may not. We have yet to decide exactly what information is publicly accessible, however a baseline is that no identifying information (besides a username and profile picture) should be visible to other users. All information, regardless of visibility, will be stored in a secure MySQL database.

Authentication is also a security requirement that will be addressed. While there won't be much sensitive information stored in a user's account, it is still important to secure the accounts so that users don't lose any progress that they've made or history that they've stored. Passwords will also have minimum requirements in order to ensure that logins cannot be brute forced.

System Requirements

Developer system requirements:

- Gitlab
- Python 3
    - Packages: stockfish

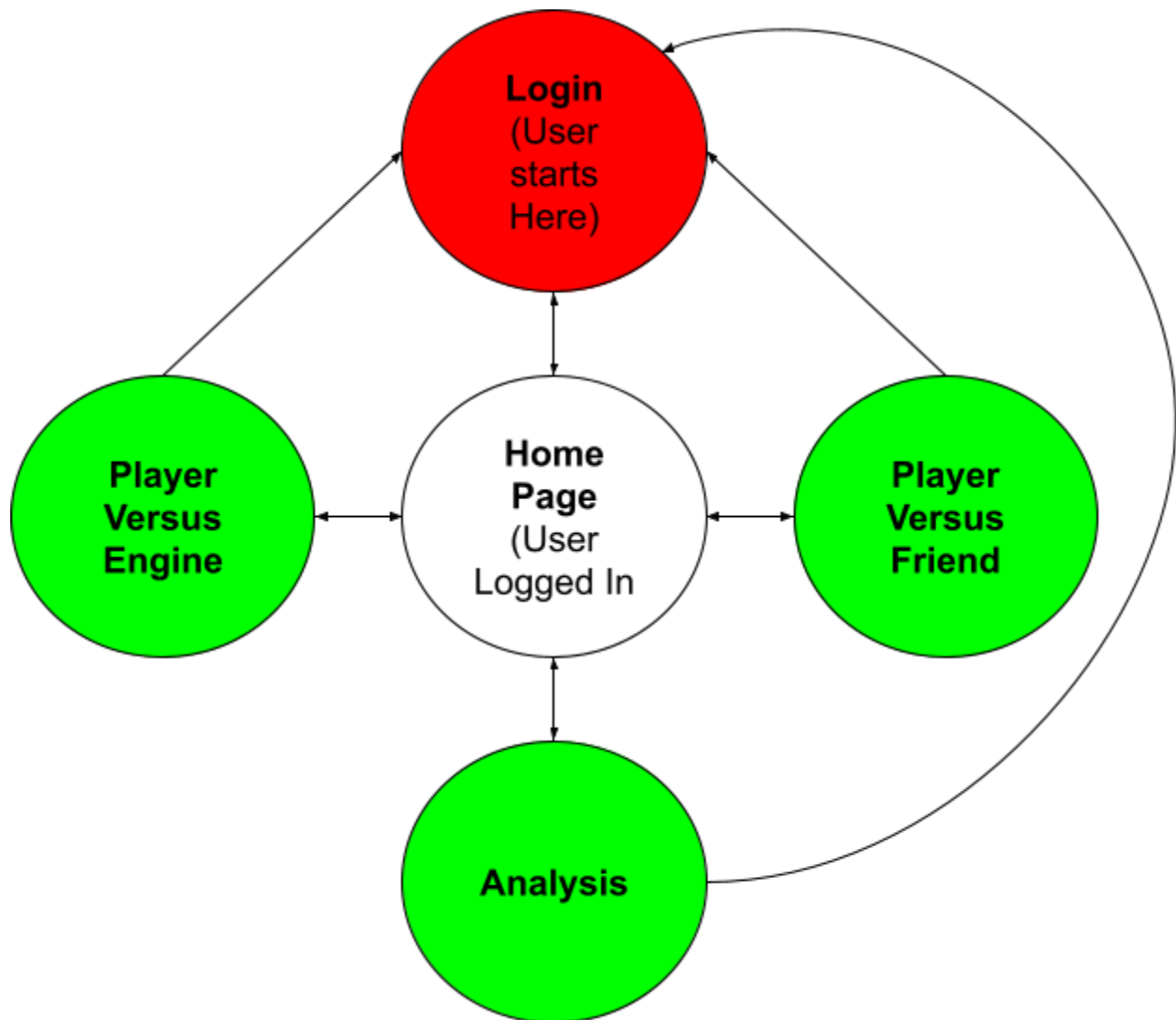User system requirements:

- Latest version of a web browser with React support (Chrome, Safari, Firefox, Edge)
- Stable internet connection

Specification

App Entity Relationship Diagram:

The Entity Relationship Diagram below details the sitemap and the ways of reaching different parts of the app from other parts:

1. The user starts at the red circle where they are initially not logged in.
2. Once they log in, they will move to the white circle where they can select which mode they wish to play or have the option to log out.

3. The playing modes are indicated by green circles. From these pages, the user can choose to go back to the home page or they can log out directly from the page they are currently on.