CSC 667/867
Spring 2018

Term Project

Milestone 1: Web Application Concept and Wireframes

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Github Repository
https://github.com/sfsu-csc-667-spring-2018/term-project-team-i

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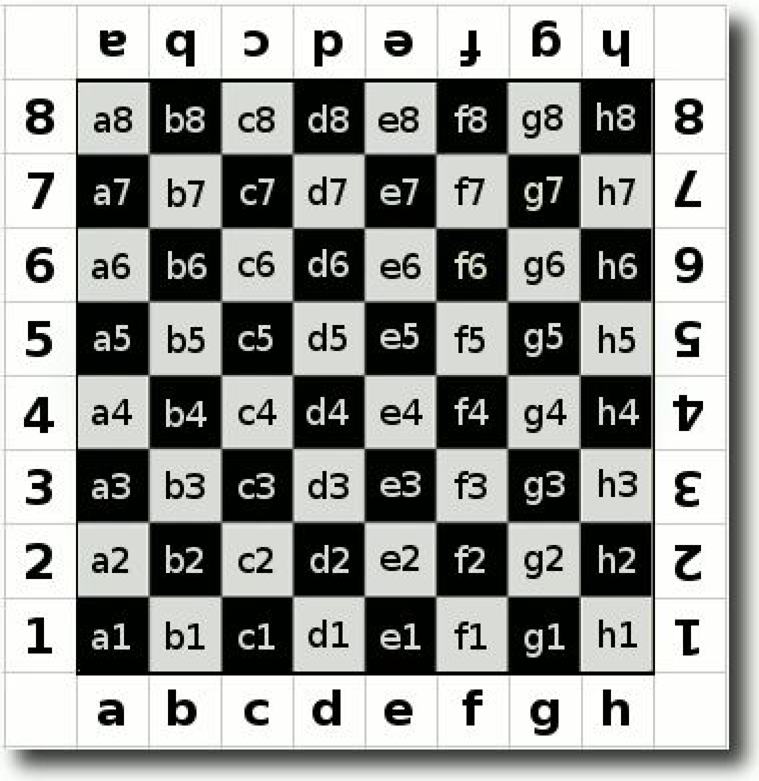
Project specifications

Introduction

Game: Chess
Chess is a two player strategy board game. The board is formed in an 8x8 grid squares known as a chessboard. Each player has 16 pieces that start off on opposite sides of the chessboard. Players take turns moving their pieces along the grid. The whole point of the game is to place the opposing king in a position of “checkmate” which is an inescapable threat of capture. All other pieces can be captured if a capturing piece moves on the square of the soon to be captured piece. Each player can only move one piece only one time every turn.



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Chessboard Grid Source
(http://chess-tips.blogspot.com/2012/09/chess-board-details-positions.html)

Piece(# of pieces) and moves:

1. King(1): Most important piece. The whole objective is to threaten the opponent’s king to force a checkmate. Starts at the grid location E1/E8. Can move in any direction, but only one square. Cannot move into a position of danger (that will cause a check)
2. Queen(1): Most powerful piece. Starts to the left of the king D1/D8. Can move any number of squares horizontally, vertically, diagonally.
3. Rook(2): Starts at the corners of the chessboard A1/A8 and H1/H8. Can move only in the horizontal or vertical direction.

4. Knight(2): Starts in between the Rook and Bishop B1/B8 and G1/G8. Can “jump” over pieces in an L shape in any direction. For example, Two squares up, one square left; or two squares left and one square up;including any other permutation of that sort.
5. Bishop(2): Starts next to king and queen C1/C8 and F1/F8. Can only move in the diagonal direction.
6. Pawn(8): Weakest pieces. All pawns start on the 2/7 row. Starting moves can be one or two squares towards your opponent’s side, after the starting move, only one square movements towards your opponent. Pawns can only capture opposing pieces if the opposing piece is one square away in the diagonal direction. If a pawn reaches the final row of your opponent (1/8 rows), the pawn can be upgraded to any of the other pieces, except for the King.

End Conditions

1. Checkmate
    - When a losing player’s King piece is in position to be captured (“Checked”) but cannot avoid it (“Checkmate”), either by changing positions or having another piece intercept the winning opponent’s capturing piece.
2. Draw
    - Agreement
        - If both players agree to end the game.
    - Stalemate
        - If in the current player’s turn cannot move any piece and his/her King is not in position to be captured either.
3. Time Out
    - Disconnection
        - If the disconnected player does not return to the game after a fixed time frame then he/she will automatically lose the game.
    - Player Time Expired
        - The player whose playing time has completely elapsed will automatically lose the game.
4. Resign
    - When one player concedes the victory over to their opponent.

https://en.wikipedia.org/wiki/Chess

Features

Authentication

Users will be able to view the general lobby and general lobby chat by default. If the user is not logged in and attempts to interact with the content then he/she will be prompted to do so by a popup to enter their credentials. Each new user will be required to register by providing a username, email, and password. The new user's username and password must be unique.

Real Time Chat

The chat box consists of a text input area and a text display area immediately above it. Only logged in users will be able to chat. Every message will be prepended by the user's username before displaying. The chat box will be persistent in both, the general lobby, and game page. However, once in the game page the chat box will be cleared to display messages between the two opposing players only.

Navigation Bar

The navigation bar allows you to host a new game wherever you happen to be. As well as showing your profile avatar in the top right corner. Hosting a new game will ask you if you want to leave your current game if you happen to be in a game already, or simply host another game in a new tab without leaving the current game.

Lobby

The lobby will have tools for joining games as well as a real time chat to communicate with lobby members.

Game Page

The game page will display the chessboard and a game chat that only the two players can see and use to communicate with. There will also be a message box that shows what moves were done by each player and disconnect/reconnect messages. There will also be buttons that allows you to forfeit or call a draw. Wins/losses/draws: a small popup box will appear with a victory/defeat/draw message. Confirming the victory/defeat/draw will end the game and send you back to the lobby.

Technologies

Heroku

Heroku is a cloud platform that enables developers to quickly deploy web applications without the need of personally supporting an infrastructure for serving users. In the context of our project we will be using Heroku to service our game. Interested users will be able to access our game through their web client.

Node.js

Node.js is a cross-platform, JavaScript run-time environment, for executing JavaScript code server-side. JavaScript was primarily used to produce dynamic HTML content on a web client. However with Node.js, JavaScript can now be used for both, web content and server programming, which was made in strife to unify web application development under one language.

Express.js

Express.js is a web application framework that uses Node.js. Express.js provides features to handle request and responses which enables us to focus on content development as opposed to rebuilding basic HTTP handling. Express.js also provides libraries and supporting architecture that enable us to build and maintain web applications.

Postgres

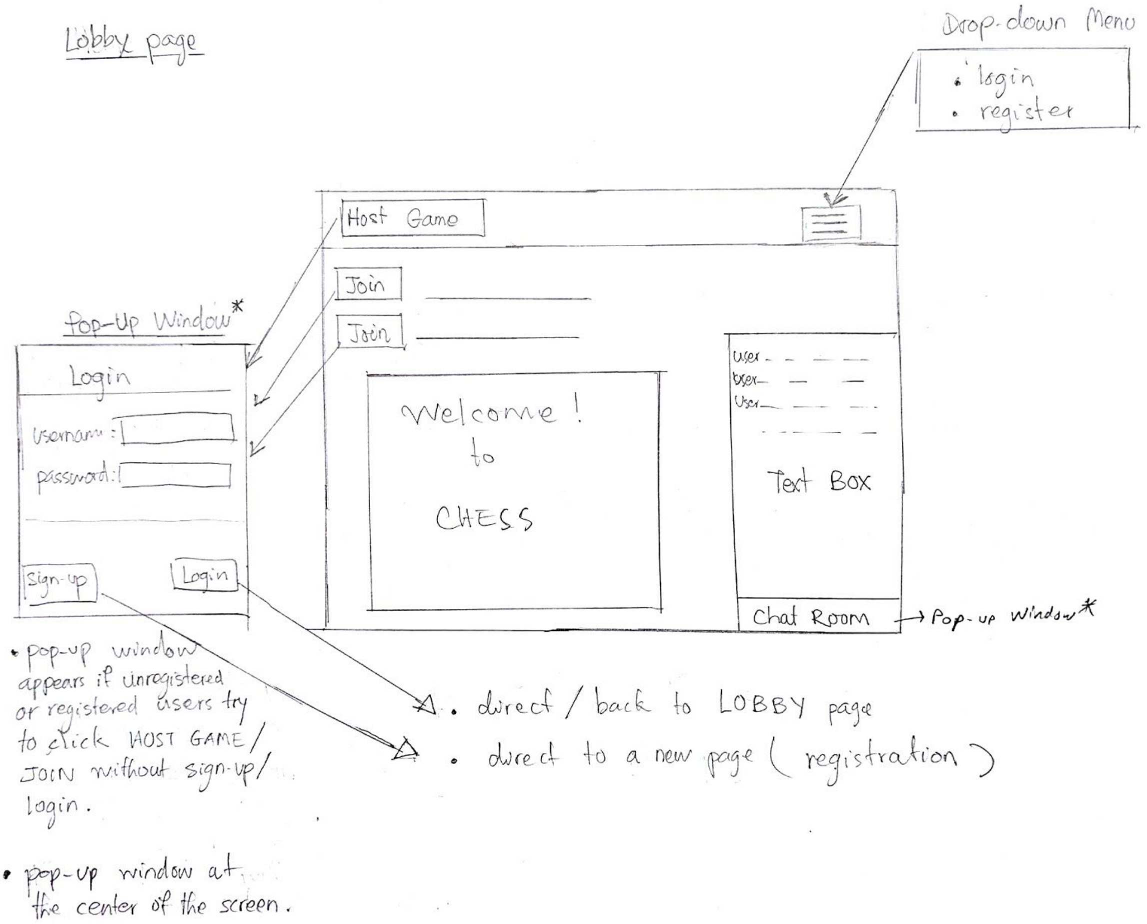
Postgres is an object-relational database management system that is used to store and return requested information. In the context of our project, we will be using Postgres to store user credentials, game state information, and other essential information required for persistence.

Pug

HTML templating engine. More efficient than writing out HTML.

Wireframes

Lobby Page



• direct / back to LOBBY page

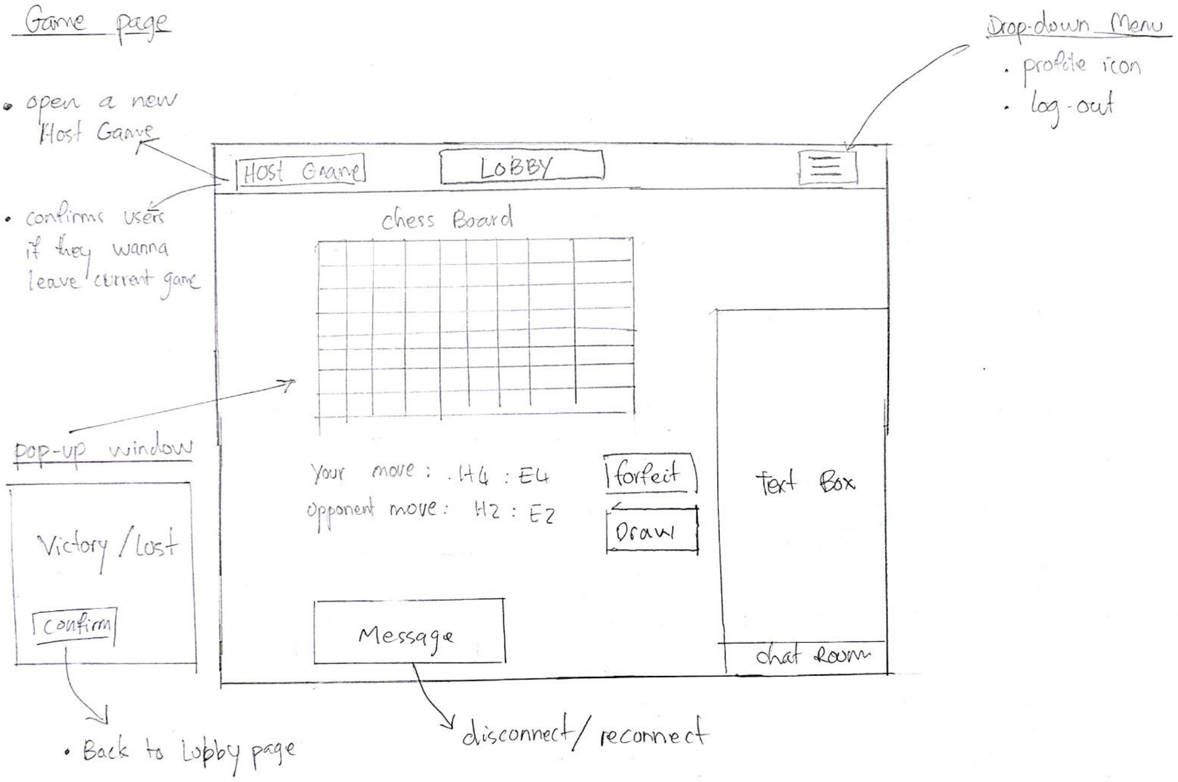
• direct to a new page (registration)

• pop-up window appears if unregistered or registered users try to click HOST GAME/ JOIN without sign-up/ login.

• pop-up window at the center of the screen.

(Continue)

Game Page



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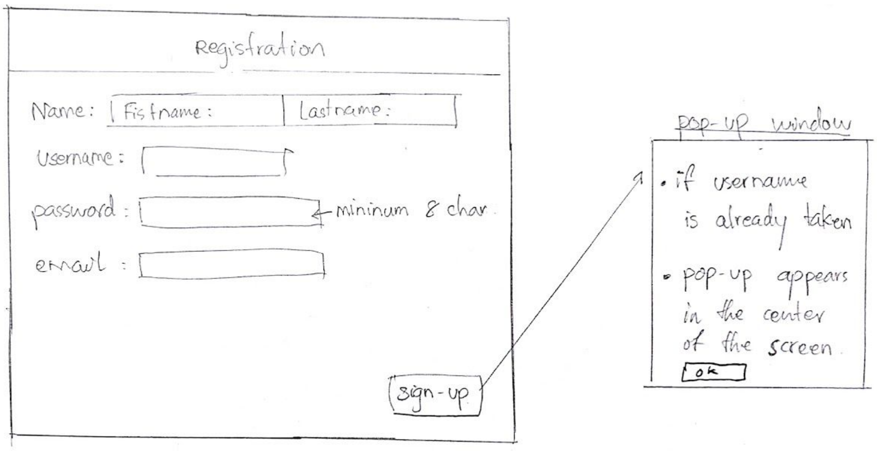
Registration page

Register page



minimum 8 char.

- if username is already taken
- pop-up appears in the center of the screen.