PROJECT Design Documentation

Team Information

- Team name: Team D
- Team members
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Executive Summary

Web Checkers is an online, multiplayer web app that allows users to play checkers with one another. Users can sign in with a desired username and play against friends or strangers.

Purpose

Provide a way for users to play checkers with their friends. The target user base would be all checkers lovers.

Glossary and Acronyms

> *Provide a table of terms and acronyms.*

Term	Definition
VO	Value Object

Requirements

Allow users to Sign In with a username, without Sign Out functionality.
Allow users to start a game with other online players who are not in a game.
Allow users to play a game with their opponent.
Allow users to record and watch replays of any game.
Allow users to ask for help when they are stuck.

Definition of MVP

The MVP of the project is to have a basic checkers game with sign in and sign out functionality.

MVP Features

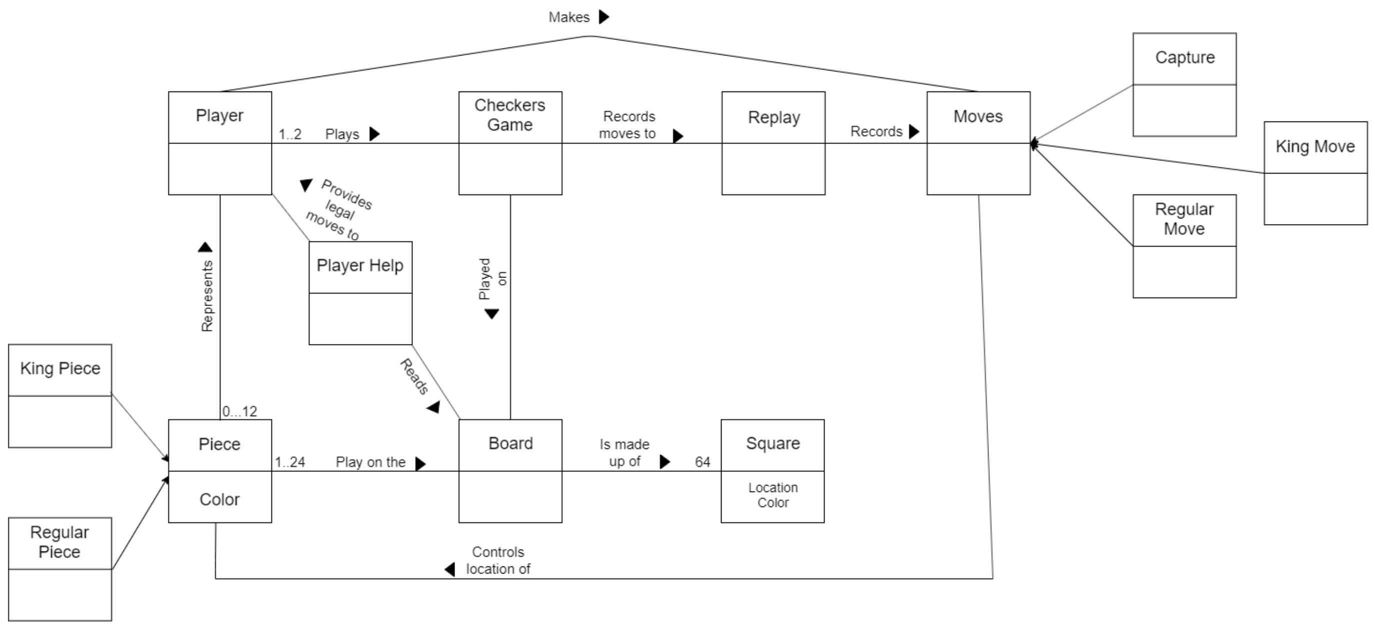
The features of the MVP will be sign in with a username and sign out.
Start a game with a player who is not in a game.
Resign a game.
Validate the moves.
Submit and pass your turn.

Roadmap of Enhancements

Allow users to ask for help about available moves.
Allow users to record the moves in the game and replay them.

Application Domain

This section describes the application domain.



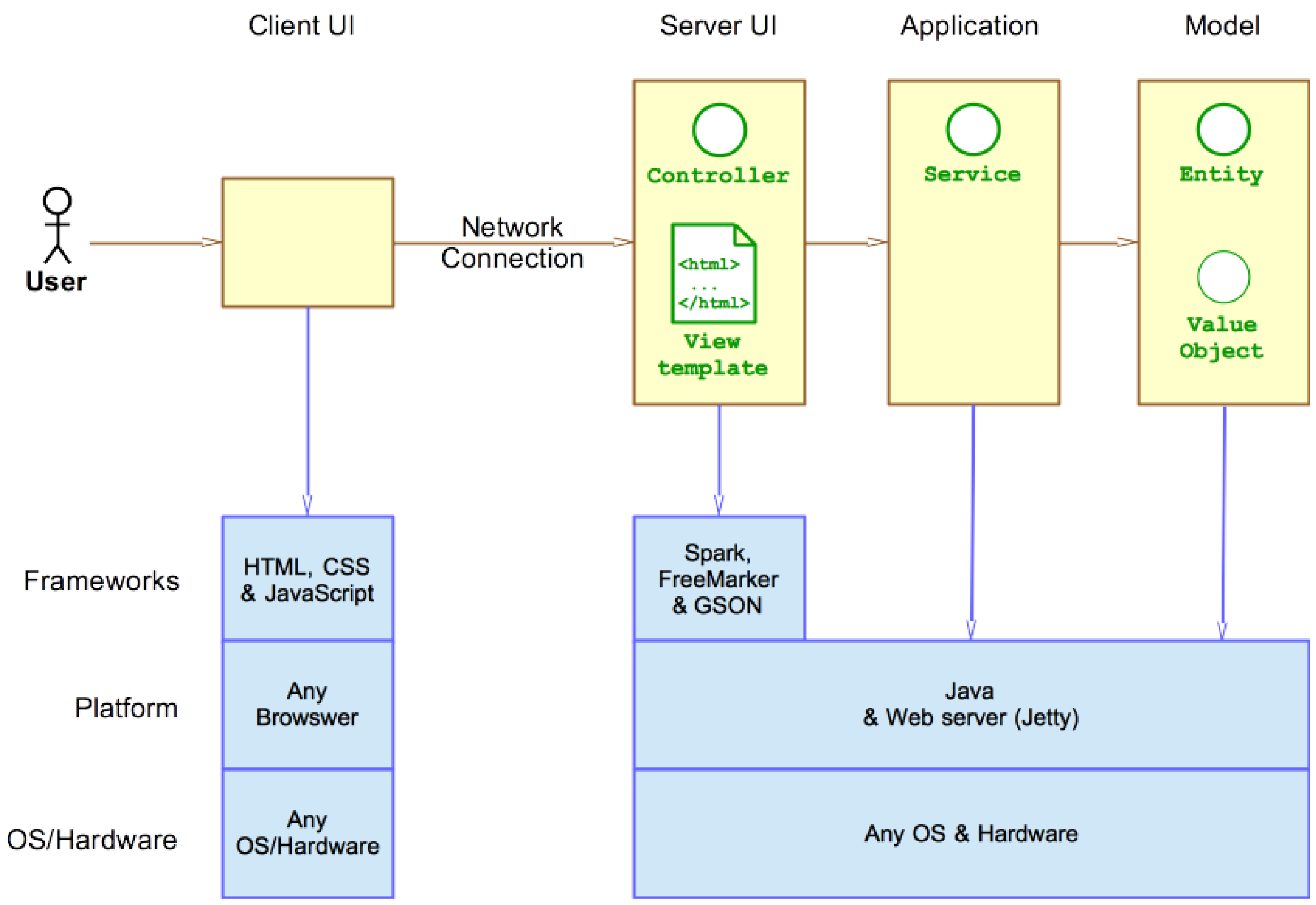
The main entities are the board, player, piece, moves, and square.
Pieces belong on the board, and the board is made of squares.
A Player is represented by a piece and makes moves.
A Piece can either be a regular piece or king piece.
The different types of moves are capture, regular move, and king move.

Architecture and Design

This section describes the application architecture.

Summary

The following Tiers/Layers model shows a high-level view of the webapp's architecture.



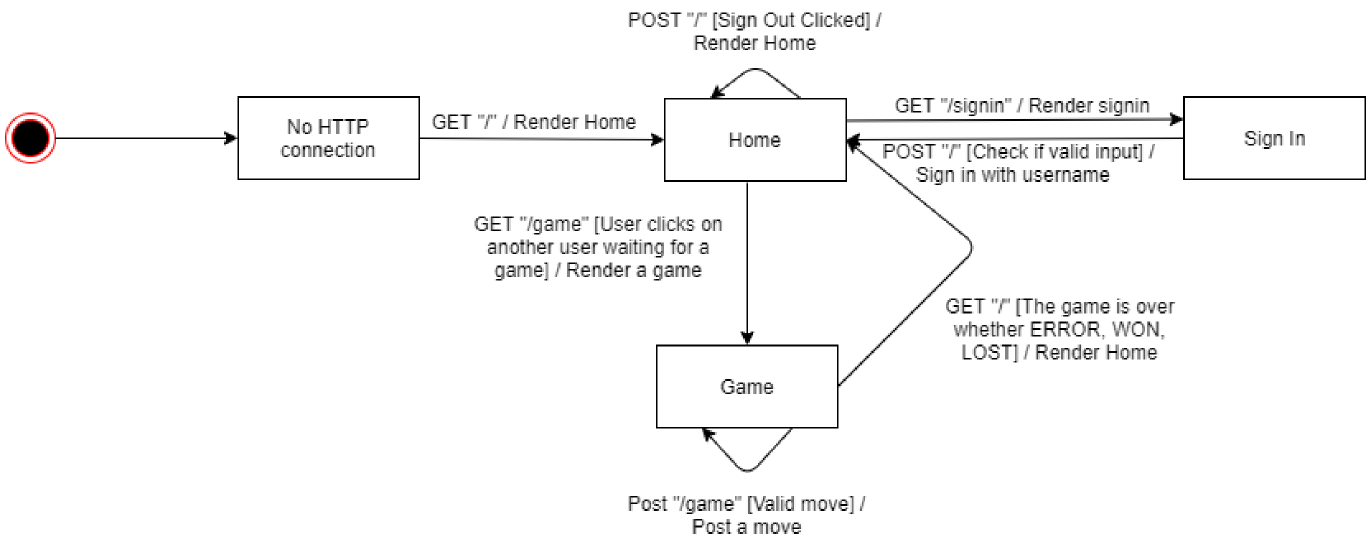
As a web application, the user interacts with the system using a browser. The client-side of the UI is composed of HTML pages with some minimal CSS for styling the page. There is also some JavaScript that has been provided to the team by the architect.

The server-side tiers include the UI Tier that is composed of UI Controllers and Views. Controllers are built using the Spark framework and View are built using the FreeMarker framework. The Application and Model tiers are built using plain-old Java objects (POJOs).

Details of the components within these tiers are supplied below.

Overview of User Interface

This section describes the web interface flow; this is how the user views and interacts with the WebCheckers application.


POST "/" [Sign Out Clicked] / Render Home
No HTTP connection
GET "/" / Render Home
Home
GET "/signin" / Render signin
Sign In
POST "/" [Check if valid input] / Sign in with username
GET "/game" [User clicks on another user waiting for a game] / Render a game
GET "/" [The game is over whether ERROR, WON, LOST] / Render Home
Game
Post "/game" [Valid move] / Post a move

After the user connects, the user sees the home page with route "/". After, if he chooses to sign in, he gets sent to the "/signin", seeing the signin.ftl page. After he signs in, he is redirected to the homepage if he inputs a valid name, and if not, he stays on the "/signin" route. If he is signed in, he can choose to start a game which would load the "/game".

UI Tier

> *Provide a summary of the Server-side UI tier of your architecture. Describe the types of components in the tier and describe their responsibilities. This should be a narrative description, i.e. it has a flow or "story line" that the reader can follow.*

> *At appropriate places as part of this narrative provide one or more static models (UML class structure or object diagrams) with some details such as critical attributes and methods.*

> *You must also provide any dynamic models, such as statechart and sequence diagrams, as is relevant to a particular aspect of the design that you are describing. For example, in WebCheckers you might create a sequence diagram of the `POST /validateMove` HTTP request processing or you might show a statechart diagram if the Game component uses a state machine to manage the game.*

> *If a dynamic model, such as a statechart describes a feature that is not mostly in this tier and cuts across multiple tiers, you can consider placing the narrative description of that feature in a separate section for describing significant features. Place this after you describe the design of the three tiers.*

Application Tier

> *Provide a summary of the Application tier of your architecture. This section will follow the same instructions that are given for the UI Tier above.*

Model Tier

> *Provide a summary of the Application tier of your architecture. This section will follow the same instructions that are given for the UI Tier above.*

Design Improvements

> *Discuss design improvements that you would make if the project were to continue. These improvement should be based on your direct analysis of where there are problems in the code base which could be*

> *addressed with design changes, and describe those suggested design improvements. After completion of the Code metrics exercise, you will also discuss the resutling metric measurements. Indicate the hot spots the metrics identified in your code base, and your suggested design improvements to address those hot spots.*

Testing

> *This section will provide information about the testing performed and the results of the testing.*

Acceptance Testing

> *Report on the number of user stories that have passed all their acceptance criteria tests, the number that have some acceptance criteria tests failing, and the number of user stories that have not had any testing yet. Highlight the issues found during acceptance testing and if there are any concerns.*

Unit Testing and Code Coverage

> *Discuss your unit testing strategy. Report on the code coverage achieved from unit testing of the code base. Discuss the team's coverage targets, why you selected those values, and how well your code coverage met your targets. If there are any anomalies, discuss those.*