Software Requirements For

Smart Chess Game

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1. Introduction

1.1. Purpose of Document

This document will list all requirements for the game Interactive Chess Game to create the final version. The clients can use it to determine what the program should look like and what the application can do. The developers can use this document to decide what the application should look like.

1.2. Scope of Document

This document will contain enough information that developers can transform the requirements into a functioning chess application, which can work online.

1.3. Overview of Document

This document will contain functional and nonfunctional requirements, use cases, diagrams, and UI mockups. The game is designed to run on PC and laptop.

2. Description

2.1. Product Perspective

Interactive Chess Game will be a program which will let one user play a chess game with one other person online, from remote locations. This is a web application that simulates the two players playing chess on a physical board. The chess rules will be utilized to assess the validation of each move and the gameplay. The game ends when one of the players is put in checkmate, or both of the players are in stalemate.

2.1.1. Program User Interface

The program will show the user everything to play the game. When opening the application, the user can choose to create a new game room or enter the ID to join the current game room. Then, they will see a chess board of size 8x8, which includes each player's pieces and smaller square frames. The user will be able to move the chosen pieces on the board. In the next turn, the opponent can make a move. The two players can see each other's moves while waiting for the turns. If one of the two players wants to exit, he/she can click "Forfeit".

2.2. Product Functions

The client will provide the following features:

- Creating or joining of an online chess game session
- Ability to make chess moves
- Ability to exit from an ongoing game

The server will provide the following functionality:

- Ability to host chess game sessions and manage different rooms and players at the same time via the internet
- Ability to send information to update the chess board
- Ability to validate the chess move from users

2.3. User Description

The primary user of *Interactive Chess Game* is someone who desires to play chess with a friend, from different machines. To learn the rules for playing chess, the user can use Wikipedia - Rules of Chess. Furthermore, the user should also have a way to contact their friend to get the room ID to join their game session. The game should support players of all levels (from beginners to experts).

2.4. Assumptions and Constraints

2.4.1. Assumptions

The interactive chess game generates the UI based on HTML/CSS. The web browser is expected to be able to render HTML5 to get the correct UI version of the game.

2.4.2. Constraints

The application must be a final workable game within 6 weeks from the time writing this document.

2.5. Requirements Apportioning

The priority levels of the following requirements are as follows:

Priority Level	Description
1	These requirements are required.
2	These requirements are not required but highly desirable.
3	These requirements are not required, but will be included if there is sufficient time.

3. Functional Requirements

3.1. Launch Page

a. This page should allow users to create a new room for the chess game. **Priority 1**

b. After creating a new room, the user should get back a unique room ID number identified the game room that the user created, and the user then gets redirected to the game page. **Priority 1**

c. Other than create a new room, the user can also choose to enter a created room using room ID and get redirected to the game room. If the room ID does not exist or is already full (2 players joined), the user should get back this error message on the launch page . **Priority 1**

d. The user should be able to choose his/her side of the board, either black or white. **Priority 2**

e. Once the game starts with two players, other users who enter that same room ID can see them playing. **Priority 3**

3.2. Game Page

a. After joining the room, If only one player joins the room, that player has to wait for the other player to join. The application should allow the user to forfeit the game to join a different room. **Priority 1**

b. Upon clicking the forfeit button, the other user will be prompted a “Yes” or “No” button to accept or decline the request. If “Yes” is entered, the user should be redirected back to the launch page to create a new room or to join a room. If “No” is entered, the game will continue on until the game ends or either player forfeits. **Priority 1**

c. The page should be able to render and update the chess board with chess pieces for both players when one of the players makes a move. **Priority 1**

d. The page should show the players’ turns to move. **Priority 1**

e. The user should only be allowed to make a chess move only when it is his/her turn. **Priority 1**

f. If the user makes an invalid chess move, the page should show this error message to the user and prompt him/her for a different move. **Priority 1**

g. If there is a stalemate, the application should show a message indicating the draw game. **Priority 1**

h. The page should display the user’s move and possible valid moves on the chess board. **Priority 2**

i. The page should show the pieces of the opponent that the user has captured. The pieces, which the opponent has captured, will be displayed on the screen. **Priority 3**

j. The page should allow players to chat with each other. **Priority 3**

k. The page should let human players play against the AI based on the Easy and Medium levels. **Priority 3**

4. Non-Functional Requirements

4.1. Capacity

a. The application server will be run in AWS or Heroku. **Priority 2**
b. The application will allow 50 players (pairs of 25) to play chess game at any time. **Priority 2**

4.2. Time and Speed

a. A move, once played, should be performed within 1-2 seconds, including time for poor network connection. **Priority 2**

5. User Interface

5.1 Launch Page

5.1.1. Create Button

- The user can create a new game room

5.1.2. Join an existing room

- The user can enter the room ID to enter an existing game room

5.1.3. Status Bar

- All messages regarding to the page will be displayed in the status bar

5.2. Game Page

5.2.1. Chess Board

- An 8x8 chessboard with all black and white pieces will appear on the screen. **Priority 1**

5.2.2. Forfeit

- The users can exit the game. **Priority 1**

5.2.3. Status Bar

- All messages regarding the page will be displayed in the status bar. **Priority 2**

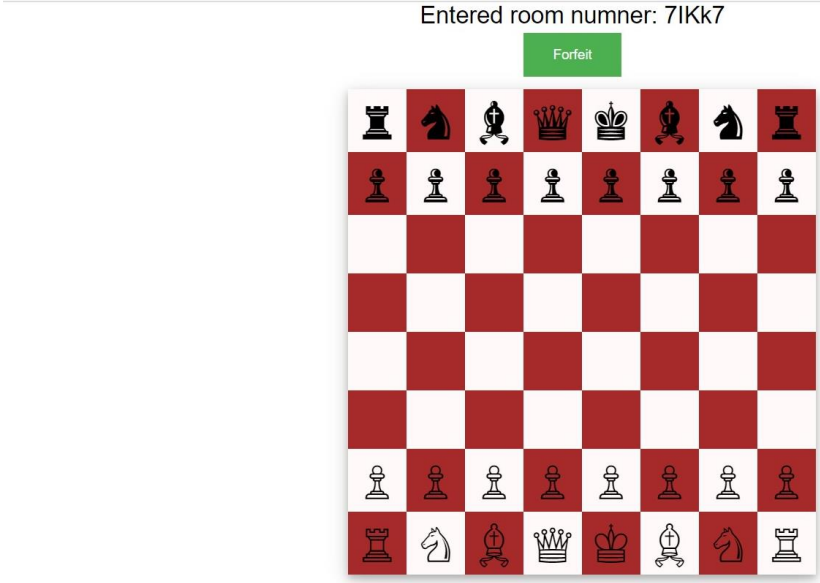

Figure 1: the mock user interface for the game page

6. Use Cases

6.1. Use Case Flow

6.1.1. Create a game

Preconditions:

- The player is the host of the game
- The player has opened the chess application
- A game has not been initialized yet

Main Flow:

- In the application, the player pushes the “CREATE” button to create a unique game room and get a unique identification number to be utilized by the second player for establishing a connection

Postconditions:

- The host player waits for the guest player to join and for the game to start

6.1.2. Join a game

Preconditions:

- There exists a player who has already hosted the game
- There exists a specific game room ID number that the other player can enter to join the game
- The player has launched the chess application
- A game has not been initialized yet

Main Flow:

- The guest player enters the room ID number, which is generated by the host player’s devices, to connect the game

Postconditions:

- The host and guest players are connected to the chess game, and the game starts

6.1.3. Play a game

Preconditions:

- The host and guest players are connected
- The chessboard is displayed by the application along with all the pieces at the starting positions.

Main Flow:

- The player makes moves by moving a chess piece from its current position to its desired position
- The move is validated by the application for accuracy and consistency with game rules

Postconditions:

- It switches to the other player's turn where they have to make a move that is validated by the application

6.1.4. Exit a game

Preconditions:

- The two players of the chess game are connected

Main Flow:

- One of the two players forfeit the game by clicking "Forfeit" button

Postconditions:

- The player exits from the game and goes back to the launch page, and the game is paused.

6.2. Activity Diagram

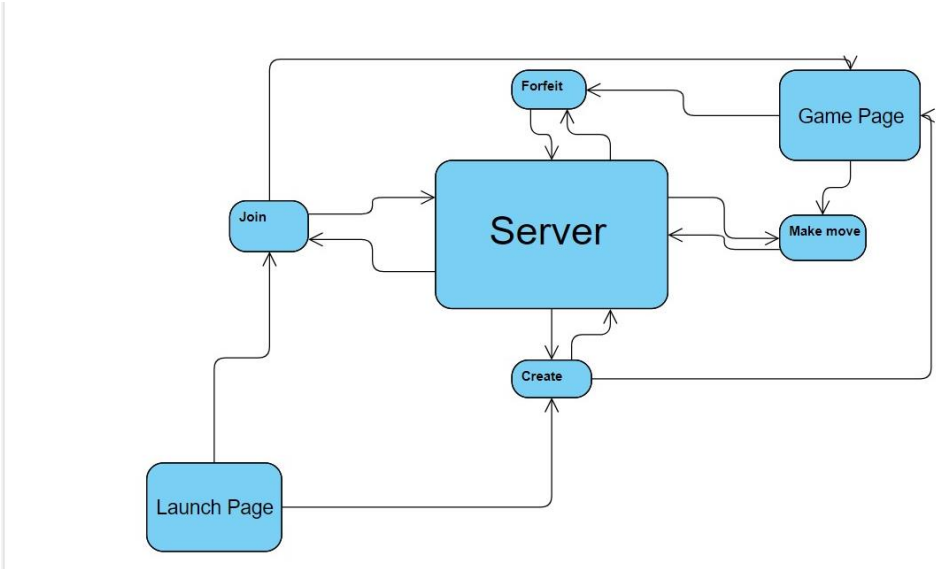

Figure 2: Activity diagram for the interactive chess game

7. Reference(s)

[1] Wikipedia: http://en.wikipedia.org/wiki/Rules_of_chess