

Project Report - CHESS GAME

Team Members

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Use Cases

The project has many use cases -

- Human Player vs. Human Player on one machine
- Human Player vs. AI on one machine

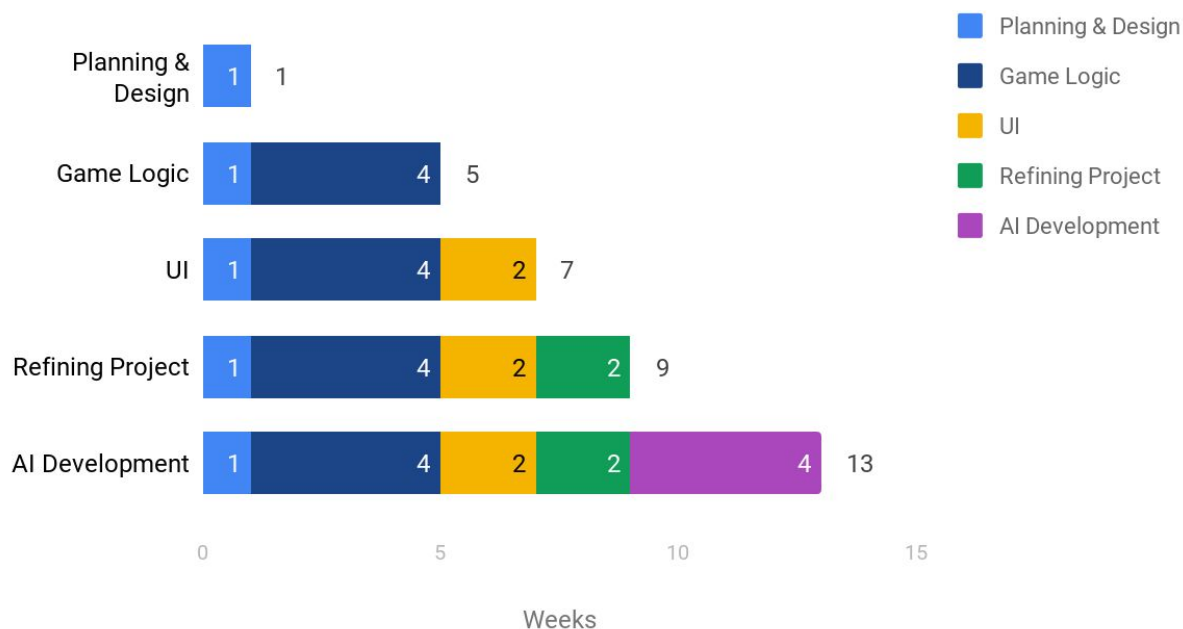
Defining the problem

Chess, although played physically, it is possible to design a system to automate it. This need is much more relevant now due to the Covid-19 pandemic.

Our objectives with this project are, therefore, mainly two.

- Making a basic 2-player chess game.
- Adding an A.I to play the game locally.

Timeline



Features of the project

The chess game that we shall develop will have the following features -

1. Chess game will have a GUI that will use 2D graphics
2. A player will be able to play against another human player using single PC
3. A player will be able to play against A.I.
4. When it is the player's turn, all pieces that has move available will be automatically detected and shown in the UI
5. When a player selects a piece, all possible moves of that piece will be automatically detected and shown in the UI
6. A player will not be able to move a piece that belongs to another player
7. When the king is under "check" state, it will be clearly visible in the UI and a sound will be heard
8. "Checkmate" state for both players will be detected by the program and the game will end. After that no players will be able to make any move.
9. No. of games played, no. of wins by a particular player will be stored in a realtime database.

Technologies

Language

Things we need to consider for our project

- Maintaining the code in the long run
- Applying Object Oriented Concepts in the project.

With these goals in mind we decided to use Java 7/8 , Java SE 15 in our project

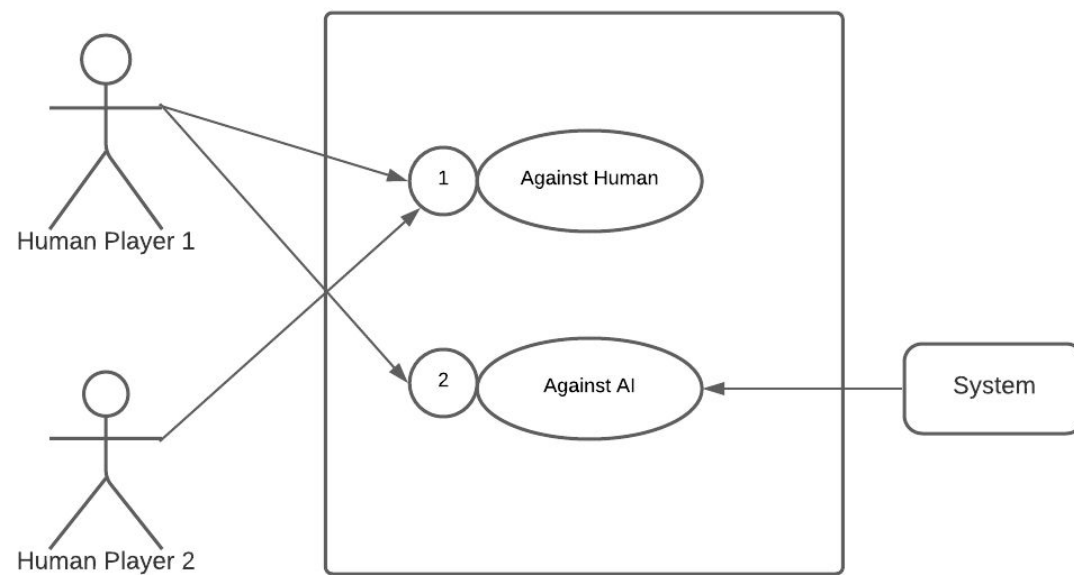
IDE

Intellij IDEA community edition

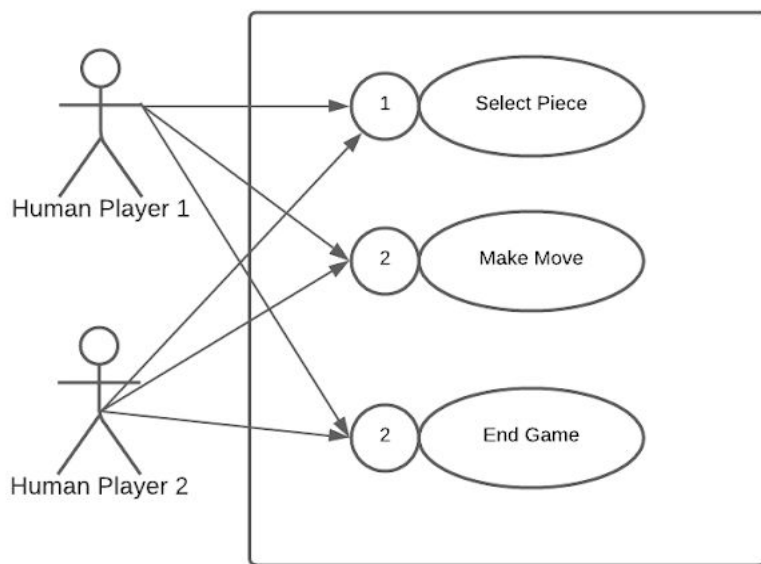
Constraints

- Java's Chess utility cannot be used.
- No game engine can be used

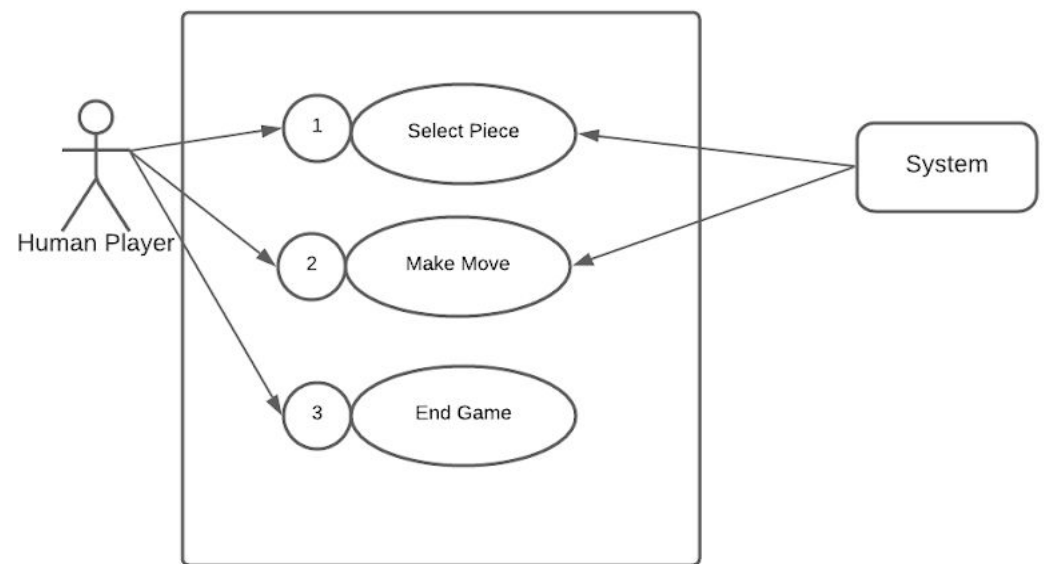
Use Case Diagrams



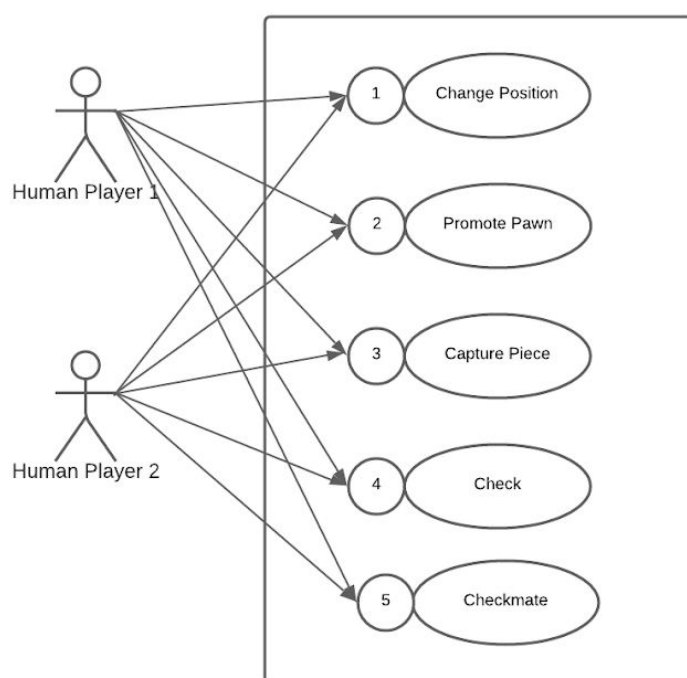
Level 1



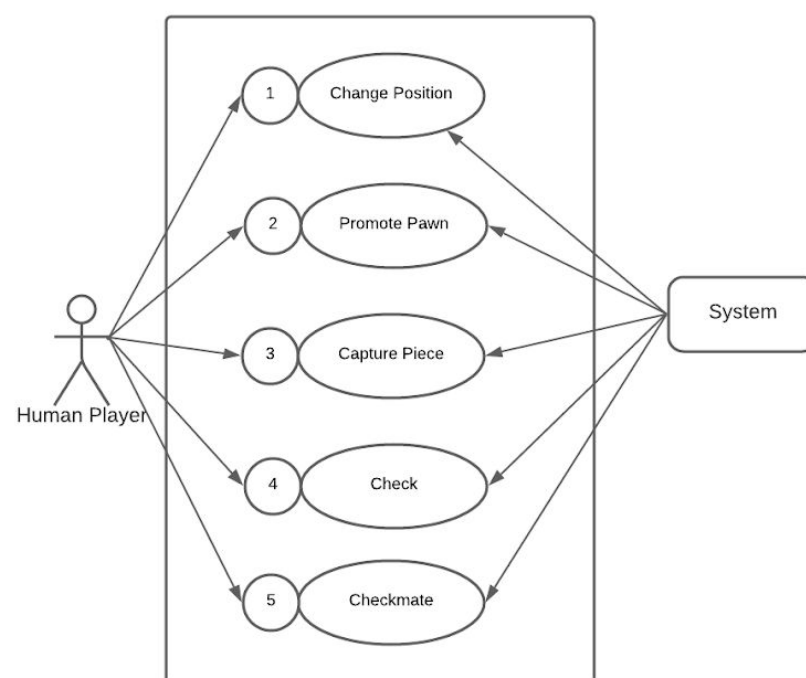
level 1.1 (Against Human)



level 1.2 (Against AI)



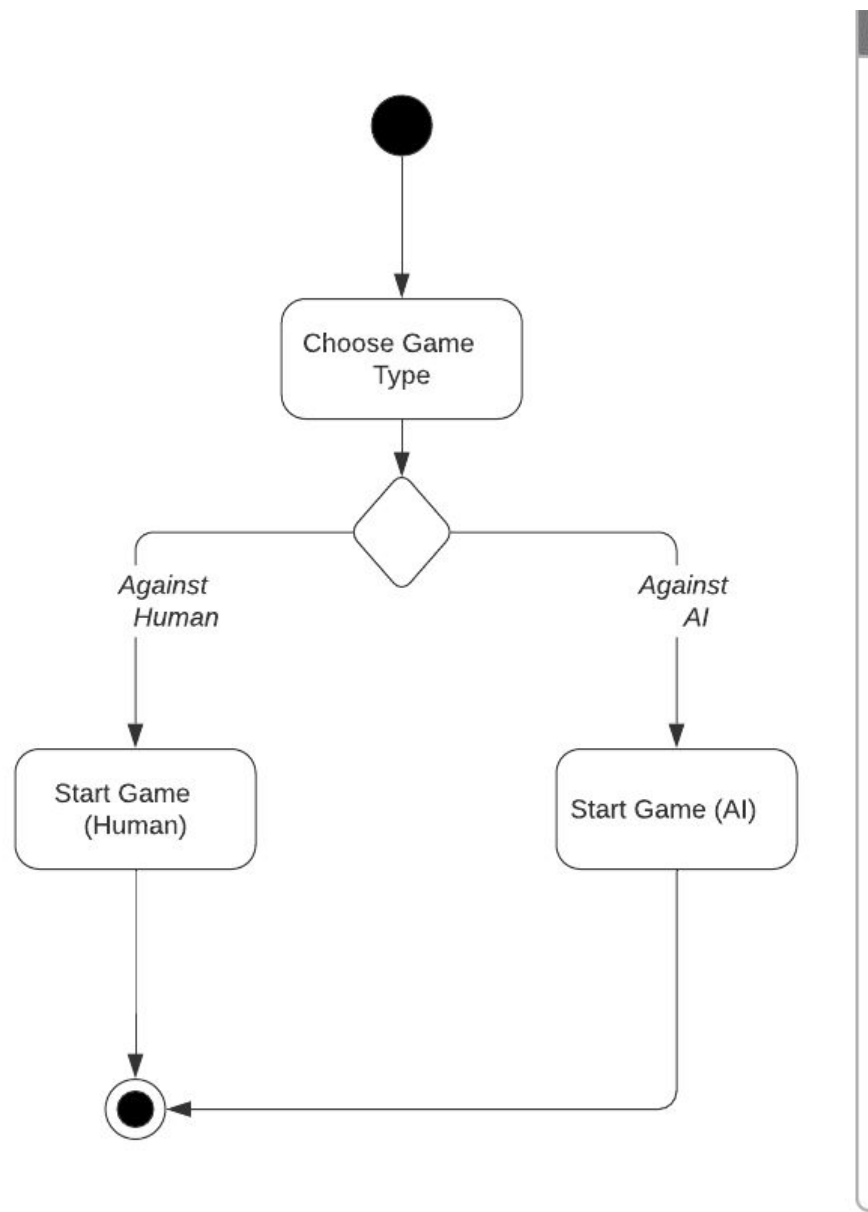
level 1.1.2 (Make Move)



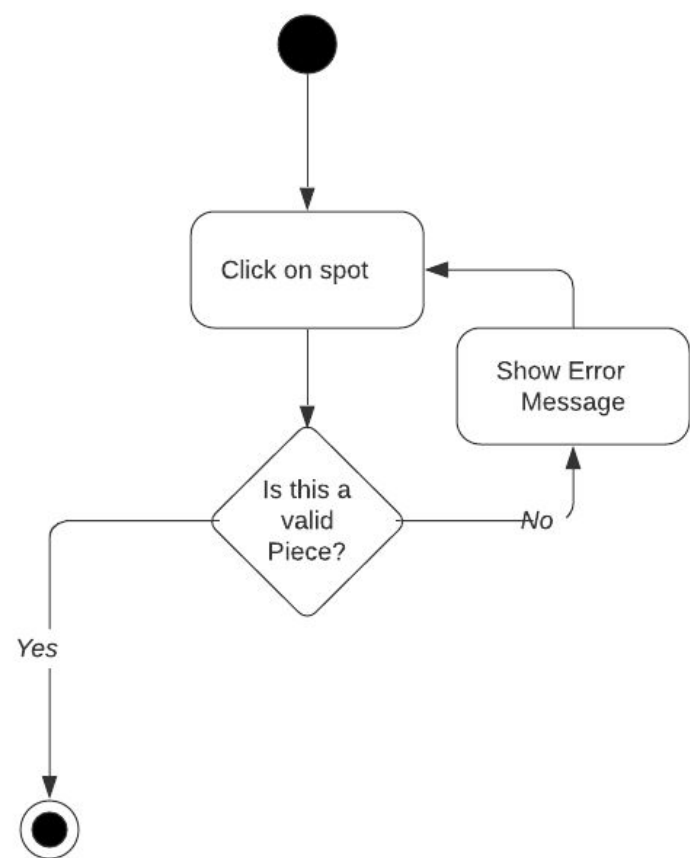
level 1.2.2 (Make Move)

Activity Diagram

Choose Game Type



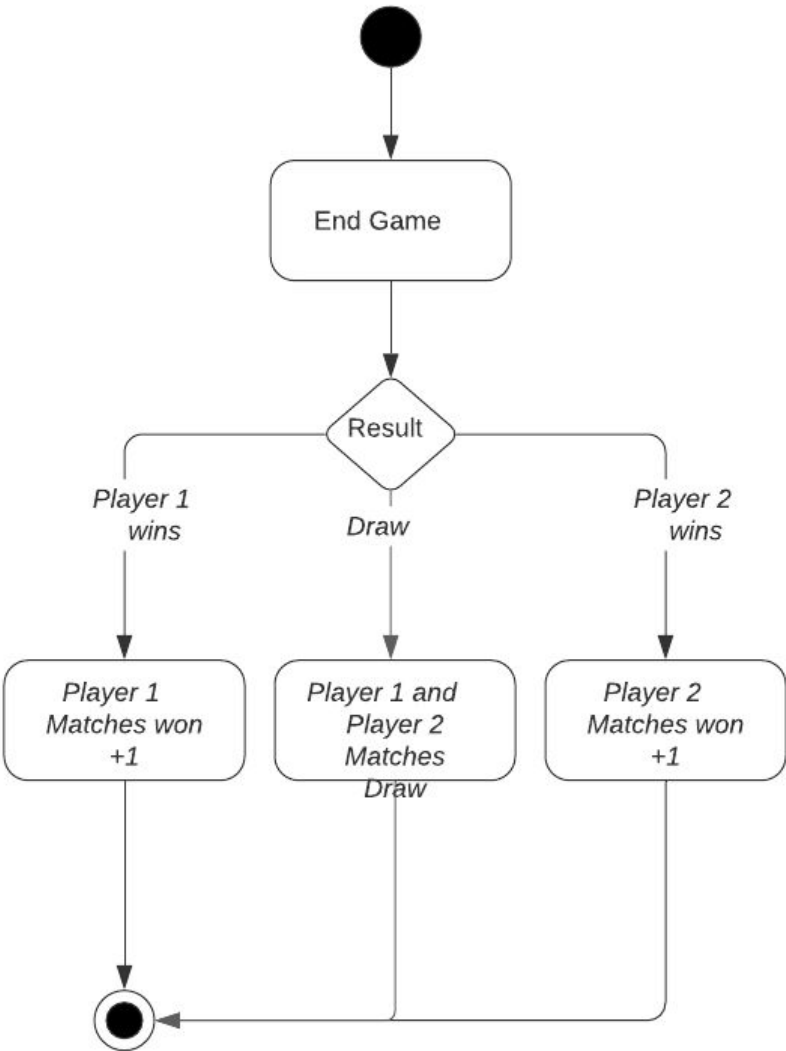
Select Piece (Against Human/AI)



Make Move (Against Human/AI)



End Game (Against Human/AI)



Github Link

<https://github.com/afzalsiddique/ChessGame/>

Project Demo

<https://drive.google.com/file/d/1OIQcwHlwTFIgVsCoJGWy4mW1MfRrCDe-/view?usp=sharing>