Project Design Documentation: Python Chess

Team Members:

```
* Peter Carter
* Nicholas Kelly
* Arian Jahjaga
```

Minimum Viable Product Summary

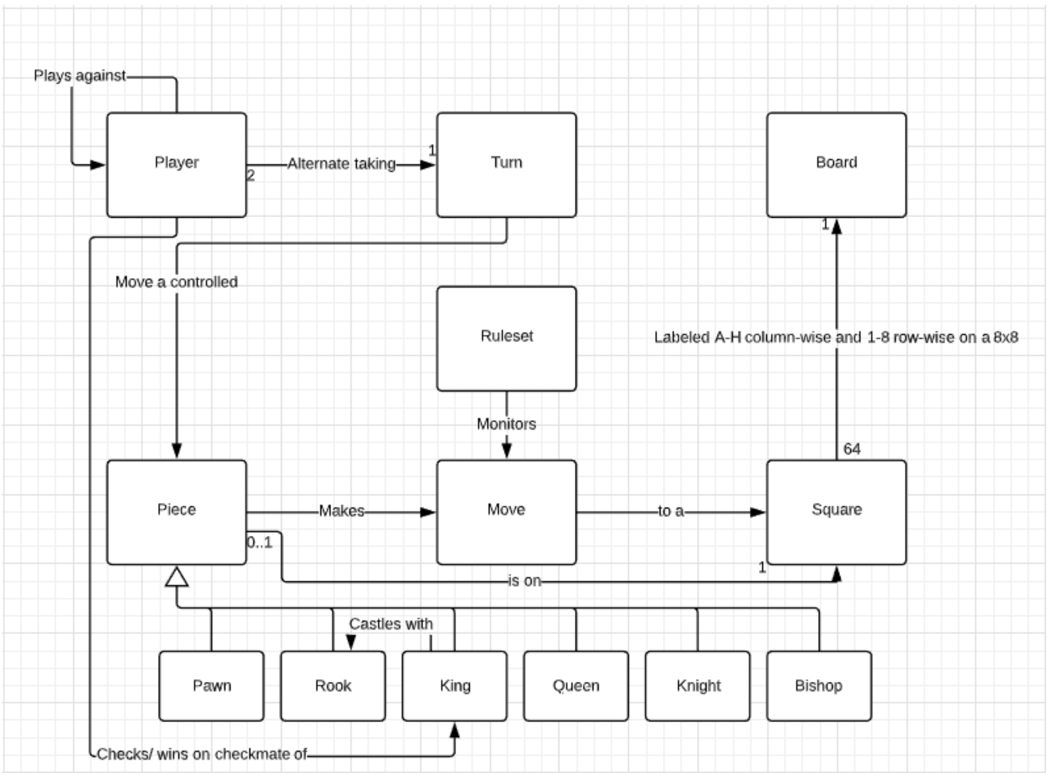
Our minimum viable product will be a Python executable that can be run from a desktop shortcut. Upon opening, users will be taken to a start screen where they may select to play a local game against another player or against an AI. Upon starting a game, users will be able to play legal chess as defined by the US Chess Federation's rules.

Requirements

Our product must meet the following requirements to be defined as functional:

- Players can launch a Python executable from their desktop
- Players can select either to start a local normal game, or against an AI
- Upon starting a game, a chess board is displayed with pieces on top of it
- Pieces must be move-able via drag and drop.
- Game play follows the rules of the US Chess Federation.
- Games will conclude when checkmate is reached.

Domain Model



Domain Model of PythonChess

Our model is comprised of the following pieces:

- Board: This represents a chess board. It is made up of 64 squares
- Square: A single square on a chess board. It has a color attribute, and a coordinate.
- Piece: This is a super class representing all chess pieces. It has a type attribute, color, and makes moves
- Pawn, Rook, King, Queen, Knight, Bishop: These will all be subclasses of Piece, with essentially unique interpretations of a 'move' function.
- Player: represents one of the two players in a game of chess.

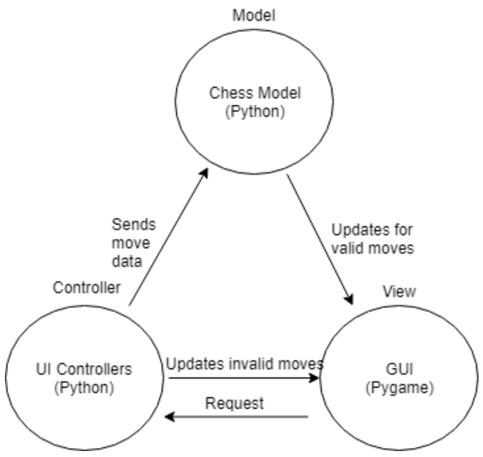
- Move: represents the move of a piece from one spot to another.
- Ruleset: A set of rules that dictate if a move is legal

Summary of Project Architecture

Model View Controller

The general structure of our project will follow a model view controller (MVC) pattern.

Here is an illustration of MVC design within a chess game:



- Model Tier: composed of Python classes representing entities described in our domain model. Chess buisness logic lives here.
- Controller Tier: Composed of UI Controller classes written in Python. These will handle requests from the GUI. Valid requests, namely valid moves or button presses, are relayed to the model.
- View: Our view is a Pygame GUI representing a chess board. Requests will be sent by dragging and dropping chess pieces