Department of Computer Science and Engineering

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Project Documentation

Week 2: Moving the pieces

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We have updated both the ChessEngine.py & ChessMain.py script this week with including functionalities to move the chess pieces.

ChessEngine.py

The Chess.Engine module has 2 classes as described below:

1. **GameState Class:** This represents the current state of the game.

- The **__init__** function initializes the game board, sets the player to move as white and initializes an empty move log.
- The **makeMove** function takes a move as input, updates the game board, logs the move and updates the player to move.

2. **Move Class**: The Move class is responsible for representing a single move made by a player in the game of chess. It has the following attributes:

    - **startRow**: The row of the starting square of the move
    - **startCol**: The column of the starting square of the move
    - **endRow**: The row of the ending square of the move
    - **endCol**: The column of the ending square of the move
    - **pieceMoved**: The piece that is being moved
    - **pieceCaptured**: The piece that is being captured (if any)

    The Move class also has the following methods:

- **getChessNotation**(): Returns the move in algebraic chess notation. For example, if the move is from square (1,1) to square (3,3), then the algebraic notation for the move would be "b2c3".
- **getRankFile(r, c)**: Given a row and column, returns the algebraic chess notation for the corresponding square. For example, if the row is 1 and the column is 2, the algebraic notation for the square would be "c2".

When a move is made in the game, a Move object is created with the starting and ending squares of the move, as well as the current state of the chess board. The **pieceMoved** attribute is set to the piece that is being moved, and the **pieceCaptured** attribute is set to the piece that is being captured (if any).

The **getChessNotation()** method is used to convert the starting and ending squares of the move into algebraic chess notation. This notation is useful for recording the move and displaying it to the players.

Overall, the Move class is an important component of the chess engine, as it allows the engine to keep track of the moves made by the players and update the state of the game accordingly.

ChessMain.py

To move the pieces of the chess board we have built a logic & updated it inside the while loop. The **while** loop is responsible for running the game continuously until the user decides to exit. Within this loop, the code listens for events such as mouse clicks and the quit event.

The **sqSelected** and **playerClicks** variables keep track of the user's clicks on the board. Initially, they are both set to an empty tuple.
When the user clicks the mouse button, the location of the click is obtained and converted to the corresponding row and column on the board. If the user clicks the same square twice, then **sqSelected** is reset to an empty tuple, and **playerClicks** is cleared.

Otherwise, if the user clicks a different square, the **(row, col)** tuple representing the square is added to the **playerClicks** list. If **playerClicks** contains two tuples (i.e., the user has made two clicks), the program creates a **Move** object and uses the **makeMove()** method of the **GameState** object to apply the move to the board.
After a move is made, **sqSelected** and **playerClicks** are reset, and the loop continues to the next iteration.

The code then calls the **drawGameState()** function to draw the current state of the game on the screen. The **clock.tick()** method controls the frame rate of the game, and the **p.display.flip()** method updates the screen.

After implementing the above discussed functionalities, now the pieces of the chess board of a certain square can be selected and move to another square.