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Python Chess Project

For our project, we wrote a program that allows a user to play the game of chess. The user(s) can take turns in the game by entering coordinates as instructed within the program. One set to select a piece, and one set to select where to move the piece. Our program abides by the standard chess rules, with the exclusion of castling, en passant, and pawns turning into queens at the opposite end of the board. The game ends when a player, after attempting to make a move that would leave their king in check, responds “y” to a query asking if they are in checkmate.

We used chess as the subject for our project since it is a near universally understood game that would also pose some interesting coding challenges to us. For example, we used objects to keep track of the pieces, rather than any potential alternative method that we discussed in class. When testing the program, we recommend playing through a game or two, choosing your own moves, the basic rules of chess are shown below to aide in this. Additionally, further below, there is a set of suggested input which provides a quick way to reach the end of the game.

The Rules of the game:

Pawns: can move one space forward, or two if it is their first move, and pawns can capture pieces to their front left and front right. Where forward is towards the opposite color’s side of the board when the game starts. Pawns cannot jump over other pieces, and cannot capture without moving diagonally

Knights: Able to move in an “L” shape, 1 space in either horizontal or vertical, and 2 spaces in the other (EX: A knight at the space 4,4 can move to the space 3,2). Knights can jump over other pieces, and capture a piece occupying its destination

Rook: able to move in a straight line on the horizontal or vertical axis, but cannot jump over pieces, is able to capture at a move’s endpoint

Bishop: similar to rooks, but moves on its diagonals

Queen: able to move like either a rook or bishop

Kings: able to move to any of the 8 adjacent spaces. However, kings are restricted by spaces where they are, and are not in check

Check: a condition in which an opposing piece would be able to capture a player’s king on its next turn. A player is not able to move their king into check, and must move out of check if the king is in check at the start of their turn

Checkmate: the end condition of the game, occurs when a player’s king is in check, and has no way to escape that condition

The turn sets below are displayed how the user would input these coordinates to reach the same outcome

Fastest to check:

1. 6,4 -> 4,4
2. 1,5 -> 3,5
3. 7,3 -> 3,7

Fastest to checkmate:

1. 6,4 -> 4,4
2. 1,5 -> 3,5
3. 4,4 -> 3,5
4. 1,6 -> 3,6
5. 7,3 -> 3,7

Works Cited

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