The Concept

Chest chess was designed to be similar to chess except there is no King piece and therefore no checkmate and instead you start with 1 piece and chests randomly spawn from which you can get pieces. The higher in the opponent's territory, the better the piece is that you get from the chest.

Below is Figure 1 showing the start of the game (the yellow squares are where Player 1 can move to)

Below is Figure 2 showing the game after chests have spawned

Below is Figure 3 showing the game after white has opened a chest

Below is Figure 4 showing the game after each player has played a few more moves

Below is Figure 5 showing the game after WHITE has won (as black has no remaining pieces)

This is the basic design of the game with screenshots to show how it will look like

Now onto the design section

The Design

The Code

Firstly, the window was set up with the board displayed

The pygame window showing the board

After this, the Piece class and Pawn class which inherits from Piece were set up

This was then updated so ‘Piece’ had the ‘move’ and method instead and ‘Pawn’ inherited this from ‘Piece’

The ‘Board’ and ‘Square’ classes were updated

A ‘checkMove’ method was added to ‘Pawn’ which would be different for each ‘Piece’ class

The program was modified to include the instantiation of both pawns

Next, the ‘highlightMoves’ method of ‘Board’ was implemented

The Window after the ‘highlightMoves’ method has implemented and been displayed

After clicking again after ‘highlightMoves’ method has implemented and been displayed

A ‘get\_possibleMoves’ method was added to ‘Pawn’

The program was then updated to use this method instead of a pre-determined array for ‘possibleMoves’

The Window after the updated ‘highlightMoves’ method has implemented and been displayed

Then the ‘move’ method of ‘Pawn’ was implemented

Also the ‘checkMove’ method of ‘Pawn’ was updated and moved to ‘Piece’

However, this was reverted as it didn’t work properly and so a checkMove method that was specific to the piece type was further developed

A draw function for instantiating the pieces was defined

The colours of the board squares were changed slightly

The link for the video is below:

Chest Chess 2023-02-21 10-12-40.mp4

Another pawn for each colour was added

A “checkCapture” method was added in “Pawn”

This was then implemented

A new method called ‘draw\_squares’ was added

2 new colours were defined as constants and ‘piecesDict’ was updated

A ‘Text’ class was added for any textboxes

The first of these textboxes was instantiated and added to its own sprite group

A textbox was then instantiated based on the player turn

A FOR loop for blitting the textboxes on to the screen was also added

The next thing to do was to create the ‘Queen’ class for pawns that got promoted

Then some modifications were made and the promotion process was implemented

The game after white has promoted a pawn to a queen

The link to the video is here: Chest Chess 2023-03-01 16-26-40.mp4

However, Queen movement needed to be updated in order for the Queen to actually be able to move

First the ‘Rook’ part of the movement was sorted

Then the ‘Bishop’ part of the movement was also sorted

Also, the ‘checkMove’ method of the ‘Pawn’ class was updated

Next a system was implemented to detect if the game is over

Also, a separate screen was made for displaying the winner at the end

There was also a video made at this point in the development of the game

The link to the video is here: Chest Chess 2023-06-22 16-48-57.mp4

Next, version 2 was started by defining the Chest class as a sprite class

Then a method was made to spawn chests at random

Also this was implemented and a few tweaks were made to the program

Below is the program running with 6 chests spawned (after 3 moves)

Then after 5 more moves:

Then, the leftover piece classes were created - the Rook, Bishop & Knight classes

These were then added to the dictionary and instantiated in the draw function

Next, getting a piece from a chest was implemented

The link to the video is: Chest Chess 2023-07-03 17-25-21.mp4

Before getting a chest

After getting a chest

After this, a few more tweaks were made to improve gameplay and fix some bugs

Then, the ‘highlighting moves’ was fixed (finally!)

The link to the video at this stage of the game is below:

Chest Chess 2023-07-13 17-12-45.mp4

The Testing

VALIDATION TESTING:

Figure 6.1 and Figure 6.2 showing testing of the ‘checkMove’ method of ‘Pawn’

FUNCTIONALITY TESTING

Figure 7.1 showing the highlight possible moves not functioning properly

Figure 7.2 showing the piece moving not functioning properly