Project: Chess

Made by:

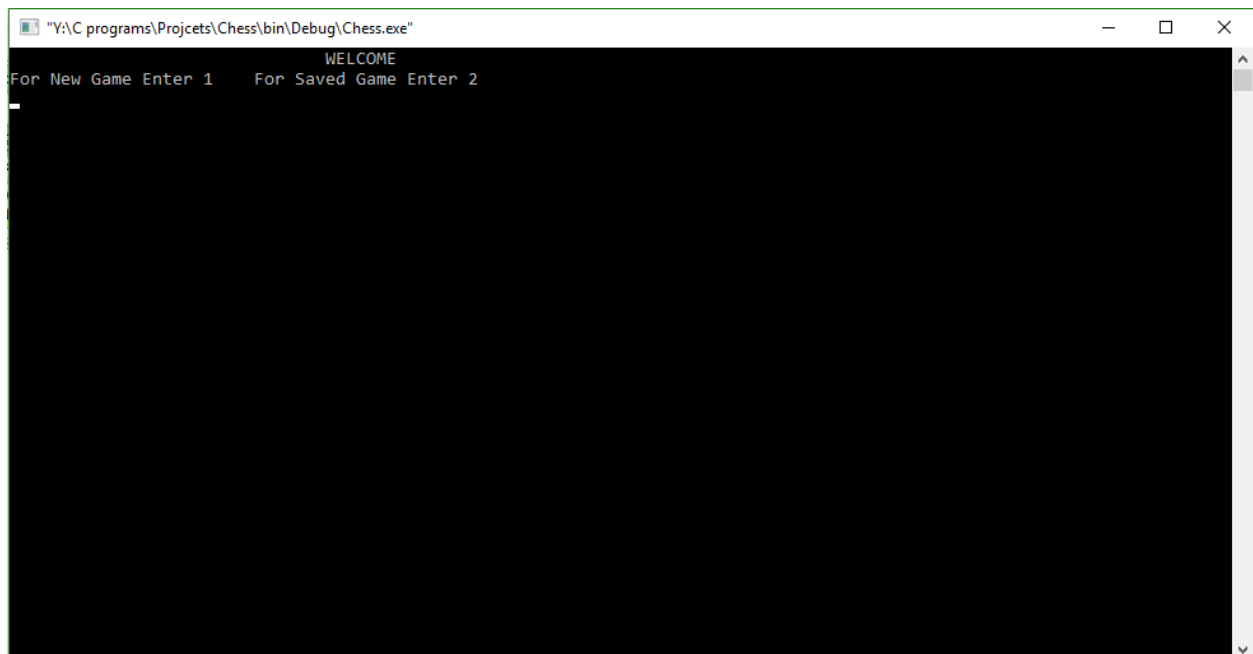*Youssef Mohamed Alshaarawi*

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Description:

- The project contain the basic features of any chess game (checkmate, stalemate, promotion, etc.)
- It is a multiplayer game and you can save your game and load it at any time
- You can undo to the start of the game and redo to the last move played

Overview of the design

Start Screen:

In-Game Screen:


```
 "Y:\C programs\Projcets\Chess\bin\Debug\Chess.exe"                          —   □   ×
                 WELCOME

  To Undo Write "u"|To Redo Write "r"|To Save Write "s"

        A     B     C     D     E     F     G     H         Moves:0
      ---------------------------------------------------
 1    | R |  N  | B |  Q  | K |  B  | N |  R |       1
 2      P |  P  | P |  P  | P |  P  | P |  P |        2
 3    |  |   |  |   |  |   |  |   |          3
 4      |  |  |  |   |  |  |   |  |  |        4
 5    |  |  |  |   |  |  |   |  |  |         5
 6      |  |  |   |  |  |   |  |  |  |        6
 7    | p |  p  | p |  p  | p |  p  | p |  p |       7
 8      r |  n  | b |  q  | k |  b  | n |  r |        8
      ---------------------------------------------------
        A     B     C     D     E     F     G     H      Previous Move:

 White Turn

 Please Enter Next Move:
```

Assumptions:

- Every two blocks(black, white) Resembles a black OR white board
- Maximum number of Characters allowed as Input is 499
- Maximum number of moves is 499

Data Structure used:

- Integers
- Characters
- Boolean
- Pointers
- Array of integers
- Array of Characters
- File

Description of important functions:

1. **Checkmate**: Try every possible move for the player under the **Check** and check if the **CHECK** is still on and **Undo** after every move it try

2. **Stalemate**: Try every possible move for the player if found **Undo** the move and continuo the game else end game as draw

3. **Undo** : Save every valid move ever happened in the game and undo whenever called

4. **Redo** : Save every undo done in the game and redo upon call

Pseudo Code of the main loop:

1. While(!checkmate)
2. If it is a saved game check if there is a check on both sides
3. If check was found print check and don't accept any move until it can remove the check
4. If stalemate was found end the game and print draw
5. Get input from user if valid continue if not ask for another input
6. if input is u undo
7. if input is r redo
8. if input is s save
9. if input is 5 characters check if promotion is possible if possible make the move and promote else ask for another input
10. Make the move
11. Check if there is a check if check was found print check
12. Repeat the loop till checkmate is found

User Manual:

- Input must be like this (A7A6), no lower case allowed nor space
- To undo write 'u', no uppercase allowed and to redo or save are the same
- To promote and you are black (A7A8Q),no lowercase is allowed and if you are white (A2A1q), no uppercase allowed
- Check how the game is played in Wikipedia

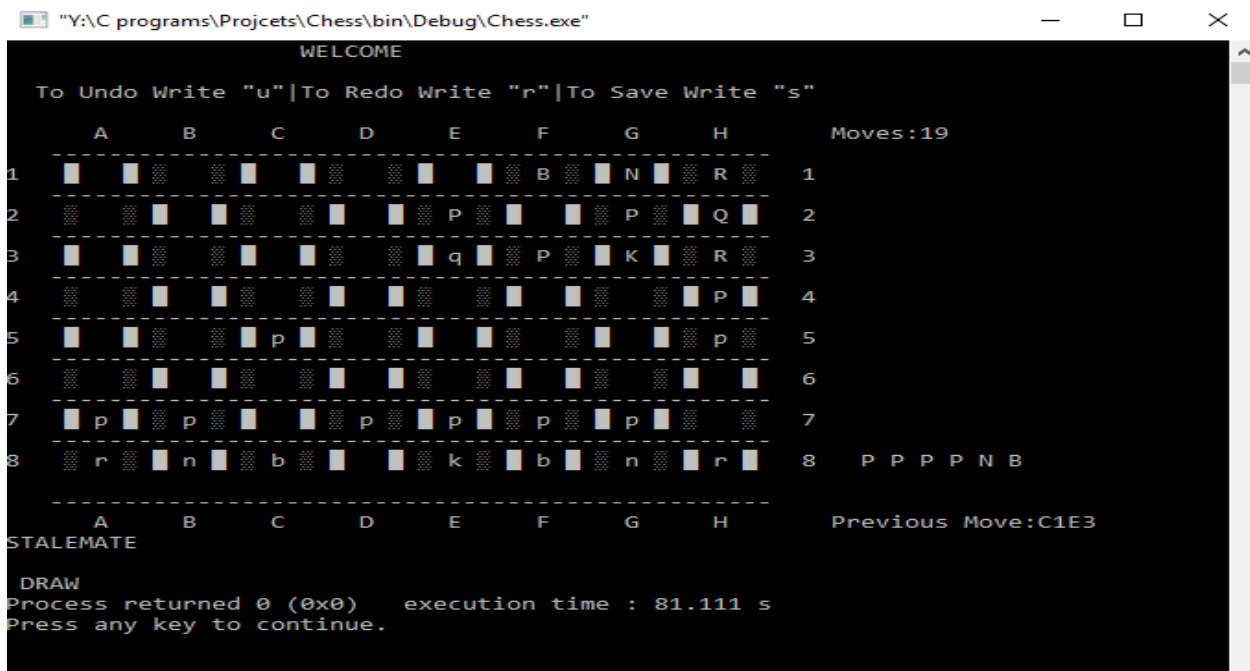# Sample Runs:

Check:

(F7F5)(E2E4)(A7A6)(D1H5)"CHECK"

Checkmate:

(F7F5)(E2E4)(G7G5)(D1H5)"CHECKMATE"

Stalemate:

(C7C5)(H2H4)(H7H5)(A2A4)(D8A5)(A1A3)(A5A4)(A3H3)(A4C2)
(F2F3)(C2D2)(Check)(E1F2)(D2B2)(D1D6)(B2B1)(D6H2)(B1C1)
(F2G3)(C1E3)"STALEMATE"

Promotion:

(D7D6)(E2E4)(B7B6)(E4E5)(E8D7)(E5D6)(D7C6)
(D6E7)(C6B7)(E7D8Q)"PROMOTION TO Q"