CA-360
PROJECT: CHESS

End-Term Evaluation

Submitted To: DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

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OBJECTIVE

- How to make efficient and fast chess game application of those that are mostly available in the market.

TOOLS FOR DEVELOPMENT

- Python- is easy to implement, faster than java as no garbage colection.
- Pygame :Simple, easy and one of best for 2-d games.
- VS Code : popular source code editor.

ABSTRACT

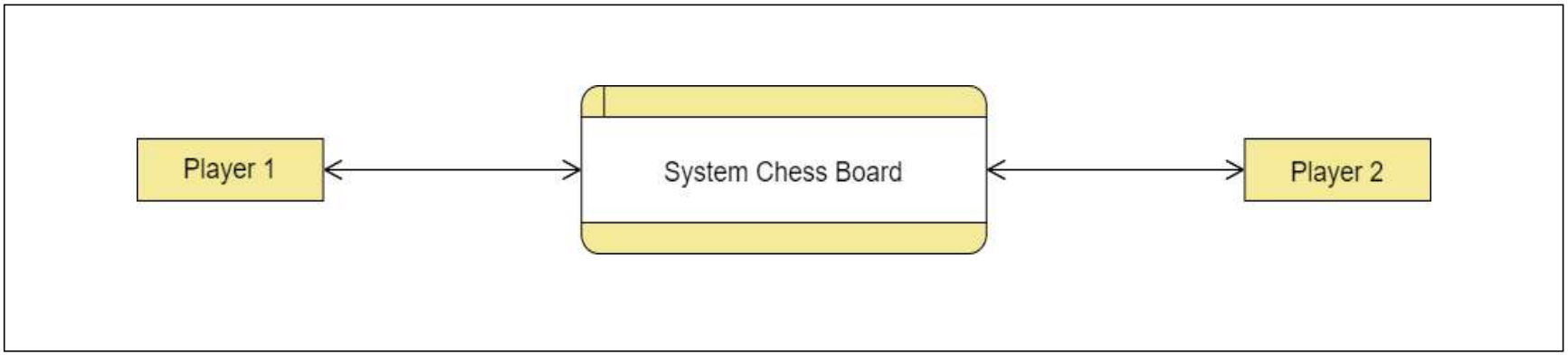
- Chess with all basic functionalities and rules.
- Different from other chess algorithms.
- Overall Low –cost , efficient and fast(low response time) alternative.
- Available only for the users that are present at same remote locations.

Working

1. Starts with drawing the board.
2. Consist of 4 phases(0,1,2,3).
   a) Starting with white(no selection)
   b) White moves the piece
   c) Black with no selection
   d) Black moves the piece
3. Player makes the move
4. How the game will end:
   - Draw
   - Forfeit
   - Checkmate

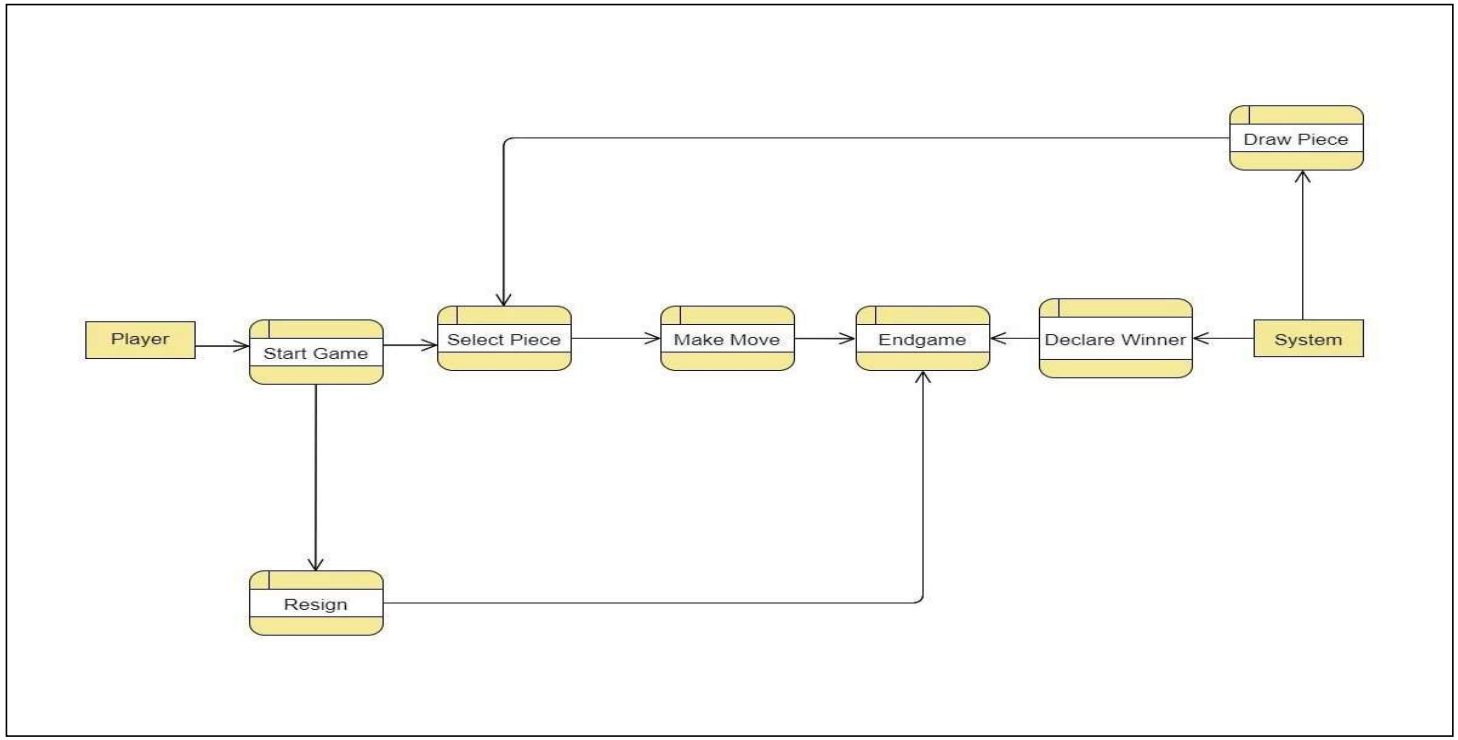
DESIGN AND ANALYSIS

- Data Flow Diagram
  - 0-level DFD : how the information/data flows through both the players and system.



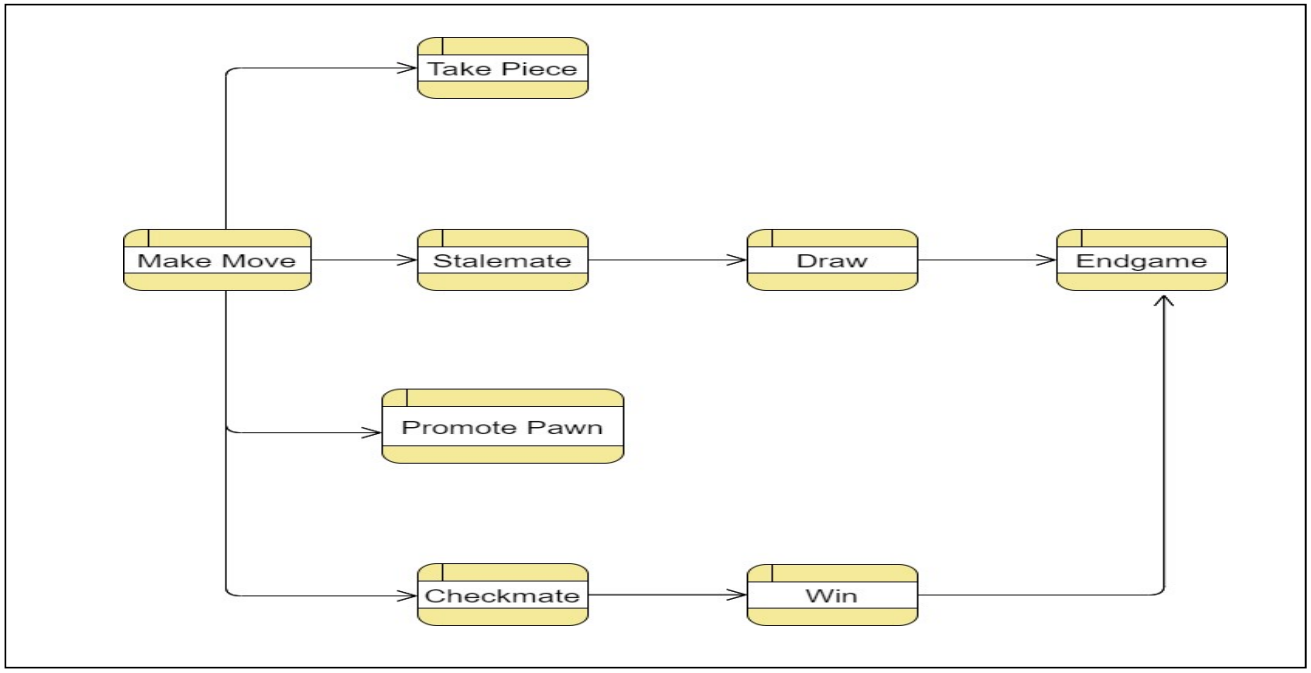
1-level DFD

- how information flows between each player and the system.



2-level DFD

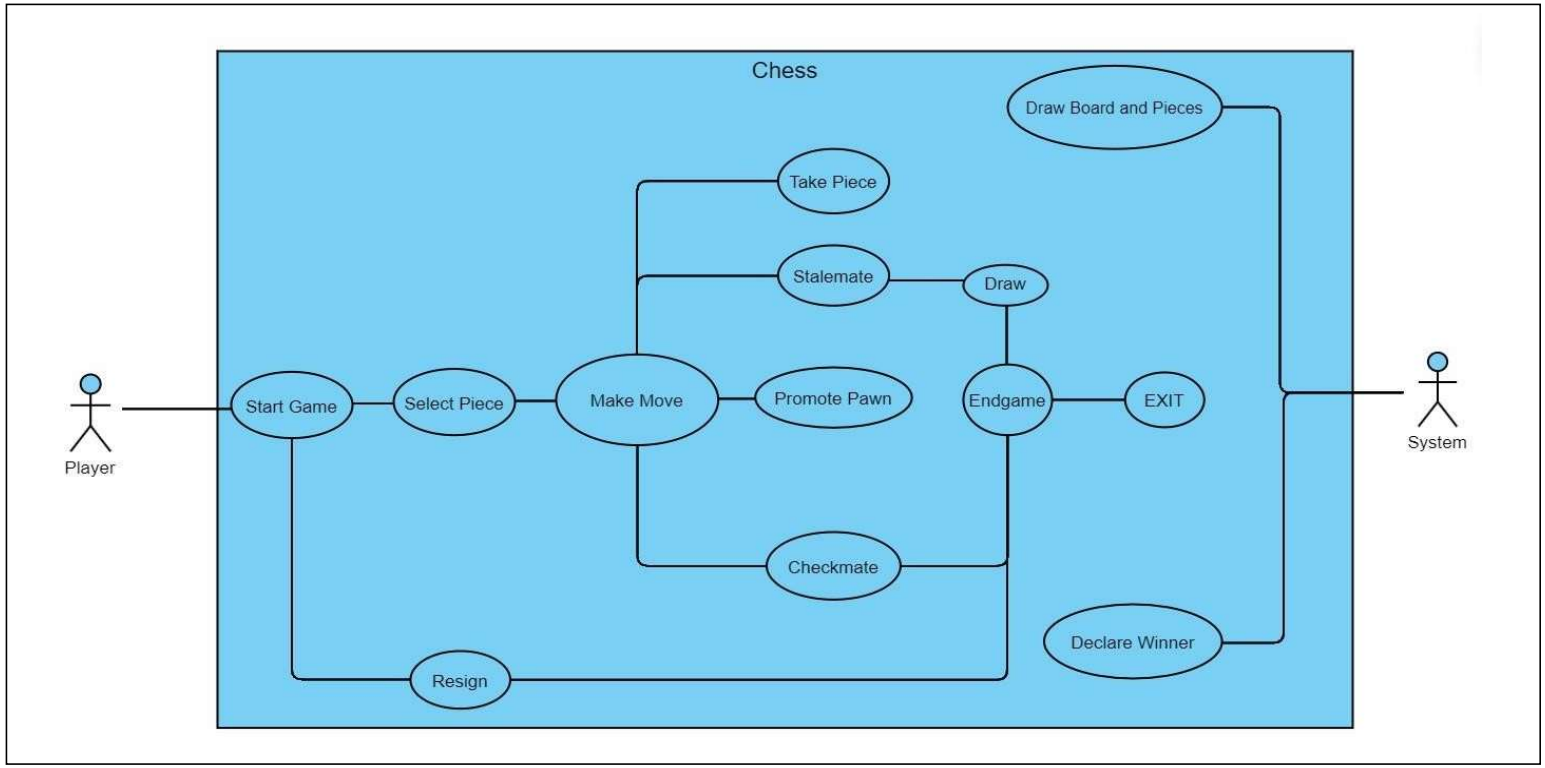
- Further how “make move” can lead to and ENDGAME.



- Stalemate : Situaton where the player is not in check but does not have any legal moves

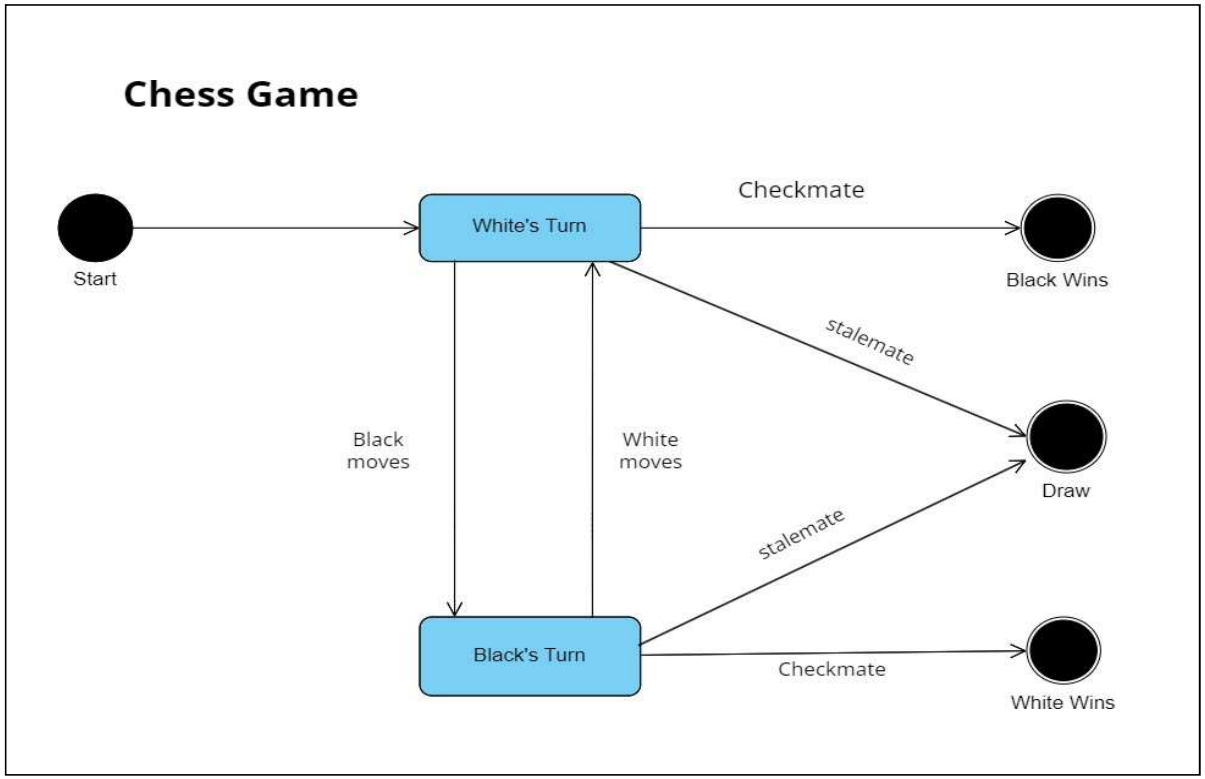
Use –Case Diagram

between the actor (player) and the system.



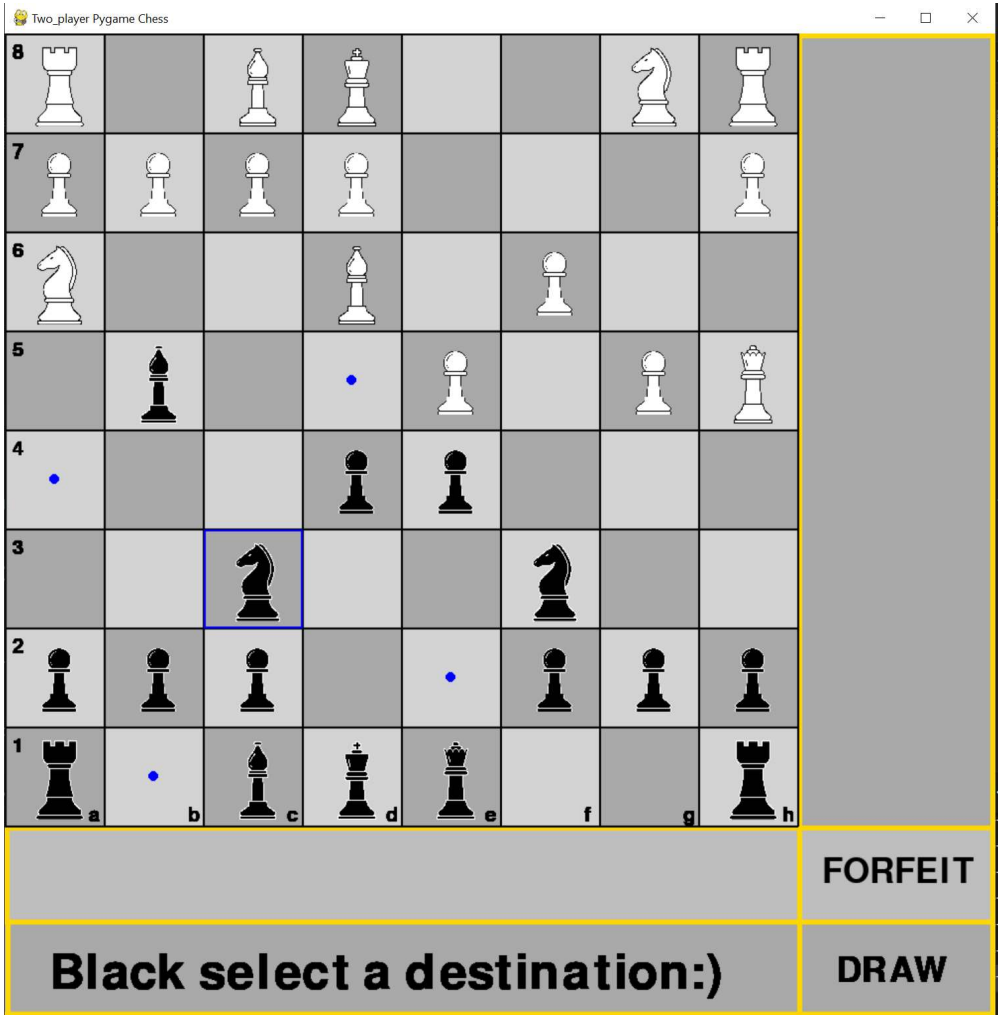
State Diragram

- State changes after each turn , which can lead to ENDGAME.



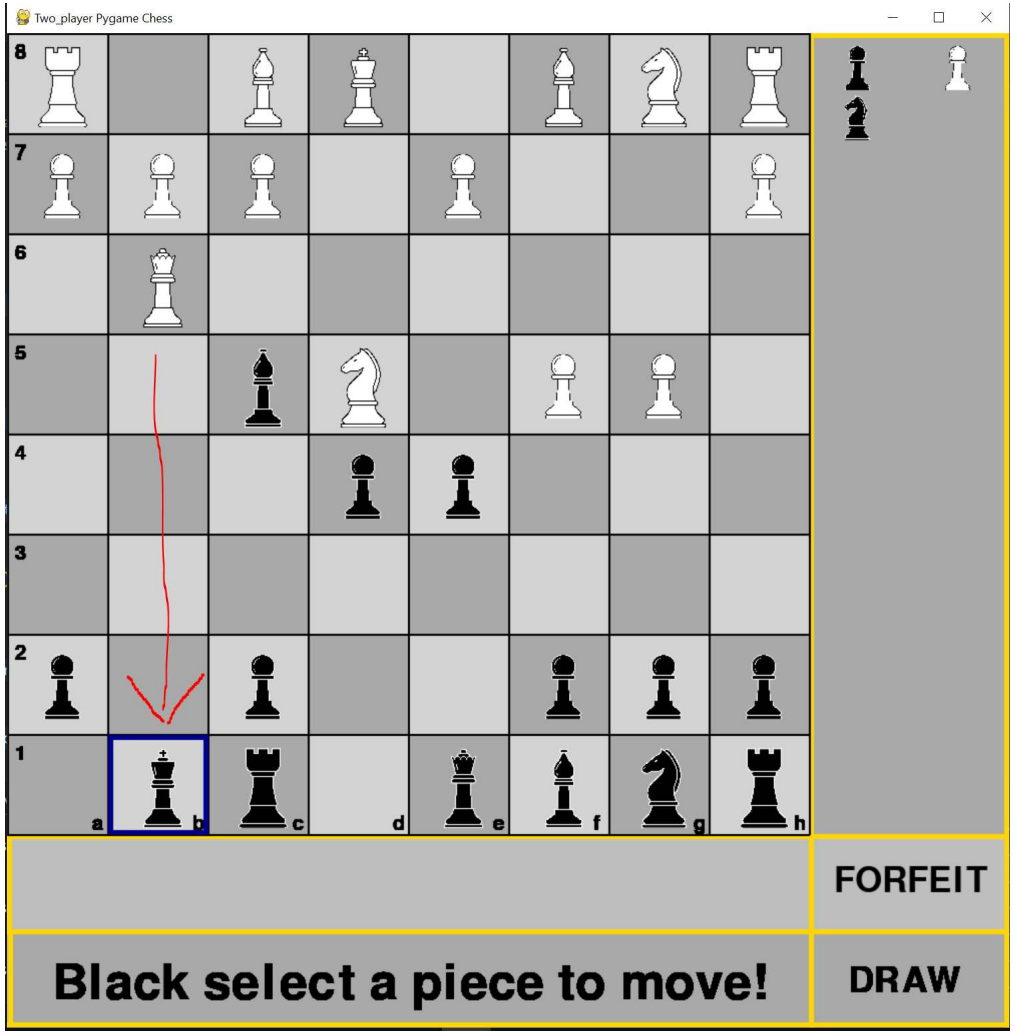
FEATURES

1. Valid Moves (red and blue)
2. Captured Piece Window
3. Forfeit
4. Status Window



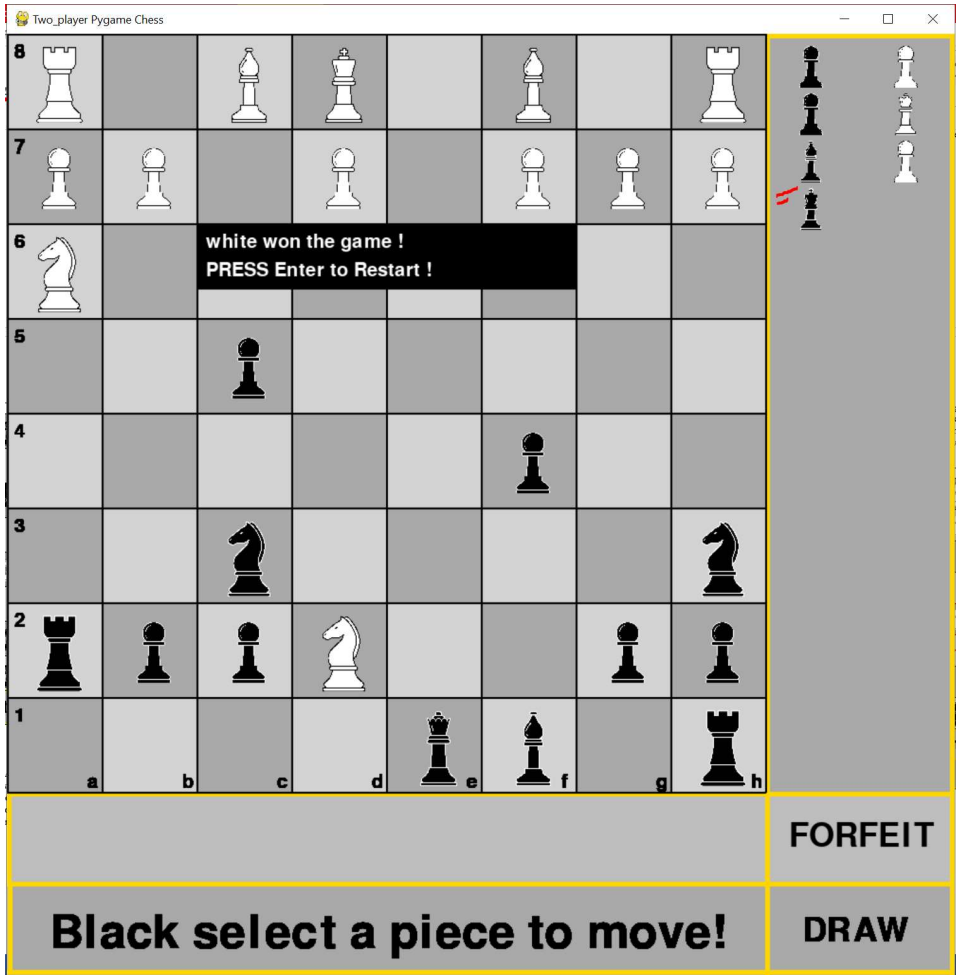
FEATURES

5. Flashing Warning Box
    - White(Red)
    - Black(Blue)



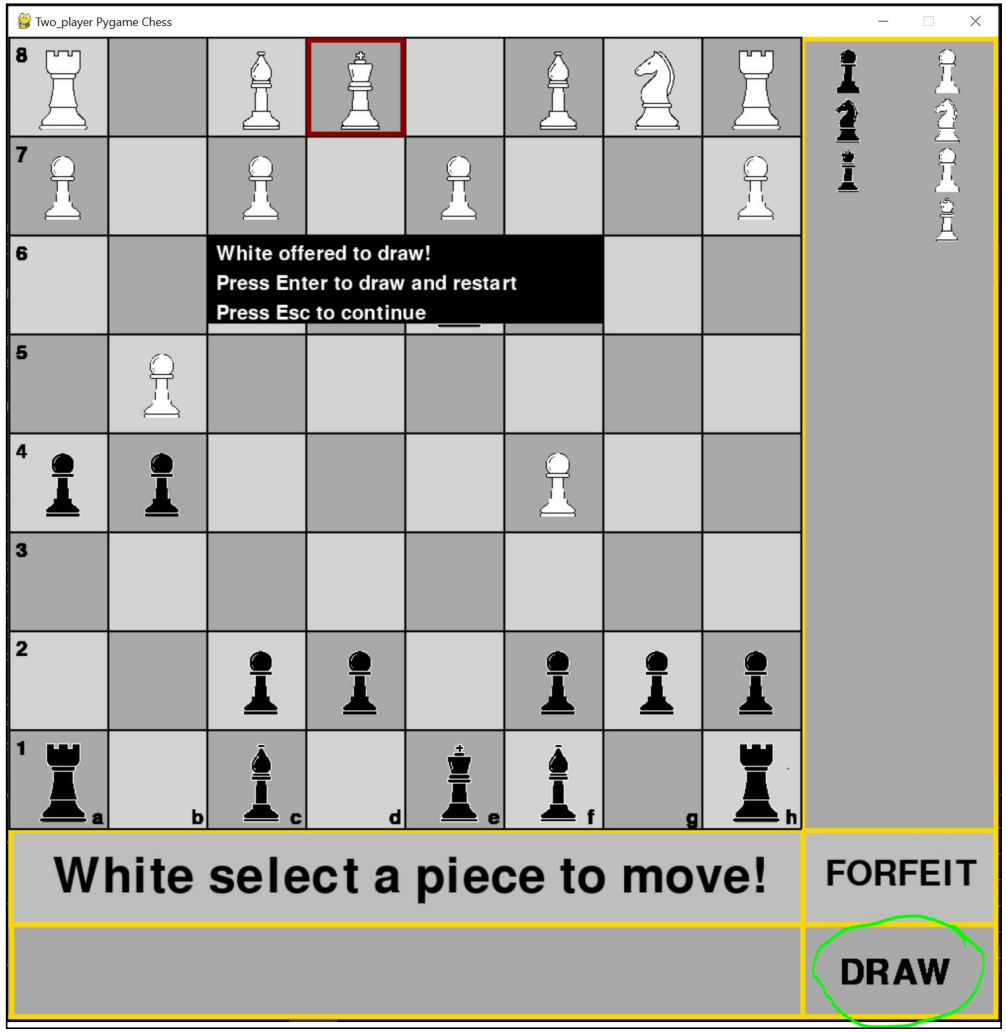
FEATURES

6. Declaring the winner
7. Restarting on game over
8. Board Positions



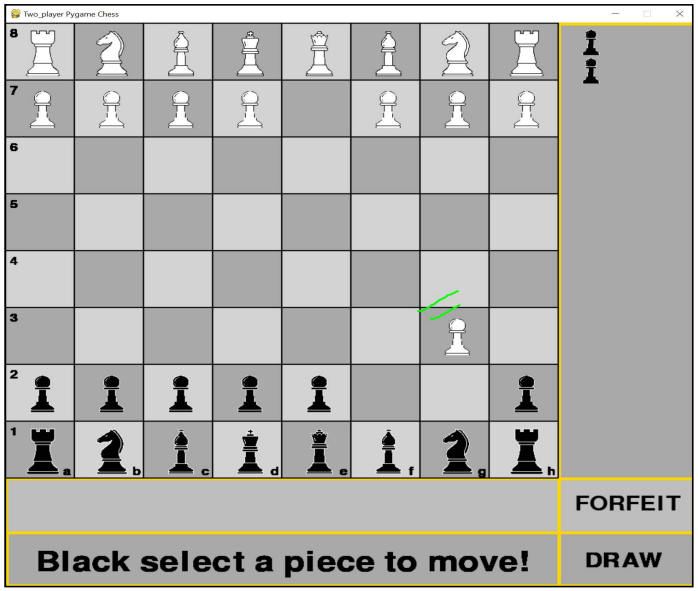
FEATURES

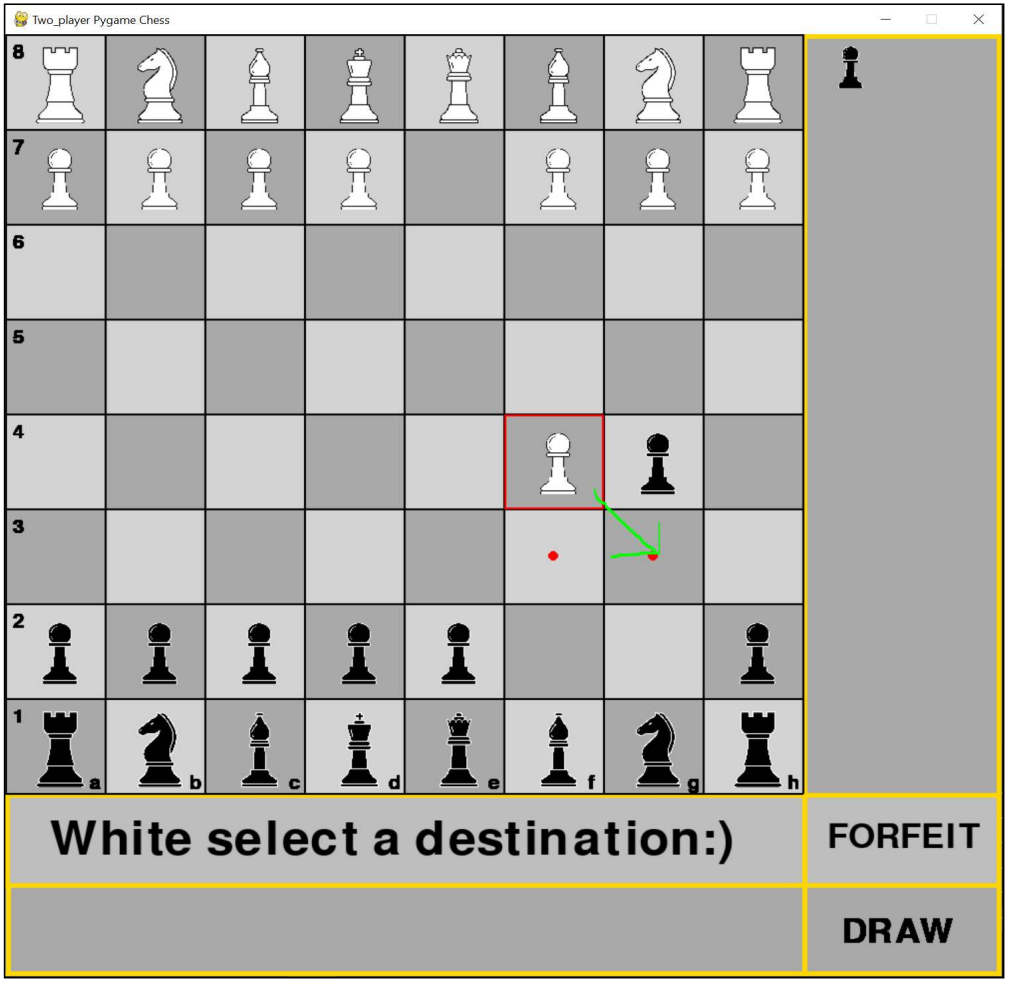
9. Draw
    - Press Enter to draw and restart
    - Press Esc to refuse and continue



En-passant

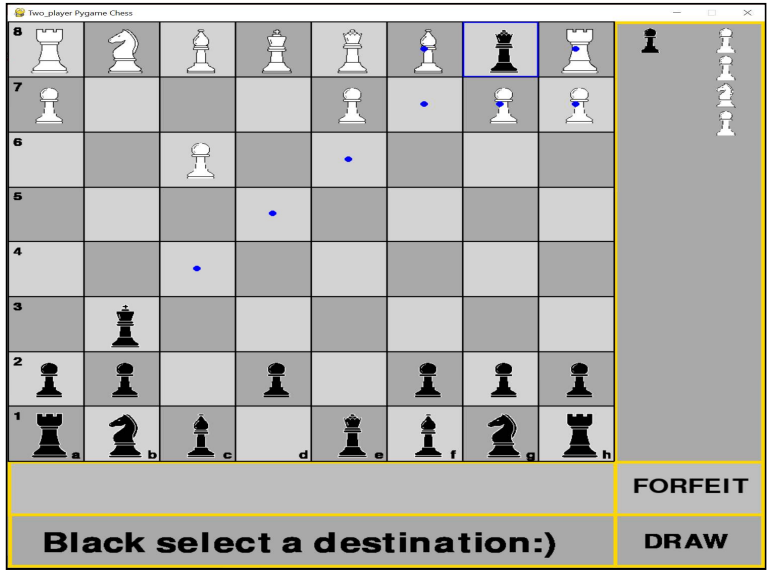
- One-time move only
- Only moves in which capturing piece does not occupy the position of captured piece.

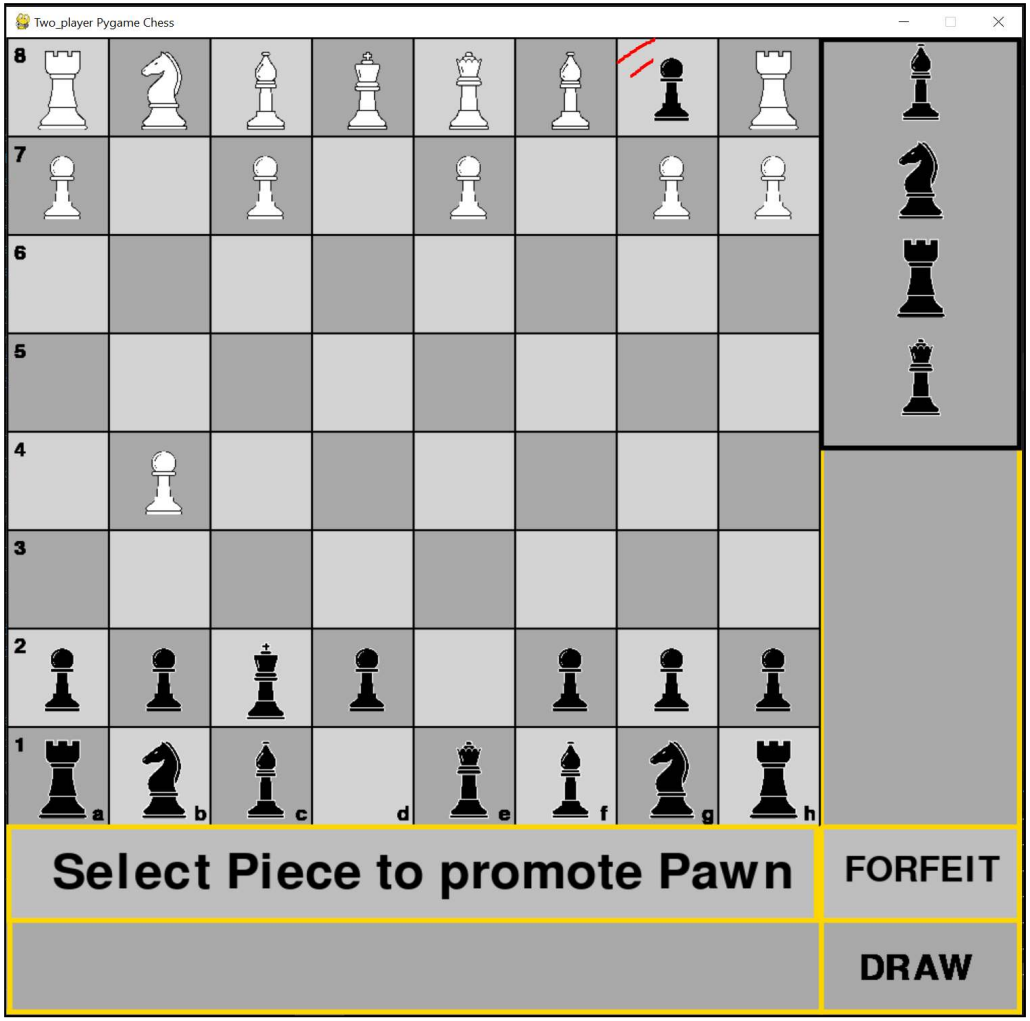




Pawn-promotion

- Choose between Rook, Bishop ,Knight and Queen from the drop down menu.
- Moves are replaced by that of the selected piece.





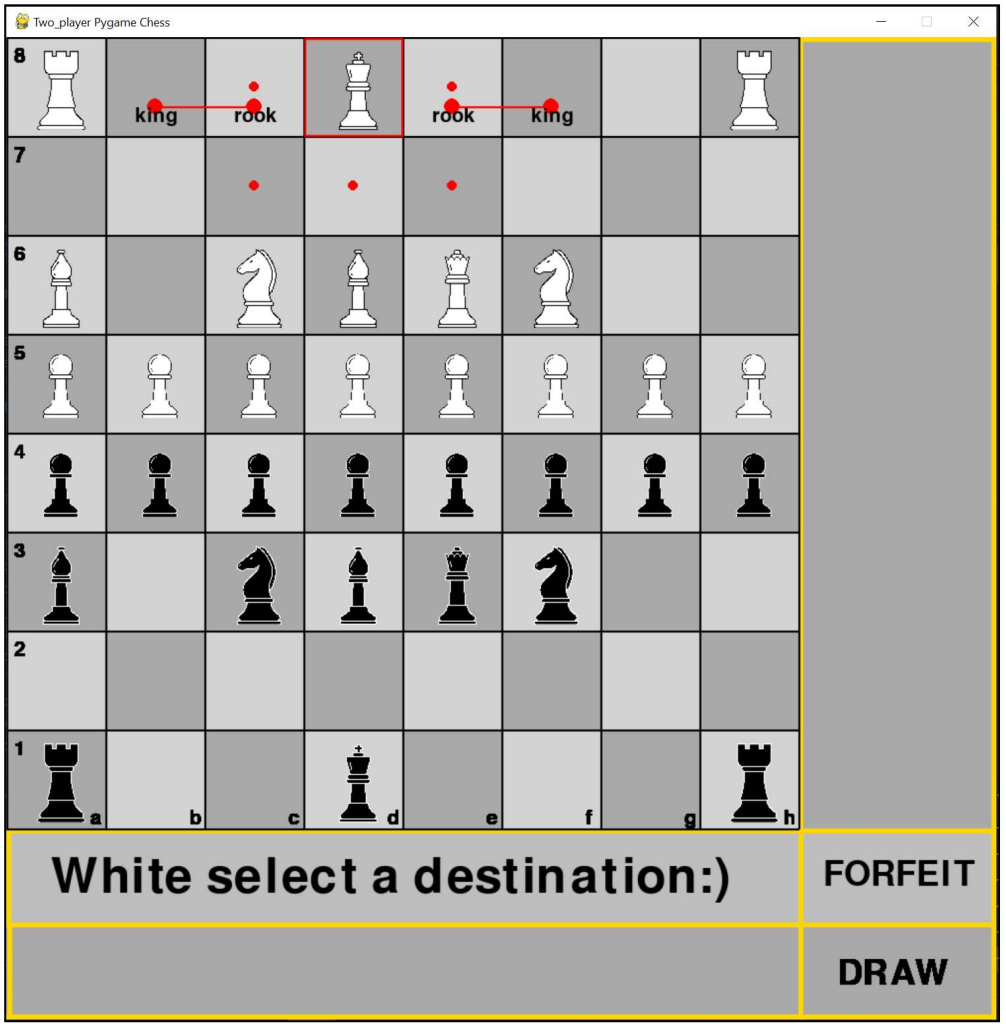
Castling

Rules:

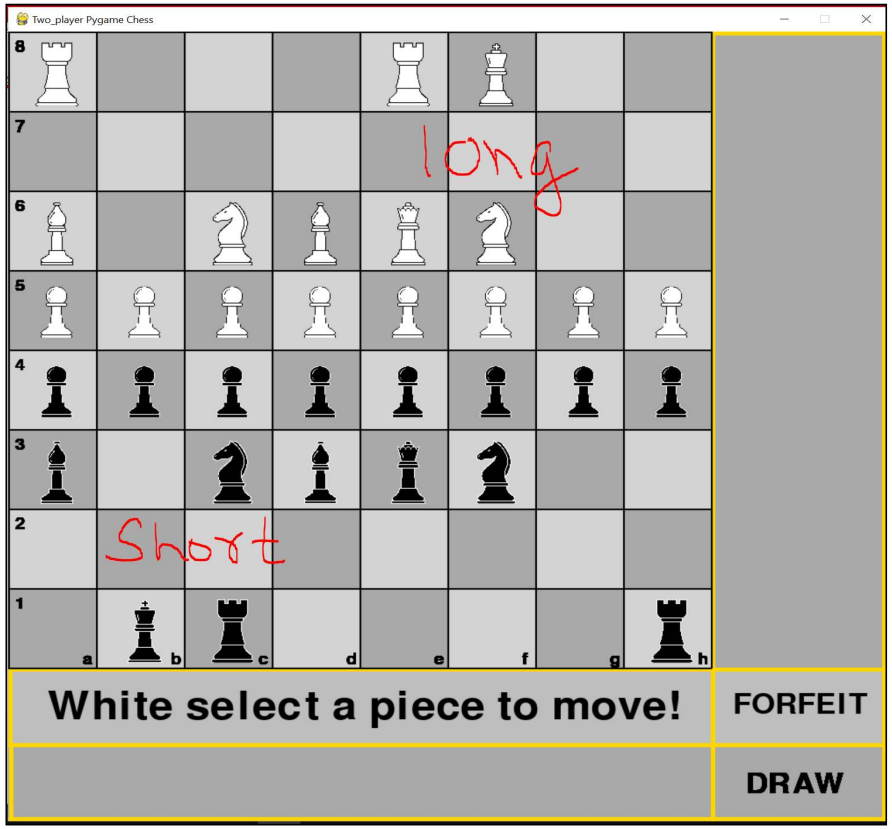
- No pieces between the rook and king.
- King and rook both have not been move from their intial positions.
- King should not be in check
- King should not pass through a check

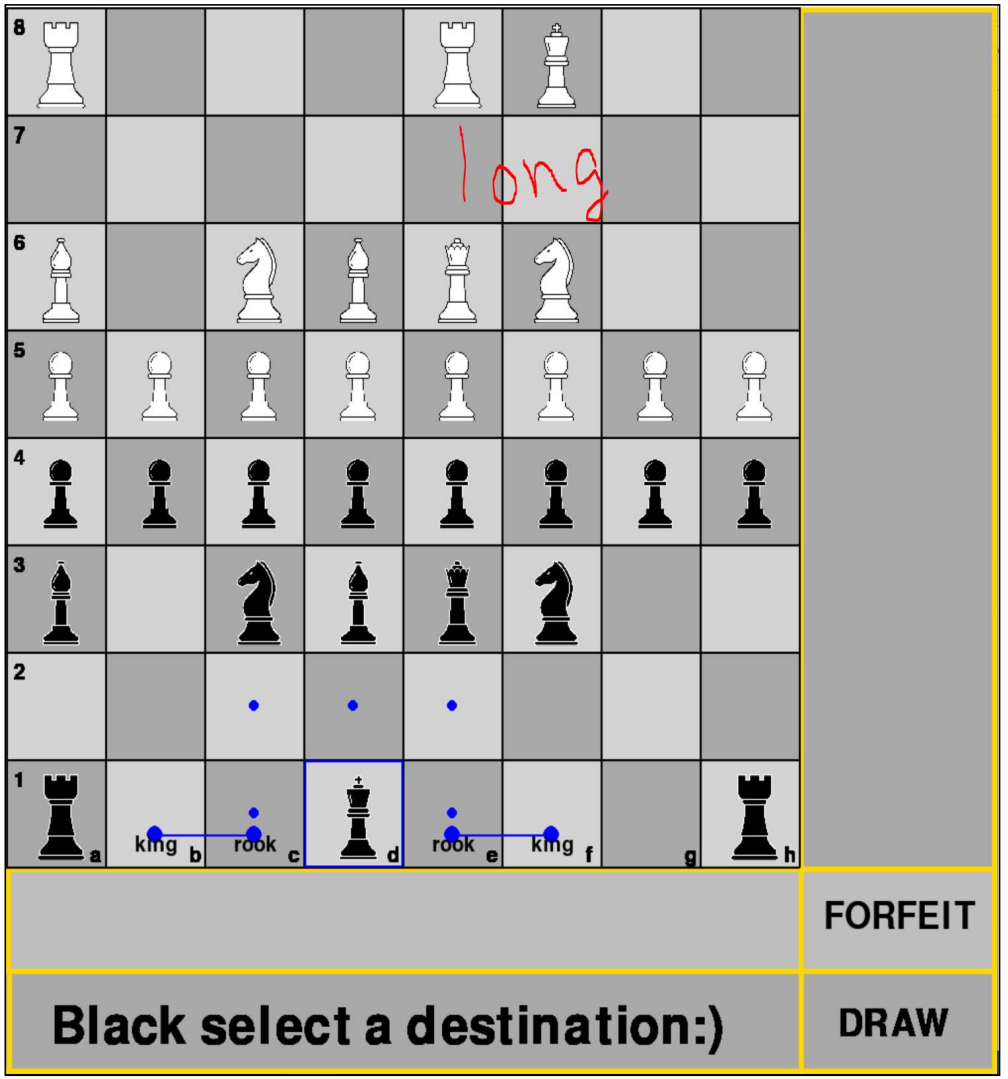
Two types :

- Long Castling (Queen Side)
- Short Castling (Non-Queen Side)



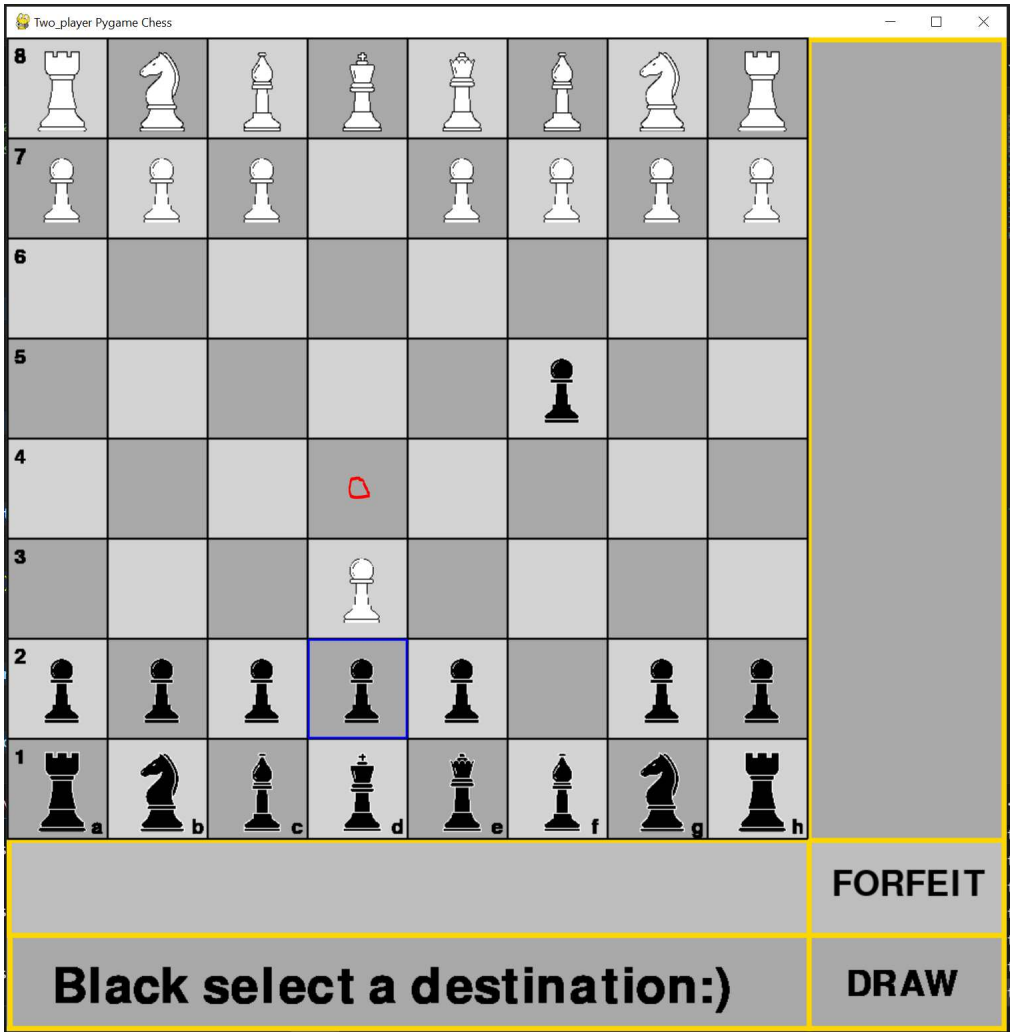
Long Castle (White)
Short Castle (Black)





FIXED BUGS

- Pawn(from first position) jumping over enemy pawn.
  - Fix : Have to check the ahead position for first move too.
- Previous valid moves are available after restart
  - Fix : have to reintialise the moves list again after restarting the game.



Conclusion

- This is better than other most chess applications that are available in the market as:
  - All moves are predefined
  - Lowers the computation cost of valid moves.
  - Better for beginners

FUTURE SCOPE

- Artificial Intelligence : Using alpha beta pruning and moves ordering.
- Difficulty: can be adjusted by adjusting depth.
- Chess Online : using Socket APIs
- Timer
- Move History
- Theme

REFERENCES

- youtube@lemastertech
- chess.com

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