Software Requirements and Design Document

For

Group 34

Version 1.0

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1. Overview (5 points)

The Chess AI Bot Game is a roguelike-inspired chess game where players compete against progressively challenging AI-controlled opponents. Each AI bot possesses increasing levels of strategic depth. The game incorporates traditional chess rules, enhanced with special power-ups and abilities that players can unlock as they progress. The game aims to blend competitive chess mechanics with an engaging, story-driven experience, set within a castle-themed environment.

The AI opponents utilize the Stockfish engine to evaluate board positions and determine optimal moves. The game features a graphical user interface built with Pygame, displaying a functional chessboard with interactive piece movement. Players can customize board themes, adjust settings, and track their progress. The system is designed for both casual and competitive chess players who seek a twist on traditional chess gameplay.

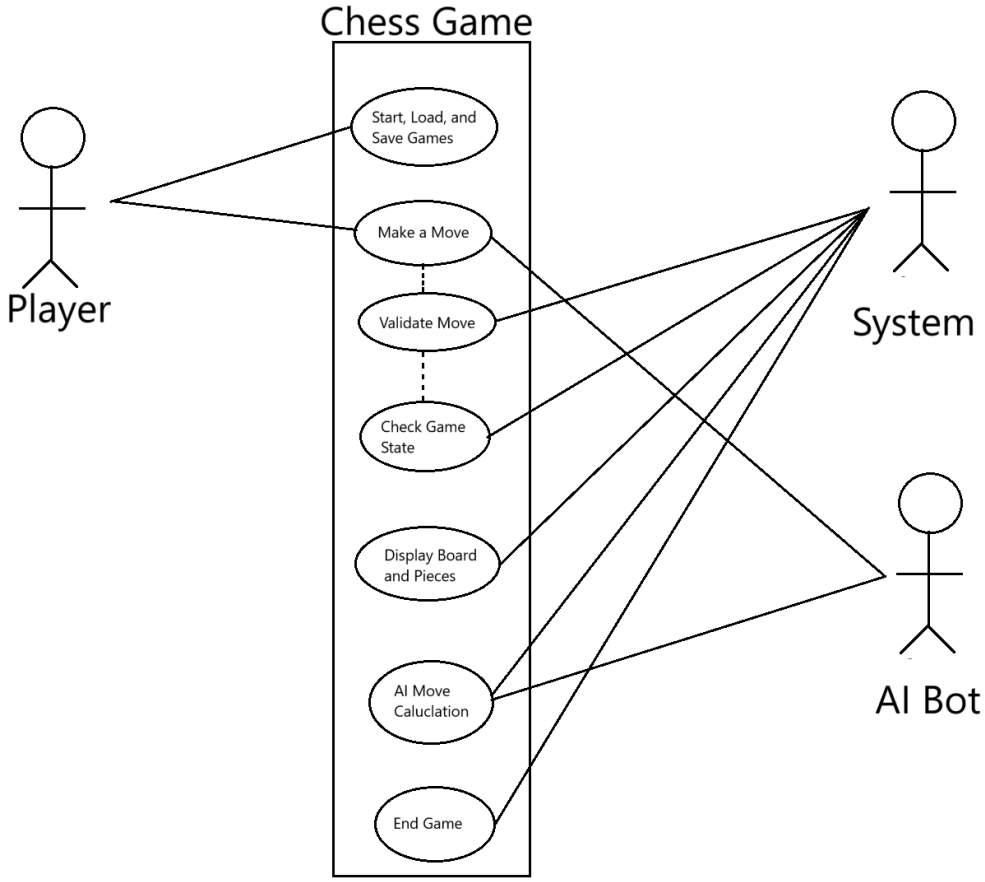
2. Functional Requirements (10 points)

1. The system shall provide a fully interactive chessboard where users can move pieces according to standard chess rule (High Priority)
2. The system shall validate all moves (High Priority)
3. The system shall support AI opponents with increasing difficulty (High Priority)
4. The system shall allow saving and loading game sessions (Medium Priority)
5. The system shall allow players to use special abilities (e.g., resurrecting pieces, extra moves) (Medium Priority)
6. The system shall include audio settings, screen resolution adjustments, and customization options (Medium Priority)
7. The system shall provide a tutorial mode explaining basic chess mechanics (Low Priority)

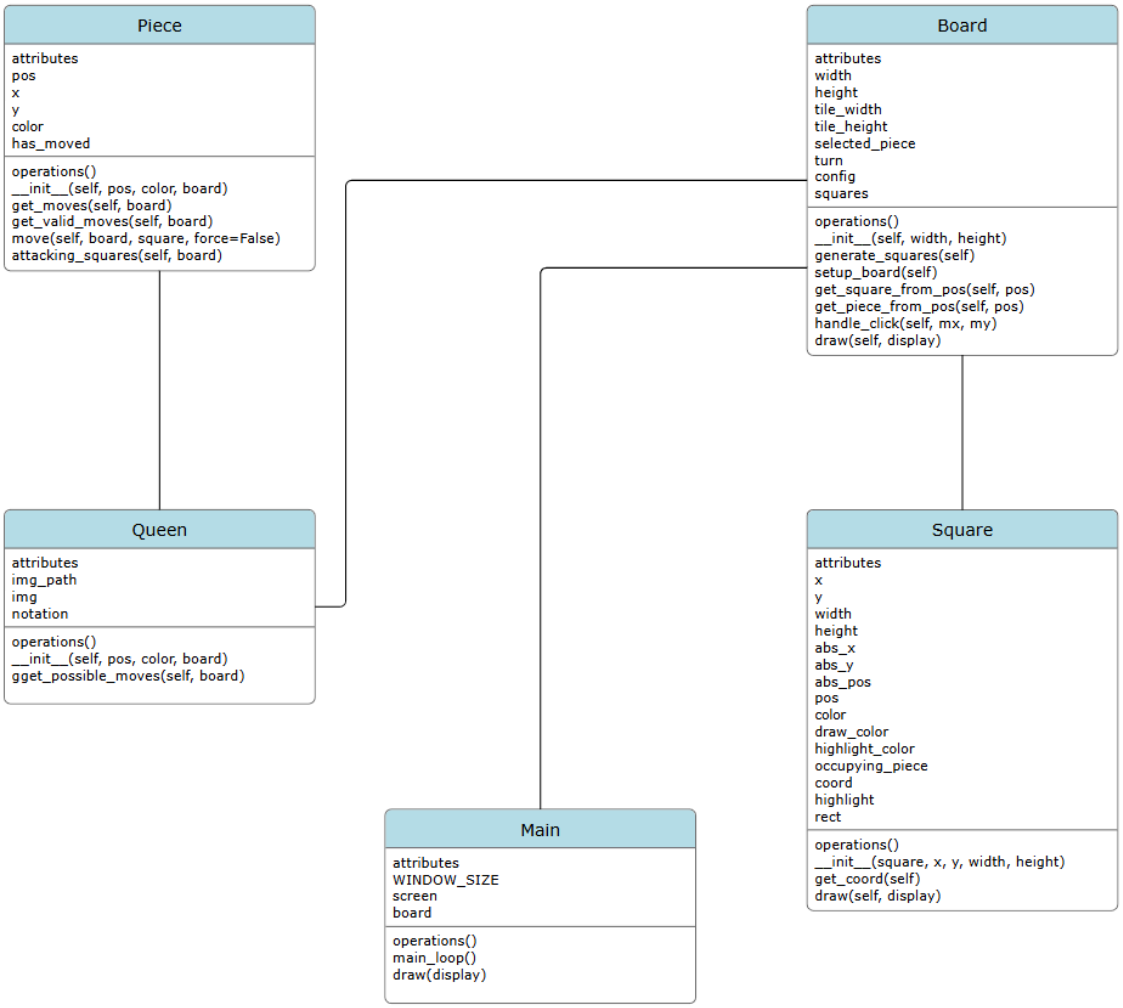
3. Non-functional Requirements (10 points)

1. The system shall provide a smooth and responsive UI (High Priority)
2. The system shall operate efficiently on most hardware (High Priority)
3. The system shall be developed using modular and maintainable code (High Priority)

4. Use Case Diagram (10 points)



5. Class Diagram and/or Sequence Diagrams (15 points)



6. Operating Environment (5 points)

Hardware: Standard personal computers
Operating System: Windows 10+
Software Dependencies: Python 3+, Pygame, Stockfish

7. Assumptions and Dependencies (5 points)

- The AI system depends on the Stockfish engine for move generation
- The game will use Pygame for graphical rendering and event handling
- The game assumes a basic level of chess knowledge from the player
- The system relies on local file storage for saving and loading game progress