Team 27

Product Backlog

1. Application startup that displays introduction.
2. Menu appears offering modes of play between playing against AI or human.
3. An intermediary menu is displayed offering a choice between white, black, or random (white or black chosen randomly) pieces.
4. If the user is playing against AI, the menu offers an option of levels of difficulty (Easy, Medium, Hard).
5. If Easy is selected, the AI will only look 1 full turn ahead.
6. If Medium is selected, the AI will only look 2 full turns ahead. (Subject to change upon development)
7. If Hard is selected, the AI will only look 3 full turns ahead. (Subject to change upon development).
8. Board appears with pieces and buttons in corner to concede, offer draw, and exit application.
9. The controller of the white pieces will go first
10. Players alternate turns.
11. If concede is selected, it displays results, final board state and provides options to return to main menu or exit application.
12. If the main menu option is selected, it returns to the main menu (2).
13. If the exit application option is selected, the application closes.
14. If the offer draw option is selected, the program send the offer to the other player in the form of a menu with accept and decline options.
15. If the other player accepts the offer, the result is displayed along with the final board state and options to return to main menu or exit the application.
16. If the other player declines the offer, the games proceeds in normal play.
17. User can select pieces to be moved.
18. Valid squares that can be moved to by the piece are highlighted.
19. User selects a square to move to.
20. The program validates the move.
21. If the move is valid the board state updates.
22. If the move was not valid, the process returns to the user selecting the move (17).
23. The board state is evaluated for pawn promotions, checks, checkmates and stalemates.
24. On the event of a pawn promotion, a menu is offered to choose the piece to be promoted to.
25. On the event of a pawn promotion, once the promotion is selected, the board updates.
26. On checkmates and stalemates, the result is displayed along with the final board state and options to return to the main menu or exit application.
27. When AI is playing, at the start of the game, it randomly selects between several predetermined openings.
28. The AI will play the opening to completion or until a move that exceeds a point threshold for the opening is found.
29. After the opening, the AI will run solely based off its basic programming
30. The AI will determine all pieces currently capable of being moved.
31. The AI will create a tree with the depth of turns associated with its difficulty
32. The AI implements the tree as a minimax tree.
33. Alpha-Beta pruning implementation helps determine moves.
34. Utility functions helping improve Alpha-Beta pruning implementation helps determine moves