CPSC2150 – Checkers

Team Name: Binary Bandits

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Functional Requirements: As a <userRole> I <what/need/can> <goal> so that <reason>

Functional Requirement User Stories:

1. As a Player, I can see the current status of the checkerboard printed out before I make a move, so that i can use that information to help me in deciding my next move

2. As a Player, the checkerboard shows me the rows and columns numbered, so i view the coordinates of the pieces easily versus having to count the spots

3. As a player, I am alerted when it is my turn to move a piece, so that i can play my turn

4. As a player, I am given available choices as to where to move my piece, so that i can accurately make a movement that is valid

5. As a player, I am told which player's move it is, so i can keep track of who's move it is

6. As a player, I am instructed on the format to input my selection of the piece i want to move, so that I can make a valid input of the piece i want to select

7. As a player, i am informed that i have entered an input in improper format and how to re enter my input, so that i can continue to play the game despite inputting a invalid format

8. As a player, I am informed that i have selected something that wasn't my piece and to re pick, so that i can re enter my correct input, that is not a black tile, and keep playing the game

9. As a player, I am informed that i have selected an improper piece and to re pick, so that when i choose the other player's piece i am corrected and have a chance to choose again

10. As a player, I am informed when there is a winner, so that i can know who won and when the game is over

11. As a player, I am prompted to choose if I want to play again, so i can continue playing or end the program

12. As a player, when I am kinged, the piece needs to be updated so that the piece follows a new set of rules for king pieces

13. As a player, I want my opponent and I to be able to choose the piece we play with, so that we can easily distinguish our pieces from each other on the checkerboard.
14. As a player, I want the checkerboard to be updated immediately after each player's turn, so that I can see an accurate depiction of the game's current state and plan my next move accordingly.
15. As a player, I want the non-playable spaces on the checkerboard to be clearly marked with "*", so that I can easily identify which spaces are not in play and plan my moves within the playable areas
16. As a player, I want the game to only allow me to move my pieces in valid directions, so that I don't accidentally try to move out of bounds or to an occupied spot
17. As a player, I want to know when the game starts so I can begin to play
18. As a player, I want to be informed what to type to properly interact with the game so that I can communicate my move to the program
19. As a player, I can enter rows and columns as input so that I can make a move and progress the game.
20. As a player, I can jump an opponent's piece so that I capture it and remove it from the game.
21. As a player, I want to have the option to select the size of the checkerboard before starting the game, within the constraints of a minimum size of 8x8 and a maximum size of 16x16, with dimensions always even and equal, So that the game has complexity and different durations.
22. As a player, I want to have the starting number of pieces adjusted based on the size of the board selected, So that the game remains balanced and engaging regardless of the board size.
23. As a player, I want to be able to choose between the standard version of the checkers game and the "memory-conscious" version upon starting the game, So that I can play the version that suits my preferences or system capabilities.

Non-Functional Requirements:

1. The Checkerboard output must feature numbered row and columns so that locating a piece on the grid can be more efficient
2. The numbering of the checkerboard rows and column should start after [0][1], which should be left blank, so that the numbering of the board is accurate
3. The checkerboard should be a 8x8 board, adjusted to accommodate the "|" and numbered rows and columns
4. The game should recognize when only a single player's pieces remain and choose them to be the winner
5. The game should conclude once a winner has been chosen
6. The game should verify only valid inputs to ensure they are also acceptable game moves
7. On the checkerboard, Every other space should be a "|" to enhance readability and properly divide up the board
8. There should be "|" separating each spot on the checkerboard so that it is easier for the player to read the output of the board
9. The game of checkers should be able to run on Windows, macOs, and linux
10. The game should be able to run efficiently, without lagging or crashing
11. The game design should allow for future changes or extensions, without requiring an entire redesign.
12. The game should be able to handle exceptions and invalid inputs without crashing
13. The game needs to support at least 2 players
14. The game should be able to add two board positions together and return the resultant position

15. The game should be able to double the row and column values of a board position and return the result
16. The game should be able to convert a board state into a string representation
17. The game should restrict movement to the four directions NE, NW, SE, SW.
18. The game should be written in Java, version 17.
19. The system should allow for the input and output to be done through the terminal/command console.