Jeffrey Black
CPSC 2150

How to Play

1. Open a linux terminal and navigate to the folder that contains the folder “cpsc2150” and the file “makefile.”
2. Type “make”
    a. This will compile the java source files, creating .class versions of all of the source files.
3. Type “make run”
    a. This will run the tic-tac-toe program.
    b. Can be run multiple times.
4. Type “make clean”
    a. This will remove the .class versions of the source files.

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Requirements Analysis

User Stories

- As a player, I want to be able to place a marker, so I can play Tic-Tac-Toe
- As a player, I want to be able to see the tic-tac-toe grid, so I can view the locations of the markers
- As a player, I want to know when one of the players has won, so I don't have to check after each turn
- As a player, I want to know if there has been a tie, so I don't have to check if there has been a tie
- As a player, I want to know whose turn it is, so I know who has to place their marker
- As a player, I want to know if I placed my marker on a spot that was already claimed, so that multiple players don't place their marker on the same spot.
- As a player, I want to know if I placed my marker outside of the grid, so I don't place my marker outside of the playable grid
- As a player, I want to be able to play again after the game ends, so I can play more games without starting the program again
- As a player, I want to be able to change the size of the board, so I can play with different board sizes
- As a player, I want to be able to change the number of markers in a row required to win, so I can change the win condition
- As a player, I want to be able to change the game rulesets after choosing to play again, so I can change the rules without restarting the program.
- As a player, I want to be able to specify the amount of players, so I can play with however many people I want
- As a player, I want to be able to choose the character representation of my marker, so I can choose my marker representation.
- As a player, I don't want to be able to choose a marker representation that has already been chosen, so I don't get confused when playing.
- As a player, I want to be able to choose the implementation of the game to play, so I can choose the implementation type.
- As a player, I want to be able to choose the amount of players after starting a new game, so I can change the amount of players without restarting the program.
- As a player, I want to be able to choose the implementation type after starting a new game, so I can change the implementation without restarting the program.

Non-Functional Requirements

- Must have a grid
- The top left of the board is 0,0
- System must be coded in Java
- System must be able to run on Unix
- 2 <= number of players <= 10
- Player marker representations must be capitalized alphabetical characters
- Must have a fast implementation and a memory efficient implementation
- Player 1 must always be the first to play

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GameScreen
-players:list<Character>[MIN_PLAYERS..MAX_PLAYERS] -currentPlayer: Character[1] {must be a member of players} -board: GameBoard[1] +MAX_PLAYERS:int[1] = 10 +MIN_PLAYERS:int[1] = 2
+main(): void -nextPlayer(): void -makePlay(): boolean

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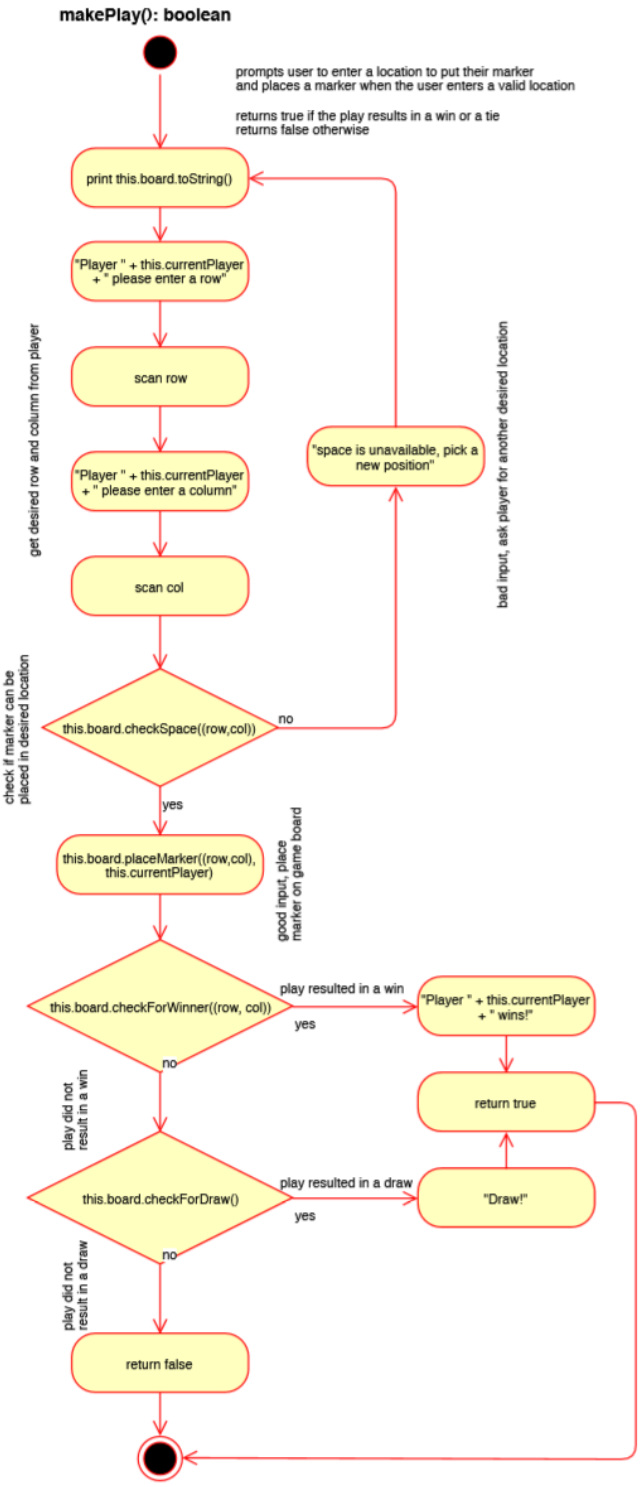

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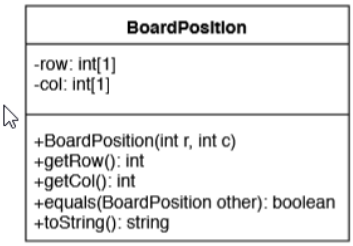

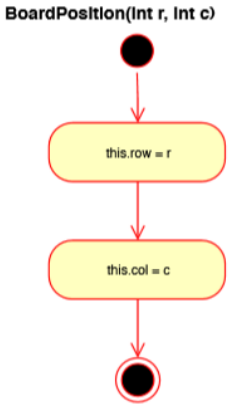

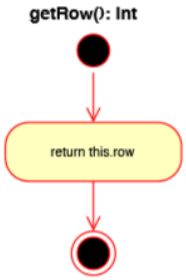

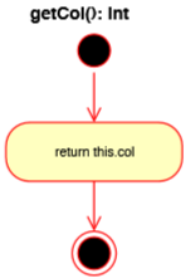

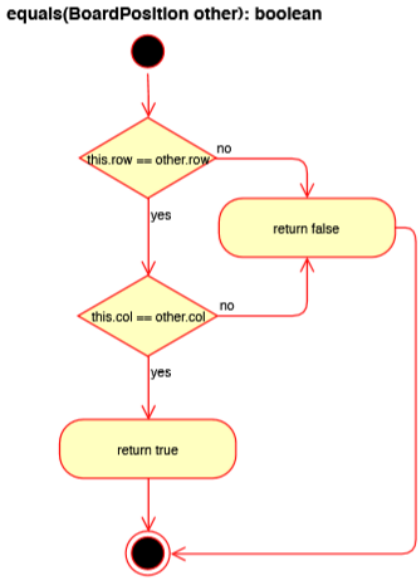

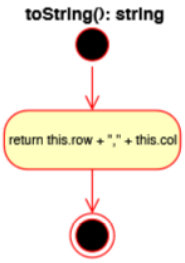

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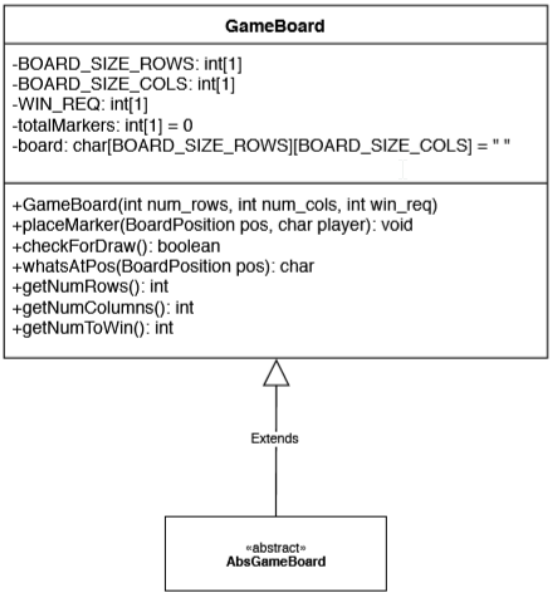

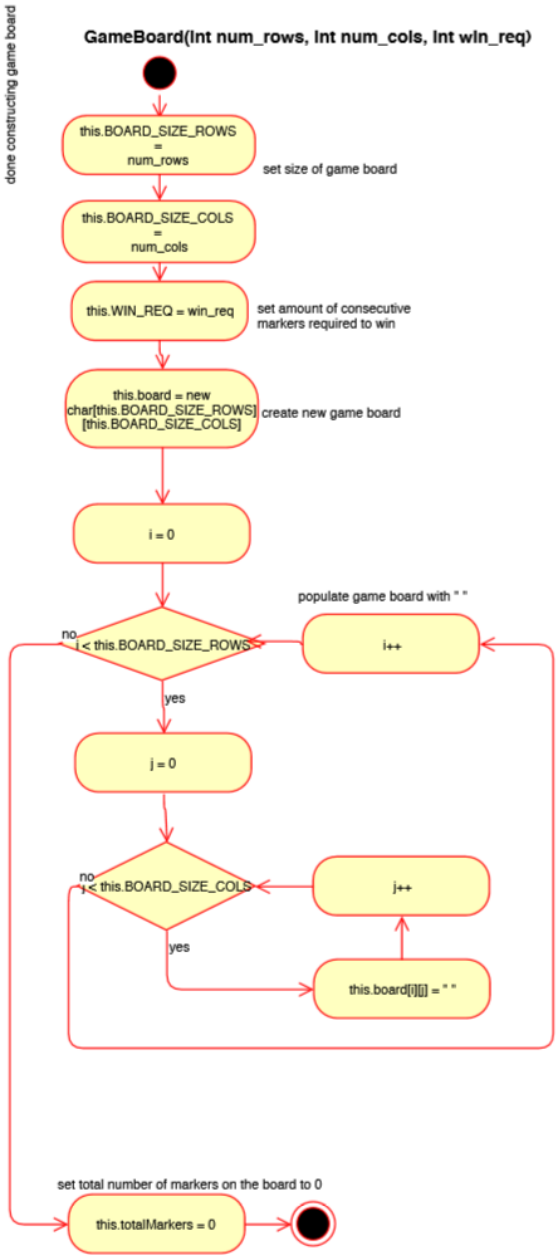

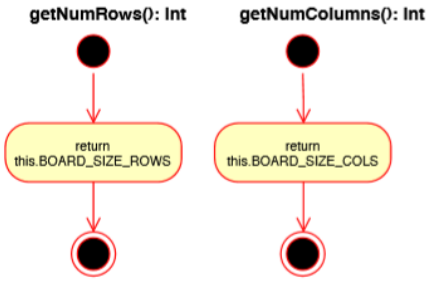

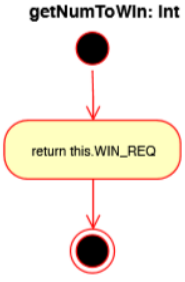

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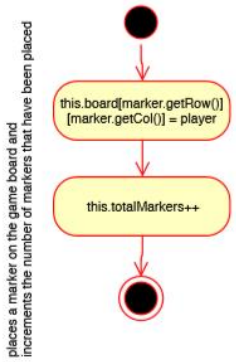
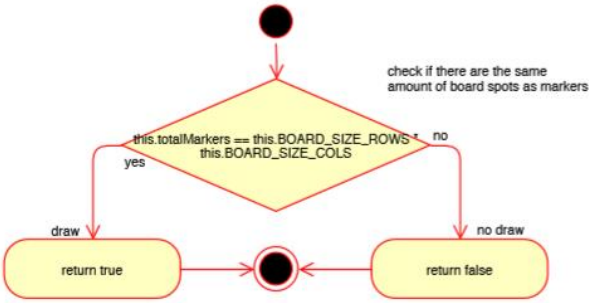
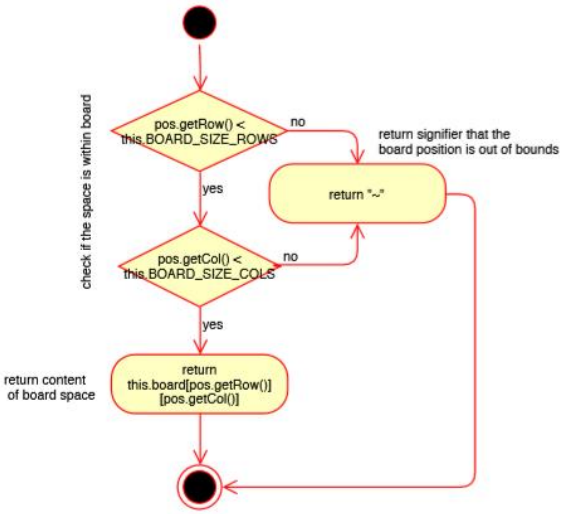
placeMarker(BoardPosition marker, char player): void



checkForDraw(): boolean



whatsAtPos(BoardPosition pos): char



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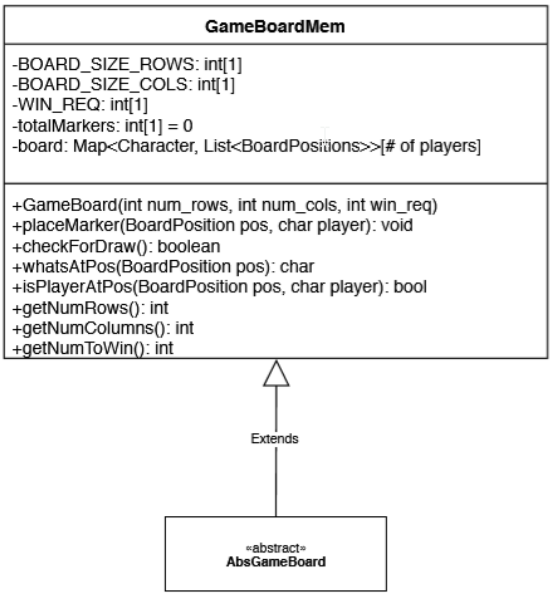

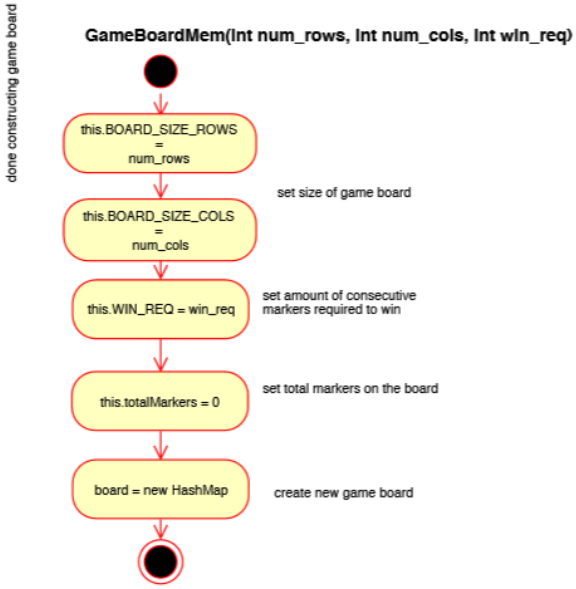

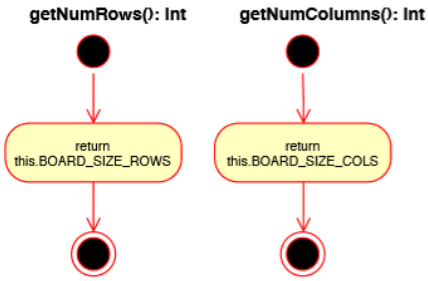

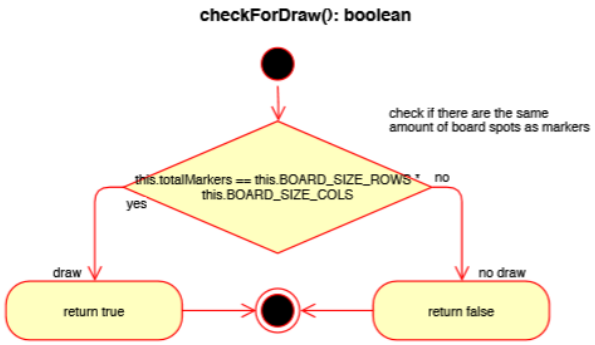

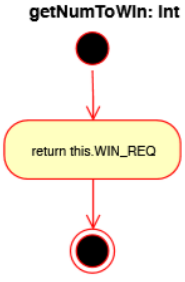

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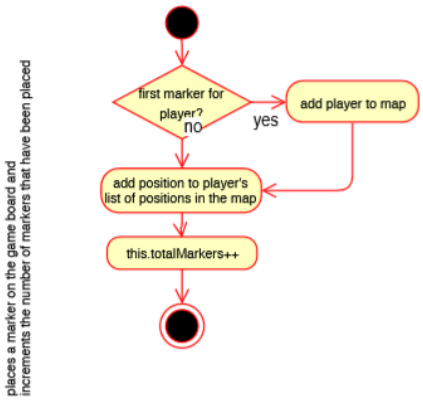
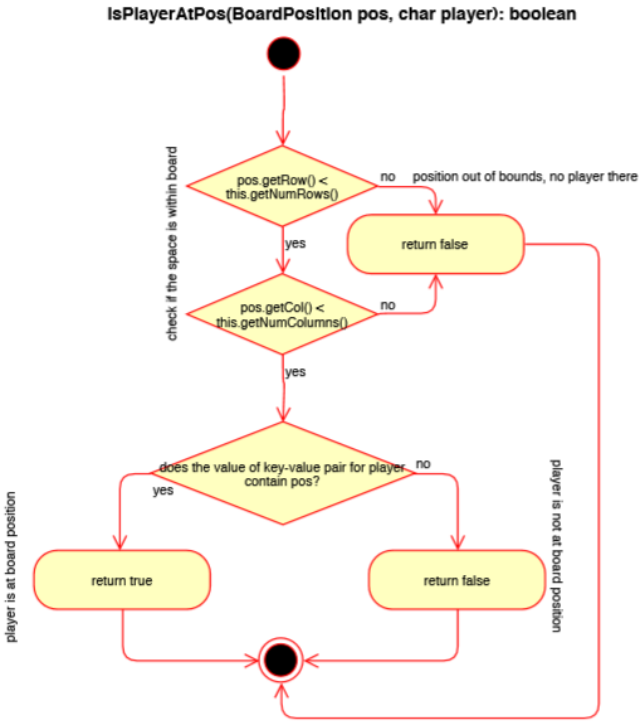
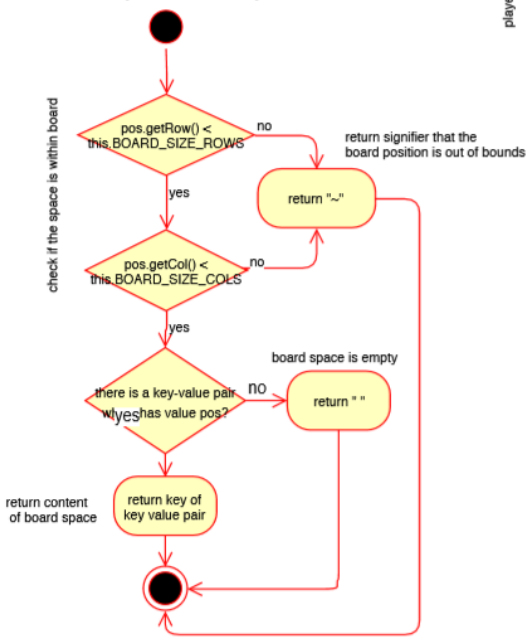


isPlayerAtPos(BoardPosition pos, char player): boolean



whatsAtPos(BoardPosition pos): char



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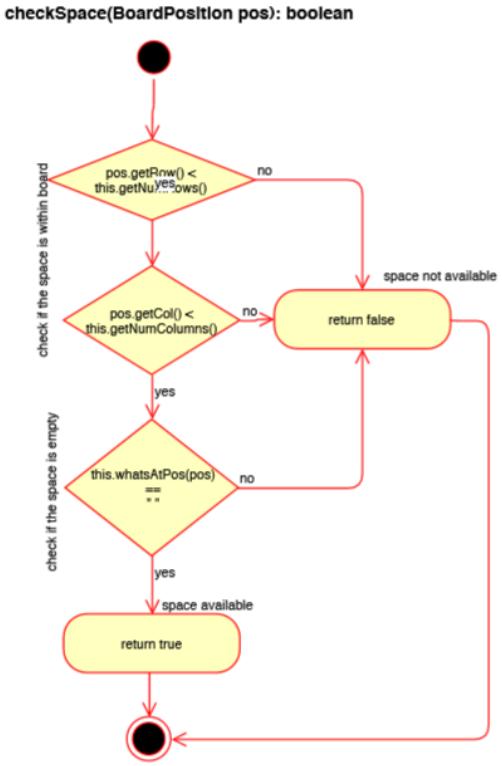

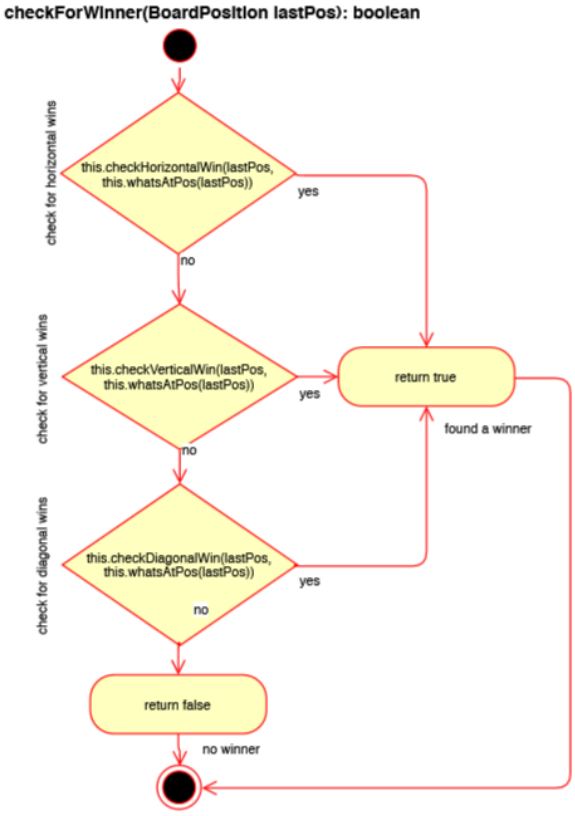

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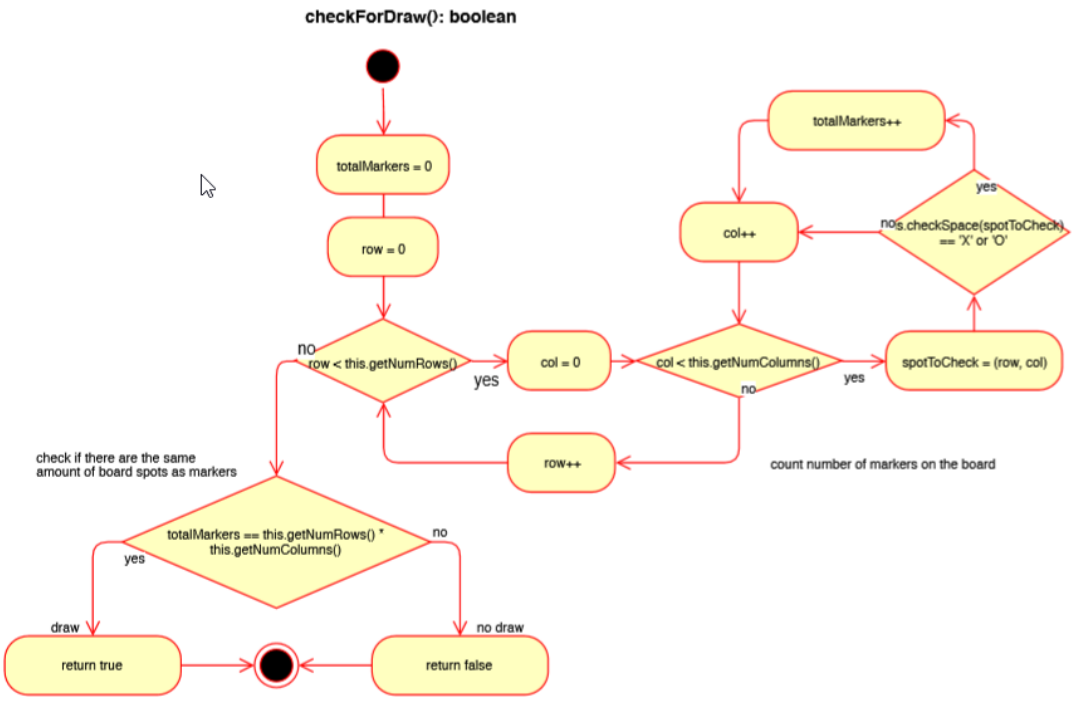

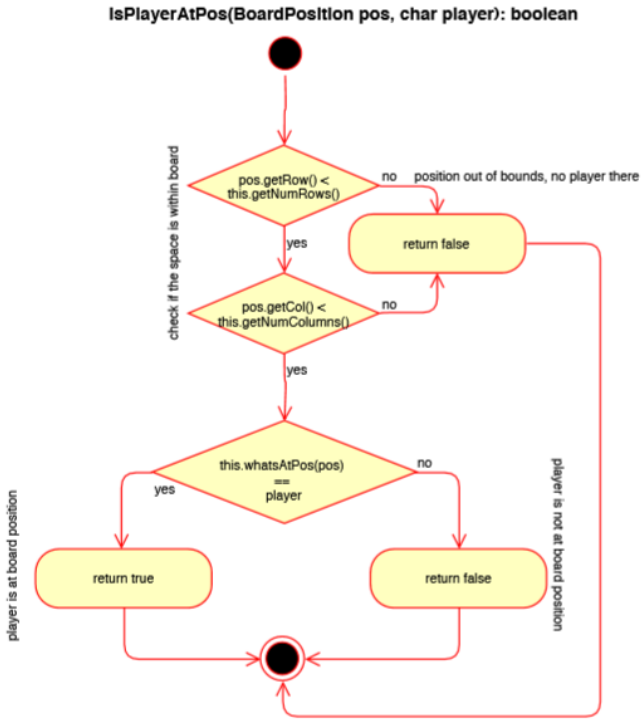

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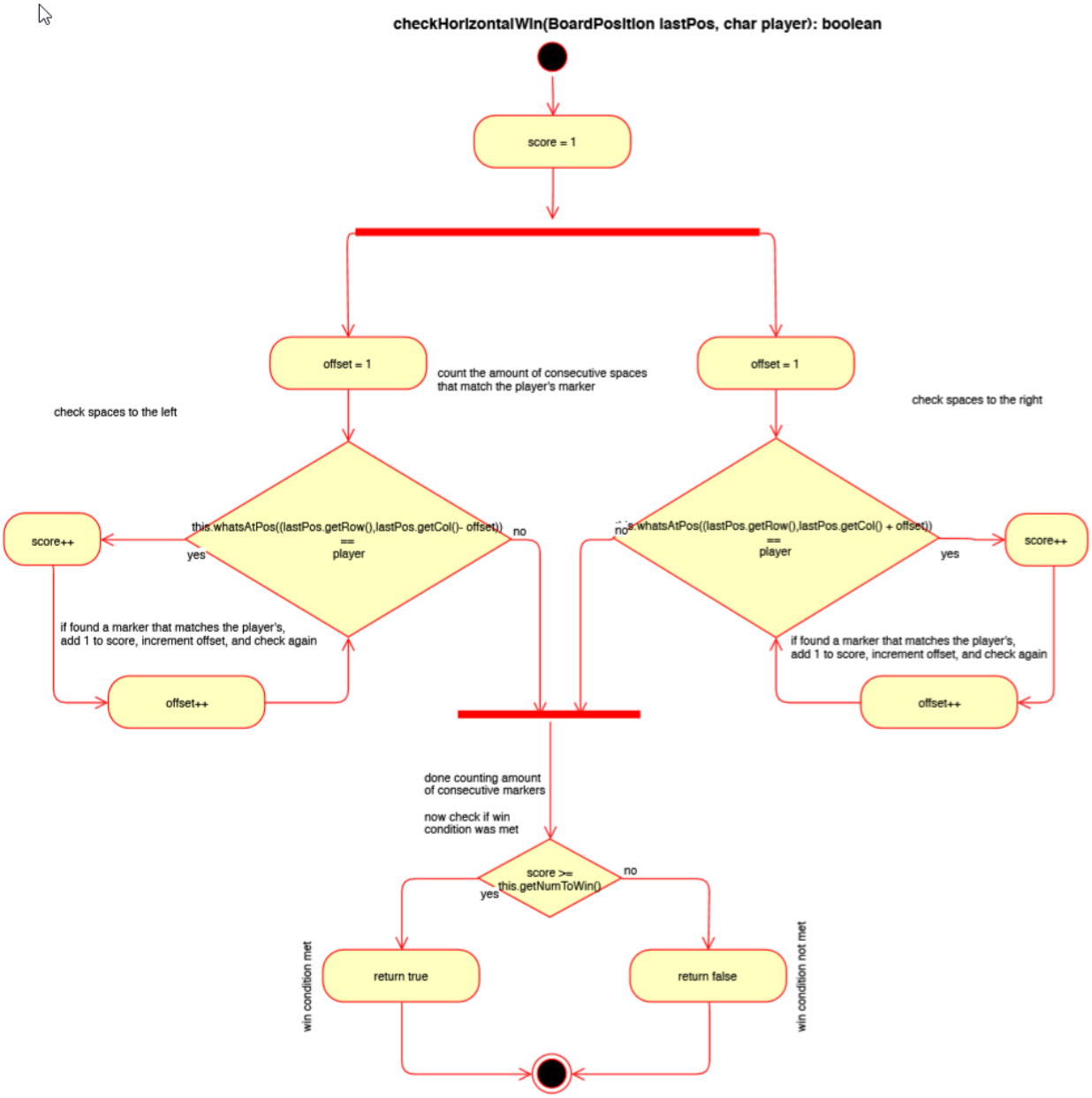

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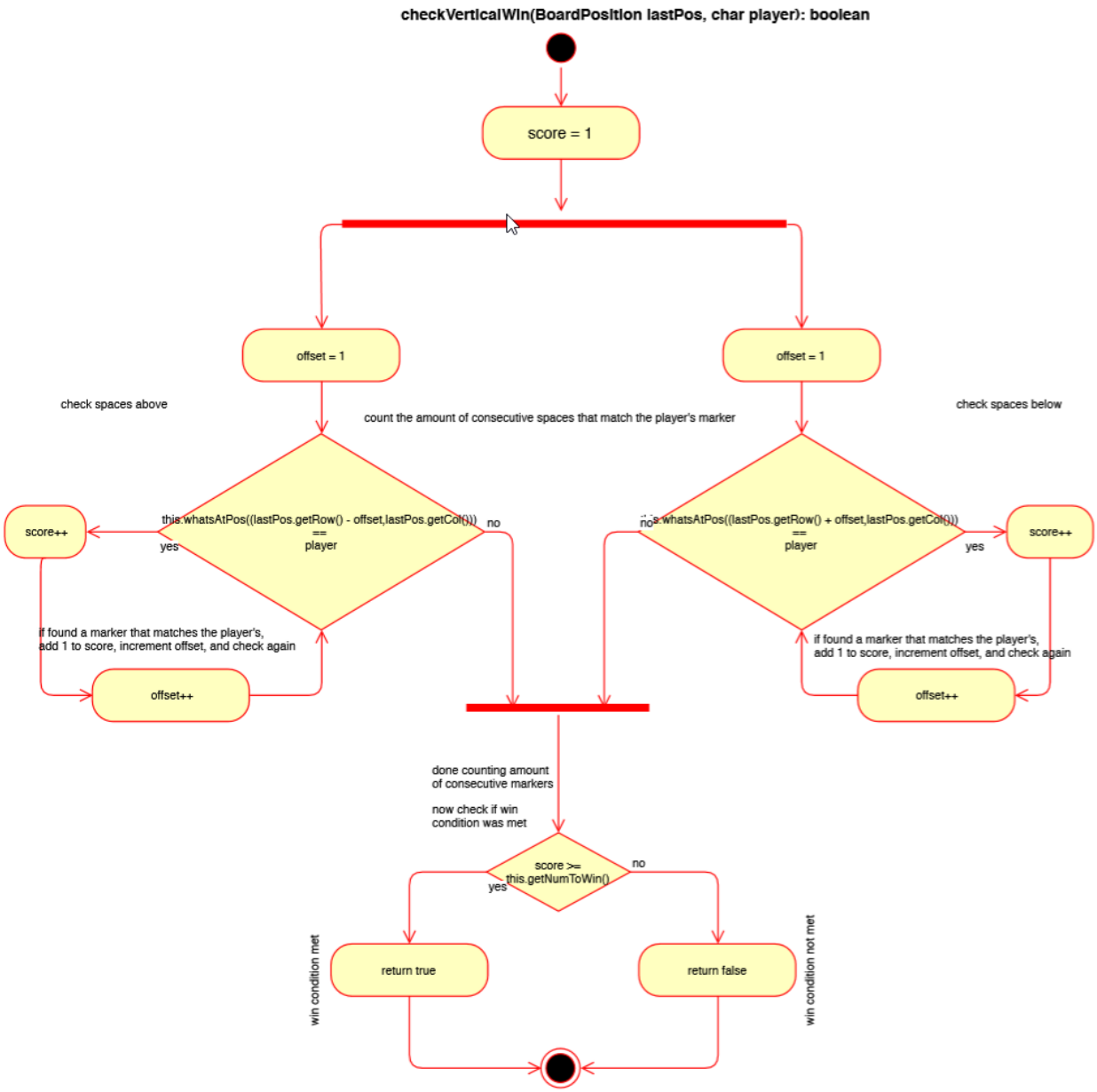

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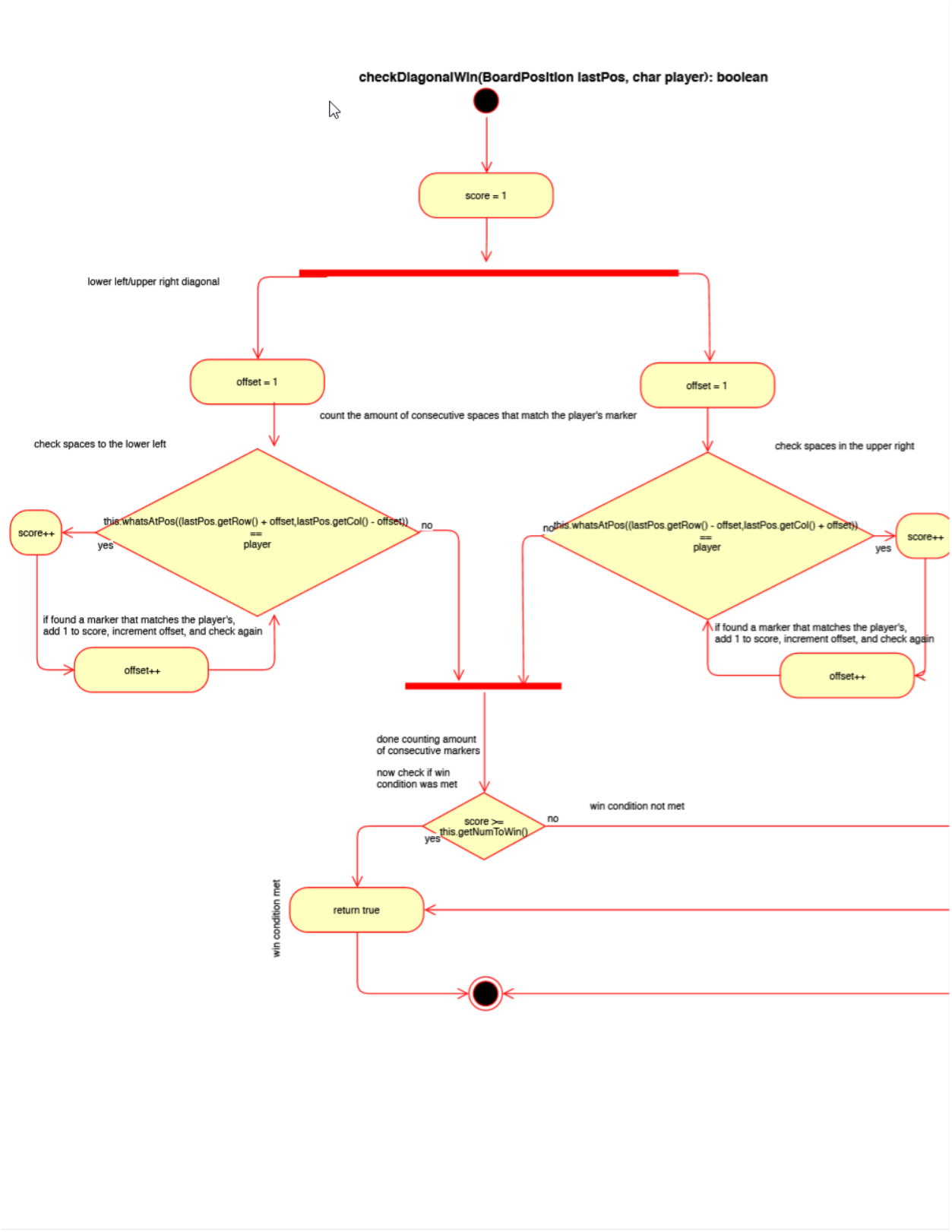

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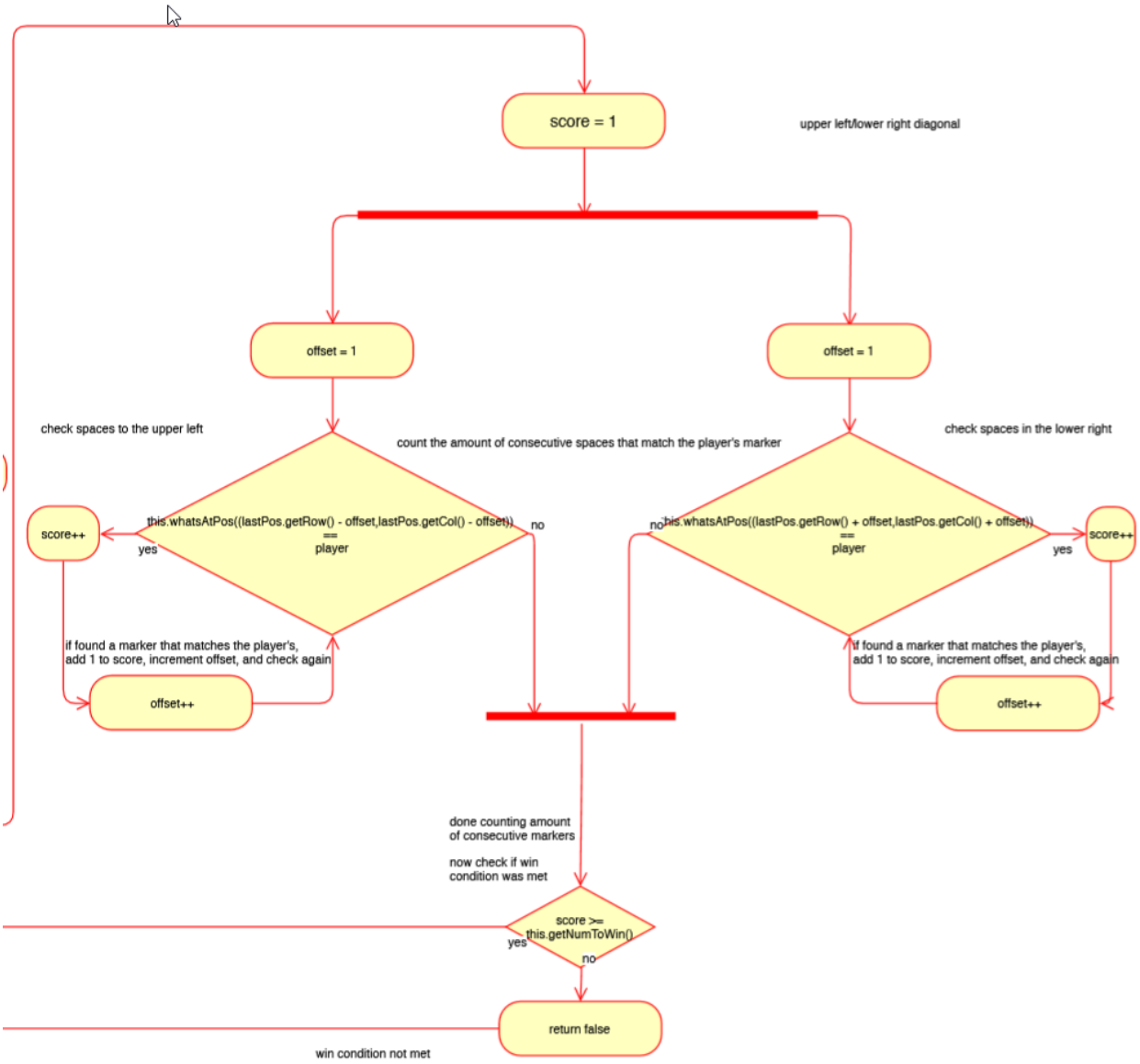

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