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CPSC 2150

Project 2

Project Report

Requirements Analysis

Functional Requirements

1. As a player, I can input a position so that I can play my token.
2. As a player, I can choose to play again so that I can replay tic tac toe.
3. As a player, I can have my input validated by the program so that I can place my token in a valid position.
4. As a player, I can view output prompting for an input so that I can see when I should make an input.
5. As a player, I can view an outputted message at the end of the game, so that I know how the game ended.
6. As a player, I can win horizontally, as that I can win the game.
7. As a player, I can win vertically, so that I can win the game.
8. As a player, I can win diagonally so that I can win the game.
9. As a player, I can make a move after my opponent (if they have not one), so that I can take my turn.
10. The program can end the game without either player winning, so that the game can end in a tie.

Non-functional Requirements

1. The system must be written in Java.
2. The system must run on a Unix machine.
3. The program can print the game board to the screen so that the player can see the board.
4. The program can alternate between players so that the program can be played by two players.
5. The program can be repeated so that the program has the ability to let the players play again.
6. The game board is of size 8x8.
7. Player X will always go first.
8. Coordinate (0,0) represents the top left corner of the game board.

Design

A picture containing table

Description automatically generatedA picture containing table

Description automatically generatedClass Diagrams

Text

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Description automatically generated

Table

Description automatically generated

GameScreeN Activity Diagrams

Table

Description automatically generatedmain()

Diagram

Description automatically generated

gameWon()

Diagram

Description automatically generated

Diagram

Description automatically generatedgameDrawn()

Diagram

Description automatically generatedtakeTurn()

GameBoard and IGameBoard Activity Diagrams

Diagram

Description automatically generatedGameBoard Constructor

placeMarker(BoardPosition marker, char player)

Diagram

Description automatically generated

Default checkSpace(BoardPosition pos)

Diagram

Description automatically generated

Default checkForWInner(BoardPosition lastPos)

Diagram

Description automatically generated

checkForDraw()

Diagram

Description automatically generated

checkHorizontalWin(BoardPosition lastPos, char player)

Diagram

Description automatically generated

Diagram

Description automatically generatedcheckVerticalWin(BoardPosition lastPos, char player)

Diagram

Description automatically generatedcheckDiagonalWin(BoardPosition lastPost, char player)

Diagram

Description automatically generated

whatsAtPos(BoardPosition pos)

Diagram

Description automatically generated

isPlayerAtPos(BoardPosition pos, char player)

Diagram

Description automatically generated

toString()

Diagram

Description automatically generated

getNumRows()

Diagram

Description automatically generated

Diagram

Description automatically generatedgetNumColumns()

getNumToWin()

Diagram

Description automatically generated

AbsGameBoard

Diagram

Description automatically generatedtoString()

Deployment

Running the extended Tic-Tac-Toe is based off the makefile. To use the makefile navigate to the project directory in the terminal window and type the following commands:

* To compile the code type make
* To run the program and play the game type make run
* To remove the compiled (.class) files type make clean