

Project Name: Connect 4

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Overview

Our project is a simple board game. The user can choose to play either against a computer player or play with another player. The objective of the game is to get four game pieces in a row horizontally, vertically or diagonally. Each player takes turn placing piece on the 7x6 board. The game will go on until either player gets four in a row or if the board fills up with pieces.

To play, the user will be prompted to either play against a computer player or another player. Then the board will be emptied and the player can choose from any row with the corresponding button, and will alternate between players, either computer or second user. This will go on until either player wins or the board fills up, then it is a draw.

The win condition will be checked after the 4th turn of the first player (7th overall turn), and after every turn following it. It will check the last piece that was placed, and check in all 8 board spots around it for a matching piece. If it finds a matching piece, then it will continue to check in that direction until either there are four in a row, then that player wins and the four pieces will be outlined, or if there is an empty spot or the other player's piece. If there was not a matching piece found in one of the 8 spots, it will move on to the next of the 8 spots until all have been checked. If the max amount of turns were played, 42 for a 7x6 board, and the win condition was not met, the game will result in a draw.

Functional Requirements:

FR1: At game start the user is prompted to play against the computer or another player

FR2: Once the user decides, the board is displayed and the game waits for user input

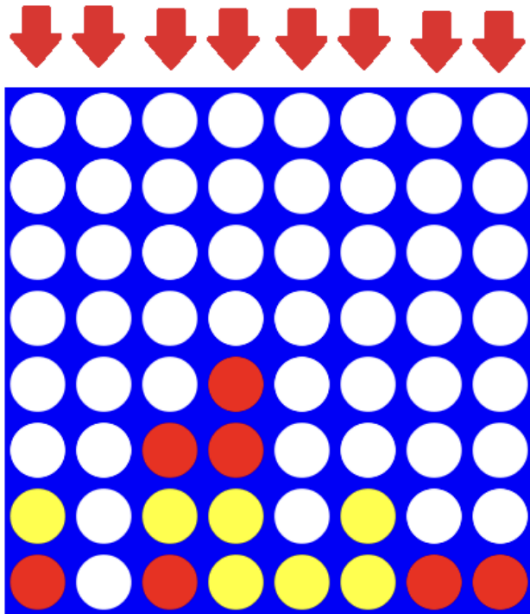
FR3: Once the player chooses a column, the game will prompt for player 2 to act, either choosing a computer move or waiting for player 2 to act.

FR4: As the game is played, the game will check for a winner after every move, and once a connect 4 has been achieved vertically, horizontally, or diagonally or the board is completely filled, the game will end and show the user the result - either:

1. player 1 win
2. player 2 win
3. draw

FR5: The game will prompt the user to play again or quit

User Interface Prototype:



User Interface Requirements:

UIR1: The game will first show a screen with 2 options: “2 player game” or “play against computer” and will wait for user input

UIR2: The game will wait for user input on the column of choice, then add a piece to said column. The game will in some way show visually which player’s turn it is

UIR3: When the game ends, the gui will show the result in an overlay and prompt the user to either restart or quit, and wait for input.

Project Plan

Requirement	Deliverable 1 (Game)	Deliverable 2 (GUI)	Deliverable 3 (Controller)	Deliverable 4 (RandomAgent)
FR1		x	x	
FR2		x		
FR3			x	x
FR4	x			
FR5			x	
UIR1		x	x	
UIR2		x		
UIR3		x	x	