Connect 4: Manual Testing Plan
By Prashant Pokhriyal & Vivek Sriramineni

Introduction:

The following testing plan is intended to help developers test the Connect4 application beyond running unit tests and verifying snapshot test results. This testing should help ensure that the application is functionally and aesthetically proficient.

Major prerequisites are listed below; please see error results for any missing dependencies or additional development requirements

Prerequisites (Frontend):

- Javascript React
- Babel & Jest
    - Snapshot tests
- For specific versions of the above and more dependencies, see package.json in frontend folder

## Prerequisites (Backend):

- Python 3.7
- Flask
- MongoDB
- PyMongo
    - For interaction with MongoDB
- Pytest
    - Used for Unit Testing
    - Run these in addition to the manual tests described in this document
- Coverage Python package
    - Used for determining code coverage by unit tests

Environment Setup & Configurations:

To demo game:
1. In Backend folder
    a. Have MongoDB running
    b. Have server.py running
2. In Frontend folder
    a. Run "yarn start"

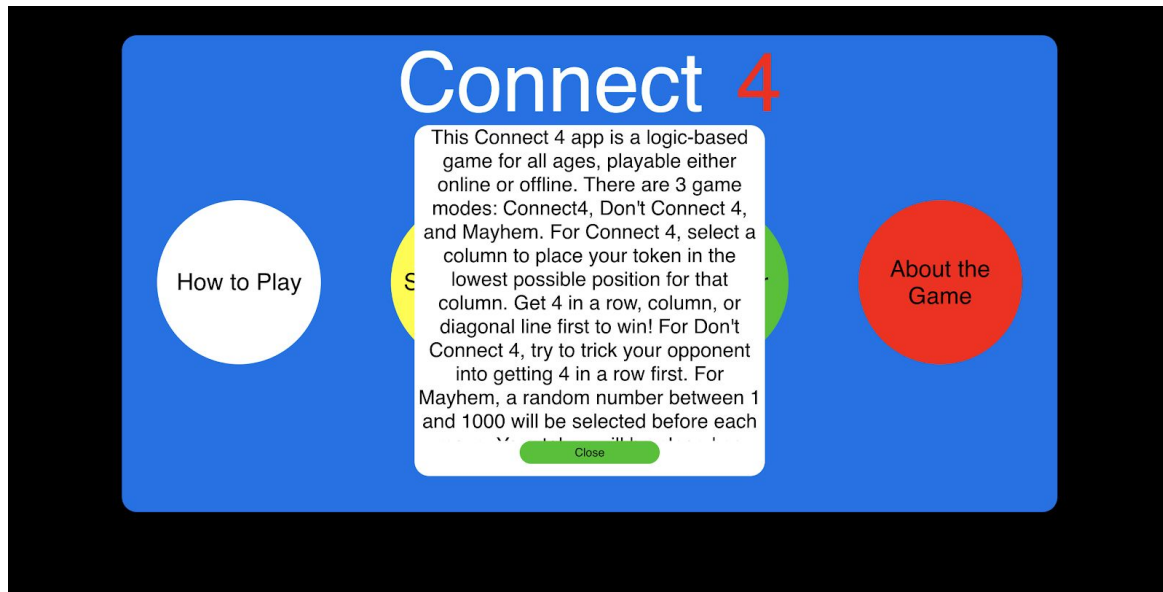The following screen should then appear:
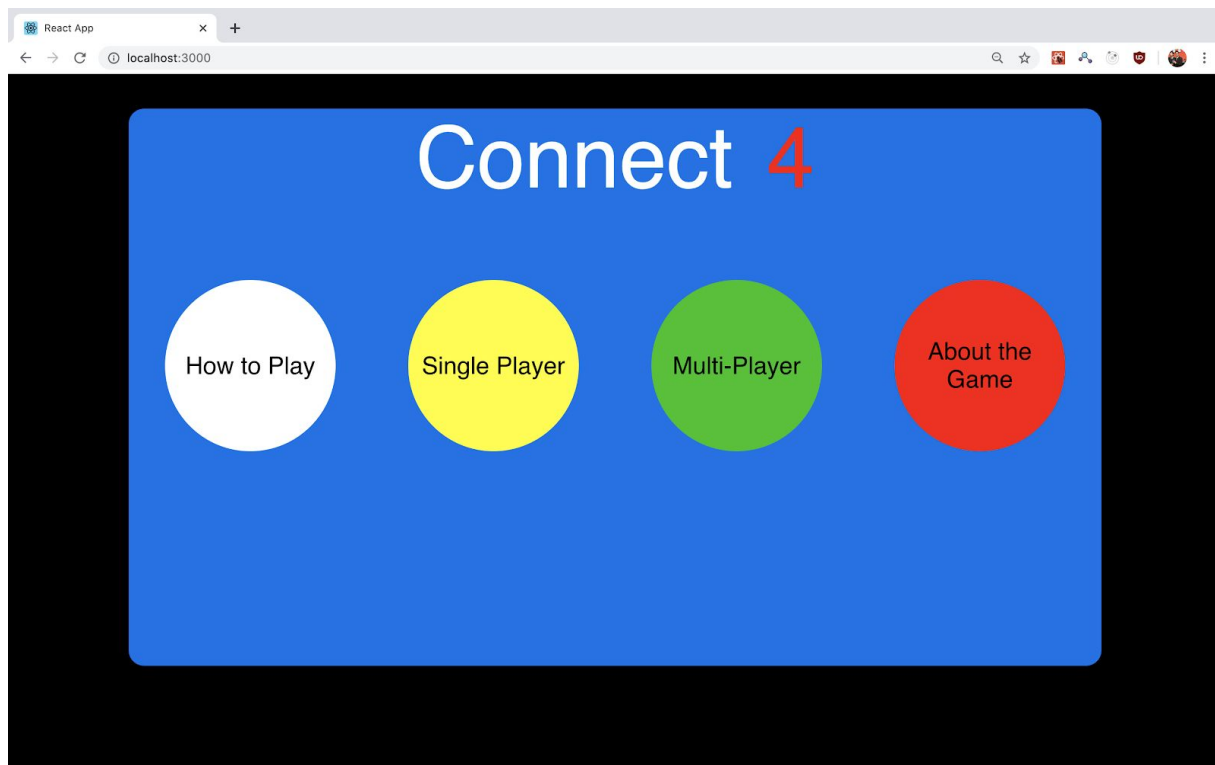
Operations & Results (Menus):

As seen above, the Connect 4 main menu has 4 options: How to Play, Single Player, Multi-Player, and About the Game.
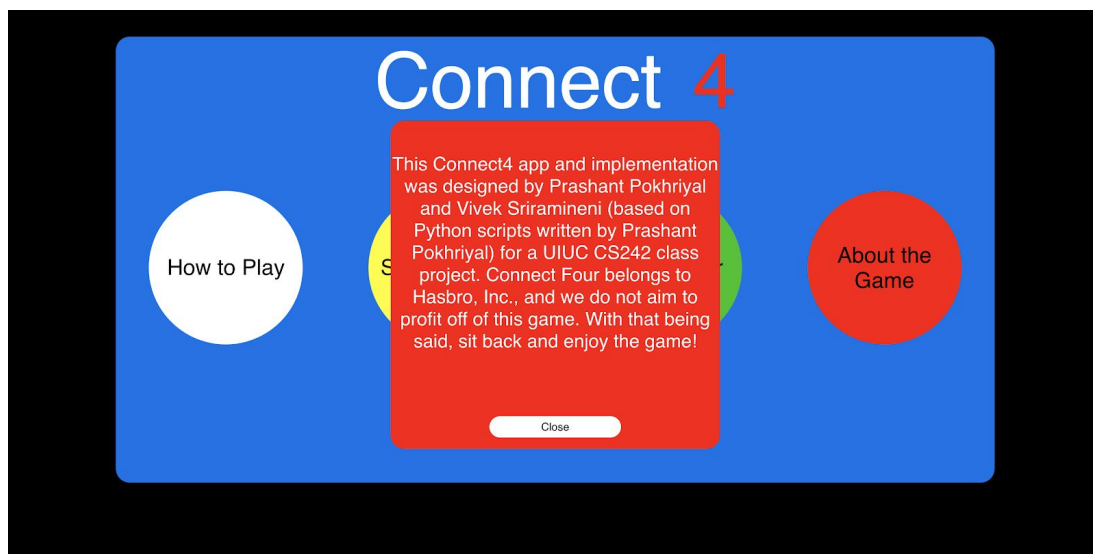We'll start by demoing the most straightforward items on the page.
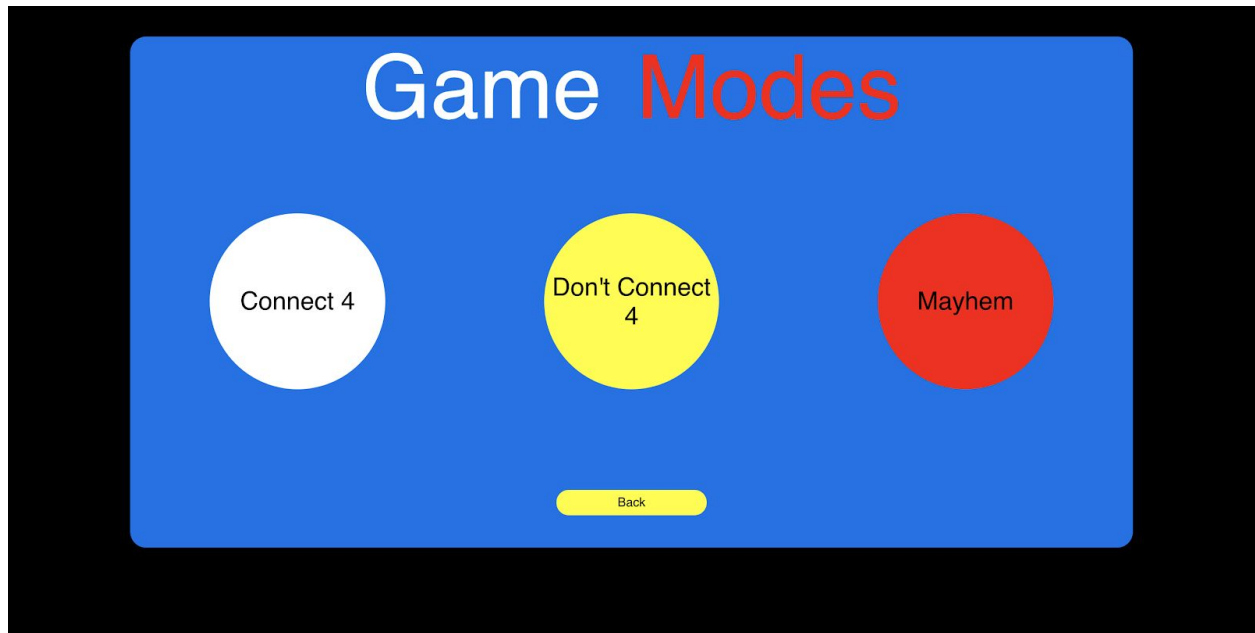
1. Click "How to Play"

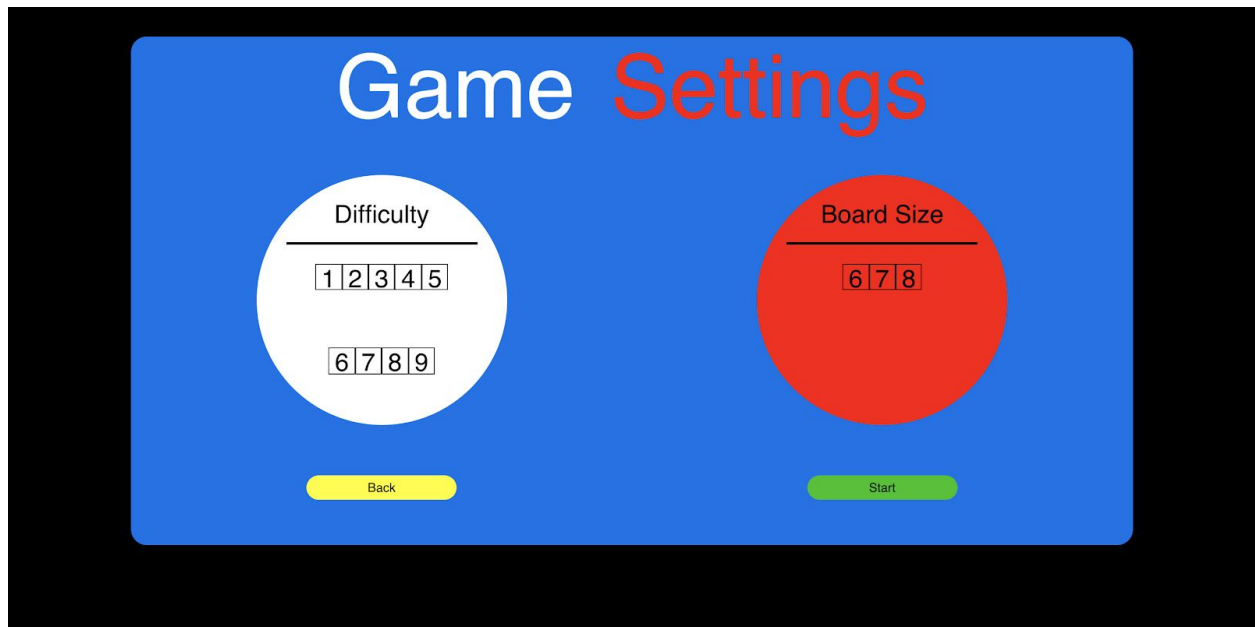This pop-up menu should be scrollable.
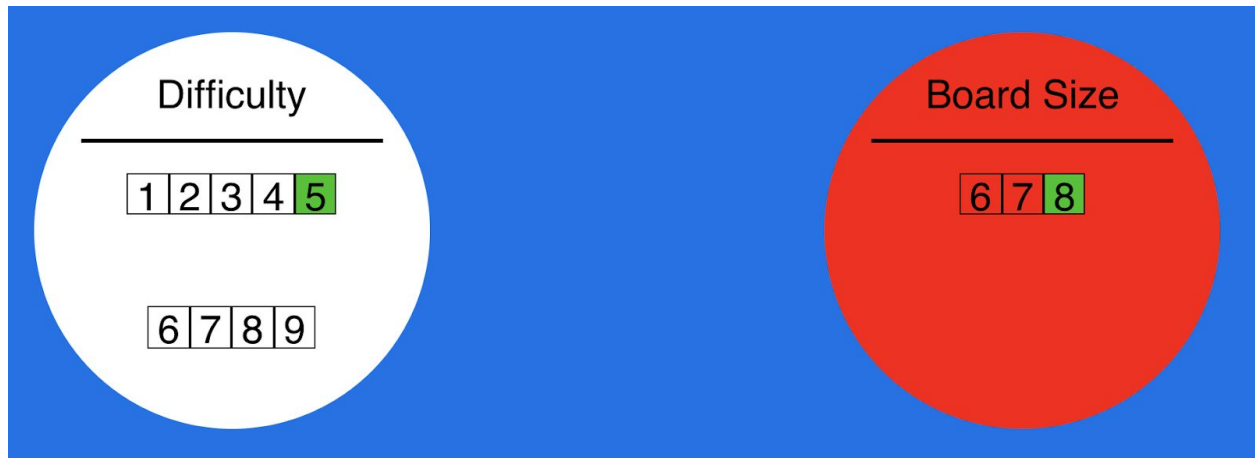
2. Click "About the Game"

3. Click "Single Player"

Note that the central two buttons should be yellow.

4. Select any option to go to "Single Player Game Settings"

Note that AI Difficulty should be selectable on the left, and board size should be selectable on the right.
On hover, each individual option should become light green, and should remain green once selected.
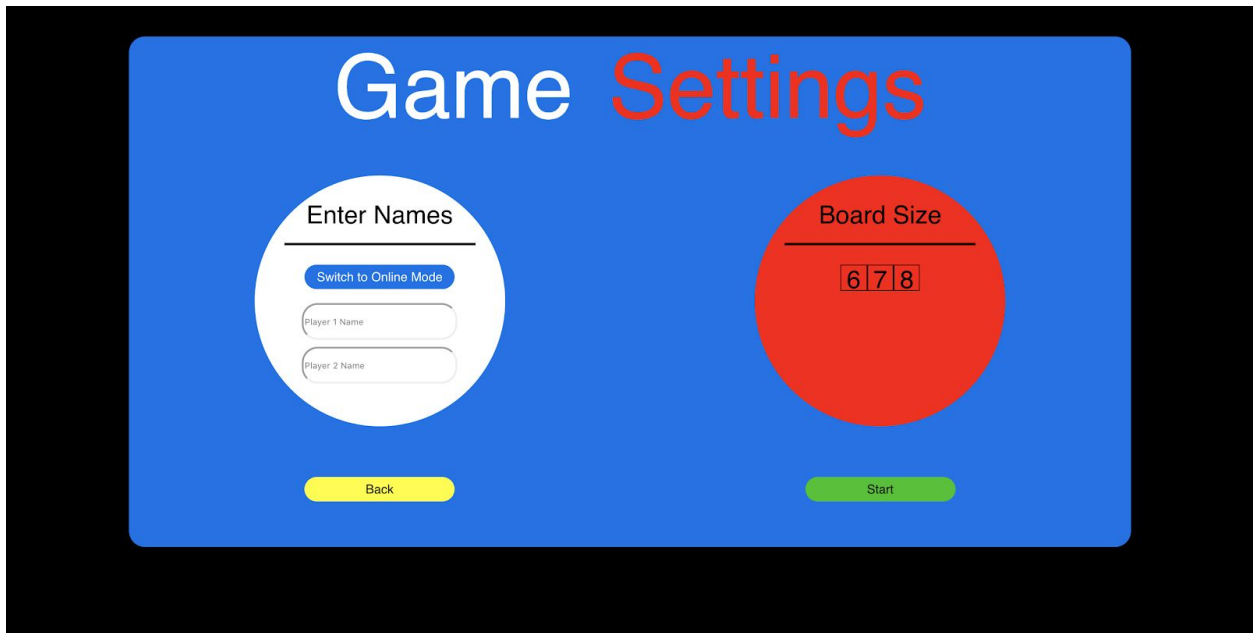

5. Go back to the Main Menu. Click "Multi-Player"

Note that the central two buttons should be light green.

6. Click any option to go to "Multi-Player Game Settings"
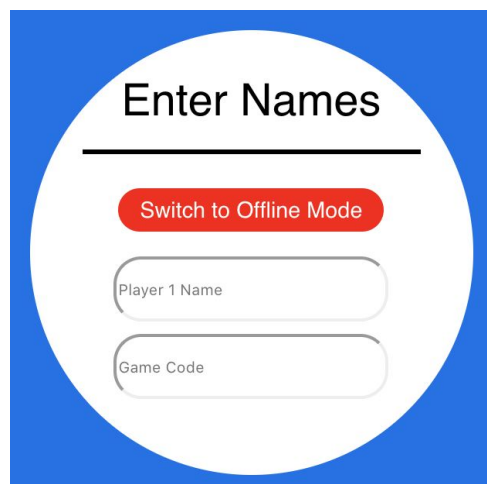

On the left, you should see the option to enter two names, and on the right you should see the option to select board size. On the "Enter Names" side, note that it should be in Offline mode (there is a blue button stating the option to "Switch to Online Mode")

7. Click "Switch to Online Mode"

Before   **After**

Operations & Results (Game):

Now we will attempt to play different game modes.

Normal Connect 4, Single Player

Using the instructions above, start from the Main Menu and navigate from Single Player → Connect 4. On the Game Modes page, select any option for Difficulty, but select 8 for Board size (to verify images match the following).
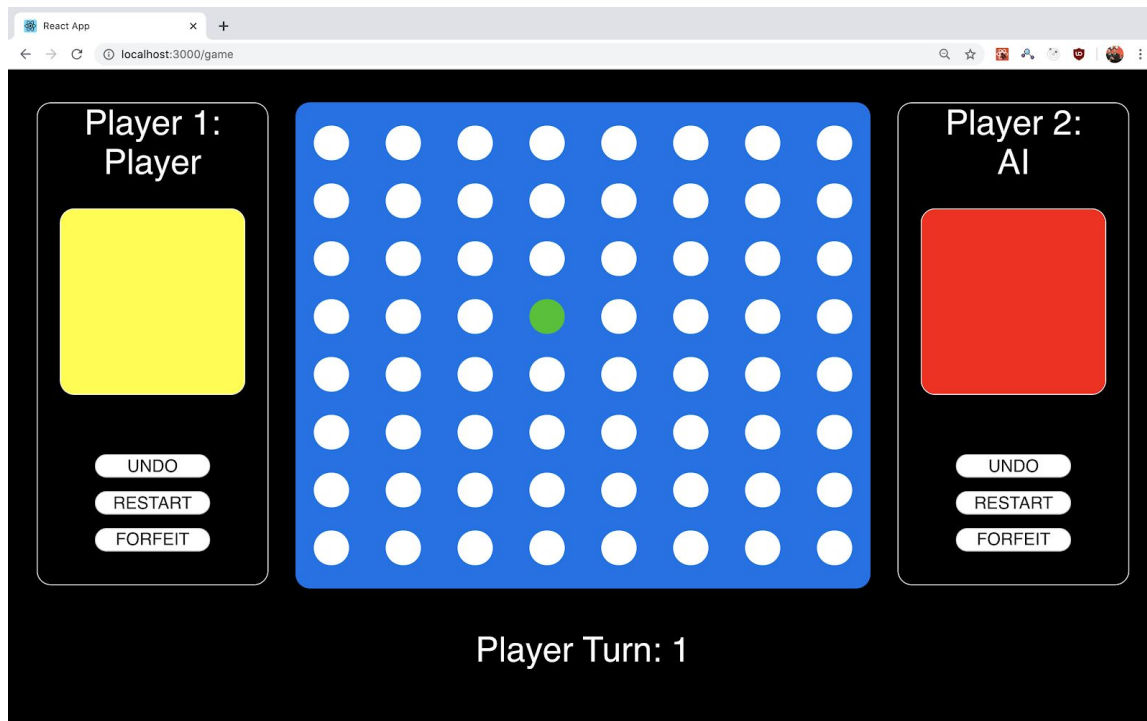
As soon as you start the game, the screen should look like the following:
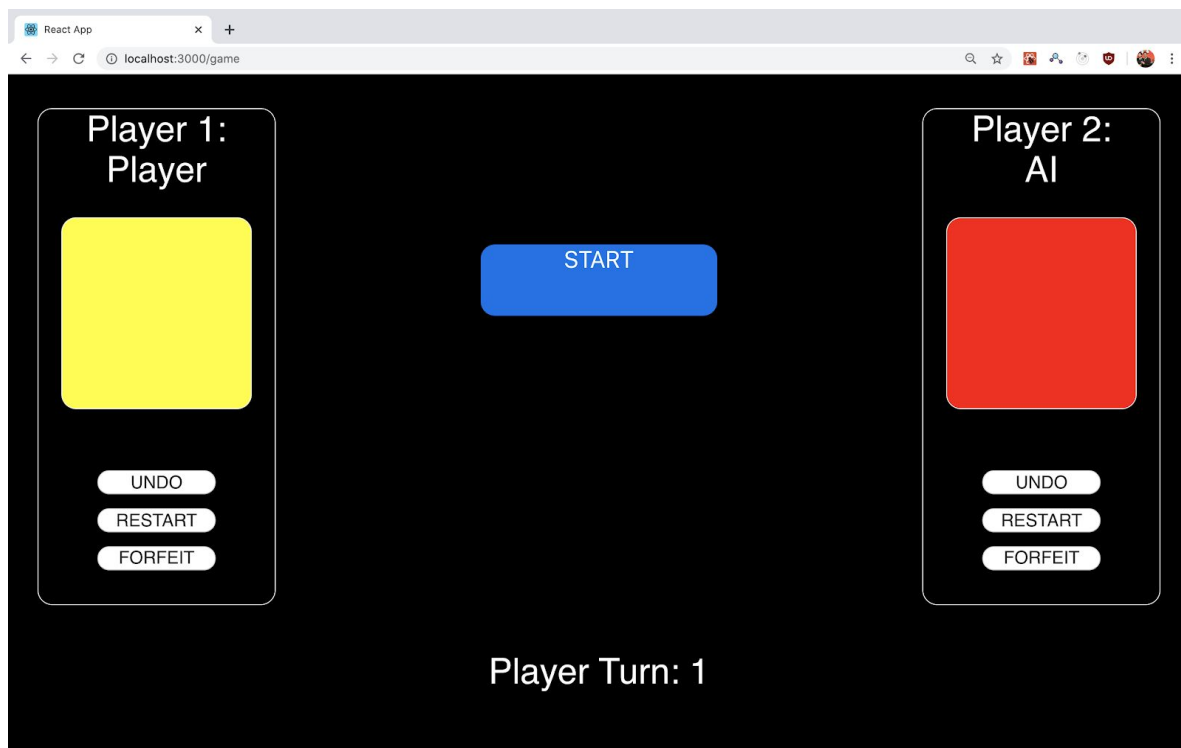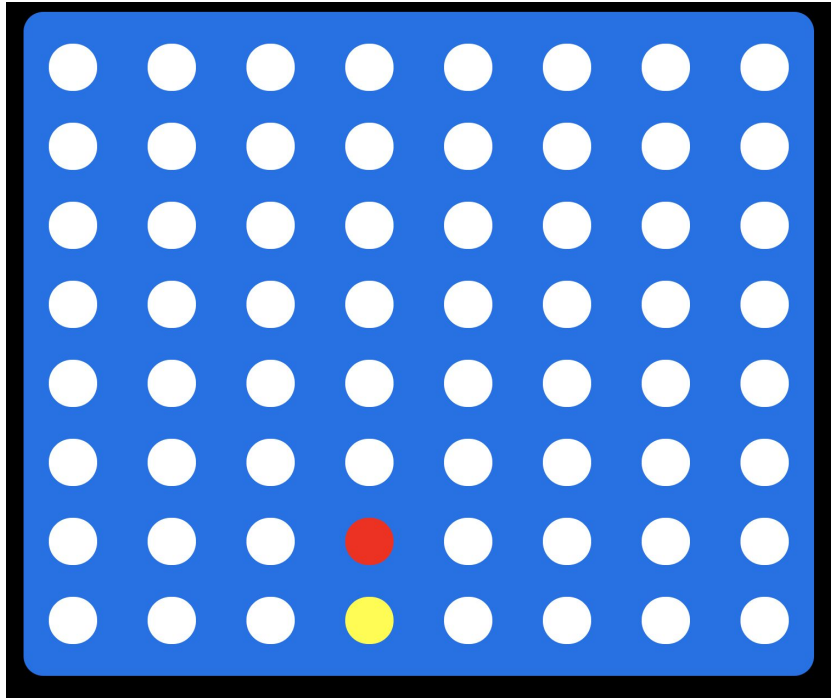
Click the Start button to begin the game.
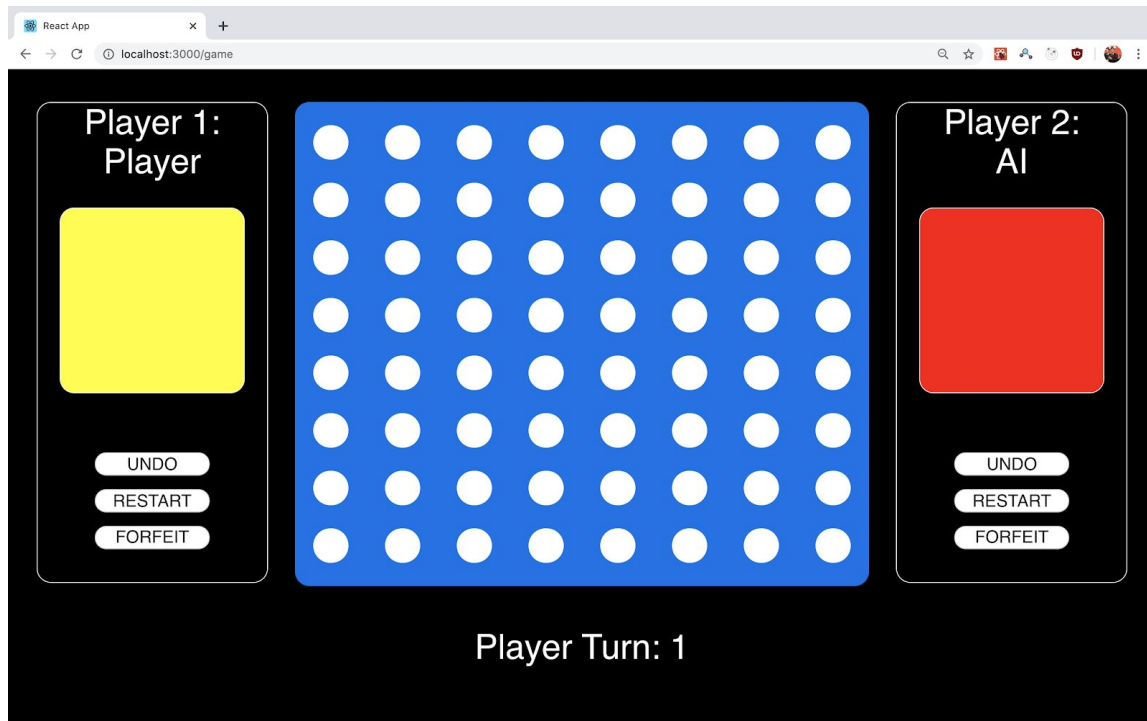
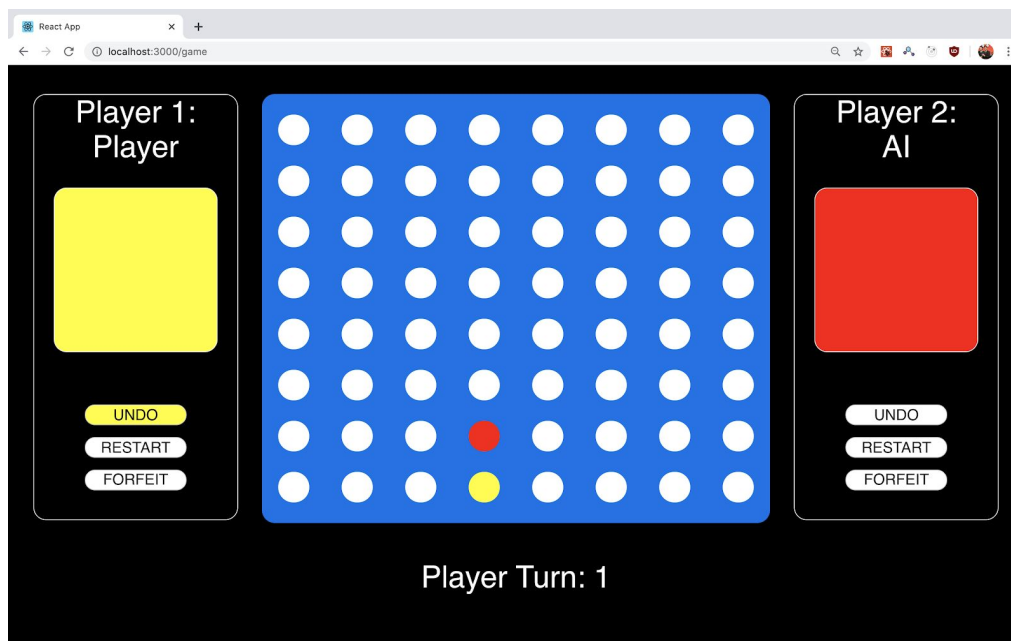As you hover over a particular space on the board, it should highlight in green.

However, once you click, a yellow token should "fall into place" at the bottom of the column. Ignore the red token in the following picture (this is the AI's move, as the AI is player 2).
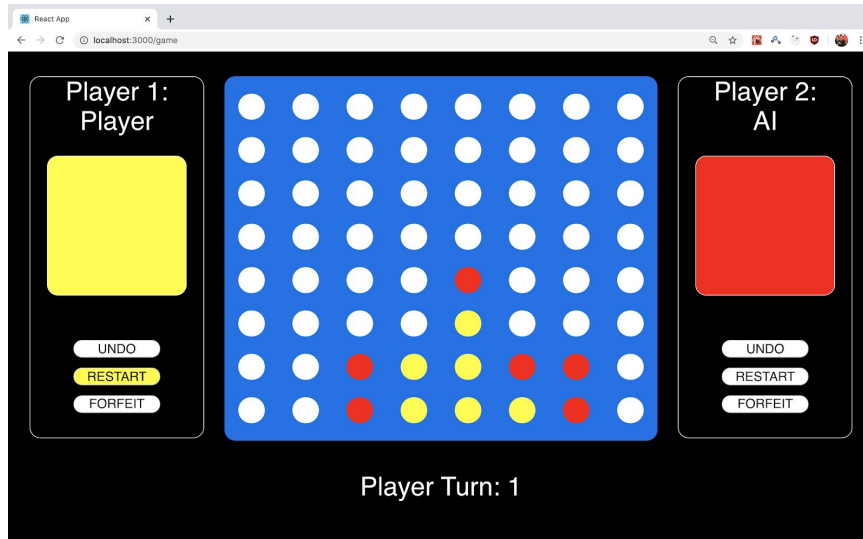

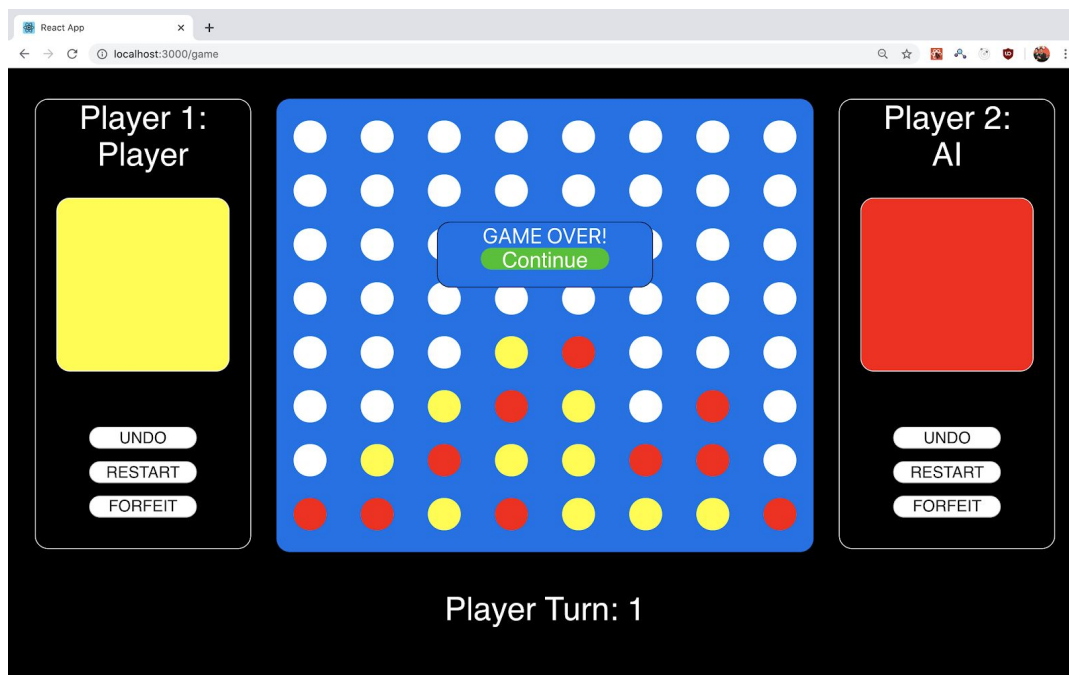Then click Undo on Player 1's side. The button should hover in yellow.

The board should then be emptied (and it should be Player 1's turn).

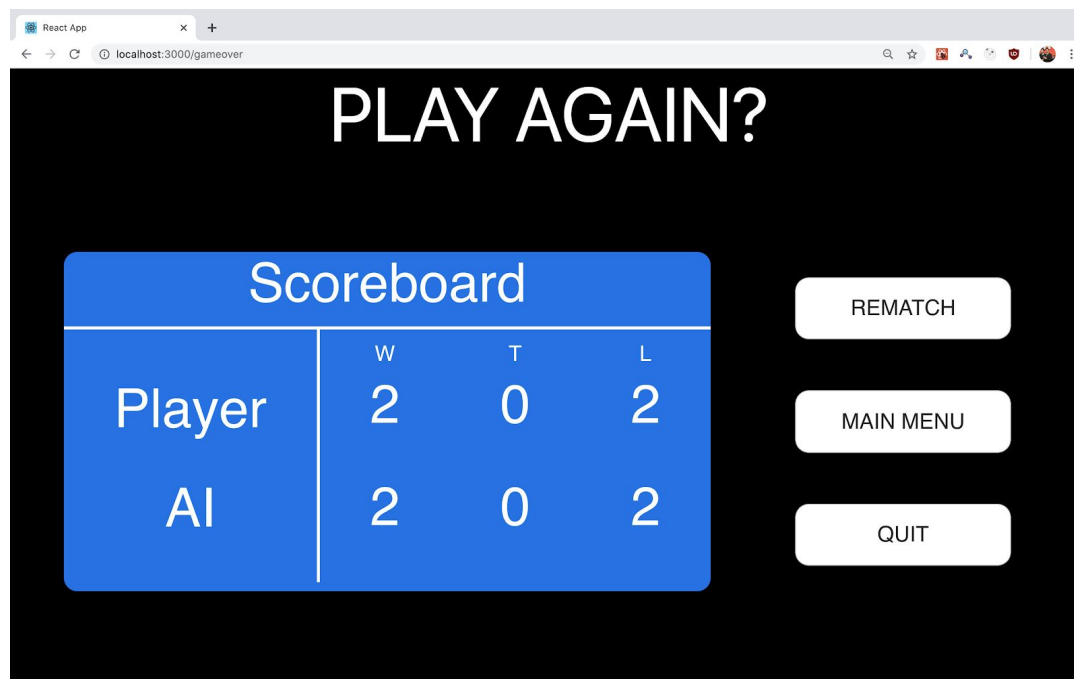Now play the game a bit, and then attempt to restart.

The board should then be emptied (and it should be Player 1's turn).

Then resume the game, and try to let the AI win and reach the following screen.

Click Continue to proceed to the following screen (your scores will be slightly different if this is your first time playing single player mode).

Press Rematch to restart the game. After playing for a bit, click the Forfeit button.
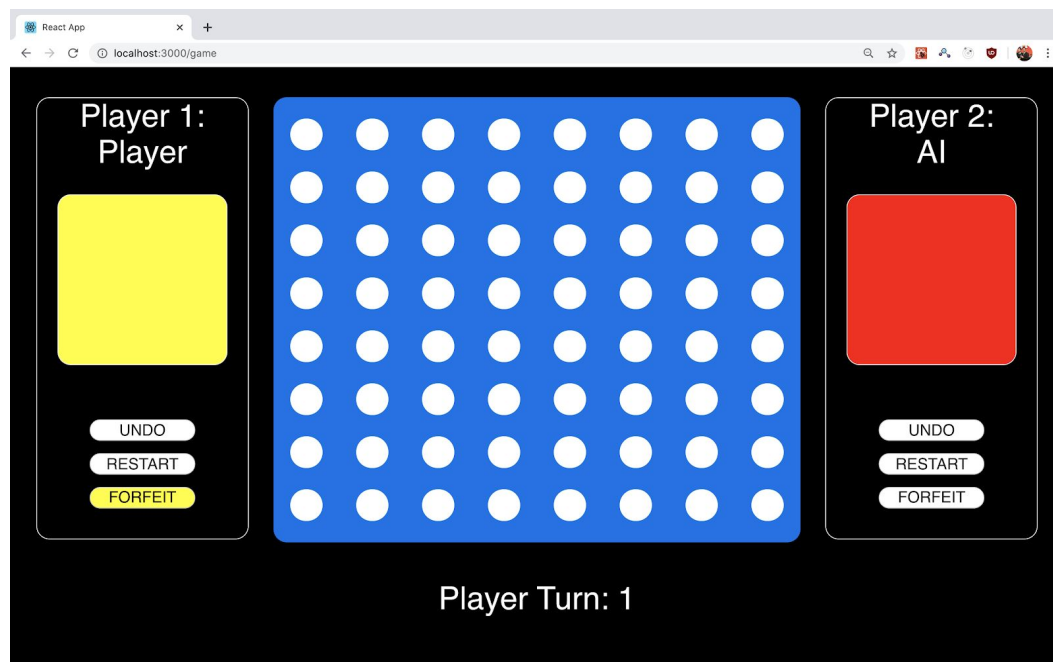
Now, the scoreboard should be updated such that Player 1 has 1 additional Loss and the AI has 1 additional Win.
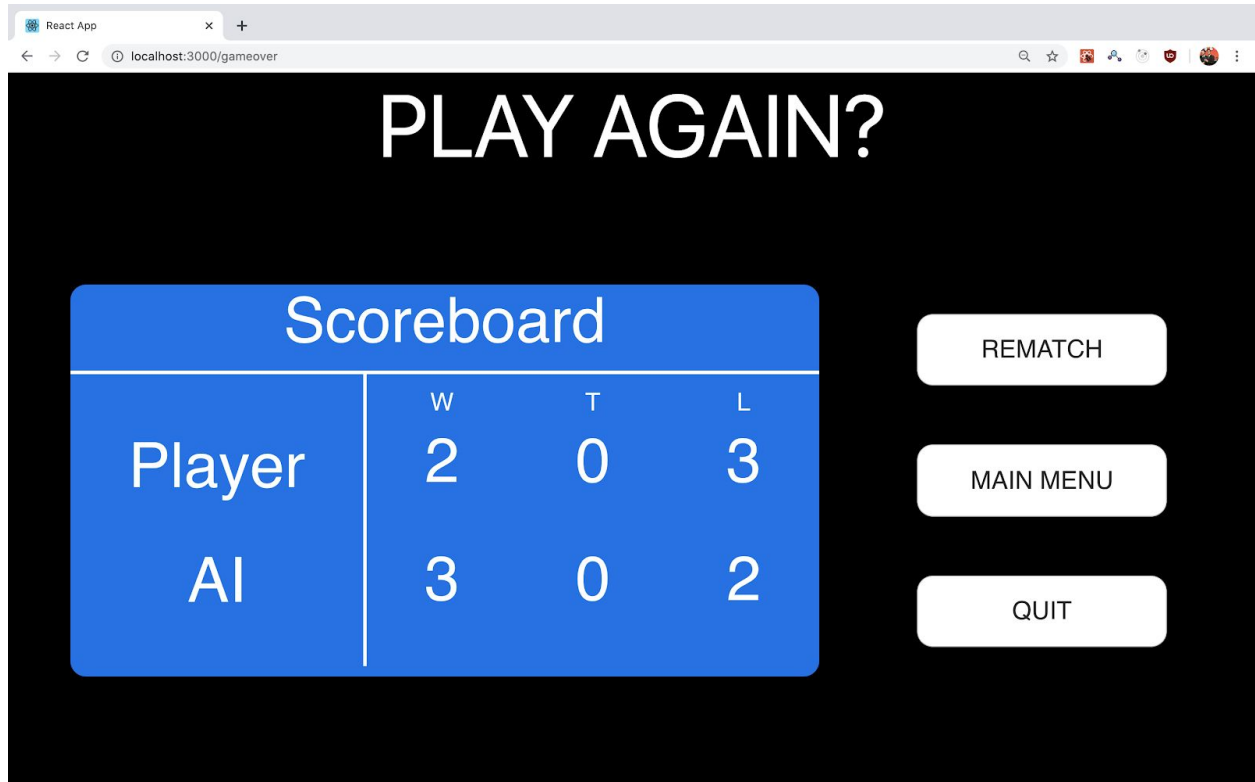
Feel free to try all of the above from the perspectives of Player 1, Player 2, and the AI.

Make sure to test out all game modes, all game board sizes, and that all of the above works on both Offline and Online modes.

For reference on the nature of the game modes, please see How to Play on the menu. In general, Don't Connect 4 should have the opposite results that you saw in regular Connect 4, and the token selection for Mayhem should seem somewhat random (although the logic should follow that which is described in the How to Play section on the menu).