

Assignment 4: Tic Tac Toe

Lab Goals

1. Practice using the DOM APIs to handle user interaction
2. Explore the Canvas API
3. Build a local Tic Tac Toe game
4. Continue to become familiar with Git and Github

Instructions

For this assignment you will be building a Tic Tac Toe game using HTML, CSS, and JavaScript. Specifically in this assignment you will be practicing/exploring the Canvas API as all of your graphical display and user interaction must be done through the canvas. The game play process should go something like this:

1. Player(s) go to the game and are presented with a title, description, and blank Tic Tac Toe board
 - a. The board must be rendered with Canvas
2. The player can then click into an empty section of the board to place their selection
 - a. Start order of players (X/O) does not matter
 - b. If a player plays into a spot which has already been played you must let them know and have them select a different spot. To do this you will need to maintain the board state in your JavaScript code. My recommendation for this is to use a 2-D array (see Fig. 1 on page 2)
3. After each turn you will then have to process the board state you are maintaining to check for any winning conditions
4. If a player wins, present a winner message and provide a way to restart the game (can be automatic)
5. If the game ends in a tie, display a tie message and provide a way to restart the game (can be automatic)

If you want to add some extra features to your game to challenge yourself, here are some ideas:

1. Present a form at the beginning to allow players to provide their name
2. Instead of using X/O, allow the players to select a unicode emoji to be their game piece

- a. A list of possible options can be found here:
<https://unicode.org/emoji/charts/full-emoji-list.html>

Once you have completed and **tested** your project, make sure all of the code is pushed to github.uc.edu and then submit your repository URL on Canopy before the due date.



```
// Set up variable to represent the users
const playerX = "X";
const player0 = "0";

// Create empty board
const boardState = [
  [ null, null, null ], // Row 1
  [ null, null, null ], // Row 2
  [ null, null, null ], // Row 3
];

/*

If player X selects the middle section in row 2, we
must then update our boardState to represent that new state.

[
  [ null, null, null ], // Row 1
  [ null, playerX, null ], // Row 2
  [ null, null, null ], // Row 3
];

*/
```

Fig. 1