



Front End Technologies Week 11 Coding Assignment

Points possible: 70

Category	Criteria	% of Grade
Functionality	Does the code work?	25
Organization	Is the code clean and organized? Proper use of white space, syntax, and consistency are utilized. Names and comments are concise and clear.	25
Creativity	Student solved the problems presented in the assignment using creativity and out of the box thinking.	25
Completeness	All requirements of the assignment are complete.	25

Instructions: In VS Code, or an IDE of your choice, write the code that accomplishes the objectives listed below. Ensure that the code compiles and runs as directed. Take screenshots of the code and of the running program (make sure to get screenshots of all required functionality) and paste them in this document where instructed below. Create a new repository on GitHub for this week's assignments and push this document, with your JavaScript project code, to the repository. Add the URL for this week's repository to this document where instructed and submit this document to your instructor when complete.

Coding Steps:

1. Using any of the tools you've worked with so far, create a game of tic-tac-toe.
 - a. A heading should say whether it is X's or O's turn and change with each move made.
 - b. Create a tic-tac-toe grid using your HTML element of choice. When a cell in the grid is clicked, an X or O should appear in that spot depending on whose turn it is.
 - c. A button should be available to clear the grid and restart the game.
 - d. When a player has won, or the board is full and the game results in a draw, a Bootstrap alert or similar Bootstrap component should appear across the screen announcing the winner.

Screenshots of Code:



PROMINEO TECH

Html file

```
File Edit Selection View Go Run Terminal Help index.html - mytictactoe - Visual Studio Code

EXPLORER
  MYTICTACTOE
    > node_modules
    JS app.js
    index.html
    package-lock.json
    package.json
    # style.css

index.html
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4   <meta charset="UTF-8">
5   <meta http-equiv="X-UA-Compatible" content="IE=edge">
6   <meta name="viewport" content="width=device-width, initial-scale=1.0">
7   <title>Tic-Tac-Toe</title>
8   <!-- CSS only -->
9   <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.2.0/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384"
10  <link rel="stylesheet" href="style.css">
11 </head>
12 <body>
13   <div class="text-center mt-5">
14     <span class="text-center mt-5">
15       <h1 class="mt-5">My Tic-Tac-Toe Game</h1>
16       <p>Start the Game by tapping on the box</p>
17       <p id="text-change">The first player will be X</p>
18     </span>
19     <!-- Bard and cells. -->
20     <div class="board pb-5" id="board">
21       <div class="cell x" data-cell></div>
22       <div class="cell circle" data-cell></div>
23       <div class="cell" data-cell></div>
24       <div class="cell" data-cell></div>
25       <div class="cell" data-cell></div>
26       <div class="cell" data-cell></div>
27       <div class="cell" data-cell></div>
28       <div class="cell" data-cell></div>
29       <div class="cell" data-cell></div>
30     </div>
31   </div>
32 </body>
33 </html>
```

```
File Edit Selection View Go Run Terminal Help index.html - mytictactoe - Visual Studio Code

EXPLORER
  MYTICTACTOE
    > node_modules
    JS app.js
    index.html
    package-lock.json
    package.json
    # style.css

index.html
34 <div class="winner-message" id="winnerMessage">
35   <div id="winnerMessageText"></div>
36   <button id="restartButton">Restart</button>
37 </div>
38 <!-- vJavaScript -->
39 <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.2.0/dist/js/bootstrap.bundle.min.js" integrity="sha384-A3r"
40 <script src="app.js"></script>
41 </body>
42 </html>
```

Css file



PROMINEO TECH

The screenshot shows the Visual Studio Code interface with the 'style.css' file open. The Explorer sidebar on the left shows the project structure: 'MYTICTACTOE' with subfolders 'node_modules', 'app.js', and 'index.html', and files 'package-lock.json', 'package.json', and 'style.css'. The main editor area displays the following CSS code:

```
1  /* First we will define the margin, border, and box-sizing. We will chose 0. */
2  * {
3    margin: 0;
4    border: 0;
5    box-sizing: border-box;
6  }
7
8
9  :root {
10   --cell-size: 100px;
11   --mark-size: calc(var(--cell-size) * .9);
12   --color: #81c3fd; /* for hover */
13   --color-set: #0275d8; /* when set */
14   /*-l: 10px; X line-width */
15 }
16
17 body {
18   margin: 0;
19   background-color: #e8f8f2;
20 }
21
22
23 span {
24   font-family: Verdana, Geneva, Tahoma, sans-serif;
25
26   color: #053742;
27   font-size: 17px;
28 }
29
```

The screenshot shows the Visual Studio Code interface with the 'style.css' file open, displaying the continuation of the CSS code from the previous screenshot:

```
29
30 /* Making the board. */
31 .board {
32   width: 100vw;
33   height: 60vh;
34   display: grid;
35   justify-content: center;
36   align-content: center;
37   justify-items: center;
38   align-items: center;
39   grid-template-columns: repeat(3, auto)
40 }
41
42 /* Making the cells in the grid. */
43 .cell {
44   width: var(--cell-size);
45   height: var(--cell-size);
46   border: 1px solid black;
47   display: flex;
48   justify-content: center;
49   align-items: center;
50   position: relative;
51   cursor: pointer;
52 }
53
54 .cell:nth-child(1), .cell:nth-child(2), .cell:nth-child(3) {
55   border-top: none;
56 }
57
58 .cell:nth-child(1), .cell:nth-child(4), .cell:nth-child(7) {
59   border-left: none;
60 }

```



PROMINEO TECH

```
File Edit Selection View Go Run Terminal Help style.css - mytictactoe - Visual Studio Code

EXPLORER
MYTICTACTOE
  > node_modules
  JS app.js
  index.html
  package-lock.json
  package.json
  style.css

# style.css > ...

58 .cell:nth-child(1), .cell:nth-child(4), .cell:nth-child(7) {
59 |   border-left: none;
60 | }
61
62 .cell:nth-child(3), .cell:nth-child(6), .cell:nth-child(9) {
63 |   border-right: none;
64 | }
65
66 .cell:nth-child(7), .cell:nth-child(8), .cell:nth-child(9) {
67 |   border-bottom: none;
68 | }
69
70 /* Making the cursor not allowed when the cell is an x or a circle. */
71 .cell.x, .cell.circle {
72 |   cursor: not-allowed;
73 | }
74
75 /* Making the background color of the cell when it is hovered over. */
76 .cell.x::before,
77 .cell.x::after,
78 .cell.circle::before {
79 |   background-color: green;
80 | }
81
82 /* Making the background color of the cell when it is hovered over. */
83 .board.x .cell:not(.x):not(.circle):hover::before,
84 .board.x .cell:not(.x):not(.circle):hover::after,
85 .board.circle .cell:not(.x):not(.circle):hover::before {
86 |   background-color: #81c3fd;
87 | }
88
```

```
File Edit Selection View Go Run Terminal Help style.css - mytictactoe - Visual Studio Code

EXPLORER
MYTICTACTOE
  > node_modules
  JS app.js
  index.html
  package-lock.json
  package.json
  style.css

# style.css > ...

88
89 /* Making the X. */
90 .cell.x::before,
91 .cell.x::after,
92 .board.x .cell:not(.x):not(.circle):hover::before,
93 .board.x .cell:not(.x):not(.circle):hover::after {
94 |   content: 'X';
95 |   position: absolute;
96 |   width: calc(var(--mark-size) * .15);
97 |   height: var(--mark-size);
98 | }
99
100 /* Rotating the X by 50 degrees. */
101 .cell.x::before,
102 .board.x .cell:not(.x):not(.circle):hover::before {
103 |   transform: rotate(50deg);
104 | }
105
106 /* Making the O. */
107 .cell.o::before,
108 .board.o .cell:not(.o):not(.circle):hover::after {
109 |   transform: rotate(-45deg);
110 | }
111
112 /* Here we will create the circle. */
113 .cell.circle::before,
114 .cell.circle::after,
115 .board.circle .cell:not(.o):not(.circle):hover::before,
116 .board.circle .cell:not(.o):not(.circle):hover::after {
117 |   content: 'O';
118 | }
119
```



PROMINEO TECH

```
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EXPLORER
  MYTICTACTOE
    > node_modules
    JS app.js
    index.html
    package-lock.json
    package.json
    # style.css

# style.css > ...
117 | content: ' ';
118 | position: absolute;
119 | border-radius: 50%;
120 | }
121 |
122 | /* About the width and height of the circle. */
123 | .cell.circle::before,
124 | .board.circle .cell:not(.x):not(.circle):hover::before {
125 |   width: var(--mark-size);
126 |   height: var(--mark-size);
127 | }
128 |
129 | /* Making the background color of the button white, the color of the text white, and the border color
130 | white. */
131 | .cell.circle::after,
132 | .board.circle .cell:not(.x):not(.circle):hover::after {
133 |   width: calc(var(--mark-size) * .7);
134 |   height: calc(var(--mark-size) * .7);
135 |   background-color: #e8fef2;
136 | }
137 |
138 |
139 | /* Make the winning message. */
140 | .winner-message {
141 |   display: none;
142 |   position: fixed;
143 |   top: 0;
144 |   left: 0;
145 |   right: 0;
146 |   bottom: 0;
```

```
File Edit Selection View Go Run Terminal Help style.css - mytictactoe - Visual Studio Code

EXPLORER
  MYTICTACTOE
    > node_modules
    JS app.js
    index.html
    package-lock.json
    package.json
    # style.css

# style.css > ...
146 | bottom: 0;
147 | background-color: var(--color-set);
148 | justify-content: center;
149 | align-items: center;
150 | color: #rgb(255, 255, 255);
151 | font-size: 4rem;
152 | font-family: 'Courier New', Courier, monospace;
153 | flex-direction: column;
154 | }
155 |
156 | /* Button for the winning message. */
157 | .winner-message button {
158 |   border-radius: 10px;
159 |   font-size: 3rem;
160 |   background-color: #rem;
161 |   border: 2px solid var(--color-set);
162 |   padding: .25em .5em;
163 |   cursor: pointer;
164 | }
165 |
166 | /* The button background color and the color of the text . */
167 | .winner-message button:hover {
168 |   background-color: var(--color-set);
169 |   color: #white;
170 |   border-color: #white;
171 | }
172 |
173 | /* Making the winning message show. */
174 | .winner-message.show {
175 |   display: flex;
```

```
File Edit Selection View Go Run Terminal Help style.css - mytictactoe - Visual Studio Code

EXPLORER
  MYTICTACTOE
    > node_modules
    JS app.js
    index.html
    package-lock.json
    package.json
    # style.css

# style.css > ...
168 | background-color: var(--color-set);
169 | color: #white;
170 | border-color: #white;
171 | }
172 |
173 | /* Making the winning message show. */
174 | .winner-message.show {
175 |   display: flex;
176 | }
```



PROMINEO TECH

JavaScript file

```
File Edit Selection View Go Run Terminal Help app.js - mytictactoe - Visual Studio Code

EXPLORER
MYTICTACTOE
  > node_modules
  JS app.js
    index.html
    package-lock.json
    package.json
    # style.css

index.html
# style.css

OUTLINE
TIMELINE

1 const playerXClass = 'x'
2 const playerOClass = 'circle'
3
4 const winnerCombination = [
5   [0, 1, 2],
6   [3, 4, 5],
7   [6, 7, 8],
8   [0, 3, 6],
9   [1, 4, 7],
10  [2, 5, 8],
11  [0, 4, 8],
12  [2, 4, 6]
13 ]
14
15 const cellElements = document.querySelectorAll('[data-cell]')
16
17 const boardElement = document.getElementById('board')
18
19 const winnerMessageElement = document.getElementById('winnerMessage')
20
21 const restartButton = document.getElementById('restartButton')
22
23 const winnerMessageTextElement = document.getElementById('winnerMessageText')
24
25 let isPlayerOTurn = false
26
27 startGame()
28
29
30 restartButton.addEventListener('click', startGame)
```

```
File Edit Selection View Go Run Terminal Help app.js - mytictactoe - Visual Studio Code

EXPLORER
MYTICTACTOE
  > node_modules
  JS app.js
    index.html
    package-lock.json
    package.json
    # style.css

index.html
# style.css

OUTLINE
TIMELINE

30 restartButton.addEventListener('click', startGame)
31
32 function startGame() {
33   isPlayerOTurn = false
34   cellElements.forEach(cell => {
35     cell.classList.remove(playerXClass)
36     cell.classList.remove(playerOClass)
37     cell.removeEventListener('click', handleCellClick)
38     cell.addEventListener('click', handleCellClick, {once: true})
39   })
40
41   setBoardHoverClass()
42
43   winnerMessageElement.classList.remove('show')
44 }
45
46 function handleCellClick(e) {
47   const cell = e.target
48
49   const currentClass = isPlayerOTurn ? playerOClass : playerXClass
50
51   placeMark(cell, currentClass)
52   if (checkWin(currentClass)) {
53     endGame(false)
54   } else if (isDraw()) {
55     endGame(true)
56   } else {
57     swapTurns()
58     setBoardHoverClass()
59   }
60 }
```



PROMINEO TECH

```
File Edit Selection View Go Run Terminal Help app.js - mytictactoe - Visual Studio Code

EXPLORER
MYTICTACTOE
  node_modules
  app.js
  index.html
  package-lock.json
  package.json
  style.css

index.html # style.css JS app.js X

JS app.js > ...
60 }
61
62 function endGame(draw) {
63   /* Checking if it is a draw. If it is, it is setting the winnerMessageTextElement to
64    a draw. */
65   if (draw) {
66     winnerMessageTextElement.innerText = 'It is a draw'
67   } /* Checking if it is player O's turn. If it is, it is setting the winnerMessageElement to
68    Player with O's wins! If it is not, it is setting the winnerMessageElement to Player with X's
69    wins! */
70   else {
71     winnerMessageTextElement.innerText = 'Player with ${isPlayerOTurn ? "O's" : "X's"} wins!'
72   }
73
74   winnerMessageElement.classList.add('show')
75 }
76
77 // This one just returns the value in case there is a draw
78 function isDraw() {
79   /* Checking if every cell contains either the playerXClass or the playerOClass. If it
80    does, it is returning true. If it does not, it is returning false. */
81   return [...cellElements].every(cell => {
82     return cell.classList.contains(playerXClass) || cell.classList.contains(playerOClass)
83   })
84 }
85
86 /**
87  * The placeMark function takes two arguments, a cell and a currentClass, and adds the currentClass to
88  * the cell's classList.
89  * @param cell - the cell that was clicked
```

```
File Edit Selection View Go Run Terminal Help app.js - mytictactoe - Visual Studio Code

EXPLORER
MYTICTACTOE
  node_modules
  app.js
  index.html
  package-lock.json
  package.json
  style.css

index.html # style.css JS app.js X

JS app.js > ...
89  * @param cell - the cell that was clicked
90  * @param currentClass - the class that is being added to the cell
91  */
92 function placeMark(cell, currentClass) {
93   cell.classList.add(currentClass)
94 }
95
96 /**
97  * If it's player O's turn, then it's now player X's turn. If it's player X's turn, then it's now
98  * player O's turn.
99  */
100 function swapTurns() {
101   isPlayerOTurn = !isPlayerOTurn
102   document.getElementById('text-change').innerHTML = `It is player ${isPlayerOTurn ? "O": "X"}`
103 }
104
105 function setBoardHoverClass() {
106   boardElement.classList.remove(playerXClass)
107   boardElement.classList.remove(playerOClass)
108   if (isPlayerOTurn) {
109     boardElement.classList.add(playerOClass)
110   } else {
111     boardElement.classList.add(playerXClass)
112   }
113 }
114
115 /**
116  * If any of the winning combinations are true, then return true.
117  * @param currentClass - The class of the current player.
118  * @returns a boolean value.
```

```
File Edit Selection View Go Run Terminal Help app.js - mytictactoe - Visual Studio Code

EXPLORER
MYTICTACTOE
  node_modules
  app.js
  index.html
  package-lock.json
  package.json
  style.css

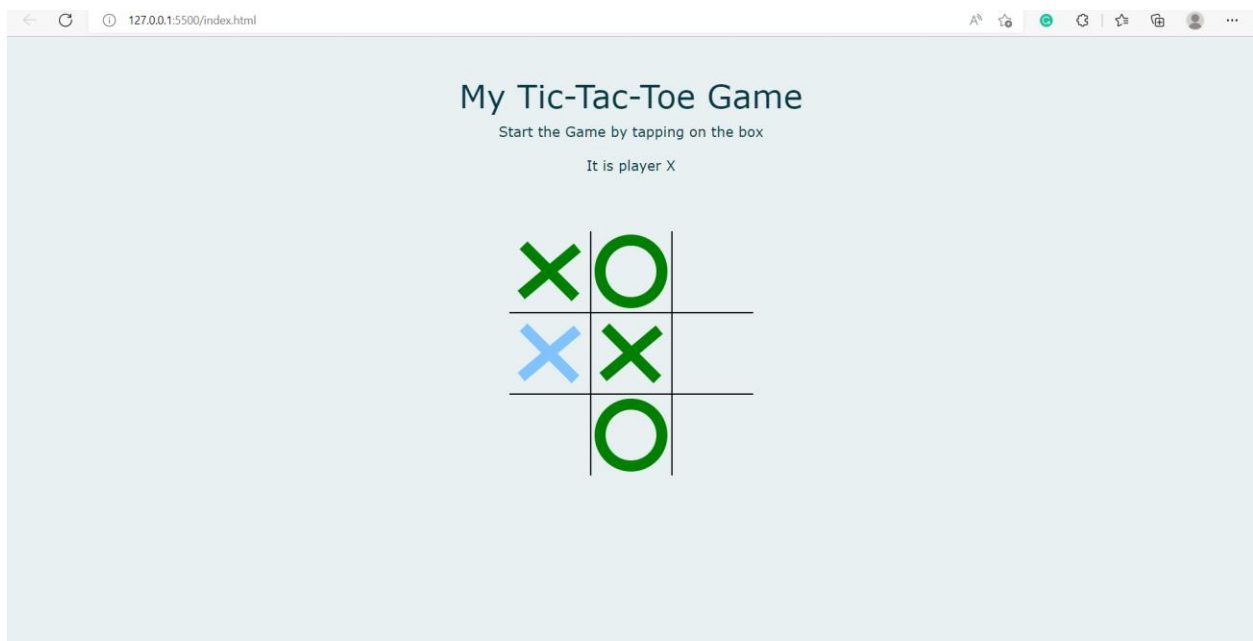
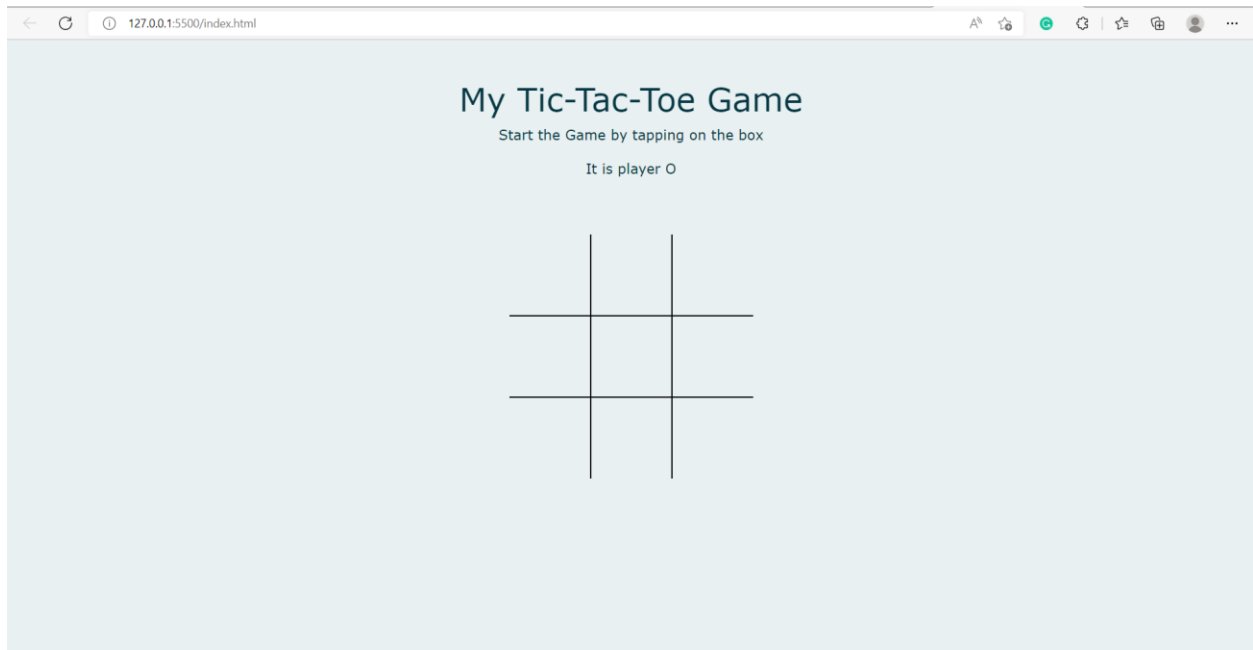
index.html # style.css JS app.js X

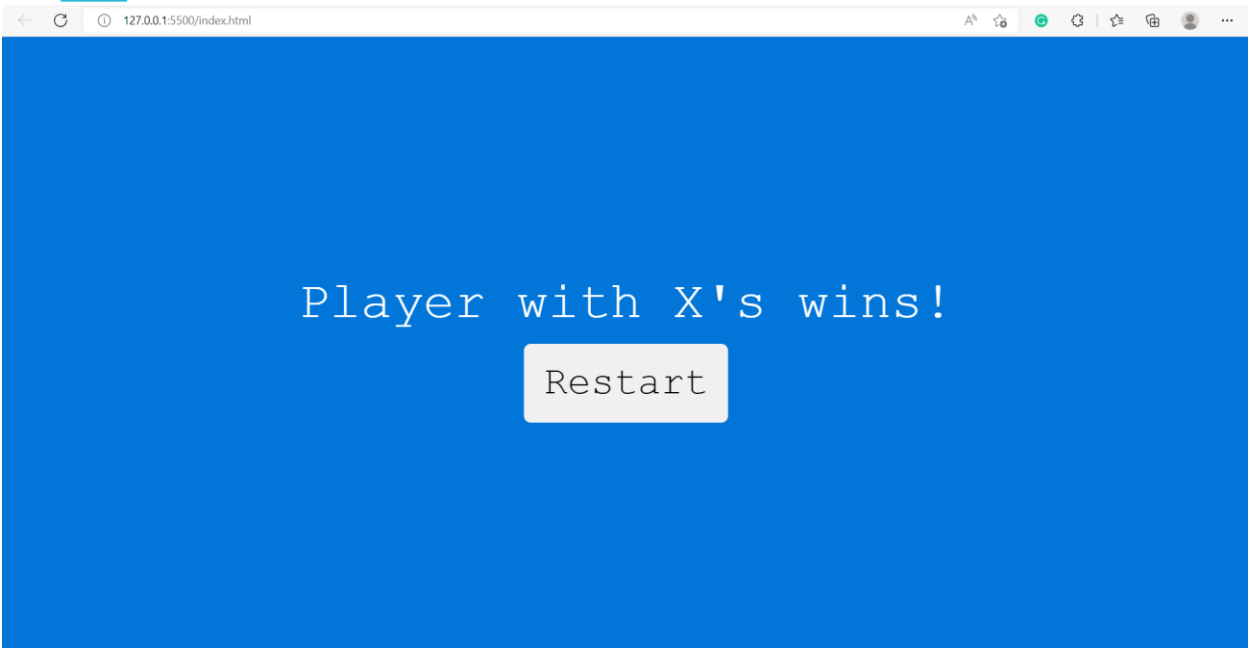
JS app.js > ...
117  * @param currentClass - The class of the current player.
118  * @returns a boolean value.
119  */
120 function checkWin(currentClass) {
121   return winnerCombination.some(combination => {
122     return combination.every(index => {
123       return cellElements[index].classList.contains(currentClass)
124     })
125   })
126 }
127
```



PROMINEO TECH

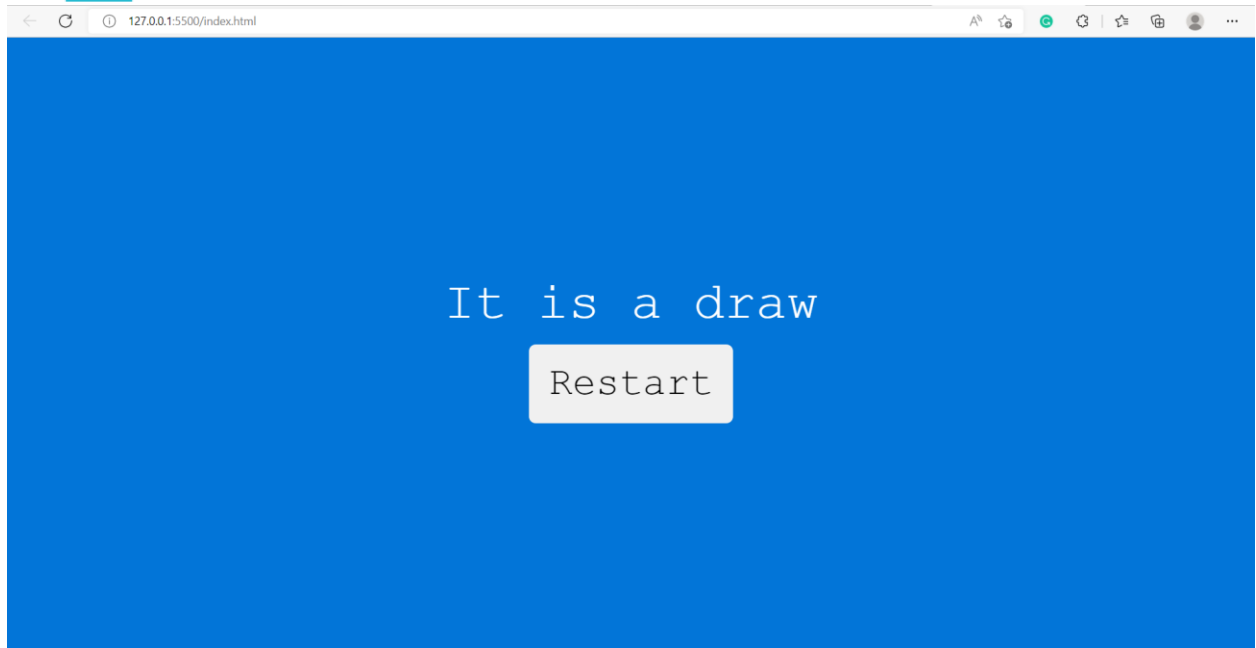
Screenshots of Running Application:







PROMINEO TECH



URL to GitHub Repository: