



BCSE203E- Web Programming

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Topics: HTML- Forms, CSS and JavaScript

Problem 1

Create an HTML file that lists:

To create a very simple income tax form. The form will have two text fields. The first one is where the user will enter their total income. The second field is where the computed income tax is displayed. The form will also need one button. When this button is pressed, the income tax is computed for the income entered in the first field. The form could look something as follows:

Enter Yearly Income:	<input type="text"/>
<input type="button" value="Calculate Tax"/>	
Your Income Tax is:	<input type="text"/>

Here is the income range and tax slab for computation

Income Range	Tax
\$0 - \$2,000	Nothing
\$2,001 - \$20,000	4% * Each dollar earned over \$2,000
\$20,001 - \$40,000	\$720 + 8% * Each dollar earned over \$20,000
\$40,001 - \$80,000	\$2,320 + 16% * Each dollar earned over \$40,000
\$80,001 - \$120,000	\$8,720 + 24% * Each dollar earned over \$80,000
\$120,001 +	\$18,320 + 32% * Each dollar earned over \$120,000

Code:

```
<!DOCTYPE html>
<html>
  <head>
    <title>Income Tax Calculator</title>
  </head>
  <style>
```

```

body {
  font-family: Arial, sans-serif;
  background-color: #c4c0c0;
  max-width: 500px;
  margin: 0 auto;
  text-align: center;
}
h1 {
  margin-top: 50px;
}
form {
  margin-top: 30px;
}
input[type="text"] {
  padding: 10px;
  font-size: 18px;
  width: 100%;
}
input[type="button"] {
  padding: 10px 20px;
  font-size: 18px;
  background-color: #5b16ca;
  color: white;
  margin-top: 10px;
}
</style>
<body>
  <h1>Income Tax Calculator</h1>
  <form id="taxForm">
    <label for="income">Enter Yearly Income(in $):</label><br>
    <input type="text" id="income" name="income"><br>
    <label for="tax">Your Income Tax is(in $):</label><br>
    <input type="text" id="tax" name="tax" readonly><br>
    <input type="button" value="Calculate Tax" onclick="calculateTax()">
  </form>
</body>
<script>
function calculateTax() {
  var income = document.getElementById("income").value;
  var tax;

  if (income <= 2000) {
    tax = 0;
  } else if (income <= 20000) {
    tax = 0.04 * (income - 2000);
  } else if (income <= 40000) {
    tax = 720 + 0.08 * (income - 20000);
  } else if (income <= 80000) {

```

```
    tax = 2320 + 0.16 * (income - 40000);  
  } else if (income <= 120000) {  
    tax = 8720 + 0.24 * (income - 80000);  
  } else {  
    tax = 18320 + 0.32 * (income - 120000);  
  }  
  
  document.getElementById("tax").value = tax;  
}  
</script>  
</html>
```

Output:

A screenshot of a web browser displaying the "Income Tax Calculator" application. The browser's address bar shows the URL "127.0.0.1:3000/web/assignment_2.3/tax.html". The page has a light gray background. At the top, the title "Income Tax Calculator" is centered. Below the title, there are two input fields. The first field is labeled "Enter Yearly Income(in \$):" and contains the value "1500". The second field is labeled "Your Income Tax is(in \$):" and contains the value "0". Below these fields is a purple button labeled "Calculate Tax".

A second screenshot of the same "Income Tax Calculator" web application. In this state, the "Enter Yearly Income(in \$):" input field contains the value "60000", and the "Your Income Tax is(in \$):" input field contains the value "5520". The "Calculate Tax" button remains visible below the input fields.

Problem 2

You will create a 3×3 grid where two players will take turns marking the grid with cross and circle symbols. The first player to get three marks in a horizontal, vertical, or diagonal row wins the game. Building a simple Tic Tac Toe game using JavaScript. 1. The game is played on a grid that's 3 squares by 3 squares. 2. You are X, your friend (or the computer in this case) is O. Players take turns putting their marks in empty squares. 3. The first player to get 3 of her marks in a row (up, down, across, or diagonally) is the winner. 4. When all 9 squares are full, the game is over. If no player has 3 marks in a row, the game ends in a tie.

Code:

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-scale=1.0">
<title>Tic Tac Toe</title>
<style>
  body {
    background-color: #87CEEB;
    display: flex;
    justify-content: center;
    align-items: center;
    height: 100vh;
    margin: 0;
  }

  #game-container {
    background-color: rgba(89, 231, 103, 0.917);
    padding: 20px;
    border-radius: 10px;
    text-align: center;
    box-shadow: 0px 0px 10px 0px rgba(0,0,0,0.5);
  }

  .grid {
    display: grid;
    grid-template-columns: repeat(3, 100px);
    grid-template-rows: repeat(3, 100px);
    gap: 2px;
    margin: 20px auto;
  }

  .cell {
    width: 100px;
    height: 100px;
    background-color: lightgoldenrodyellow;
  }
```

```

        display: flex;
        justify-content: center;
        align-items: center;
        font-size: 2em;
        cursor: pointer;
    }

    #reset-button {
        margin-top: 20px;
        padding: 10px 20px;
        font-size: 1em;
        cursor: pointer;
        background-color: #3e93d9;
        color: white;
        border: none;
        border-radius: 5px;
    }

    #reset-button:hover {
        background-color: #4169E1;
    }
    #message {
        margin-top: 10px;
        font-size: 1.2em;
    }
}
</style>
</head>
<body>
<div id="game-container">
    <h1 style="color: #4169E1;">Tic Tac Toe</h1>
    <p>Current Player: <span id="current-player">X</span></p>
    <div class="grid" id="grid">
        <div class="cell" onclick="cellClicked(event)" id="cell100"></div>
        <div class="cell" onclick="cellClicked(event)" id="cell101"></div>
        <div class="cell" onclick="cellClicked(event)" id="cell102"></div>
        <div class="cell" onclick="cellClicked(event)" id="cell110"></div>
        <div class="cell" onclick="cellClicked(event)" id="cell111"></div>
        <div class="cell" onclick="cellClicked(event)" id="cell112"></div>
        <div class="cell" onclick="cellClicked(event)" id="cell120"></div>
        <div class="cell" onclick="cellClicked(event)" id="cell121"></div>
        <div class="cell" onclick="cellClicked(event)" id="cell122"></div>
    </div>
    <button id="reset-button" onclick="resetGame()">Reset Game</button>
    <div id="message"></div>
</div>
<script>
    let currentPlayer = 'X';
    let gameOver = false;

```

```

let board = [
  ['', '', ''],
  ['', '', ''],
  ['', '', '']
];

function cellClicked(event) {
  if (!gameOver) {
    const cell = event.target;
    const row = parseInt(cell.id[4]);
    const col = parseInt(cell.id[5]);

    if (board[row][col] === '') {
      board[row][col] = currentPlayer;
      cell.innerText = currentPlayer;
      checkWinner();
      currentPlayer = (currentPlayer === 'X') ? 'O' : 'X';
      document.getElementById('current-player').innerText =
currentPlayer;
    }
  }
}

function checkWinner() {
  const winningCombinations = [
    [[0, 0], [0, 1], [0, 2]],
    [[1, 0], [1, 1], [1, 2]],
    [[2, 0], [2, 1], [2, 2]],
    [[0, 0], [1, 0], [2, 0]],
    [[0, 1], [1, 1], [2, 1]],
    [[0, 2], [1, 2], [2, 2]],
    [[0, 0], [1, 1], [2, 2]],
    [[0, 2], [1, 1], [2, 0]]
  ];

  for (let combination of winningCombinations) {
    let [a, b, c] = combination;
    if (board[a[0]][a[1]] !== '' &&
        board[a[0]][a[1]] === board[b[0]][b[1]] &&
        board[a[0]][a[1]] === board[c[0]][c[1]]) {
      gameOver = true;
      document.getElementById('message').innerText =
`${currentPlayer} wins!`;
      return;
    }
  }

  if (!board.flat().includes('')) {

```

```
        gameOver = true;
        document.getElementById('message').innerText = "It's a tie!";
    }
}

function resetGame() {
    board = [
        ['', '', ''],
        ['', '', ''],
        ['', '', '']
    ];
    currentPlayer = 'X';
    gameOver = false;
    document.querySelectorAll('.cell').forEach(cell => cell.innerText =
'');
    document.getElementById('message').innerText = '';
    document.getElementById('current-player').innerText = currentPlayer;
}
</script>
</body>
</html>
```

Output:



