Q1 Vrinda Devadas (22BCE11227)

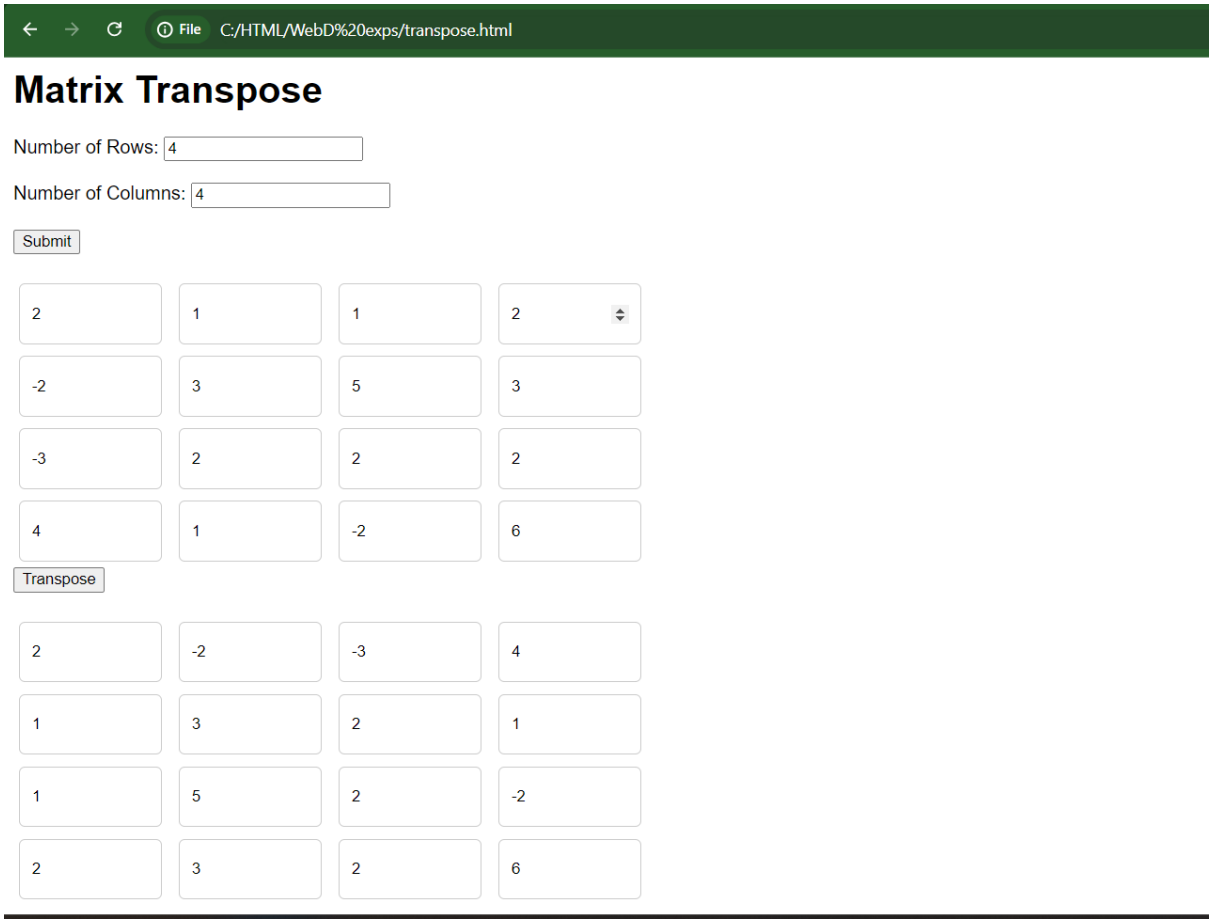
```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Matrix Transpose</title>
    <style>
        body {
            font-family: Arial, sans-serif;
        }

        #matrix-container, #transpose-container {
            margin-top: 20px;
        }

        #matrix-container input, #transpose-container input {
            width: 50px;
            height: 30px;
            margin: 5px;
            padding: 10px;
            border: 1px solid #ccc;
            border-radius: 5px;
        }

        #matrix-container input[type="number"], #transpose-container input[type="number"] {
            width: 100px;
        }
    </style>
</head>
```

```
<body>
    <h1>Matrix Transpose</h1>
    <form id="matrix-form">
        <label for="rows">Number of Rows:</label>
        <input type="number" id="rows" required>
        <br><br>
        <label for="columns">Number of Columns:</label>
        <input type="number" id="columns" required>
        <br><br>
        <button id="submit-btn">Submit</button>
    </form>
    <div id="matrix-container"></div>
    <button id="transpose-btn">Transpose</button>
    <div id="transpose-container"></div>

    <script>
        const matrixForm = document.getElementById('matrix-form');
        const matrixContainer = document.getElementById('matrix-container');
        const transposeBtn = document.getElementById('transpose-btn');
        const transposeContainer = document.getElementById('transpose-container');

        let rows, columns;

        matrixForm.addEventListener('submit', (e) => {
            e.preventDefault();
            rows = parseInt(document.getElementById('rows').value);
            columns = parseInt(document.getElementById('columns').value);

            const matrixHtml = [];
            for (let i = 0; i < rows; i++) {
                const rowHtml = [];
```

```
        for (let j = 0; j < columns; j++) {
            rowHtml.push(`<input type="number" id="matrix-${i}-${j}" required>`);
        }
        matrixHtml.push(`<div>${rowHtml.join(' ')}</div>`);
    }
    matrixContainer.innerHTML = matrixHtml.join('');
});

transposeBtn.addEventListener('click', () => {
    const matrix = [];
    for (let i = 0; i < rows; i++) {
        const row = [];
        for (let j = 0; j < columns; j++) {
            row.push(parseInt(document.getElementById(`matrix-${i}-${j}`).value));
        }
        matrix.push(row);
    }

    const transpose = [];
    for (let i = 0; i < columns; i++) {
        const row = [];
        for (let j = 0; j < rows; j++) {
            row.push(matrix[j][i]);
        }
        transpose.push(row);
    }

    const transposeHtml = [];
    for (let i = 0; i < columns; i++) {
        const rowHtml = [];
        for (let j = 0; j < rows; j++) {
```

```
            rowHtml.push(`<input type="number" value="${transpose[i][j]}" readonly>`);
          }
          transposeHtml.push(`<div>${rowHtml.join(' ')}</div>`);
        }
        transposeContainer.innerHTML = transposeHtml.join('');
      });
    </script>
</body>
</html>
```

OUTPUT



Q2

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Student Information</title>
    <style>
        body {
            font-family: Arial, sans-serif;
        }
        #student-info {
            margin-top: 20px;
        }
        #student-info ul {
            list-style: none;
            padding: 0;
            margin: 0;
        }
        #student-info li {
            padding: 10px;
            border-bottom: 1px solid #ccc;
        }
        #student-info li:last-child {
            border-bottom: none;
        }
    </style>
</head>
<body>
    <h1>Student Information</h1>
    <div id="student-info"></div>
```

```
<script>
    // Student data in JSON format
    const students = [
        {
            "id": 1,
            "name": "John Doe",
            "age": 20,
            "grade": "A",
            "courses": ["Math", "Science", "English"]
        },
        {
            "id": 2,
            "name": "Jane Smith",
            "age": 21,
            "grade": "B",
            "courses": ["History", "Geography", "French"]
        },
        {
            "id": 3,
            "name": "Bob Johnson",
            "age": 22,
            "grade": "A",
            "courses": ["Computer Science", "Physics", "Chemistry"]
        }
    ];

    // Function to display student information
    function displayStudentInfo(students) {
        const studentInfoHtml = [];
        students.forEach((student) => {
```

```
            const coursesHtml = student.courses.map((course) => `<li>${course}</li>`).join('');
            studentInfoHtml.push(`
                <h2>Student ID: ${student.id}</h2>
                <ul>
                    <li>Name: ${student.name}</li>
                    <li>Age: ${student.age}</li>
                    <li>Grade: ${student.grade}</li>
                    <li>Courses:</li>
                    <ul>${coursesHtml}</ul>
                </ul>
            `);
        });
        document.getElementById('student-info').innerHTML = studentInfoHtml.join('');
    }

    // Display student information
    displayStudentInfo(students);
  </script>
</body>
</html>
```

OUTPUT

Student Information

Student ID: 1

Name: John Doe

Age: 20

Grade: A

Courses:

Math

Science

English

Student ID: 2

Name: Jane Smith

Age: 21

Grade: B

Courses:

History

Geography

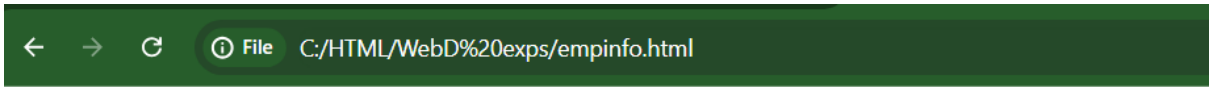
French

Q3

```
<!DOCTYPE html>
<html>
<head>
  <title>Employee Details</title>
  <script src="https://code.jquery.com/jquery-3.6.0.min.js"></script>
</head>
<script>
let employees = [
  { id: 1, name: "John Doe", age: 30, department: "IT" },
  { id: 2, name: "Jane Doe", age: 25, department: "Marketing" },
  { id: 3, name: "Bob Smith", age: 40, department: "Sales" },
];

// Use JQuery to display employee data
$(document).ready(function () {
  $.each(employees, function (index, employee) {
    $("#employee-data").append(
      `<tr>
        <td>${employee.id}</td>
        <td>${employee.name}</td>
        <td>${employee.age}</td>
        <td>${employee.department}</td>
      </tr>`
    );
  });
});
</script>
<body>
  <h1>Employee Details</h1>
```

```
    <table id="employee-table" border="1">
        <thead>
            <tr>
                <th>Employee ID</th>
                <th>Name</th>
                <th>Age</th>
                <th>Department</th>
            </tr>
        </thead>
        <tbody id="employee-data">
        </tbody>
    </table>

    <script src="script.js"></script>
</body>
</html>
```

OUTPUT



Employee Details

Employee ID	Name	Age	Department
1	John Doe	30	IT
2	Jane Doe	25	Marketing
3	Bob Smith	40	Sales

Q4

```
<!DOCTYPE html>
<html>
<head>
  <title>Library Details</title>
  <link rel="stylesheet" type="text/css"
href="https://cdn.datatables.net/1.12.1/css/jquery.dataTables.css">
  <script type="text/javascript" charset="utf8" src="https://code.jquery.com/jquery-
3.6.0.min.js"></script>
  <script type="text/javascript" charset="utf8"
src="https://cdn.datatables.net/1.12.1/js/jquery.dataTables.js"></script>
</head>
<script>
  // Define library data
let libraryData = [
  { id: 101, title: "Jane Eyre", author: "Charlotte  Bronte", publisher: "Publisher 1" },
  { id: 213, title: "Pride And Prejudice", author: "Jane Austen", publisher: "Publisher 2" },
  { id: 311, title: "One Indian Girl", author: "Chetan Bhagat", publisher: "Publisher 3" },
];

// Use DataTables plugin to display library data
$(document).ready(function () {
  $.each(libraryData, function (index, book) {
    $("#library-data").append(
      `<tr>
        <td>${book.id}</td>
        <td>${book.title}</td>
        <td>${book.author}</td>
        <td>${book.publisher}</td>
      </tr>`
    );
  });
```

```
    $('#library-table').DataTable();
});
</script>
<body>
    <h1>Library Details</h1>
    <table id="library-table" border="1">
        <thead>
            <tr>
                <th>Book ID</th>
                <th>Book Title</th>
                <th>Author</th>
                <th>Publisher</th>
            </tr>
        </thead>
        <tbody id="library-data">
        </tbody>
    </table>

    <script src="script.js"></script>
</body>
</html>
```

OUTPUT

Library Details

Show 10 entries

Search:

Book ID	Book Title	Author	Publisher
101	Jane Eyre	Charlotte Bronte	Publisher 1
213	Pride And Prejudice	Jane Austen	Publisher 2
311	One Indian Girl	Chetan Bhagat	Publisher 3

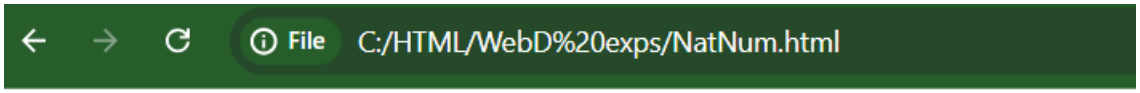
Showing 1 to 3 of 3 entries

Previous 1 Next

Q5

```
<!DOCTYPE html>
<html>
<head>
   <title>Sum of Natural Numbers</title>
</head>
<body>
   <h1>Sum of Natural Numbers</h1>
   <input type="number" id="num" placeholder="Enter a natural number">
   <button onclick="calculateSum()">Calculate Sum</button>
   <p id="result"></p>

   <script>
      function sumOfNaturalNumbers(n) {
         if (n <= 1) {
            return n;
         } else {
            return n + sumOfNaturalNumbers(n - 1);
         }
      }

      function calculateSum() {
         let num = document.getElementById("num").value;
         let result = sumOfNaturalNumbers(parseInt(num));
         document.getElementById("result").innerHTML = `The sum of natural numbers up to ${num}
is ${result}`;
      }
   </script>
</body>
</html>
```

OUTPUT



Sum of Natural Numbers

7 Calculate Sum

The sum of natural numbers up to 7 is 28

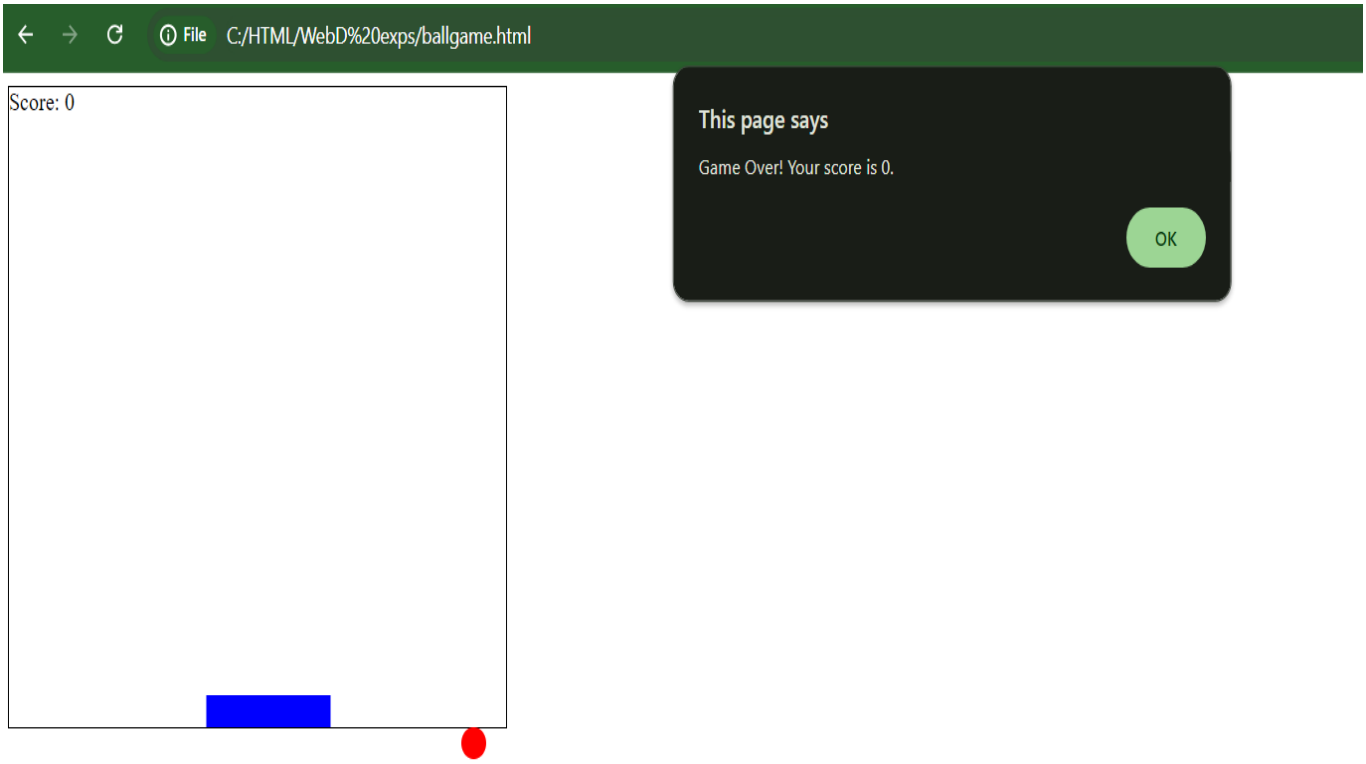
Q6

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Catch a Ball</title>
  <style>
    /* Styles for the game */
    #game-container {
      width: 400px;
      height: 400px;
      border: 1px solid black;
      position: relative;
    }

    #ball {
      width: 20px;
      height: 20px;
      border-radius: 50%;
      background-color: red;
      position: absolute;
    }

    #paddle {
      width: 100px;
      height: 20px;
      background-color: blue;
      position: absolute;
      bottom: 0;
      left: 50%;
```

```
            transform: translateX(-50%);
        }
    </style>
</head>
<body>
    <div id="game-container">
        <div id="ball"></div>
        <div id="paddle"></div>
        <div id="score">Score: 0</div>
    </div>

    <script>
        // Get elements
        const gameContainer = document.getElementById('game-container');
        const ball = document.getElementById('ball');
        const paddle = document.getElementById('paddle');
        const scoreElement = document.getElementById('score');

        // Set initial values
        let ballX = 200;
        let ballY = 200;
        let ballSpeedX = 2;
        let ballSpeedY = 2;
        let paddleX = 200;
        let score = 0;

        // Update ball position
        function updateBall() {
            ballX += ballSpeedX;
            ballY += ballSpeedY;
```

```
    // Collision with walls
    if (ballX < 0 || ballX > 380) {
        ballSpeedX = -ballSpeedX;
    }
    if (ballY < 0) {
        ballSpeedY = -ballSpeedY;
    }

    // Collision with paddle
    if (ballY > 380 && ballX > paddleX - 50 && ballX < paddleX + 50) {
        ballSpeedY = -ballSpeedY;
        score++;
        scoreElement.innerText = `Score: ${score}`;
    }

    // Game over
    if (ballY > 400) {
        alert(`Game Over! Your score is ${score}.`);
        ballX = 200;
        ballY = 200;
        ballSpeedX = 2;
        ballSpeedY = 2;
        paddleX = 200;
        score = 0;
        scoreElement.innerText = `Score: ${score}`;
    }

    ball.style.left = `${ballX}px`;
    ball.style.top = `${ballY}px`;
}
```

```
        // Update paddle position
        function updatePaddle() {
            paddleX = gameContainer.getBoundingClientRect().left +
(gameContainer.getBoundingClientRect().width / 2);
            paddle.style.left = `${paddleX}px`;
        }

        // Handle user input
        document.addEventListener('mousemove', (e) => {
            paddleX = e.clientX - gameContainer.getBoundingClientRect().left;
            paddle.style.left = `${paddleX}px`;
        });

        // Game loop
        setInterval(() => {
            updateBall();
            updatePaddle();
        }, 16);
    </script>
</body>
</html>
```


File
C:/HTML/WebD%20exps/ballgame.html
Score: 0
This page says
Game Over! Your score is 0.
OK