NAME: TEJ DOSHI

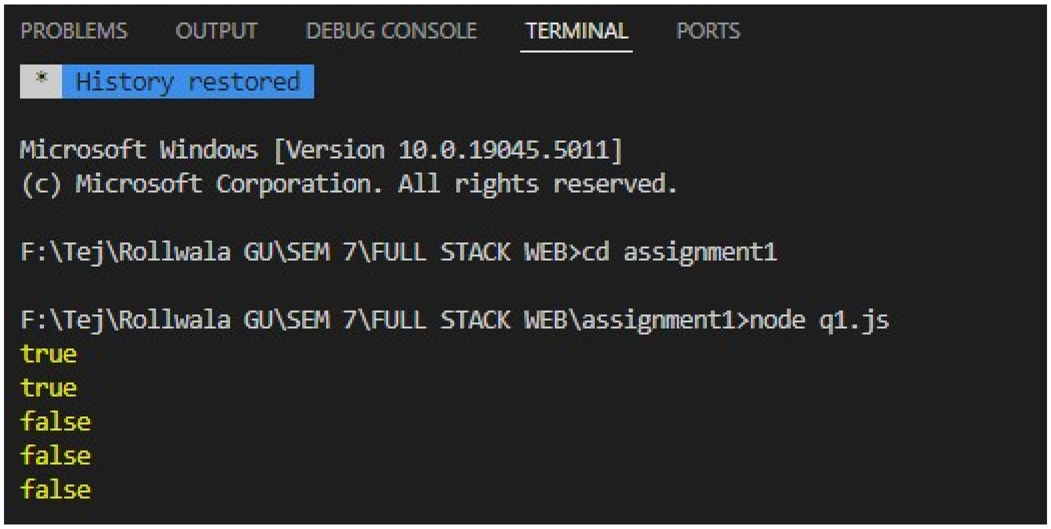
ROLL NO: 08

SUBJECT: FULL STACK WEB DEVELOPMENT

Q1.

```
// How to check if a value is object-like in JavaScript?


function isObjectLike(value) {
  return value !== null && typeof value === 'object';
}


console.log(isObjectLike({}));
console.log(isObjectLike([]));
console.log(isObjectLike(null));
console.log(isObjectLike(123));
console.log(isObjectLike('hello'));
```

OUTPUT:

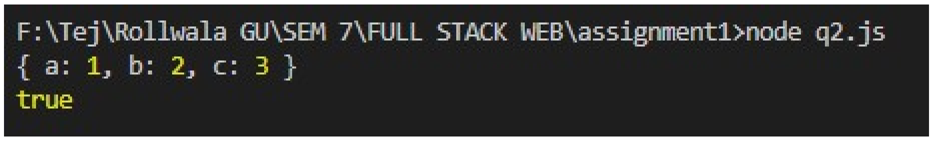


```
Microsoft Windows [Version 10.0.19045.5011]
(c) Microsoft Corporation. All rights reserved.

F:\Tej\Rollwala GU\SEM 7\FULL STACK WEB>cd assignment1

F:\Tej\Rollwala GU\SEM 7\FULL STACK WEB\assignment1>node q1.js
true
true
false
false
false
```

Q2.

```
// 2. How to convert two-dimensional array into an object in JavaScript?

function arrayToObject(arr) {

  let obj = {};

  for (let i = 0; i < arr.length; i++) {

    let key = arr[i][0];

    let value = arr[i][1];

    obj[key] = value;

  }

  return obj;

}


function isObjectLike(value) {

  return value !== null && typeof value === "object";

}
```

```
const arr = [['a', 1], ['b', 2], ['c', 3]];

console.log(arrayToObject(arr));


console.log(isObjectLike(arr));
```



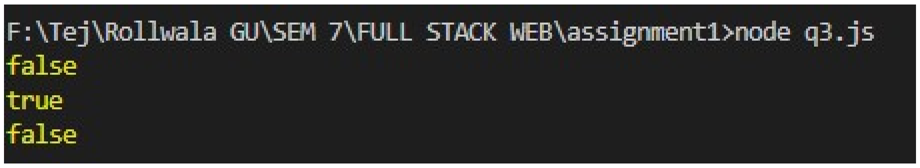
```
F:\Tej\Rollwala GU\SEM 7\FULL STACK WEB\assignment1>node q2.js
{ a: 1, b: 2, c: 3 }
true
```

Q3.

```
// 3. W.A.P. to enter any number and check that number is palindrome or not by

// using function recursion.

function palindromee(num){

   let revnum=0;

   let orignalnum=num;

   while(num>0){

      let digit=num%10;

      revnum = revnum*10+digit;

      num=Math.floor(num/10);

   }

   if(revnum===orignalnum){

      flag=true;

   }

   else{

      flag=false;

   }
```

```
    return flag;
}


console.log(palindromee(123));


console.log(palindromee(121));
console.log(palindromee(526));
```

OUTPUT:



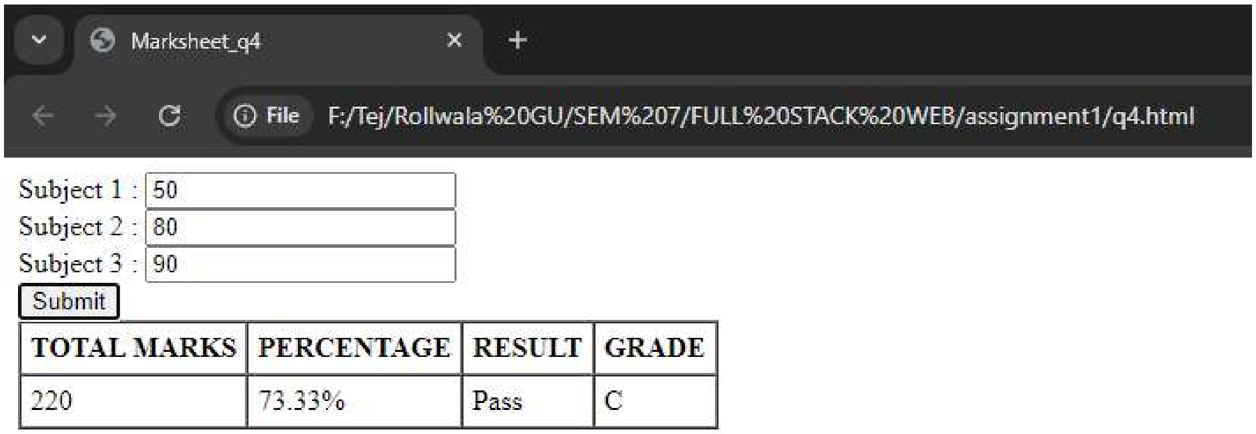
```
F:\Tej\Rollwala GU\SEM 7\FULL STACK WEB\assignment1>node q3.js
false
true
false
```

Q4.

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Marksheet_q4</title>
</head>
<body>
    <form id="marksform">
        Subject 1 : <input type="number" id="sub1" required><br>
        Subject 2 : <input type="number" id="sub2" required><br>
        Subject 3 : <input type="number" id="sub3" required><br>
        <button type="button" onclick="calculateRes()">Submit</button>

    </form>

    <div id="result"></div>

<script>

    function calculateRes(){

        let sub1 = parseInt(document.getElementById('sub1').value);

        let sub2 = parseInt(document.getElementById('sub2').value);

        let sub3 = parseInt(document.getElementById('sub3').value);


        if(isNaN(sub1)|| isNaN(sub2) || isNaN(sub3)){

            document.getElementById('result').innerHTML="Please enter valid marks for all subjects!!";

            return;

        }


        if(sub1<0 || sub1>100 || sub2<0 || sub2>100 || sub3<0 || sub3>100){

            document.getElementById('result').innerHTML="Marks should be between 0 to 100 for all 3 
subjects!!";

            return;

        }

        let total =sub1+sub2+sub3;

        let percent= (total/300)*100;

        let grade;


        if(percent>=90){

            grade='A';
        }
        else if (percent>=75){
            grade='B';
        }
        else if(percent>=50){
            grade='C';
        }
        else{
            grade='***';
        }
        result=(percent>=50)? 'Pass':'Fail';
        // document.getElementById('result').innerHTML=`
        // Total : ${total} <br>
        // Percentage : ${percent.toFixed(2)}% <br>
        // Grade : ${grade}
        // `;
        let resulttable= `
        <table border="1" cellpadding="5" cellspacing="0">
            <tr>
                <th>TOTAL MARKS</th>
                <th>PERCENTAGE</th>
                <th>RESULT</th>
                <th>GRADE</th>
                </tr>
                <tr>
```

```
                <td>${total}</td>

                <td>${percent.toFixed(2)}%</td>

                <td>${result}</td>

                <td>${grade}</td>

                </tr>

        `;

        document.getElementById('result').innerHTML=resulttable;

    }

</script>

</body>

</html>
```

OUTPUT:

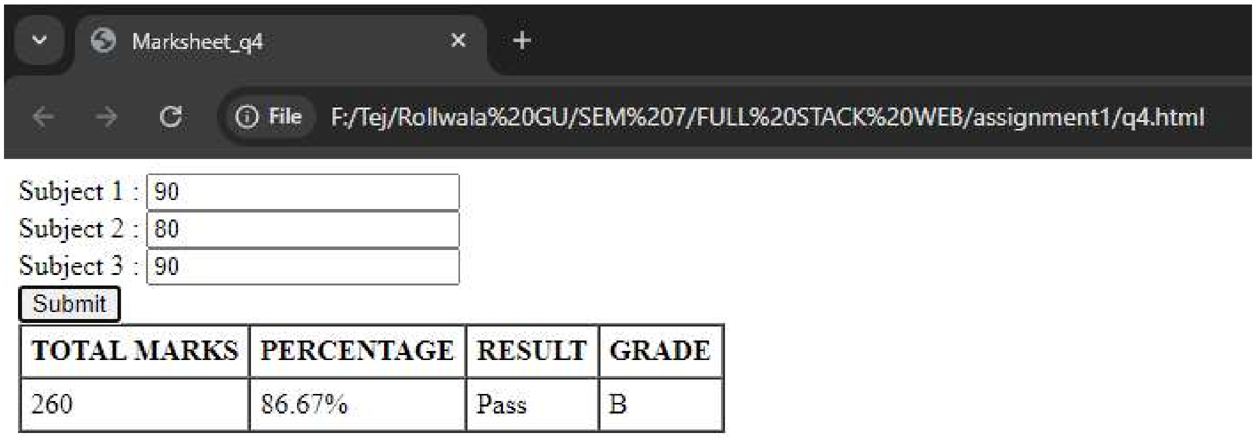


Marksheet_q4

File F:/Tej/Rollwala%20GU/SEM%207/FULL%20STACK%20WEB/assignment1/q4.html

Subject 1 : 50
Subject 2 : 80
Subject 3 : 90
Submit

TOTAL MARKS	PERCENTAGE	RESULT	GRADE
220	73.33%	Pass	C


Marksheet_q4
File
F:/Tej/Rollwala%20GU/SEM%207/FULL%20STACK%20WEB/assignment1/q4.html
Submit

Subject 1 : 90
Subject 2 : 80
Subject 3 : 90

TOTAL MARKS	PERCENTAGE	RESULT	GRADE
260	86.67%	Pass	B

Q5.

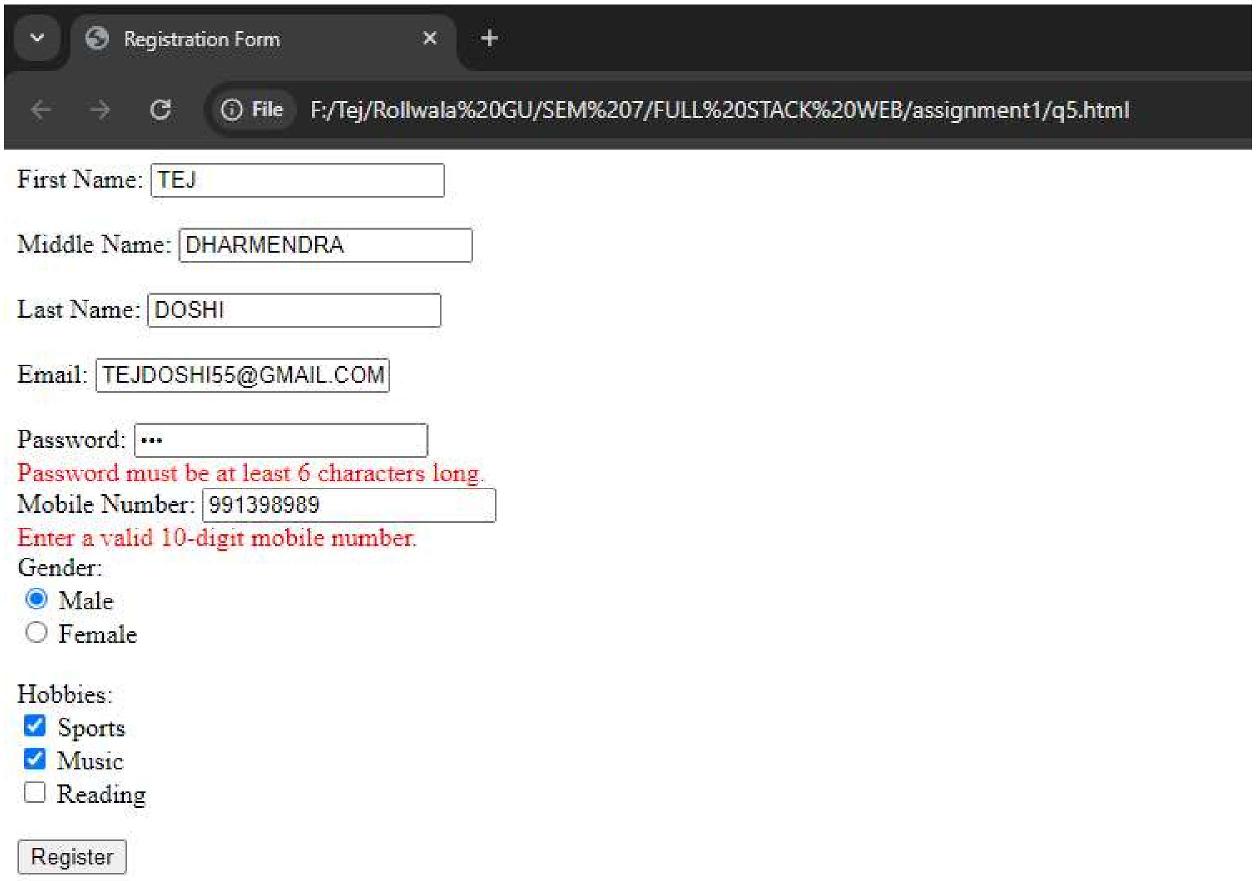
```
<!DOCTYPE html>

<html>

<head>

  <title>Registration Form</title>

  <style>

    .error {

      color: red;

    }

  </style>

</head>

<body>

  <form id="registrationForm">

    <label>First Name: <input type="text" id="firstName" required></label><br>

    <span id="firstNameError" class="error"></span><br>



    <label>Middle Name: <input type="text" id="middleName"></label><br><br>
    <label>Last Name: <input type="text" id="lastName" required></label><br>
    <span id="lastNameError" class="error"></span><br>

    <label>Email: <input type="email" id="email" required></label><br>
    <span id="emailError" class="error"></span><br>

    <label>Password: <input type="password" id="password" required></label><br>
    <span id="passwordError" class="error"></span><br>

    <label>Mobile Number: <input type="text" id="mobile" required></label><br>
    <span id="mobileError" class="error"></span><br>

    <label>Gender: </label><br>
    <input type="radio" name="gender" id="male" value="Male" required> Male<br>
    <input type="radio" name="gender" id="female" value="Female" required> Female<br><br>

    <label>Hobbies: </label><br>
    <input type="checkbox" name="hobby" value="Sports"> Sports<br>
    <input type="checkbox" name="hobby" value="Music"> Music<br>
    <input type="checkbox" name="hobby" value="Reading"> Reading<br><br>

    <button type="button" onclick="validateForm()">Register</button>
  </form>
```

```
}

<div id="result"></div>

<script>
 function validateForm() {

   document.getElementById("firstNameError").innerHTML = "";
   document.getElementById("lastNameError").innerHTML = "";
   document.getElementById("emailError").innerHTML = "";
   document.getElementById("passwordError").innerHTML = "";
   document.getElementById("mobileError").innerHTML = "";

   let firstName = document.getElementById("firstName").value.trim();
   let lastName = document.getElementById("lastName").value.trim();
   let email = document.getElementById("email").value.trim();
   let password = document.getElementById("password").value;
   let mobile = document.getElementById("mobile").value.trim();
   let gender = document.querySelector('input[name="gender"]:checked');
   let hobbies = document.querySelectorAll('input[name="hobby"]:checked');

   let isValid = true;

   if (firstName === "") {
     document.getElementById("firstNameError").innerHTML = "First name is required.";
     isValid = false;
   }
```

```
    if (lastName === "") {
      document.getElementById("lastNameError").innerHTML = "Last name is required.";
      isValid = false;
    }

    const emailPattern = /^[a-zA-Z0-9._-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,4}$/;
    if (!emailPattern.test(email)) {
      document.getElementById("emailError").innerHTML = "Enter a valid email address.";
      isValid = false;
    }

    if (password.length < 6) {
      document.getElementById("passwordError").innerHTML = "Password must be at least 6 characters
long.";
      isValid = false;
    }

    const mobilePattern = /^[0-9]{10}$/;
    if (!mobilePattern.test(mobile)) {
      document.getElementById("mobileError").innerHTML = "Enter a valid 10-digit mobile number.";
      isValid = false;
    }
```

```
      if (gender === null) {
        alert("Please select your gender.");
        isValid = false;
      }



      if (hobbies.length === 0) {
        alert("Please select at least one hobby.");
        isValid = false;
      }

      if (isValid) {
        document.getElementById("result").innerHTML = "Registration successful!";
      }
    }
  </script>
</body>
</html>
```

OUTPUT:


Registration Form
File
F:/Tej/Rollwala%20GU/SEM%207/FULL%20STACK%20WEB/assignment1/q5.html

First Name: TEJ

Middle Name: DHARMENDRA

Last Name: DOSHI

Email: TEJDOSHI55@GMAIL.COM

Password: •••

Password must be at least 6 characters long.

Mobile Number: 991398989

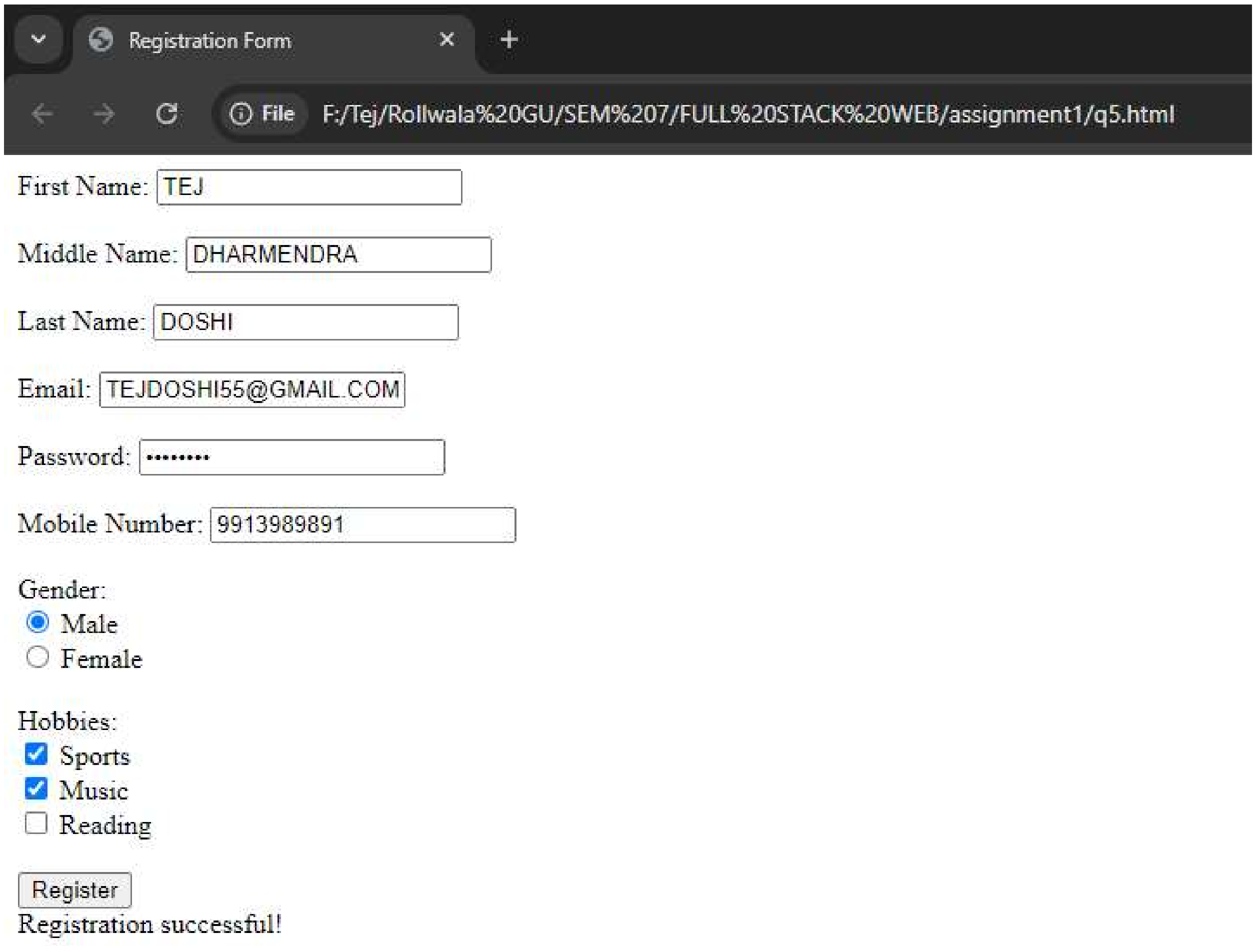
Enter a valid 10-digit mobile number.

Gender:

- [✓ Male]
- Female

Hobbies:

- [✓ Sports]
- [✓ Music]
- Reading



Registration Form

F:/Tej/Rollwala%20GU/SEM%207/FULL%20STACK%20WEB/assignment1/q5.html

First Name: TEJ

Middle Name: DHARMENDRA

Last Name: DOSHI

Email: TEJDOSHI55@GMAIL.COM

Password: ••••••••

Mobile Number: 9913989891

Gender:
[✓ Male]
Female

Hobbies:
[✓ Sports]
[✓ Music]
Reading

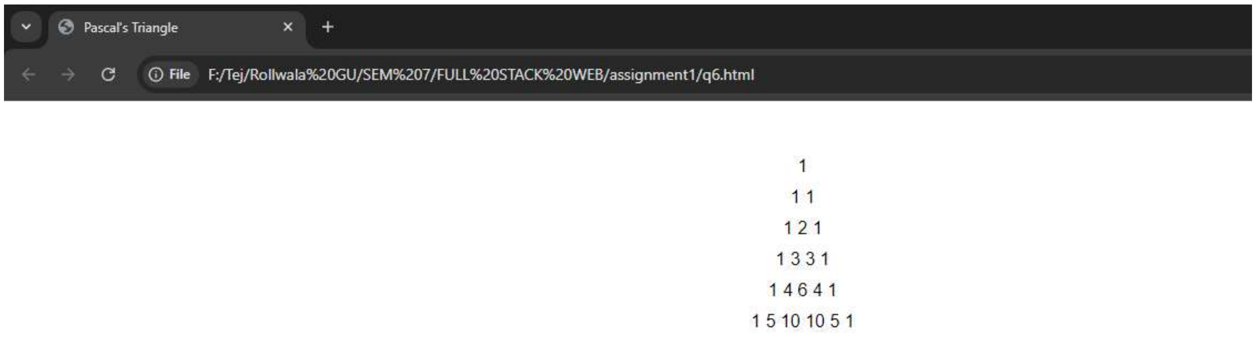
Register
Registration successful!

Q6.

```
<!DOCTYPE html>

<html lang="en">

<head>

  <meta charset="UTF-8">

  <meta name="viewport" content="width=device-width, initial-scale=1.0">

  <title>Pascal's Triangle</title>

  <style>

    .triangle {

      text-align: center;
```

```
            font-family: Arial, sans-serif;

            margin-top: 50px;

        }

        .row {

            margin: 10px 0;

        }

    </style>

</head>

<body>


<div class="triangle" id="triangle"></div>


<script>


    function factorial(n) {

        let result = 1;

        for (let i = 2; i <= n; i++) {

            result *= i;

        }

        return result;

    }


    function combination(n, r) {

        return factorial(n) / (factorial(r) * factorial(n - r));

    }
    function generatePascalsTriangle(rows) {
        const triangleContainer = document.getElementById('triangle');

        for (let n = 0; n < rows; n++) {
            let rowDiv = document.createElement('div');
            rowDiv.classList.add('row');

            for (let r = 0; r <= n; r++) {
                let value = combination(n, r);
                let span = document.createElement('span');
                span.textContent = value + ' ';
                rowDiv.appendChild(span);
            }

            triangleContainer.appendChild(rowDiv);
        }
    }

    generatePascalsTriangle(6);

</script>

</body>
</html>
```

OUTPUT:


Pascal's Triangle
File
F:/Tej/Rollwala%20GU/SEM%207/FULL%20STACK%20WEB/assignment1/q6.html

```
        1
       1 1
      1 2 1
     1 3 3 1
    1 4 6 4 1
  1 5 10 10 5 1
```

Q7.chessboard

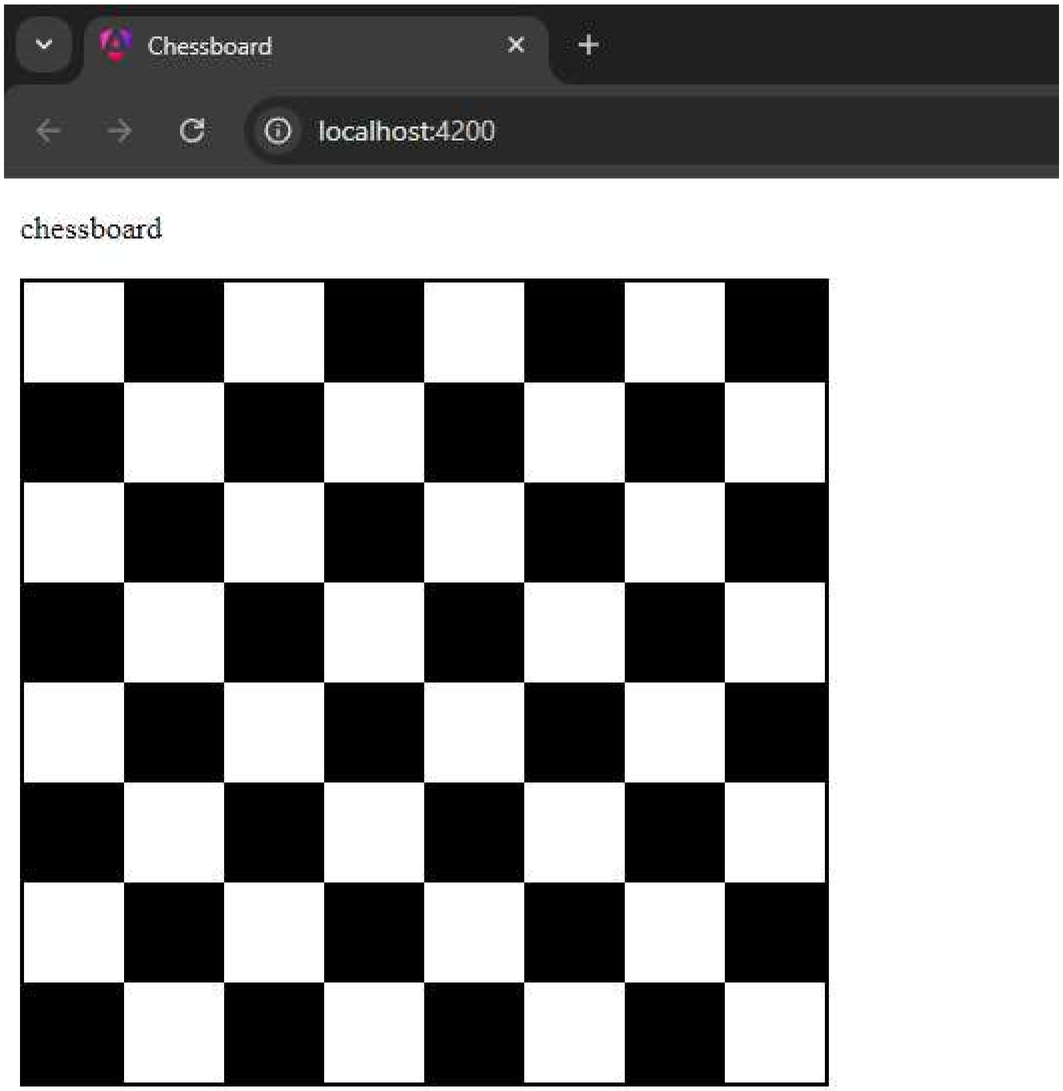
->chessboard.component.html

```
<p>chessboard </p>

<div class="chessboard">

  <div *ngFor="let row of rows; let i = index" class="row">

    <div

      *ngFor="let col of cols; let j = index"

      class="cell"

      [ngClass]="{ 'black': (i + j) % 2 !== 0, 'white': (i + j) % 2 === 0 }"

    >

    </div>

  </div>

</div>
```

->chessboard.component.ts

```
import { Component } from '@angular/core';

import { CommonModule } from '@angular/common';


@Component({

  selector: 'app-chessboard',

  standalone: true,

  imports: [CommonModule],

  templateUrl: './chessboard.component.html',

  styleUrls: ['./chessboard.component.css'],

})

export class ChessboardComponent {

  rows: number[] = Array(8).fill(0);

  cols: number[] = Array(8).fill(0);

}
```

OUTPUT:

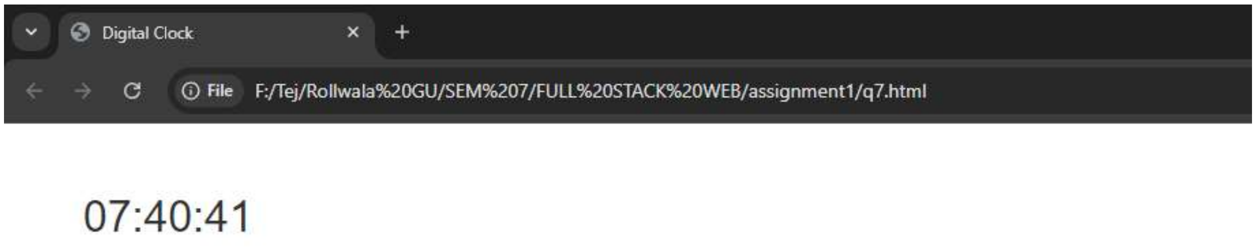


chessboard

Q8.

```
<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Digital Clock</title>

    <style>

        .clock {

            font-size: 2em;

            font-family: Arial, Helvetica, sans-serif;

            color: #333;

            margin: 50px;

        }

    </style>

</head>

<body>

    <div class="clock" id="digitalClock"></div>


    <script>

        function showTime() {


            const now = new Date();

            const timeInMs = now.getTime();




            const totalSeconds = Math.floor(timeInMs / 1000);




            const secondsInDay = totalSeconds % (24 * 3600);
            const hours = Math.floor(secondsInDay / 3600);

            const minutes = Math.floor((secondsInDay % 3600) / 60);

            const seconds = secondsInDay % 60;



            const formattedHours = hours < 10 ? '0' + hours : hours;

            const formattedMinutes = minutes < 10 ? '0' + minutes : minutes;

            const formattedSeconds = seconds < 10 ? '0' + seconds : seconds;


            const timeString = `${formattedHours}:${formattedMinutes}:${formattedSeconds}`;

            document.getElementById("digitalClock").innerText = timeString;


            setTimeout(showTime, 1000);

        }



        showTime();

    </script>

</body>

</html>
```

OUTPUT:


Digital Clock
File
F:/Tej/Rollwala%20GU/SEM%207/FULL%20STACK%20WEB/assignment1/q7.html

```
07:40:41
```

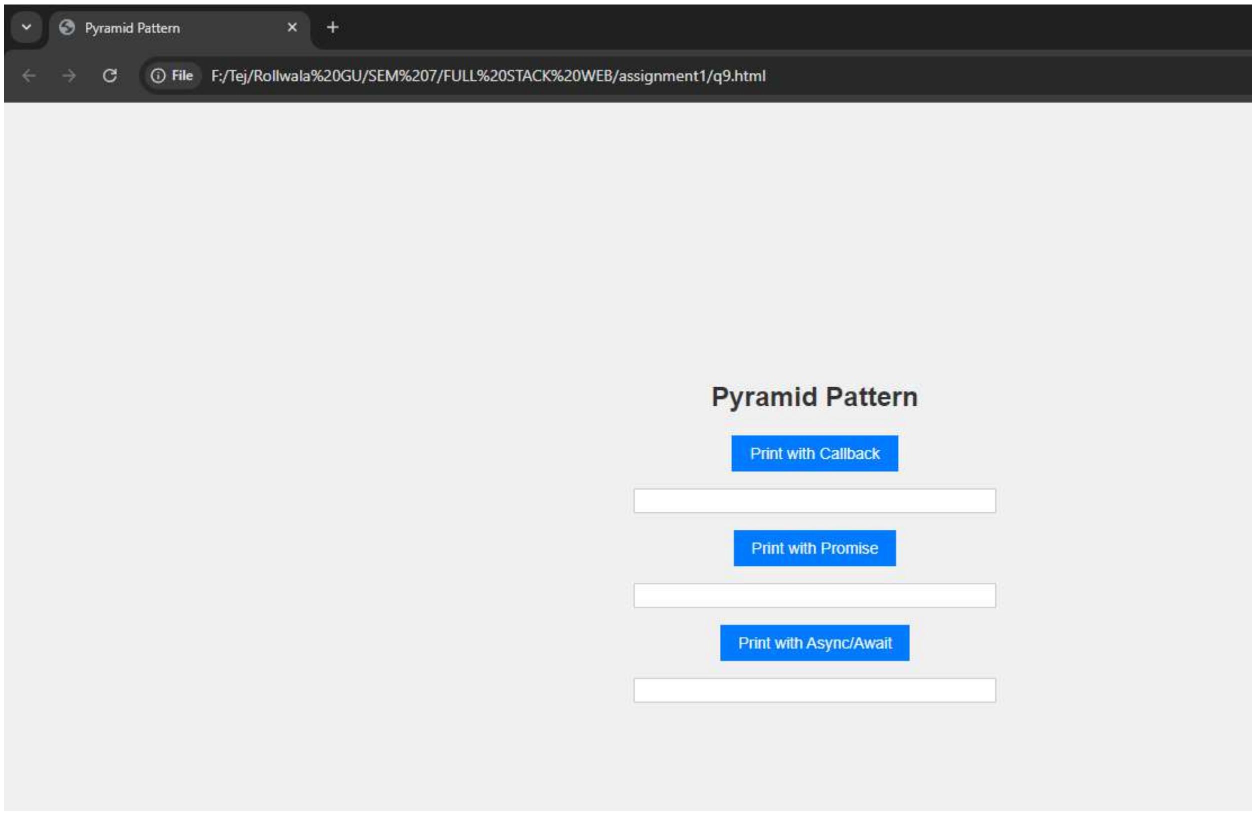
Q9.

```
<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

<title>Pyramid Pattern</title>

<style>

body {

   font-family: Arial, sans-serif;

   background-color: #f0f0f0;

   display: flex;

   flex-direction: column;

   align-items: center;

   justify-content: center;

   height: 100vh;

   margin: 0;
```

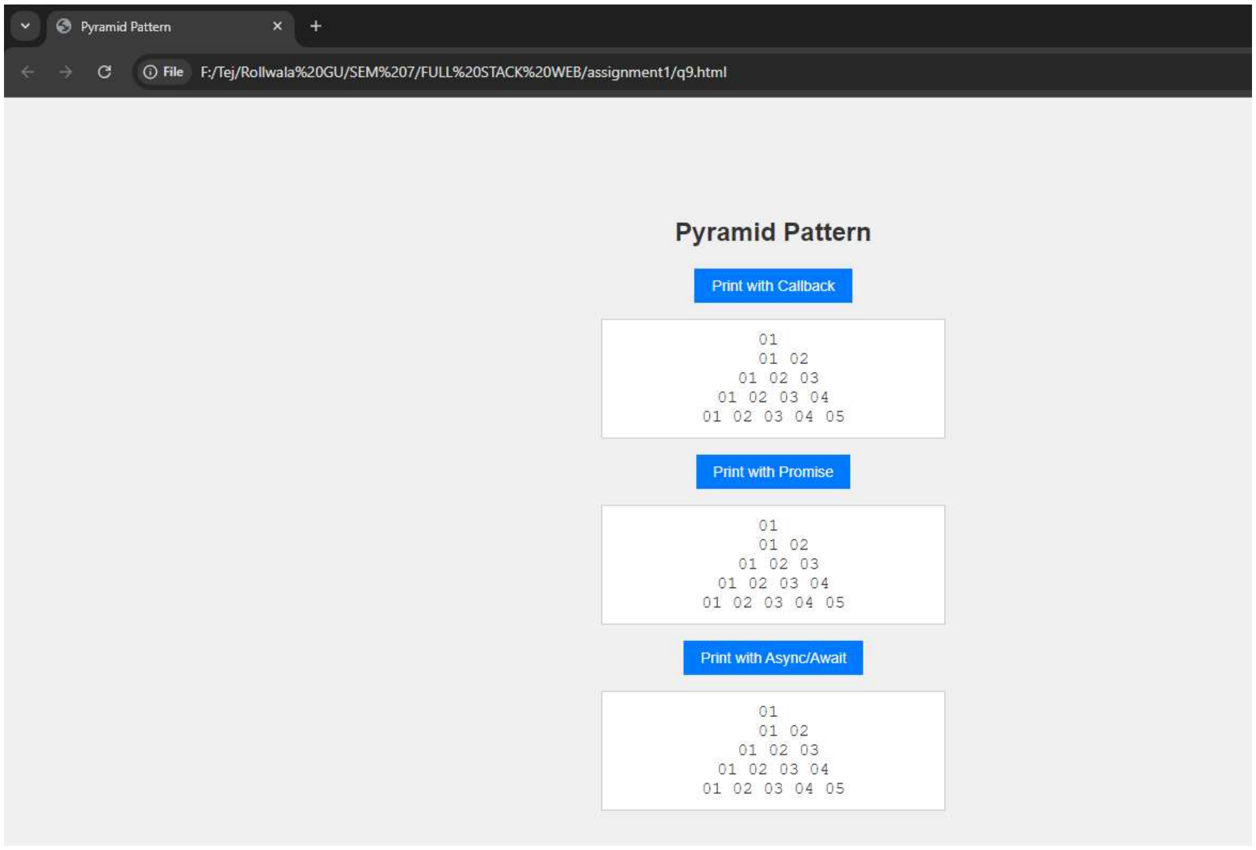
```css
    color: #333;
}

h1 {
    font-size: 24px;
    margin-bottom: 15px;
}

.output {
    background-color: #fff;
    padding: 10px;
    border: 1px solid #ccc;
    margin: 10px;
    width: 300px;
    text-align: center;
    white-space: pre;
    font-family: 'Courier New', monospace;
    color: #333;
}

button {
    background-color: #007BFF;
    color: white;
    padding: 8px 16px;
    border: none;
    cursor: pointer;

    margin: 5px;

    font-size: 14px;

}


button:hover {

    background-color: #0056b3;

}


@media (max-width: 600px) {

    h1 {

        font-size: 20px;

    }

    .output {

        width: 90%;

        padding: 10px;

    }

    button {

        padding: 6px 12px;

        font-size: 12px;

    }

}

</style>

</head>

<body>
```

```
<h1>Pyramid Pattern</h1>

<button onclick="printWithCallback()">Print with Callback</button>

<div class="output" id="callbackOutput"></div>

<button onclick="printWithPromise()">Print with Promise</button>

<div class="output" id="promiseOutput"></div>

<button onclick="printWithAsyncAwait()">Print with Async/Await</button>

<div class="output" id="asyncOutput"></div>

<script>

function printPyramid(rows, callback) {

  let output = '';

  for (let i = 1; i <= rows; i++) {

    output += ' '.repeat(rows - i);

    for (let j = 1; j <= i; j++) {

      output += (j < 10 ? '0' : '') + j + ' ';

    }

    output += '\n';

  }

  callback(output);

}

function printWithCallback() {

  printPyramid(5, function(result) {

    document.getElementById('callbackOutput').textContent = result.trim();

  });

}

function printPyramidWithPromise(rows) {
    return new Promise((resolve) => {
        let output = '';
        for (let i = 1; i <= rows; i++) {
            output += ' '.repeat(rows - i);
            for (let j = 1; j <= i; j++) {
                output += (j < 10 ? '0' : '') + j + ' ';
            }
            output += '\n';
        }
        resolve(output.trim());
    });
}
function printWithPromise() {
    printPyramidWithPromise(5).then(result => {
        document.getElementById('promiseOutput').textContent = result;
    });
}
async function printWithAsyncAwait() {
    const result = await printPyramidWithPromise(5);
    document.getElementById('asyncOutput').textContent = result;
}
</script>
</body>
</html>
```

OUTPUT:



Pyramid Pattern



Pyramid Pattern

```
      01
      01 02
    01 02 03
  01 02 03 04
01 02 03 04 05
```

```
      01
      01 02
    01 02 03
  01 02 03 04
01 02 03 04 05
```

```
      01
      01 02
    01 02 03
  01 02 03 04
01 02 03 04 05
```

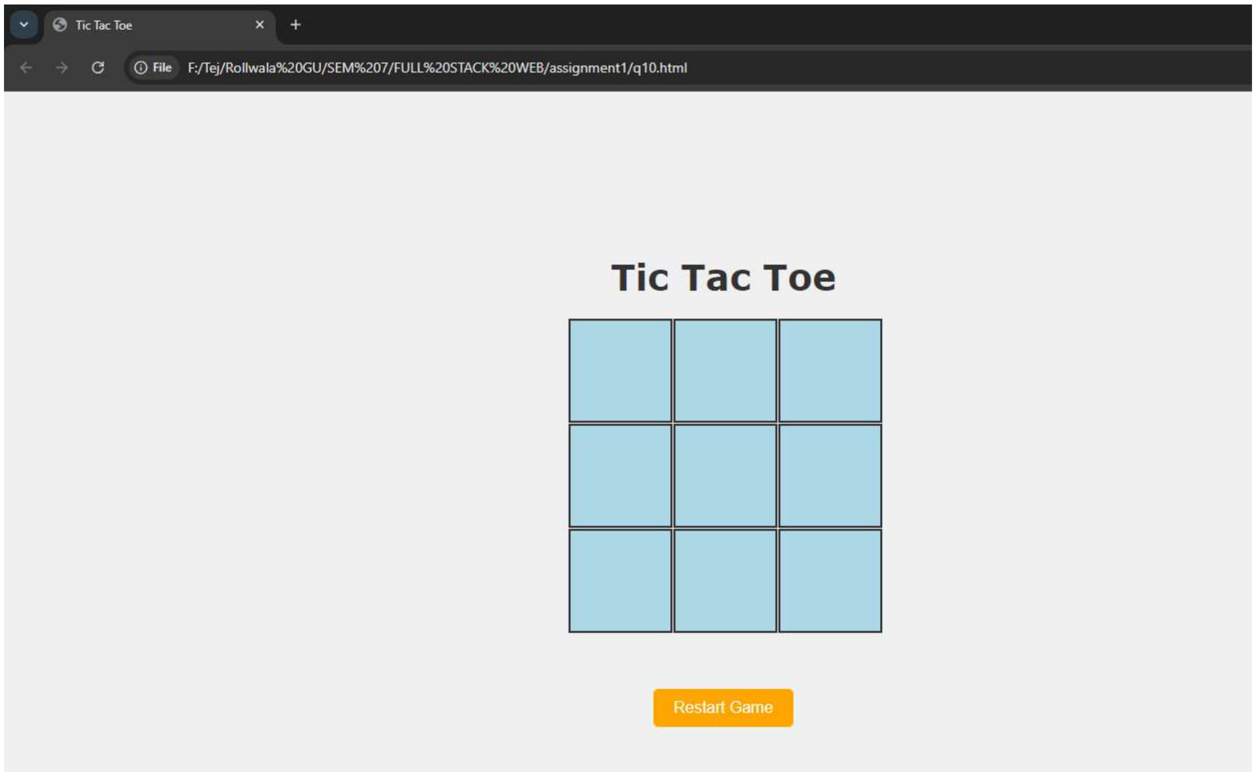
Q10.

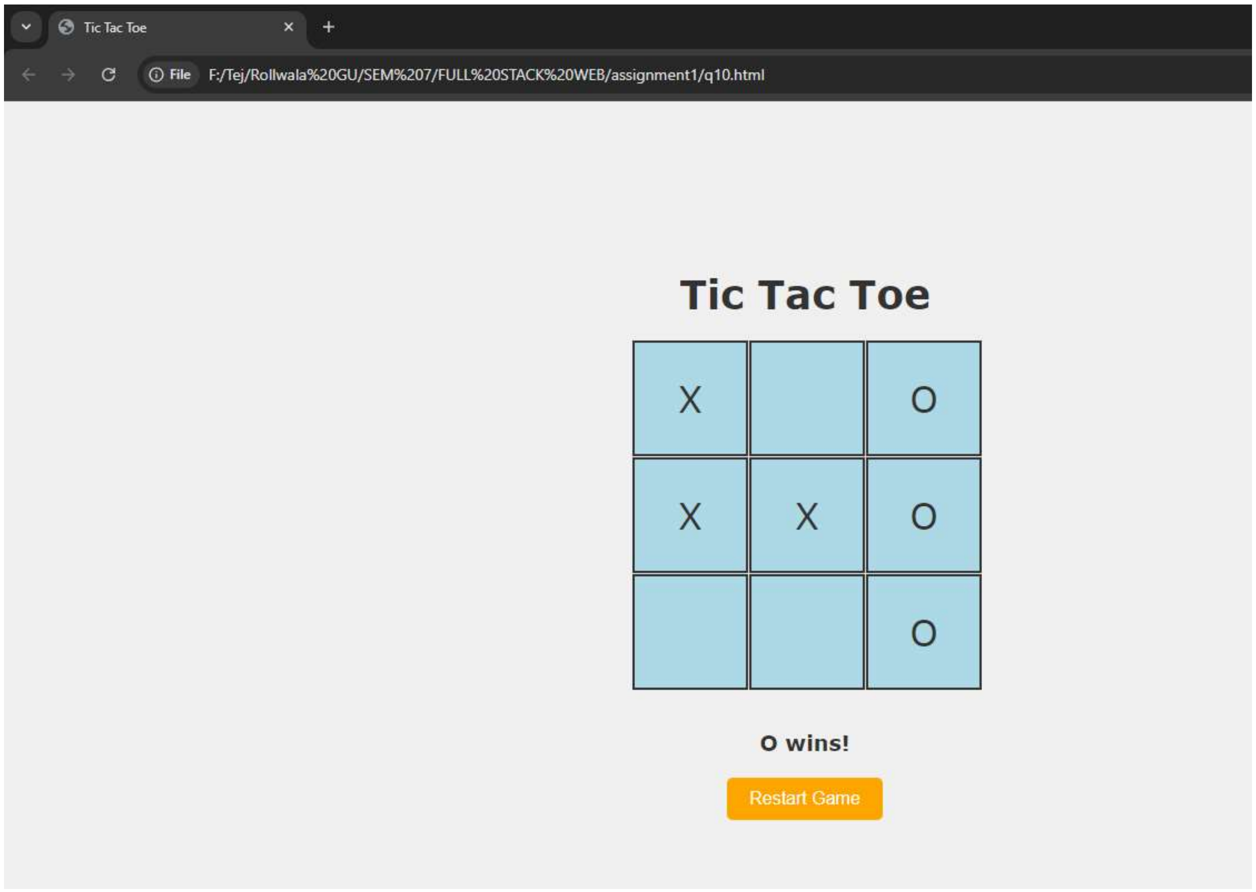
```
<!DOCTYPE html>

<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 {

   font-family: 'Verdana', sans-serif;

   display: flex;

   flex-direction: column;
```

```
    align-items: center;

    justify-content: center;

    height: 100vh;

    margin: 0;

    background-color: #f0f0f0;

    color: #333;

}


h1 {

    font-size: 36px;

    margin-bottom: 20px;

}


.board {

    display: grid;

    grid-template-columns: repeat(3, 100px);

    grid-template-rows: repeat(3, 100px);

    gap: 5px;

    margin-bottom: 20px;

}


.cell {

    display: flex;

    align-items: center;

    justify-content: center;
    width: 100px;

    height: 100px;

    font-size: 2rem;

    background-color: #add8e6;

    cursor: pointer;

    border: 2px solid #333;

    transition: background-color 0.2s;

}


.cell:hover {

    background-color: #87cefa;

}


.message {

    margin: 20px 0;

    font-size: 1.2rem;

    font-weight: bold;

    text-align: center;

}


button {

    padding: 10px 20px;

    border: none;

    border-radius: 5px;

    background-color: #ffa500;
    color: white;
    font-size: 16px;
    cursor: pointer;
    transition: background-color 0.2s;
}

button:hover {
    background-color: #ff8c00;
}

@media (max-width: 600px) {
    .board {
        grid-template-columns: repeat(3, 80px);
        grid-template-rows: repeat(3, 80px);
    }
    .cell {
        width: 80px;
        height: 80px;
        font-size: 1.5rem;
    }
    h1 {
        font-size: 24px;
    }
    .message {
        font-size: 1rem;
    }
}
</style>
</head>
<body>
<h1>Tic Tac Toe</h1>
<div class="board" id="board"></div>
<div class="message" id="message"></div>
<button onclick="resetGame()">Restart Game</button>
<script>
const boardElement = document.getElementById('board');
const messageElement = document.getElementById('message');
let board = ['', '', '', '', '', '', '', '', ''];
let currentPlayer = 'X';
let isGameActive = true;

function renderBoard() {
    boardElement.innerHTML = '';
    board.forEach((cell, index) => {
        const cellElement = document.createElement('div');
        cellElement.className = 'cell';
        cellElement.textContent = cell;
        cellElement.addEventListener('click', () => handleCellClick(index));
        boardElement.appendChild(cellElement);
    });
```

```
}


function handleCellClick(index) {
    if (board[index] !== '' || !isGameActive) return;
    board[index] = currentPlayer;
    renderBoard();
    checkWinner();
    currentPlayer = currentPlayer === 'X' ? 'O' : 'X';
}


function checkWinner() {
    const winningCombinations = [
        [0, 1, 2],
        [3, 4, 5],
        [6, 7, 8],
        [0, 3, 6],
        [1, 4, 7],
        [2, 5, 8],
        [0, 4, 8],
        [2, 4, 6],
    ];
    for (const combination of winningCombinations) {
        const [a, b, c] = combination;
        if (board[a] && board[a] === board[b] && board[a] === board[c]) {
            messageElement.textContent = `${board[a]} wins!`;
            isGameActive = false;

            return;

        }

    }

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

        messageElement.textContent = "It's a draw!";

        isGameActive = false;

    }

}


function resetGame() {

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

    currentPlayer = 'X';

    isGameActive = true;

    messageElement.textContent = '';

    renderBoard();

}


renderBoard();

</script>

</body>

</html>
```

OUTPUT:


Tic Tac Toe
F:/Tej/Rollwala%20GU/SEM%207/FULL%20STACK%20WEB/assignment1/q10.html
Tic Tac Toe
Restart Game


Tic Tac Toe
F:/Tej/Rollwala%20GU/SEM%207/FULL%20STACK%20WEB/assignment1/q10.html
Tic Tac Toe
X
O
X
X
O
O
Restart Game

O wins!

Q11.

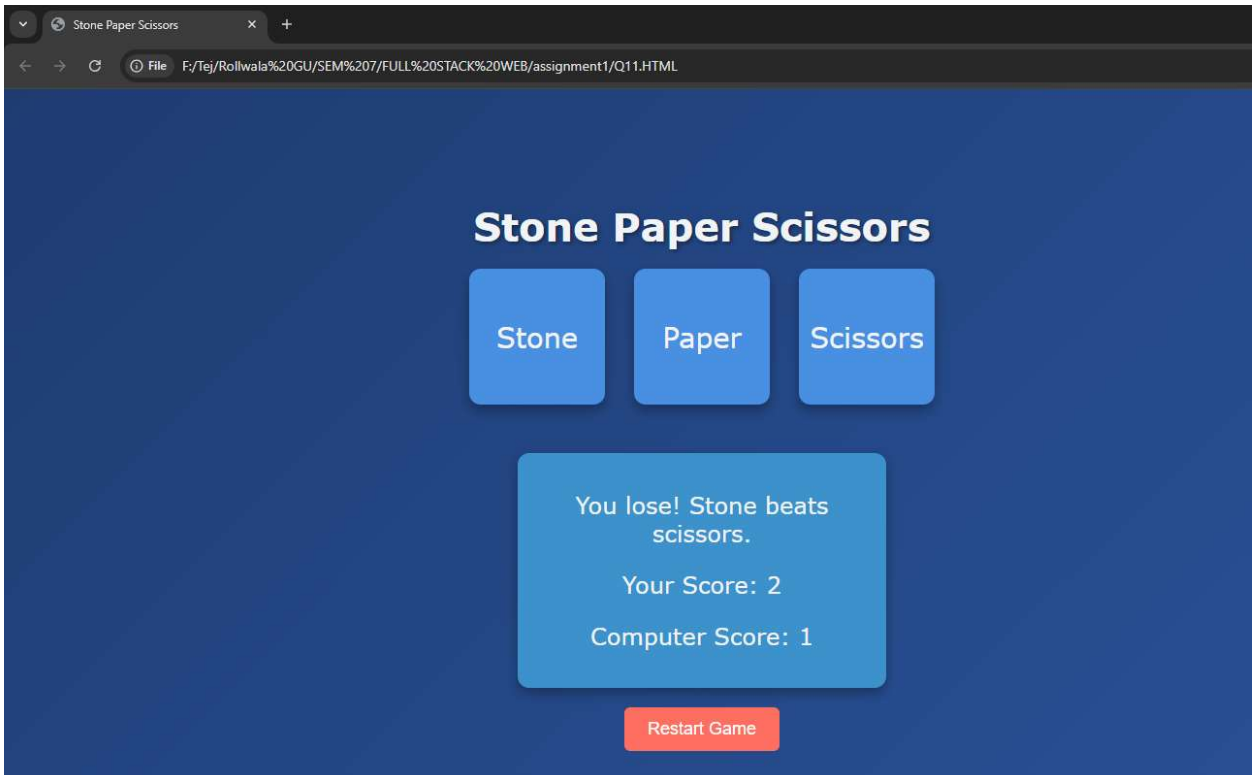
```
<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

<title>Stone Paper Scissors</title>

<style>

body {

font-family: 'Verdana', sans-serif;

display: flex;

flex-direction: column;

align-items: center;

justify-content: center;

height: 100vh;

margin: 0;

background: linear-gradient(135deg, #1E3C72, #2A5298);

color: #F3F4F6;

}

h1 {

font-size: 40px;

margin-bottom: 20px;

text-shadow: 2px 2px 4px rgba(0, 0, 0, 0.4);

}

.choices {
```

```
display: flex;

justify-content: center;

margin-bottom: 30px;

}

.choice {

width: 140px;

height: 140px;

background-color: #4A90E2;

margin: 0 15px;

display: flex;

align-items: center;

justify-content: center;

font-size: 1.8rem;

cursor: pointer;

border-radius: 12px;

transition: background-color 0.3s, transform 0.2s;

box-shadow: 0 6px 12px rgba(0, 0, 0, 0.3);

}

.choice:hover {

background-color: #5DADE2;

transform: scale(1.1);

}

.result {

font-size: 1.5rem;

margin-top: 20px;
```

```
text-align: center;

padding: 15px;

background-color: #3E92CC;

border-radius: 12px;

box-shadow: 0 6px 12px rgba(0, 0, 0, 0.3);

width: 350px;

}

button {

padding: 12px 24px;

border: none;

border-radius: 6px;

background-color: #FF6F61;

color: white;

font-size: 18px;

cursor: pointer;

margin-top: 20px;

transition: background-color 0.3s, transform 0.2s;

}

button:hover {

background-color: #FF4F36;

transform: scale(1.1);

}

@media (max-width: 600px) {

.choice {

width: 100px;
height: 100px;

font-size: 1.5rem;

}

button {

padding: 10px 20px;

font-size: 16px;

}

h1 {

font-size: 32px;

}

.result {

font-size: 1.2rem;

width: auto;

}

}

</style>

</head>

<body>

<h1>Stone Paper Scissors</h1>

<div class="choices">

<div class="choice" onclick="playGame('stone')">Stone</div>

<div class="choice" onclick="playGame('paper')">Paper</div>

<div class="choice" onclick="playGame('scissors')">Scissors</div>

</div>

<div class="result" id="result"></div>
```

```
<button onclick="resetGame()">Restart Game</button>

<script>

const resultElement = document.getElementById('result');

let userScore = 0;

let computerScore = 0;

function playGame(userChoice) {

const choices = ['stone', 'paper', 'scissors'];

const computerChoice = choices[Math.floor(Math.random() * choices.length)];

let resultMessage = '';

if (userChoice === computerChoice) {

resultMessage = `It's a tie! You both chose ${userChoice}.`;

} else if (

(userChoice === 'stone' && computerChoice === 'scissors') ||

(userChoice === 'paper' && computerChoice === 'stone') ||

(userChoice === 'scissors' && computerChoice === 'paper')

) {

userScore++;

resultMessage = `You win! ${userChoice.charAt(0).toUpperCase() + userChoice.slice(1)}

beats ${computerChoice}.`;

} else {

computerScore++;

resultMessage = `You lose! ${computerChoice.charAt(0).toUpperCase() +

computerChoice.slice(1)} beats ${userChoice}.`;

}

resultElement.innerHTML = `
<p>${resultMessage}</p>

<p>Your Score: ${userScore}</p>

<p>Computer Score: ${computerScore}</p>

`;

}

function resetGame() {

userScore = 0;

computerScore = 0;

resultElement.innerHTML = '';

}

</script>

</body>

</html>
```

OUTPUT:


Stone Paper Scissors
F:/Tej/Rollwala%20GU/SEM%207/FULL%20STACK%20WEB/assignment1/Q11.HTML
Stone
Paper
Scissors
Restart Game

Stone Paper Scissors

You lose! Stone beats scissors.

Your Score: 2

Computer Score: 1