

Exp no:1

```
/*HTML CODE*/
```

```
<!DOCTYPE html>
```

```
<html lang="en">
```

```
<head>
```

```
  <title>Area Computation</title>
```

```
  <script type="text/javascript" src="exp1.js"></script>
```

```
</head>
```

```
<body>
```

```
  <h2>Area of rectangle</h2>
```

```
  <label for="length">Enter Length</label>
```

```
  <input type="number" name="length" id="rectLen">
```

```
  <label for="breadth">Enter Breadth</label>
```

```
  <input type="number" name="breadth" id="rectBre">
```

```
  <button type="submit" onclick="areaOfRectangle()">calculateArea</button>
```

```
  <h4 id="rectarea" style="color: red">Area of rectangle is: ?</h4>
```

```
  <h2>Area of triangle</h2>
```

```
  <label for="base">Enter Base</label>
```

```
  <input type="number" name="base" id="triBase">
```

```
  <label for="height">Enter Height</label>
```

```
  <input type="number" name="height" id="triHei">
```

```
  <button type="submit" onclick="areaOfTriangle()">computeArea</button>
```

```
  <h4 id="triarea" style="color: red">Area of triangle is: ?</h4>
```

```
  <h2>Area of Circle</h2>
```

```
  <label>Enter radius</label>
```

```
  <input type="number" id="radius">
```

```
  <button type="submit" onclick="areaOfCircle()">computeArea</button>
```

```
  <h4 id="circlearea" style="color: red">Area of circle is: ?</h4>
```

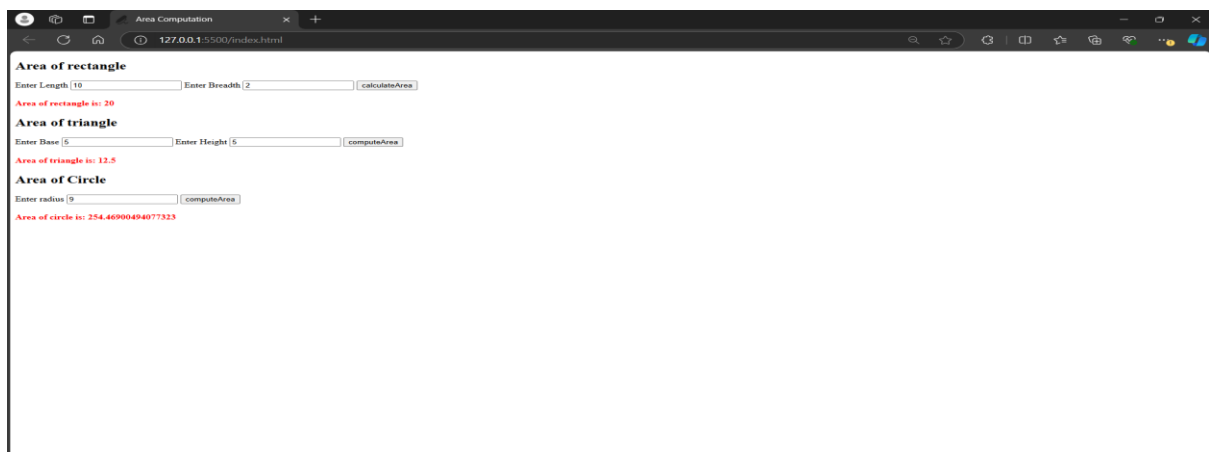
```
</body>
```

</html>

//JS CODE

```
function areaOfRectangle() {  
    var a = parseFloat(document.getElementById('rectLen').value);  
    var b = parseFloat(document.getElementById('rectBre').value);  
    var area = a * b;  
    document.getElementById("rectarea").innerHTML = "Area of rectangle is: " + area;  
}  
  
function areaOfTriangle() {  
    var a = parseFloat(document.getElementById('triBase').value);  
    var b = parseFloat(document.getElementById('triHei').value);  
    var area = 0.5 * a * b;  
    document.getElementById("triarea").innerHTML = "Area of triangle is: " + area;  
}  
  
function areaOfCircle() {  
    var r = parseFloat(document.getElementById('radius').value);  
    var area = Math.PI * r * r;  
    document.getElementById("circlearea").innerHTML = "Area of circle is: " + area;  
}
```

Output



EXP NO 2:

//CODE

```
<!DOCTYPE html>

<html>

<head>

  <title>First multiplication table</title>

  <script type="text/javascript">

    function mul(abc) {

      for (var i = 1; i <= 10; i++) {

        var pqr = i * abc;

        console.log(i + " X " + abc + " = " + pqr);

        document.write("<br>");

        document.write(i + " X " + abc + " = " + pqr);

      }

    }

  </script>

</head>

<body>

  <label for="text">Enter the no:</label><br>

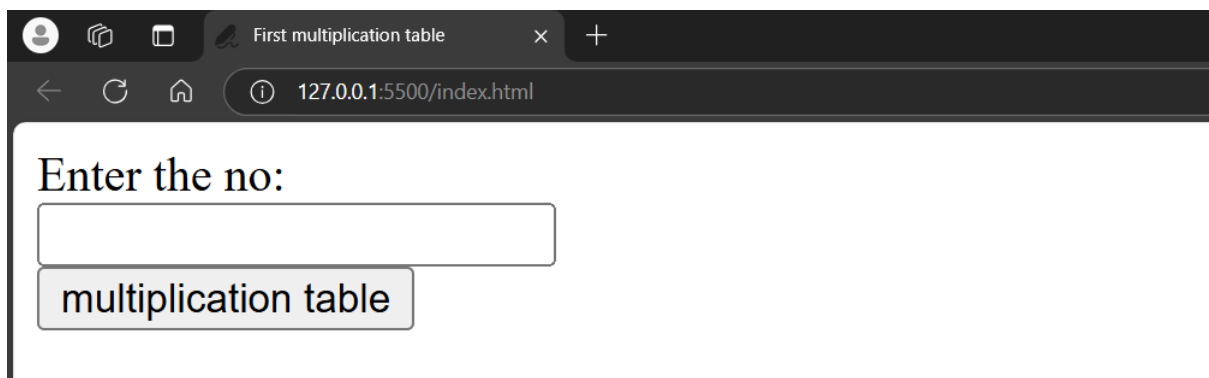
  <input type="number" id="no1"><br>

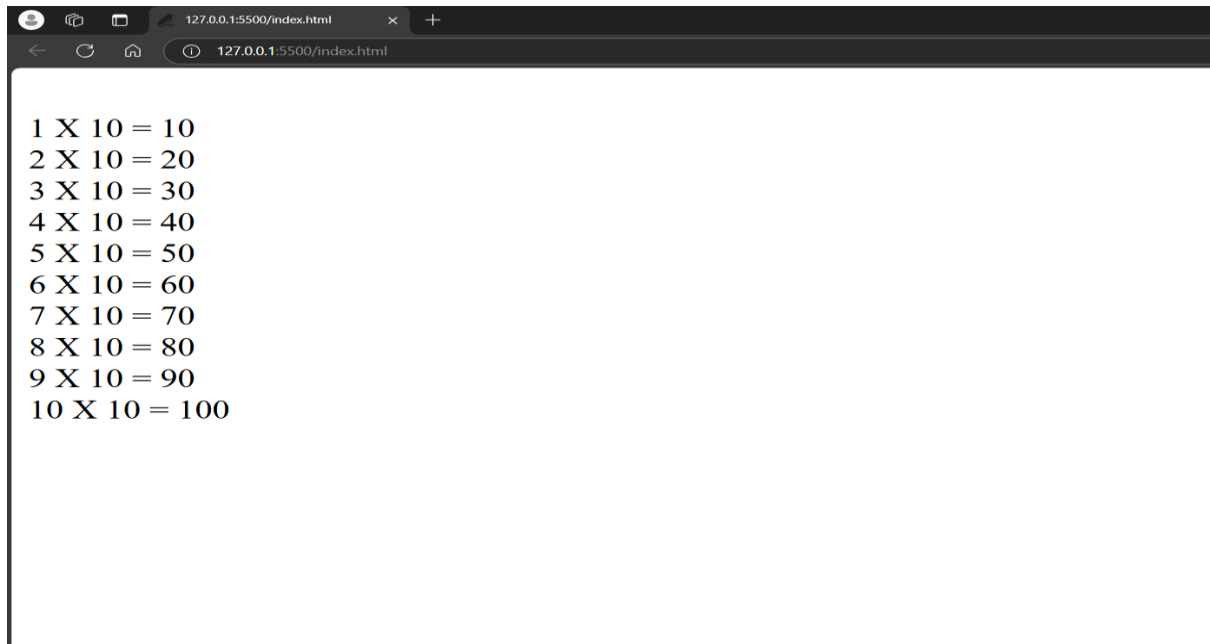
  <button onclick="mul(no1.value)">multiplication table</button>

</body>

</html>
```

Output:





EXP NO: 3

//CODE :

```
<!DOCTYPE html>
<lang="en">
<head>
  <title>String Operations</title>
</head>
<h1>String Operations</h1>
<br>
<label for="str">Enter the string </label>
<input type="text" name="str" id="str"/>
<h2>String Reversal using FOR Loop</h2>
<button type="submit" onclick="revStrUsingFor()">Reverse String</button>
<h4 style="color:red" id="revfor">Reverse string is? </h4>
<br>
<h2>String Reversal using recursive function</h2>
<button type="submit" onclick="var x = revStrRecursive();
document.getElementById('revrec').innerHTML = 'Reverse string is: ' + x;">Reverse
String</button>
<h4 style="color:red" id="revrec">Reverse string is? </h4>
<br>
<h2>String Reversal using in-built functions</h2>
<button type="submit" onclick="revStrInbuiltFunc()">Reverse String</button>
<h4 style="color:red" id="revinbuilt">Reverse string is? </h4>
<br>
<h2>String Palindrome</h2>
<button type="submit" onclick="strPalindrome()">Check String</button>
<h4 style="color:red" id="strPalin">Given string is? </h4>
<br>
<h2>Replace characters of string</h2>
```

```

<label for="match">Enter match/characters to be replaced from string:</label>
<input type="text" name="match" id="match"/>
<br>
<br>
<label for="pattern">Enter pattern/characters to be added into string:</label>
<input type="text" name="pattern" id="pattern"/>
<input type="text" name="pattern" id="pattern"/>
<br>
<br>
<button type="submit" onclick="strReplace()">Replace</button>
<h4 style="color:red" id="strrep">String replacement using replace() method: ? </h4>
<h4 style="color:red" id="strrepall">String replacement using replaceall() method: ?
</h4>
<Script type="text/javascript">
function revStrUsingFor() {
    var str = document.getElementById('str').value;
    var revStr = "";
    for (var i = str.length - 1; i >= 0; i--) {
        revStr += str[i];
    }
    document.getElementById('revfor').innerHTML = "Reverse string is: " + revStr;
}
function strRevRecursive(str) {
    if (str === "") {
        return null;
    } else if (str.length === 1) {
        return str;
    } else {
        return strRevRecursive(str.substr(1)) + str.charAt(0);
    }
}
}

```

```

function revStrRecursive() {
    var str = document.getElementById('str').value;
    var revStr = strRevRecursive(str);
    document.getElementById("revrec").innerHTML = "Reverse string is: " + revStr;
}

function revStrInbuiltFunc() {
    var str = document.getElementById('str').value;
    var splitString = str.split("");
    var reverseArray = splitString.reverse();
    var joinArray = reverseArray.join("");
    //str.split("").reverse().join(""); //all in single line
    document.getElementById("revinbuilt").innerHTML = "Reverse string is: " + joinArray;
}

function strReplace() {
    var str = document.getElementById('str').value;
    var match = document.getElementById('match').value;
    var pattern = document.getElementById('pattern').value;
    var newStr1 = str.replace(match, pattern);
    var newStr2 = str.replaceAll(match, pattern);

    document.getElementById("strrep").innerHTML = "String replacement using replace() method: " + newStr1;

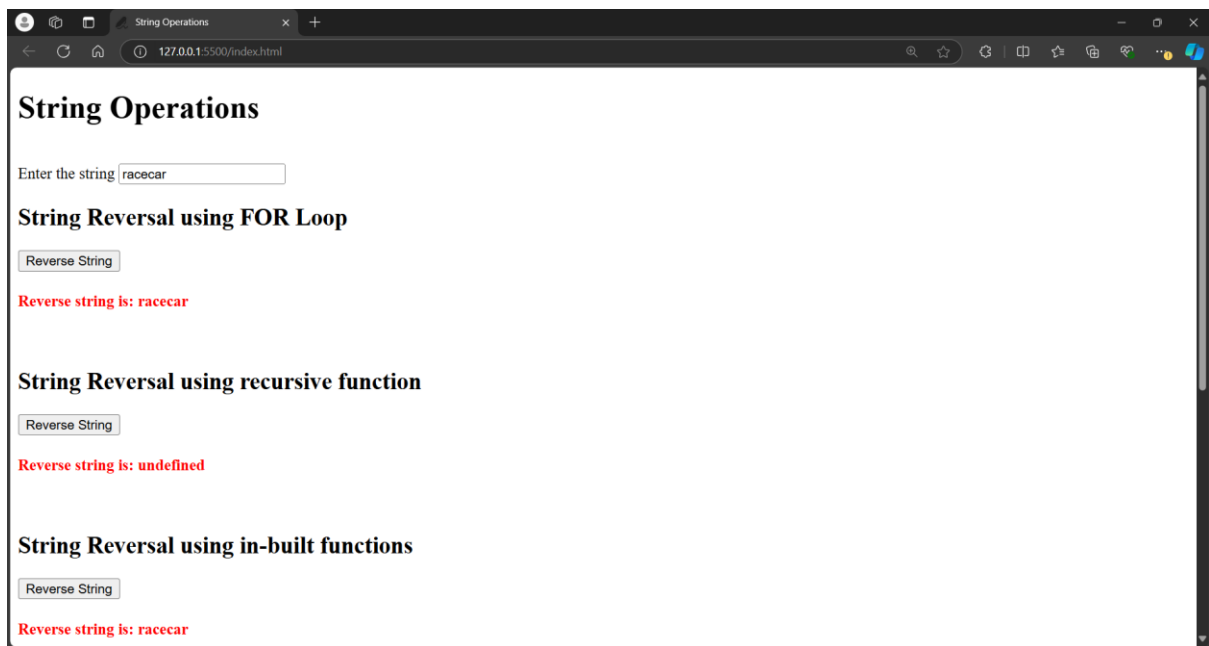
    document.getElementById("strrepall").innerHTML = "String replacement using replaceAll() method: " + newStr2;
}

function strPalindrome() {
    var str = document.getElementById('str').value;
    var revStr = str.split("").reverse().join("");
    if (str === revStr) {
        document.getElementById("strPalin").innerHTML = "Given string is Palindrome";
    } else {
        document.getElementById("strPalin").innerHTML = "Sorry! Given string is not palindrome";
    }
}

```

```
}  
}  
</Script>  
</body>  
</html>
```

//OUTPUT:



String Palindrome

Check String

Given string is Palindrome

Replace characters of string

Enter match/characters to be replaced from string: e

Enter pattern/characters to be added into string: a b

Replace

String replacement using replace() method: racacar

String replacement using replaceAll() method: racacar

EXP NO:4

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>String Comparison</title>
</head>
<body>
  <h1>String Comparison Using Various Methods</h1>
  <p>Open the browser console to see the results of the string comparison.</p>
  <script>
    // Method 1: Using toUpperCase()
    console.log("Method 1: Using toUpperCase()");
    const string1a = 'JavaScript Program';
    const string2a = 'javascript program';
    const result1 = string1a.toUpperCase() === string2a.toUpperCase();
    if(result1) {
      console.log('The strings are similar.');
```

```
    } else {
      console.log('The strings are not similar.');
```

```
    }
    // Method 2: JS String Comparison Using RegEx
    console.log("\nMethod 2: Using RegEx");
    const string1b = 'JavaScript Program';
    const string2b = 'javascript program';
    const pattern = new RegExp(string1b, "gi");
    const result2 = pattern.test(string2b);
    if(result2) {
      console.log('The strings are similar.');
```

```
    } else {
```

```
        console.log('The strings are not similar.');
```

```
    }
```

```
    // Method 3: Using localeCompare() [Recommended Method]
```

```
    console.log("\nMethod 3: Using localeCompare()");
```

```
    const string1c = 'JavaScript Program';
```

```
    const string2c = 'javascript program';
```

```
    const result3 = string1c.localeCompare(string2c, undefined, {sensitivity: 'base'});
```

```
    if(result3 == 0) {
```

```
        console.log('The strings are similar.');
```

```
    } else {
```

```
        console.log('The strings are not similar.');
```

```
    }
```

```
</script>
```

```
</body>
```

```
</html>
```

OUTPUT :

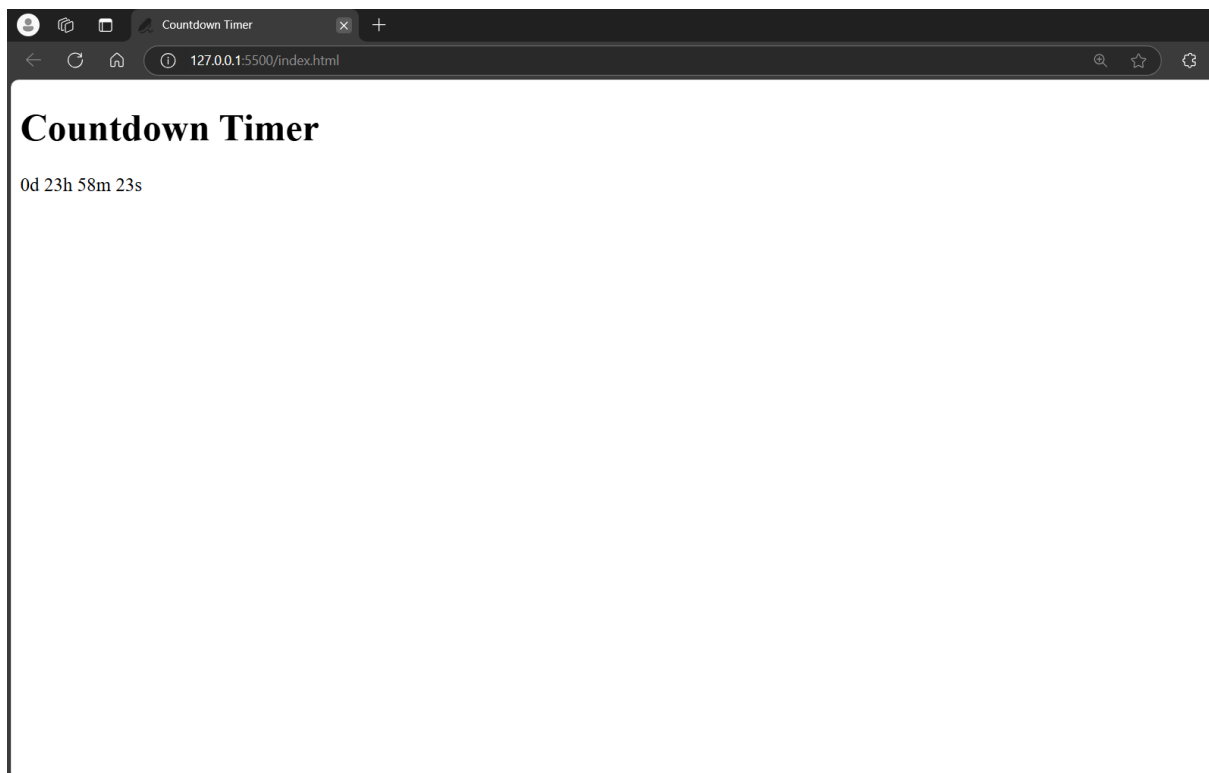


EXP NO: 5

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Countdown Timer</title>
</head>
<body>
  <h1>Countdown Timer</h1>
  <p id="demo"></p>
  <script>
    // time to countdown from (in milliseconds)
    let countDownDate = new Date().getTime() + 24 * 60 * 60 * 1000;
    // countdown timer
    let x = setInterval(function() {
      // get today's date and time in milliseconds
      let now = new Date().getTime();
      // find the interval between now and the countdown time
      let timeLeft = countDownDate - now;
      // time calculations for days, hours, minutes and seconds
      const days = Math.floor( timeLeft/(1000*60*60*24) );
      const hours = Math.floor( (timeLeft/(1000*60*60)) % 24 );
      const minutes = Math.floor( (timeLeft/1000/60) % 60 );
      const seconds = Math.floor( (timeLeft/1000) % 60 );
      // display the result in the element with id="demo"
      document.getElementById("demo").innerHTML = days + "d " + hours + "h "
      + minutes + "m " + seconds + "s ";
      // clearing countdown when complete
      if (timeLeft < 0) {
        clearInterval(x);
```

```
        document.getElementById("demo").innerHTML = "Countdown Finished";
    }
    }, 1000); // update every second (1000 milliseconds)
</script>
</body>
</html>
```

//OUTPUT:



Exp No:8

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Set Operations</title>
</head>
<body>
  <h1>Set Operations</h1>
  <!-- Section for Union -->
  <h3>Union of two sets</h3>
  <p id="unionResult"></p>
  <!-- Section for Intersection -->
  <h3>Intersection of two sets</h3>
  <p id="intersectionResult"></p>
  <!-- Section for Difference -->
  <h3>Difference of two sets</h3>
  <p id="differenceResult"></p>
  <script>
    // Exp 8a: Perform union operation
    function union(a, b) {
      let unionSet = new Set(a);
      for (let i of b) {
        unionSet.add(i);
      }
      return unionSet;
    }
    // Exp 8b: Perform intersection operation
    function intersection(setA, setB) {
      let intersectionSet = new Set();
```

```

    for (let i of setB) {
        if (setA.has(i)) {
            intersectionSet.add(i);
        }
    }
    return intersectionSet;
}

// Exp 8c: Perform difference operation
function difference(setA, setB) {
    let differenceSet = new Set(setA);
    for (let i of setB) {
        differenceSet.delete(i);
    }
    return differenceSet;
}

// Two sets of fruits
const setA = new Set(['apple', 'mango', 'orange']);
const setB = new Set(['grapes', 'apple', 'banana']);

// Display union result
const unionResult = union(setA, setB);

        document.getElementById('unionResult').innerText    =    `Union:
${Array.from(unionResult).join(', ')} `;

// Display intersection result
const intersectionResult = intersection(setA, setB);

        document.getElementById('intersectionResult').innerText    =    `Intersection:
${Array.from(intersectionResult).join(', ')} `;

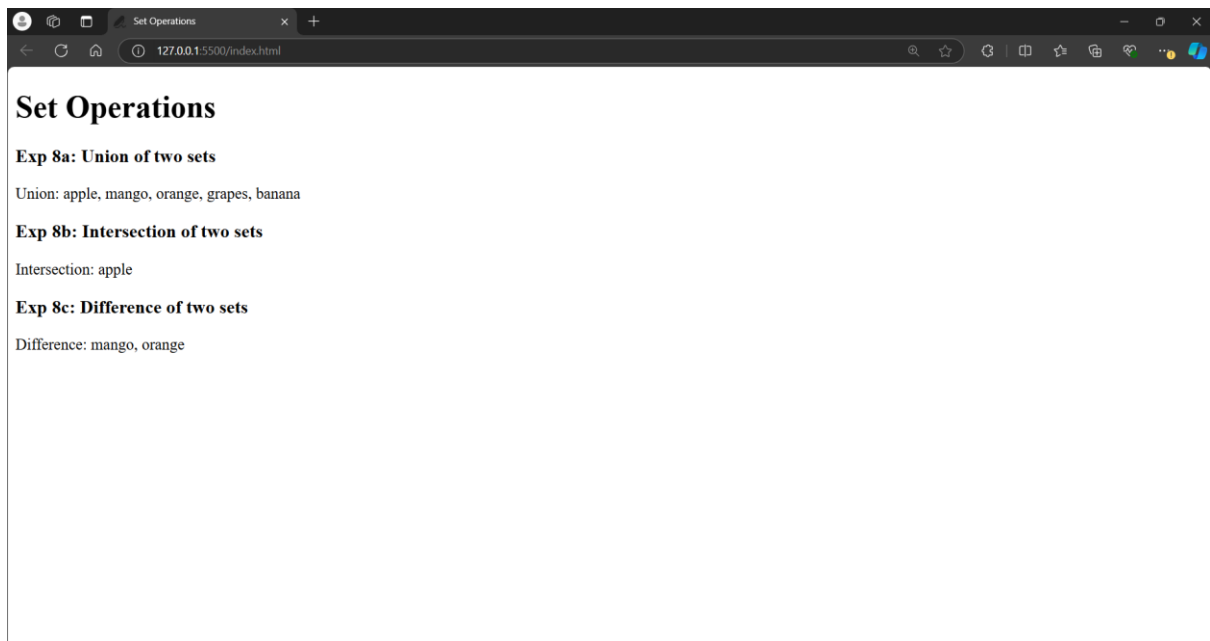
// Display difference result
const differenceResult = difference(setA, setB);

        document.getElementById('differenceResult').innerText    =    `Difference:
${Array.from(differenceResult).join(', ')} `;

</script></body>
</html>

```

Output:



Exp no: 7b

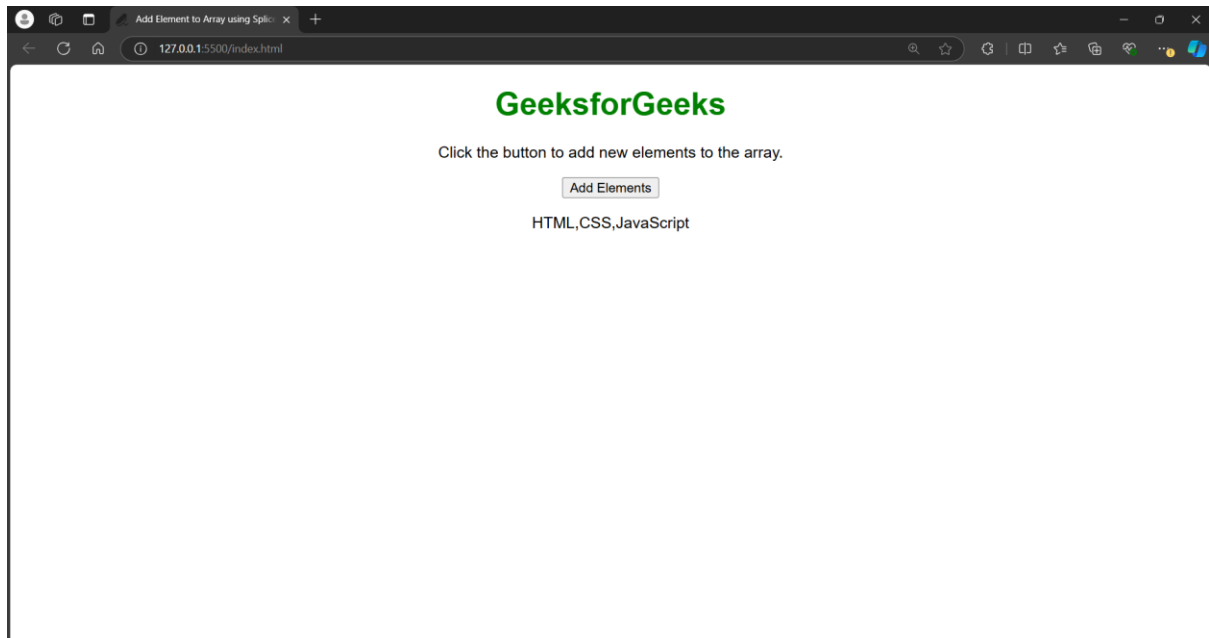
Code:

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Add Element to Array using Splice Method</title>
  <style>
    body {
      text-align: center;
      font-family: Arial, sans-serif;
    }
    h1 {
      color: green;
    }
  </style>
</head>
<body>
  <h1>GeeksforGeeks</h1>
  <p>Click the button to add new elements to the array.</p>
  <!-- Button to trigger spliceFunction -->
  <button onclick="spliceFunction()">Add Elements</button>
  <!-- Display array here -->
  <p id="geeks"></p>
  <script>
    // Initial array
    var list = ["HTML", "CSS", "JavaScript"]
    // Display the initial array
    document.getElementById("geeks").innerHTML = list;
```



```
// Function to add new elements using splice
function spliceFunction() {
    list.splice(2, 0, "Angular", "SQL"); // Add elements at index 2
    document.getElementById("geeks").innerHTML = list; // Update display
}
</script>
</body>
</html>
```

Output:



Exp No:7a

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Append Object to Array and Check if Object is an Array</title>
  <style>
    body {
      font-family: Arial, sans-serif;
      text-align: center;
    }
    h1 {
      color: blue;
    }
    p {
      font-size: 16px;
    }
  </style>
</head>
<body>
  <h1>Append Object to Array and Check if Object is an Array</h1>
  <!-- Sections to display results -->
  <p><strong>Check if object is an array:</strong> <span
id="checkObject"></span></p>
  <p><strong>Array after inserting object:</strong> <span
id="arrayResult"></span></p>
  <script>
    // Function to append an object to an array
    function insertObject(arr, obj) {
      arr.push(obj); // Append object
```

```

        document.getElementById('arrayResult').innerText = JSON.stringify(arr); // Display
updated array

        console.log(arr);
    }

    // Function to check if a variable is an array

    function checkObject(obj) {

        const result = Array.isArray(obj); // Check if obj is an array

        if (result) {

            document.getElementById('checkObject').innerText = `[${JSON.stringify(obj)}] is
an array.`; // Display result

            console.log(`[${obj}] is an array.`);

        } else {

            document.getElementById('checkObject').innerText = `[${JSON.stringify(obj)}] is
not an array.`; // Display result

            console.log(`${obj} is not an array.`);

        }

    }

    // Original array
    let array = [1, 2, 3];

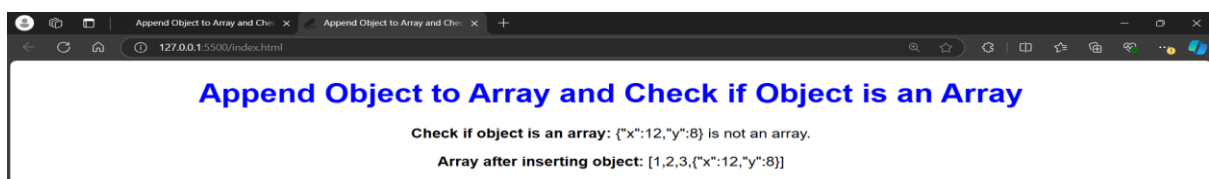
    // Object to add
    let object = {x: 12, y: 8};

    // Check if object is an array
    checkObject(object);

    // Append object to array
    insertObject(array, object);

</script>
</body>
</html>

```



Exp no: 6a

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Remove Array Element</title>
</head>
<body>
  <h1>Remove Array Element Example</h1>
  <p><strong>Original Array:</strong> [1, 2, 3, 4, 5]</p>
  <p><strong>After removing 2:</strong> <span id="result1"></span></p>
  <p><strong>Original Array:</strong> [2, 5, 9, 6]</p>
  <p><strong>After removing 5:</strong> <span id="result2"></span></p>
  <script>
    // Function to remove an element by modifying the original array
    function remove_array_element(array, n) {
      var index = array.indexOf(n);
      if (index > -1) {
        array.splice(index, 1); // Remove element at index
      }
      return array;
    }
    // Function to remove an element and return a new array
    function removeItemFromArray(array, n) {
      const newArray = [];
      for (let i = 0; i < array.length; i++) {
        if (array[i] !== n) {
          newArray.push(array[i]); // Push element if it's not equal to n
        }
      }
    }
  </script>
</body>
</html>
```

```
        return newArray;
    }

    // Testing the functions and displaying the result
    const result1 = removeItemFromArray([1, 2, 3, 4, 5], 2); // Using second method
    const result2 = remove_array_element([2, 5, 9, 6], 5); // Using first method

    // Display the results in the HTML
    document.getElementById("result1").innerText = result1;
    document.getElementById("result2").innerText = result2;
</script>
</body>
</html>
```

Output :

Remove Array Element Example

Original Array: [1, 2, 3, 4, 5]

After removing 2: 1,3,4,5

Original Array: [2, 5, 9, 6]

After removing 5: 2,9,6

Exp no: 6b

Code:

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Array Manipulation</title>
</head>
<body>
<h1>Array Manipulation Experiments</h1>
<h2>Checking if an array contains a specified value</h2>
<p id="arrayCheckResult"></p>
<h2>Emptying an array using three methods</h2>
<p>Original array: [1, 2, 3]</p>
<p><strong>Method 1 (Substitution):</strong> <span
id="method1Result"></span></p>
<p><strong>Method 2 (Splice):</strong> <span id="method2Result"></span></p>
<p><strong>Method 3 (Set length to 0):</strong> <span
id="method3Result"></span></p>
<script>
  // Exp 6b: Program to check if an array contains a specified value
  const array1 = ['you', 'will', 'learn', 'javascript'];
  const hasValue = array1.includes('javascript');
  const arrayCheckResult = document.getElementById('arrayCheckResult');
  if (hasValue) {
    arrayCheckResult.textContent = 'Array contains the value: "javascript"';
  } else {
    arrayCheckResult.textContent = 'Array does not contain the value.';
  }
  // Exp 6c: Program to empty an array using three methods
```

```
// Method 1: Substituting new array
function emptyArrayBySubstitution(arr) {
    arr = [];
    return arr;
}

// Method 2: Using splice to remove all elements
function emptyArrayBySplice(arr) {
    arr.splice(0, arr.length);
    return arr;
}

// Method 3: Setting array length to 0
function emptyArrayByLength(arr) {
    arr.length = 0;
    return arr;
}

const originalArray = [1, 2, 3];

// Method 1
const method1Array = [...originalArray]; // Clone the array to avoid modifying the original
const result1 = emptyArrayBySubstitution(method1Array);
document.getElementById('method1Result').textContent = `${result1}`;

// Method 2
const method2Array = [...originalArray];
const result2 = emptyArrayBySplice(method2Array);
document.getElementById('method2Result').textContent = `${result2}`;

// Method 3
const method3Array = [...originalArray];
const result3 = emptyArrayByLength(method3Array);
document.getElementById('method3Result').textContent = `${result3}`;

</script>
</body></html>
```

EXP No:9

Code :

//Experiment 9a: JavaScript program to change background color of Webpage On mouse over event

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Experiment-9</title>

    <script src="Exp9.js">
    </script>
</head>
<body>
    <h1 id="head1" onmouseover="changeColor1()" onmouseout="changeColor2()">
Experiment-9</h1>
    <h2> JavaScript program to change background color of Webpage On mouse
over event</h2>
    <p>We are using mouseover Event to Change the Background Color</p>

</body>
</html>
```

Js Code:

```
function changeColor1(){
    document.body.style.backgroundColor = "red";
}
function changeColor2(){
    document.body.style.backgroundColor = "yellow";
}
```


Output :

//Experiment 9a: JavaScript program to change background color of Webpage On mouse over event

Experiment-9

JavaScript program to change background color of Webpage On mouse over event

We are using mouseover Event to Change the Background Color

Exp no:9b

//Experimen-9b: Program to change Background color using onfocus event

```
<!DOCTYPE html>
```

```
<html lang="en">
```

```
<head>
```

```
  <meta charset="UTF-8">
```

```
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
```

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

```
  <title>Experiment-9b</title>
```

```
</head>
```

```
<body>
```

```
  <h1>Experimen-9b</h1>
```

<p> In this Program we are going to change the Background color of document when onfocus event is occurred</p>

```
  <h2>Student Information Form</h2>
```

```
  <form id="myForm">
```

```
    <label> Student Name: <input type="text" id="myInput"> </label>
```

```
  </form>
```

```
</body>
```

```
<script src="Exp9b.js"></script>
```

```
</html>
```

JS code:

```
var x = document.getElementById("myForm");
```

```
x.addEventListener("focus", myFocusFunction, true);
```

```
x.addEventListener("blur", myBlurFunction, true);
```

```
function myFocusFunction() {
```

```
  document.getElementById("myInput").style.backgroundColor = "yellow";
```

```
}  
  
function myBlurFunction() {  
    document.getElementById("myInput").style.backgroundColor = "";  
}
```

Output :

```
//Experimen-9b: Program to change Background color using onfocus event
```

Experimen-9b

In this Program we are going to change the Background color of document when onfocus event is occurred

Student Information Form

Student Name:

Exp no 10

Html code:

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Document</title>
  <script src="/Exp10a.js"></script>
</head>
<body>
  <h1>Experiment-10</h1>
  <h2>Form Validation Example</h2>
  <br>
  <h1>Sign Up Form</h1>
  <form name="myForm" action="/thankyou.html" onsubmit="return validate()" >
    <label for="fname"> First name</label>
    <input type="text" id="fname" name="fname" placeholder="Enter First Name"
required>
    <label for="lname">Last Name</label>
    <input type="text" id="lname" name="lname" placeholder="Enter Last Name" >
    <br>
    <br>
    <label for="usremail">Email</label>
    <input type="email" id="usremail" name="usremail" placeholder="Enter Email here"
>
    <label for="usrpassword">Password</label>
    <input type="password" id="usrpassword" name="usrpassword" placeholder="Enter
Password" >
    <br>
    <br>
```

```

<p>Gender ?</p>
<label for="male"> Male</label>
<input type="radio" id="male" name="option">
<label for="female"> Female </label>
<input type="radio" id="female" name="option">
<p></p>

<label for="usrmobile">Mobile Number</label>
<input type="text" id="usrmobile" name="usrmobile" placeholder="Mobile Number"
required>
<p></p>
<input type="submit" name="" id="" value="submit">
</form>
</body>
</html>

```

JS code:

```

function validate() {
    var firstName = document.myForm.fname.value;
    var lastName = document.myForm.lname.value;
    var userpassword = document.myForm.usrpassword.value;
    var usrmobile = document.myForm.usrmobile.value;
    console.log(firstName);
    console.log(lastName);
    console.log(userpassword);
    console.log(usrmobile);
    if (firstName == null || firstName == "" || firstName.length<3 ) {
        alert("First Name can't be blank or Less than 3 Charecter");
        document.myForm.fname.focus();
        return false;
    }
}

```

```

if (lastName == null || lastName == "") {
    alert("Last Name can't be blank");
    document.myForm.lname.focus();
    return false;
}
if (userpassword.length < 6) {
    alert("Password must be at least 6 characters long.");
    document.myForm.usrpassword.focus();
    return false;
}
if (isNaN(usrmobile)) {
    alert("Enter Numeric value only");
    document.myForm.usrmobile.focus();
    return false;
}
return true;
}

```

Output :

Experiment-10

Form Validation Example

Sign Up Form

First name Last Name

Email Password

Gender ?

Male ☒ Female ☐

Mobile Number

Thank you..!

Your Registration is Completed

