Experiment 1: JavaScript program to calculate area of triangle, area of rectangle and area of circle

```
var base = parseInt(prompt("Enter the base: "));
var height = parseInt(prompt("Enter the height: "));

//Calculating the area
var area = (base * height) / 2;

//Display Output

console.log("Base: " + base);
console.log("Height: " + height);
console.log("The area of the triangle is " + area);
```

Output:

Enter the base: 4

Enter the height: 5

Base: 4

Height: 5

The area of the triangle is 10

Expt no :2

```
// program to generate a multiplication table

// take input from the user
const number = parseInt(prompt('Enter an integer: '));

//creating a multiplication table
for(let i = 1; i <= 10; i++) {

    // multiply i with number
    const result = i * number;

    // display the result

    console.log(`${number} * ${i} = ${result}`);
    document.write(`${number} * ${i} = ${result} <br>`);

}
```

Output:

Enter an integer: 10

10 * 1 = 10

10 * 1 = 10

10 * 2 = 20

10 * 2 = 20

10 * 3 = 30

10 * 3 = 30

10 * 4 = 40

10 * 4 = 40

10 * 5 = 50

10 * 5 = 50

10 * 6 = 60

10 * 6 = 60

10 * 7 = 70

10 * 7 = 70

10 * 8 = 80

10 * 8 = 80

10 * 9 = 90

10 * 9 = 90

10 * 10 = 100

10 * 10 = 100

```
//Experiment 3a. Write a program to reverse a string

function reverseString(str) {

    // empty string
    let newString = "";
    for (let i = str.length - 1; i >= 0; i--) {
        newString += str[i];
    }
    return newString;
}

// take input from the user
const string = prompt('Enter a string: ');

const result = reverseString(string);
console.log(result);
```

Output:

```
Enter a string: 987654321
123456789
```

```
// Experiment 3b. Program to replace a character of a string

const string = 'Mr Red has a red house and a red car';

// replace the characters
const newText = string.replace('red', 'blue');

// display the result
console.log(newText);
```

Output:

Mr Red has a blue house and a red car

//Experiment 4: Write a JavaScript program to compare two strings using various methods

//Method 1: Using toUpperCase()

```
// js program to perform string comparison

const string1 = 'JavaScript Program';
const string2 = 'javascript program';

// compare both strings
const result = string1.toUpperCase() === string2.toUpperCase();

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

Output:

The strings are similar.

//Experiment 4: Write a JavaScript program to compare two strings using various methods

```
// Method 2: JS String Comparison Using RegEx

// program to perform string comparison


const string1 = 'JavaScript Program';

const string2 = 'javascript program';


// create regex

const pattern = new RegExp(string1, "gi");


// compare the stings

const result = pattern.test(string2)


if(result) {

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

} else {

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

}
```

Output:

The strings are similar.

//Experiment 4: Write a JavaScript program to compare two strings using various methods

Method 3: Using localeCompare() [Recommended Method]

```
// program to perform case insensitive string comparison

const string1 = 'JavaScript Program';
const string2 = 'javascript program';

const result = string1.localeCompare(string2, undefined, {sensitivity: 'base' });

if(result == 0) {
   console.log('The strings are similar.');
} else {
   console.log('The strings are not similar.');
}
```

Output:

The strings are similar.

```
// Experiment 5: Program to create a countdown timer
// 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"
   console.log(days + "d " + hours + "h " + minutes + "m " + seconds +
"s ");

   // clearing countdown when complete
   if (timeLeft < 0) {
      clearInterval(x);
      console.log('CountDown Finished');
   }
   }, 2000);
```

Output:

0d 23h 59m 57s

0d 23h 59m 55s

0d 23h 59m 53s

0d 23h 59m 51s

0d 23h 59m 49s

0d 23h 59m 47s

0d 23h 59m 45s

0d 23h 59m 43s

0d 23h 59m 41s

0d 23h 59m 39s

0d 23h 59m 37s

0d 23h 59m 35s

0d 23h 59m 33s

0d 23h 59m 31s

0d 23h 59m 29s

0d 23h 59m 27s

0d 23h 59m 25s

0d 23h 59m 23s

0d 23h 59m 21s

0d 23h 59m 19s

0d 23h 59m 17s

0d 23h 59m 15s

0d 23h 59m 13s

0d 23h 59m 11s

0d 23h 59m 9s

//Program 6a: Program to remove specific element from Array Object

```
function remove_array_element(array, n)
 {
   var index = array.indexOf(n);
   if (index > -1) {
    array.splice(index, 1);
}
   return array;
 }

console.log(remove_array_element([2, 5, 9, 6], 5));
```

Output:

[2, 9, 6]

```
//Exp 6a: program to remove specific item from an array: Using For Loop
function removeItemFromArray(array, n) {
   const newArray = [];

   for ( let i = 0; i < array.length; i++) {
      if(array[i] !== n) {
         newArray.push(array[i]);
      }
   }
   return newArray;
}
const result = removeItemFromArray([1, 2, 3 , 4 , 5], 2);
console.log(result);
```

Output:

[1, 3, 4, 5]

```
// Exp 6 b: program to check if an array contains a specified value

const array = ['you', 'will', 'learn', 'javascript'];

const hasValue = array.includes('javascript');

// check the condition
if(hasValue) {
    console.log('Array contains a value.');
} else {
    console.log('Array does not contain a value.');
}
```

Output:

Array contains a value.

```
//Exp 6c: Program to empty an array
//Method 1
function emptyArray(arr) {
   // substituting new array
   arr = [];
      return arr;
}
const array = [1, 2 ,3];
console.log(array);
// call the function
const result = emptyArray(array);
console.log(result);
```

Output:

```
[ 1, 2, 3 ]
[]
```

```
//Exp 6c: Program to empty an array: Method 2
function emptyArray(arr) {
 // substituting new array
   arr.splice(0, arr.length);

   return arr;
}

const array = [1, 2 ,3];
console.log(array);

// call the function
const result = emptyArray(array);
console.log(result);
```

Output:

```
[ 1, 2, 3 ]
[]
```

```
//Exp 6c: program to empty an array: Method 3

function emptyArray(arr) {
  // setting array length to 0
   arr.length = 0;

   return arr;
}
const array = [1, 2 ,3];
console.log(array);
// call the function
const result = emptyArray(array);
console.log(result);
```

Output:

```
[ 1, 2, 3 ]
[]
```

```
//Exp 7a: Program to append an object to an array and check if object is an array
function insertObject(arr, obj) {
 // append object
   arr.push(obj);
    console.log(arr);
}
function checkObject(arr) {
  // check if arr is array
   const result = Array.isArray(arr);
 if(result) {
       console.log(`[${arr}] is an array.`);  }
   else {
       console.log(`${arr} is not an array.`);    }
}
// original array
let array = [1, 2, 3];
// object to add
let object = {x: 12, y: 8};
// Check if object is array
checkObject(object);
// call the function
insertObject(array, object);
```

Output:

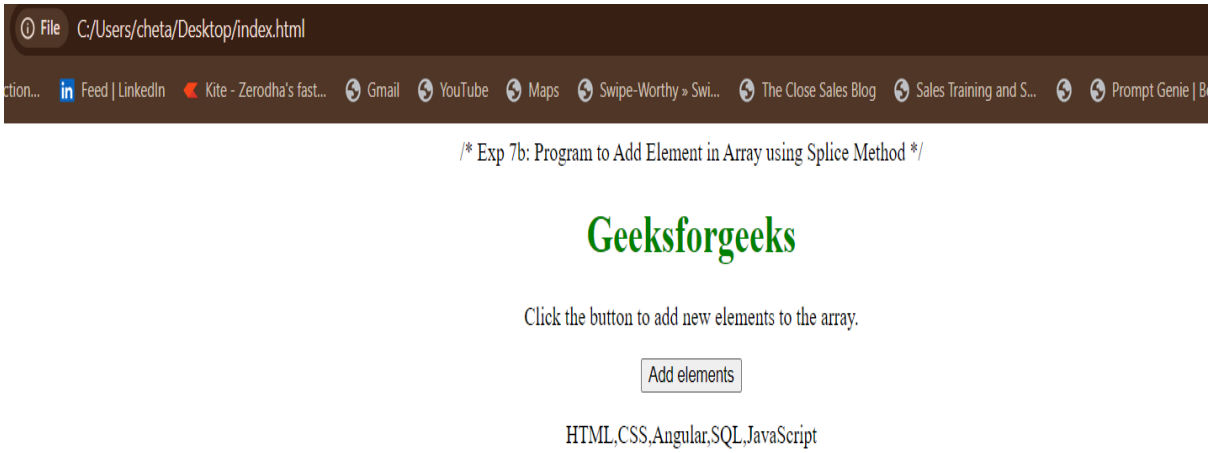
[object Object] is not an array.

[1, 2, 3, { x: 12, y: 8 }]

```
/* Exp 7b: Program to Add Element in Array using Splice Method */
<!DOCTYPE html>
<html>
<head>
	<title>Adding object in array</title>
	<style>
		body {
			text-align: center;
		}
	</style>
</head>
<body>
	<h1 style="color: green">Geeksforgeeks</h1>
	<p>Click the button to add new elements to the array.</p>

	<button onclick="spliceFunction()">Add elements</button>

	<p id="geeks"></p>

	<script>
		var list = ["HTML", "CSS", "JavaScript"];
		document.getElementById("geeks").innerHTML = list;
```

```
        function spliceFunction() {
            list.splice(2,0,"Angular", "SQL", );
            document.getElementById("geeks").innerHTML =
list;
        }
</script>
</body>
</html>
```

Output:


File C:/Users/cheta/Desktop/index.html
Feed | LinkedIn
Kite - Zerodha's fast...
Gmail
YouTube
Maps
Swipe-Worthy » Swi...
The Close Sales Blog
Sales Training and S...
Prompt Genie
/* Exp 7b: Program to Add Element in Array using Splice Method */
Geeksforgeeks
Click the button to add new elements to the array.
Add elements
HTML,CSS,Angular,SQL,JavaScript

```
// Exp 8a: Perform union operation-contain elements of both
setsfunction union(a, b) {
   let unionSet = new Set(a);
   for (let i of b) {
      unionSet.add(i);
   }
   return unionSet
}// two sets of fruits
const setA = new Set(['apple', 'mango', 'orange']);
const setB = new Set(['grapes', 'apple', 'banana']);

const result = union(setA, setB);

console.log(result);
```

Output:

```
Set(5) { 'apple', 'mango', 'orange', 'grapes', 'banana' }
```

```
// Exp 8b: Perform intersection operation - Elements of set a that are also in set b
function intersection(setA, setB) {
    let intersectionSet = new Set();
    for (let i of setB) {
        if (setA.has(i)) {
            intersectionSet.add(i);
        }
    }
    return intersectionSet;
}
// two sets of fruits
const setA = new Set(['apple', 'mango', 'orange']);
const setB = new Set(['grapes', 'apple', 'banana']);
const result = intersection(setA, setB);
console.log(result);
```

Output:

```
Set(1) { 'apple' }
```

```
// Exp 8c: Perform difference operation- Elements of set a that are not in set b
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']);
const result = difference(setA, setB);
console.log(result);
```

Output:

```
Set(2) { 'mango', 'orange' }
```

//Experiment 3c:

Progam to check if string is Palindrome or not.

```
<script>

// function that check str is palindrome or not
function check_palindrome( str )
{
        let j = str.length -1;
        for( let i = 0 ; i < j/2 ;i++)
        {
        let x = str[i] ;//forward character
        let y = str[j-i];//backward character
        if( x != y)
        {
                // return false if string not match
                return false;
        }
        }
        /// return true if string is palindrome
        return true;

}
```

```
//function that print output is string is palindrome
function is_palindrome( str )
{
        // variable that is true if string is palindrome
        let ans = check_palindrome(str);
        //condition checking ans is true or not
        if( ans == true )
        {
        console.log("passed string is palindrome ");
        }
        else
        {
        console.log("passed string not a palindrome");
        }
}
// test variable
let test = "racecar";
is_palindrome(test);

</script>
```

Output:

passed string is palindrome

//Experiment 3: Program to check if number is Palindrome or not.

```
<script>
// function to reverse the string
function reverse( str )
{
        // variable holds reverse string
        let rev_str = "";
        for( let i = str.length-1 ;i >= 0 ;i--)
        {
        rev_str+= str[i];
        }
        // return reverse string
        return rev_str;
}

// function checking string is palindrome or not
function is_palindrome( str )
{
        reverse_str = reverse(str);
        // condition checking if reverse str is
        // same as string it is palindrome
        // else not a palindrome
        if( reverse_str === str)
```

```
        {
        console.log("passed string is palindrome ");
        }
        else
        {
        console.log("passed string is not palindrome")
        }
}
let test = "hellolleh";
is_palindrome(test);
</script>
```

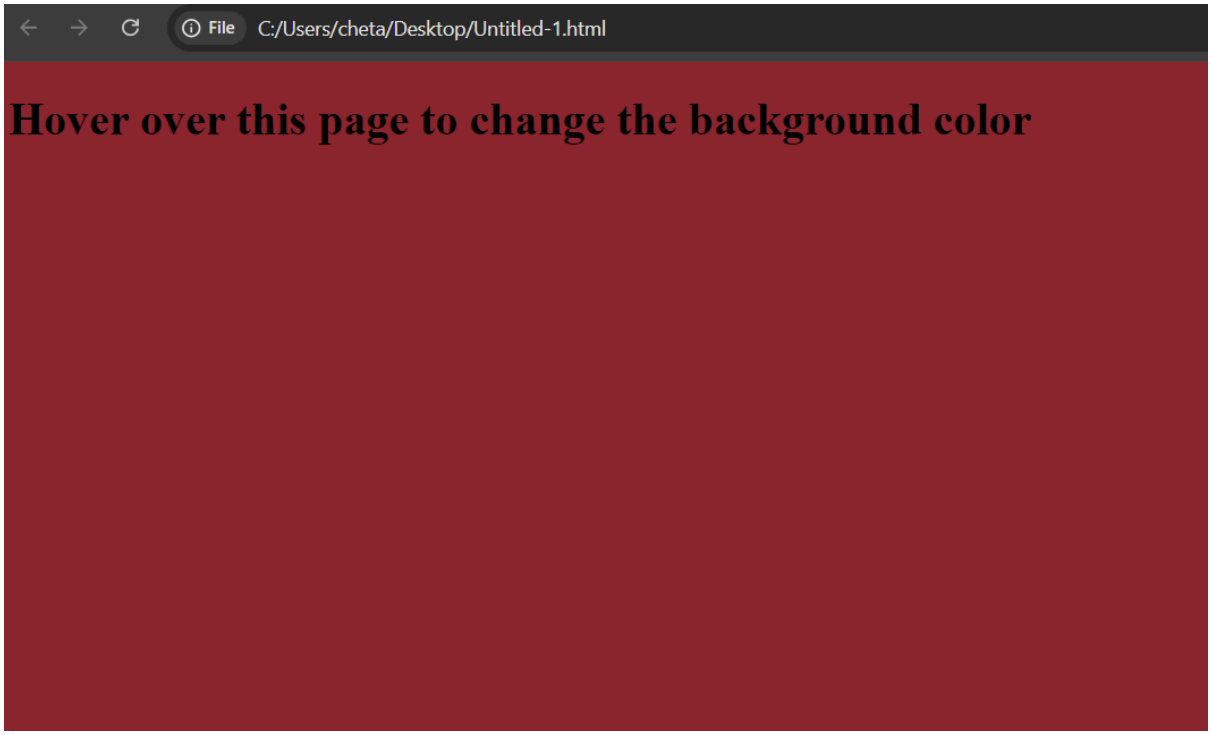
Output:

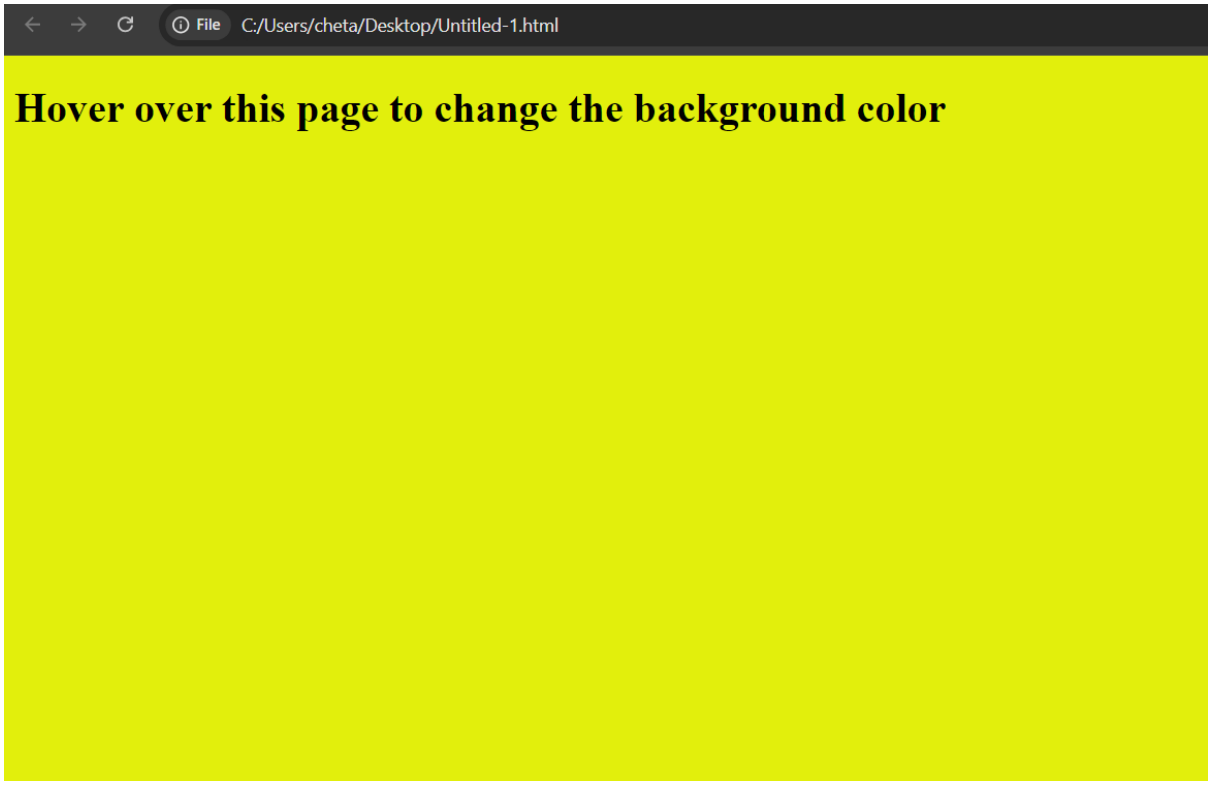
passed string is palindrome

```
//Experiment 9a: JavaScript program to change background color of Webpage On mouse over event
function changeColor1() {
   document.body.style.backgroundColor = "red";
}
function changeColor2() {
   document.body.style.backgroundColor = "yellow";
}

<!DOCTYPE html>
<html>
<head>
   <title>Mouseover Event - Change Background Color</title>
   <style>
      body {
         transition: background-color 0.5s ease;
      }
   </style>
</head>
<body>

<h1>Hover over this page to change the background color</h1>

<script>
```

```
    // Function to change the background color on mouseover
    document.body.addEventListener("mouseover", function() {
        document.body.style.backgroundColor = getRandomColor();
    });

    // Function to reset the background color on mouseout
    document.body.addEventListener("mouseout", function() {
        document.body.style.backgroundColor = "white";
    });

    // Function to generate random color
    function getRandomColor() {
        let letters = "0123456789ABCDEF";
        let color = "#";
        for (let i = 0; i < 6; i++) {
            color += letters[Math.floor(Math.random() * 16)];
        }
        return color;
    }
</script>

</body>
</html>
```

Output:


File
C:/Users/cheta/Desktop/Untitled-1.html
Hover over this page to change the background color

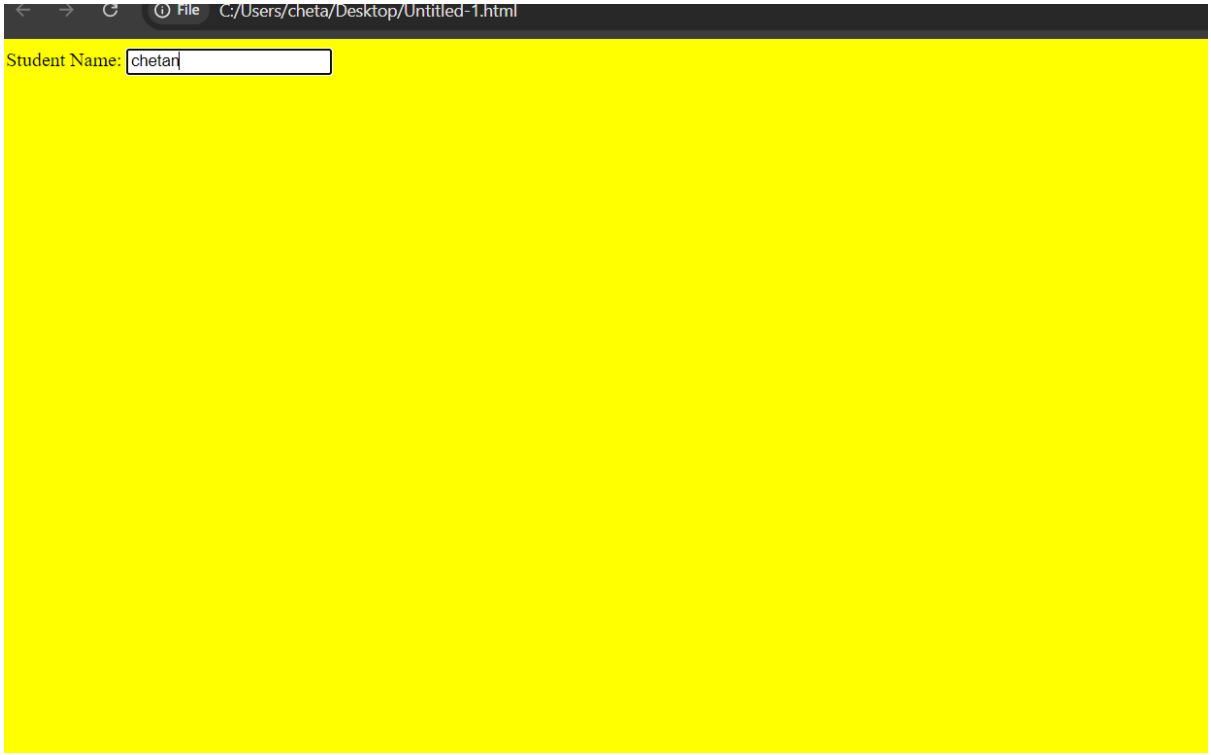

File
C:/Users/cheta/Desktop/Untitled-1.html
Hover over this page to change the background color

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

```
<!DOCTYPE html>
<html>
<head>
   <title>Focus Event - Change Document Background</title>
</head>
<body>

<form id="myForm">
  <label for="myInput">Student Name: </label>
  <input type="text" id="myInput">
</form>

<script>
   // Get the form element
   var x = document.getElementById("myForm");

   // Add event listeners for focus and blur events
   x.addEventListener("focus", myFocusFunction, true);  // Capture focus event in child elements
   x.addEventListener("blur", myBlurFunction, true);
```

```
  // Function to change the background color of the document when input gets focus
  function myFocusFunction() {
    document.body.style.backgroundColor = "yellow";  // Change the document's background color
  }

  // Function to reset the background color of the document when input loses focus
  function myBlurFunction() {
    document.body.style.backgroundColor = "";  // Revert to the original background color
  }
</script>

</body>
</html>
```

Output:


File
C:/Users/cheta/Desktop/Untitled-1.html
Student Name:
chetan

Experiment-10

Form Validation Example

```
<!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <title>Sign Up Form</title>
   <style>
      body {
         font-family: Arial, sans-serif;
         margin: 40px;
      }
      label {
         display: inline-block;
         width: 100px;
         margin-top: 10px;
      }
      input[type="text"], input[type="password"] {
         width: 250px;
         padding: 5px;
         margin-top: 5px;
```

```
    margin-bottom: 10px;
}
input[type="radio"] {
    margin-left: 10px;
}
.gender-label {
    display: inline;
}
.form-container {
    max-width: 600px;
    margin: auto;
    border: 1px solid #ccc;
    padding: 20px;
    border-radius: 5px;
}
h2 {
    text-align: center;
}
input[type="submit"] {
    margin-top: 20px;
    padding: 10px 15px;
}
.thank-you {
    display: none;
```

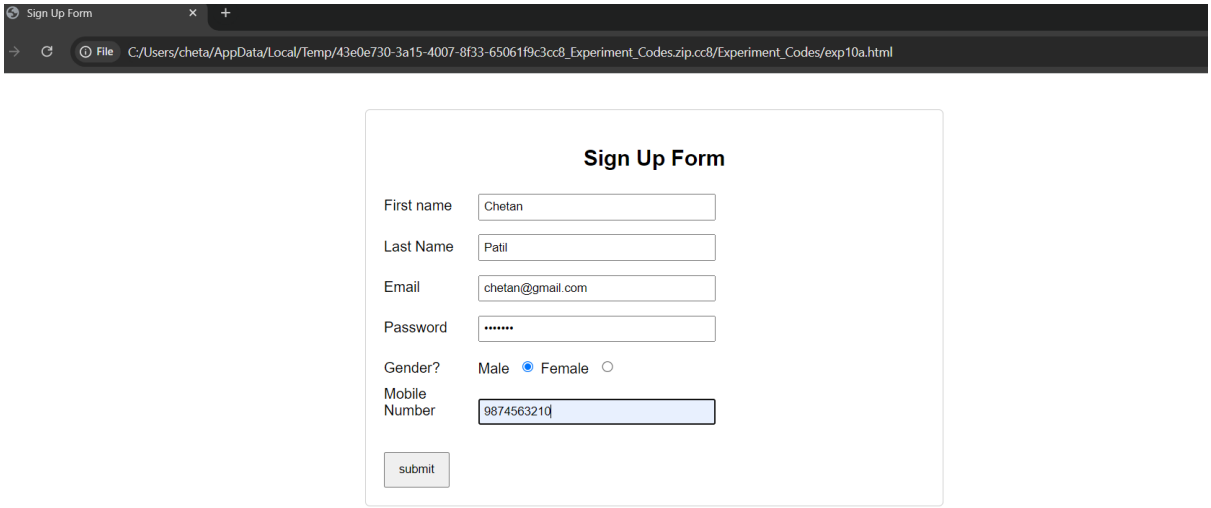
```
            font-size: 20px;
            color: green;
            text-align: center;
            margin-top: 20px;
        }
    </style>
</head>
<body>

    <div class="form-container">
        <h2>Sign Up Form</h2>
        <form name="myForm" onsubmit="return validate()">
            <label for="fname">First name</label>
            <input type="text" id="fname" name="fname"
placeholder="Enter First Name"><br>

            <label for="lname">Last Name</label>
            <input type="text" id="lname" name="lname"
placeholder="Enter Last Name"><br>

            <label for="email">Email</label>
            <input type="text" id="email" name="email"
placeholder="Enter Email here"><br>

            <label for="usrpassword">Password</label>
```

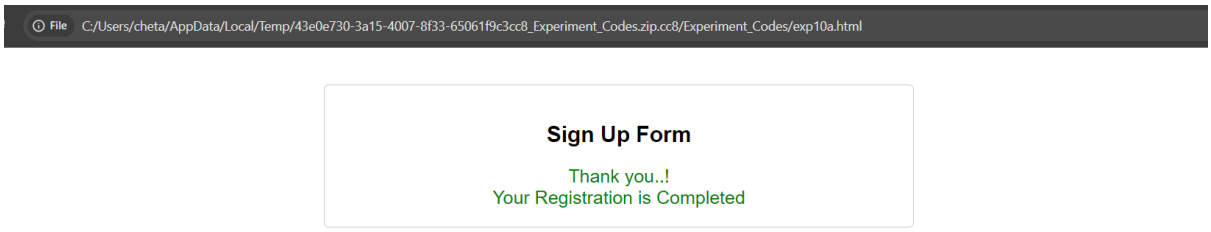
```
        <input type="password" id="usrpassword"
name="usrpassword" placeholder="Enter Password"><br>

        <label for="gender">Gender?</label>
        <span class="gender-label">Male</span>
        <input type="radio" id="male" name="gender" value="male">
        <span class="gender-label">Female</span>
        <input type="radio" id="female" name="gender"
value="female"><br>

        <label for="usrmobile">Mobile Number</label>
        <input type="text" id="usrmobile" name="usrmobile"
placeholder="Mobile Number"><br>

        <input type="submit" value="submit">
    </form>

    <!-- Hidden Thank You Message -->
    <div class="thank-you" id="thankYouMessage">
        Thank you..!<br>
        Your Registration is Completed
    </div>
  </div>

  <script>
```

```
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 characters");
        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;
        }

        // If validation passes, display thank you message
        document.querySelector('.form-container form').style.display = 'none';  // Hide the form
        document.getElementById('thankYouMessage').style.display = 'block';  // Show thank you message

        return false;  // Prevent form submission
    }
  </script>

</body>
</html>
```

Output:


Sign Up Form
File
C:/Users/cheta/AppData/Local/Temp/43e0e730-3a15-4007-8f33-65061f9c3cc8_Experiment_Codes.zip.cc8/Experiment_Codes/exp10a.html
Sign Up Form
First name
Chetan
Last Name
Patil
Email
chetan@gmail.com
Password
Gender?
Male
Female
Mobile Number
9874563210
submit


File
C:/Users/cheta/AppData/Local/Temp/43e0e730-3a15-4007-8f33-65061f9c3cc8_Experiment_Codes.zip.cc8/Experiment_Codes/exp10a.html
Sign Up Form
Thank you..!
Your Registration is Completed