1.Description:

This program calculates the factorial of a given number using a JavaScript function.  
It prompts the user to enter a number, then uses a for loop inside a function named factorial() to multiply numbers from 1 to the entered value.

Program:

<!DOCTYPE html>

<html>

<head>

<title>Factorial using Function</title>

</head>

<body>

<h2>Find Factorial of a Number</h2>

<script>

// Function to calculate factorial

function factorial(num) {

let fact = 1;

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

fact \*= i;

}

return fact;

}

// Taking input from user

let number = parseInt(prompt("Enter a number:"));

// Calling the function and displaying result

let result = factorial(number);

document.write("Factorial of " + number + " is " + result);

</script>

</body>

</html>

2.Description: This program generates and displays the Fibonacci series up to a given number using a JavaScript function.  
It defines a function fibonacciSeries(n) that starts with two initial numbers, 0 and 1, and continuously adds them to form the next term until the value exceeds the given number.

Program:

<!DOCTYPE html>

<html>

<head>

<title>Fibonacci Series using Function</title>

</head>

<body>

<h2>Fibonacci Series up to Given Number</h2>

<script>

// Function to display Fibonacci series up to n

function fibonacciSeries(n) {

let a = 0, b = 1, next;

document.write("Fibonacci Series up to " + n + " :<br>");

document.write(a + " " + b + " ");

next = a + b;

while (next <= n) {

document.write(next + " ");

a = b;

b = next;

next = a + b;

}

}

// Taking input from user

let num = parseInt(prompt("Enter a number:"));

// Calling the function

fibonacciSeries(num);

</script>

</body>

</html>

3.Description:

This program allows the user to calculate either the **factorial** of a number or the **Fibonacci series** up to a given number using JavaScript functions.  
It takes input from the user through a text box and performs the selected operation when the respective button is clicked.  
The factorial is computed using a for loop that multiplies numbers sequentially, while the Fibonacci series is generated by adding the previous two numbers in a loop.

Program:

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

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

<title>Factorial & Fibonacci Calculator</title>

<style>

body {

font-family: Arial, sans-serif;

background: linear-gradient(to right, #74ebd5, #ACB6E5);

height: 100vh;

display: flex;

align-items: center;

justify-content: center;

}

.container {

background-color: white;

padding: 30px 40px;

border-radius: 15px;

box-shadow: 0 5px 15px rgba(0,0,0,0.2);

text-align: center;

width: 350px;

}

h2 {

color: #333;

}

input {

width: 80%;

padding: 10px;

margin: 15px 0;

border-radius: 8px;

border: 1px solid #ccc;

font-size: 16px;

}

button {

margin: 8px;

padding: 10px 20px;

font-size: 16px;

border: none;

border-radius: 8px;

cursor: pointer;

background-color: #4CAF50;

color: white;

transition: 0.3s;

}

button:hover {

background-color: #45a049;

}

#result {

margin-top: 20px;

font-weight: bold;

font-size: 18px;

color: #333;

}

</style>

</head>

<body>

<div class="container">

<h2>Factorial & Fibonacci Calculator</h2>

<input type="number" id="numberInput" placeholder="Enter a number">

<div>

<button onclick="calculateFactorial()">Factorial</button>

<button onclick="calculateFibonacci()">Fibonacci</button>

</div>

<p id="result"></p>

</div>

<script>

// Function to calculate factorial

function calculateFactorial() {

let n = parseInt(document.getElementById("numberInput").value);

if (isNaN(n) || n < 0) {

document.getElementById("result").innerText = "Please enter a valid non-negative number.";

return;

}

let fact = 1;

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

fact \*= i;

}

document.getElementById("result").innerText = `Factorial of ${n} = ${fact}`;

}

// Function to calculate Fibonacci series

function calculateFibonacci() {

let n = parseInt(document.getElementById("numberInput").value);

if (isNaN(n) || n <= 0) {

document.getElementById("result").innerText = "Please enter a valid positive number.";

return;

}

let fib = [];

for (let i = 0; i < n; i++) {

if (i === 0) fib.push(0);

else if (i === 1) fib.push(1);

else fib.push(fib[i - 1] + fib[i - 2]);

}

let result = fib.join(", ");

document.getElementById("result").innerText = `Fibonacci series (${n} terms): ${result}`;

}

</script>

</body>

</html>

4.Description:

This program creates a **Contact Us form** using HTML and JavaScript with input fields for **Name, Email, Password, Phone, and Message**.  
The JavaScript function validation() checks whether all fields are filled and ensures that the data entered is valid — such as minimum name and password length, correct email format, and a 10-digit phone number.  
If any field is invalid, an alert message is shown to the user; otherwise, a success message appears and the form is submitted successfully.

Program:

<!DOCTYPE html>

<html>

<head>

<title>Contact Us Page</title>

<script type="text/javascript">

// Validation for fields

function validation() {

var nm = document.getElementById("name\_id").value.trim();

var em = document.getElementById("email\_id").value.trim();

var pw = document.getElementById("password\_id").value.trim();

var ph = document.getElementById("phone\_id").value.trim();

// Check all fields

if (nm === "" || em === "" || pw === "" || ph === "") {

alert("Please fill all fields.");

return false;

}

// Name validation

if (nm.length < 4) {

alert("Name must be at least 4 characters long.");

return false;

}

// Email validation

var emailPattern = /^[a-zA-Z0-9.\_%+-]+@[a-zA-Z.-]+\.[a-zA-Z]{2,}$/;

if (!emailPattern.test(em)) {

alert("Please enter a valid email address.");

return false;

}

// Password validation

if (pw.length < 6) {

alert("Password must be at least 6 characters long.");

return false;

}

// Phone number validation

var phonePattern = /^[0-9]{10}$/;

if (!phonePattern.test(ph)) {

alert("Phone number must be 10 digits only.");

return false;

}

alert("Form submitted successfully!");

return true;

}

</script>

</head>

<body>

<form action="login\_app.php" method="POST" onsubmit="return validation();">

<table align="center" cellpadding="8" border="0">

<tr>

<td colspan="2" align="center"><h2>Contact Us</h2></td>

</tr>

<tr>

<td><label for="name\_id">Name:</label></td>

<td><input type="text" name="name" id="name\_id" /></td>

</tr>

<tr>

<td><label for="email\_id">Email:</label></td>

<td><input type="text" name="email" id="email\_id" /></td>

</tr>

<tr>

<td><label for="password\_id">Password:</label></td>

<td><input type="password" name="password" id="password\_id" /></td>

</tr>

<tr>

<td><label for="phone\_id">Phone:</label></td>

<td><input type="text" name="phone" id="phone\_id" /></td>

</tr>

<tr>

<td><label for="message\_id">message:</label></td>

<td><input type="text" name="message" id="message\_id" /></td>

</tr>

<tr>

<td></td>

<td>

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

<input type="reset" value="CLEAR" />

</td>

</tr>

</table>

</form>

</body>

</html>