1 st program – Form Validation

```html
<!DOCTYPE html>

<html>

<head>

    <title>Form Validation</title>

</head>

<body>


<h3 style="text-align:center;">Validation Form</h3>


<form id="myForm" style="width:25%; margin:0 auto; border:solid orange; margin-top:3%;
padding:20px;">


    <label>Name:</label>

    <input type="text" id="name" required><br><br>


    <label>Email:</label>

    <input type="text" id="email"><br><br>


    <label>Mobile No:</label>

    <input type="text" id="mobile"><br><br>


    <label>Gender:</label>

    <input type="radio" name="gender" value="male"> Male

    <input type="radio" name="gender" value="female"> Female

    <br><br>
```

```html
<label>Hobbies:</label><br>

<input type="checkbox" name="hobby" value="reading"> Reading<br>

<input type="checkbox" name="hobby" value="gaming"> Gaming<br>

<input type="checkbox" name="hobby" value="traveling"> Traveling

<br><br>


<input type="button" value="Submit" onclick="validateForm()">


</form>


<script>
function validateForm()
{
    var name = document.getElementById("name").value;

    var email = document.getElementById("email").value;

    var mobile = document.getElementById("mobile").value;


    if (name === "" || email === "" || mobile === "")
    {
        alert("Please fill in all required fields");

        return;
    }


    var emailPattern = /^[a-zA-Z0-9]+@[a-zA-Z]+\.[a-z]{2,3}$/;

    var mobilePattern = /^[7-9][0-9]{9}$/;
```

```javascript
      if (!email.match(emailPattern))

      {

         alert("Invalid email format");

         return;

      }


      if (!mobile.match(mobilePattern))

      {

         alert("Mobile number must be 10 digits");

         return;

      }


      alert("Form submitted");

   }
</script>


</body>

</html>
```

2nd program – Evaluate the expression and result

```html
<!DOCTYPE html>

<html>

<head>

   <title>Math Expression Evaluator</title>

</head>

<body>
```

```html
<h1>Math Expression Evaluator</h1>

<form id="calculator-form">

   <input type="text" id="expression" placeholder="Enter a mathematical expression" required>

   <br><br>

   <button type="button" onclick="calculate()">Calculate</button>

</form>


<p>

   Result: <span id="result">---</span>

</p>


<script>

function calculate()

{

   const expression = document.getElementById("expression").value;


   try

   {

      const result = eval(expression);

      document.getElementById("result").textContent = result;

   }

   catch (error)

   {

      document.getElementById("result").textContent = "Error";
```

```
    }

}

</script>


</body>

</html>
```

3rd Program – layer and basic animation

```
<!DOCTYPE html>

<html>

<head>

  <title>Dynamic Effects and Animations</title>


  <style>

    .layer {

       position: absolute;

       width: 100px;

       height: 100px;

       background-color: pink;

       border: 2px solid red;

       transition: left 0.5s ease, top 0.5s ease;

    }


    #layer1 { top: 100px; left: 100px; }

    #layer2 { top: 100px; left: 250px; }

    #layer3 { top: 100px; left: 400px; }

  </style>
```

```
</head>


<body>


<h1>Dynamic Effects and Animations</h1>

<h3>Layers with Basic Animation</h3>


<div class="layer" id="layer1" onmouseover="moveLayer(this)"></div>

<div class="layer" id="layer2" onmouseover="moveLayer(this)"></div>

<div class="layer" id="layer3" onmouseover="moveLayer(this)"></div>


<script>

function moveLayer(layer)

{

    let x = Math.random() * (window.innerWidth - 120);

    let y = Math.random() * (window.innerHeight - 120);


    layer.style.left = x + "px";

    layer.style.top = y + "px";

}

</script>


</body>

</html>
```

4th program – sum of n natural number

```
<!DOCTYPE html>
```

```html
<html>
<head>
    <title>Sum of Natural Numbers</title>

    <script>
        function sumOfNaturalNumbers(n)
        {
            let sum = 0;
            for (let i = 1; i <= n; i++)
            {
                sum += i;
            }
            return sum;
        }

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

            if (!isNaN(n) && n > 0)
            {
                let sum = sumOfNaturalNumbers(n);
                alert("Sum of first " + n + " natural numbers is: " + sum);
            }
            else
```

```
            {

                alert("Please enter a positive integer.");

            }

        }

    </script>

</head>


<body>


<h2>Sum of N Natural Numbers</h2>


<label for="numberInput">Enter a number:</label>

<input type="number" id="numberInput" min="1">

<br><br>


<button onclick="calculateSum()">Calculate Sum</button>


</body>

</html>
```

5th program – Date month and year

```
<!DOCTYPE html>

<html lang="en">

<head>

    <title>Current Date in Words</title>

</head>
```

```html
<body>

<h1>Today's Date</h1>
<p id="dateInWords"></p>

<script>
  const days = [
    "Sunday", "Monday", "Tuesday",
    "Wednesday", "Thursday", "Friday", "Saturday"
  ];

  const months = [
    "January", "February", "March", "April",
    "May", "June", "July", "August",
    "September", "October", "November", "December"
  ];

  let d = new Date();

  let dateString =
    days[d.getDay()] + ", " +
    months[d.getMonth()] + " " +
    d.getDate() + ", " +
    d.getFullYear();

  document.getElementById("dateInWords").textContent = dateString;
```
</body>

```
</script>
```

```
</body>
```

```
</html>
```

6 th program – Student information

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
    <title>Student Information</title>
```

```
</head>
```

```
<body>
```

```
<h1>Student Information Form</h1>
```

```
<form id="student-form">
```

```
    <label for="name">Student Name:</label>
```

```
    <input type="text" id="name" required><br><br>
```

```
    <label for="math">Math Score:</label>
```

```
    <input type="number" id="math" required><br><br>
```

```
    <label for="science">Science Score:</label>
```

```
    <input type="number" id="science" required><br><br>
```

```html
<label for="history">History Score:</label>

<input type="number" id="history" required><br><br>


<button type="button" onclick="calculateResult()">Calculate</button>

<br><br>


<label for="total">Total Score:</label>

<input type="text" id="total" readonly><br><br>


<label for="average">Average Score:</label>

<input type="text" id="average" readonly><br><br>


<label for="result">Result:</label>

<input type="text" id="result" readonly><br><br>


<label for="grade">Grade:</label>

<input type="text" id="grade" readonly><br><br>

</form>


<script>

function calculateResult()

{

    const mathScore = parseInt(document.getElementById("math").value);

    const scienceScore = parseInt(document.getElementById("science").value);

    const historyScore = parseInt(document.getElementById("history").value);
```

```javascript
const totalScore = mathScore + scienceScore + historyScore;

const averageScore = totalScore / 3;


document.getElementById("total").value = totalScore;

document.getElementById("average").value = averageScore;


if (mathScore >= 40 && scienceScore >= 40 && historyScore >= 40)

{

    document.getElementById("result").value = "Pass";


    if (averageScore >= 70)

    {

        document.getElementById("grade").value = "A";

    }

    else if (averageScore >= 60)

    {

        document.getElementById("grade").value = "B";

    }

    else if (averageScore >= 50)

    {

        document.getElementById("grade").value = "C";

    }

    else

    {

        document.getElementById("grade").value = "D";
```

```
        }

    }

    else

    {

        document.getElementById("result").value = "Fail";

        document.getElementById("grade").value = "F";

    }

}

</script>


</body>

</html>
```

7 th program – DA,HRA,PPF,TAX,Grosspay,

```
<!DOCTYPE html>

<html>

<head>

    <title>Employee Information</title>

    <script>

        function calculateSalary() {

            const basicSalary = parseFloat(document.getElementById("basic").value);

            const daPercentage = parseFloat(document.getElementById("daPercentage").value);

            const hraPercentage = parseFloat(document.getElementById("hraPercentage").value);

            const pfPercentage = parseFloat(document.getElementById("pfPercentage").value);

            const taxPercentage = parseFloat(document.getElementById("taxPercentage").value);


            const da = (daPercentage / 100) * basicSalary;
```

```javascript
        const hra = (hraPercentage / 100) * basicSalary;

        const pf = (pfPercentage / 100) * basicSalary;

        const tax = (taxPercentage / 100) * basicSalary;


        const grossPay = basicSalary + da + hra;

        const deduction = pf + tax;

        const netPay = grossPay - deduction;


        document.getElementById("da").value = da.toFixed(2);

        document.getElementById("hra").value = hra.toFixed(2);

        document.getElementById("pf").value = pf.toFixed(2);

        document.getElementById("tax").value = tax.toFixed(2);

        document.getElementById("grossPay").value = grossPay.toFixed(2);

        document.getElementById("deduction").value = deduction.toFixed(2);

        document.getElementById("netPay").value = netPay.toFixed(2);
    }
  </script>
</head>


<body>
  <h1>Employee Information Form</h1>


  <form id="employee-form">
    <label for="name">Employee Name:</label>
    <input type="text" id="name" required><br><br>
```

```html
<label for="basic">Basic Salary:</label>
<input type="number" id="basic" required><br><br>


<label for="daPercentage">DA Percentage (%):</label>
<input type="number" id="daPercentage" required><br><br>


<label for="hraPercentage">HRA Percentage (%):</label>
<input type="number" id="hraPercentage" required><br><br>


<label for="pfPercentage">PF Percentage (%):</label>
<input type="number" id="pfPercentage" required><br><br>


<label for="taxPercentage">Income Tax Percentage (%):</label>
<input type="number" id="taxPercentage" required><br><br>


<button type="button" onclick="calculateSalary()">Calculate</button>
<br><br>


<label for="da">Dearness Allowance (DA):</label>
<input type="text" id="da" readonly><br><br>


<label for="hra">House Rent Allowance (HRA):</label>
<input type="text" id="hra" readonly><br><br>


<label for="pf">Provident Fund (PF):</label>
<input type="text" id="pf" readonly><br><br>
```

```html
    <label for="tax">Income Tax (TAX):</label>
    <input type="text" id="tax" readonly><br><br>


    <label for="grossPay">Gross Pay:</label>
    <input type="text" id="grossPay" readonly><br><br>


    <label for="deduction">Deduction:</label>
    <input type="text" id="deduction" readonly><br><br>


    <label for="netPay">Net Pay:</label>
    <input type="text" id="netPay" readonly><br><br>
  </form>
</body>
</html>
```