<h2 style="text-align:center">1. Write an HTML document to display a simple calculator.</h2>

Source Code:

```html
<!DOCTYPE html>
<html lang="en">
<head>

<title>Simple Calculator</title>
<style>
   body {
      font-family: Arial, sans-serif;
      text-align: center;
      margin-top: 50px;
      background-color: #f0f0f0;
   }
   .calculator {
      width: 500px;
      margin: 0 auto;
      border: 1px solid #ccc;
      padding: 20px;
      background-color: #fff;
      border-radius: 8px;
      box-shadow: 0 0 10px rgba(0,0,0,0.1);
   }
   .calculator input {
      width: 100%;
      margin-bottom: 10px;
      padding: 10px;
      box-sizing: border-box;
      border: 1px solid #ccc;
      border-radius: 4px;
      font-size: 18px;
      text-align: right;
   }
   .calculator button {
      width: 70px;
      padding: 15px;
      margin: 5px;
      border: none;
      border-radius: 4px;
      cursor: pointer;
      font-size: 18px;
      background-color: #f0f0f0;
   }

</style>
</head>
<body>
<div class="calculator">
   <input type="text" id="display" readonly>
   <button>7</button>
   <button>8</button>
   <button>9</button>
```
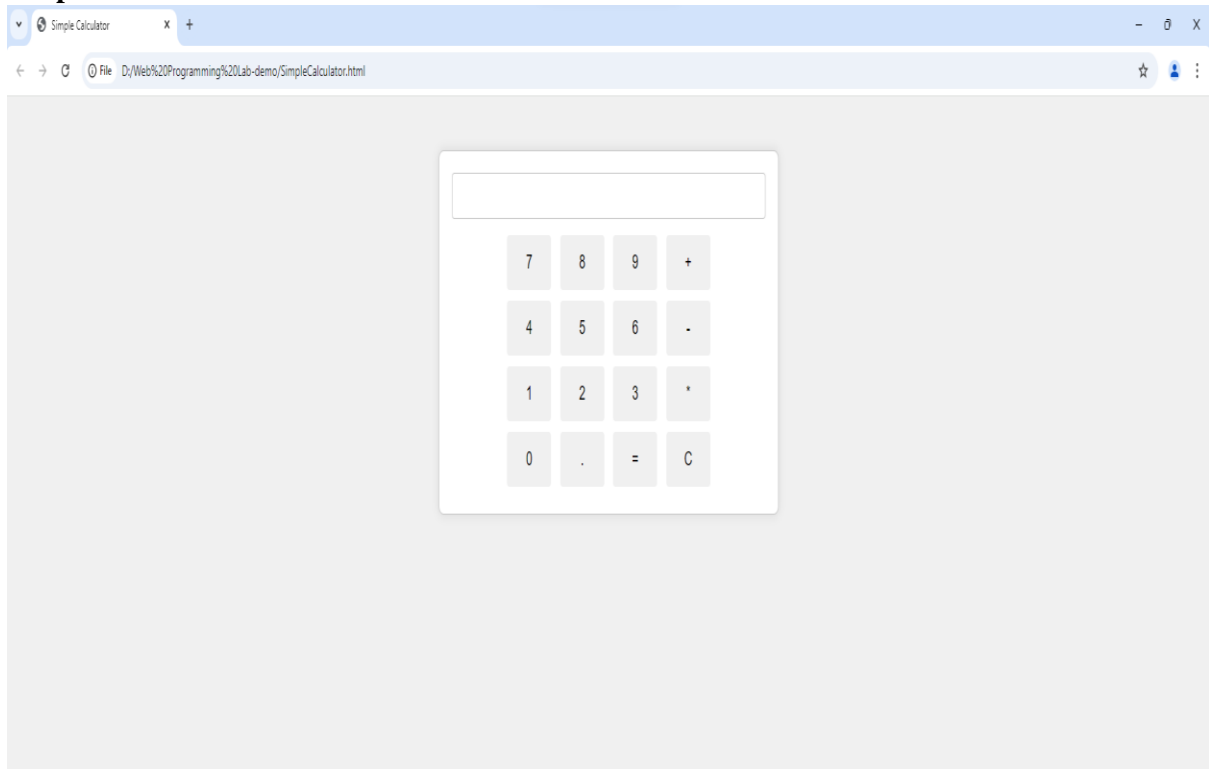
```html
            <button class="operator">+</button>
            <br>
            <button>4</button>
            <button>5</button>
            <button>6</button>
            <button class="operator">-</button>
            <br>
            <button>1</button>
            <button>2</button>
            <button>3</button>
            <button class="operator">*</button>
            <br>
            <button>0</button>
            <button>.</button>
            <button class="equals">=</button>
            <button class="clear">C</button>
        </div>
    </body>
</html>
```

Output:

2. Write an HTML document to create college application form.

Source Code:

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>College Application Form</title>
    <style>
      body {
         font-family: Arial, sans-serif;
         margin: 20px;
         padding: 20px;
      }
      label {
         display: block;
         margin-bottom: 5px;
         font-weight: bold;
      }
      input[type=text], input[type=email], textarea, select {
         width: 100%;
         padding: 8px;
         margin-bottom: 10px;
         box-sizing: border-box;
         border: 1px solid #ccc;
         border-radius: 4px;
      }
      input[type=submit] {
         background-color: #4CAF50;
         color: white;
         padding: 10px 15px;
         border: none;
         border-radius: 4px;
         cursor: pointer;
         font-size: 16px;
      }
      input[type=submit]:hover {
         background-color: #45a049;
      }
    </style>
</head>
<body>
    <h2>College Application Form</h2>
      <label for="fullname">Full Name:</label>
      <input type="text" id="fullname" name="fullname" required>

      <label for="email">Email:</label>
      <input type="email" id="email" name="email" required>
```

```html
<label for="phone">Phone Number:</label>
    <input type="text" id="phone" name="phone">

    <label for="dob">Date of Birth:</label>
    <input type="date" id="dob" name="dob" required>

    <label for="gender">Gender:</label>
    <select id="gender" name="gender" required>
       <option value="">Select Gender</option>
       <option value="male">Male</option>
       <option value="female">Female</option>
       <option value="other">Other</option>
    </select>

    <label for="address">Address:</label>
    <textarea id="address" name="address" rows="4" required></textarea>

    <label for="highschool">High School Name:</label>
    <input type="text" id="highschool" name="highschool" required>

    <label for="gpa">High School GPA:</label>
    <input type="text" id="gpa" name="gpa" required>

    <label for="major">Intended Major:</label>
    <input type="text" id="major" name="major">

    <label for="essay">Personal Statement:</label>
    <textarea id="essay" name="essay" rows="6" required></textarea>

    <input type="submit" value="Submit Application">
  </form>
</body>
</html>
```

Output:

3. Write a CSS program to link external style sheet.

Source Code:
```html
<!-- index.html -->
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>External CSS Example</title>
    <!-- Linking external CSS file -->
    <link rel="stylesheet" href="D:\Web Programming Lab-demo\styles.css">
</head>
<body>
    <div class="container">
        <h1>Welcome to My Website</h1>
        <p>This is a paragraph of text. Here's another sentence.</p>
    </div>
</body>
</html>
```
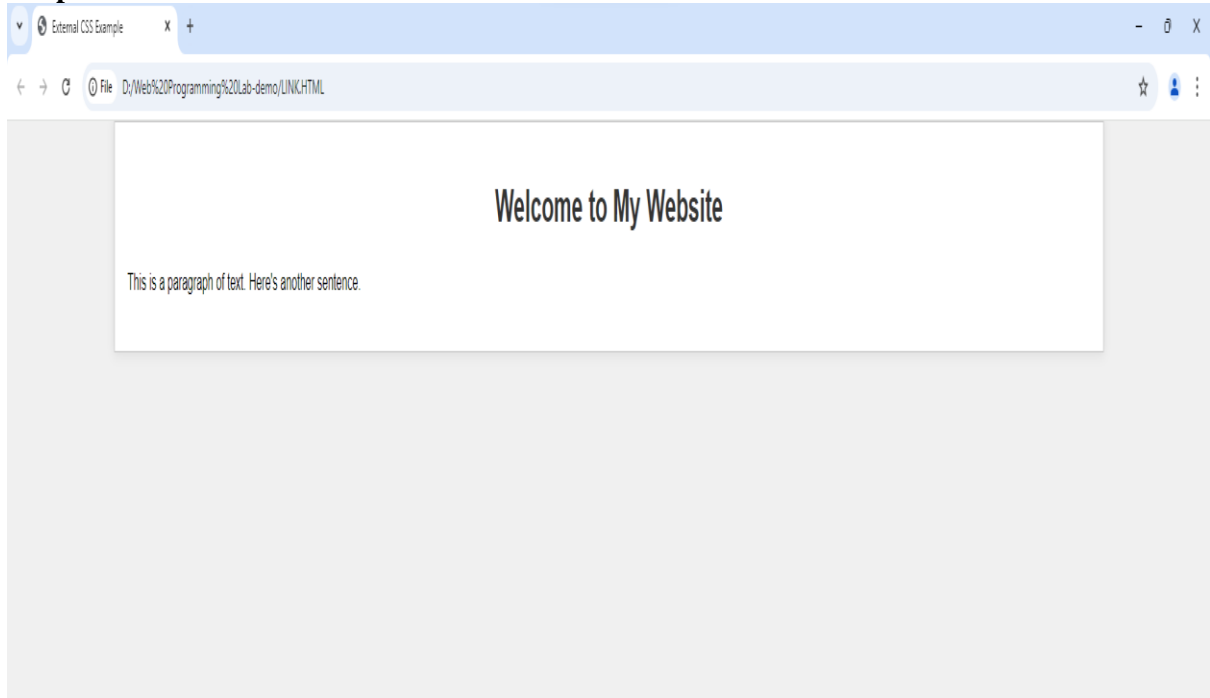
```css
/* styles.css */
body {
    font-family: Arial, sans-serif;
    background-color: #f0f0f0;
    margin: 0;
    padding: 0;
}

h1 {
    color: #333;
    text-align: center;
}

.container {
    width: 80%;
    margin: 0 auto;
    padding: 20px;
    background-color: #fff;
    border: 1px solid #ccc;
    box-shadow: 0 0 10px rgba(0,0,0,0.1);
}

p {
    line-height: 1.6;
}
```

Output:

4. Using CSS and HTML, make a webpage that has two columns. Each column should use half of the width of the page. The left half should have a light gray background and the right half should have a light green background. The left half should have a list of the 5-best selling books in Amazon's kindle store, and the right should have a list of your five favourite celebrities or athelets.

Source Code:

```
<!DOCTYPE html>
<html lang="en">
<head>
 <meta charset="UTF-8">
 <meta name="viewport" content="width=device-width, initial-scale=1.0">
 <link rel="stylesheet" href="columns.css">
 <title>Two Column Page</title>
</head>
<body>
 <div class="container">
 <div class="left-column">
 <h2>Top 5 Best Selling Books on Kindle</h2>
 <ul>
 <li>The Silent Patient by Alex Michaelides</li>
 <li>Where the Crawdads Sing by Delia Owens</li>
 <li>The Nightingale by Kristin Hannah</li>
 <li>Becoming by Michelle Obama</li>
 <li>The Tattooist of Auschwitz by Heather Morris</li>
 </ul>
 </div>
 <div class="right-column">
 <h2>My 5 Favorite Celebrities/Athletes</h2>
 <ul>
 <li>MSD</li>
 <li>Kamaraj</li>
 <li>MGR</li>
 <li>Rohit Sharma</li>
 <li>Virat Kohli</li>
 </ul>
 </div>
 </div>
</body>
</html>

/* columns.css */

body
{
font-family: Arial, sans-serif;
 margin: 0;
 padding: 0;
font-color:grey;
```

```css
font-size:12px;
}

.container {
 display: flex;
 width: 100%;
}

.left-column, .right-column {
 width: 50%;
 padding: 20px;
 box-sizing: border-box;
}

.left-column {
 background-color: lightgray;
}

.right-column {
 background-color: lightgreen;
}

h2 {
 text-align: center;
}

ul {
 list-style-type: none;
 padding: 0;
}

li {
 margin-bottom: 10px;
}
```

Output:

5. Write a program to illustrate CSS border style properties.

Source Code:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>CSS Border Style Properties</title>
    <link rel="stylesheet" href="borders.css">
</head>
<body>
    <div class="box solid-border">Solid Border</div>
    <div class="box dotted-border">Dotted Border</div>
    <div class="box dashed-border">Dashed Border</div>
    <div class="box double-border">Double Border</div>
    <div class="box groove-border">Groove Border</div>
    <div class="box ridge-border">Ridge Border</div>
    <div class="box inset-border">Inset Border</div>
    <div class="box outset-border">Outset Border</div>
</body>
</html>

/* borders.css */

body {
    font-family: Arial, sans-serif;
    display: flex;
    justify-content: center;
    align-items: center;
    height: 100vh;
    margin: 0;
    background-color: #f0f0f0;
}

.box {
    width: 200px;
    height: 100px;
    margin: 10px;
    padding: 10px;
    text-align: center;
    font-size: 16px;
    line-height: 1.5;
}

.solid-border {
    border: 2px solid #333; /* Solid border */
}

.dotted-border {
```

```
    border: 2px dotted #007bff; /* Dotted border */
}

.dashed-border {
    border: 3px dashed #28a745; /* Dashed border */
}

.double-border {
    border: 3px double #dc3545; /* Double border */
}

.groove-border {
    border: 4px groove #ffc107; /* Groove border */
}

.ridge-border {
    border: 4px ridge #17a2b8; /* Ridge border */
}

.inset-border {
    border: 4px inset #6c757d; /* Inset border */
}

.outset-border {
    border: 4px outset #6610f2; /* Outset border */
}
```
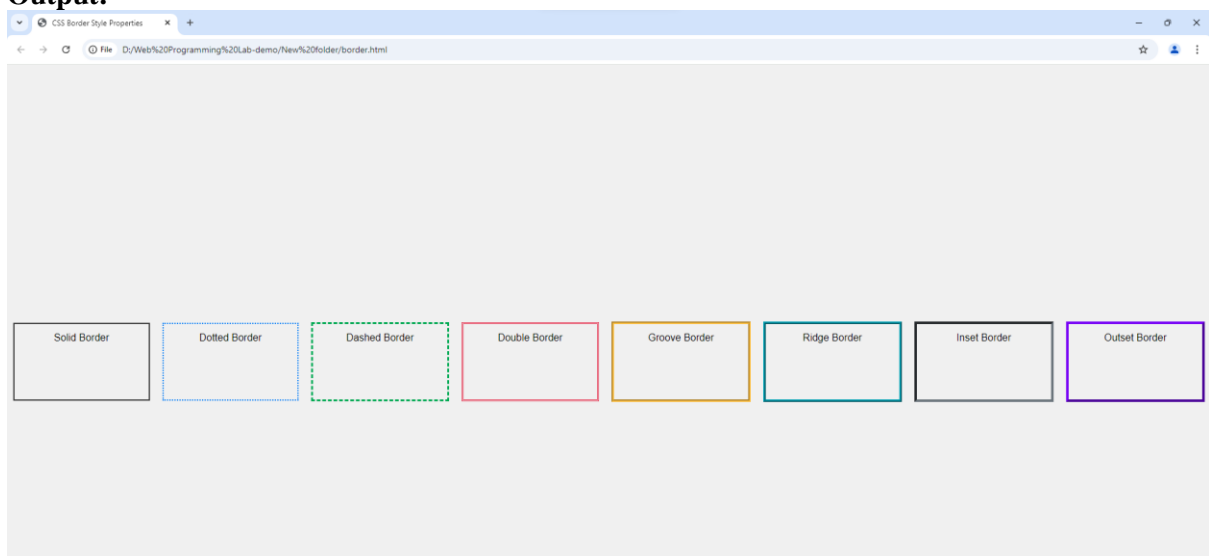
Output:

6. Write a JavaScript code to illustrate the use of arithmetic operators

Source Code:

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Arithmetic Operators Example</title>
    <style>
        body {
            font-family: Arial, sans-serif;
            margin: 20px;
        }
        .result {
            margin-top: 10px;
        }
    </style>
</head>
<body>

    <h1>Arithmetic Operators Example</h1>

    <script>
        // Define two numbers
        let num1 = 10;
        let num2 = 5;

        // Perform arithmetic operations
        let sum = num1 + num2;          // Addition
        let difference = num1 - num2;     // Subtraction
        let product = num1 * num2;        // Multiplication
        let quotient = num1 / num2;       // Division
        let remainder = num1 % num2;      // Modulus

        // Display results on the webpage
        document.write("<div class='result'>Number 1: " + num1 + "</div>");
        document.write("<div class='result'>Number 2: " + num2 + "</div>");
        document.write("<div class='result'>Addition: " + sum + "</div>");
        document.write("<div class='result'>Subtraction: " + difference + "</div>");
        document.write("<div class='result'>Multiplication: " + product + "</div>");
        document.write("<div class='result'>Division: " + quotient + "</div>");
        document.write("<div class='result'>Modulus: " + remainder + "</div>");

        // Display results in the console
        console.log("Number 1: " + num1);
        console.log("Number 2: " + num2);
        console.log("Addition: " + sum);          // 10 + 5 = 15
        console.log("Subtraction: " + difference);  // 10 - 5 = 5
        console.log("Multiplication: " + product);  // 10 * 5 = 50
```

```
      console.log("Division: " + quotient);        // 10 / 5 = 2
      console.log("Modulus: " + remainder);        // 10 % 5 = 0
    </script>


</body>
</html>
```

Output:

7. Write a JavaScript code to guess a random number.

Source Code:

```html
<!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <title>Guess the Number</title>
   <style>
      body {
         font-family: Arial, sans-serif;
         display: flex;
         justify-content: center;
         align-items: center;
         height: 100vh;
         background-color: #f4f4f4;
      }
      #game {
         text-align: center;
      }
   </style>
</head>
<body>
   <div id="game">
      <h1>Guess the Number</h1>
      <p>Guess a number between 1 and 10:</p>
      <input type="number" id="guessInput" min="1" max="10">
      <button id="submitGuess">Submit Guess</button>
      <p id="result"></p>
   </div>
   <script src="script.js"></script>
</body>
</html>
```

```javascript
//script.js
document.addEventListener('DOMContentLoaded', () => {

   const random = Math.floor(Math.random() * 10) + 1;



   const guessInput = document.getElementById('guessInput');
   const submitGuess = document.getElementById('submitGuess');
   const result = document.getElementById('result');

    function handleGuess() {
      const userGuess = parseInt(guessInput.value);
```

```
if (userGuess === random) {
    result.textContent = 'Congratulations! You guessed the correct number.';
    result.style.color = 'green';
} else if (userGuess < 1 || userGuess > 10 || isNaN(userGuess)) {
    result.textContent = 'Please enter a number between 1 and 10.';
    result.style.color = 'red';
} else {
    result.textContent = 'Try again!';
    result.style.color = 'red';
}
}

    submitGuess.addEventListener('click', handleGuess);
});
```

Output:
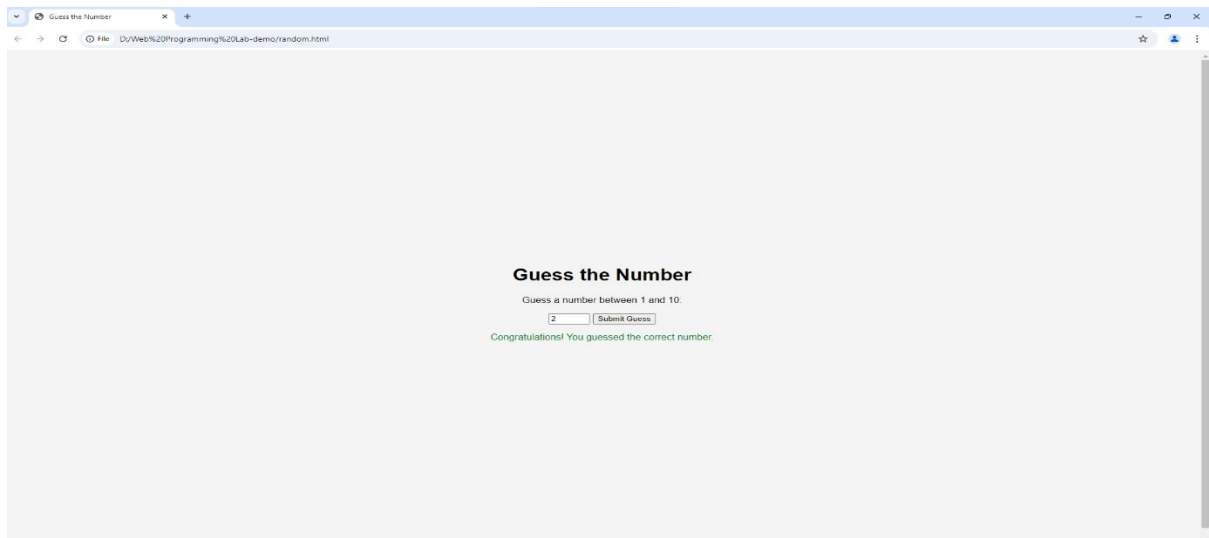
8. Write a JavaScript code to check if an array contains a specified value.

Source Code:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Array Value Check</title>
    <style>
        body {
            font-family: Arial, sans-serif;
            margin: 20px;
        }
    </style>
</head>
<body>
    <h1>Check if Array Contains a Specified Value</h1>
    <p id="result"></p>

    <script>
        // Function to check if an array contains a specified value
        function containsValue(array, value) {
            return array.includes(value);
        }

        // Example array and value to check
        const myArray = [1, 2, 3, 4, 5];
        const valueToCheck = 6;

        // Check if the value is in the array and display the result
        const resultElement = document.getElementById('result');
        if (containsValue(myArray, valueToCheck)) {
            resultElement.textContent = `${valueToCheck} is in the array.`;
        } else {
            resultElement.textContent = `${valueToCheck} is not in the array.`;
        }
    </script>
</body>
</html>
```
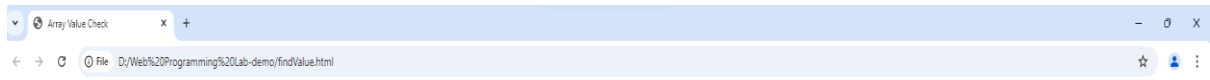
Output:

Check if Array Contains a Specified Value

6 is not in the array.

9. Write an AngularJS program using directives.

Source Code:

```html
<!DOCTYPE html>
<html lang="en" ng-app="myApp">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>AngularJS Directives Demo</title>
    <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.8.2/angular.min.js"></script>
    <script src="app.js"></script>
</head>
<body ng-controller="MainCtrl">
    <h1>AngularJS Directives Demo</h1>

    <!-- Using custom directive -->
    <my-greeting></my-greeting>

    <!-- Using built-in directive -->
    <div>
        <label for="name">Name:</label>
        <input type="text" id="name" ng-model="name">
        <p>Hello, {{name}}!</p>
    </div>
</body>
</html>
```

```javascript
// app.js
// Define the AngularJS module
var app = angular.module('myApp', []);

// Define a custom directive
app.directive('myGreeting', function() {
    return {
        restrict: 'E',
        template: '<h2>Welcome to the AngularJS Directives Demo!</h2>'
    };
});

// Define a controller
app.controller('MainCtrl', ['$scope', function($scope) {
    $scope.name = 'Computer Science Students';
}]);
```

Output:

10. Write an AngularJS program to add filters to directives.

Source Code:

```html
<!DOCTYPE html>
<html ng-app="myApp">
<head>
   <title>AngularJS Filters in Directives</title>
   <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.8.2/angular.min.js"></script>
<script src="app.js"></script>
</head>
<body ng-controller="MainController as ctrl">

   <!-- Custom Directive Usage -->
   <div>
      <h3>Custom Directive with Filters</h3>
      <my-directive></my-directive>
   </div>
</body>
</html>
```

```javascript
// app.js

var app = angular.module('myApp', []);

// Define a Controller
app.controller('MainController', function() {
   this.data = {
      text: 'Hello World!',
      number: 123456.789,
      date: new Date(),
      jsonData: { name: 'John Doe', age: 30 }
   };
});

// Define a Custom Directive
app.directive('myDirective', function() {
   return {
      restrict: 'E',
      template: `
        <div>
           <p><strong>Original Text:</strong> {{ ctrl.data.text }}</p>
           <p><strong>Uppercase Text:</strong> {{ ctrl.data.text | uppercase }}</p>
           <p><strong>Formatted Number:</strong> {{ ctrl.data.number | number:2 }}</p>
           <p><strong>Short Date:</strong> {{ ctrl.data.date | date:'shortDate' }}</p>
           <p><strong>JSON Data:</strong> {{ ctrl.data.jsonData | json }}</p>
           <p><strong>Currency Format:</strong> {{ ctrl.data.number | currency:'$' }}</p>
        </div>
      `,
      controller: 'MainController',
      controllerAs: 'ctrl'
```

```
      };
  });
```

Output:

Custom Directive with Filters

Original Text: Hello World!

Uppercase Text: HELLO WORLD!

Formatted Number: 123,456.79

Short Date: 9/30/24

JSON Data: { "name": "John Doe", "age": 30 }

Currency Format: $123,456.79

11. Write an AngularJS program to add modules and controllers in file.

Source Code:

```
<!DOCTYPE html>
<html ng-app="myApp">
<head>
    <title>AngularJS Filters in Directives</title>
    <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.8.2/angular.min.js"></script>
<script src="app.js"></script>
</head>
<body ng-controller="MainController as ctrl">

    <!-- Custom Directive Usage -->
    <div>
        <h3>Custom Directive with Filters</h3>
        <my-directive></my-directive>
    </div>
</body>
</html>
```

```
// app.js
// Define the AngularJS module
var app = angular.module('myApp', []);

// Define the MainController
app.controller('MainController', ['$scope', function($scope) {
    $scope.items = []; // Initialize an empty array for items
    $scope.newItem = ''; // Model for the input field

    // Function to add an item
    $scope.addItem = function() {
        if ($scope.newItem) {
            $scope.items.push($scope.newItem); // Add new item to the array
            $scope.newItem = ''; // Clear the input field
        }
    };
}]);
```

Output:

My Items

[Add new item] [Add]

- Apple
- Blueberry
- Rasberry

12. Write an AngularJS program to create a notepad application.

Source Code:

```html
<!DOCTYPE html>
<html lang="en" ng-app="notepadApp">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Simple Notepad Application</title>
    <link rel="stylesheet" href="style.css">
    <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.8.2/angular.min.js"></script>
    <script src="app.js"></script>
</head>
<body ng-controller="NotepadController">

    <div class="container">
        <h1>Notepad</h1>
        <textarea ng-model="newNote" placeholder="Write your note here..."></textarea>
        <button ng-click="addNote()">Add Note</button>

        <ul>
            <li ng-repeat="note in notes">
                <span ng-bind="note.text"></span>
                <button ng-click="editNote(note)">Edit</button>
                <button ng-click="deleteNote(note)">Delete</button>
            </li>
        </ul>
    </div>

</body>
</html>
```

```css
//style.css
body {
    font-family: Arial, sans-serif;
    background-color: #f4f4f4;
    margin: 0;
    padding: 20px;
}

.container {
    max-width: 600px;
    margin: auto;
    background: white;
    padding: 20px;
    border-radius: 8px;
    box-shadow: 0 2px 5px rgba(0, 0, 0, 0.1);
}

h1 {
    text-align: center;
}
```
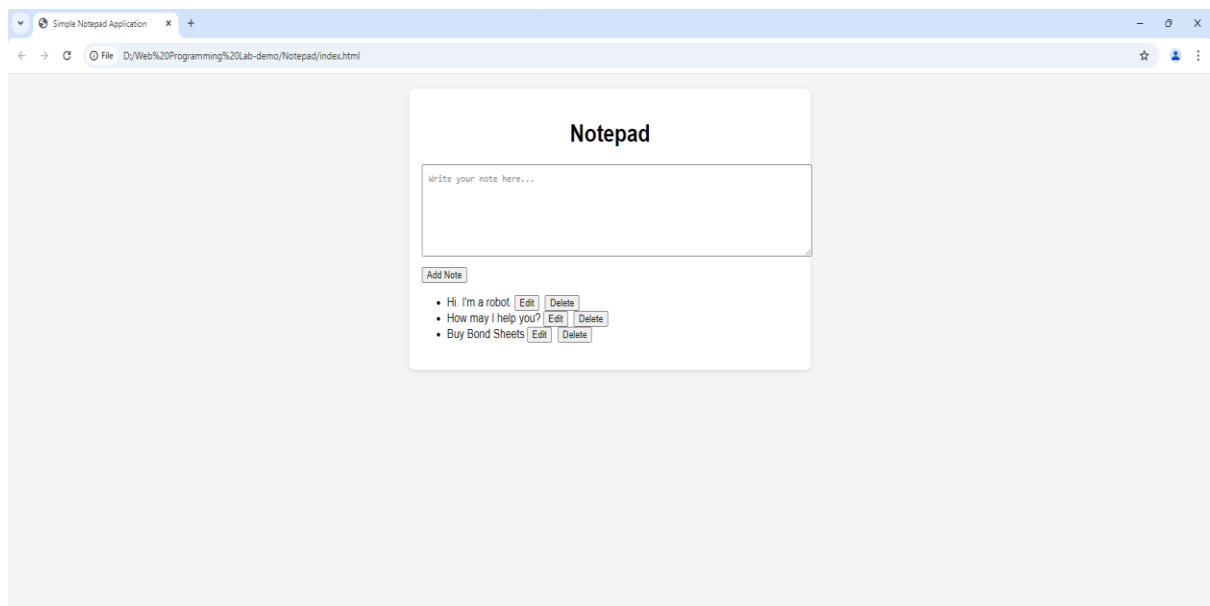
```css
textarea {
  width: 100%;
  height: 100px;
  margin-bottom: 10px;
  padding: 10px;
}

button {
  margin-right: 5px;
}
```

```javascript
// app.js
angular.module('notepadApp', []).controller('NotepadController', function($scope) {
  $scope.notes = [];
  $scope.newNote = ';

  $scope.addNote = function() {
    if ($scope.newNote) {
      $scope.notes.push({ text: $scope.newNote });
      $scope.newNote = '; // Clear the input field
    }
  };

  $scope.editNote = function(note) {
    const editedNote = prompt("Edit your note:", note.text);
    if (editedNote !== null) {
      note.text = editedNote;
    }
  };

  $scope.deleteNote = function(note) {
    const index = $scope.notes.indexOf(note);
    if (index !== -1) {
      $scope.notes.splice(index, 1);
    }
  };
});
```

Output:

13. Login Application

Source Code:

```html
<!DOCTYPE html>
<html lang="en" ng-app="loginApp">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Login Application</title>
    <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.8.2/angular.min.js"></script>
    <script src="app.js"></script>
    <style>
        body {
            font-family: Arial, sans-serif;
            display: flex;
            justify-content: center;
            align-items: center;
            height: 100vh;
            background-color: #f4f4f4;
        }
        .login-form {
            background: white;
            padding: 20px;
            border-radius: 5px;
            box-shadow: 0 0 10px rgba(0,0,0,0.1);
        }
    </style>
</head>
<body>

<div class="login-form" ng-controller="LoginController">
    <h2>Login</h2>
    <form ng-submit="login()">
        <div>
            <label for="username">Username:</label>
            <input type="text" id="username" ng-model="username" required />
        </div>
        <div>
            <label for="password">Password:</label>
            <input type="password" id="password" ng-model="password" required />
        </div>
        <button type="submit">Login</button>
        <p ng-if="errorMessage" style="color: red;">{{ errorMessage }}</p>
    </form>
</div>

</body>
</html>
```

```
// app.js
// Define the AngularJS module
var app = angular.module('loginApp', []);

// Define the LoginController
app.controller('LoginController', ['$scope', function($scope) {
  // Initialize model variables
  $scope.username = '';
  $scope.password = '';
  $scope.errorMessage = '';

  // Sample credentials for validation
  var validUsername = 'user';
  var validPassword = 'pass';

  // Login function
  $scope.login = function() {
    if ($scope.username === validUsername && $scope.password === validPassword) {
      alert('Login successful!');
      $scope.errorMessage = ''; // Clear error message if login is successful
    } else {
      $scope.errorMessage = 'Invalid username or password. Please try again.';
    }
  };
}]);
```

Output: