

# Web Technology Lab Manual (MCAL106)

**Department:** Master of Computer Applications

**Semester:** 1st

**Subject:** Web Technology

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## Experiment 1: Design an HTML Form for Displaying Information

**Question:** Design an HTML form for displaying information using interactive CSS including images, tables.

### Code

**File Name:** user\_info\_bootstrap.html

```
<!-- user_info_bootstrap.html -->
<!DOCTYPE html>
<html lang="en">
<head>
    <!-- Bootstrap CSS -->
    <link href="[https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css]" rel="stylesheet">
</head>
<body class="bg-light d-flex justify-content-center py-4">

    <div class="card shadow border-0 sticky-top" style="width: 24rem; border-top: 5px solid #007bff; position: relative; height: 18rem;">
        <div class="card-body">

            <h2 class="text-center text-dark mb-3">User Information</h2>
            
            <table class="table border-top-0 border-left-0 border-right-0 border-bottom-0" style="width: 100%; border-collapse: collapse; font-size: 0.9em; border: none; margin-top: 10px;">
                <tr>
                    <td style="padding: 5px;">Name:</td>
                    <td style="padding: 5px;">John Doe</td>
                </tr>
                <tr>
                    <td style="padding: 5px;">Age:</td>
                    <td style="padding: 5px;">30</td>
                </tr>
                <tr>
                    <td style="padding: 5px;">Gender:</td>
                    <td style="padding: 5px;">Male</td>
                </tr>
                <tr>
                    <td style="padding: 5px;">Address:</td>
                    <td style="padding: 5px;">123 Main St, Anytown, USA</td>
                </tr>
            </table>
        </div>
    </div>
</body>
</html>
```

```
>
```

```

<table class="table table-bordered align-middle">
  <thead class="table-light">
    <tr>
      <th>Field</th>
      <th>Details</th>
    </tr>
  </thead>
  <tbody>
    <tr><td>Name</td><td>John Doe</td></tr>
    <tr><td>Email</td><td>johndoe@example.com</td></tr>
    <tr><td>Phone</td><td>(123) 456-7890</td></tr>
    <tr><td>Address</td><td>1234 Elm St, Springfield</td></tr>
  </tbody>
</table>

<label class="fw-bold mb-1">Leave a Comment:</label>
<textarea class="form-control" rows="3"></textarea>

<button class="btn btn-success w-100 mt-3">Submit</button>
</div>
</div>

<!-- Bootstrap JS -->
<script src="[https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/js/bootstrap.bundle]>
```

```

</body>
</html>
```

## Output

### Experiment 2: Department Webpage

**Question:** Create a webpage with HTML describing your department with following specification.

#### 2a. Background Color & Top Link

**Specification:** Change the background color of the page. At the bottom create a link to take user to the top of the page.

**File Name:** department\_a.html

```

<!-- department_a.html -->
<!DOCTYPE html>
<html>
<head>
  <title>Department of Computer Science</title>
  <style>
    body {
      background-color: #e6f7ff; /* Light Blue Background */
      font-family: Arial, sans-serif;
      color: #333;
```

```

        padding: 20px;
    }
    .footer-link {
        margin-top: 50px;
        padding: 10px;
        text-align: center;
    }

```

</style>

</head>

<body>

<!-- Anchor for Top -->

<a id="top"></a>

<h1 style="text-align:center;">Department of Computer Science</h1>

<h2>About Us</h2>

<p>The Department of Computer Science is committed to excellence in research, teach

<h3>Our Vision</h3>

<p>We aim to be a leader in computer science education, driving innovation and cont

<h3>Courses Offered</h3>

<ul>

- <li>Introduction to Programming</li>
- <li>Data Structures and Algorithms</li>
- <li>Operating Systems</li>
- <li>Database Management Systems</li>
- <li>Artificial Intelligence</li>
- <li>Machine Learning</li>

</ul>

<h3>Contact Us</h3>

<p>If you have any questions, feel free to reach out to our department office. You

<!-- Link to Top -->

<div class="footer-link">

<a href="#top">Back to Top</a>

</div>

</body>

</html>

## Output

### 2b. Image Link

**Specification:** Insert an image and create a link such that clicking on image takes user to other page.

**File Name:** department\_b.html

```

<!-- department_b.html -->
<!DOCTYPE html>
<html>
<head>
    <title>Department Gallery</title>

```

```

</head>
<body>
    <h1>Univerty Resources</h1>

    <h3>Dr.Babasaheb Ambedkar Technological University</h3>
    <p>Click the image below to visit the official university website:</p>

    <!-- Image acting as a link -->
    <a href="https://dbatu.ac.in/" target="_blank">
        

</body>
</html>

```

## Output

### 2c. Font Styling & Headers

**Specification:** Apply font styling like italics, underline and two other fonts to words you find appropriate. Also use header tags.

**File Name:** department\_c.html

```

<!-- department_c.html -->
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>CS Dept</title>
    <link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css"/>
</head>

<body class="bg-light p-4">
<div class="container">

    <h1 class="text-center text-success mb-4" style="font-family: Georgia;">Welcome to the

    <div class="card p-3 mb-3">
        <h2 class="text-teal" style="color:#00796b;">About Us</h2>
        <p>The <span class="fst-italic">Department of Computer Science</span> provides quali
            <span class="text-decoration-underline">cutting-edge skills</span>. </p>
    </div>

    <div class="card p-3 mb-3">
        <h2 style="color:#00796b;">Our Vision</h2>
        <p>We aim to lead in <span style="font-family:'Courier New';">AI</span> and
            <span style="font-family:'Courier New';">ML</span> research.</p>
    </div>

    <div class="card p-3 mb-3">
        <h2 style="color:#00796b;">What We Offer</h2>

```

```

<p>Courses in <span class="fst-italic" style="font-family:'Times New Roman';">Cybersecurity</span>
    <span class="fst-italic" style="font-family:'Times New Roman';">Data Science</span>
    <span class="fst-italic" style="font-family:'Times New Roman';">Software Engineering</span>
</div>

<div class="card p-3 mb-3">
    <h2 style="color:#00796b;">Contact Us</h2>
    <p>Email: <span class="text-decoration-underline">info@csdepartment.edu</span><br>
        Phone: <span class="fst-italic">(123) 456-7890</span></p>
</div>

</div>
</body>
</html>

```

## Output

### Experiment 3: Simple Calculator (JavaScript)

**Question:** Write a JavaScript to design a simple calculator to perform: sum, product, difference, and quotient.

#### Code

**File Name:** calculator.html

```

<!-- calculator.html -->
<!DOCTYPE html>
<html>
<head>
    <script>
        function calc(op) {
            var n1 = parseFloat(document.getElementById('n1').value);
            var n2 = parseFloat(document.getElementById('n2').value);
            var res = 0;
            switch(op) {
                case '+': res = n1 + n2; break;
                case '-': res = n1 - n2; break;
                case '*': res = n1 * n2; break;
                case '/': res = n1 / n2; break;
            }
            document.getElementById('result').value = res;
        }
    </script>
</head>
<body>
    <h2>Simple Calculator</h2>
    <input type="number" id="n1" placeholder="Num 1">
    <input type="number" id="n2" placeholder="Num 2"><br><br>

    <button onclick="calc('+')">Sum</button>
    <button onclick="calc('-')">Difference</button>
    <button onclick="calc('*')">Product</button>

```

```

<button onclick="calc('/')">Quotient</button>
<br><br>
Result: <input type="text" id="result" readonly>
</body>
</html>

```

## Output

### Experiment 4: Form Validation (JavaScript)

**Question:** Validate fields: email, name, mobile no., address, salary.

#### Code

**File Name:** validation.html

```

<!-- validation.html -->
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<title>Validation Form</title>

<link href="[https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css]"(t

<script>
function validate() {
    let f = document.empForm;
    let name = f.name.value.trim();
    let email = f.email.value.trim();
    let mobile = f.mobile.value.trim();

    if (!/^[A-Za-z\s]+$/ .test(name)) { alert("Invalid Name"); return false; }
    if (!/^\w+([.-]?\w+)*@\w+([.-]?\w+)*(\.\w{2,3})+$/.test(email)) { alert("Invalid Email"); return false; }
    if (!/^\d{10}$/.test(mobile)) { alert("Invalid Mobile"); return false; }

    alert("Form Validated Successfully!");
    return true;
}
</script>
</head>

<body class="bg-light p-4">

<div class="container d-flex justify-content-center">
<form name="empForm" onsubmit="return validate()" class="bg-white p-4 shadow-sm rounded">
<h4 class="text-center mb-3">Employee Form</h4>

<input class="form-control mb-2" type="text" name="name" placeholder="Name">
<input class="form-control mb-2" type="text" name="email" placeholder="Email">
<input class="form-control mb-2" type="text" name="mobile" placeholder="Mobile">
<input class="form-control mb-2" type="text" name="address" placeholder="Address">
<input class="form-control mb-3" type="number" name="salary" placeholder="Salary">

```

```

        <button class="btn btn-primary w-100">Register</button>
    </form>
</div>

</body>
</html>

```

## Output

### Experiment 5: String & Number Functions (JavaScript)

**Question:** I. Parameter: A string -> Output: Length of String II. Parameter: A number -> Output: Reverse order

## Code

**File Name:** functions.html

```

<!-- functions.html -->
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<title>Functions</title>
<link href="[https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css]" rel="stylesheet">
</head>

<body class="bg-light p-4">

<div class="container">

    <!-- String Length -->
    <div class="mb-4 p-3 bg-white shadow-sm rounded">
        <h4>String Length</h4>
        <input type="text" id="strInput" class="form-control mb-2" placeholder="Enter a string">
        <button class="btn btn-primary btn-sm" onclick="document.getElementById('strOut').innerText = document.getElementById('strInput').value.length">
            Get Length
        </button>
        <p class="mt-2">Length: <span id="strOut"></span></p>
    </div>

    <!-- Reverse Number -->
    <div class="p-3 bg-white shadow-sm rounded">
        <h4>Reverse Number</h4>
        <input type="number" id="numInput" class="form-control mb-2" placeholder="Enter a number">
        <button class="btn btn-primary btn-sm" onclick="reverseNum()>Reverse</button>
        <p class="mt-2">Result: <span id="numOut"></span></p>
    </div>

</div>

```

```

<script>
function reverseNum() {
    let n = document.getElementById('numInput').value;
    document.getElementById('numOut').innerText = n.split('').reverse().join('');
}
</script>

</body>
</html>

```

## Output

### Experiment 6: Prime Numbers (JavaScript)

**Question:** Find all prime numbers between a starting and ending number.

#### Code

**File Name:** primes.html

```

<!-- primes.html -->
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<title>Prime Finder</title>
<link href="[https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css]" rel="stylesheet">

<script>
function findPrimes() {
    let start = parseInt(document.getElementById('start').value);
    let end = parseInt(document.getElementById('end').value);
    let primes = [];

    for (let i = start; i <= end; i++) {
        let flag = 0;
        for (let j = 2; j < i; j++) {
            if (i % j == 0) { flag = 1; break; }
        }
        if (i > 1 && flag == 0) primes.push(i);
    }

    document.getElementById('pRes').innerText = primes.join(", ");
}
</script>
</head>

<body class="bg-light p-4">

<div class="container d-flex justify-content-center">
    <div class="bg-white p-4 shadow-sm rounded" style="width:300px">

        <h4 class="text-center mb-3">Prime Number Finder</h4>

```

```

<input type="number" class="form-control mb-2" id="start" placeholder="Start">
<input type="number" class="form-control mb-3" id="end" placeholder="End">

<button class="btn btn-primary w-100 mb-2" onclick="findPrimes()">Find Primes</button>

<p class="mt-2">Result: <span id="pRes" class="fw-bold"></span></p>

</div>
</div>

</body>
</html>

```

## Output

### Experiment 7: Digital Clock (PHP)

**Question:** Write a PHP program to display a digital clock (server time).

#### Code

**File Name:** clock.php

```

<!-- clock.php -->
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<title>Bootstrap Digital Clock</title>
<meta name="viewport" content="width=device-width, initial-scale=1">

<!-- Bootstrap CSS -->
<link href="[https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css]" rel="stylesheet">

<style>
#clock {
    font-size: 55px;
    font-family: monospace;
    color: #00ff00;
    background: #000;
    padding: 20px 40px;
    border-radius: 12px;
    display: inline-block;
    box-shadow: 0 0 15px rgba(0, 255, 0, 0.4);
    letter-spacing: 3px;
}
</style>
</head>

<body class="bg-light d-flex flex-column justify-content-center align-items-center vh-100">
<h2 class="text-primary mb-4">Server Time Digital Clock</h2>

```

```

<div id="clock">
    <?php
        date_default_timezone_set("Asia/Kolkata");
        echo date("H:i:s");
    ?>
</div>

<script>
function updateClock() {
    let now = new Date();
    let h = String(now.getHours()).padStart(2, '0');
    let m = String(now.getMinutes()).padStart(2, '0');
    let s = String(now.getSeconds()).padStart(2, '0');

    document.getElementById("clock").innerHTML = `${h}:${m}:${s}`;
}
setInterval(updateClock, 1000);
updateClock();
</script>

</body>
</html>

```

## Output

### Experiment 8: Sign-In and Sign-Out (PHP)

**Question:** Implement Sign-In and Sign-Out functionality using PHP Sessions.

#### Code

**File Name:** login.php

```

<!-- login.php -->
<?php
session_start();

if (isset($_POST['login'])) {
    $user = $_POST['username'];
    $pass = $_POST['password'];

    if ($user === "admin" && $pass === "1234") {
        $_SESSION['user'] = $user;
    } else {
        $error = "Invalid Credentials!";
    }
}

if (isset($_GET['logout'])) {
    session_destroy();
    header("Location: login.php");
}

```

```
?>

<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<title>Login System</title>

<link href="[https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css]"(r
</head>

<body class="bg-light d-flex justify-content-center align-items-center vh-100">

<div class="container" style="max-width: 350px;">

<?php if(isset($_SESSION['user'])): ?>

    <div class="card p-4 text-center shadow-sm">
        <h3 class="mb-3">Welcome, <?php echo $_SESSION['user']; ?>!</h3>
        <a href="login.php?logout=true" class="btn btn-danger w-100">Sign Out</a>
    </div>

<?php else: ?>

    <div class="card p-4 shadow-sm">
        <h4 class="text-center mb-3">User Login</h4>

        <?php if(isset($error)): ?>
        <div class="alert alert-danger py-2"><?php echo $error; ?></div>
        <?php endif; ?>

        <form method="post">
            <input type="text" name="username" class="form-control mb-2" placeholder="U
            <input type="password" name="password" class="form-control mb-3" placeholder="P

            <button type="submit" name="login" class="btn btn-primary w-100">Sign In</b
        </form>
    </div>

<?php endif; ?>

</div>

</body>
</html>
```

## Output

### Experiment 9: Visitor Counter (PHP)

**Question:** Keep track of the number of visitors visiting the Web page.

## Code

**File Name:** counter.php

```
<!-- counter.php -->
<?php
$file = "counter.txt";

if(!file_exists($file)) {
    file_put_contents($file, 0);
}

$count = (int) file_get_contents($file);
$count++;
file_put_contents($file, $count);
?>

<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<title>Visitor Counter</title>

<link href="[https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css]" rel="stylesheet">
</head>

<body class="bg-light d-flex justify-content-center align-items-center vh-100">

<div class="card p-4 shadow-sm text-center" style="width: 330px;">
    <h2 class="text-primary mb-3">Welcome to Our Website</h2>
    <h4 class="fw-bold">You are visitor number:</h4>
    <div class="display-6 text-success mt-2"><?php echo $count; ?></div>
</div>

</body>
</html>
```

## Output

### Experiment 10: AJAX Implementation (PHP)

**Question:** PHP code to implement AJAX functionality (Get Server Time).

## Code

**File Name:** index.html

```
<!-- index.html -->
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<title>PHP AJAX Example</title>
<meta name="viewport" content="width=device-width, initial-scale=1">
```

```

<!-- Bootstrap CSS -->
<link href="[https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css]" rel="stylesheet">
</head>

<body class="bg-light d-flex flex-column justify-content-center align-items-center vh-100">

    <div class="card p-4 shadow-sm text-center" style="width: 350px;">
        <h3 class="mb-3 text-primary">PHP AJAX Example</h3>
        <p>Click the button to fetch server time:</p>

        <button class="btn btn-success w-100 mb-3" onclick="fetchServerTime()">Get Server Time</button>

        <div id="result" class="fs-4 text-info"></div>
    </div>

    <script>
        function fetchServerTime() {
            var xhttp = new XMLHttpRequest();

            xhttp.onreadystatechange = function () {
                if (this.readyState === 4 && this.status === 200) {
                    document.getElementById("result").innerHTML = this.responseText;
                }
            };

            xhttp.open("GET", "server.php", true);
            xhttp.send();
        }
    </script>
</body>
</html>

```

**File Name:** server.php

```

<!-- server.php -->
<?php
echo "Current Server Time: " . date("h:i:s A");
?>

```

**Output**

## Experiment 11: AJAX Search Student (PHP)

**Question:** Perform search operation on the student records using AJAX.

### Step 1: Database Setup (SQL)

Execute the following SQL commands to set up the database and table.

**File Name:** setup.sql

```
-- create database and students table
CREATE DATABASE IF NOT EXISTS school;
USE school;

CREATE TABLE IF NOT EXISTS students (
    id INT AUTO_INCREMENT PRIMARY KEY,
    name VARCHAR(100) NOT NULL,
    age TINYINT NOT NULL,
    grade VARCHAR(10) NOT NULL
);

-- sample rows
INSERT INTO students (name, age, grade) VALUES
('Alice Johnson', 15, 'A'),
('Bob Kumar', 16, 'B'),
('Charlie Smith', 14, 'A'),
('Dana Lee', 15, 'B+'),
('Esha Patil', 17, 'A-');
```

**Step 2: Frontend Code****File Name:** index.html

```
<!-- index.html -->
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="utf-8" />
    <meta name="viewport" content="width=device-width,initial-scale=1" />
    <title>Student Search (AJAX)</title>
    <link href="[https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css]">
</head>
<body class="bg-light p-4">

<div class="container" style="max-width:700px;">
    <div class="card shadow-sm p-4">
        <h3 class="mb-3 text-center">Search Student Records</h3>

        <div class="input-group mb-3">
            <input id="searchInput" type="text" class="form-control" placeholder="Enter student name...">
            <button id="btnSearch" class="btn btn-success">Search</button>
        </div>

        <div id="results" class="mt-2"></div>
    </div>
</div>

<script>
const btn = document.getElementById('btnSearch');
const input = document.getElementById('searchInput');
const results = document.getElementById('results');
```

```

async function searchStudents() {
  const q = input.value.trim();
  results.innerHTML = '<div class="text-muted">Searching...</div>';

  try {
    const res = await fetch('search.php?query=' + encodeURIComponent(q));
    if (!res.ok) throw new Error('Server error');
    const students = await res.json();

    if (!Array.isArray(students) || students.length === 0) {
      results.innerHTML = '<div class="alert alert-warning mb-0">No students found.</div>';
      return;
    }

    // build table
    let html = `<div class="table-responsive"><table class="table table-sm table-striped">
      <thead class="table-light"><tr><th>Name</th><th>Age</th><th>Grade</th></tr></thead>
      <tbody>`;
    students.forEach(s => {
      html += `<tr><td>${escapeHtml(s.name)}</td><td>${escapeHtml(s.age)}</td><td>${escapeHtml(s.grade)}</td></tr>`;
    });
    html += `</tbody></table></div>`;
    results.innerHTML = html;

  } catch (err) {
    results.innerHTML = `<div class="alert alert-danger mb-0">Error: ${escapeHtml(err.message)}</div>`;
  }
}

// small helper to avoid injecting raw HTML
function escapeHtml(str) {
  return String(str).replaceAll('&', '&').replaceAll('<', '<').replaceAll('>', '>');
}

btn.addEventListener('click', searchStudents);
input.addEventListener('keydown', e => { if (e.key === 'Enter') searchStudents(); });

</script>

</body>
</html>

```

### Step 3: Backend Code

**File Name:** search.php

```

<?php
// search.php
header('Content-Type: application/json; charset=utf-8');

$servername = "localhost";
$username = "root";
$password = "system";      // change if necessary
$dbname   = "school";

$mysqli = new mysqli($servername, $username, $password, $dbname);
if ($mysqli->connect_errno) {

```

```

http_response_code(500);
echo json_encode(["error" => "DB connection failed"]);
exit;
}

$searchQuery = isset($_GET['query']) ? trim($_GET['query']) : '';

$sql = "SELECT id, name, age, grade FROM students WHERE name LIKE ?";
$stmt = $mysqli->prepare($sql);
$like = "%{$searchQuery}%";
$stmt->bind_param('s', $like);
$stmt->execute();
$result = $stmt->get_result();

$students = [];
while ($row = $result->fetch_assoc()) {
    $students[] = $row;
}

$stmt->close();
$mysqli->close();

echo json_encode($students);
?>

```

## Output

### Experiment 12: Sort Student Records (PHP)

**Question:** Sort student records stored in database using ascending/descending order.

#### Code

**File Name:** sort.php

```

<!-- sort.php -->
<form method="get">
    <select name="order">
        <option value="ASC">Ascending</option>
        <option value="DESC">Descending</option>
    </select>
    <input type="submit" value="Sort">
</form>

<?php
$conn = new mysqli("localhost", "root", "", "college");
$order = isset($_GET['order']) ? $_GET['order'] : 'ASC';
$sql = "SELECT * FROM students ORDER BY name $order";
$result = $conn->query($sql);

echo "<table border='1'><tr><th>ID</th><th>Name</th></tr>";
while($row = $result->fetch_assoc()) {
    echo "<tr><td>".$row['id']. "</td><td>".$row['name']. "</td></tr>";
}

```

```
echo "</table>";  
$conn->close();  
?>
```

## Output

### Experiment 13: Grade Calculator (HTML/CSS/JS)

**Question:** Calculate grade (FCD, First Class, etc.) based on CGPA.

## Code

**File Name:** grades.html

```
<!-- grades.html -->  
<!DOCTYPE html>  
<html lang="en">  
<head>  
<meta charset="UTF-8">  
<title>Grade Calculator</title>  
<meta name="viewport" content="width=device-width, initial-scale=1">  
  
<!-- Bootstrap CSS -->  
<link href="[https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css]" rel="stylesheet">  
</head>  
  
<body class="bg-light d-flex justify-content-center align-items-center vh-100">  
  
<div class="card shadow p-4 text-center" style="width: 350px;">  
    <h4 class="mb-3">CGPA to Grade Calculator</h4>  
  
    <input type="number" id="cgpaInput" class="form-control mb-3" placeholder="Enter CGPA (0-10)" min="0" max="10" step="0.01">  
  
    <button class="btn btn-success w-100 mb-3" onclick="calculateGrade()">  
        Calculate Grade  
    </button>  
  
    <p id="result" class="fw-semibold"></p>  
</div>  
  
<script>  
function calculateGrade() {  
    let cgpa = parseFloat(document.getElementById("cgpaInput").value);  
    let result = "";  
  
    if (isNaN(cgpa) || cgpa < 0 || cgpa > 10) {  
        result = "Please enter a valid CGPA (0-10)";  
    } else {  
        let percentage = cgpa * 10;  
  
        if (percentage >= 70)  
            result = `Percentage: ${percentage}% → First Class with Distinction (FCD)`;  
        else if (percentage >= 60)
```

```

        result = `Percentage: ${percentage}% → First Class (FC)`;
    else if (percentage >= 50)
        result = `Percentage: ${percentage}% → Second Class (SC)`;
    else if (percentage >= 40)
        result = `Percentage: ${percentage}% → Pass Class (PC)`;
    else
        result = `Percentage: ${percentage}% → Fail`;
    }

    document.getElementById("result").innerText = result;
}
</script>

</body>
</html>

```

## Output

### Experiment 14: BMI Calculator

**Question:** Build a BMI Calculator. Formula: Weight / (Height \* Height)

#### Code

**File Name:** bmi.html

```

<!-- bmi.html -->
<script>
    function calcBMI() {
        var h = parseFloat(document.getElementById('h').value);
        var w = parseFloat(document.getElementById('w').value);
        var bmi = w / (h * h);
        document.getElementById('bmiRes').innerText = bmi.toFixed(2);
    }
</script>
<h2>BMI Calculator</h2>
Height (meters): <input type="number" id="h" step="0.01"><br>
Weight (kg): <input type="number" id="w"><br>
<button onclick="calcBMI()">Calculate BMI</button>
<h3>Your BMI: <span id="bmiRes"></span></h3>

```

## Output

### Experiment 15: Tip Calculator

**Question:** Simple Tip Calculator.

#### Code

**File Name:** tip.html

```
<!-- tip.html -->
<script>
    function calcTip() {
        var bill = parseFloat(document.getElementById('bill').value);
        var tipPerc = parseFloat(document.getElementById('tip').value);
        var tipAmt = bill * (tipPerc / 100);
        var total = bill + tipAmt;

        document.getElementById('tipAmt').innerText = tipAmt.toFixed(2);
        document.getElementById('total').innerText = total.toFixed(2);
    }
</script>
<h2>Tip Calculator</h2>
Bill Amount ($): <input type="number" id="bill"><br>
Tip Percentage (%): <input type="number" id="tip"><br>
<button onclick="calcTip()">Calculate</button>
```