RAJALAKSHMI ENGINEERING COLLEGE

An Autonomous Institution, Affiliated to Anna University Rajalakshmi Nagar, Thandalam – 602 105

AI23431 Web Technology and Mobile Application

LAB MANUAL

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Year / Branch / Section : ..... 2/B.Tech AIML/AC. .....

Semester : ..... 4th. .....

Academic Year : ..... .2024-2025..... .....

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BONAFIDE CERTIFICATE

Name ……Vijay R……....

Academic Year….2024-2025..Semester….IV..Branch..AIML..

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Certified that this is the Bonafide record of work done by above student in the **AI23431-Web Technology and Mobile Application** Laboratory during the year 2024-2025

Signature of Faculty -in-Charge

Submitted for the Practical Examination held on ……..

Internal Examiner External Examiner

EXP: 1 HTML & CSS

A) Create a Web Page to Embed a Map with Hotspots, Frames & Links

AIM:

Create a Web Page to Embed a Map with Hotspots, Frames & Links.

ALGORITHM:

Step 1: Create an HTML file (`index.html`).

- Define the document structure using `<html>`, `<head>`, and `<body>`.
- Set the page title and include internal CSS for basic styling.

Step 2: Embed an Image Map.

- Use the `<img>` tag to insert an image (map).
- Define a `<map>` element with a `name` attribute.
- Add `<area>` elements inside the `<map>` with different **shapes** (rectangle, circle, polygon).
- Assign **`href`** attributes to the `<area>` elements to make them clickable.

Step 3: Create Hyperlinks.

- Add `<a>` tags that allow navigation to different pages.
- Use the `target` attribute to open the linked pages in a frame.

Step 4: Add an Inline Frame (iframe).

- Use the `<iframe>` tag to display linked pages within the same webpage.
- Set the `name` attribute for the iframe to target it from links.

Step 5: Create Additional Pages (`page1.html`, `page2.html`).

- Define a simple HTML structure.
- Apply **CSS styles** for a visually appealing design.
- Test the project to ensure the map hotspots and frames work correctly.

PROGRAM:

```
<!DOCTYPE html>

<html lang="en">

<head>
```

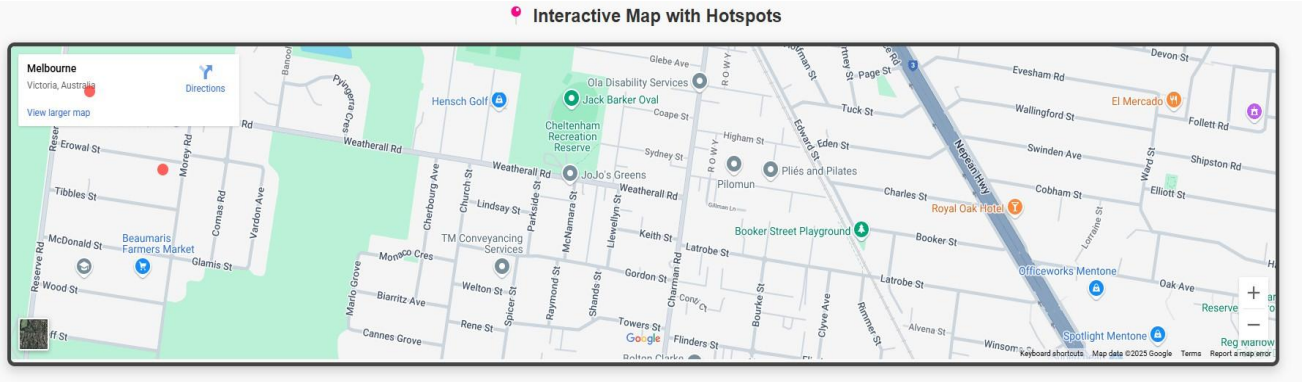
```
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-scale=1.0">
<title>Subject Entry Form</title>
<style>
    * {
        margin: 0;
        padding: 0;
        box-sizing: border-box;
        font-family: "Poppins", sans-serif;
    }
    body {
        background-color: #f4f4f4;
        display: flex;
        justify-content: center;
        align-items: center;
        height: 100vh;
    }
    .container {
        width: 400px;
        background: white;
        padding: 20px;
        border-radius: 10px;
        box-shadow: 0px 4px 10px rgba(0, 0, 0, 0.2);
    }
```

```
h2 {
    text-align: center;
    color: #333;
    margin-bottom: 20px;
}
label {
    font-weight: bold;
    color: #555;
}
input, select {
    width: 100%;
    padding: 10px;
    margin-top: 5px;
    margin-bottom: 15px;
    border: 1px solid #ccc;
    border-radius: 5px;
    font-size: 16px;
}
button {
    width: 100%;
    padding: 12px;
    background: #007bff;
    color: white;
    border: none;
```

```
            border-radius: 5px;
            font-size: 18px;
            cursor: pointer;
            transition: 0.3s;
        }
        button:hover {
            background: #0056b3;
        }
        .message {
            margin-top: 15px;
            text-align:  center;
            color: green;
            font-weight: bold;
        }
    </style>
</head>
<body>

    <div class="container">
        <h2>📄 Subject Entry Form</h2>
        <form id="subjectForm">
            <label for="subjectCode">Subject Code:</label>
            <input type="text" id="subjectCode" placeholder="Enter Subject Code" required>
```

```
        <label for="subjectName">Subject Name:</label>
        <input type="text" id="subjectName" value="WEB TECHNOLOGY AND MOBILE APPLICATION" readonly>

        <label for="category">Category:</label>
        <select id="category">
            <option value="AI-DS & AI-ML">Artificial Intelligence & Data Science / Artificial Intelligence & Machine Learning</option>
        </select>

        <button type="submit">Submit</button>
    </form>
    <p class="message" id="message"></p>
  </div>

  <script>
    document.getElementById("subjectForm").addEventListener("submit",  function(event) {
        event.preventDefault(); // Prevent form from reloading
        document.getElementById("message").textContent = "✅ Subject details submitted successfully!";
    });
  </script>
</body>
</html>
```

OUTPUT:



RESULT: The image map with hotspots, frames, and link**s** is successfully created**.**

B) Create a Web Page Using Embedded, External & Inline CSS

AIM:

Create a Web Page Using Embedded, External & Inline CSS

ALGORITHM:

Step 1: Create an External CSS File (`style.css`).

- Define **body, headings, and paragraph styles** in `style.css`.
- Save the CSS file in the same directory as `index.html`.

Step 2: Create an HTML File (`index.html`).

- Define the structure using `<html>`, `<head>`, and `<body>`.
- Add a `<title>` tag for the page title.

Step 3: Link External CSS.

- Use `<link rel="stylesheet" href="style.css">` inside the `<head>` tag.

Step 4: Apply Embedded CSS.

- Add a `<style>` section inside `<head>`.
- Define styles for a **div box** with width, height, color, and border-radius.

Step 5: Apply Inline CSS.

- Use the `style` attribute in an HTML element (`<p>`) to apply color and font weight directly.

Step 6: Display Content.

- Use headings (`<h2>`) and paragraphs (`<p>`) to demonstrate different CSS types.
- Add a styled **div box** using embedded CSS.

Step 7: Test the Page.

- Open the HTML file in a browser to check if all styles (inline, embedded, external) are applied correctly.

PROGRAM:

INDEX.HTML:

```
<!DOCTYPE html>

<html lang="en">
```

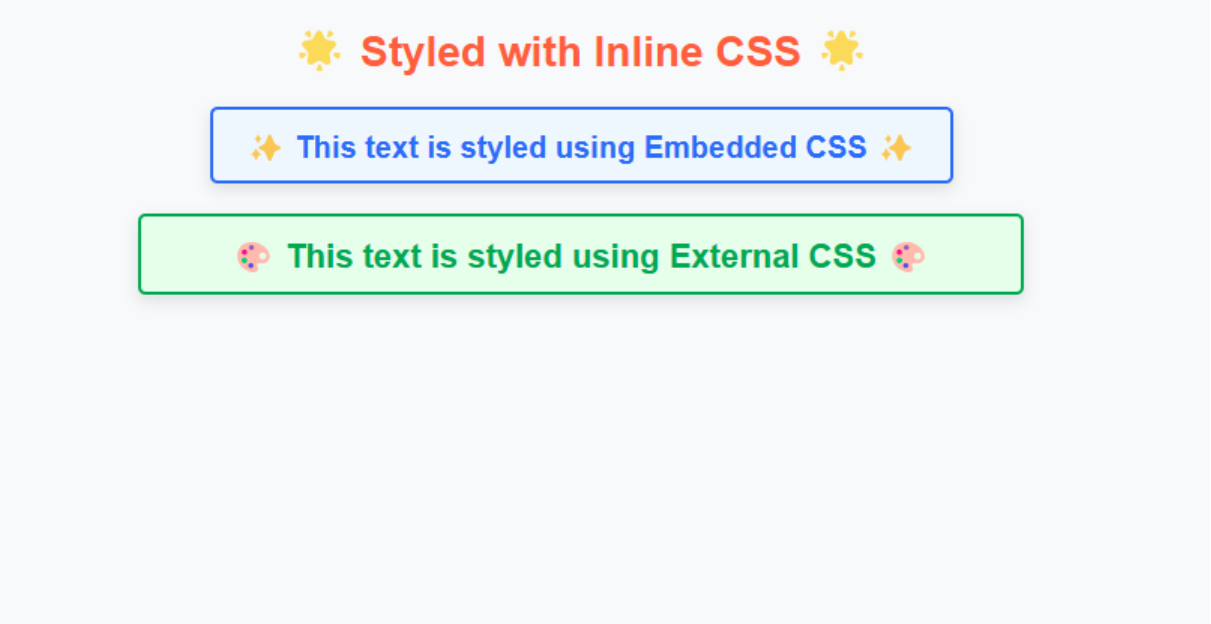
```
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Elegant CSS Styling Example</title>
    <link rel="stylesheet" href="styles.css">  <!-- External CSS -->
    <style>
        /* Embedded CSS */
        .embedded-style {
            color: #007bff;
            font-size: 20px;
            font-weight: bold;
            text-align: center;
            padding: 10px;
            border: 2px solid #007bff;
            border-radius: 5px;
            width: 50%;
            margin: 20px auto;
            box-shadow: 0px 4px 10px rgba(0, 0, 0, 0.1);
            background: #f0f8ff;
        }
    </style>
</head>
<body style="background-color: #f8f9fa; font-family: 'Poppins', sans-serif; text-align:
center;">
<h1 style="color: #ff5733; font-size: 28px;">✸ Styled with Inline CSS ✸</h1>
```

```
  <p class="embedded-style">✨ This text is styled using Embedded CSS ✨</p>
    <p class="external-style">🎨 This text is styled using External CSS 🎨</p>
</body>
</html>
```

STYLE.CSS:

```
.external-style {
    color: #28a745;
    font-size: 22px;
    font-weight: bold;
    text-align: center;
    padding: 10px;
    border: 2px solid #28a745;
    border-radius: 5px;
    width: 60%;
    margin: 20px auto;
    box-shadow: 0px 4px 10px rgba(0, 0, 0, 0.1);
    background: #e9ffe9;
    transition: 0.3s;
}
external-style:hover {
    background: #d4f8d4;
    transform: scale(1.05);
}
```

OUTPUT:



RESULT: The webpage demonstrates external, embedded, and inline CSS styles effectively**.**

EXP: 2 JAVASCRIPT

2) Write JavaScript to validate the following fields of the Registration page.

a) First Name (Name should contains alphabets and the length

Should not be less than 6 characters).

b) Password (Password should not be less than 6 characters length).

c) E-mail id (should not contain any invalid and must follow the

standard pattern name@domain.com)

d) Mobile Number (Phone number should contain 10 digits only).

e) Last Name and Address (should not be Empty).

AIM:

Write JavaScript to validate the following fields of the Registration page.

ALGORITHM:

Step 1: Create the HTML Form

- Add input fields for First Name, Last Name, Email, Password, Mobile Number, and Address.
- Add a Submit Button to trigger validation.

Step 2: Apply Elegant CSS Styling

- Add responsive styling with hover effects.
- Improve form layout, input fields, and button styles.

Step 3: Add JavaScript for Validation

- Validate each field and show error messages if invalid.
- Display "Registration Successful!" if all inputs are valid.

Step 4: Full Working Code in One HTML File

- Copy and paste the code below into an `.html` file and open it in a browser.

PROGRAM:

<!DOCTYPE html>

<html lang="en">

```
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Registration Form</title>
    <style>
        body {
            font-family: Arial, sans-serif;
            background: linear-gradient(135deg, #ff9a9e, #fad0c4);
            display: flex;
            justify-content: center;
            align-items: center;
            height: 100vh;
            margin: 0;
        }
        .container {
            background: white;
            padding: 20px;
            border-radius: 10px;
            box-shadow: 0 4px 8px rgba(0, 0, 0, 0.2);
            width: 350px;
            text-align: center;
        }
        h2 {
            color: #333;
        }
        input {
            width: 100%;
            padding: 10px;
            margin: 8px 0;
            border: 1px solid #ccc;
```

```
            border-radius: 5px;
            font-size: 16px;
        }
        input:focus {
            border-color: #ff6f61;
            outline: none;
            box-shadow: 0 0 5px rgba(255, 111, 97, 0.5);
        }
        .error {
            color: red;
            font-size: 14px;
            text-align: left;
            margin-bottom: 10px;
        }
        button {
            width: 100%;
            padding: 10px;
            background: #ff6f61;
            color: white;
            border: none;
            border-radius: 5px;
            font-size: 16px;
            cursor: pointer;
        }
        button:hover {
            background: #e55b50;
        }
    </style>
</head>
<body>
```

```
<div class="container">
    <h2>Register Here</h2>
    <form id="registrationForm">
        <input type="text" id="firstName" placeholder="First Name">
        <div class="error" id="firstNameError"></div>

        <input type="text" id="lastName" placeholder="Last Name">
        <div class="error" id="lastNameError"></div>

        <input type="email" id="email" placeholder="Email">
        <div class="error" id="emailError"></div>

        <input type="password" id="password" placeholder="Password">
        <div class="error" id="passwordError"></div>

        <input type="text" id="mobile" placeholder="Mobile Number">
        <div class="error" id="mobileError"></div>

        <input type="text" id="address" placeholder="Address">
        <div class="error" id="addressError"></div>

        <button type="button" onclick="validateForm()">Register</button>
    </form>
</div>

<script>
    function validateForm() {
        let isValid = true;
```

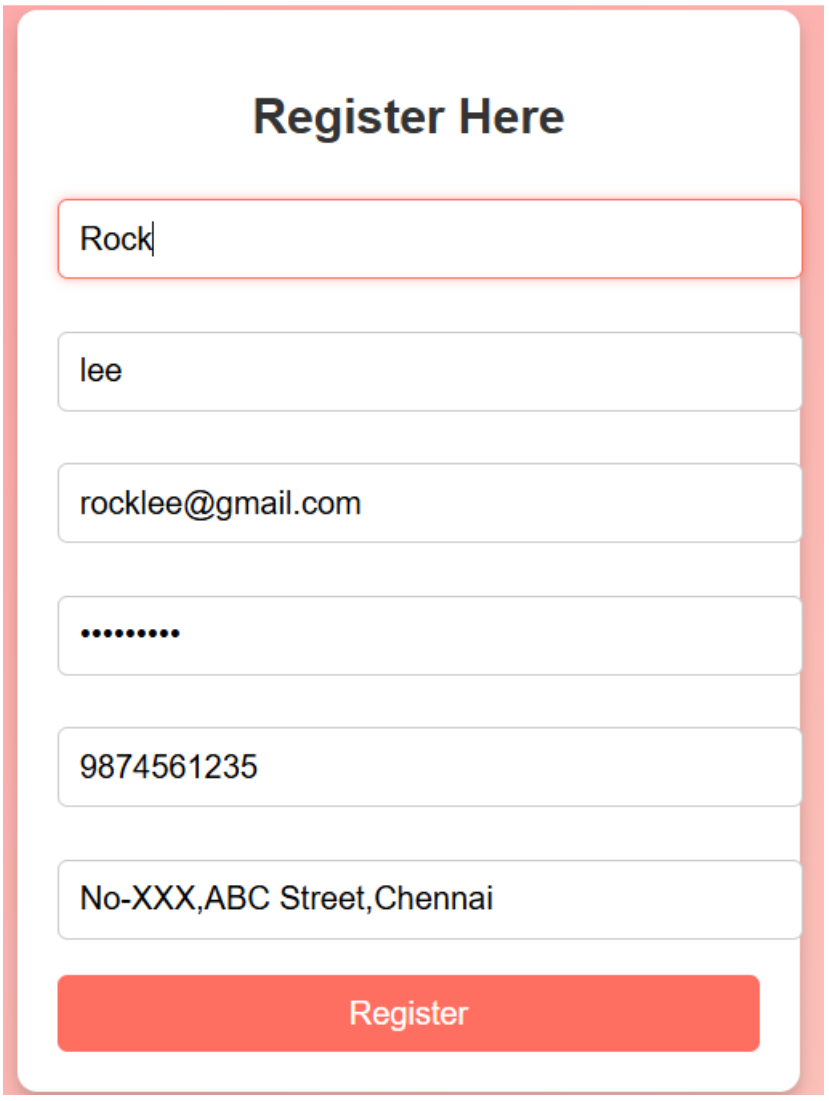
```
        let firstName = document.getElementById("firstName").value.trim();
        let lastName = document.getElementById("lastName").value.trim();
        let email = document.getElementById("email").value.trim();
        let password = document.getElementById("password").value.trim();
        let mobile = document.getElementById("mobile").value.trim();
        let address = document.getElementById("address").value.trim();

        // Clear previous error messages
        document.getElementById("firstNameError").innerText = "";
        document.getElementById("lastNameError").innerText = "";
        document.getElementById("emailError").innerText = "";
        document.getElementById("passwordError").innerText = "";
        document.getElementById("mobileError").innerText = "";
        document.getElementById("addressError").innerText = "";

        // First Name Validation
        if (!/^[A-Za-z]{6,}$/.test(firstName)) {
            document.getElementById("firstNameError").innerText = "First name must be at
least 6 letters.";
            isValid = false;
        }

        // Last Name Validation
        if (lastName === "") {
            document.getElementById("lastNameError").innerText = "Last name cannot be
empty.";
            isValid = false;
        }

        // Email Validation
        if  (!/^[a-zA-Z0-9._%+-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,}$/.test(email))  {
```

```
        document.getElementById("emailError").innerText = "Enter a valid email (e.g., name@domain.com).";
        isValid = false;
    }

    // Password Validation
    if (password.length < 6) {
        document.getElementById("passwordError").innerText = "Password must be at least 6 characters.";
        isValid = false;
    }

    // Mobile Number Validation
    if (!/^\d{10}$/.test(mobile)) {
        document.getElementById("mobileError").innerText = "Enter a valid 10-digit mobile number.";
        isValid = false;
    }

    // Address Validation
    if (address === "") {
        document.getElementById("addressError").innerText = "Address cannot be empty.";
        isValid = false;
    }

    if (isValid) {
        alert("Registration Successful!");
    }
  }
</script>
```

</body>

</html>

OUTPUT:



RESULT: The Registration Form was successfully created using HTML, CSS, and JavaScript.

EXP 3 SERVLET PROGRAM

AIM:

To create an HTML webpage that displays "Hello World" in the center of the page inside a styled box using CSS for alignment and styling.

ALGORITHM:

1. Start
2. Create an HTML document with a `<head>` and `<body>` section.
3. Inside the `<head>` section:
    - Set the title of the page.
    - Add meta tags for character set and viewport settings.
    - Define CSS styles to center the text and style the box.
4. In the `<body>` section:
    - Use a `<div>` element with a class `box` to wrap the text.
    - Inside the `<div>`, add an `<h1>` tag with the text "Hello World" in bold.
5. Use **CSS** Flexbox to center the box both vertically and horizontally.
6. Apply **s**tyles to the box, including:
    - Padding
    - Border
    - Border-radius
    - Box-shadow
    - Background color
7. Save the file and open it in a web browser.
8. End.

PROGRAM:

```
<!DOCTYPE html>

<html>

  <head>

    <title>hello world</title>

    <meta charset="UTF-8">

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

    <style>

      body {

        display: flex;

        justify-content: center;

        align-items: center;
```

```
            height: 100vh;
            margin: 0;
            background-color: #f0f0f0;
        }
        .box {
            padding: 20px;
            background-color: white;
            border: 2px solid black;
            border-radius: 10px;
            box-shadow: 5px 5px 15px rgba(0, 0, 0, 0.2);
            text-align: center;
        }
    </style>
</head>
<body>
    <div class="box">
        <h1><b>HELLO WORLD!!!</b></h1>
    </div>
</body>
</html>
```

Output:

RESULT: Thus, the servlet program was successfully executed.

EXP 4: WEB FORM DEVELOPED USING SERVLET PROGRAM

AIM:

To create a web form that accepts a user's name and age, processes the data using JavaScript, and displays the submitted details with a stylish UI and animations.

ALGORITHM:

Step 1: Start

Step 2: Design the Web Form

- Create an HTML form with two input fields:
  - `Name` (Text Input)
  - `Age` (Number Input)
- Add a submit button.

Step 3: Apply CSS Styles

- Use **gradient background, smooth input effects, button hover effects, and animations**.
- Style the form, inputs, button, and result display area.

Step 4: Write JavaScript for Form Handling

- Attach an **event listener** to the form submit event.
- Get user input values (`name` and `age`).
- Validate input fields (ensure **name is not empty** and **age is valid**).
- If validation fails, **show an alert**.
- If valid, display the submitted details dynamically.

Step 5: Show Output Dynamically

- Use JavaScript to update the UI and **display the submitted data in a formatted box**.
- Use **smooth animations** for better user experience.

Step 6: End

PROGRAM:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>User Form</title>
    <style>
        /* Import Google Font */
        @import
url('https://fonts.googleapis.com/css2?family=Poppins:wght@300;400;600&display=swap');

        /* Page Styling */
        body {
            font-family: 'Poppins', sans-serif;
            background: linear-gradient(135deg, #ff9a9e, #fad0c4);
            display: flex;
            justify-content: center;
            align-items: center;
            height: 100vh;
            margin: 0;
            animation: fadeIn 1s ease-in-out;
        }

        /* Form Container */
        .container {
            background: white;
            padding: 25px;
            border-radius: 12px;
            box-shadow: 0px 5px 15px rgba(0, 0, 0, 0.2);
            width: 350px;
```

```
    text-align: center;
    transition: transform 0.3s ease-in-out;
}

.container:hover {
    transform: scale(1.05);
}

h2 {
    color: #ff4d6d;
    font-weight: 600;
    margin-bottom: 15px;
    text-shadow: 1px 1px 2px rgba(0, 0, 0, 0.2);
}

/* Input Fields */
label {
    font-weight: 600;
    color: #444;
    display: block;
    margin: 10px 0 5px;
}

input {
    width: 100%;
    padding: 10px;
    border: 2px solid #ff4d6d;
    border-radius: 8px;
    font-size: 16px;
    outline: none;
```

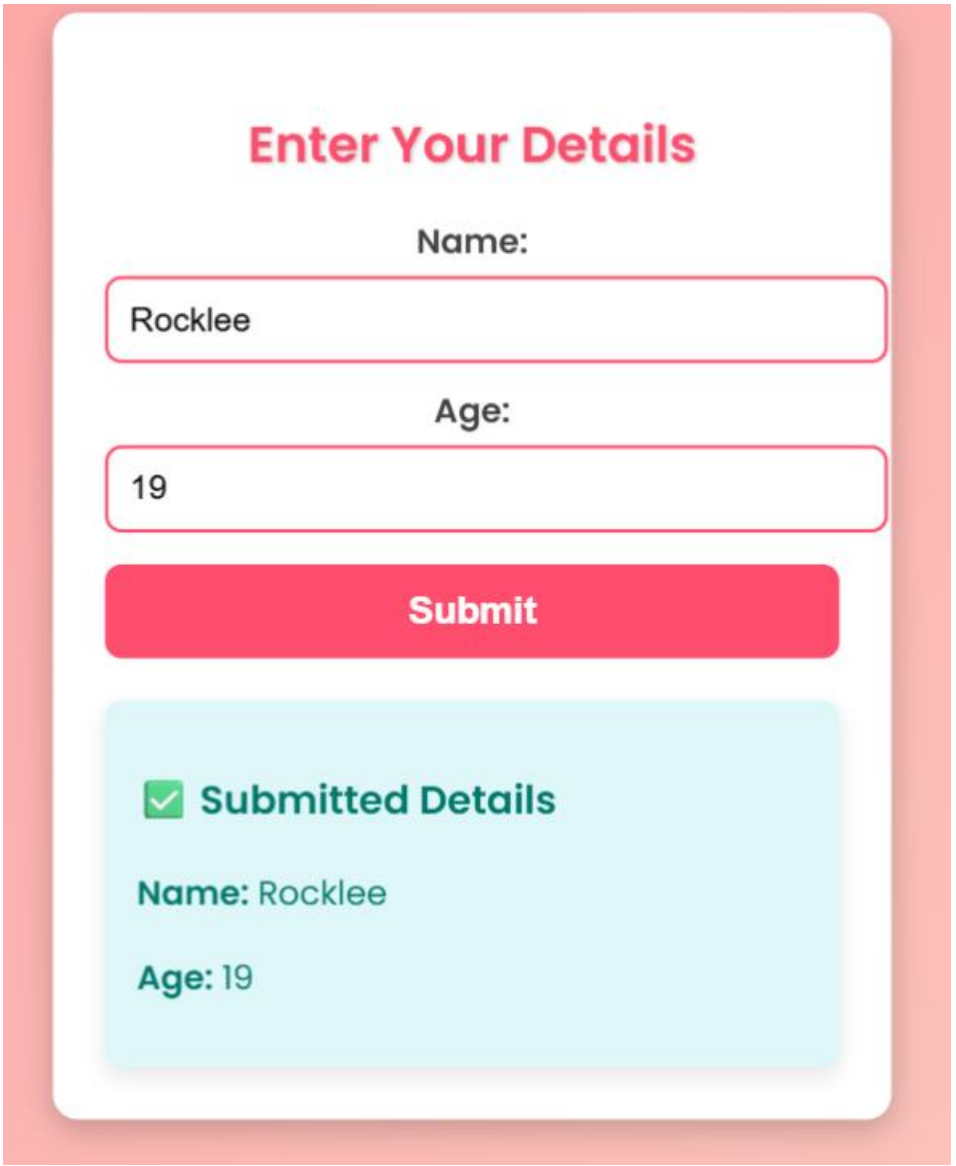
```
    transition: all 0.3s ease-in-out;
}

input:focus {
    border-color: #ff165d;
    box-shadow: 0px 0px 10px rgba(255, 22, 93, 0.4);
}

/* Submit Button */
button {
    background: #ff4d6d;
    color: white;
    border: none;
    padding: 12px;
    cursor: pointer;
    width: 100%;
    font-size: 18px;
    font-weight: 600;
    border-radius: 8px;
    margin-top: 15px;
    transition: background 0.3s ease-in-out, transform 0.2s;
}

button:hover {
    background: #ff165d;
    transform: scale(1.05);
}

button:active {
    transform: scale(0.95);
```

```
        }

        /* Output Box */
        .output {
            display: none;
            margin-top: 20px;
            padding: 15px;
            border-radius: 8px;
            background: #e0f7fa;
            color: #00796b;
            font-size: 16px;
            text-align: left;
            box-shadow: 0px 4px 10px rgba(0, 0, 0, 0.1);
            animation: slideIn 0.5s ease-in-out;
        }

        /* Animations */
        @keyframes fadeIn {
            from { opacity: 0; transform: translateY(-10px); }
            to { opacity: 1; transform: translateY(0); }
        }

        @keyframes slideIn {
            from { opacity: 0; transform: translateY(20px); }
            to { opacity: 1; transform: translateY(0); }
        }
    </style>
</head>
<body>
    <div class="container">
```

```
        <h2>Enter Your Details</h2>
        <form id="userForm">
            <label for="name">Name:</label>
            <input type="text" id="name" name="name" required placeholder="Enter your name...">

            <label for="age">Age:</label>
            <input type="number" id="age" name="age" required placeholder="Enter your age...">

            <button type="submit">Submit</button>
        </form>

        <div class="output" id="output"></div>
    </div>

    <script>
        document.getElementById("userForm").addEventListener("submit", function(event) {
            event.preventDefault(); // Prevent form submission

            let name = document.getElementById("name").value.trim();
            let age = document.getElementById("age").value.trim();

            if (name === "" || age === "" || age <= 0) {
                alert("⚠□ Please enter a valid name and age.");
                return;
            }

            // Display the submitted data with an animation
            let outputBox = document.getElementById("output");
            outputBox.innerHTML =
```

```
            `<h3>✅ Submitted Details</h3>
            <p><b>Name:</b> ${name}</p>
            <p><b>Age:</b> ${age}</p>`;
        outputBox.style.display = "block";
    });
  </script>
</body>
</html>
```

OUTPUT:



RESULT: The creation of web form using servlet program was executed successfully.

EXP 5 HTTP GET and POST methods

AIM:

To demonstrate the difference between HTTP GET and POST methods using a Java Servlet by creating a form that sends data using both methods.

ALGORITHM:

Step 1: Create an HTML form with GET and POST methods.

Step 2: Develop a Servlet (`GetPostServlet.java`) to handle requests.

Step 3: Implement `doGet()` to handle GET requests.

Step 4: Implement `doPost()` to handle POST requests.

Step 5: Configure `web.xml` to map the Servlet to `/GetPostServlet`.

Step 6: Run the server and observe how GET and POST work differently.

PROGRAM:

index.html (Form Page)

```
html
CopyEdit
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>GET vs POST Demo</title>
    <link rel="stylesheet" href="styles.css">
</head>
<body>
    <div class="container">
        <h2>Choose GET or POST Method 🚀</h2>
        <form action="GetPostServlet" method="GET">
            <input type="text" name="username" placeholder="Enter your name" required>
            <button type="submit">Submit with GET</button>
        </form>

        <form action="GetPostServlet" method="POST">
            <input type="text" name="username" placeholder="Enter your name" required>
            <button type="submit">Submit with POST</button>
        </form>
    </div>
```

```
</body>
</html>
```

styles.css

```
css
CopyEdit
body {
    font-family: 'Poppins', sans-serif;
    background: linear-gradient(to right, #36D1DC, #5B86E5);
    text-align: center;
    display: flex;
    justify-content: center;
    align-items: center;
    height: 100vh;
    margin: 0;
}

.container {
    background: #fff;
    padding: 20px;
    border-radius: 15px;
    box-shadow: 0 4px 8px rgba(0, 0, 0, 0.2);
    width: 300px;
}

h2 {
    color: #5B86E5;
}

input {
    width: 90%;
    padding: 10px;
    margin: 10px 0;
    border: 1px solid #5B86E5;
    border-radius: 8px;
    text-align: center;
}

button {
    background: #36D1DC;
    color: white;
    border: none;
    padding: 10px 15px;
    border-radius: 8px;
    cursor: pointer;
    transition: 0.3s;
}

button:hover {
```

```
    background: #1e6e8c;
}
```

GetPostServlet.java (Servlet to Handle GET & POST)

java

CopyEdit

```
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

@WebServlet("/GetPostServlet")
public class GetPostServlet extends HttpServlet {
    private static final long serialVersionUID = 1L;

    // Handling GET Request
    protected void doGet(HttpServletRequest request, HttpServletResponse response) throws
ServletException, IOException {
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();

        String name = request.getParameter("username");

        out.println("<html><body>");
        out.println("<h2>GET Method Received</h2>");
        out.println("<p>Hello, <b>" + name + "</b>! Data sent using GET.</p>");
        out.println("</body></html>");
    }

    // Handling POST Request
    protected void doPost(HttpServletRequest request, HttpServletResponse response) throws
ServletException, IOException {
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();

        String name = request.getParameter("username");

        out.println("<html><body>");
        out.println("<h2>POST Method Received</h2>");
        out.println("<p>Hello, <b>" + name + "</b>! Data sent using POST.</p>");
        out.println("</body></html>");
    }
}
```

web.xml (Servlet Configuration)

xml

CopyEdit

```
<web-app xmlns="http://java.sun.com/xml/ns/javaee" version="3.0">
   <servlet>
      <servlet-name>GetPostServlet</servlet-name>
      <servlet-class>GetPostServlet</servlet-class>
   </servlet>
   <servlet-mapping>
      <servlet-name>GetPostServlet</servlet-name>
      <url-pattern>/GetPostServlet</url-pattern>
   </servlet-mapping>
</web-app>
```

OUTPUT:

RESULT: The Get and Post methods were executed successfully.

EXP 6 Demonstrate Session Tracking using HttpSession

AIM:

To implement a simple login system using **HttpSession** to track user sessions in a Java Servlet.

ALGORITHM:

Step 1: Create an HTML **Login Form** to take **username & password** as input.

Step 2: Develop a **Servlet (**`LoginServlet.java`**)** to handle login requests.

Step 3: Validate the user credentials and start an **HttpSession**.

Step 4: Redirect users to the **DashboardServlet**, where session details are displayed.

Step 5: Provide a **LogoutServlet** to end the session.

Step 6: Run the server and test session tracking.

PROGRAM:

index.html (Login Page)

```
html
CopyEdit
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Login Page</title>
    <link rel="stylesheet" href="styles.css">
</head>
<body>
    <div class="container">
        <h2>Login System with Session Tracking</h2>
        <form action="LoginServlet" method="POST">
            <input type="text" name="username" placeholder="Enter Username"
required>
            <input type="password" name="password" placeholder="Enter
Password" required>
            <button type="submit">Login</button>
        </form>
    </div>
</body>
</html>
```

---

styles.css

```
css
CopyEdit
body {
```

```
    font-family: 'Poppins', sans-serif;
    background: linear-gradient(to right, #fbc2eb, #a6c1ee);
    text-align: center;
    display: flex;
    justify-content: center;
    align-items: center;
    height: 100vh;
    margin: 0;
}

.container {
    background: #fff;
    padding: 20px;
    border-radius: 15px;
    box-shadow: 0 4px 8px rgba(0, 0, 0, 0.2);
    width: 300px;
}

h2 {
    color: #5B86E5;
}

input {
    width: 90%;
    padding: 10px;
    margin: 10px 0;
    border: 1px solid #5B86E5;
    border-radius: 8px;
    text-align: center;
}

button {
    background: #36D1DC;
    color: white;
    border: none;
    padding: 10px 15px;
    border-radius: 8px;
    cursor: pointer;
    transition: 0.3s;
}

button:hover {
    background: #1e6e8c;
}
```

LoginServlet.java (Login & Session Creation)

```
java
CopyEdit
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import javax.servlet.http.HttpSession;

@WebServlet("/LoginServlet")
public class LoginServlet extends HttpServlet {
```

```
    protected void doPost(HttpServletRequest request, HttpServletResponse
response) throws ServletException, IOException {
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();

        String username = request.getParameter("username");
        String password = request.getParameter("password");

        // Simple validation (In real apps, use a database)
        if(username.equals("admin") && password.equals("password")) {
            HttpSession session = request.getSession();
            session.setAttribute("user", username);
            response.sendRedirect("DashboardServlet"); // Redirect to
Dashboard
        } else {
            out.println("<h3>Invalid Credentials! Try Again.</h3>");
            request.getRequestDispatcher("index.html").include(request,
response);
        }
    }
}
```

DashboardServlet.java (Session Tracking & Dashboard)

```
java
CopyEdit
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import javax.servlet.http.HttpSession;

@WebServlet("/DashboardServlet")
public class DashboardServlet extends HttpServlet {
    protected void doGet(HttpServletRequest request, HttpServletResponse
response) throws ServletException, IOException {
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();

        HttpSession session = request.getSession(false); // Get session
without creating a new one
        if (session != null && session.getAttribute("user") != null) {
            String username = (String) session.getAttribute("user");
            out.println("<h2>Welcome, " + username + "!</h2>");
            out.println("<a href='LogoutServlet'>Logout</a>");
        } else {
            out.println("<h3>Session expired! Please login again.</h3>");
            request.getRequestDispatcher("index.html").include(request,
response);
        }
    }
}
```

LogoutServlet.java (Session Invalidation)

```
java
CopyEdit
```

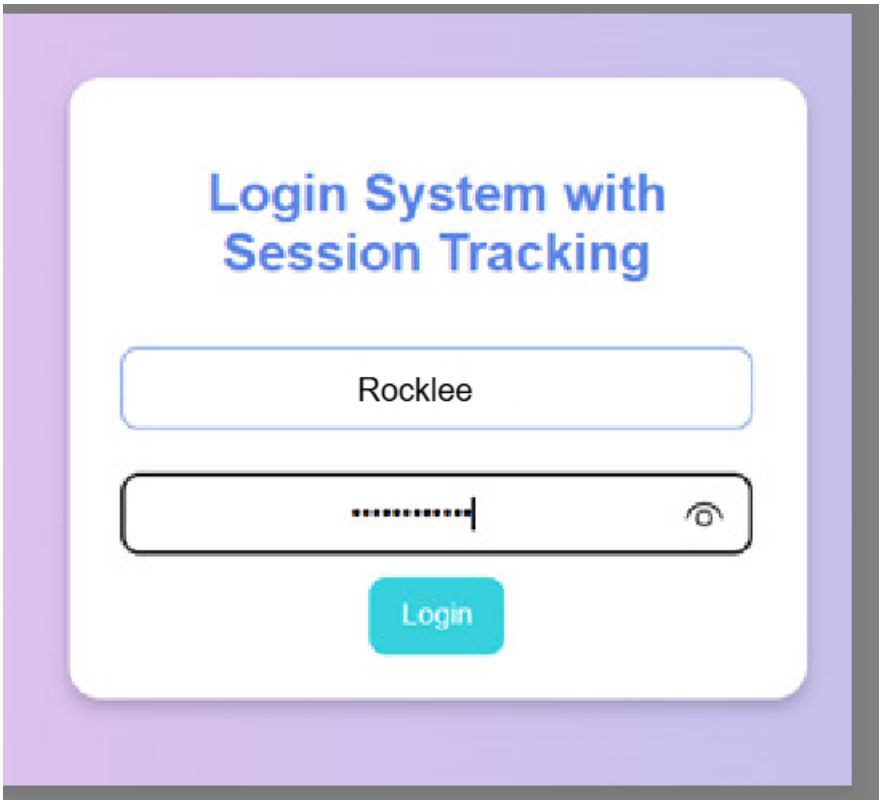
```
import java.io.IOException;
import java.io.PrintWriter;
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import javax.servlet.http.HttpSession;

@WebServlet("/LogoutServlet")
public class LogoutServlet extends HttpServlet {
    protected void doGet(HttpServletRequest request, HttpServletResponse
response) throws ServletException, IOException {
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();

        HttpSession session = request.getSession(false);
        if (session != null) {
            session.invalidate(); // Destroy session
        }

        out.println("<h3>You have been logged out successfully.</h3>");
        request.getRequestDispatcher("index.html").include(request,
response);
    }
}
```

---

web.xml (Servlet Configuration)

```
xml
CopyEdit
<web-app xmlns="http://java.sun.com/xml/ns/javaee" version="3.0">
    <servlet>
        <servlet-name>LoginServlet</servlet-name>
        <servlet-class>LoginServlet</servlet-class>
    </servlet>
    <servlet-mapping>
        <servlet-name>LoginServlet</servlet-name>
        <url-pattern>/LoginServlet</url-pattern>
    </servlet-mapping>

    <servlet>
        <servlet-name>DashboardServlet</servlet-name>
        <servlet-class>DashboardServlet</servlet-class>
    </servlet>
    <servlet-mapping>
        <servlet-name>DashboardServlet</servlet-name>
        <url-pattern>/DashboardServlet</url-pattern>
    </servlet-mapping>

    <servlet>
        <servlet-name>LogoutServlet</servlet-name>
        <servlet-class>LogoutServlet</servlet-class>
    </servlet>
    <servlet-mapping>
        <servlet-name>LogoutServlet</servlet-name>
        <url-pattern>/LogoutServlet</url-pattern>
    </servlet-mapping>
</web-app>
```

OUTPUT:



RESULT: The Session Tracking using HttpSession were executed successfully.

EXP 7 Servlet-based project is to store user preferences

AIM:

The goal of this Servlet-based project is to store user preferences (such as theme and language) using cookies and retrieve and display them on subsequent visits.

ALGORITHM:

Step 1: Load Preferences Page → **Browser checks for existing cookies.**

Step 2 Retrieve Preferences (GET Request) → **Servlet reads cookies and applies saved settings.**

Step 3: User Selects Preferences → **User picks theme and language.**

Step 4: Save Preferences (POST Request) → **JavaScript sends data to Servlet.**

Step 5: Servlet Stores Preferences → **Cookies are updated and sent back to the browser.**

Step 6: Preferences Applied on Next Visit → **Browser loads saved settings automatically.**

PROGRAM:

`index.html` (Frontend - Combined HTML, CSS & JavaScript)

```
html
CopyEdit
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Preferences using Cookies</title>
    <style>
        body {
            font-family: 'Poppins', sans-serif;
            background: linear-gradient(to right, #ffafbd, #ffc3a0);
            text-align: center;
            display: flex;
            justify-content: center;
            align-items: center;
            height: 100vh;
            margin: 0;
            transition: background 0.5s ease-in-out;
        }

        .container {
            background: white;
            padding: 20px;
            border-radius: 15px;
            box-shadow: 0 4px 8px rgba(0, 0, 0, 0.2);
```

```
            width: 320px;
        }

        h2 {
            color: #ff6f61;
        }

        select, button {
            width: 90%;
            padding: 10px;
            margin: 10px 0;
            border: 1px solid #ff6f61;
            border-radius: 8px;
            text-align: center;
        }

        button {
            background: #ff6f61;
            color: white;
            border: none;
            cursor: pointer;
            transition: 0.3s;
        }

        button:hover {
            background: #e6514a;
        }

        .pref-box {
            margin-top: 20px;
            padding: 10px;
            background: rgba(255, 255, 255, 0.8);
            color: black;
            border-radius: 10px;
            font-weight: bold;
        }

        .hidden {
            display: none;
        }

        .dark-mode {
            background: linear-gradient(to right, #333333, #1e1e1e);
            color: white;
        }

        .dark-mode .container {
            background: rgba(255, 255, 255, 0.1);
            backdrop-filter: blur(10px);
        }

        .dark-mode .pref-box {
            background: rgba(255, 255, 255, 0.2);
            color: white;
        }
    </style>
</head>
<body>
    <div class="container">
        <h2>Set Your Preferences</h2>
        <div id="form-section">
```

```
            <label for="theme">Choose Theme:</label>
            <select id="theme">
                <option value="light">Light</option>
                <option value="dark">Dark</option>
            </select>

            <label for="language">Choose Language:</label>
            <select id="language">
                <option value="English">English</option>
                <option value="French">French</option>
            </select>

            <button onclick="savePreferences()">Save Preferences</button>
        </div>

        <div id="view-section" class="hidden">
            <h2>Your Preferences</h2>
            <div class="pref-box">
                <p>🌟 Theme: <span id="saved-theme">-</span></p>
                <p>🌍 Language: <span id="saved-language">-</span></p>
            </div>
            <button onclick="resetPreferences()">Change
Preferences</button>
        </div>
    </div>

    <script>
        function savePreferences() {
            let theme = document.getElementById("theme").value;
            let language = document.getElementById("language").value;

            fetch("PreferenceServlet", {
                method: "POST",
                headers: { "Content-Type": "application/x-www-form-
urlencoded" },
                 body: `theme=${theme}&language=${language}`
            }).then(() => updateView());
        }

        function updateView() {
            fetch("PreferenceServlet")
                .then(response => response.json())
                .then(data => {
                    document.getElementById("saved-theme").innerText =
data.theme;
                    document.getElementById("saved-language").innerText =
data.language;
                    document.body.classList.toggle("dark-mode", data.theme
=== "dark");

                    document.getElementById("form-
section").classList.add("hidden");
                    document.getElementById("view-
section").classList.remove("hidden");
                });
        }

        function resetPreferences() {
            fetch("PreferenceServlet", { method: "DELETE" }).then(() => {
                document.getElementById("form-
section").classList.remove("hidden");
```

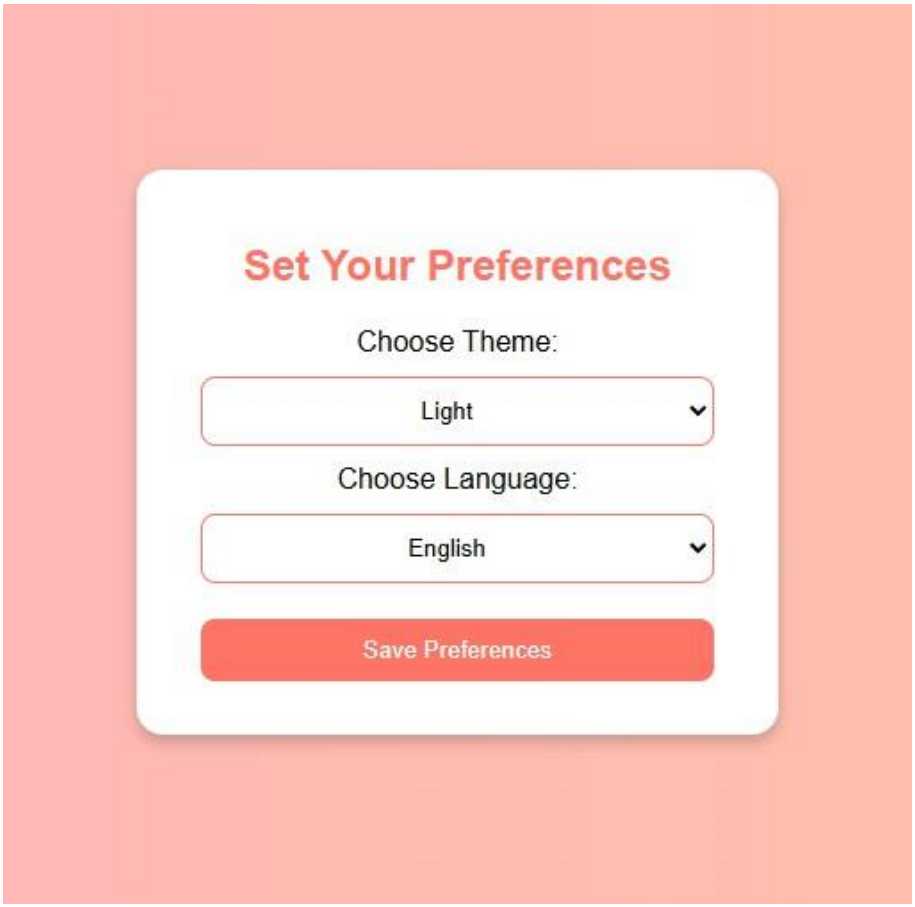
```
                document.getElementById("view-
section").classList.add("hidden");
            });
        }

        window.onload = updateView;
    </script>
</body>
</html>
```

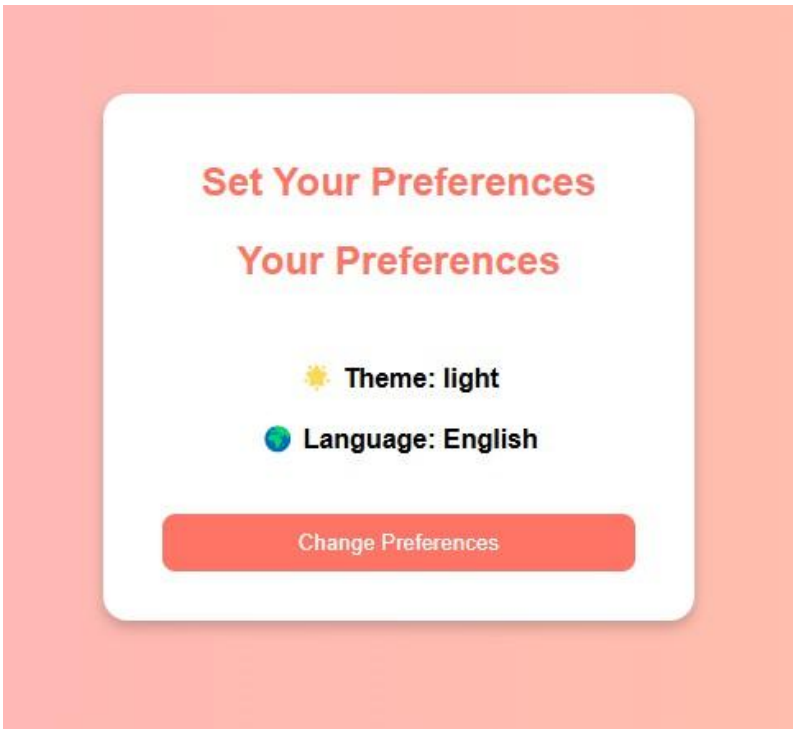
`PreferenceServlet.java` (Backend - Java Servlet)

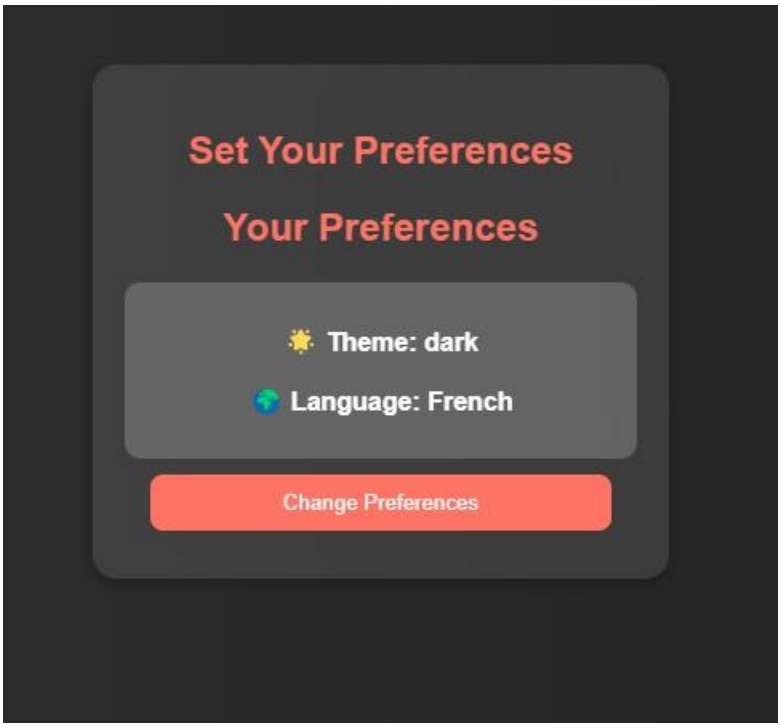
```
java
CopyEdit
import java.io.IOException;
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.Cookie;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import org.json.JSONObject;

@WebServlet("/PreferenceServlet")
public class PreferenceServlet extends HttpServlet {
    protected void doPost(HttpServletRequest request, HttpServletResponse
response) throws ServletException, IOException {
        String theme = request.getParameter("theme");
        String language = request.getParameter("language");

        Cookie themeCookie = new Cookie("theme", theme);
        Cookie languageCookie = new Cookie("language", language);

        themeCookie.setMaxAge(60 * 60 * 24 * 7); // 1 Week
        languageCookie.setMaxAge(60 * 60 * 24 * 7);

        response.addCookie(themeCookie);
        response.addCookie(languageCookie);
    }

    protected void doGet(HttpServletRequest request, HttpServletResponse
response) throws ServletException, IOException {
        String theme = "light";
        String language = "English";

        Cookie[] cookies = request.getCookies();
        if (cookies != null) {
            for (Cookie cookie : cookies) {
                if ("theme".equals(cookie.getName())) theme =
cookie.getValue();
                if ("language".equals(cookie.getName())) language =
cookie.getValue();
            }
        }

        JSONObject json = new JSONObject();
        json.put("theme", theme);
        json.put("language", language);
```

```
        response.setContentType("application/json");
        response.getWriter().write(json.toString());
    }

    protected void doDelete(HttpServletRequest request, HttpServletResponse
response) throws ServletException, IOException {
        Cookie themeCookie = new Cookie("theme", "");
        Cookie languageCookie = new Cookie("language", "");

        themeCookie.setMaxAge(0);
        languageCookie.setMaxAge(0);

        response.addCookie(themeCookie);
        response.addCookie(languageCookie);
    }
}
```

OUTPUT:







RESULT: The Servlet-based project to store user preferences using cookies were executed successfully.

EXP 8 LIBRARY MANAGEMENT SYSTEM

🎯 AIM

To develop a **Library Management System** using **Android Studio** that allows users to enter book details, validates the inputs on the frontend, and displays a cute success message upon submission. The app uses a beautiful UI and ensures input correctness without connecting to a backend.

□ ALGORITHM

1. **Start the Application**.
2. Display the **book entry form** with fields:
   `Book Name`, `Author`, `ISBN`, and `Category`.
3. Wait for the user to **enter the details**.
4. On **Submit Button Click**:
   - Check if **all fields** are filled.
   - If any field is empty, show a **toast message**: "Please fill all fields".
   - If all fields are valid:
     - Display a big **"Book Added Successfully"** message.
5. End.

☎ CODE STRUCTURE

✓ **MainActivity.kt**

```
kotlin
CopyEdit
package com.example.calci

import android.os.Bundle
import android.widget.*
import androidx.appcompat.app.AppCompatActivity

class MainActivity : AppCompatActivity() {

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        val bookName = findViewById<EditText>(R.id.bookName)
        val  author  =  findViewById<EditText>(R.id.author)
        val isbn = findViewById<EditText>(R.id.isbn)
        val category = findViewById<EditText>(R.id.category)
```

```
        val submitBtn = findViewById<Button>(R.id.submitBtn)
        val message = findViewById<TextView>(R.id.successMessage)

        submitBtn.setOnClickListener {
            val bName = bookName.text.toString().trim()
            val auth = author.text.toString().trim()
            val isbnCode = isbn.text.toString().trim()
            val cat = category.text.toString().trim()

            if (bName.isEmpty() || auth.isEmpty() || isbnCode.isEmpty() ||
cat.isEmpty()) {
                Toast.makeText(this, "Please fill all fields",
Toast.LENGTH_SHORT).show()
            } else {
                message.text = "\uD83D\uDCDA Book Added Successfully!"
                message.visibility = TextView.VISIBLE
            }
        }
    }
}
```

---

 activity_main.xml

```
xml
CopyEdit
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:padding="24dp"
    android:gravity="center"
    android:background="@color/pink_bg"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <TextView
        android:text="☎ Library Book Entry"
        android:textSize="26sp"
        android:textColor="@color/deep_pink"
        android:layout_marginBottom="24dp"
        android:textStyle="bold"
        android:layout_gravity="center"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />

    <EditText
        android:id="@+id/bookName"
        android:hint="Book Name"
        android:background="@drawable/input_bg"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" />

    <EditText
        android:id="@+id/author"
        android:hint="Author Name"
        android:background="@drawable/input_bg"
        android:layout_marginTop="10dp"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" />
```

```
    <EditText
        android:id="@+id/isbn"
        android:hint="ISBN"
        android:background="@drawable/input_bg"
        android:layout_marginTop="10dp"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" />

    <EditText
        android:id="@+id/category"
        android:hint="Category"
        android:background="@drawable/input_bg"
        android:layout_marginTop="10dp"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" />

    <Button
        android:id="@+id/submitBtn"
        android:text="Submit"
        android:layout_marginTop="16dp"
        android:backgroundTint="@color/deep_pink"
        android:textColor="#fff"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" />

    <TextView
        android:id="@+id/successMessage"
        android:text=""
        android:textSize="22sp"
        android:gravity="center"
        android:textStyle="bold"
        android:textColor="@color/success_green"
        android:layout_marginTop="18dp"
        android:visibility="gone"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"/>
</LinearLayout>
```

🎨 `colors.xml`

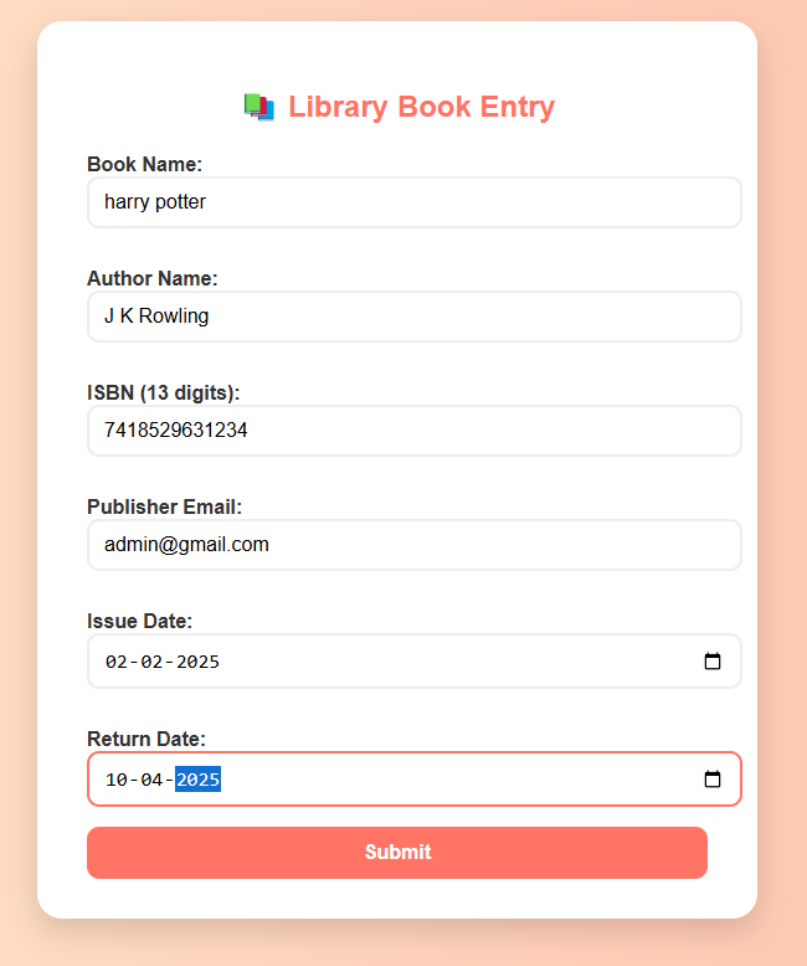
```
xml
CopyEdit
<resources>
    <color name="pink_bg">#FFF0F5</color>
    <color name="deep_pink">#FF1493</color>
    <color name="success_green">#228B22</color>
</resources>
```

🎨 `input_bg.xml` (drawable folder)

```
xml
CopyEdit
<shape xmlns:android="http://schemas.android.com/apk/res/android"
    android:shape="rectangle">
    <solid android:color="#FFFFFF"/>
    <corners android:radius="16dp"/>
```

```
    <stroke android:width="2dp" android:color="#FFB6C1"/>
    <padding android:left="12dp" android:right="12dp"/>
</shape>
```

OUTPUT:



✓ RESULT

When the user fills in all the fields and presses **Submit**, the screen displays:

📚 Book Added Successfully!

With cute pink background, rounded input fields, toast messages for empty fields, and success UI.

EXP 9 CALCULATOR APP

🎯 AIM

To develop a **simple and cute Calculator App** in Android Studio using Kotlin, allowing the user to perform basic arithmetic operations (Addition, Subtraction, Multiplication, Division) with a mobile-friendly interface and clear input/output validation.

□ ALGORITHM

1. Start the app.
2. Display two input fields for numbers.
3. Show buttons: ➕ ➖ ✖ □ ➗ and □ (clear).
4. User enters two numbers and taps a button.
5. App checks if both inputs are valid numbers:
    - If not: show a toast message "Enter valid numbers".
    - If valid:
        - Perform the selected operation.
        - Show the result on the screen.
6. Clear button resets everything.
7. End.

☎ CODE

✅ **MainActivity.kt**

```
kotlin
CopyEdit
package com.example.calci

import android.os.Bundle
import android.widget.*
import androidx.appcompat.app.AppCompatActivity

class MainActivity : AppCompatActivity() {
    private lateinit var num1: EditText
    private lateinit var num2: EditText
    private lateinit var result: TextView
    private lateinit var addBtn: Button
    private lateinit var subBtn: Button
    private lateinit var mulBtn: Button
    private lateinit var divBtn: Button
    private lateinit var clearBtn: Button
```

```
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        num1 = findViewById(R.id.number1)
        num2 = findViewById(R.id.number2)
        result = findViewById(R.id.result)
        addBtn = findViewById(R.id.add)
        subBtn = findViewById(R.id.subtract)
        mulBtn = findViewById(R.id.multiply)
        divBtn = findViewById(R.id.divide)
        clearBtn = findViewById(R.id.clear)

        addBtn.setOnClickListener { calculate("+") }
        subBtn.setOnClickListener { calculate("-") }
        mulBtn.setOnClickListener { calculate("*") }
        divBtn.setOnClickListener { calculate("/") }
        clearBtn.setOnClickListener {
            num1.text.clear()
            num2.text.clear()
            result.text = ""
        }
    }

    private fun calculate(op: String) {
        val n1Text = num1.text.toString()
        val n2Text = num2.text.toString()

        if (n1Text.isEmpty() || n2Text.isEmpty()) {
            Toast.makeText(this, "Enter valid numbers",
Toast.LENGTH_SHORT).show()
            return
        }

        val n1 = n1Text.toDouble()
        val n2 = n2Text.toDouble()
        val res = when (op) {
            "+" -> n1 + n2
            "-" -> n1 - n2
            "*" -> n1 * n2
            "/" -> {
                if (n2 == 0.0) {
                    Toast.makeText(this, "Cannot divide by zero",
Toast.LENGTH_SHORT).show()
                    return
                }
                n1 / n2
            }
            else -> 0.0
        }
        result.text = "Result: $res"
    }
}
```

☐ `activity_main.xml` (Cute Styling UI)

```
xml
CopyEdit
<?xml version="1.0" encoding="utf-8"?>
```

```
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:background="#FFF1F8"
    android:padding="24dp"
    android:gravity="center">

    <TextView
        android:text="Cute Calculator 💖"
        android:textSize="28sp"
        android:textColor="#E91E63"
        android:layout_marginBottom="16dp"
        android:textStyle="bold"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />

    <EditText
        android:id="@+id/number1"
        android:hint="Enter Number 1"
        android:inputType="numberDecimal"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:backgroundTint="#E91E63"
        android:padding="10dp"
        android:layout_marginBottom="12dp"/>

    <EditText
        android:id="@+id/number2"
        android:hint="Enter Number 2"
        android:inputType="numberDecimal"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:backgroundTint="#E91E63"
        android:padding="10dp"
        android:layout_marginBottom="24dp"/>

    <LinearLayout
        android:orientation="horizontal"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:gravity="center"
        android:layout_marginBottom="16dp">

        <Button
            android:id="@+id/add"
            android:text="+"
            android:layout_width="0dp"
            android:layout_weight="1"
            android:layout_height="wrap_content"
            android:backgroundTint="#F8BBD0" />

        <Button
            android:id="@+id/subtract"
            android:text="−"
            android:layout_width="0dp"
            android:layout_weight="1"
            android:layout_height="wrap_content"
            android:backgroundTint="#F8BBD0"
```

```
            android:layout_marginStart="8dp"/>

        <Button
            android:id="@+id/multiply"
            android:text="✕□"
            android:layout_width="0dp"
            android:layout_weight="1"
            android:layout_height="wrap_content"
            android:backgroundTint="#F8BBD0"
            android:layout_marginStart="8dp"/>

        <Button
            android:id="@+id/divide"
            android:text="÷"
            android:layout_width="0dp"
            android:layout_weight="1"
            android:layout_height="wrap_content"
            android:backgroundTint="#F8BBD0"
            android:layout_marginStart="8dp"/>
    </LinearLayout>

    <Button
        android:id="@+id/clear"
        android:text="□ Clear"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:backgroundTint="#CE93D8"
        android:layout_marginBottom="16dp" />

    <TextView
        android:id="@+id/result"
        android:textSize="22sp"
        android:textStyle="bold"
        android:textColor="#880E4F"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />
</LinearLayout>
```

OUTPUT:

✓ RESULT

Once you run the app:

- You can enter two numbers.
- Tap any operation: ➕ ➖ ✖ □ ➗
- Result appears below in bold.
- Clear button resets the input.
- If input is missing or invalid, you'll see a toast message.

EXP 10 FONT COLOUR CHANGER

🎯 AIM

To develop an Android application that **changes the font and color of a TextView** and shows a **toast message** when the user clicks a button.

□ ALGORITHM

1. Start the app.
2. Show a TextView with default text.
3. Display a Button: `Change Style`.
4. When the button is clicked:
    - Change the font style (bold/italic/custom).
    - Change the text color (to a vibrant color).
    - Show a Toast: `"Style Changed!"`
5. End.

☎ CODE

✅ MainActivity.kt

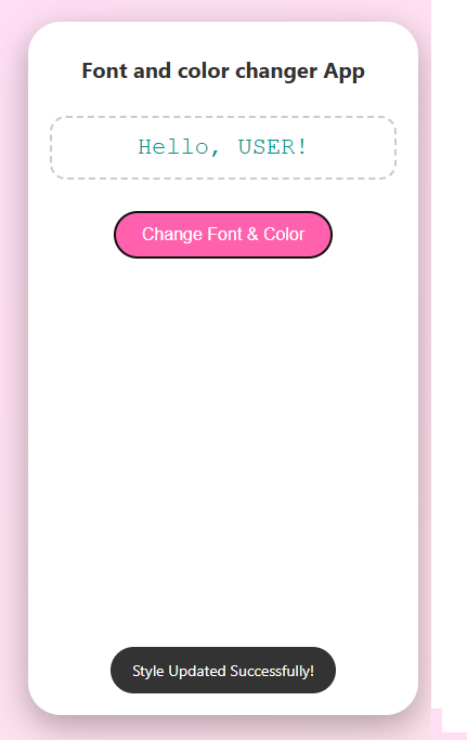
```
kotlin
CopyEdit
package com.example.textstyler

import android.graphics.Color
import android.graphics.Typeface
import android.os.Bundle
import android.widget.*
import androidx.appcompat.app.AppCompatActivity

class MainActivity : AppCompatActivity() {

    lateinit var myText: TextView
    lateinit var styleButton: Button

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        myText = findViewById(R.id.myText)
        styleButton = findViewById(R.id.styleButton)

        styleButton.setOnClickListener {
```

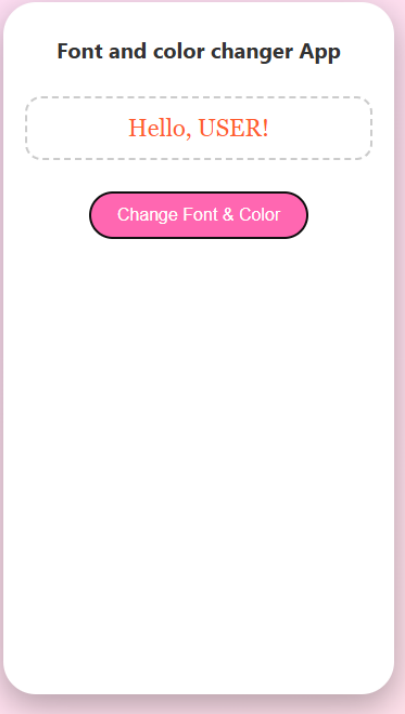
```
            myText.setTextColor(Color.parseColor("#E91E63")) // Vibrant
pink
            myText.setTypeface(null, Typeface.BOLD_ITALIC)
            myText.textSize = 24F
            Toast.makeText(this, "Style Changed!",
Toast.LENGTH_SHORT).show()
        }
    }
}
```

🎨 activity_main.xml

```
xml
CopyEdit
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:gravity="center"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#FFF8E1"
    android:padding="24dp">

    <TextView
        android:id="@+id/myText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Welcome to My App!"
        android:textSize="20sp"
        android:textColor="#333"
        android:padding="16dp" />

    <Button
        android:id="@+id/styleButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Change Style"
        android:textColor="#fff"
        android:backgroundTint="#F48FB1"
        android:layout_marginTop="20dp"
        android:padding="10dp"/>
</LinearLayout>
```

OUTPUT:





✓ RESULT

- When the app runs, a `TextView` displays the message.
- Pressing the **Change Style** button:
  - Changes the **text color to pink**, makes it **bold italic**, and increases the size.