

RAJALAKSHMI ENGINEERING COLLEGE

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



AI23431 Web Technology and Mobile Application

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Semester : 4-nd.

Academic Year : 2024-2025.....

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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

S. No.	Title	Page No.
1	Create a Web Page to Embed a Map with Hotspots, Frames & Links	4
2	JavaScript Form Validation (Registration Page)	9
3	Servlet Program to Display "Hello World"	14
4	Web Form using Servlet to Accept Name & Age	18
5	HTTP GET vs POST using Java Servlet	22
6	Session Tracking using HttpSession in Servlet	26
7	Servlet Project: Store User Preferences using Cookies	30
8	Android App – Library Management System	34
9	Android App – Calculator App with Basic Operations	38
10	Android App – Font & Color Changer	42

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 `` 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!";

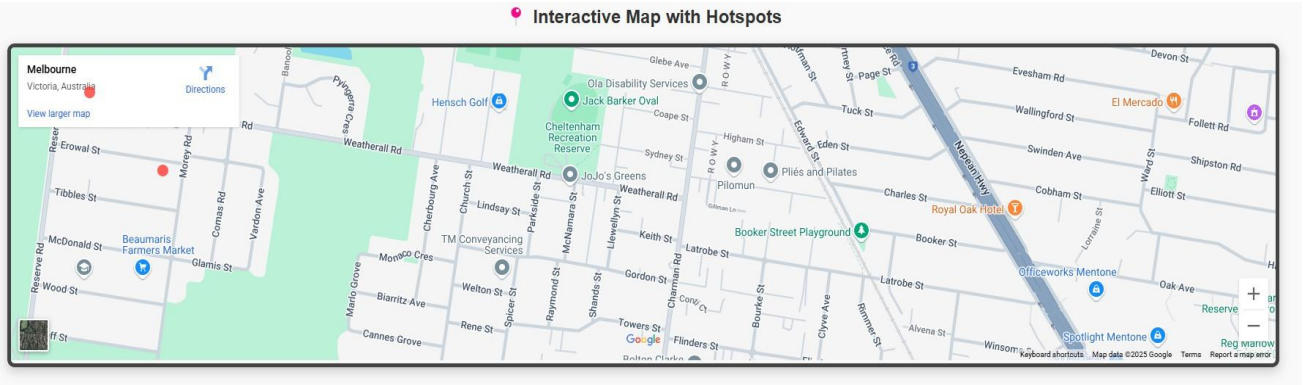
});

</script>

</body>

</html>

OUTPUT:



RESULT: The image map with hotspots, frames, and links 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;

}

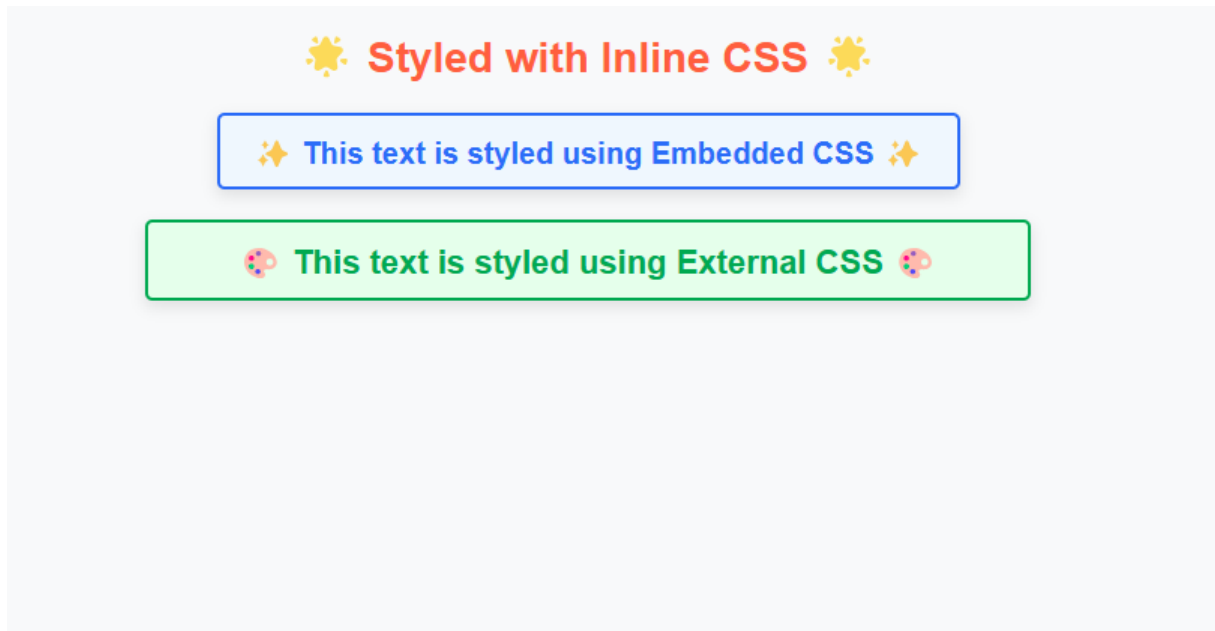
external-style:hover {

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;
}

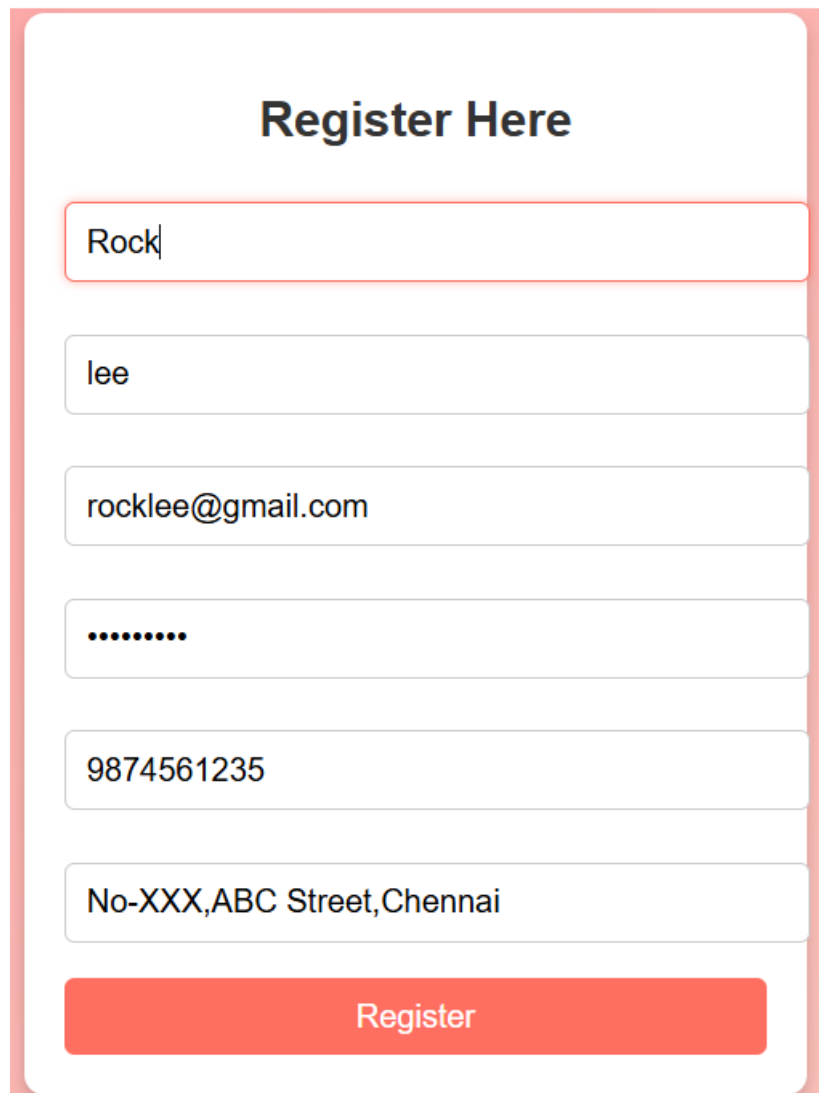
// Email Validation
if (!/^[a-zA-Z0-9._%+-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,}$/.test(email)) {
```

```
        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:



The image shows a registration form titled "Register Here". The form is contained within a light gray rounded rectangle with a red border. It features the following fields and elements:

- Title:** "Register Here" in bold black text.
- Name Field:** A text input field containing "Rock".
- Last Name Field:** A text input field containing "lee".
- Email Field:** A text input field containing "rocklee@gmail.com".
- Password Field:** A text input field containing seven dots ".....".
- Phone Number Field:** A text input field containing "9874561235".
- Address Field:** A text input field containing "No-XXX,ABC Street,Chennai".
- Register Button:** A red button with the text "Register" in white.

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 styles 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:



HELLO WORLD!!!

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;

  }

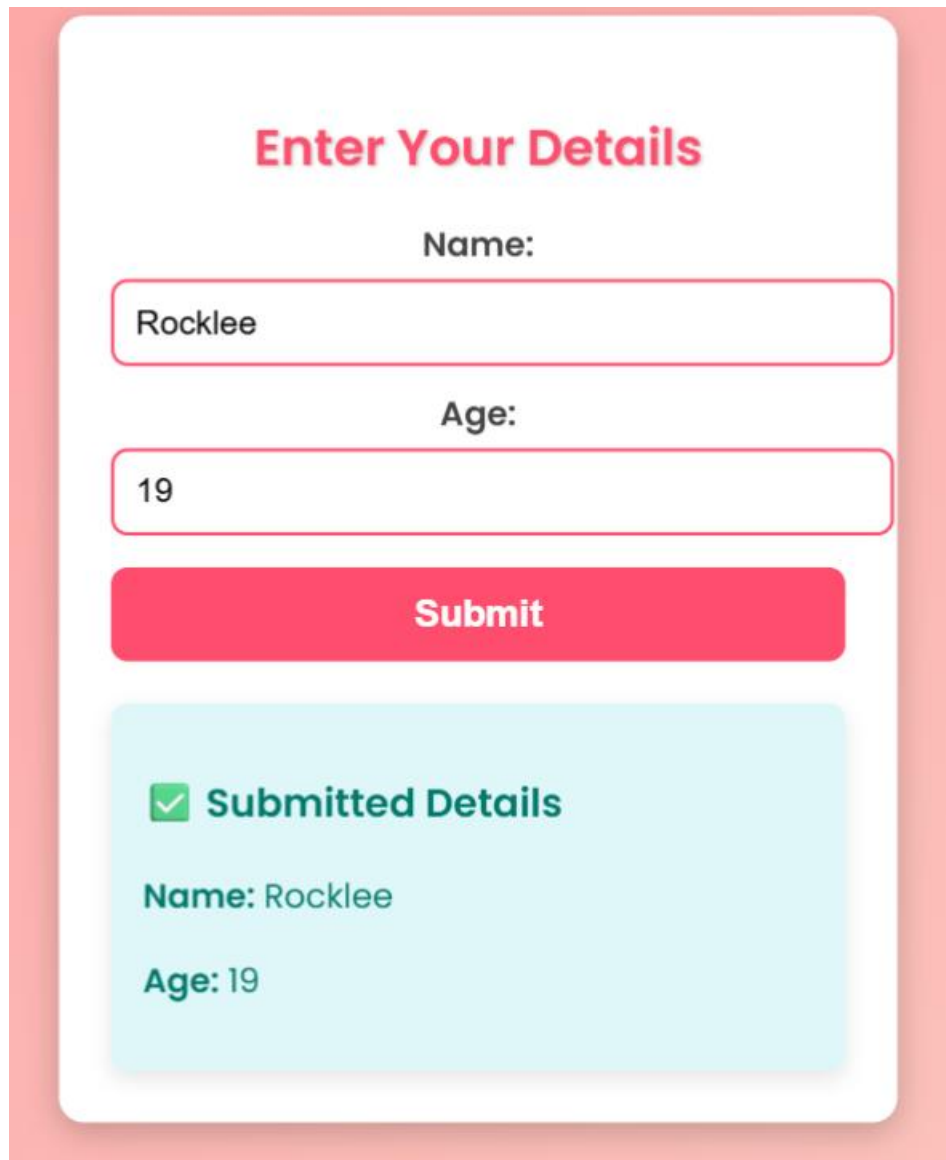
  // Display the submitted data with an animation

  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:



The screenshot displays a web form with a pink border. At the top, the title "Enter Your Details" is centered in bold pink text. Below the title, the label "Name:" is followed by a text input field containing "Rocklee". The label "Age:" is followed by a text input field containing "19". A large pink "Submit" button is positioned below the input fields. At the bottom, a light blue box contains a green checkmark icon, the text "Submitted Details", and the submitted values: "Name: Rocklee" and "Age: 19".

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 
```

```
</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:



Choose GET or POST Method 🚀

Rocklee

Submit with GET

Rocklee

Submit with POST

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("/")
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)

```

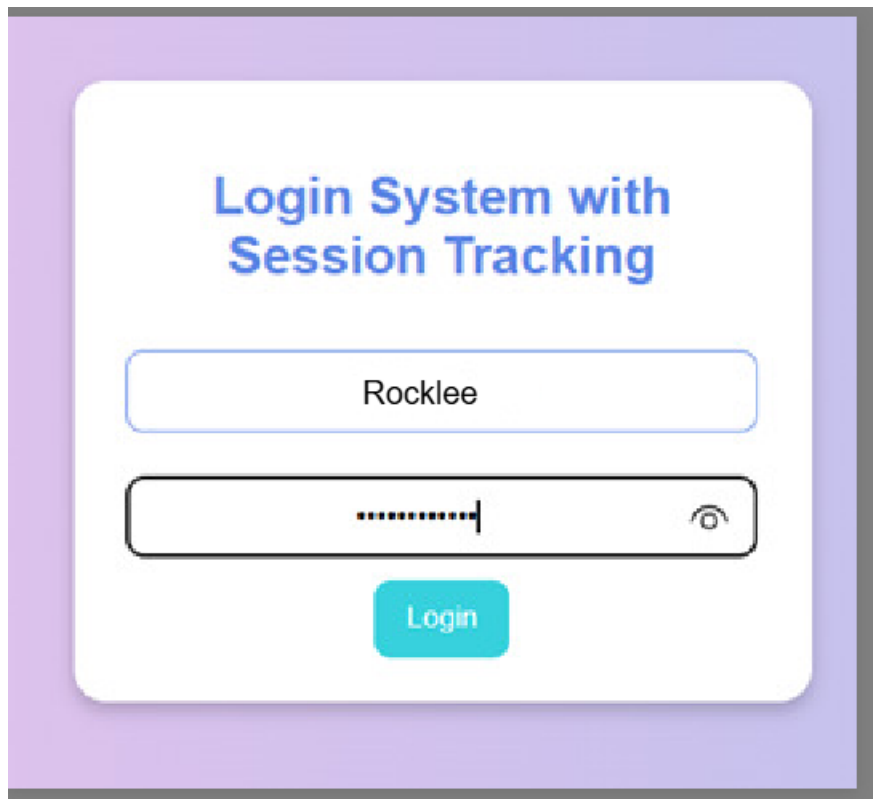
xml
CopyEdit
<web-app xmlns="http://java.sun.com/xml/ns/javaee" version="3.0">
    <servlet>
        <servlet-name>LoginServlet</servlet-name>
        <servlet-class>LoginServlet</servlet-class>
    </servlet>
    <servlet-mapping>
        <servlet-name>LoginServlet</servlet-name>
        <url-pattern>/LoginServlet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



A login form titled "Login System with Session Tracking" in blue text. The form is set against a light purple background with a white rounded rectangle in the center. It contains two input fields: the first is labeled "Rocklee" and the second is a password field with a series of dots and a toggle icon on the right. Below the password field is a teal "Login" button.

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);
    }
}

```

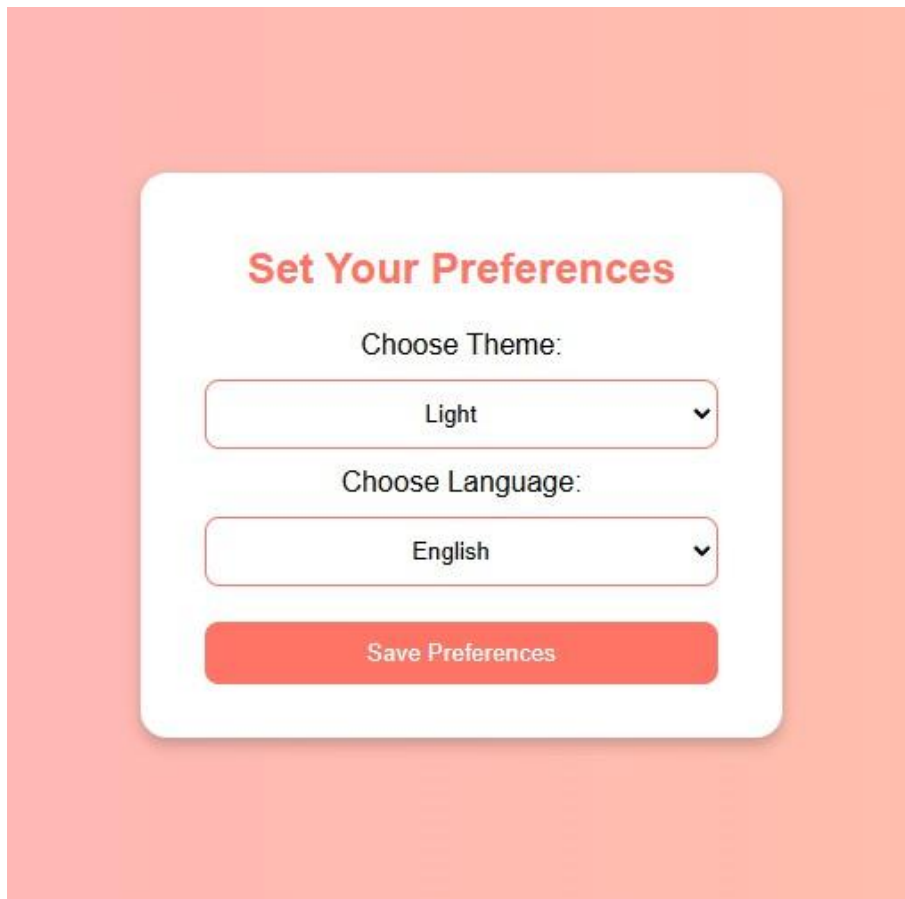
```
        response.setContentType("application/json");
        response.getWriter().write(json.toString());
    }

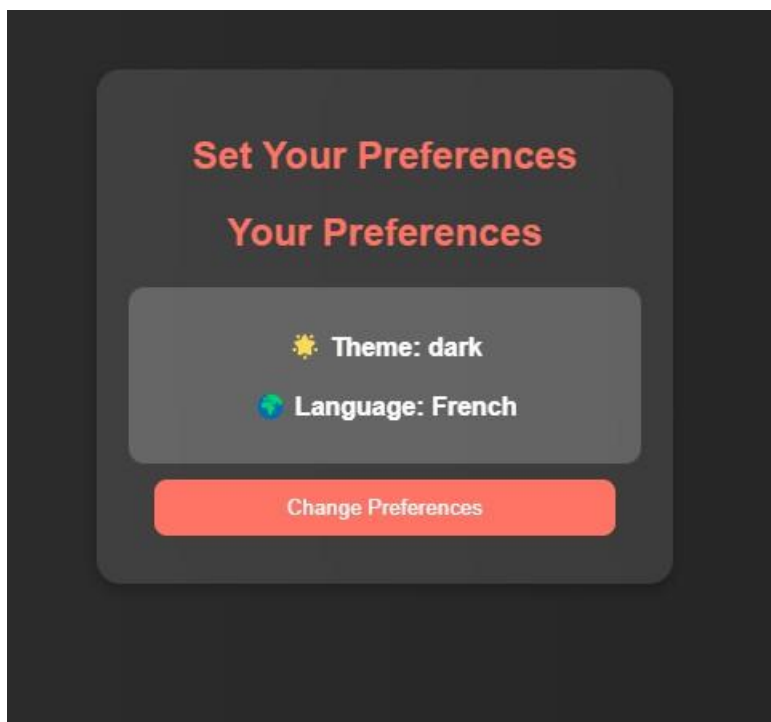
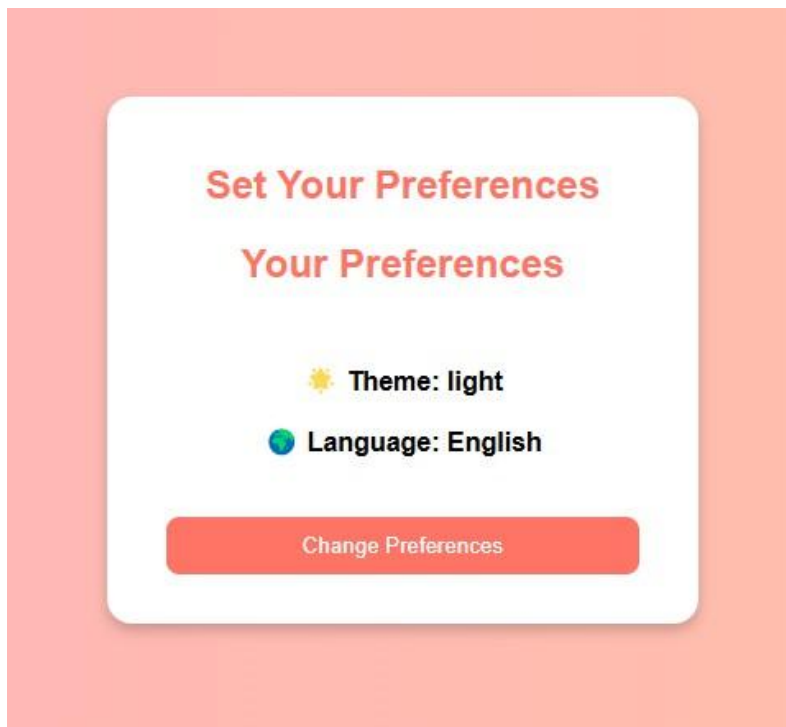
    protected void doDelete(HttpServletRequest request, HttpServletResponse
response) throws ServletException, IOException {
        Cookie themeCookie = new Cookie("theme", "");
        Cookie languageCookie = new Cookie("language", "");

        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)

```

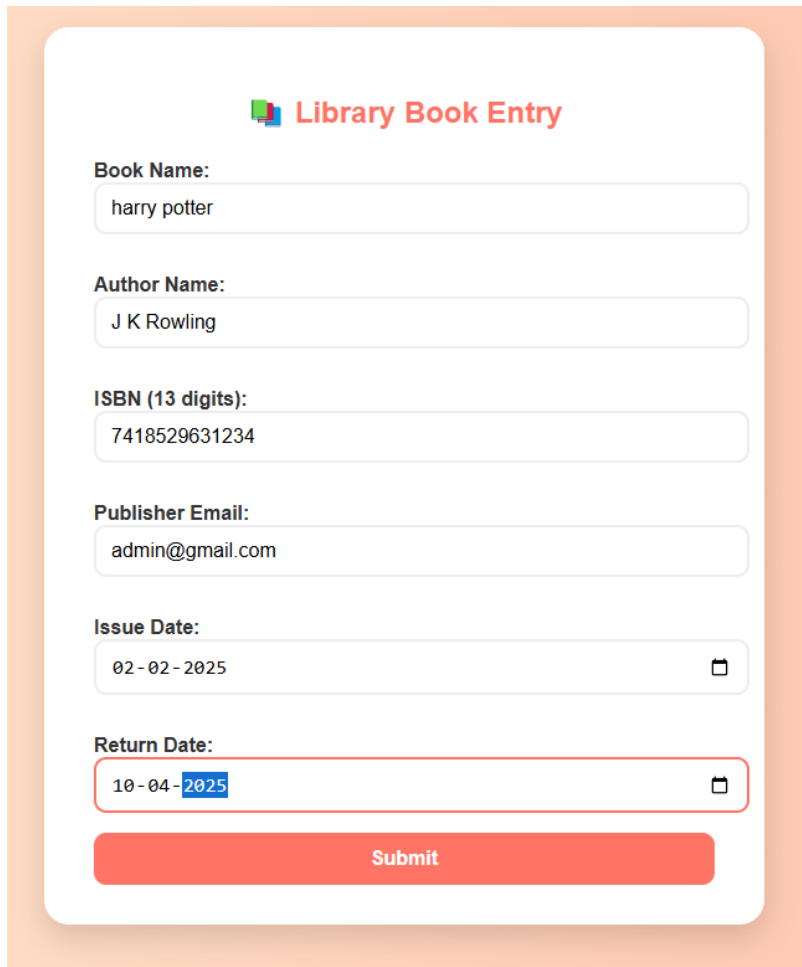
xml
CopyEdit
<shape xmlns:android="http://schemas.android.com/apk/res/android"
    android:shape="rectangle">
    <solid android:color="#FFFFFF"/>
    <corners android:radius="16dp"/>


```



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

OUTPUT:



 **Library Book Entry**

Book Name:

Author Name:

ISBN (13 digits):

Publisher Email:

Issue Date:

Return Date:

Submit



✓ 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: $+$ $-$ \times \square \div
- 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.setTextSize = 24F
        Toast.makeText(this, "Style Changed!",
Toast.LENGTH_SHORT).show()
    }
}
}

```

activity_main.xml

```

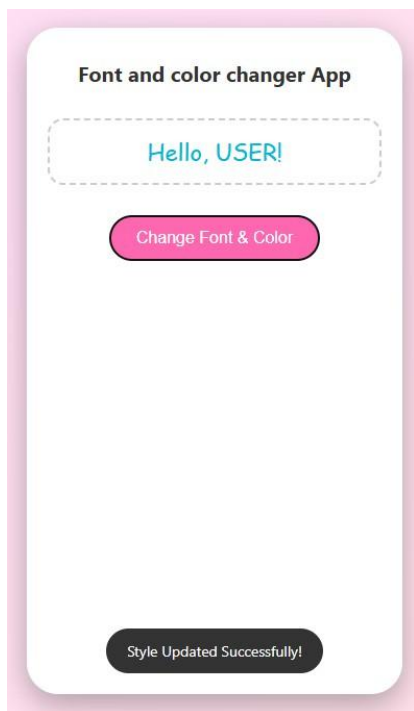
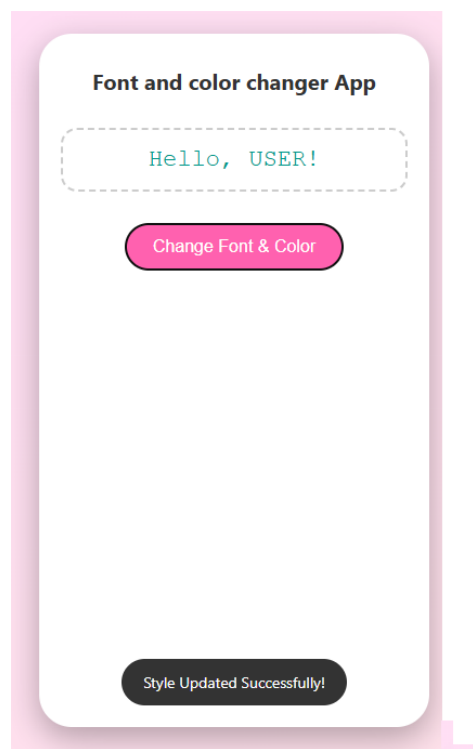
xml
CopyEdit
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:gravity="center"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#FFF8E1"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