



**RAJALAKSHMI**  
**ENGINEERING COLLEGE**  
An AUTONOMOUS Institution  
Affiliated to ANNA UNIVERSITY, Chennai

**DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND  
MACHINE LEARNING**

**AI23431 – WEB TECHNOLOGY AND MOBILE APPLICATION**

**(REGULATION 2023)**

**RAJALAKSHMI ENGINEERING COLLEGE**  
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**EX.NO: 1**

**HTML - WEB PAGE TO EMBED A MAP ALONG WITH  
HOTSPOT, FRAMES AND LINKS**

**index.html**

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>India Map</title>
  <link rel="stylesheet" href="style.css">
</head>
<body>
  
  <map name="in_map">
    <area shape="rect" coords="191, 592, 242, 604" href="tn.html" alt="tamilnadu"
target="_blank">
  </map>
  <a href="https://en.wikipedia.org/wiki/India">INDIA</a>
  <iframe src="https://en.wikipedia.org/wiki/India" frameborder="0"></iframe>
</body>
</html>
```

**tn.html**

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Tamil Nadu</title>
  <style>
    #tn_map{
      width: 500px;
      height: auto;
    }
  </style>
</head>
<body>
  <h1>TAMIL NADU</h1>
  <p>
```

Tamil Nadu is a southern state in India.

</p>



</body>

</html>

<b>EX.NO: 2</b>	<b>CSS - WEB PAGE USING INTERNAL, EXTERNAL AND INLINE CSS</b>
-----------------	---

### index.html

```

<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>WT_EX.2</title>
  <style>
    .internal{
      background-color: aquamarine;
      color: brown;
    }
    #p2{
      width: 400px;
      height: auto;
    }
  </style>
  <link rel="stylesheet" href="style.css">
</head>
<body>
  <p style="background-color:black;">
    <h1 style="color: blue; background-color:burlywood;">Inline CSS</h1>
    
  </p>
  <p>
    <h1 class="internal">Internal CSS</h1>
    
  </p>
  <p>
    <h1 class="external">External CSS</h1>
    
  </p>
</body>
</html>

```

## **style.css**

```
.external{  
    background-color:blueviolet;  
    color:antiquewhite;  
}  
#p3{  
    width: 400px;  
    height: auto;  
}
```

<b>EX.NO: 3</b>	<b>JAVASCRIPT TO VALIDATE REGISTRATION FORM</b>
-----------------	---

### index.html

```

<!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>
</head>
<body>
  <script>
    function validateForm(){
      const name=document.getElementById("fname").value;
      const fn_error=document.getElementById("fn_error");
      const alphabets = /^[A-Za-z]+$/;

      const password=document.getElementById("pswd").value;
      const p_error=document.getElementById("p_error");

      const email=document.getElementById("email").value;
      const email_error=document.getElementById("email_error");
      const emailPattern = /^[a-zA-Z0-9._%+-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,}$/;

      const mobile=document.getElementById("mob").value;
      const mob_error=document.getElementById("mob_error");

      const lname=document.getElementById("lname").value;
      const ln_error=document.getElementById("ln_error");

      const address=document.getElementById("adrs").value;
      const adrs_error=document.getElementById("adrs_error");

      let isValid=true;

      fn_error.innerHTML = "";
      p_error.innerHTML = "";
      email_error.innerHTML = "";
      mob_error.innerHTML = "";
    }
  </script>

```

```

ln_error.innerHTML = "";
adrs_error.innerHTML = "";

if(name.length <6 ){
    fn_error.innerHTML="Name must be at least 6 characters long.";
    isValid= false;
}
else if (!name.match(alphabets)) {
    fn_error.innerHTML = "Name must contain only alphabets.";
    isValid= false;
}

if(password.length<6){
    p_error.innerHTML="Password must be at least 6 characters long.";
    isValid= false;
}

if(!email.match(emailPattern)){
    email_error.innerHTML="Invalid format.";
    isValid=false;
}

if (mobile.length !== 10 || isNaN(mobile)) {

    mob_error.innerHTML = "Mobile number must be exactly 10 digits.";
    isValid = false;
}

if(!name.trim()==="){
    ln_error.innerHTML="Last Name cannot be empty.";
    isValid=false;
}

if(address.trim()==="){
    adrs_error.innerHTML="Address cannot be empty.";
    isValid=false;
}

if(isValid){
    alert("Submitted!");
    return true;
}
return false;
}

```

```
</script>
<h1 style="text-align: center;">Registration Form</h1>
<form action="" onsubmit="return validateForm()">
  <label for="fname">First Name:</label>
  <input type="text" id="fname" name="First name" placeholder="Name">
  <span style="color: red;" id="fn_error"></span>
  <br><br>

  <label for="pswd">Password:</label>
  <input type="text" id="pswd" name="Password" placeholder="Password">
  <span style="color: red;" id="p_error"></span>
  <br><br>

  <label for="E-mail">E-mail:</label>
  <input type="text" name="E-mail id" id="email" placeholder="E-mail">
  <span style="color: red;" id="email_error"></span>
  <br><br>

  <label for="Mob.number">Mobile Number:</label>
  <input type="number" name="Mobile number" id="mob" placeholder="Mobile Number">
  <span style="color: red;" id="mob_error"></span>
  <br><br>

  <label for="lname">Last Name:</label>
  <input type="text" name="Last Name" id="lname" placeholder="Last Name">
  <span style="color: red;" id="ln_error"></span>
  <br><br>

  <label for="address">Address:</label>
  <input type="text" name="Address" id="adrs" placeholder="Address">
  <span style="color: red;" id="adrs_error"></span>
  <br><br>

  <button>Submit</button>

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



<b>EX.NO: 4</b>	<b>SERVLET TO PRINT “Hello World!”</b>
-----------------	--

### **HelloWorldServlet.java**

```
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("/hello")
```

```
public class HelloWorldServlet extends HttpServlet {
    private static final long serialVersionUID = 1L;
```

```
@Override
```

```
protected void doGet(HttpServletRequest request, HttpServletResponse response)
```

```
    throws ServletException, IOException {
```

```
    response.setContentType("text/html");
```

```
    PrintWriter out = response.getWriter();
```

```
    out.println("<html><body>");
```

```
    out.println("<h1>Hello World</h1>");
```

```
    out.println("</body></html>");
```

```
}
```

```
}
```

**EX.NO: 5**

**SERVLET TO PROCESS FORM DATA AND DISPLAY  
ON BROWSER**

**FormServlet.java**

```
package com.example;
import java.io.IOException;
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("/form")
public class FormServlet extends HttpServlet {
    protected void doPost(HttpServletRequest request, HttpServletResponse response)
        throws ServletException, IOException {
        String name = request.getParameter("name");
        String email = request.getParameter("email");
        response.setContentType("text/html");
        response.getWriter().println("<h1>Form Submitted</h1>");
        response.getWriter().println("<p>Name: " + name + "</p>");
        response.getWriter().println("<p>Email: " + email + "</p>");
    }
}
```

**index.html**

```
<!DOCTYPE html>
<html>
<head>
    <title>Form Example</title>
</head>
<body>
    <h1>Submit Your Information</h1>
    <form action="form" method="post">
        <label for="name">Name:</label><br>
        <input type="text" id="name" name="name"><br><br>
        <label for="email">Email:</label><br>
        <input type="email" id="email" name="email"><br><br>
        <input type="submit" value="Submit">
    </form>
</body>
</html>
```

<b>EX.NO: 6</b>	<b>SERVLET TO DIFFERENTIATE BETWEEN HTTP GET AND POST</b>
-----------------	---

### **Form.java**

```

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("/formDemo")
public class Form2 extends HttpServlet {
    private static final long serialVersionUID = 1L;

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

        // Handle GET request
        String name = request.getParameter("name");
        if (name != null) {
            out.println("<h3>You submitted via GET: " + name + "</h3>");
        }

        out.close();
    }

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

        // Handle POST request
        String name = request.getParameter("name");
        if (name != null) {
            out.println("<h3>You submitted via POST: " + name + "</h3>");
        }
    }
}

```

```
        out.close();
    }
}
```

### **index.html**

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Form Demo</title>
</head>
<body>
    <h2>Submit Data Using GET Method</h2>
    <form method="GET" action="formDemo">
        Name: <input type="text" name="name"><br>
        <input type="submit" value="Submit via GET">
    </form>

    <h2>Submit Data Using POST Method</h2>
    <form method="POST" action="formDemo">
        Name: <input type="text" name="name"><br>
        <input type="submit" value="Submit via POST">
    </form>
</body>
</html>
```

<b>EX.NO: 7</b>	<b>SERVLET TO DEMONSTRATE SESSION TRACKING USING HttpSession</b>
-----------------	--

### index.html

```

<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Login</title>
</head>
<body>
  <h2>Login Form</h2>
  <form action="login" method="post">
    <label for="username">Username:</label>
    <input type="text" id="username" name="username" required>
    <br><br>
    <label for="password">Password:</label>
    <input type="password" id="password" name="password" required>
    <br><br>
    <input type="submit" value="Login">
  </form>
</body>
</html>

```

### LoginServlet.java

```

import java.io.IOException;
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("/login")
public class LoginServlet extends HttpServlet {
    private static final long serialVersionUID = 1L;

    protected void doPost(HttpServletRequest request, HttpServletResponse response) throws
ServletException, IOException {
        String username = request.getParameter("username");
        String password = request.getParameter("password");

```

```

        if ("admin".equals(username) && "password".equals(password)) {
            HttpSession session = request.getSession();
            session.setAttribute("username", username);
            response.sendRedirect("welcome.jsp");
        } else {
            response.sendRedirect("index.html?error=Invalid credentials");
        }
    }
}

```

### **LogoutServlet.java**

```

import java.io.IOException;
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("/logout")
public class LogoutServlet extends HttpServlet {
    private static final long serialVersionUID = 1L;

    protected void doGet(HttpServletRequest request, HttpServletResponse response) throws
ServletException, IOException {
        HttpSession session = request.getSession(false);
        if (session != null) {
            session.invalidate();
        }
        response.sendRedirect("index.html");
    }
}

```

<b>EX.NO: 8</b>	<b>LIBRARY MANAGEMENT SYSTEM</b>
-----------------	----------------------------------

### AddBookServlet.java

```

import java.io.IOException;
import java.io.PrintWriter;
import java.sql.Connection;
import java.sql.PreparedStatement;
import java.sql.SQLException;
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("/AddBookServlet")
public class AddBookServlet extends HttpServlet {
    protected void doPost(HttpServletRequest request, HttpServletResponse response) throws
    ServletException, IOException {
        String title = request.getParameter("title");
        String author = request.getParameter("author");
        String isbn = request.getParameter("isbn");

        try (Connection conn = DBUtil.getConnection()) {
            String sql = "INSERT INTO books (title, author, isbn) VALUES (?, ?, ?)";
            PreparedStatement statement = conn.prepareStatement(sql);
            statement.setString(1, title);
            statement.setString(2, author);
            statement.setString(3, isbn);
            statement.executeUpdate();

            // Send a response with a JavaScript alert
            response.setContentType("text/html");
            PrintWriter out = response.getWriter();
            out.println("<html><head><title>Success</title></head><body>");
            out.println("<script type='text/javascript'>");
            out.println("alert('Book added successfully!');");
            out.println("window.location.href = 'index.jsp';"); // Redirect to index.jsp after alert
            out.println("</script>");
            out.println("</body></html>");
        }
    }
}

```

```

    } catch (SQLException e) {
        e.printStackTrace();
        response.getWriter().println("Error: " + e.getMessage());
    }
}
}

```

### **DBUtil.java**

```

import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.SQLException;

public class DBUtil {
    private static final String URL = "jdbc:mysql://localhost:3306/library_db"; // Database URL
    private static final String USER = "root"; // Database username
    private static final String PASSWORD = "root"; // Database password

    public static Connection getConnection() throws SQLException {
        try {
            // Register the MySQL JDBC driver
            Class.forName("com.mysql.cj.jdbc.Driver");
        } catch (ClassNotFoundException e) {
            throw new SQLException("MySQL JDBC Driver not found.", e);
        }
        return DriverManager.getConnection(URL, USER, PASSWORD);
    }

    public static void main(String[] args) {
        try (Connection conn = getConnection()) {
            if (conn != null) {
                System.out.println("Connected to the database!");
            }
        } catch (SQLException e) {
            e.printStackTrace();
        }
    }
}

```



## index.jsp

```
<html>
<head>
  <title>Library Management System</title>
</head>
<body>
  <h1>Add a Book</h1>
  <form action="AddBookServlet" method="post">
    Title: <input type="text" name="title" required><br>
    Author: <input type="text" name="author" required><br>
    ISBN: <input type="text" name="isbn" required><br>
    <input type="submit" value="Add Book">
  </form>
</body>
</html>
```

<b>EX.NO: 9</b>	<b>ANDROID APPLICATION - BASIC CALCULATOR</b>
-----------------	---

**MainActivity.kt**

```
package com.example.calculatorapp
import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.widget.*

class MainActivity : AppCompatActivity() {
    lateinit var num1: EditText
    lateinit var num2: EditText
    lateinit var resultView: TextView
    lateinit var addBtn: Button
    lateinit var subBtn: Button
    lateinit var mulBtn: Button
    lateinit var divBtn: Button

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

        num1 = findViewById(R.id.num1)
        num2 = findViewById(R.id.num2)
        resultView = findViewById(R.id.resultView)
        addBtn = findViewById(R.id.addBtn)
        subBtn = findViewById(R.id.subBtn)
        mulBtn = findViewById(R.id.mulBtn)
        divBtn = findViewById(R.id.divBtn)

        addBtn.setOnClickListener { calculate('+') }
        subBtn.setOnClickListener { calculate('-') }
        mulBtn.setOnClickListener { calculate('*') }
        divBtn.setOnClickListener { calculate('/') }
    }

    private fun calculate(operator: Char) {
        val input1 = num1.text.toString()
        val input2 = num2.text.toString()
```

```

    if (input1.isEmpty() || input2.isEmpty()) {
        resultView.text = "Please enter both numbers."
        return
    }

    val a = input1.toDouble()
    val b = input2.toDouble()
    val result = when (operator) {
        '+' -> a + b
        '-' -> a - b
        '*' -> a * b
        '/' -> {
            if (b == 0.0) {
                resultView.text = "Cannot divide by zero."
                return
            } else a / b
        }
        else -> 0.0
    }

    resultView.text = "Result: $result"
}
}

```

### **activity\_main.xml**

```

<?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:padding="20dp">

    <EditText
        android:id="@+id/num1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter first number"
        android:inputType="numberDecimal"/>

    <EditText
        android:id="@+id/num2"
        android:layout_width="match_parent"

```

```
    android:layout_height="wrap_content"
    android:hint="Enter second number"
    android:inputType="numberDecimal"/>
```

```
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:gravity="center"
    android:layout_marginTop="20dp">

    <Button
        android:id="@+id/addBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="+" />

    <Button
        android:id="@+id/subBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="-" />

    <Button
        android:id="@+id/mulBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="x" />

    <Button
        android:id="@+id/divBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="÷" />
</LinearLayout>

<TextView
    android:id="@+id/resultView"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Result will be shown here"
    android:textSize="18sp"
    android:layout_marginTop="30dp"/>
</LinearLayout>
```

**EX.NO: 10**

**ANDROID APPLICATION TO CHANGE FONT AND  
COLOR OF TEXT**

**MainActivity.kt**

```
package com.example.fontchange
```

```
import android.graphics.Typeface
import android.os.Bundle
import android.widget.Button
import android.widget.TextView
import android.widget.Toast
import androidx.activity.ComponentActivity
import androidx.core.content.ContextCompat
```

```
class MainActivity : ComponentActivity() {
```

```
    private lateinit var textView: TextView
    private lateinit var buttonChange: Button
```

```
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)
        textView = findViewById(R.id.textView)
        buttonChange = findViewById(R.id.buttonChange)
        buttonChange.setOnClickListener { changeTextStyle()
        showToastMessage()
    }
}
```

```
    private fun changeTextStyle() {
        textView.typeface = Typeface.create("sans-serif-medium", Typeface.NORMAL)
        textView.setTextColor(ContextCompat.getColor(this, android.R.color.holo_blue_light))
    }
```

```
    private fun showToastMessage() {
        Toast.makeText(this, "Text style changed!", Toast.LENGTH_SHORT).show()
    }
}
```

### **activity\_main.xml**

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello, World!"
        android:textSize="24sp"
        android:layout_centerInParent="true"
        android:textColor="@android:color/black"/>

    <Button
        android:id="@+id/buttonChange"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Change Font and Color"
        android:layout_below="@id/textView"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="20dp"/>
</RelativeLayout>
```

<b>EX.NO: 11</b>	<b>ANDROID APPLICATION - SD CARD WRITER</b>
------------------	---

### **MainActivity.kt**

```
package com.example.sdcard
```

```
import android.content.ContentValues
```

```
import android.net.Uri
```

```
import android.os.Bundle
```

```
import android.provider.MediaStore
```

```
import android.widget.Button
```

```
import android.widget.Toast
```

```
import androidx.activity.ComponentActivity
```

```
class MainActivity : ComponentActivity() {
```

```
    override fun onCreate(savedInstanceState: Bundle?) {
```

```
        super.onCreate(savedInstanceState)
```

```
        setContentView(R.layout.activity_main)
```

```
        val writeButton = findViewById<Button>(R.id.buttonWrite)
```

```
        writeButton.setOnClickListener {
```

```
            writeToExternalStorage("Hello World!")
```

```
        }
```

```
    }
```

```
    private fun writeToExternalStorage(data: String) {
```

```
        val values = ContentValues().apply {
```

```
            put(MediaStore.Files.FileColumns.DISPLAY_NAME, "sample.txt")
```

```
            put(MediaStore.Files.FileColumns.MIME_TYPE, "text/plain")
```

```
            put(MediaStore.Files.FileColumns.RELATIVE_PATH, "Documents/MyAppFolder")
```

```
        }
```

```
        val uri: Uri? = contentResolver.insert(MediaStore.Files.getContentUri("external"), values)
```

```
        uri?.let {
```

```
            try {
```

```
                val outputStream = contentResolver.openOutputStream(it)
```

```
                outputStream?.write(data.toByteArray())
```

```
                outputStream?.close()
```

```

        Toast.makeText(this, "Data written to $it", Toast.LENGTH_LONG).show()
    } catch (e: Exception) {
        Toast.makeText(this, "Error: ${e.message}", Toast.LENGTH_LONG).show()
    }
} ?: run {
    Toast.makeText(this, "Error creating file", Toast.LENGTH_LONG).show()
}
}
}
}

```

### **activity\_main.xml**

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center"
    android:padding="16dp">

    <Button
        android:id="@+id/buttonWrite"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Write to SD Card" />
</LinearLayout>

```