



**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

Thandalam, Chennai-602015

Name: PRAGADEESH KUMAR L D

Register No: 231501117

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EX.NO: 1

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

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>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>
```

OUTPUT:-



RESULT:-

Thus the given program is executed successfully and output is verified

EX.NO: 2

**CSS - WEB PAGE USING INTERNAL, EXTERNAL AND
INLINE CSS**

PROGRAM:-

index.html

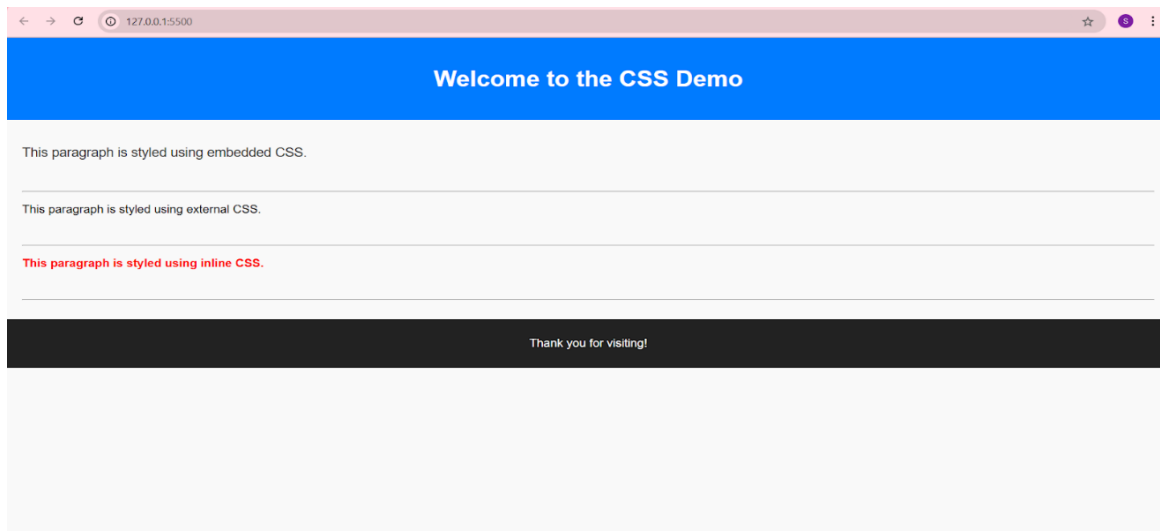
```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>WT_EX.2</title>
  <style>
    .internal{
      background-color: aquamarine;
      color: brown;
    }
    #p2{
      width: 400px;
      height: auto;
    }
  </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>
</body>
</html>
```

```
</p>
<p>
  <h1 class="external">External CSS</h1>
  
</p>
</body>
</html>
```

style.css

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

OUTPUT:-



RESULT:-

Thus the given program is executed successfully and output is verified

EX.NO: 3

JAVASCRIPT TO VALIDATE REGISTRATION FORM

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>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 = "";
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(lname.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>

```

OUTPUT:-

The screenshot shows a web browser window with a registration form. The form is titled "Registration Form" and contains several input fields with associated error messages in red text:

- First Name:** Enter First Name
- Last Name:** Enter Last Name
- Password:** Enter Password
- Email:** Enter Email
- Mobile Number:** Enter Mobile Number
- Address:** Enter Address

At the bottom of the form is a blue button labeled "Register". Below this button, there is a section titled "Registered Users:" which lists the following user:

1. Shriram N - 231501154@rajalakshmi.edu.in, 9940422086

RESULT:-

Thus the given program is executed successfully and output is verified

EX.NO: 4	SERVLET TO PRINT “Hello World!”
-----------------	--

PROGRAM:-

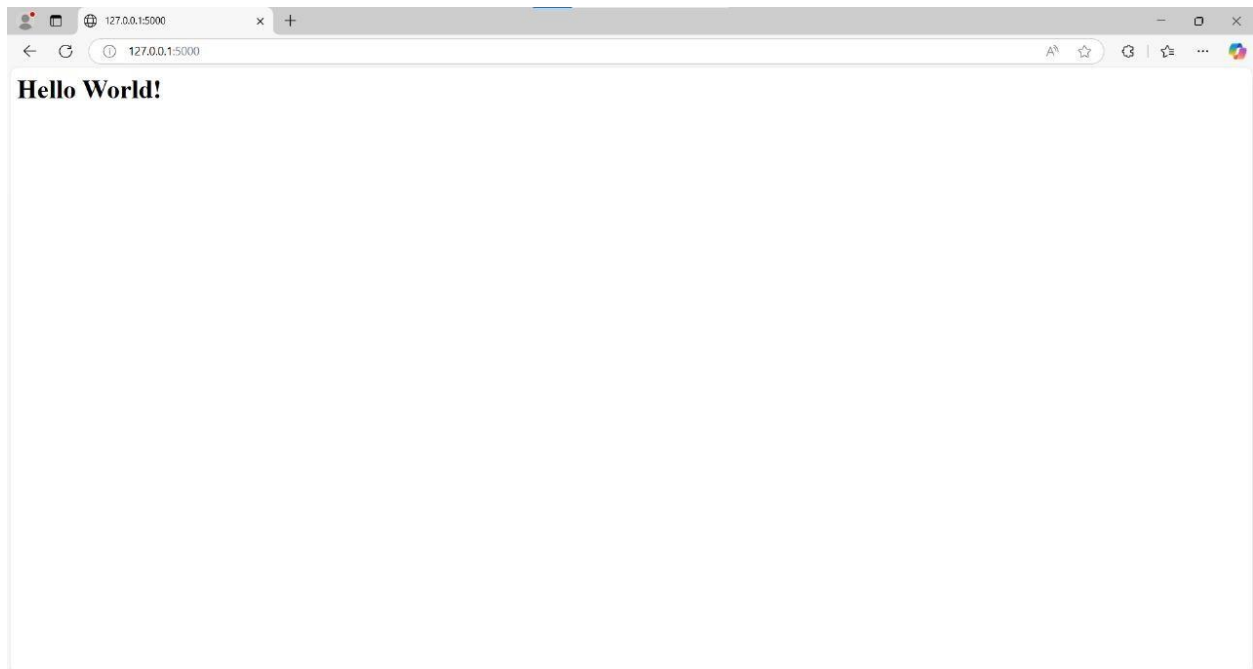
HelloWorldServlet.java

```
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>");
    }
}
```

OUTPUT:-



RESULT:-

Thus the given program is executed successfully and output is verified

EX.NO: 5

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

PROGRAM:-

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>
```

OUTPUT:-

Servelet Web Form

Name:

Email:

Password:

RESULT:-

Thus the given program is executed successfully and output is verified

EX.NO: 6

**SERVLET TO DIFFERENTIATE BETWEEN HTTP GET
AND POST**

PROGRAM:-

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>
```

OUTPUT:-

Enter Something

<input type="text" value="GET input"/>	<input type="submit" value="Submit with GET"/>
<input type="text" value="POST input"/>	<input type="submit" value="Submit with POST"/>

This page says
Login successful!

OK

Login

Username:

Password:

RESULT:-

Thus the given program is executed successfully and output is verified

EX.NO: 7

**SERVLET TO DEMONSTRATE SESSION TRACKING
USING HttpSession**

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>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");  
}  
}
```

OUTPUT:-



RESULT:-

Thus the given program is executed successfully and output is verified

EX.NO: 8

ANDROID APPLICATION - BASIC CALCULATOR

PROGRAM:-

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="×" />
```

```
<Button
```

```
    android:id="@+id/divBtn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="÷" />
```

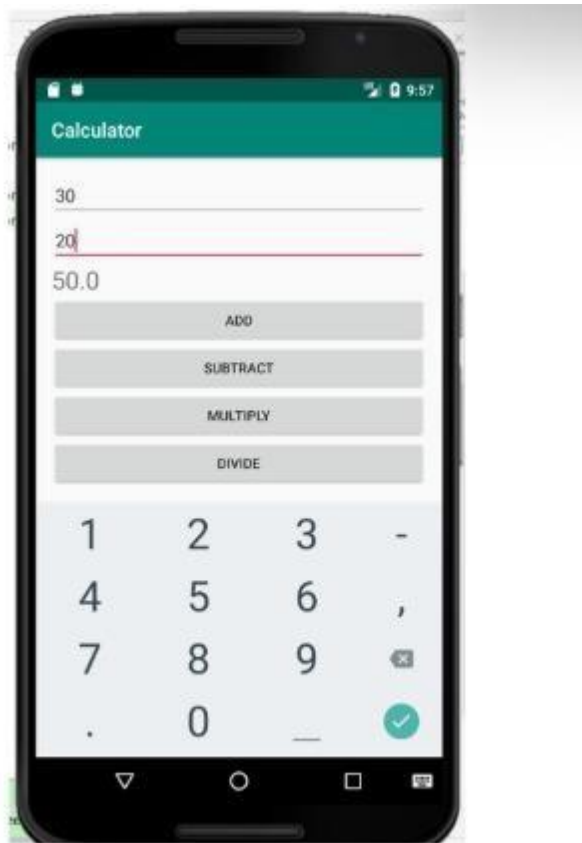
```
</LinearLayout>
```

```
<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>
```


OUTPUT:-



RESULT:-

Thus the given program is executed successfully and output is verified

EX.NO: 10	ANDROID APPLICATION TO CHANGE FONT AND COLOR OF TEXT
------------------	---

PROGRAM:-

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

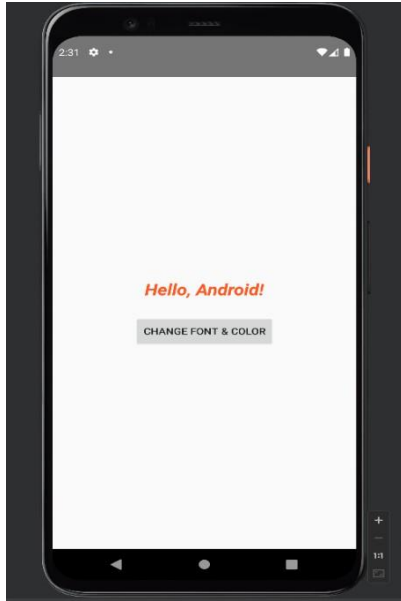
```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <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>
```

OUTPUT:-



RESULT:-

Thus the given program is executed successfully and output is verified

EX.NO: 10	ANDROID APPLICATION - SD CARD WRITER
------------------	---

PROGRAM:-

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()
        }
    }
}
}
}
}
}

```

activity_main.xml

```

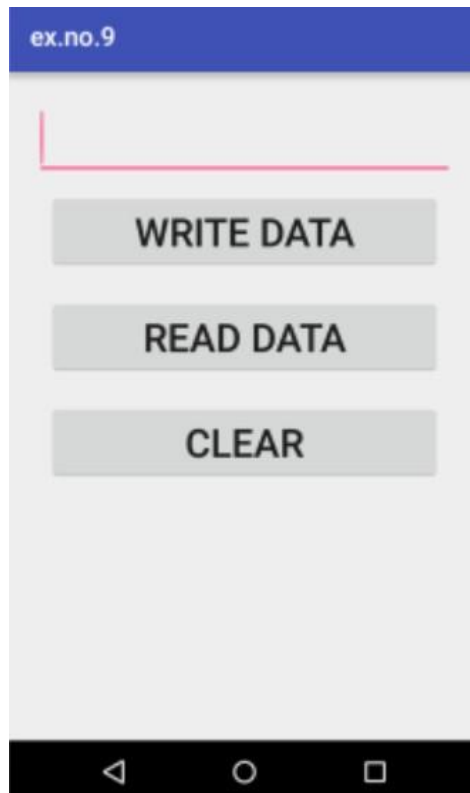
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center"
    android:padding="16dp">

    <Button
        android:id="@+id/buttonWrite"

```

```
        android:layout_width="wrap_content"  
        android:layout_height="wrap_content"  
        android:text="Write to SD Card" />  
</LinearLayout>
```

OUTPUT:-



RESULT:-

Thus the given program is executed successfully and output is verified