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

PROGRAM:-

index.html

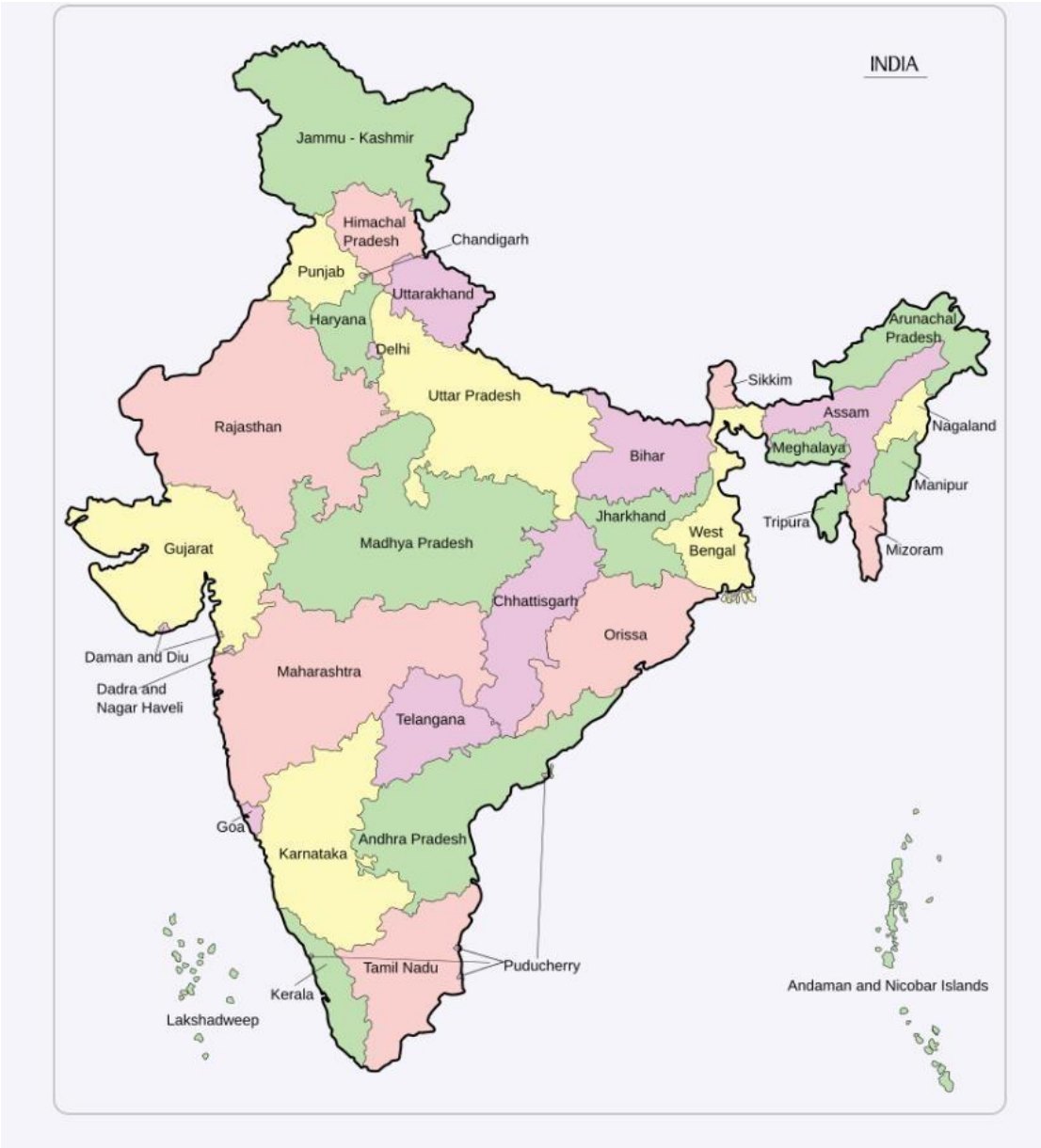
```
<!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <title>India Map</title>
   <link rel="stylesheet" href="style.css">
</head>
<body>
   <img src="india.png" alt="india_map" id="in_map" usemap="#in_map" >
   <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>
    <img src="tamilnadu.png" alt="" id="tn_map">
</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

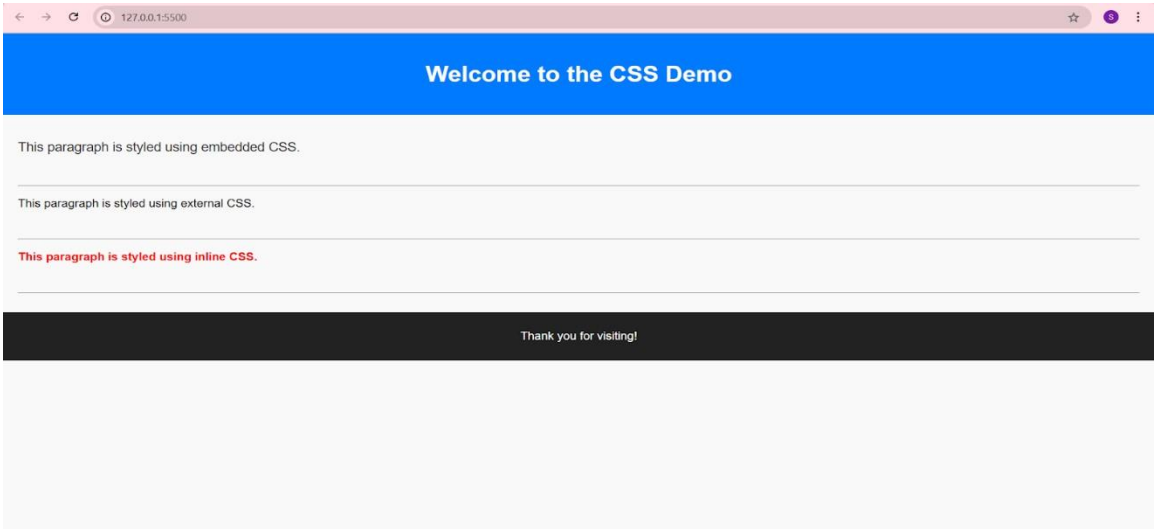
```
<!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <title>WT_EX.2</title>
   <style>
      .internal{          background-
color: aquamarine;          color:
brown;
      }
      #p2{
width: 400px;
height: 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>
      <img src="P1.jpg" alt="img1" style="width: 400px; height:auto;">
   </p>
   <p>
      <h1 class="internal">Internal CSS</h1>
      <img src="P2.jpg" alt="" id="p2">
```

```
    </p>
    <p>
        <h1 class="external">External CSS</h1>
        <img src="P3.jpg" alt="" id="p3">
    </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

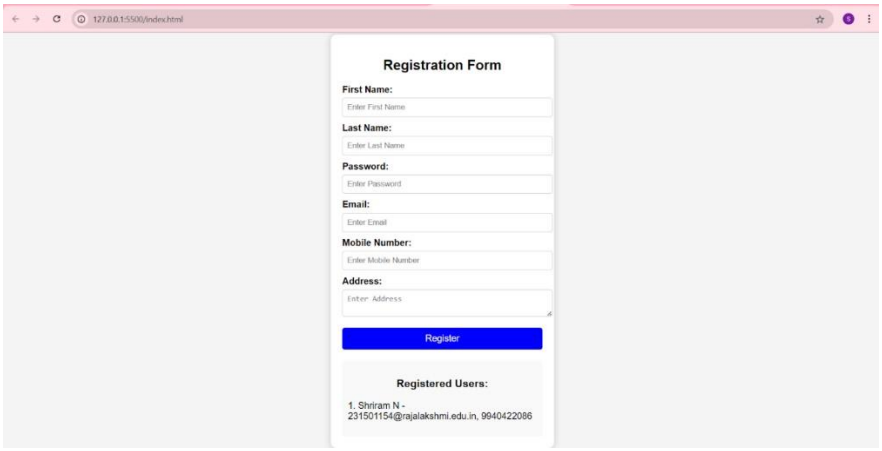
```
<!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <title>Registration form</title>
</head>
<body>
   <script>        function validateForm(){            const
name=document.getElementById("fname").value;
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:-



RESULT:-

Thus the given program is executed successfully and output is verified

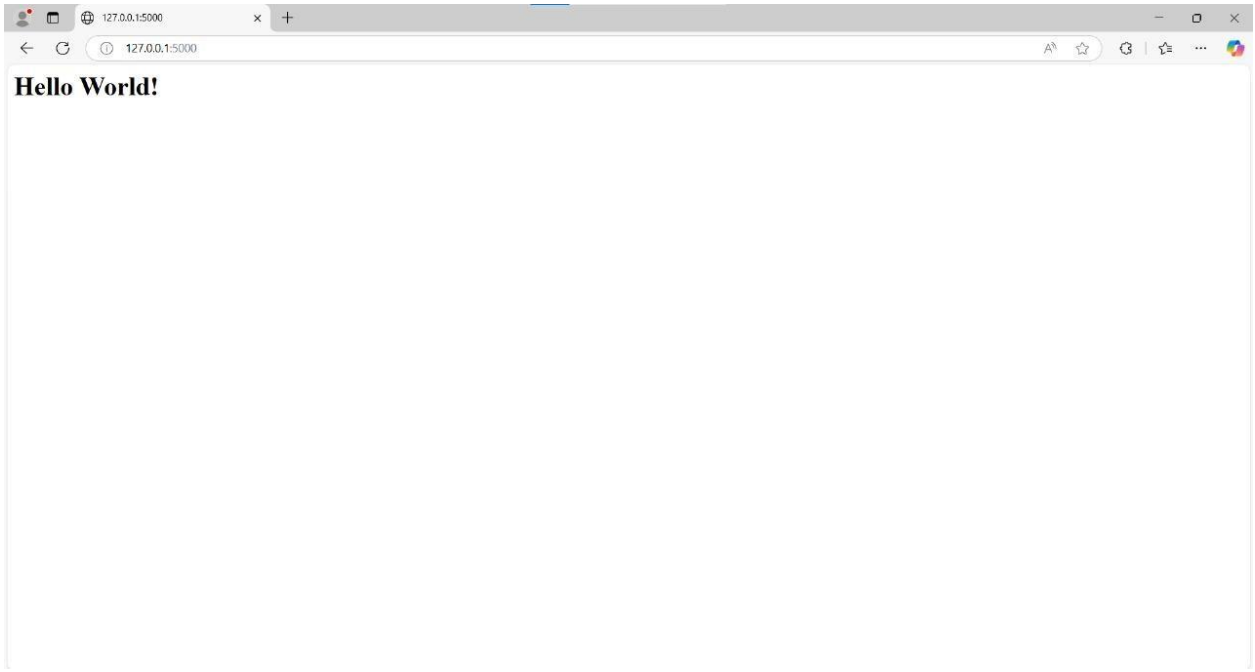
EX.NO: 4	SERVLET TO PRINT “Hello World!”

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:-

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

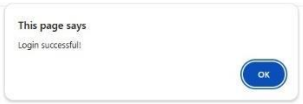
```
import java.io.IOException; import
java.io.PrintWriter; import
javax.servlet.ServletException; import
javax.servlet.annotation.WebServlet; import
javax.servlet.http.HttpServlet; import
javax.servlet.http.HttpServletRequest; import
javax.servlet.http.HttpServletResponse;

@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:-



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: 9	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"
   }
}
```

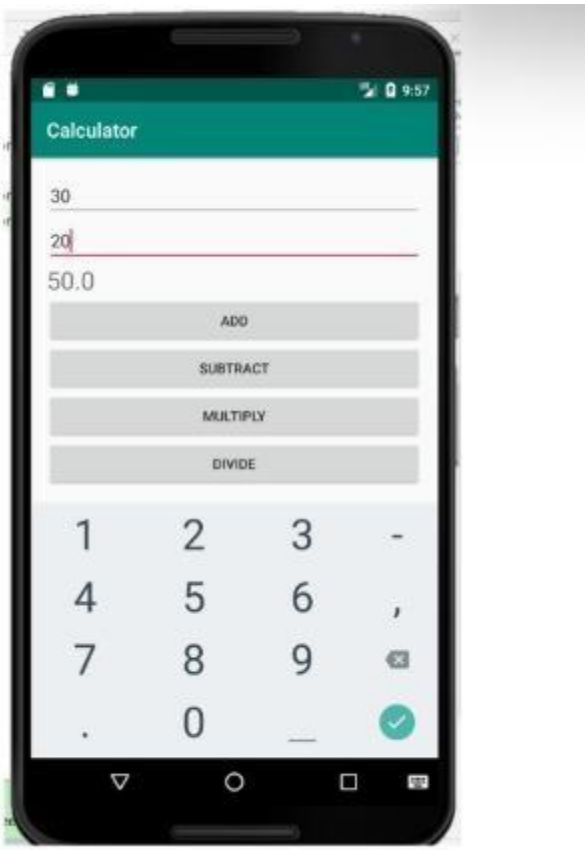
activity_main.xml

```
<?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:-

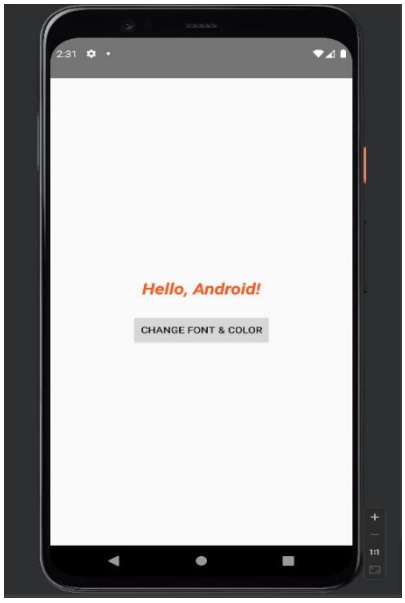
MainActivity.kt

```
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&amp;quot;
        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: 11	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()
            }
        } ?: 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>

OUTPUT:-

RESULT:-

Thus the given program is executed successfully and output is verified