**COURSE OUTCOME-1**

**By,**

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**20MCA311**

**PROGRAM 1**

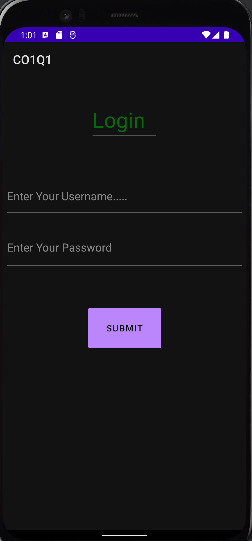
**AIM:**

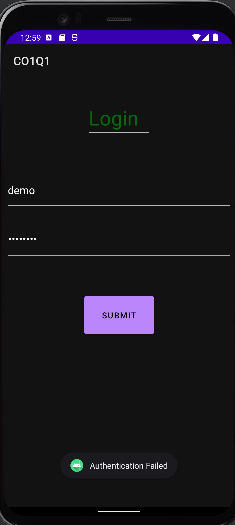
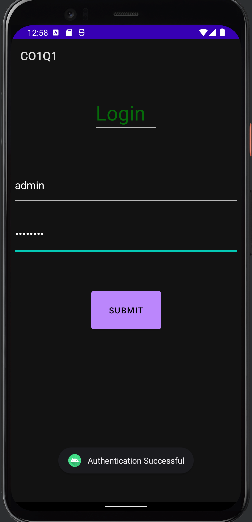
Design a Login Form with username and password using Linear Layout and toast valid credentials.

**PROGRAM CODE**

|  |  |
| --- | --- |
| MainActivity.java | package com.example.co1q1;  import androidx.appcompat.app.AppCompatActivity;  import android.os.Bundle;  import android.view.View;  import android.widget.EditText;  import android.widget.Toast;  public class MainActivity extends AppCompatActivity {  EditText username,password;  @Override  protected void onCreate(Bundle savedInstanceState) {  super.onCreate(savedInstanceState);  setContentView(R.layout.activity\_main);}  public void onSubmit(View view) {  username = findViewById(R.id.username);  password = findViewById(R.id.password);  if (username.getText().toString().equals("admin") && password.getText().toString().equals("password")) {  Toast.makeText(this, "Authentication Successful", Toast.LENGTH\_LONG).show();  } else {  Toast.makeText(this, "Authentication Failed", Toast.LENGTH\_LONG).show();  } }} |
| activity\_main.xml | <?xml version="1.0" encoding="utf-8"?>  <androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"  xmlns:app="http://schemas.android.com/apk/res-auto"  xmlns:tools="http://schemas.android.com/tools"  android:layout\_width="match\_parent"  android:layout\_height="match\_parent"  tools:context=".MainActivity">  <EditText  android:id="@+id/username"  android:layout\_width="388dp"  android:layout\_height="68dp"  android:ems="10"  android:focusableInTouchMode="false"  android:hint="Enter Your Username....."  android:inputType="textPersonName"  app:layout\_constraintBottom\_toBottomOf="parent"  app:layout\_constraintEnd\_toEndOf="parent"  app:layout\_constraintStart\_toStartOf="parent"  app:layout\_constraintTop\_toTopOf="parent"  app:layout\_constraintVertical\_bias="0.24" />  <EditText  android:id="@+id/password"  android:layout\_width="387dp"  android:layout\_height="74dp"  android:ems="10"  android:hint="Enter Your Password"  android:inputType="textPassword"  app:layout\_constraintEnd\_toEndOf="parent"  app:layout\_constraintStart\_toStartOf="parent"  app:layout\_constraintTop\_toTopOf="parent"  app:layout\_constraintVertical\_bias="0.363" />  <EditText  android:id="@+id/editTextTextPersonName3"  android:layout\_width="110dp"  android:layout\_height="65dp"  android:ems="10"  android:inputType="textPersonName"  android:text="Login"  android:textColor="#066A0A"  android:textSize="34sp"  app:layout\_constraintBottom\_toBottomOf="parent"  app:layout\_constraintEnd\_toEndOf="parent"  app:layout\_constraintHorizontal\_bias="0.498"  app:layout\_constraintStart\_toStartOf="parent"  app:layout\_constraintTop\_toTopOf="parent"  app:layout\_constraintVertical\_bias="0.057" />  <Button  android:id="@+id/submit"  android:layout\_width="119dp"  android:layout\_height="77dp"  android:onClick="onSubmit"  android:text="Submit"  app:layout\_constraintBottom\_toBottomOf="parent"  app:layout\_constraintEnd\_toEndOf="parent"  app:layout\_constraintStart\_toStartOf="parent"  app:layout\_constraintTop\_toTopOf="parent"  app:layout\_constraintVertical\_bias="0.561" />  </androidx.constraintlayout.widget.ConstraintLayout> |

**OUTPUT**





**RESULT:** The above program is successfully executed and obtained the output.

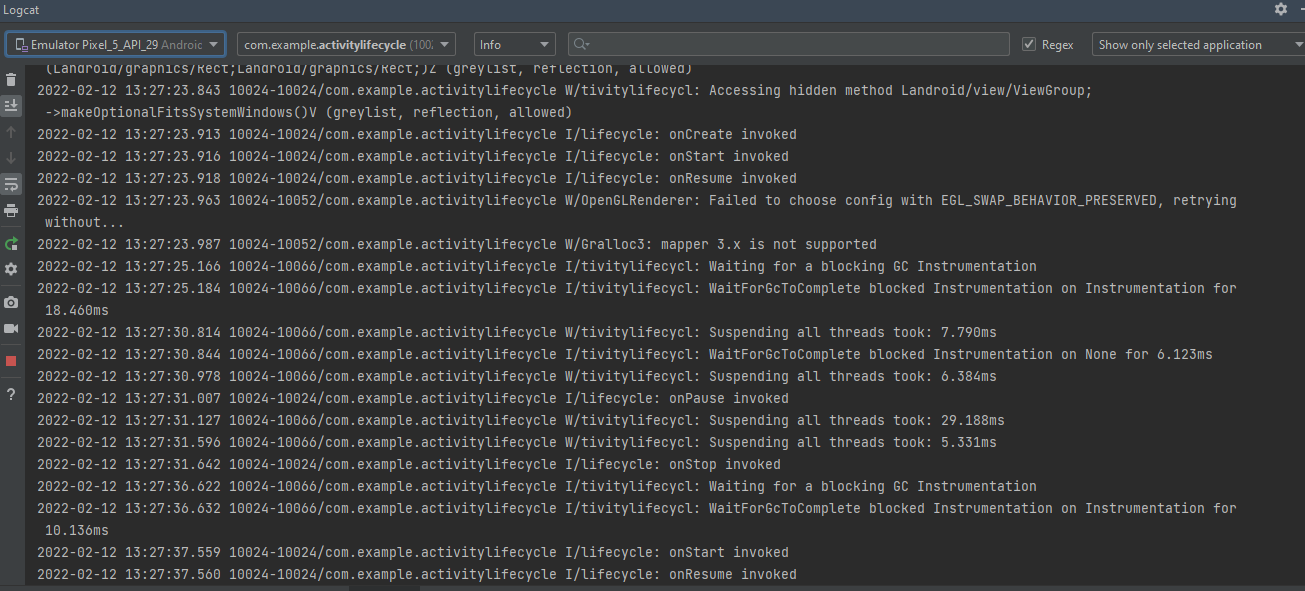
**PROGRAM 2**

**AIM:** Write a program that demonstrates Activity Lifecycle.

**PROGRAM CODE**

|  |  |
| --- | --- |
| MainActivity.java | package com.example.activitylifecycle;  import androidx.appcompat.app.AppCompatActivity;  import android.os.Bundle;  import android.util.Log;  public class MainActivity extends AppCompatActivity {  @Override  protected void onCreate(Bundle savedInstanceState) {  super.onCreate(savedInstanceState);  setContentView(R.layout.activity\_main);  Log.i("lifecycle","onCreate invoked");}  @Override  protected void onStart() {  super.onStart();  Log.i("lifecycle","onStart invoked");}  @Override  protected void onResume() {  super.onResume();  Log.i("lifecycle","onResume invoked");}  @Override  protected void onPause() {  super.onPause();  Log.i("lifecycle","onPause invoked");}  @Override  protected void onStop() {  super.onStop();  Log.i("lifecycle","onStop invoked");}  @Override  protected void onDestroy() {  super.onDestroy();  Log.i("lifecycle","onDestroy invoked");}} |
| activity\_main.xml | <?xml version="1.0" encoding="utf-8"?>  <androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"  xmlns:app="http://schemas.android.com/apk/res-auto"  xmlns:tools="http://schemas.android.com/tools"  android:layout\_width="match\_parent"  android:layout\_height="match\_parent"  tools:context=".MainActivity">  <TextView  android:layout\_width="wrap\_content"  android:layout\_height="wrap\_content"  android:text="Hello World!"  app:layout\_constraintBottom\_toBottomOf="parent"  app:layout\_constraintLeft\_toLeftOf="parent"  app:layout\_constraintRight\_toRightOf="parent"  app:layout\_constraintTop\_toTopOf="parent" />  </androidx.constraintlayout.widget.ConstraintLayout> |

**OUTPUT**



**RESULT:**

The above program is successfully executed and obtained the output.

**PROGRAM 3**

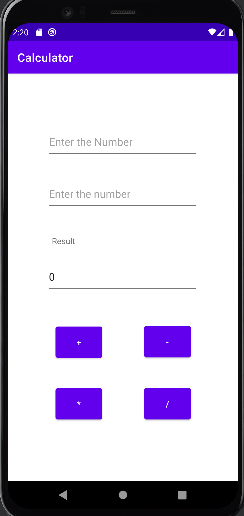
**AIM:**

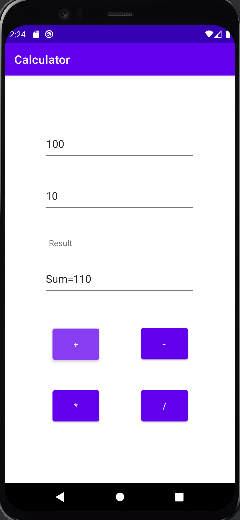
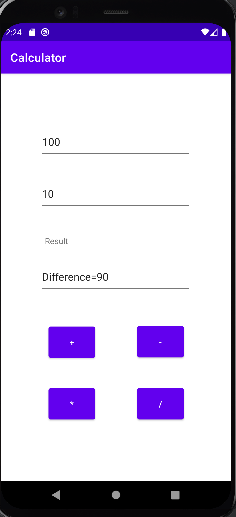
Implementing basic arithmetic operations of a simple calculator.

**PROGRAM CODE**

|  |  |
| --- | --- |
| MainActivity.j ava | package com.example.calculator;  import androidx.appcompat.app.AppCompatActivity;  import android.os.Bundle;  import android.view.View;  import android.widget.EditText;  public class MainActivity extends AppCompatActivity {  EditText num1,num2,result;  @Override  protected void onCreate(Bundle savedInstanceState) {  super.onCreate(savedInstanceState);  setContentView(R.layout.activity\_main);}  public void onSum(View view){  num1=findViewById(R.id.number1);  num2=findViewById(R.id.number2);  result=findViewById(R.id.result); result.setText("Sum="+String.valueOf(Integer.parseInt(num1.getText().toString())+Integer.parseInt(num2.getText().toString())));}  public void onSub(View view){  num1=findViewById(R.id.number1);  num2=findViewById(R.id.number2);  result=findViewById(R.id.result); result.setText("Difference="+String.valueOf(Integer.parseInt(num1.getText().toString())-Integer.parseInt(num2.getText().toString())));}  public void onMul(View view){  num1=findViewById(R.id.number1);  num2=findViewById(R.id.number2);  result=findViewById(R.id.result); result.setText("Multiplication="+String.valueOf(Integer.parseInt(num1.getText().toString())\*Integer.parseInt(num2.getText().toString())));}  public void onDiv(View view){  num1=findViewById(R.id.number1);  num2=findViewById(R.id.number2);  result=findViewById(R.id.result);  result.setText("Division="+String.valueOf(Integer.parseInt(num1.getText().toString())/Integer.parseInt(num2.getText().toString())));}} |
| activity\_main.xml | <?xml version="1.0" encoding="utf-8"?>  <androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"  xmlns:app="http://schemas.android.com/apk/res-auto"  xmlns:tools="http://schemas.android.com/tools"  android:layout\_width="match\_parent"  android:layout\_height="match\_parent"  tools:context=".MainActivity">  <EditText  android:id="@+id/number1"  android:layout\_width="259dp"  android:layout\_height="56dp"  android:ems="10"  android:hint="Enter the Number"  android:inputType="textPersonName"  app:layout\_constraintBottom\_toBottomOf="parent"  app:layout\_constraintEnd\_toEndOf="parent"  app:layout\_constraintHorizontal\_bias="0.496"  app:layout\_constraintStart\_toStartOf="parent"  app:layout\_constraintTop\_toTopOf="parent"  app:layout\_constraintVertical\_bias="0.139" />  <EditText  android:id="@+id/result"  android:layout\_width="259dp"  android:layout\_height="56dp"  android:ems="10"  android:inputType="textPersonName"  android:text="0"  app:layout\_constraintBottom\_toBottomOf="parent"  app:layout\_constraintEnd\_toEndOf="parent"  app:layout\_constraintHorizontal\_bias="0.493"  app:layout\_constraintStart\_toStartOf="parent"  app:layout\_constraintTop\_toTopOf="parent"  app:layout\_constraintVertical\_bias="0.499" />  <EditText  android:id="@+id/number2"  android:layout\_width="259dp"  android:layout\_height="56dp"  android:ems="10"  android:hint="Enter the number"  android:inputType="textPersonName"  app:layout\_constraintBottom\_toBottomOf="parent"  app:layout\_constraintEnd\_toEndOf="parent"  app:layout\_constraintHorizontal\_bias="0.493"  app:layout\_constraintStart\_toStartOf="parent"  app:layout\_constraintTop\_toTopOf="parent"  app:layout\_constraintVertical\_bias="0.278" />  <TextView  android:id="@+id/result\_label"  android:layout\_width="wrap\_content"  android:layout\_height="wrap\_content"  android:text="Result"  app:layout\_constraintBottom\_toBottomOf="parent"  app:layout\_constraintEnd\_toEndOf="parent"  app:layout\_constraintHorizontal\_bias="0.212"  app:layout\_constraintStart\_toStartOf="parent"  app:layout\_constraintTop\_toTopOf="parent"  app:layout\_constraintVertical\_bias="0.408" />  <Button  android:id="@+id/button"  android:layout\_width="80dp"  android:layout\_height="65dp"  android:onClick="onSum"  android:text="+"  app:layout\_constraintBottom\_toBottomOf="parent"  app:layout\_constraintEnd\_toEndOf="parent"  app:layout\_constraintHorizontal\_bias="0.259"  app:layout\_constraintStart\_toStartOf="parent"  app:layout\_constraintTop\_toTopOf="parent"  app:layout\_constraintVertical\_bias="0.676" />  <Button  android:id="@+id/button5"  android:layout\_width="80dp"  android:layout\_height="65dp"  android:onClick="onSub"  android:text="-"  app:layout\_constraintBottom\_toBottomOf="parent"  app:layout\_constraintEnd\_toEndOf="parent"  app:layout\_constraintHorizontal\_bias="0.743"  app:layout\_constraintStart\_toStartOf="parent"  app:layout\_constraintTop\_toTopOf="parent"  app:layout\_constraintVertical\_bias="0.675" />  <Button  android:id="@+id/button6"  android:layout\_width="80dp"  android:layout\_height="65dp"  android:onClick="onMul"  android:text="\*"  app:layout\_constraintBottom\_toBottomOf="parent"  app:layout\_constraintEnd\_toEndOf="parent"  app:layout\_constraintHorizontal\_bias="0.259"  app:layout\_constraintStart\_toStartOf="parent"  app:layout\_constraintTop\_toTopOf="parent"  app:layout\_constraintVertical\_bias="0.843" />  <Button  android:id="@+id/button7"  android:layout\_width="80dp"  android:layout\_height="65dp"  android:onClick="onDiv"  android:text="/"  app:layout\_constraintBottom\_toBottomOf="parent"  app:layout\_constraintEnd\_toEndOf="parent"  app:layout\_constraintHorizontal\_bias="0.743"  app:layout\_constraintStart\_toStartOf="parent"  app:layout\_constraintTop\_toTopOf="parent"  app:layout\_constraintVertical\_bias="0.843" />  </androidx.constraintlayout.widget.ConstraintLayout> |

**OUTPUT**





**RESULT:** The above program is successfully executed and obtained the output.

**PROGRAM 4**

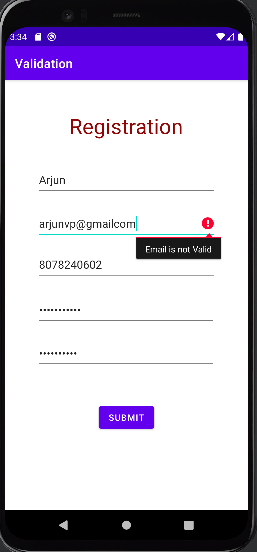
**AIM:**

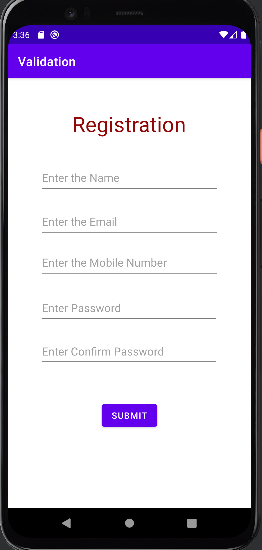
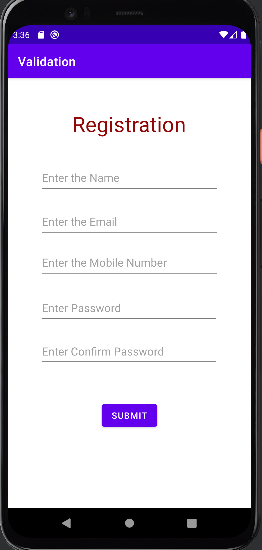
Implement validations on various UI controls.

**PROGRAM CODE:**

|  |  |
| --- | --- |
| MainActivity.java | package com.example.validation;  import androidx.appcompat.app.AppCompatActivity;  import android.os.Bundle;  import android.view.View;  import android.widget.EditText;  import android.widget.Toast;  public class MainActivity extends AppCompatActivity {  EditText name,email,number,password,confirm\_password;  @Override  protected void onCreate(Bundle savedInstanceState) {  super.onCreate(savedInstanceState);  setContentView(R.layout.activity\_main);}  public boolean nameValidate(){  name=findViewById(R.id.name);  if (name.getText().toString().isEmpty()){  name.setError("Name field cannot be empty");  return false;}  else { return true;} }  public boolean emailValidate(){  email=findViewById(R.id.email);  String email\_pattern="[a-zA-Z0-9.\_-]+@[a-z]+\\.+[a-z]+";  if (email.getText().toString().isEmpty()){  email.setError("Email field cannot be Empty");  return false;}  else if(!email.getText().toString().matches(email\_pattern)){  email.setError("Email is not Valid");  return false;}  else {return true;}}  public boolean numberValidate(){  number=findViewById(R.id.number);  if(number.getText().toString().isEmpty()){  number.setError("Mobile Number cannot be Empty");  return false;}  else if(number.getText().toString().length()!=10){  number.setError("Invalid Mobile Number");  return false;}  else{  return true;}}  public boolean validatePassword(){  password=findViewById(R.id.password);  String password\_pattern= "^" +  //"(?=.\*[0-9])" + //at least 1 digit  //"(?=.\*[a-z])" + //at least 1 lower case letter  //"(?=.\*[A-Z])" + //at least 1 upper case letter  "(?=.\*[a-zA-Z])" + //any letter  "(?=.\*[@#$%^&+=])" + //at least 1 special character  "(?=\\S+$)" + //no white spaces  ".{4,}" + //at least 4 characters  "$";  if (password.getText().toString().isEmpty()){  password.setError("Password Cannot be empty");  return false;}  else if(!password.getText().toString().matches(password\_pattern)){  password.setError("Entered Password is Weak");  return false;}  else{return true;}}  public boolean validateConfirmPassword(){  confirm\_password=findViewById(R.id.confirm\_password);  password=findViewById(R.id.password);  if(confirm\_password.getText().toString().isEmpty()){  confirm\_password.setError("This field Cannot be Empty");  return false;}  else if(!confirm\_password.getText().toString().equals(password.getText().toString())){  confirm\_password.setError("Confirm Password should be same as Password");  return false;}  else {  return true;}  }  public void onSubmit(View view){ if(nameValidate()&&emailValidate()&&numberValidate()&&validatePassword()&&validateConfirmPassword()){  Toast.makeText(this,"Registration Successful",Toast.LENGTH\_LONG).show();  }  }  } |

|  |  |
| --- | --- |
| activity\_main.xm l | <?xml version="1.0" encoding="utf-8"?>  <androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"  xmlns:app="http://schemas.android.com/apk/res-auto"  xmlns:tools="http://schemas.android.com/tools"  android:id="@+id/on"  android:layout\_width="match\_parent"  android:layout\_height="match\_parent"  tools:context=".MainActivity">  <TextView  android:id="@+id/textView"  android:layout\_width="wrap\_content"  android:layout\_height="wrap\_content"  android:text="Registration"  android:textColor="#910707"  android:textSize="34sp"  app:layout\_constraintBottom\_toBottomOf="parent"  app:layout\_constraintEnd\_toEndOf="parent"  app:layout\_constraintHorizontal\_bias="0.497"  app:layout\_constraintStart\_toStartOf="parent"  app:layout\_constraintTop\_toTopOf="parent"  app:layout\_constraintVertical\_bias="0.078" />  <EditText  android:id="@+id/name"  android:layout\_width="291dp"  android:layout\_height="51dp"  android:ems="10"  android:hint="Enter the Name"  android:inputType="textPersonName"  app:layout\_constraintBottom\_toBottomOf="parent"  app:layout\_constraintEnd\_toEndOf="parent"  app:layout\_constraintStart\_toStartOf="parent"  app:layout\_constraintTop\_toTopOf="parent"  <EditText  android:id="@+id/email"  android:layout\_width="291dp"  android:layout\_height="51dp"  android:ems="10"  android:hint="Enter the Email"  android:inputType="textPersonName"  app:layout\_constraintBottom\_toBottomOf="parent"  app:layout\_constraintEnd\_toEndOf="parent"  app:layout\_constraintStart\_toStartOf="parent"  app:layout\_constraintVertical\_bias="0.32" />  <EditText  android:id="@+id/number"  android:layout\_width="291dp"  android:layout\_height="51dp"  android:ems="10"  android:hint="Enter the Mobile Number"  android:inputType="textPersonName"  app:layout\_constraintBottom\_toBottomOf="parent"  app:layout\_constraintEnd\_toEndOf="parent"  app:layout\_constraintStart\_toStartOf="parent"  app:layout\_constraintTop\_toTopOf="parent"  app:layout\_constraintVertical\_bias="0.423" />  <EditText  android:id="@+id/password"  android:layout\_width="289dp"  android:layout\_height="50dp"  android:ems="10"  android:hint="Enter Password"  android:inputType="textPassword"  app:layout\_constraintBottom\_toBottomOf="parent"  app:layout\_constraintEnd\_toEndOf="parent"  app:layout\_constraintHorizontal\_bias="0.491"  app:layout\_constraintStart\_toStartOf="parent"  app:layout\_constraintTop\_toTopOf="parent"  app:layout\_constraintVertical\_bias="0.537" />  <EditText  android:id="@+id/confirm\_password"  android:layout\_width="289dp"  android:layout\_height="50dp"  android:ems="10"  android:hint="Enter Confirm Password"  android:inputType="textPassword"  app:layout\_constraintBottom\_toBottomOf="parent"  app:layout\_constraintEnd\_toEndOf="parent"  app:layout\_constraintHorizontal\_bias="0.491"  app:layout\_constraintStart\_toStartOf="parent"  app:layout\_constraintTop\_toTopOf="parent"  app:layout\_constraintVertical\_bias="0.646" />  <Button  android:id="@+id/button"  android:layout\_width="wrap\_content"  android:layout\_height="wrap\_content"  android:onClick="onSubmit"  android:text="Submit"  app:layout\_constraintBottom\_toBottomOf="parent"  app:layout\_constraintEnd\_toEndOf="parent"  app:layout\_constraintStart\_toStartOf="parent"  app:layout\_constraintTop\_toTopOf="parent"  app:layout\_constraintVertical\_bias="0.805" />  </androidx.constraintlayout.widget.ConstraintLayout> |

**OUTPUT**



**RESULT:**

The above program is successfully executed and obtained the output.