# COURSE OUTCOME 1

# PROGRAM : 1

**AIM :** Design a Login Form with username and password using LinearLayout and toast valid credentials

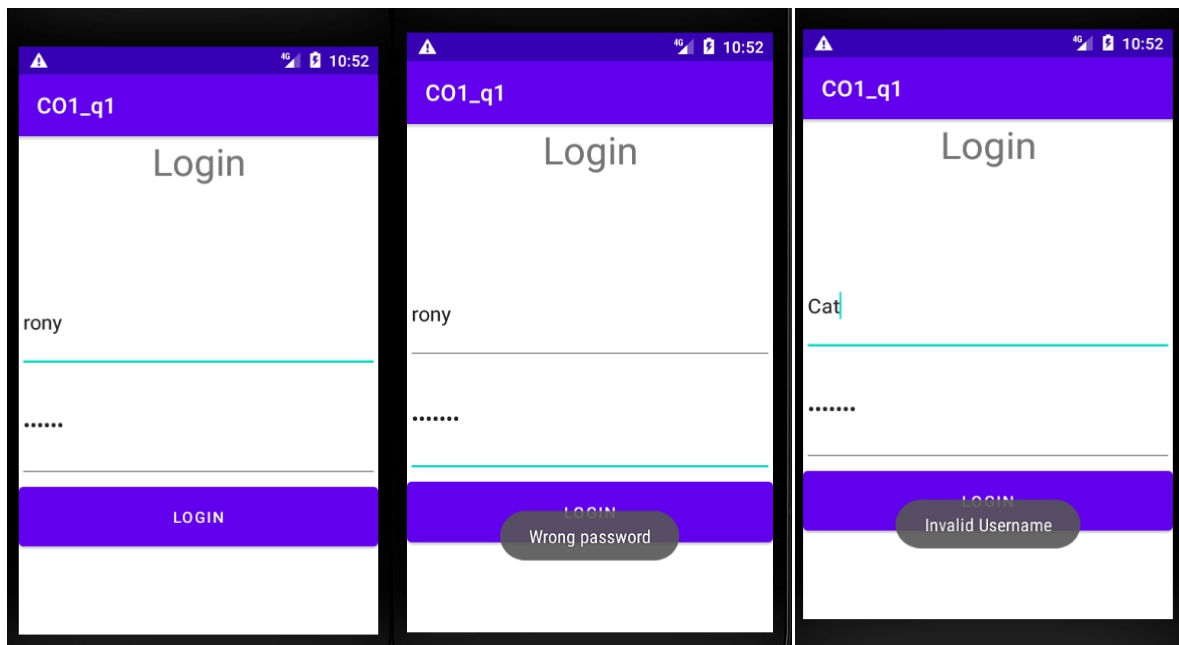## PROGRAM CODE :

| | |
|---|---|
| MainActivity.java | ```java<br>//Design a Login Form with username and password using LinearLayout and toast valid credentials<br>package com.example.co1_q1;<br><br>import androidx.appcompat.app.AppCompatActivity;<br><br>import android.os.Bundle;<br>import android.view.View;<br>import android.widget.EditText;<br>import android.widget.Toast;<br><br>public class MainActivity extends AppCompatActivity {<br><br>    @Override<br>    protected void onCreate(Bundle savedInstanceState) {<br>        super.onCreate(savedInstanceState);<br>        setContentView(R.layout.activity_main);<br>    }<br>    public void onClick(View view){<br>        EditText ed1 = (EditText) findViewById(R.id.user);<br>        String user = ed1.getText().toString();<br>        EditText ed2 = (EditText) findViewById(R.id.pswd);<br>        String pswd = ed2.getText().toString();<br>        if(!user.equals("rony")){<br>            Toast t = Toast.makeText(getApplicationContext(),"Invalid Username",Toast.LENGTH_LONG);<br>            t.show();<br>        }<br>        else if(!pswd.equals("123456")){<br>            Toast t = Toast.makeText(getApplicationContext(),"Wrong password",Toast.LENGTH_LONG);<br>            t.show();<br>        }<br>        else{<br>            Toast t = Toast.makeText(getApplicationContext(),"Sucess",<br>``` |

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| | Toast.LENGTH_LONG);<br>            t.show();<br>        }<br><br>    }<br>} |
| activity_main.xml | ```xml<br><?xml version="1.0" encoding="utf-8"?><br><LinearLayout<br>xmlns:android="http://schemas.android.com/apk/res/android"<br>    xmlns:app="http://schemas.android.com/apk/res-auto"<br>    xmlns:tools="http://schemas.android.com/tools"<br>    android:id="@+id/login"<br>    android:layout_width="match_parent"<br>    android:layout_height="match_parent"<br>    android:orientation="vertical"<br>    android:textAlignment="center"<br>    tools:context=".MainActivity"><br><br>    <TextView<br>        android:id="@+id/textView"<br>        android:layout_width="match_parent"<br>        android:layout_height="71dp"<br>        android:layout_weight="1"<br>        android:text="Login"<br>        android:textAlignment="center"<br>        android:textSize="34sp" /><br><br>    <EditText<br>        android:id="@+id/user"<br>        android:layout_width="match_parent"<br>        android:layout_height="31dp"<br>        android:layout_weight="1"<br>        android:ems="10"<br>        android:hint="Username"<br>        android:inputType="textPersonName" /><br><br>    <EditText<br>        android:id="@+id/pswd"<br>        android:layout_width="match_parent"<br>        android:layout_height="wrap_content"<br>        android:layout_weight="1"<br>        android:ems="10"<br>        android:hint="Password"<br>        android:inputType="textPassword" /><br><br>    <Button<br>        android:id="@+id/button"<br>``` |

```
                        android:layout_width="match_parent"
                        android:layout_height="11dp"
                        android:layout_weight="1"
                        android:onClick="onClick"
                        android:text="Login" />

                    <TextView
                        android:id="@+id/textView2"
                        android:layout_width="match_parent"
                        android:layout_height="wrap_content"
                        android:layout_weight="1" />
                </LinearLayout>
```

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

**OUTPUT :**

# PROGRAM : 2

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

## PROGRAM CODE :

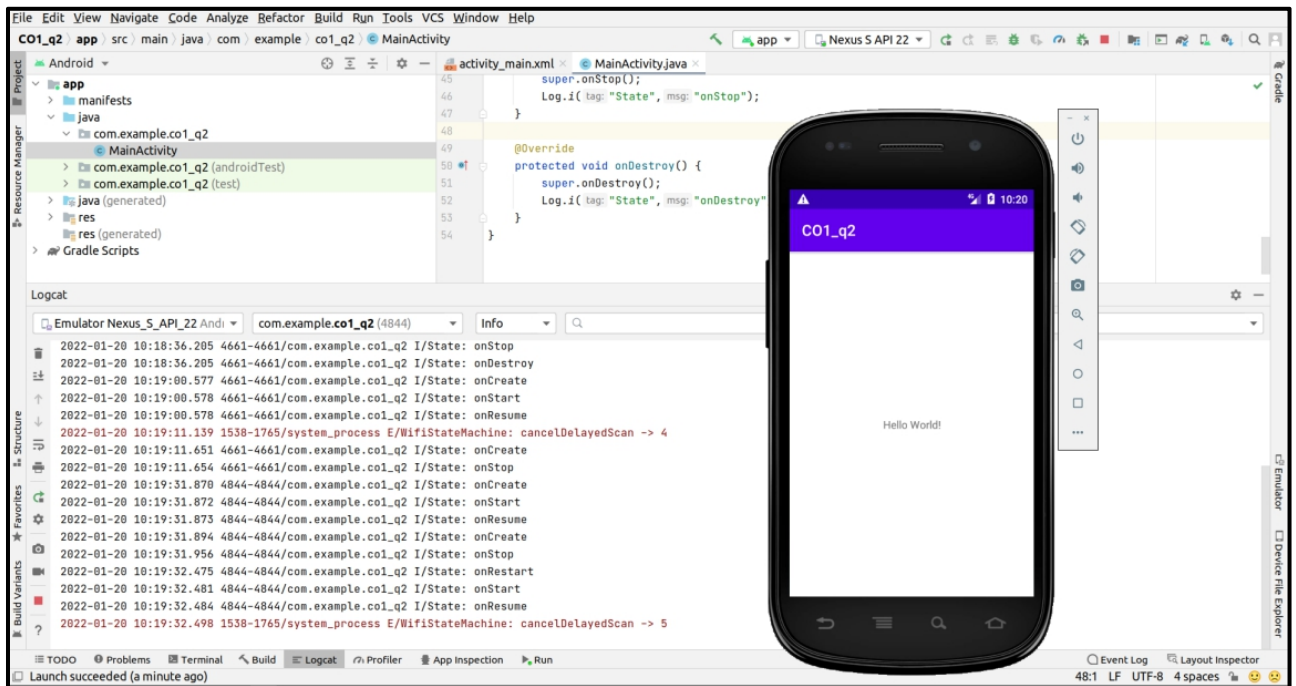| MainActivity.java | //Write a program that demonstrates Activity Lifecycle.<br>package com.example.co1_q2;<br><br>import androidx.appcompat.app.AppCompatActivity;<br><br>import android.os.Bundle;<br>import android.util.Log;<br><br>public class MainActivity extends AppCompatActivity {<br><br>  @Override<br>  protected void onCreate(Bundle savedInstanceState) {<br>    super.onCreate(savedInstanceState);<br>    setContentView(R.layout.activity_main);<br>    Log.i("State","onCreate");<br>  }<br><br>  @Override<br>  protected void onStart() {<br>    super.onStart();<br>    Log.i("State","onStart");<br>  }<br><br>  @Override<br>  protected void onResume() {<br>    super.onResume();<br>    Log.i("State","onResume");<br>  }<br><br>  @Override<br>  protected void onPause() {<br>    super.onPause();<br>    Log.i("State","onCreate");<br>  }<br><br>  @Override<br>  protected void onRestart() {<br>    super.onRestart();<br>    Log.i("State","onRestart"); |

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| | ```
        }

        @Override
        protected void onStop() {
            super.onStop();
            Log.i("State","onStop");
        }

        @Override
        protected void onDestroy() {
            super.onDestroy();
            Log.i("State","onDestroy");
        }
    }
``` |
| 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>
``` |

**<u>RESULT :</u>** The above program is successfully executed and obtained the output

**<u>OUTPUT :</u>**

# PROGRAM : 3

**AIM :** Implementing basic arithmetic operations of a simple calculator

## PROGRAM CODE :

| MainActivity.java | //Implementing basic arithmetic operations of a simple calculator<br><br>```java<br>package com.example.co1_q3;<br><br>import androidx.appcompat.app.AppCompatActivity;<br><br>import android.os.Bundle;<br>import android.view.View;<br>import android.widget.EditText;<br>import android.widget.TextView;<br><br>public class MainActivity extends AppCompatActivity {<br><br>    @Override<br>    protected void onCreate(Bundle savedInstanceState) {<br>        super.onCreate(savedInstanceState);<br>        setContentView(R.layout.activity_main);<br>    }<br>    public void add(View view){<br>        EditText n1 = (EditText)findViewById(R.id.num1);<br>        int val1 = Integer.parseInt( n1.getText().toString());<br>        EditText n2 = (EditText)findViewById(R.id.num2);<br>        int val2 = Integer.parseInt( n2.getText().toString());<br>        TextView op  = (TextView)findViewById(R.id.op);<br>        op.setText(String.valueOf(val1)+" + "+<br>String.valueOf(val2)+" = "+ String.valueOf(val1+val2));<br><br><br>    }<br>    public void sub(View view){<br>        EditText n1 = (EditText)findViewById(R.id.num1);<br>        int val1 = Integer.parseInt( n1.getText().toString());<br>        EditText n2 = (EditText)findViewById(R.id.num2);<br>        int val2 = Integer.parseInt( n2.getText().toString());<br>        TextView op  = (TextView)findViewById(R.id.op);<br>        op.setText(String.valueOf(val1)+" - "+<br>String.valueOf(val2)+" = "+ String.valueOf(val1-val2));<br>``` |
| --- | --- |

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| | ```
        }
        public void mul(View view){
            EditText n1 = (EditText)findViewById(R.id.num1);
            int val1 = Integer.parseInt( n1.getText().toString());
            EditText n2 = (EditText)findViewById(R.id.num2);
            int val2 = Integer.parseInt( n2.getText().toString());
            TextView op  = (TextView)findViewById(R.id.op);
            op.setText(String.valueOf(val1)+" * "+
String.valueOf(val2)+" = "+ String.valueOf(val1*val2));


        }
        public void div(View view){
            EditText n1 = (EditText)findViewById(R.id.num1);
            int val1 = Integer.parseInt( n1.getText().toString());
            EditText n2 = (EditText)findViewById(R.id.num2);
            int val2 = Integer.parseInt( n2.getText().toString());
            TextView op  = (TextView)findViewById(R.id.op);
            op.setText(String.valueOf(val1)+" / "+
String.valueOf(val2)+" = "+ String.valueOf(val1/val2));


        }
}
``` |
| 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:id="@+id/mul"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/sum"
        android:layout_width="74dp"
        android:layout_height="53dp"
        android:onClick="add"
        android:text="+"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.025"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.513" />
``` |

```xml
<Button
    android:id="@+id/sub"
    android:layout_width="70dp"
    android:layout_height="53dp"
    android:onClick="sub"
    android:text="-"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.351"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.517" />

<Button
    android:id="@+id/div"
    android:layout_width="66dp"
    android:layout_height="54dp"
    android:onClick="div"
    android:text="/"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.949"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.513" />

<EditText
    android:id="@+id/num1"
    android:layout_width="154dp"
    android:layout_height="68dp"
    android:ems="10"
    android:inputType="number"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.0"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.307" />

<TextView
    android:id="@+id/textView2"
    android:layout_width="187dp"
    android:layout_height="51dp"
    android:text="Calculator"
    android:textAlignment="center"
    android:textAllCaps="true"
    android:textSize="24sp"
    app:layout_constraintBottom_toBottomOf="parent"
```

```xml
        app:layout_constraintHorizontal_bias="0.45"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.045" />

    <EditText
        android:id="@+id/num2"
        android:layout_width="150dp"
        android:layout_height="73dp"
        android:ems="10"
        android:inputType="number"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.938"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.3" />

    <Button
        android:id="@+id/button"
        android:layout_width="57dp"
        android:layout_height="50dp"
        android:onClick="mul"
        android:text="*"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.646"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.515" />

    <EditText
        android:id="@+id/op"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:inputType="textPersonName"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.502"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.711" />

</androidx.constraintlayout.widget.ConstraintLayout>
```
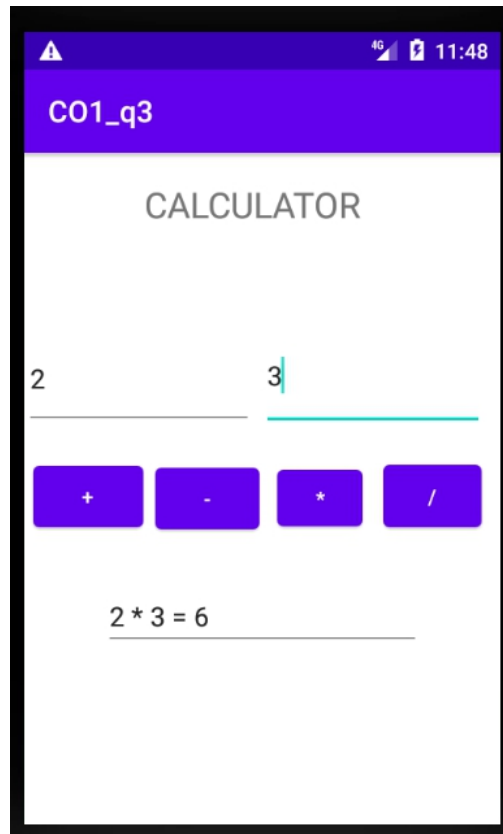
**RESULT :** The above program is successfully executed and obtained the output

**OUTPUT :**

# PROGRAM : 4

**AIM :** Implement validations on various UI controls

## PROGRAM CODE :

| MainActivity.java | //Implement validations on various UI controls |
|---|---|

```java
//Implement validations on various UI controls
package com.example.co1_q4;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.os.Trace;
import android.view.View;
import android.widget.EditText;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    public Boolean validateName(){
        EditText ed1 = (EditText) findViewById(R.id.name);
        String name = ed1.getText().toString();
        if (name.isEmpty()){
            ed1.setError("Name Cannot be Empty");
            return false;
        }
        else {
            return true;
        }
    }
    public  Boolean validateEmail(){
        EditText ed2 = (EditText) findViewById(R.id.email);
        String email = ed2.getText().toString();
        String emailPattern = "[a-zA-Z0-9._-]+@[a-z]+\\.+[a-z]+";
        if (email.isEmpty()){
            ed2.setError("Email Cannot be Empty");
            return false;
        }
        else if (!email.matches(emailPattern)){
            ed2.setError("Invalid email address");
```

```java
            return false;
        }
        else{
            return true;
        }
    }
    public  Boolean validateNumber(){
        EditText ed3 = (EditText) findViewById(R.id.phone);
        String num = ed3.getText().toString();
        if (num.isEmpty()){
            ed3.setError("Phone Number Cannot be Empty");
            return false;
        }
        else{
            return true;
        }
    }
    public  Boolean validatePassword(){
        EditText ed4 = (EditText) findViewById(R.id.pswd);
        String pswd = ed4.getText().toString();
        String passwordVal = "^" +
                //"(?=.*[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 (pswd.isEmpty()){
            ed4.setError("Password Cannot be Empty");
            return false;
        }
        else if (!pswd.matches(passwordVal)) {
            ed4.setError("Password is too weak");
            return false;
        }
        else{
            return true;
        }
    }
    public void onSubmit(View view){
        if(validateName() && validateEmail() && validateNumber()
&& validatePassword()){
            Toast t =
Toast.makeText(getApplicationContext(),"Sucess",Toast.LENGTH
_LONG);
            t.show();
```

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| | ```
      }
    }
}
``` |
| 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"
    android:textAlignment="center"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView"
        android:layout_width="236dp"
        android:layout_height="53dp"
        android:text="User Registration"
        android:textAlignment="center"

android:textAppearance="@style/TextAppearance.AppCompat.Large"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.073" />

    <EditText
        android:id="@+id/name"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:hint="Name"
        android:inputType="textPersonName"
        android:textColorHighlight="#D25454"
        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="0.205" />

    <EditText
        android:id="@+id/phone"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:hint="Phone Number"
``` |

```xml
        android:inputType="number"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.507"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.393" />

    <EditText
        android:id="@+id/email"
        android:layout_width="208dp"
        android:layout_height="43dp"
        android:ems="10"
        android:hint="Email"
        android:inputType="textEmailAddress"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.502"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.297" />

    <EditText
        android:id="@+id/pswd"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:hint="Password"
        android:inputType="textPassword"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/submit"
        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="0.613" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

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

**OUTPUT :**