Musaliar College of Engineering & Technology

MUSALIAR COLLEGE P.O., PATHANAMTHITTA - 689 653

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LABORATORY RECORD

Certified that this is the Bonafide Record of the work done by Sri/Smt.....

of.....Semester Class of .....(Reg No.....)

of..... Branch

in the.....Laboratory

during the academic year 2024-2026.

Name of Examination

Internal Examiner External Examiner Staff in- charge

DEPARTMENT OF COMPUTER APPLICATIONS

VISION

"To produce competent and dynamic professionals in the field of Computer Applications to thrive and cater the changing needs of the society through research and education".

MISSION

To impart high quality technical education and knowledge in Computer Applications. To introduce moral, ethical and social values to Computer Application students.

To establish industry institute interaction to enhance the skills of Computer Application students. To promote research aimed towards betterment of society.

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PROGRAM – 1

Aim: Write a program to design a login form with username and password using linear layout and toast valid credentials.

Program

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>

<LinearLayout
    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:gravity="center"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:inputType="textPersonName"
        android:hint="username"
        android:textColor="#E91E63"
        android:layout_margin="20dp"
        android:id="@+id/username"/>
    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:inputType="textPassword"
        android:hint="password"
        android:textColor="#E91E63"
        android:layout_margin="20dp"
        android:id="@+id/password" />
```

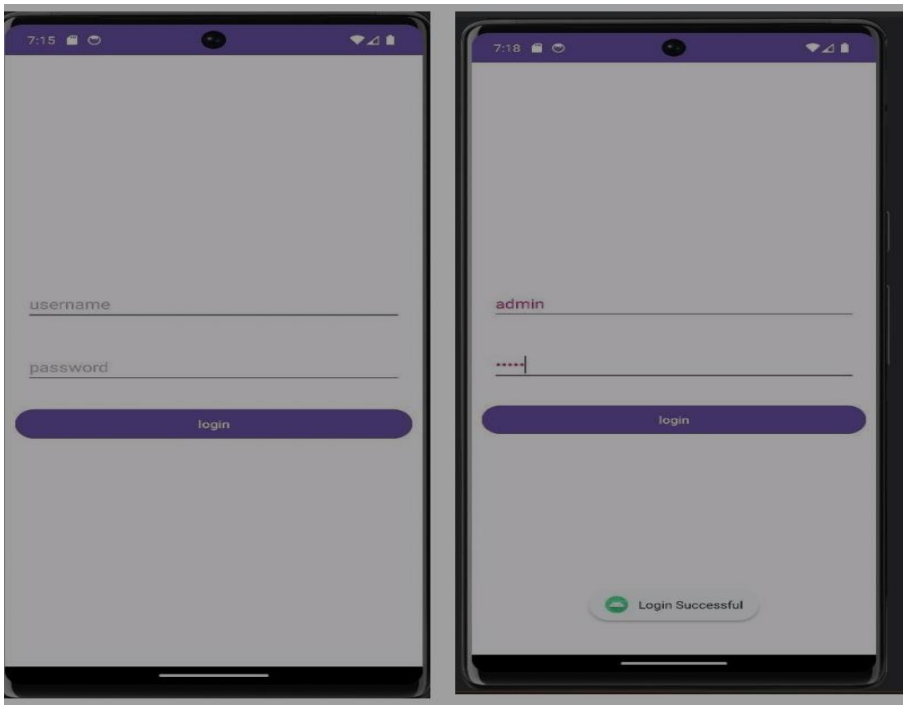
```
    <Button
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/login"
        android:text="login"
        android:layout_margin="10dp" />
</LinearLayout>
```

MainActivity.java

```
package com.exxample.loginapp;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
EditText username;
EditText password;
Button login;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        username=findViewById(R.id.username);
        password=findViewById(R.id.password);
        login=findViewById(R.id.login);
        login.setOnClickListener(new
        View.OnClickListener() {
```

```
@Override
public void onClick(View view) {
if (username.getText().toString().equals("admin")&& password.getText().
   toString().equals("admin")) {

Toast.makeText(MainActivity.this,"Login Successful",
        Toast.LENGTH_SHORT).show ();
  }
}
```

Output:



Result: The program is executed successfully and output is verified.

PROGRAM – 2

Aim: Write a program that demonstrates Activity Lifecycle.

Program

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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:gravity="center"
    tools:context=".MainActivity">
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Question Explaining the Activity Lifecycle"
    />
</LinearLayout>
```

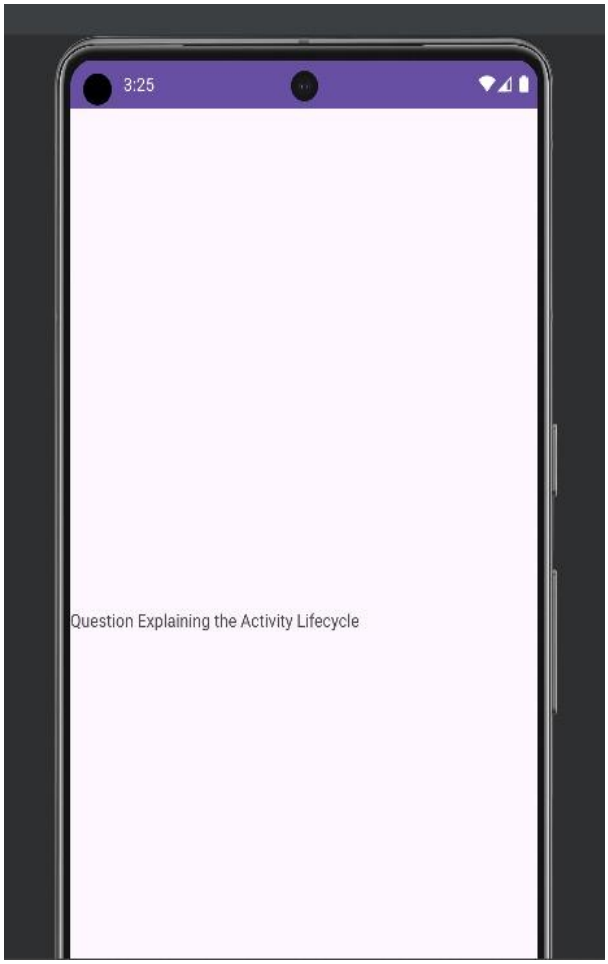
MainActivity.java

```
package com.example.activitycycle;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.util.Log;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    @Override
```

```
protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
       Log.d("life cycle","onCreate invoked");
       Toast.makeText(getApplicationContext(),"onCreate invoked",
            Toast. LENGTH_SHORT).show();
  }
 @Override
  protected void onStart()
  {
     super.onStart();
     Log.d("life cycle","onStart invoked");
     Toast.makeText(getApplicationContext(),"onStart invoked",
            Toast.LENGTH_SHORT).show();
  }
  @Override
  protected void onResume()
  {
     super.onResume();
     Log.d("life cycle","onResume invoked");
     Toast.makeText(getApplicationContext(),"onResume invoked",
             Toast.LENGTH_SHORT).show();
  }
 @Override
  protected void onPause()
  {
     super.onResume();
     Log.d("life cycle","onPause invoked");
     Toast.makeText(getApplicationContext(),"onPause invoked",
```

```
            Toast.LENGTH_SHORT).show();
    }
    @Override
    protected void onStop()
    {
        super.onStop();
        Log.d("life cycle","onStop invoked");
        Toast.makeText(getApplicationContext(),"onStop invoked",
                Toast.LENGTH_SHORT).show();
    }
    @Override
    protected void onRestart()
    {
        super.onRestart();
        Log.d("life cycle","onRestart invoked");
        Toast.makeText(getApplicationContext(),"onRestart invoked",
                Toast.LENGTH_SHORT).show();
    }
    @Override
    protected void onDestroy()
    {
        super.onDestroy();
        Log.d("life cycle","onDestroy invoked");
        Toast.makeText(getApplicationContext(),"onDestroy invoked",
                Toast.LENGTH_SHORT).show();
    }
}
```

Output:



Result: The program is executed successfully and output is verified.

PROGRAM – 3

Aim: Write a program implementing basic arithmetic operations of a simple calculator.

Program

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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:gravity="center"
    android:orientation="vertical"
    android:padding="20dp"
    tools:context=".MainActivity">
    <EditText
        android:id="@+id/number1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter Number 01"
        android:inputType="numberDecimal"/>
    <EditText
        android:id="@+id/number2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="10dp"
        android:hint="Enter Number 02"
        android:inputType="numberDecimal"/>
    <TextView
        android:id="@+id/result_text"
```

```
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="20dp"
    android:textColor="@color/black"
    android:textSize="175sp"
    android:textStyle="bold"/>
<Button
    android:id="@+id/add_btn"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10dp"
    android:text="+"/>
<Button
    android:id="@+id/sub_btn"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10dp"
    android:text="-"/>
<Button
    android:id="@+id/mul_btn"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10dp"
    android:text="x"/>
<Button
    android:id="@+id/div_btn"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10dp"
```

```
        android:text="/"/>
    <Button
        android:id="@+id/clear_btn"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="10dp"
        android:text="clear"/>
</LinearLayout>
```

MainActivity.java

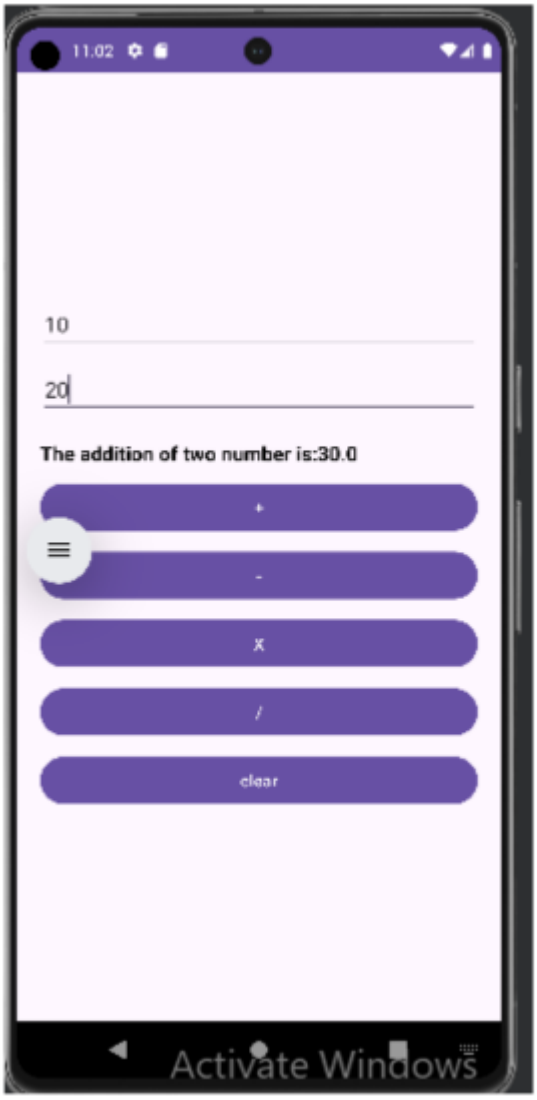
```
package com.example.calculator;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
EditText number1,number2;
TextView result_text;
Button add_btn,sub_btn,mul_btn,div_btn,clear_btn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        number1=findViewById(R.id.number1);
```

```
number2=findViewById(R.id.number2);
result_text=findViewById(R.id.result_text);
add_btn=findViewById(R.id.add_btn);
sub_btn=findViewById(R.id.sub_btn);
mul_btn=findViewById(R.id.mul_btn);
div_btn=findViewById(R.id.div_btn);
clear_btn=findViewById(R.id.clear_btn);

 add_btn.setOnClickListener(new View.OnClickListener() {
    @Override
     public void onClick(View view) {
       String number1_text=number1.getText().toString();
       String number2_text=number2.getText().toString();
       int num1=Integer.parseInt(number1_text);
       int num2=Integer.parseInt(number2_text);
       float sum=num1+num2;
       result_text.setText("The addition of the two number is:"+sum);

       Toast.makeText(getApplicationContext(),"The addition of the two numbers
              is:"+sum, Toast.LENGTH_SHORT).show();
   }
});

sub_btn.setOnClickListener(new View.OnClickListener(){
  @Override
   public void onClick(View view){
       String number1_text=number1.getText().toString();
       String number2_text=number2.getText().toString();
       int num1=Integer.parseInt(number1_text);
```

```
        int num2=Integer.parseInt(number2_text);
        float sub=num1-num2;
        result_text.setText("The subtraction of the two number is:"+sub);

        Toast.makeText(getApplicationContext(),"The subtraction of the two numbers
              is:"+sub,Toast.LENGTH_SHORT).show();
    }
});

mul_btn.setOnClickListener(new View.OnClickListener(){
    @Override
    public void onClick(View view){
        String number1_text=number1.getText().toString();
        String number2_text=number2.getText().toString();
        int num1=Integer.parseInt(number1_text);
        int num2=Integer.parseInt(number2_text);
        float mul=num1*num2;
        result_text.setText("The multiplication of the two number is:"+mul);

        Toast.makeText(getApplicationContext(),"The multiplication of the two numbers
            is:"+mul,Toast.LENGTH_SHORT).show();
    }
});

div_btn.setOnClickListener(new View.OnClickListener(){
    @Override
    public void onClick(View view){
        String number1_text=number1.getText().toString();
        String number2_text=number2.getText().toString();
```

```
            int num1=Integer.parseInt(number1_text);
            int num2=Integer.parseInt(number2_text);
            float div=num1/num2;
            result_text.setText("The division of the two number is:"+div);

            Toast.makeText(getApplicationContext(),"The division of the two numbers
                is:"+div,Toast.LENGTH_SHORT).show();
        }
    });

    clear_btn.setOnClickListener(new View.OnClickListener(){
        @Override
        public void onClick(View view){
            number1.setText("");
            number2.setText("");
            result_text.setText((""));

            Toast.makeText(getApplicationContext(),"Inputs
                Cleared....",Toast.LENGTH_SHORT).show();
        }
    });
  }
}
```

Output:



Result: The program is executed successfully and output is verified.

PROGRAM – 4

Aim: Write a program that implements validations on various UI controls.

Program

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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:layout_gravity="center_horizontal"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="User Form"
        android:textSize="20sp"
        android:layout_marginTop="30dp"
        android:textColor="@color/black"
        android:textStyle="bold"/>
    <EditText
        android:id="@+id/name_et"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="20dp"
        android:hint="Full Name"
        android:inputType="textPersonName"
        android:minHeight="48dp"
```

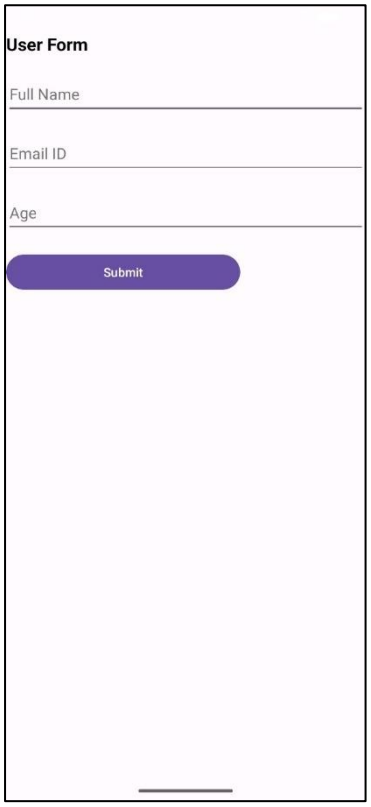
```
        android:textColorHint="#757575"
        android:importantForAutofill="no"/>
    <EditText
        android:id="@+id/email_et"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="20dp"
        android:hint="Email ID"
        android:inputType="textEmailAddress"
        android:minHeight="48dp"
        android:textColorHint="#757575"
        android:importantForAutofill="no"/>
    <EditText
        android:id="@+id/age_et"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="20dp"
        android:hint="Age"
        android:inputType="number"
        android:minHeight="48dp"
        android:textColorHint="#757575"
        android:importantForAutofill="no"/>
    <Button
        android:id="@+id/submit_btn"
        android:layout_width="268dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="20dp"
        android:text="Submit"/>
</LinearLayout>
```

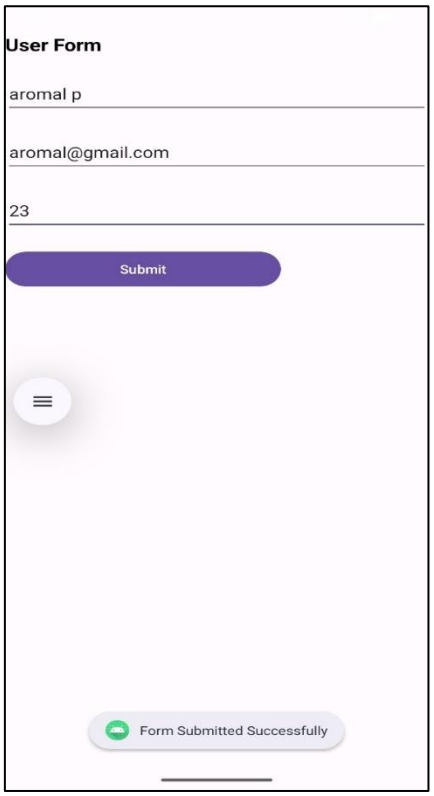
MainActivity.java

```
package com.example.ui;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.CheckBox;
import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
EditText name_et,email_et,age_et;
Button submit_btn;
  @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);

       name_et=findViewById(R.id.name_et);
      email_et=findViewById(R.id.email_et);
      age_et=findViewById(R.id.age_et);
      submit_btn=findViewById(R.id.submit_btn);

      submit_btn.setOnClickListener(new View.OnClickListener(){
        @Override
```

```
        public void onClick(View view){
            name_et.setError(null);
            age_et.setError(null);
            email_et.setError(null);
            String name_txt=name_et.getText().toString();
            String email_txt=email_et.getText().toString();
            String age_txt=age_et.getText().toString();

             if(name_txt.equals("")) {
                name_et.setError("Please enter your name");
                name_et.requestFocus();
            }
            else if(email_txt.equals("")){
                email_et.setError("Please enter your email id");
                email_et.requestFocus();
            }
            else if(age_txt.equals("")){
                age_et.setError("Please enter your age");
                age_et.requestFocus();
            }
            else{

                Toast.makeText(getApplicationContext(),"Form Submitted Successfully",
                        Toast.LENGTH_SHORT).show();
            }
        }
    });
  }
}
```

Output:





Result: The program is executed successfully and output is verified.

PROGRAM – 5

Aim: Write a program to design a registration activity and store registration details in local memory of phone using Intents and SharedPreferences.

Program

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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:orientation="vertical"
    android:paddingHorizontal="20dp"
    android:id="@+id/main_layout"
    android:paddingVertical="10dp"
    android:gravity="center"
    tools:context=".MainActivity">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Registration Form"
        android:textStyle="bold"
        android:textColor="@color/black"
        android:textSize="20sp"/>
    <EditText
        android:id="@+id/fullname"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:inputType="textPersonName"
```

```
        android:layout_marginTop="30dp"
        android:hint="Full Name"/>
    <EditText
        android:id="@+id/emailid"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:inputType="textEmailAddress"
        android:layout_marginTop="10dp"
        android:hint="Email ID"/>
    <EditText
        android:id="@+id/password"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:inputType="textPassword"
        android:hint="Password"/>
    <Button
        android:id="@+id/register_btn"
        android:layout_width="201dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="20dp"
        android:text="Register"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.registration;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.content.SharedPreferences;
```

```
import android.os.Bundle;
import android.util.Patterns;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.LinearLayout;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {
EditText fullname,emailid,password;
Button register_btn;
LinearLayout main_layout;
    @Override
      protected void onCreate(Bundle savedInstanceState) {
          super.onCreate(savedInstanceState);
          setContentView(R.layout.activity_main);

          fullname=findViewById(R.id.fullname);
          emailid=findViewById(R.id.emailid);
          password=findViewById(R.id.password);
          register_btn=findViewById(R.id.register_btn);
          main_layout=findViewById(R.id.main_layout);

          register_btn.setOnClickListener(new View.OnClickListener(){

                @Override
                 public void onClick(View view){
```

```
fullname.setError(null);
emailid.setError(null);
password.setError(null);

String password_regex = "^(?=.*[0-9])(?=.*[a-z])(?=.*[A-
        Z])(?=.*[@#$%^&+=])(?=\\S+$).{6,}$";
String fullname_txt=fullname.getText().toString();
String emailid_txt=emailid.getText().toString();
String password_txt=password.getText().toString();

if(fullname_txt.equals("")) {
   fullname.requestFocus();
   fullname.setError("Please enter fullname!!");
} else if(emailid_txt.equals("")) {
   emailid.requestFocus();
   emailid.setError("Please enter emailid_id!!");
} else if(!Patterns.EMAIL_ADDRESS.matcher(emailid_txt).matches()) {
   emailid.requestFocus();
   emailid.setError("Please enter a valid emailid_id!!");
} else if(!password_txt.matches(password_regex)){
   password.requestFocus();
   password.setError("Password should contain -\n a digit must occur atleast once
  \n a lower case lettre must occur atleast \n an uppercase letter occur atleast once
  \n a special character like @#$%^&+=\n No blank spaces allowed \n atleast 6
  character");
} else {
   SharedPreferences  pref= getSharedPreferences("register_data",
        MODE_PRIVATE);
   SharedPreferences.Editor pref_edit=pref.edit();
   pref_edit.putString("reg_fullname",fullname_txt);
```

```
                pref_edit.putString("reg_emailid",emailid_txt);
                pref_edit.putString("reg_password",password_txt);
                pref_edit.apply();
                Intent intent=new Intent(getApplicationContext(),IntendS2.class);
                startActivity(intent);
            }
        }
    });
  }
}
```

activity_intend_s2.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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:orientation="vertical"
   android:gravity="center"
   android:padding="10dp"
   tools:context=".IntendS2">
   <TextView
      android:id="@+id/fullname_result"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:layout_marginTop="10dp"/>
  <TextView
      android:id="@+id/emailid_result"
```

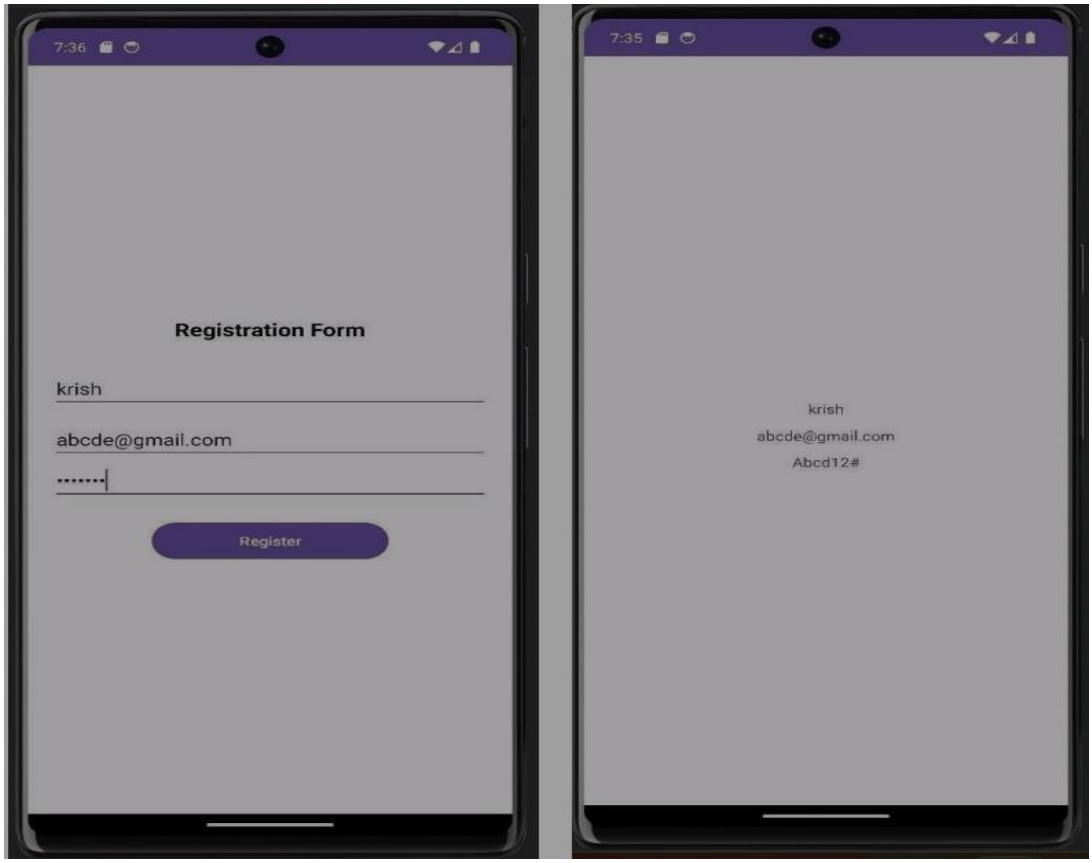
```
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="10dp"/>
    <TextView
        android:id="@+id/password_result"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="10dp"/>
</LinearLayout>
```

IntendS2.java

```
package com.example.registration;
import androidx.appcompat.app.AppCompatActivity;
import android.content.SharedPreferences;
import android.os.Bundle;
import android.widget.TextView;

public class IntendS2 extends AppCompatActivity {
TextView fullname_result, emailid_result, password_result;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_intend_s2);

        fullname_result = findViewById(R.id.fullname_result);
        emailid_result = findViewById(R.id.emailid_result);
        password_result = findViewById(R.id.password_result);
        SharedPreferences pref = getSharedPreferences("register_data", MODE_PRIVATE);
```

```
        String name = pref.getString("reg_fullname", "NotAvailable!!");
        String email = pref.getString("reg_emailid", "NotAvailable!!");
        String password = pref.getString("reg_password", "NotAvailable!!");
        fullname_result.setText(name);
        emailid_result.setText(email);
        password_result.setText(password);
    }
}
```

Output:



Result: The program is executed successfully and output is verified.

PROGRAM – 6

Aim: Write a program to create a facebook page using RelativeLayout, Set properties using .xml file.

Program

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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:orientation="vertical"
    android:layout_height="match_parent"
    android:id="@+id/mainlay"
    tools:context=".MainActivity">
    <ImageView
        android:layout_width="match_parent"
        android:layout_height="150dp"
        android:src="@drawable/fb"
        android:scaleType="centerCrop"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Welcome to Facebook"
        android:textAlignment="center"
        android:layout_marginTop="5dp"
        android:layout_gravity="center"/>
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
```

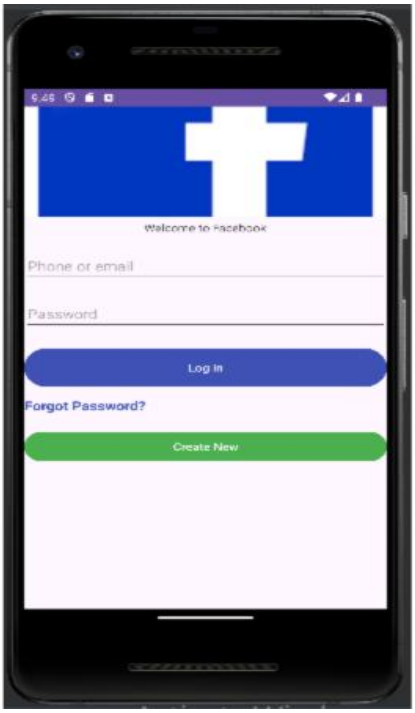
```
    android:paddingHorizontal="30dp"
    android:layout_marginTop="20dp"
    android:orientation="vertical"/>
<EditText
    android:id="@+id/fb_id"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:hint="Phone or email"
    android:digits=""
    android:inputType="text"/>
<EditText
    android:id="@+id/fb_pass"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="20dp"
    android:hint="Password"
    android:inputType="textPassword"/>
<Button
    android:id="@+id/fb_loginbtn"
    android:layout_width="match_parent"
    android:layout_height="60dp"
    android:text="Log In"
    android:layout_marginTop="20dp"
    android:textAllCaps="false"
    android:backgroundTint="#3F51B5"/>
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Forgot Password?"
```

```
        android:textStyle="bold"
        android:textColor="#3F51B5"
        android:textSize="17sp"
        android:layout_marginTop="10dp"/>
    <Button
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Create New"
        android:layout_marginTop="20dp"
        android:textAllCaps="false"
        android:backgroundTint="#4CAF50"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.facebook;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;

public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```

Output:



Result: The program is executed successfully and output is verified.

PROGRAM – 7

Aim: Write a program to develop an application that toggles image using FrameLayout.

Program

activity_main.xml

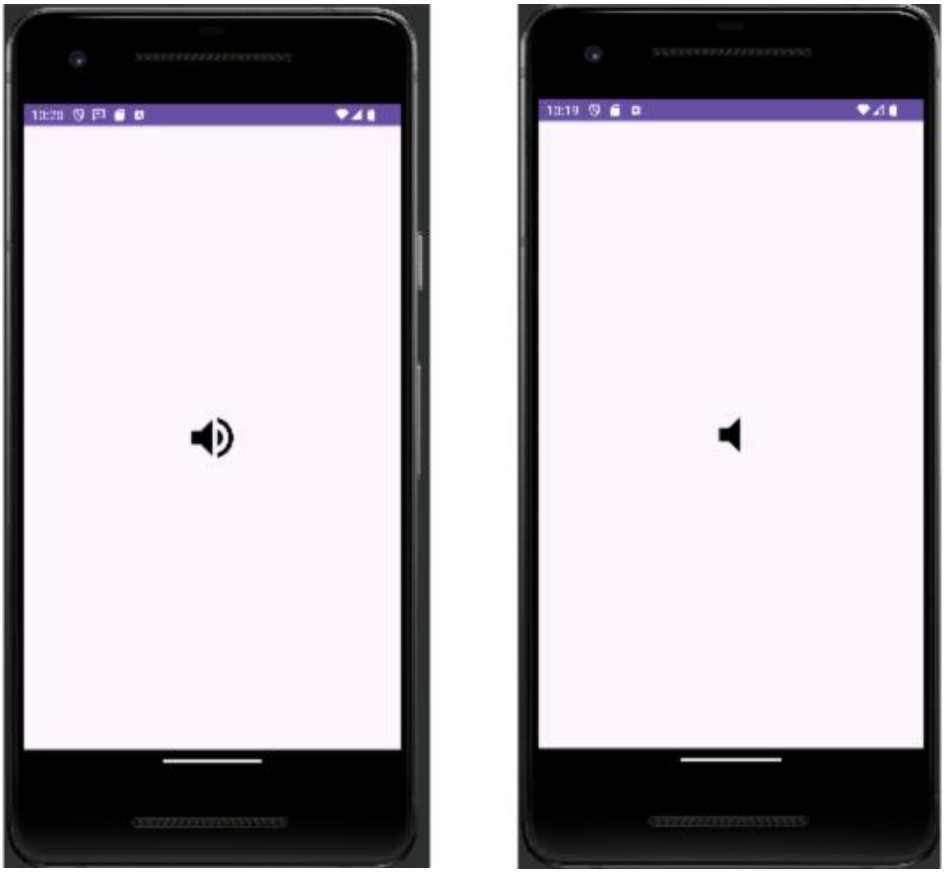
```
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <ToggleButton
        android:id="@+id/toggle_img_btn"
        android:layout_width="60dp"
        android:layout_height="60dp"
        android:textOff=""
        android:textOn=""
        android:background="@drawable/baseline_volume_up_24"
        android:layout_gravity="center"/>
</FrameLayout>
```

MainActivity.java

```
package com.example.toggleimg;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.Toast;
import android.widget.ToggleButton;
```

```
public class MainActivity extends AppCompatActivity {
ToggleButton toggle_img_btn;

  @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);

      toggle_img_btn = findViewById(R.id.toggle_img_btn);
      toggle_img_btn.setOnClickListener(v -> {

         if (toggle_img_btn.isChecked()) {
           toggle_img_btn.setBackgroundResource(R.drawable.baseline_volume_up_24);

         Toast.makeText(getApplicationContext(), "Volume Up.",
                 Toast.LENGTH_SHORT).show();
        } else {

           toggle_img_btn.setBackgroundResource(R.drawable.baseline_volume_mute_24);

           Toast.makeText(getApplicationContext(), "Volume Mute.",
                 Toast.LENGTH_SHORT).show();
        }
      });
   }
}
```

Output:



Result: The program is executed successfully and output is verified.

PROGRAM – 8

Aim: Write a program to design a Simple Calculator using GridLayout and Cascade LinearLayout.

Program

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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:orientation="vertical"
    android:id="@+id/calculator_mainlay"
    android:padding="20dp"
    tools:context=".MainActivity">
    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="30dp"
        android:hint="number 01"
        android:inputType="number"/>
    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="10dp"
        android:hint="number 02"
        android:inputType="number"/>
    <EditText
        android:layout_width="match_parent"
```

```
    android:layout_height="wrap_content"
    android:layout_marginTop="10dp"
    android:hint="Result"
    android:clickable="false"
    android:enabled="false"
    android:inputType="number"/>
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="vertical"
    android:layout_marginTop="20dp"
    android:gravity="bottom">
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:weightSum="4">
<Button
    android:id="@+id/numclearall_btn"
    android:layout_width="0dp"
    android:layout_height="60dp"
    android:textColor="@color/white"
    android:text="CE"
    android:layout_weight="1"/>
<Button
    android:id="@+id/numclear_btn"
    android:layout_width="0dp"
    android:layout_height="60dp"
    android:textColor="@color/white"
```

```
    android:text="C"
    android:layout_marginStart="10dp"
    android:layout_weight="1"/>
<Button
    android:id="@+id/nummodulus_btn"
    android:layout_width="0dp"
    android:layout_height="60dp"
    android:textColor="@color/white"
    android:text="%"
    android:layout_marginStart="10dp"
    android:layout_weight="1"/>
<Button
    android:id="@+id/divide_btn"
    android:layout_width="0dp"
    android:layout_height="60dp"
    android:textColor="@color/white"
    android:text="/"
    android:layout_marginStart="10dp"
    android:layout_weight="1"/>
</LinearLayout>
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:layout_marginTop="10dp"
    android:weightSum="4">
    <Button
        android:id="@+id/num7_btn"
        android:layout_width="0dp"
```

```
        android:layout_height="60dp"
        android:textColor="@color/white"
        android:text="7"
        android:layout_weight="1"/>
    <Button
        android:id="@+id/num8_btn"
        android:layout_width="0dp"
        android:layout_height="60dp"
        android:textColor="@color/white"
        android:text="8"
        android:layout_marginStart="10dp"
        android:layout_weight="1"/>
    <Button
        android:id="@+id/num9_btn"
        android:layout_width="0dp"
        android:layout_height="60dp"
        android:textColor="@color/white"
        android:text="9"
        android:layout_marginStart="10dp"
        android:layout_weight="1"/>
    <Button
        android:id="@+id/multiply_btn"
        android:layout_width="0dp"
        android:layout_height="60dp"
        android:textColor="@color/white"
        android:text="*"
        android:layout_marginStart="10dp"
        android:layout_weight="1"/>
</LinearLayout>
```

```
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:layout_marginTop="10dp"
    android:weightSum="4">
    <Button
      android:id="@+id/num4_btn"
      android:layout_width="0dp"
      android:layout_height="60dp"
      android:textColor="@color/white"
      android:text="4"
      android:layout_marginStart="10dp"
      android:layout_weight="1"/>
    <Button
      android:id="@+id/num5_btn"
      android:layout_width="0dp"
      android:layout_height="60dp"
      android:textColor="@color/white"
      android:text="5"
      android:layout_marginStart="10dp"
      android:layout_weight="1"/>
    <Button
      android:id="@+id/num6_btn"
      android:layout_width="0dp"
      android:layout_height="60dp"
      android:textColor="@color/white"
      android:text="6"
      android:layout_marginStart="10dp"
```

```
        android:layout_weight="1"/>
    <Button
        android:id="@+id/subtract_btn"
        android:layout_width="0dp"
        android:layout_height="60dp"
        android:textColor="@color/white"
        android:text="-"
        android:layout_marginStart="10dp"
        android:layout_weight="1"/>
</LinearLayout>
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:layout_marginTop="10dp"
    android:weightSum="4">
    <Button
        android:id="@+id/num1_btn"
        android:layout_width="0dp"
        android:layout_height="60dp"
        android:textColor="@color/white"
        android:text="1"
        android:layout_marginStart="10dp"
        android:layout_weight="1"/>
    <Button
        android:id="@+id/num2_btn"
        android:layout_width="0dp"
        android:layout_height="60dp"
        android:textColor="@color/white"
```

```
        android:text="2"
        android:layout_marginStart="10dp"
        android:layout_weight="1"/>
    <Button
        android:id="@+id/num3_btn"
        android:layout_width="0dp"
        android:layout_height="60dp"
        android:textColor="@color/white"
        android:text="3"
        android:layout_marginStart="10dp"
        android:layout_weight="1"/>
    <Button
        android:id="@+id/add_btn"
        android:layout_width="0dp"
        android:layout_height="60dp"
        android:textColor="@color/white"
        android:text="+"
        android:layout_marginStart="10dp"
        android:layout_weight="1"/>
</LinearLayout>
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:layout_marginTop="10dp"
    android:weightSum="4">
    <Button
        android:id="@+id/numplusminus_btn"
        android:layout_width="0dp"
```

```
    android:layout_height="60dp"
    android:textColor="@color/white"
    android:text="+/-"
    android:layout_marginStart="10dp"
    android:layout_weight="1"/>
<Button
    android:id="@+id/num0_btn"
    android:layout_width="0dp"
    android:layout_height="60dp"
    android:textColor="@color/white"
    android:text="0"
    android:layout_marginStart="10dp"
    android:layout_weight="1"/>
<Button
    android:id="@+id/decimal_btn"
    android:layout_width="0dp"
    android:layout_height="60dp"
    android:textColor="@color/white"
    android:text="."
    android:layout_marginStart="10dp"
    android:layout_weight="1"/>
<Button
    android:id="@+id/equals_btn"
    android:layout_width="0dp"
    android:layout_height="60dp"
    android:textColor="@color/white"
    android:text="="
    android:layout_marginStart="10dp"
    android:layout_weight="1"/>
```

```
        </LinearLayout>
    </LinearLayout>
</LinearLayout>
```

MainActivity.java

```
package com.example.calculator;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

        @Override
        protected void onCreate(Bundle savedInstanceState) {
            super.onCreate(savedInstanceState);
            setContentView(R.layout.activity_main);
    }
}
```

activity_grid_layout.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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/calculator_mainlay"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="20dp"
```

```
tools:context=".GridLayoutActivity">

<EditText
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="30dp"
    android:hint="Number 01"
    android:inputType="number"/>
<EditText
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10dp"
    android:hint="Number 02"
    android:inputType="number"/>
<EditText
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10dp"
    android:clickable="false"
    android:enabled="false"
    android:hint="Result"
    android:inputType="number"/>
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="bottom"
    android:orientation="vertical">
<GridLayout
    android:layout_width="match_parent"
```

```
android:layout_height="wrap_content"
android:layout_marginTop="10dp"
android:columnCount="4"
android:orientation="horizontal"
android:rowCount="5">
<Button
    android:layout_marginTop="20dp"
    android:padding="13dp"
    android:text="CE"
    android:textColor="@color/white"/>
<Button
    android:layout_marginStart="10dp"
    android:layout_marginTop="20dp"
    android:padding="13dp"
    android:text="C"
    android:textColor="@color/white"/>
<Button
    android:layout_marginStart="10dp"
    android:layout_marginTop="20dp"
    android:padding="13dp"
    android:text="%"
    android:textColor="@color/white"/>
<Button
    android:layout_marginStart="10dp"
    android:layout_marginTop="20dp"
    android:padding="13dp"
    android:text="/"
    android:textColor="@color/white"/>
<Button
```

```
    android:layout_marginStart="10dp"
    android:layout_marginTop="20dp"
    android:padding="13dp"
    android:text="7"
    android:textColor="@color/white"/>
<Button
    android:layout_marginStart="10dp"
    android:layout_marginTop="20dp"
    android:padding="13dp"
    android:text="8"
    android:textColor="@color/white"/>
<Button
    android:layout_marginStart="10dp"
    android:layout_marginTop="20dp"
    android:padding="13dp"
    android:text="9"
    android:textColor="@color/white"/>
<Button
    android:layout_marginStart="10dp"
    android:layout_marginTop="20dp"
    android:padding="13dp"
    android:text="*"
    android:textColor="@color/white"/>
<Button
    android:layout_marginStart="10dp"
    android:layout_marginTop="20dp"
    android:padding="13dp"
    android:text="4"
    android:textColor="@color/white"/>
```

```
<Button
    android:layout_marginStart="10dp"
    android:layout_marginTop="20dp"
    android:padding="13dp"
    android:text="5"
    android:textColor="@color/white"/>
<Button
    android:layout_marginStart="10dp"
    android:layout_marginTop="20dp"
    android:padding="13dp"
    android:text="6"
    android:textColor="@color/white"/>
<Button
    android:layout_marginStart="10dp"
    android:layout_marginTop="20dp"
    android:padding="13dp"
    android:text="-"
    android:textColor="@color/white"/>
<Button
    android:layout_marginStart="10dp"
    android:layout_marginTop="20dp"
    android:padding="13dp"
    android:text="1"
    android:textColor="@color/white"/>
<Button
    android:layout_marginStart="10dp"
    android:layout_marginTop="20dp"
    android:padding="13dp"
```

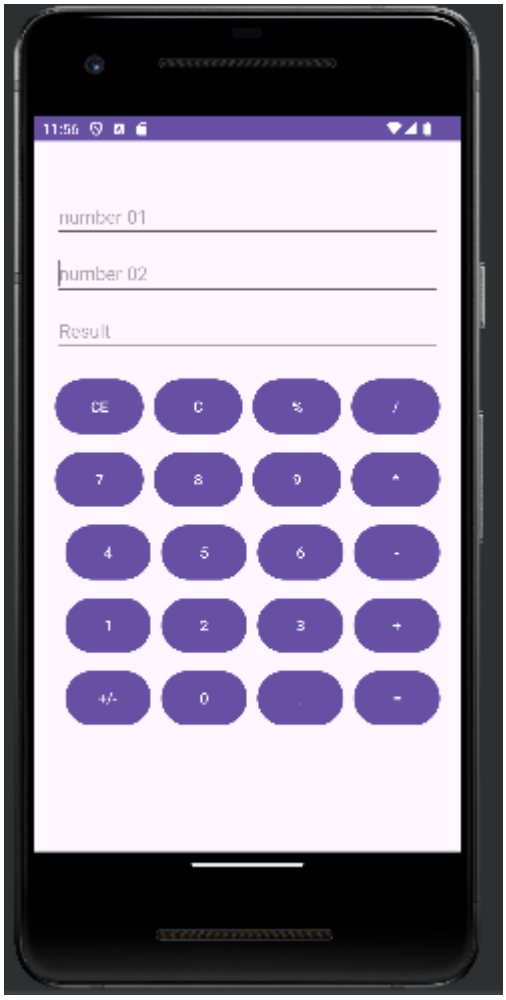
```
    android:text="2"
    android:textColor="@color/white"/>
<Button
    android:layout_marginStart="10dp"
    android:layout_marginTop="20dp"
    android:padding="13dp"
    android:text="2"
    android:textColor="@color/white"/>
<Button
    android:layout_marginStart="10dp"
    android:layout_marginTop="20dp"
    android:padding="13dp"
    android:text="+"
    android:textColor="@color/white"/>
<Button
    android:layout_marginStart="10dp"
    android:layout_marginTop="20dp"
    android:padding="13dp"
    android:text="+/-"
    android:textColor="@color/white"/>
<Button
    android:layout_marginStart="10dp"
    android:layout_marginTop="20dp"
    android:padding="13dp"
    android:text="0"
    android:textColor="@color/white"/>
<Button
    android:layout_marginStart="10dp"
    android:layout_marginTop="20dp"
```

```
            android:padding="13dp"
            android:text="."
            android:textColor="@color/white"/>
        <Button
            android:layout_marginStart="10dp"
            android:layout_marginTop="20dp"
            android:padding="13dp"
            android:text="="
            android:textColor="@color/white"/>
        </GridLayout>
    </LinearLayout>
</LinearLayout>
```

GridLayoutActivity.java

```
package com.example.calculator;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;

public class GridLayoutActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_grid_layout);
    }
}
```

Output:



Result: The program is executed successfully and output is verified.

PROGRAM – 9

Aim: Write a program to implement Adapters and perform Exception Handling.

Program

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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:gravity="center"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Exception Activity"
        />
    <TextView
        android:id="@+id/textview"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="20dp"
        android:text="Value of 0/0"
        />
</LinearLayout>
```

MainActivity.java

```
package com.example.exceptionhandling;
import androidx.appcompat.app.AppCompatActivity;
```

```
import android.os.Bundle;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
TextView textView;

   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      textView=findViewById(R.id.textview);
      try {
         int n1=0,n2=0;
         int a=n1/n2;
         textView.setText("Value of 0/0:"+a);

         Toast.makeText(getApplicationContext(),"The value is:"+a,
               Toast.LENGTH_SHORT).show();
      }
      catch(Exception e) {

         Toast.makeText(getApplicationContext(),"The caught exception is:"+e.getMessage(),
               Toast.LENGTH_LONG).show();
      }
   }
}
```

Output:

Result: The program is executed successfully and output is verified.

PROGRAM – 10

Aim: Write a program to implement Intent to navigate between multiple activities.

Program

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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:gravity="center"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Home Page"
        android:textSize="17sp"/>
    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="View Profile"
        android:layout_marginTop="1dp"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.intent;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
```

```
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity {
Button button;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        button=findViewById(R.id.button);

        button.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent intent=new Intent(getApplicationContext(),Navigate2.class);
                startActivity(intent);
            }
        });
    }
}
```

activity_navigate.xml

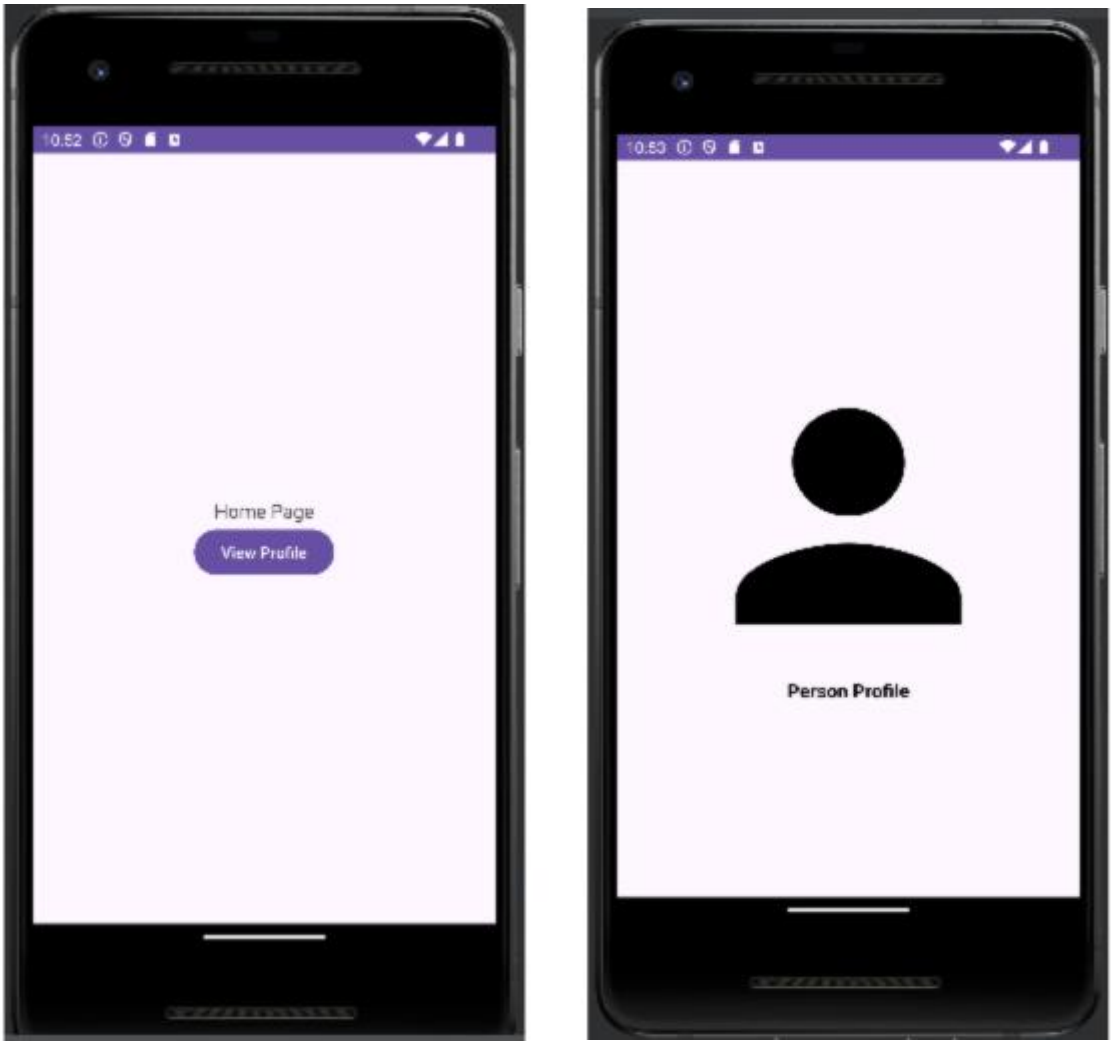
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
```

```
    android:layout_height="match_parent"
    android:gravity="center"
    android:orientation="vertical"
    tools:context=".Navigate2">
    <ImageView
        android:layout_width="match_parent"
        android:layout_height="300dp"
        android:src="@drawable/baseline_person_24"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Person Profile"
        android:textColor="@color/black"
        android:textStyle="bold"
        android:textSize="17sp"/>
</LinearLayout>
```

Navigate2.java

```
package com.example.intent;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;

public class Navigate2 extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_navigate);
    }
}
```

Output:



Result: The program is executed successfully and output is verified.

PROGRAM – 11

Aim: Write a program to develop application that works with explicit intents.

Program

activity_main.xml

```
<? xml version = “1.0” encoding=”utf-8” ?>
<LinearLayout 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:gravity="center"
 android:orientation="vertical"
 tools:context=".MainActivity">
<TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Welcome"/>
<Button
         android:id="@+id/goto_second_btn"
         android:layout_width="wrap_content"
         android:layout_height="wrap_content"
         android:text="admin"
         android:layout_marginTop="10dp"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.explicit;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
```

```
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity {
Button goto_second_btn;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        goto_second_btn=findViewById(R.id.goto_second_btn);
        goto_second_btn.setOnClickListener(new View.OnClickListener() {

            @Override
            public void onClick(View view) {
                Intent intent=new Intent(getApplicationContext(),Explicit2.class);
                startActivity(intent);
            }
        });
    }
}
```

secondactivity.xml

```
<? xml version = “1.0” encoding = “utf-8” ?>
<LinearLayout 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:gravity="center"
android:orientation="vertical"
tools:context=".Explicit2">
<TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Welcome to trip"/>
<Button
        android:id="@+id/goto_third_btn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="move to page"
        android:layout_marginTop="10dp"/>
</LinearLayout>
```

Explicit2.java

```
package com.example.explicit;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class Explicit2 extends AppCompatActivity {
Button goto_third_btn;
```

```
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.secondactivity);

        goto_third_btn=findViewById(R.id.goto_third_btn);
        goto_third_btn.setOnClickListener(new View.OnClickListener() {

            @Override
            public void onClick(View view) {
                Intent intent=new Intent(getApplicationContext(),Explicit3.class);
                startActivity(intent);
            }
        });
    }
}
```

thirdactivity.xml

```
<? xml version = “1.0” encoding=”utf-8” ?>
<LinearLayout 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:gravity="center"
android:orientation="vertical"
tools:context=".Explicit3">
<TextView
        android:layout_width="wrap_content"
```

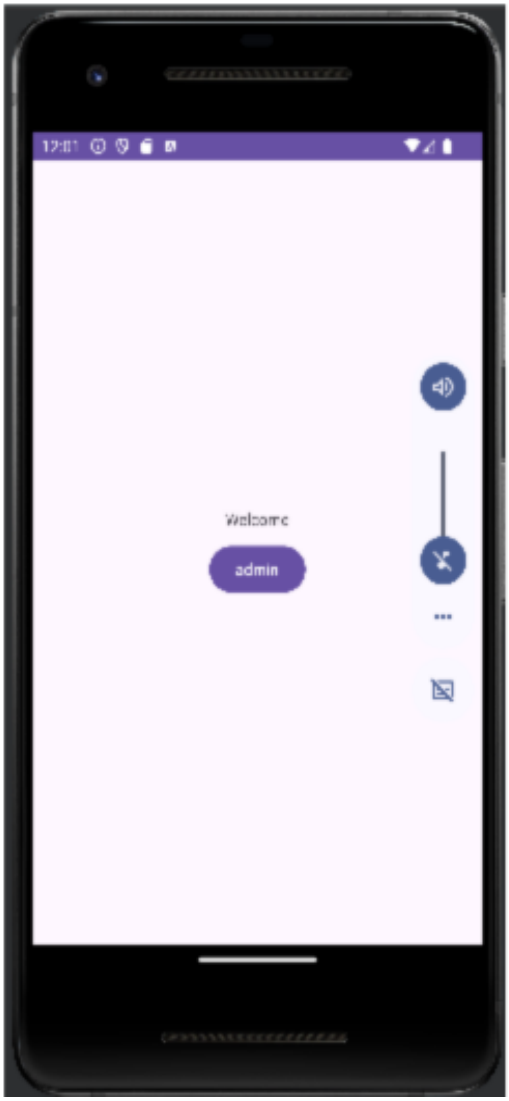
```
        android:layout_height="wrap_content"
        android:text="Welcome to trip"/>
<Button
        android:id="@+id/goto_main_btn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="go back"
        android:layout_marginTop="10dp"/>
</LinearLayout>
```

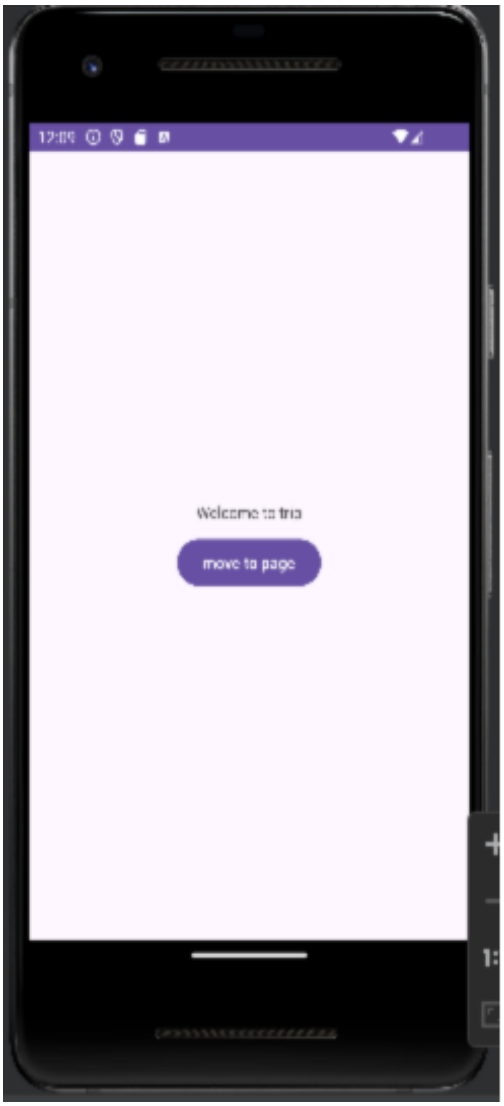
Explicit3.java

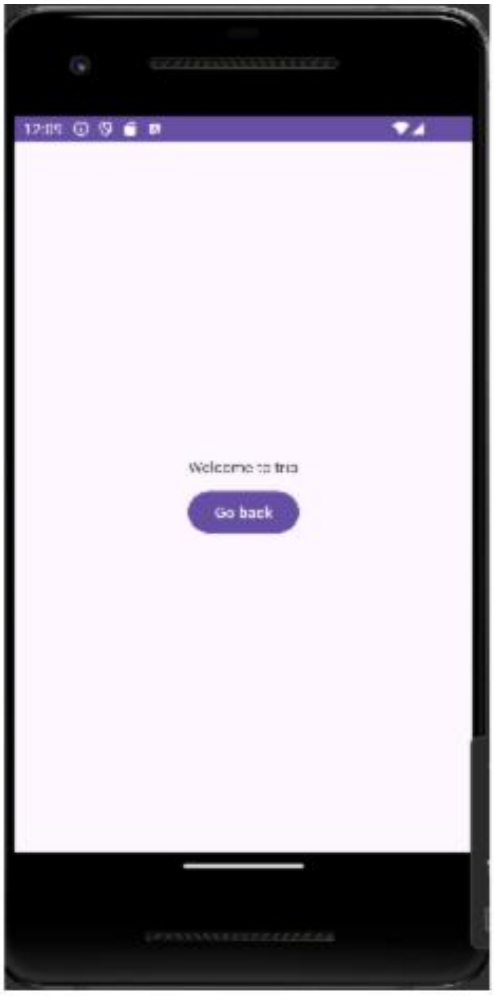
```
package com.example.explicit;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class Explicit3 extends AppCompatActivity {
Button goto_main_btn;

   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.thirdactivity);

      goto_main_btn=findViewById(R.id.goto_main_btn);
      goto_main_btn.setOnClickListener(new View.OnClickListener() {
```

```
    @Override
            public void onClick(View v) {
                Intent intent=new Intent(getApplicationContext(),MainActivity.class);
                startActivity(intent);
            }
        });
    }
}
```

Output:







Result: The program is executed successfully and output is verified.

PROGRAM – 12

Aim: Write a program to implement option menu to navigate to activities.

Program

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center_horizontal"
    tools:context=".MainActivity">

    < androidx.appcompat.widget.Toolbar
        android:id="@+id/toolbar"
        android:layout_width="match_parent"
        android:layout_height="?attr/actionBarSize"
        android:background="?attr/colorPrimary"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="MenuOptions Menu Program" />
</LinearLayout>
```

MainActivity.java

```
package com.example.menu;
import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
```

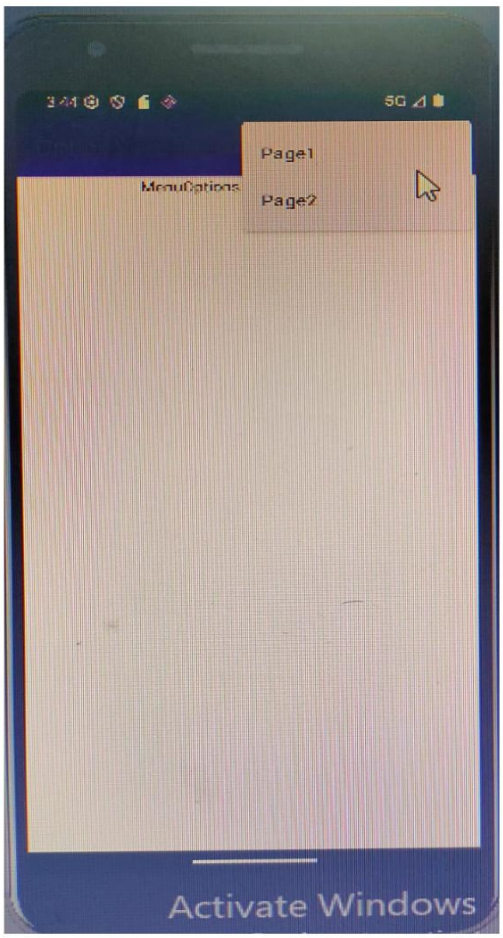
```
import androidx.appcompat.widget.Toolbar;
import android.content.Intent;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        Toolbar toolbar = findViewById(R.id.toolbar);
        setSupportActionBar(toolbar);
    }

    @Override
    public boolean onOptionsItemSelected(@NonNull MenuItem item) {
        int id = item.getItemId();
        if(id==R.id.menu_option_1) {

            Toast.makeText(this,"Page1 clicked",Toast.LENGTH_SHORT).show();
            return true;
        }
        else if (id==R.id.menu_option_2) {

            Toast.makeText(this,"Page2 clicked",Toast.LENGTH_SHORT).show();
```

```
            return true;
        }
        return super.onOptionsItemSelected(item);
    }
}
```

menu_item.xml

```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android"
      xmlns:app="http://schemas.android.com/apk/res-auto">
     <item
        android:id="@+id/menu_option_1"
        android:title="Page1"
        app:showAsAction="never"
     />
   <item
      android:id="@+id/menu_option_2"
      android:title="Page2"
      app:showAsAction="never"
      />
</menu>
```

Output:



Result: The program is executed successfully and output is verified.

PROGRAM – 13

Aim: Write a program to develop an application that uses ArrayAdapter with ListView.

Program

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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">
    <ListView
        android:id="@+id/listview"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        />
</LinearLayout>
```

MainActivity.java

```
package com.example.list;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
```

```
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        ListView listview;
        String[] person_qualify = {
                "Item 1", "Item 2", "Item 3", "Item 4", "Item 5", "Item 6",
                "Item 7", "Item 8", "Item 9", "Item 10", "Item 11", "Item 12"
        };
        listview = findViewById(R.id.listview);
        ArrayAdapter<String> adapter = new ArrayAdapter<>(
                this, android.R.layout.simple_list_item_1, person_qualify
        );
        listview.setAdapter(adapter);
        listview.setOnItemClickListener((parent, view, position, id) -> {

            Toast.makeText(MainActivity.this, "The selected item is - "+person_qualify[position],
                    Toast.LENGTH_SHORT).show();
        });
    }
}
```

Output:

Result: The program is executed successfully and output is verified.

PROGRAM – 14

Aim: Write a program to develop an application that uses GridView with images and display AlertBox on selection.

Program

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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:gravity="center"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="My Apps"
        android:layout_marginTop="30dp"
        android:textColor="@color/black"
        android:textSize="20sp"
        android:textStyle="bold"/>
    <GridLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="30dp"
        android:columnCount="3"
        android:orientation="horizontal"
        android:rowCount="3">
```

```
    <ImageView
        android:id="@+id/wifi_btn"
        android:layout_width="80dp"
        android:layout_height="80dp"
        android:padding="13dp"
        android:src="@drawable/baseline_wifi_24"
        android:textColor="@color/white"/>
    <ImageView
        android:id="@+id/bluetooth_btn"
        android:layout_width="80dp"
        android:layout_height="80dp"
        android:padding="13dp"
        android:src="@drawable/baseline_bluetooth_24"
        android:textColor="@color/white"/>
    <ImageView
        android:id="@+id/volume_btn"
        android:layout_width="80dp"
        android:layout_height="80dp"
        android:padding="13dp"
        android:src="@drawable/baseline_volume_up_24"
        android:textColor="@color/white"/>
    </GridLayout>
</LinearLayout>
```

MainActivity.java

```
package com.example.gridviewdr;
import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;
import android.content.DialogInterface;
```

```
import android.os.Bundle;
import android.view.View;
import android.widget.ImageButton;
import android.widget.ImageView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
ImageView wifi_btn,bluetooth_btn,volume_btn;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        wifi_btn=findViewById(R.id.wifi_btn);
        bluetooth_btn=findViewById(R.id.bluetooth_btn);
        volume_btn=findViewById(R.id.volume_btn);

        wifi_btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                myAlertBox("Album Option");
            }
        });

        bluetooth_btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                myAlertBox("Mail Option");
```

```
        }
    });

    volume_btn.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            myAlertBox("Money Option");
        }
    });
}

public void myAlertBox(String buttonname) {
    AlertDialog.Builder builder = new AlertDialog.Builder(MainActivity.this);
    builder.setMessage(("Click OK to select option"));
    builder.setTitle("Alert!");
    builder.setCancelable(false);
    builder.setPositiveButton("Yes", new DialogInterface.OnClickListener() {

        @Override
        public void onClick(DialogInterface dialogInterface, int i) {

            Toast.makeText(getApplicationContext(),buttonname+"is successfully
                    selected",Toast.LENGTH_SHORT).show();
        }
    });

    builder.setNegativeButton("No",(DialogInterface.OnClickListener)(dialog,which)->
    {
        dialog.cancel();
```

```
        });
        AlertDialog alertDialog = builder.create();
        alertDialog.show();
    }
}
```

Output:

Result: The program is executed successfully and output is verified.

PROGRAM – 15

Aim: Write a program to develop an application that implements Spinners components and perform event handling.

Program

activity_main.xml

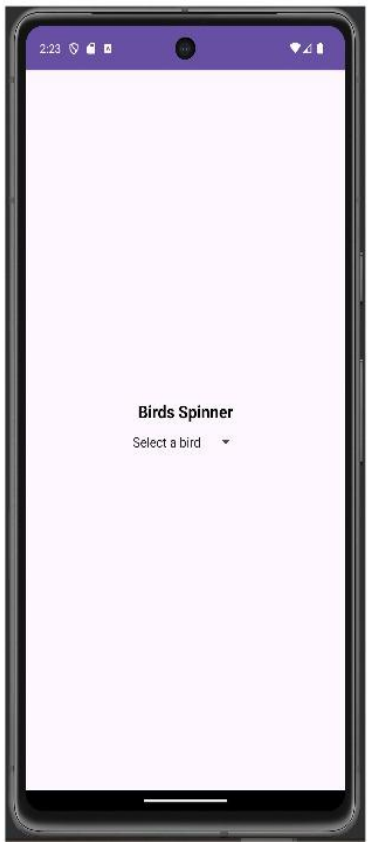
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Birds Spinner"
        android:textStyle="bold"
        android:textSize="20sp"
        android:textColor="#0F0F0F"/>
    <Spinner
        android:id="@+id/spinner"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="10dp"/>
</LinearLayout>
```

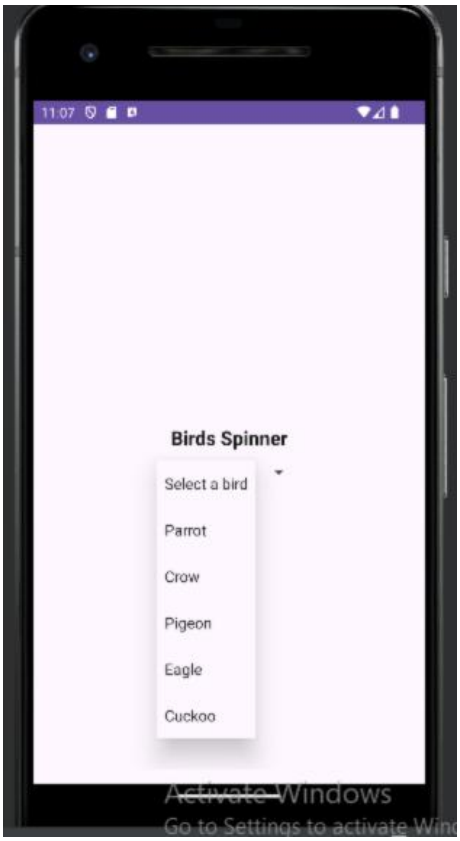
MainActivity.java

```
package com.example.spinner;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.Spinner;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
Spinner spinner;
   String[] designations={"Select a bird","Parrot","Crow","Pigeon","Eagle","Cuckoo"} ;

   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);

      spinner=findViewById(R.id.spinner);
      spinner.setSelection(0,false);
      ArrayAdapter adapter = new ArrayAdapter(this, android.R.layout.simple_spinner_item,
            designations);
      adapter.setDropDownViewResource(android.R.layout.simple_spinner_dropdown_item);
      spinner.setAdapter(adapter);
      spinner.setOnItemSelectedListener(new AdapterView.OnItemSelectedListener() {

         @Override
         public void onItemSelected(AdapterView<?> adapterView, View view, int i, long l) {
```

```
            Toast.makeText(getApplicationContext(),"Selected bird is:"+designations,
                    Toast.LENGTH_SHORT).show();
        }

        @Override
        public void onNothingSelected(AdapterView<?>adapterView) {
        }
    });
  }
}
```

Output:





Result: The program is executed successfully and output is verified.

PROGRAM – 16

Aim: Write a program to create database using SQLite and perform INSERT and SELECT.

Program

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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:gravity="center"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Database Operations"
        android:layout_gravity="center"
        android:layout_marginTop="50dp"
        android:textSize="25sp"
        android:textStyle="bold"/>
    <EditText
        android:id="@+id/roll_no"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Roll no"
        android:layout_marginHorizontal="20dp"
        android:layout_marginTop="30dp"/>
    <EditText
```

```
    android:id="@+id/name"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:hint="Name"
    android:layout_marginHorizontal="20dp"
    android:layout_marginTop="10dp"/>
<EditText
    android:id="@+id/email"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:hint="Email ID"
    android:layout_marginHorizontal="20dp"
    android:layout_marginTop="10dp"/>
<Button
    android:id="@+id/insert_btn"
    android:layout_width="286dp"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:layout_marginTop="30dp"
    android:backgroundTint="#8BC34A"
    android:text="Insert into table"/>
<Button
    android:id="@+id/select_btn"
    android:layout_width="286dp"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:layout_marginTop="30dp"
    android:backgroundTint="#8BC34A"
    android:text="View from table"/>
```

```
</LinearLayout>
```

MainActivity.java

```
package com.example.sqlite;
import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;
import android.database.Cursor;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
EditText roll_no,name,email;
Button insert_btn,select_btn;
dbhelpher db;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        roll_no=findViewById(R.id.roll_no);
        name=findViewById(R.id.name);
        email=findViewById(R.id.email);
        insert_btn=findViewById(R.id.insert_btn);
        select_btn=findViewById(R.id.select_btn);
        db=new dbhelpher(getApplicationContext());
```

```
insert_btn.setOnClickListener(new View.OnClickListener() {

    @Override
    public void onClick(View view) {
        int roll_num=Integer.parseInt(roll_no.getText().toString());
        String name_txt=name.getText().toString();
        String email_txt=email.getText().toString();
        boolean insert_result=db.insertToDB(roll_num,name_txt,email_txt);
        if(insert_result){

            Toast.makeText(getApplicationContext(),"Inserted successfully",
                    Toast.LENGTH_LONG).show();
        }
        else {

            Toast.makeText(getApplicationContext(),"Insertion failed!!",
                    Toast.LENGTH_LONG).show();
        }
    }
});

select_btn.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        Cursor res=db.selectFromDB();
        if(res.getCount()==0) {

            Toast.makeText(getApplicationContext(), "No entry Exist",
                    Toast.LENGTH_LONG).show();
```

```
            }
            else {
                StringBuffer buffer=new StringBuffer();
                while(res.moveToNext()) {
                    buffer.append("roll_no:"+res.getString(0)+"\n");
                    buffer.append("Name:"+res.getString(1)+"\n");
                    buffer.append("email:"+res.getString(2)+"\n");
                }

                AlertDialog.Builder builder=new AlertDialog.Builder(MainActivity.this);
                builder.setCancelable(true);
                builder.setTitle("User Entries");
                builder.setMessage(buffer.toString());
                builder.show();
            }
        }
    });
  }
}
```

dbhelper.java

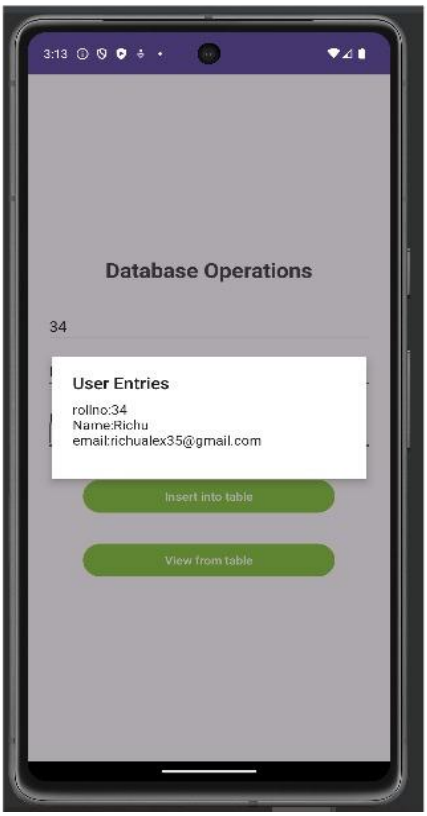
```
package com.example.sqlite;
import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import androidx.annotation.Nullable;
```

```
public class dbhelpher extends SQLiteOpenHelper {
    public dbhelpher(@Nullable Context context) {
        super(context,"MyDB",null,1);
    }

    @Override
    public void onCreate(SQLiteDatabase sqLiteDatabase) {

        sqLiteDatabase.execSQL("CREATE TABLE userdetails(roll_no INTEGER PRIMARY
            KEY,NAME TEXT,EMAIL TEXT)");
    }

    @Override
    public void onUpgrade(SQLiteDatabase sqLiteDatabase,int i,int i1){

        sqLiteDatabase.execSQL("Drop table if exists userdetails");
    }
    public boolean insertToDB(int roll_no,String name,String email) {

        SQLiteDatabase db=this.getWritableDatabase();
        ContentValues values=new ContentValues();
        values.put("roll_no",roll_no);
        values.put("name",name);
        values.put("email",email);
        long result=db.insert("userdetails",null,values);
        if(result>=0){
            return true;
        } else {
            return false;
```

```
    }
}
public Cursor selectFromDB(){
    SQLiteDatabase db=this.getWritableDatabase();
    Cursor cursor=db.rawQuery("Select * from userdetails",null);
    return cursor;
}
public boolean updateToDB(int roll_no,String name,String email) {

    SQLiteDatabase db=this.getWritableDatabase();
    ContentValues values=new ContentValues();
    values.put("name",name);
    values.put("email",email);
    Cursor check_user=db.rawQuery("SELECT * from userdetails WHERE roll_no=?",
      new String[] {String.valueOf(roll_no)});
    if(check_user.getCount()>0) {
       long update_user_query=db.update("userdetails",values,"roll_no=?",
            new String[] {String.valueOf(roll_no)});
       if(update_user_query>=0) {
          return true;
       } else {
          return false;
       }
    }
    else {
       return false;
}
}
public boolean deleteFromDB(int roll_no) {
```

```
        SQLiteDatabase db=this.getWritableDatabase();
        Cursor check_user=db.rawQuery("SELECT * from userdetails WHERE rollno=?",
           new String[] {String.valueOf(roll_no)});
        if(check_user.getCount()>(0)) {
           long delete_user_query=db.delete("userdetails","roll_no=?",
                new String[]{String.valueOf(roll_no)});
           if(delete_user_query>=0) {
              return true;
           }else {
              return false;
           }
        }
        else{
           return false;
        }
    }
}
```

Output:



Result: The program is executed successfully and output is verified.