20MCA243 - MOBILE APPLICATION DEVELOPMENT LAB

Lab Report Submitted By

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Reg. No.: AJC21MCA-2076

In Partial fulfilment for the Award of the Degree Of

MASTER OF COMPUTER APPLICATIONS (2 Year)(MCA)

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

AMAL JYOTHI COLLEGE OF ENGINEERING

KANJIRAPPALLY

[Affiliated to APJ Abdul Kalam Technological University, Kerala. Approved by AICTE, Accredited by NAAC with 'A' grade. Koovapally, Kanjirappally, Kottayam, Kerala – 686518]

2022-2023

DEPARTMENT OF COMPUTER APPLICATIONS

AMAL JYOTHI COLLEGE OF ENGINEERING

KANJIRAPPALLY

CERTIFICATE

This is to certify that the lab report, **"20MCA243 MOBILE APPLICATION DEVELOPMENT LAB"**is the bonafide work of **MATHEW SEBASTIAN (AJC21MCA-2076)** in partial fulfilment of the requirements for the award of the Degree of Master of Computer Applications under APJ Abdul Kalam Technological University during the year **2022-23.**

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Course Code	Course Name	Syllabus Year	L-T-P-C
20MCA243	Mobile Application Development Lab	2020	0-1-3-2

VISION

To promote an academic and research environment conducive for innovation centric technical education.

MISSION

MS1 - Provide foundations and advanced technical education in both theoretical and applied ComputerApplications in-line with Industry demands.

MS2 - Create highly skilled computer professionals capable of designing and innovating real life solutions.

MS3 - Sustain an academic environment conducive to research and teaching focused to generate up-skilledprofessionals with ethical values.

MS4 - Promote entrepreneurial initiatives and innovations capable of bridging and contributing withsustainable, socially relevant technology solutions.

COURSE OUTCOME

CO	Outcome	Target
CO1	Design and develop user interfaces for mobile apps using basic building blocks, UIcomponents and application structure using Emulator	60
CO2	Write simple programs and develop small applications using the concepts of UI design,layouts and preferences	60
CO3	Develop applications with multiple activities using intents, array adapter, exceptions andoptions menu.	60
CO4	Implement activities with dialogs, spinner, fragments and navigation drawer by applyingthemes	60
CO5	Develop mobile applications using SQLite.	60

COURSE END SURVEY

CO	Survey Question	Answer Format
CO1	To what extent you are able to design and develop UI usingEmulator	Excellent/Very Good/GoodSatisfactory/Needsimprovement
CO2	To what extent you understood concepts of layouts	Excellent/Very Good/GoodSatisfactory/Needsimprovement

CO3	To what extent you understood intents, exceptions and menus	Excellent/Very Good/GoodSatisfactory/Needsimprovement
CO4	To what extent you are able to implement activities applyingthemes	Excellent/Very Good/GoodSatisfactory/Needsimprovement
CO5	To what extent you understood to create applications with SQLite	Excellent/Very Good/GoodSatisfactory/Needsimprovement

CONTENT

	images and display Alert box on selection			
15	Develop an application that implements Spinner component and perform event handling	25/10/2022	CO4	**70-72**
16	Create database using SQLite and perform INSERT and SELECT	01/11/2022	CO5	**73-78**
17	Perform UPDATE and DELETE on SQLite database	01/11/2022	CO5	**79-86**

Experiment No.: 1

Aim

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

CO1

Design and develop user interfaces for mobile apps using basic building blocks, UI components and application structure using Emulator

Procedure

activity_main.xml

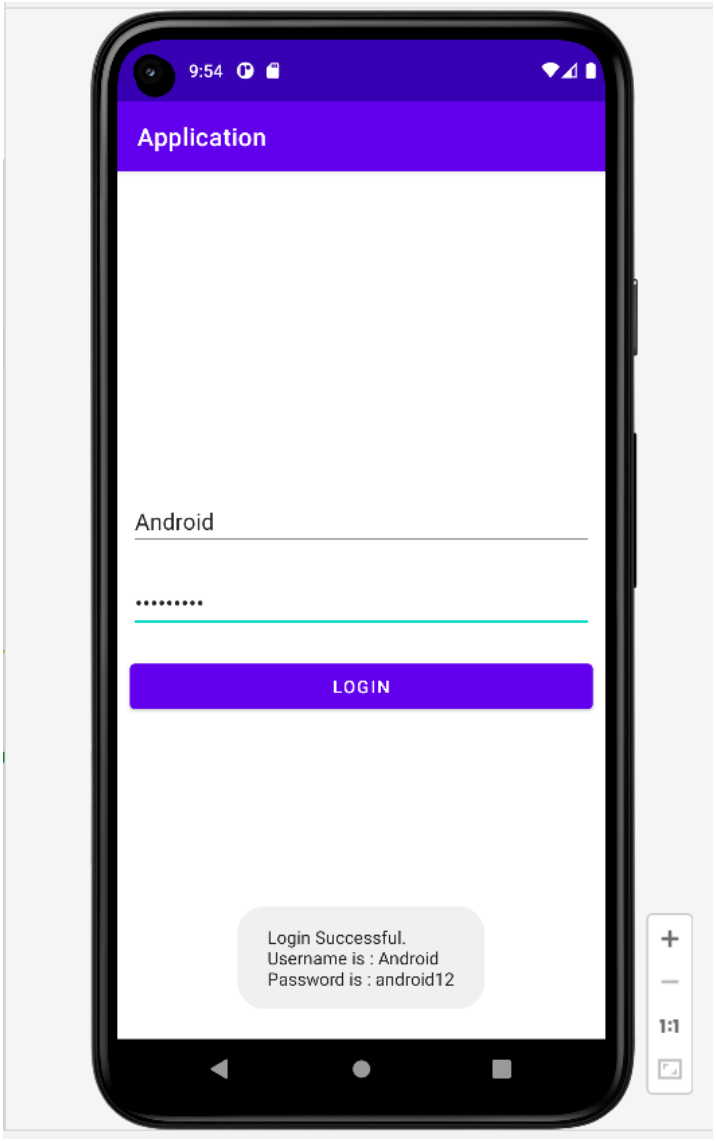
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayoutxmlns:android="http://schemas.android.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto"
xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"
android:layout_height="match_parent"
android:gravity="center"
android:orientation="vertical"
tools:context=".MainActivity">

<EditText
android:id="@+id/username"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_margin="10dp"
android:inputType="textPersonName"
android:hint="Username"/>

<EditText
android:id="@+id/password"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_margin="10dp"
android:inputType="textPassword"
android:hint="Password"/>

<Button
android:id="@+id/login"
```

```
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Login"
android:layout_margin="10dp"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.application;

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 {

// Variable Creation
EditTextusername,password;
   Button login;

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

// Variables Initializations
username= findViewById(R.id.username);
      password= findViewById(R.id.password);
      login= findViewById(R.id.login);

// Below code works when user clicks on the login button
login.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View view) {
            String username_text= username.getText().toString();
            String password_text= password.getText().toString();
Toast.makeText(MainActivity.this, "Login Successful.\nUsername is : "+username_text+"\nPassword is :
"+password_text, Toast.LENGTH_LONG).show();
         }
      });
   }
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus, CO1was obtained.

Experiment No.: 2

Aim

Write a program that demonstrates Activity Lifecycle.

CO1

Design and develop user interfaces for mobile apps using basic building blocks, UI components and application structure using Emulator

Procedure

activity_ques02.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayoutxmlns: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=".Ques02Activity">

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Question explaining the Activity-LifeCycle" />

</LinearLayout>
```

Ques02Activity.java

```
package com.example.application;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.util.Log;
import android.widget.Toast;

public class Ques02Activity extends AppCompatActivity {
```

```
    @Override
    protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_ques02);
Log.d("lifecycle", "onCreate invoked");
Toast.makeText(getApplicationContext(), "onCreate invoked", Toast.LENGTH_SHORT).show();
    }

    @Override
    protected void onStart() {
super.onStart();
Log.d("lifecycle", "onStart invoked");
Toast.makeText(getApplicationContext(), "onStart invoked", Toast.LENGTH_SHORT).show();
    }

    @Override
    protected void onResume() {
super.onResume();
Log.d("lifecycle", "onResume invoked");
Toast.makeText(getApplicationContext(), "onResume invoked", Toast.LENGTH_SHORT).show();
    }

    @Override
    protected void onPause() {
super.onPause();
Log.d("lifecycle", "onPause invoked");
Toast.makeText(getApplicationContext(), "onPause invoked", Toast.LENGTH_SHORT).show();
    }

    @Override
    protected void onStop() {
super.onStop();
Log.d("lifecycle", "onStop invoked");
Toast.makeText(getApplicationContext(), "onStop invoked", Toast.LENGTH_SHORT).show();
    }

    @Override
    protected void onRestart() {
super.onRestart();
Log.d("lifecycle", "onRestart invoked");
Toast.makeText(getApplicationContext(), "onRestart invoked", Toast.LENGTH_SHORT).show();
    }

    @Override
    protected void onDestroy() {
super.onDestroy();
Log.d("lifecycle", "onDestroy invoked");
Toast.makeText(getApplicationContext(), "onDestroy invoked", Toast.LENGTH_SHORT).show();
```

```
    }

}
```

Output Screenshot

Result

The program was executed and the result was successfully obtained. Thus, CO1was obtained.

Experiment No.: 3

Aim

Implementing basic arithmetic operations of a simple calculator

CO1

Design and develop user interfaces for mobile apps using basic building blocks, UI components and application structure using Emulator

Procedure

activity_ques03.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayoutxmlns: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=".Ques03Activity">

<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="17sp"
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>
```

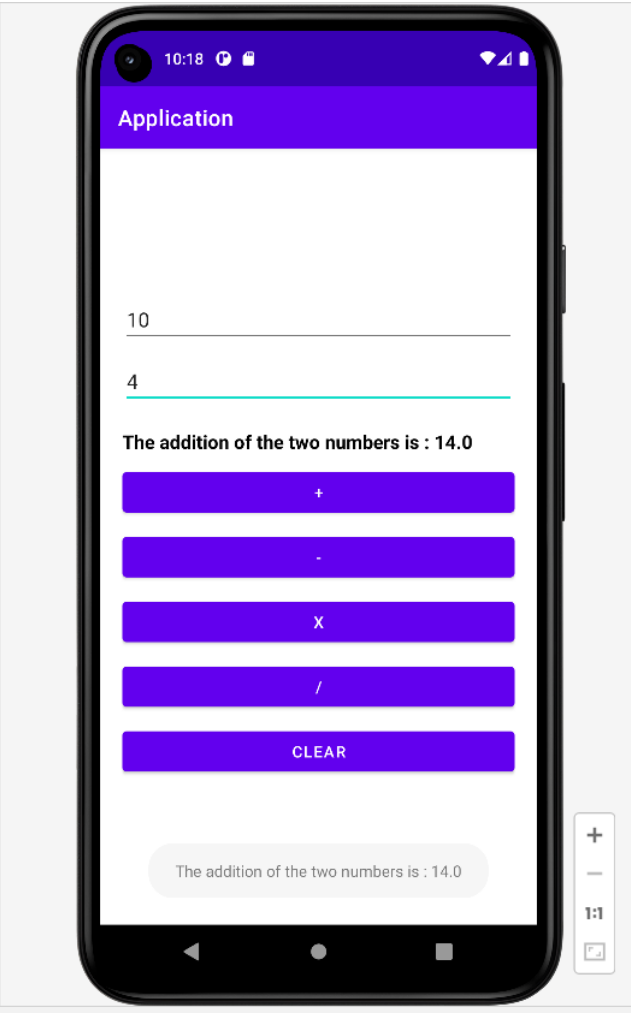
Ques03Activity.java

```
package com.example.application;

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 Ques03Activity extends AppCompatActivity {

EditText number1, number2;
TextViewresult_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_ques03);

      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 numbers 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 substraction of the two numbers is : "+sub);
Toast.makeText(getApplicationContext(), "The substraction 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 numbers 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 numbers 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 Screenshot



Result

The program was executed and the result was successfully obtained. Thus, CO1was obtained.

Experiment No.: 4

Aim

Implement validations on various UI controls

CO1

Design and develop user interfaces for mobile apps using basic building blocks, UI components and application structure using Emulator.

Procedure

activity_ques04.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_horizontal"
    android:orientation="vertical"
    android:paddingHorizontal="20dp"
    tools:context=".Ques04Activity">

    <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>
```

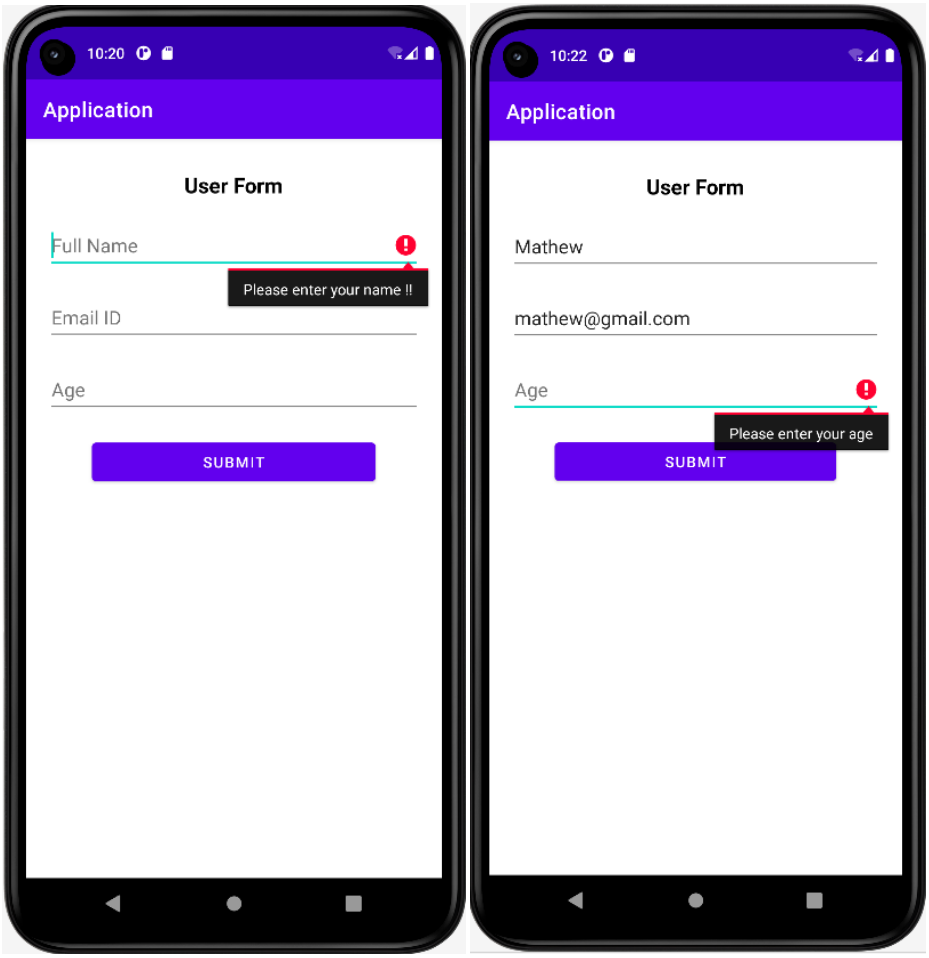
Ques04Activity.java

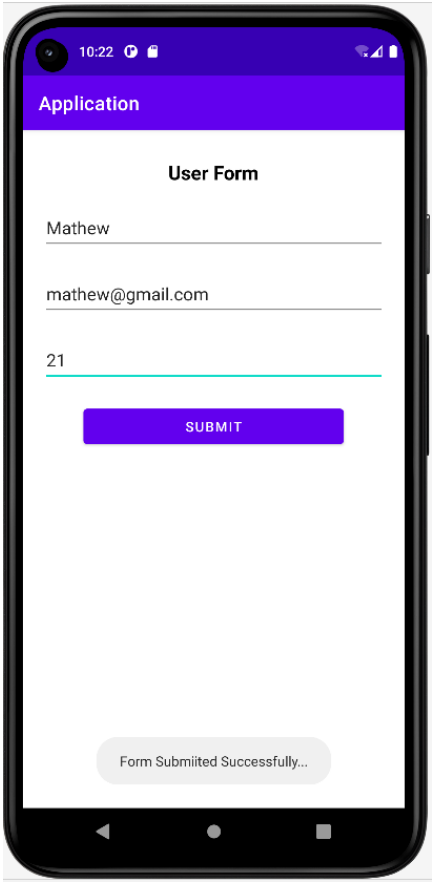
```
package com.example.application;

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 Ques04Activity 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_ques04);

        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 Submiited Successfully...",
               Toast.LENGTH_SHORT).show();
            }
          }
       });


    }
}
```

Output Screenshot





Result

The program was executed and the result was successfully obtained. Thus CO1was obtained.

Experiment No.: 5

Aim

Design a registration activity and store registration details in local memory of phone using Intents and SharedPreferences

CO2

Write simple programs and develop small applications using the concepts of UI design, layouts and preferences

Procedure

activity_ques05.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=".Ques05Activity">

    <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:layout_marginTop="10dp"
    android:inputType="textEmailAddress"
    android:hint="Email ID"/>

  <TextView
    android:id="@+id/gender_error"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:textColor="#ff0000"/>

  <EditText
    android:id="@+id/password"
```

```
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Password"
        android:inputType="textPassword" />

    <Button
        android:id="@+id/register_btn"
        android:layout_width="201dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="20dp"
        android:text="Register" />

</LinearLayout>
```

Ques05Activity.java

```
package com.example.application;

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 Ques05Activity 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_ques05);

        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])(?=.*[@#$%^&+=])(?=\\S+$).{4,}$";
                String fullname_text= fullname.getText().toString();
                String emailid_text= emailid.getText().toString();
```

```
String password_text= password.getText().toString();


if(fullname_text.equals("")){
   fullname.requestFocus();
   fullname.setError("Please enter fullname !!");
}
else if(emailid_text.equals("")){
   emailid.requestFocus();
   emailid.setError("Please enter email-id !!");
}
else if(!Patterns.EMAIL_ADDRESS.matcher(emailid_text).matches()){
   emailid.requestFocus();
   emailid.setError("Please enter a valid email-id !!");
}
else if(!password_text.matches(password_regex)){
   password.requestFocus();
   password.setError("Password should contain - \na digit must occur at least once\na lower case letter must occur at least once\nan upper case letter must occur at least once\na special character like @#$%^&+=\nNo blank spaces allowed\natleast 6 characters");
}
else{
   SharedPreferences pref= getSharedPreferences("register_data", MODE_PRIVATE);
   SharedPreferences.Editor pref_edit= pref.edit();
   pref_edit.putString("reg_fullname",fullname_text);
   pref_edit.putString("reg_emailid",emailid_text);
   pref_edit.putString("reg_password",password_text);
   pref_edit.apply();

   Intent intent= new Intent(getApplicationContext(),Ques05ResultActivity.class);
   startActivity(intent);
```

```
            }
        }
    });
  }
}
```

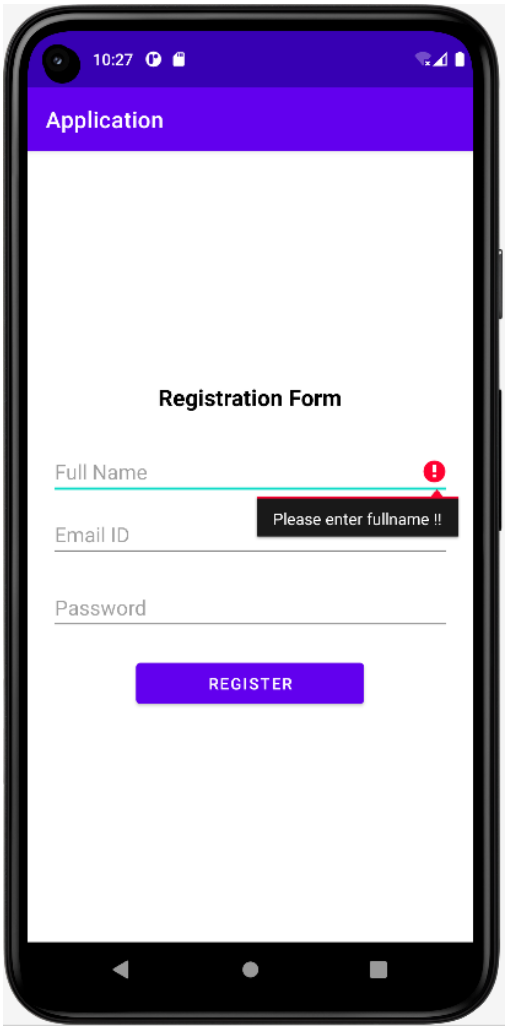
activity_ques05_result.xml

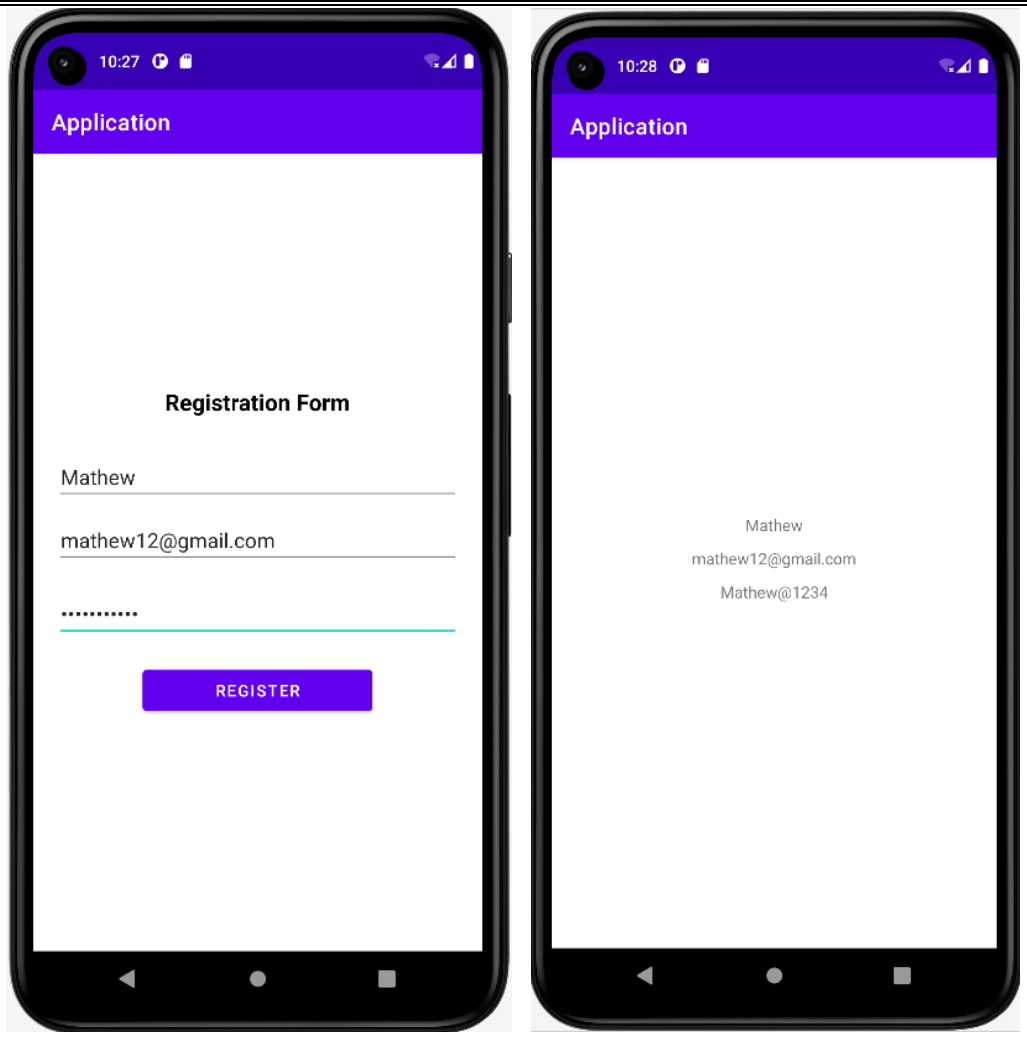
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center"
    android:padding="10dp"
    tools:context=".Ques05ResultActivity">

    <TextView
        android:id="@+id/fullname_result"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="10dp" />

    <TextView
        android:id="@+id/emailid_result"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="10dp" />

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



</LinearLayout>
```

Ques05ResultActivity.java

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

public class Ques05ResultActivity extends AppCompatActivity {
 TextView fullname_result, emailid_result, password_result;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_ques05_result);

        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","Not Available !!");
        String email= pref.getString("reg_emailid","Not Available !!");
        String password= pref.getString("reg_password","Not Available !!");

        fullname_result.setText(name);
        emailid_result.setText(email);
        password_result.setText(password);
    }
}
```

Output Screenshot





Result

The program was executed and the result was successfully obtained. Thus, CO2 was obtained.

Experiment No.: 6

Aim

Design a simple Calculator using GridLayout and Cascaded LinearLayout

CO2

Write simple programs and develop small applications using the concepts of UI design, layouts and preferences

Procedure

activity_ques06_cascaded_layout.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayoutxmlns: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=".Ques06CascadedLayoutActivity">

<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="match_parent"
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="x"
```

```
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_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/substract_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_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_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>
```

Ques06CascadedLayoutActivity.java

```
package com.example.application;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

public class Ques06CascadedLayoutActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_ques06_cascaded_layout);
    }
}
```

activity_ques06_cascaded_layout.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayoutxmlns: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=".Ques06GridLayoutActivity">

<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_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="x"
android:textColor="@color/white" />

<Button
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" />
```

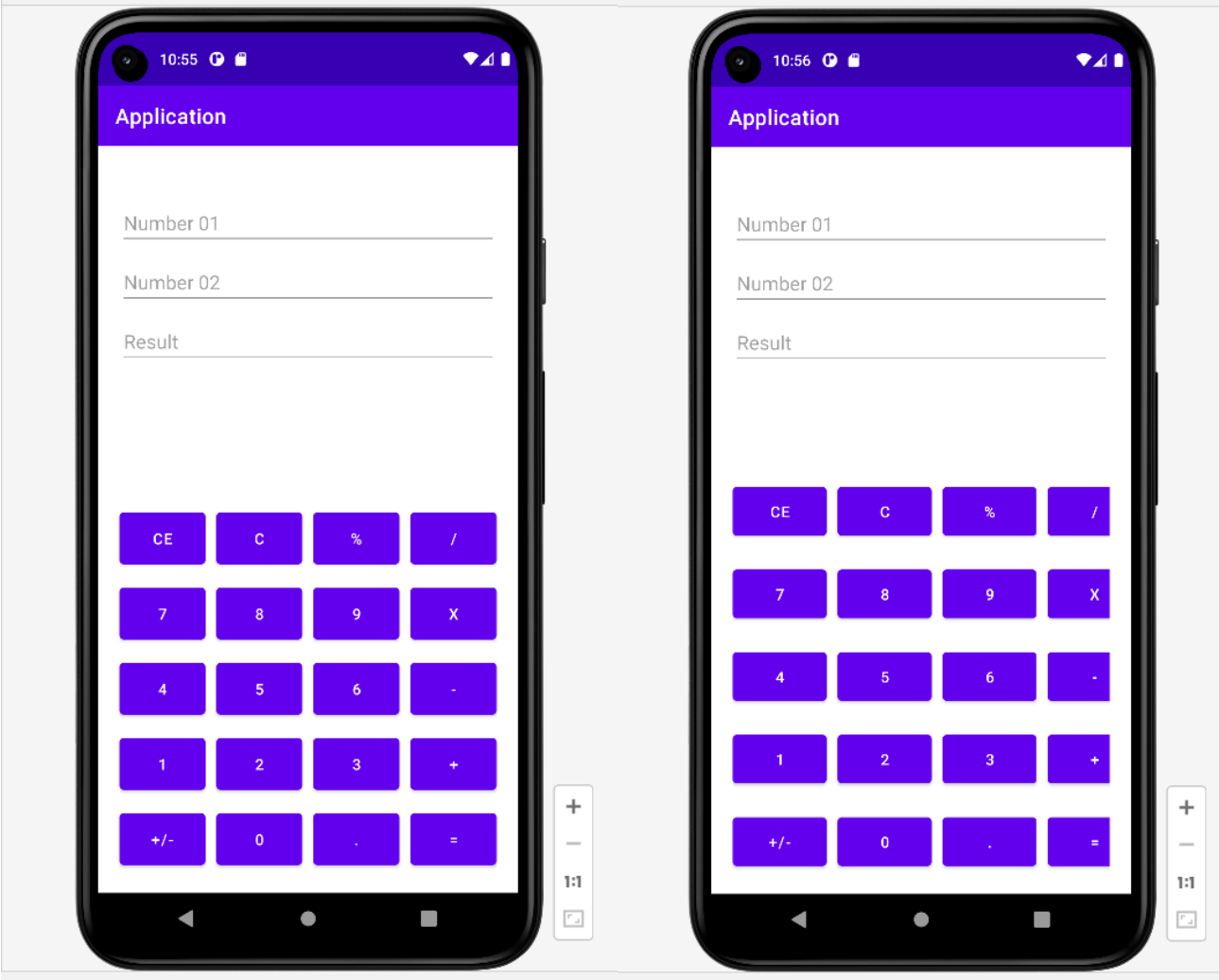
```
<Button
android:layout_marginStart="10dp"
android:layout_marginTop="20dp"
android:padding="13dp"
android:text="-"
android:textColor="@color/white" />

<Button
android:layout_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="3"
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_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>
```

Ques06CascadedLayoutActivity.java

```
package com.example.application;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

public class Ques06GridLayoutActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_ques06_grid_layout);
    }
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO2 was obtained.

Experiment No.: 7

Aim

Create a Facebook page using RelativeLayout; set properties using .xml file

CO2

Write simple programs and develop small applications using the concepts of UI design, layouts and preferences

Procedure

activity_ques07.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayoutxmlns: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=".Ques07Activity">

<ImageView
android:layout_width="match_parent"
android:layout_height="230dp"
android:src="@drawable/fb_subbg"
android:scaleType="centerCrop"/>

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Nederlands . Polski . More ..."
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="50dp"
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:textAlignment="center"
android:layout_gravity="center"
android:layout_marginTop="10dp"/>

<LinearLayout
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:orientation="horizontal"
android:layout_gravity="center"
android:gravity="center"
android:layout_marginTop="40dp"
android:weightSum="3">
```

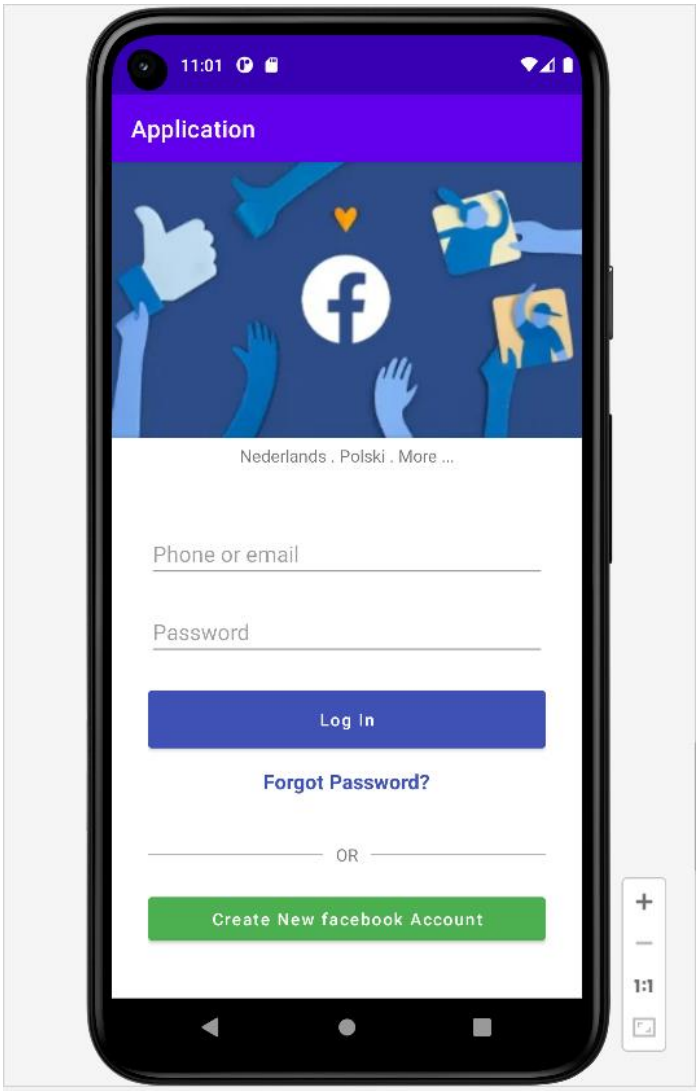
```
<com.google.android.material.divider.MaterialDivider
android:layout_width="0dp"
android:layout_height="1dp"
android:layout_weight="1.45"
android:background="#CCCCCC"/>

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="OR"
android:textAlignment="center"
android:layout_weight="0.2"/>

<com.google.android.material.divider.MaterialDivider
android:id="@+id/divider_2"
android:layout_width="0dp"
android:layout_height="1dp"
android:layout_weight="1.45"
android:background="#CCCCCC"/>
</LinearLayout>

<Button
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Create New facebook Account"
android:layout_marginTop="20dp"
android:textAllCaps="false"
android:backgroundTint="#4CAF50"/>

</LinearLayout>

</LinearLayout>
```

Ques07Activity.java

```
package com.example.application;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

public class Ques07Activity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_ques07);
```

```
    }
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO2 was obtained.

Experiment No.: 8

Aim

Develop an application that toggles image using FrameLayout

CO2

Write simple programs and develop small applications using the concepts of UI design, layouts and preferences

Procedure

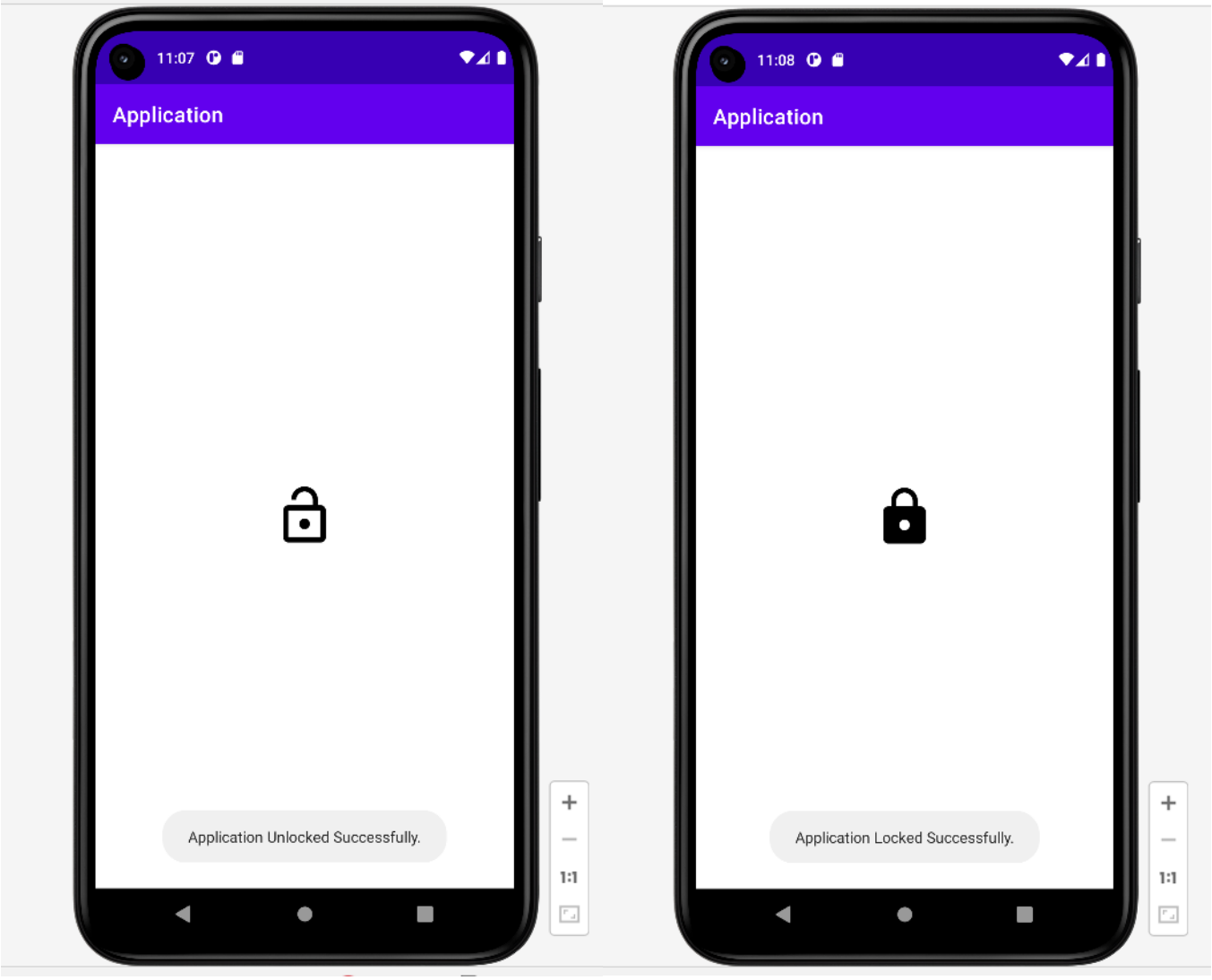
activity_ques08.xml

```
<?xml version="1.0" encoding="utf-8"?>
<FrameLayoutxmlns: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=".Ques08Activity">

<ToggleButton
android:id="@+id/toggle_img_btn"
android:layout_width="60dp"
android:layout_height="60dp"
android:textOff=""
android:textOn=""
android:background="@drawable/ic_unlocked"
android:layout_gravity="center"/>

</FrameLayout>
```

Ques08Activity.java

```
package com.example.application;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.widget.Toast;
import android.widget.ToggleButton;

public class Ques08Activity extends AppCompatActivity {

ToggleButtontoggle_img_btn;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_ques08);

toggle_img_btn= findViewById(R.id.toggle_img_btn);

toggle_img_btn.setOnClickListener(v->{
          if(toggle_img_btn.isChecked()){
             toggle_img_btn.setBackgroundDrawable(getResources().getDrawable(R.drawable.ic_locked));
Toast.makeText(getApplicationContext(), "Application Locked Successfully.",
Toast.LENGTH_SHORT).show();
          }
          else{
             toggle_img_btn.setBackgroundDrawable(getResources().getDrawable(R.drawable.ic_unlocked));
Toast.makeText(getApplicationContext(), "Application Unlocked Successfully.",
Toast.LENGTH_SHORT).show();
          }
       });
    }
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus, CO2 was obtained.

Experiment No.: 9

Aim

Implement Adapters and perform exception handling

CO3

Develop applications with multiple activities using intents, array adapter, exceptions and options menu.

Procedure

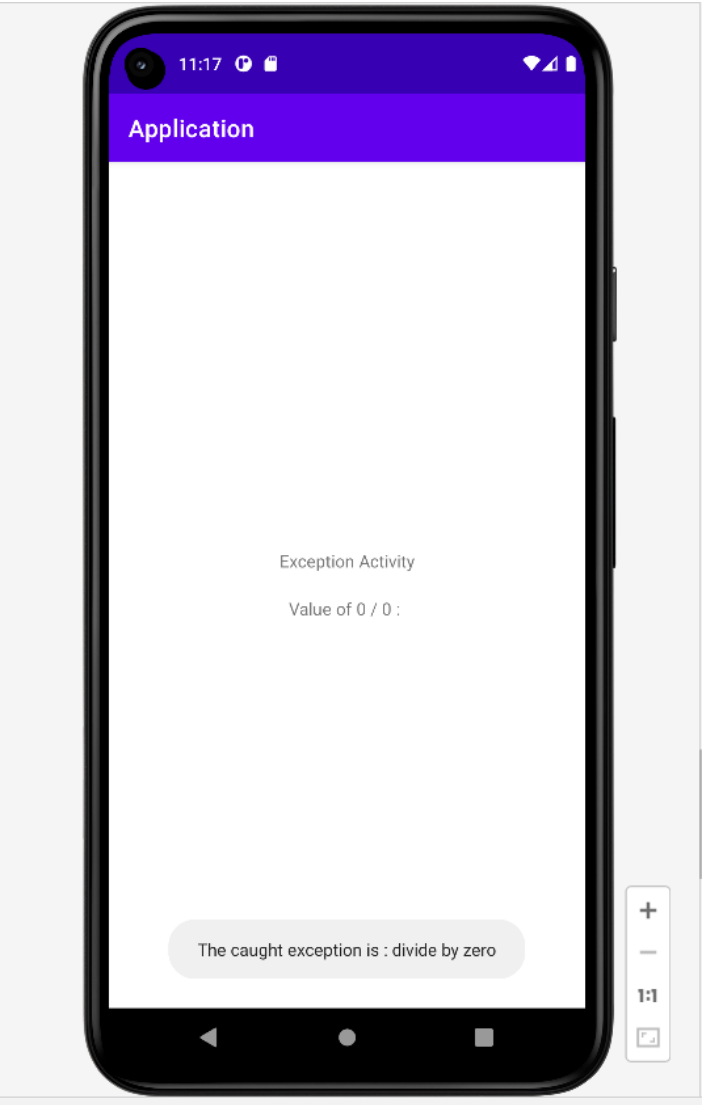
activity_ques09.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayoutxmlns: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=".Ques09Activity">

<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>
```

Ques09Activity.java

```
package com.example.application;

import androidx.appcompat.app.AppCompatActivity;

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

public class Ques09Activity extends AppCompatActivity {

TextViewtextview;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_ques09);

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

    }
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus, CO3 was obtained.

Experiment No.: 10

Aim

Implement Intent to navigate between multiple activities

CO3

Develop applications with multiple activities using intents, array adapter, exceptions and options menu.

Procedure

activity_ques10.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayoutxmlns: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=".Ques10Activity">

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="HOME ACTIVITY PAGE"
android:textStyle="bold"
android:textSize="17sp"
android:textColor="@color/black"/>

<Button
android:id="@+id/button"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="View AJCE"
android:layout_marginTop="10dp"/>

</LinearLayout>
```

Ques10Activity.java

```
package com.example.application;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class Ques10Activity extends AppCompatActivity {

   Button button;

   @Override
   protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_ques10);

      button= findViewById(R.id.button);
button.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View view) {
            Intent intent= new Intent(getApplicationContext(), Ques10ResultActivity.class);
startActivity(intent);
         }
      });
   }
}
```

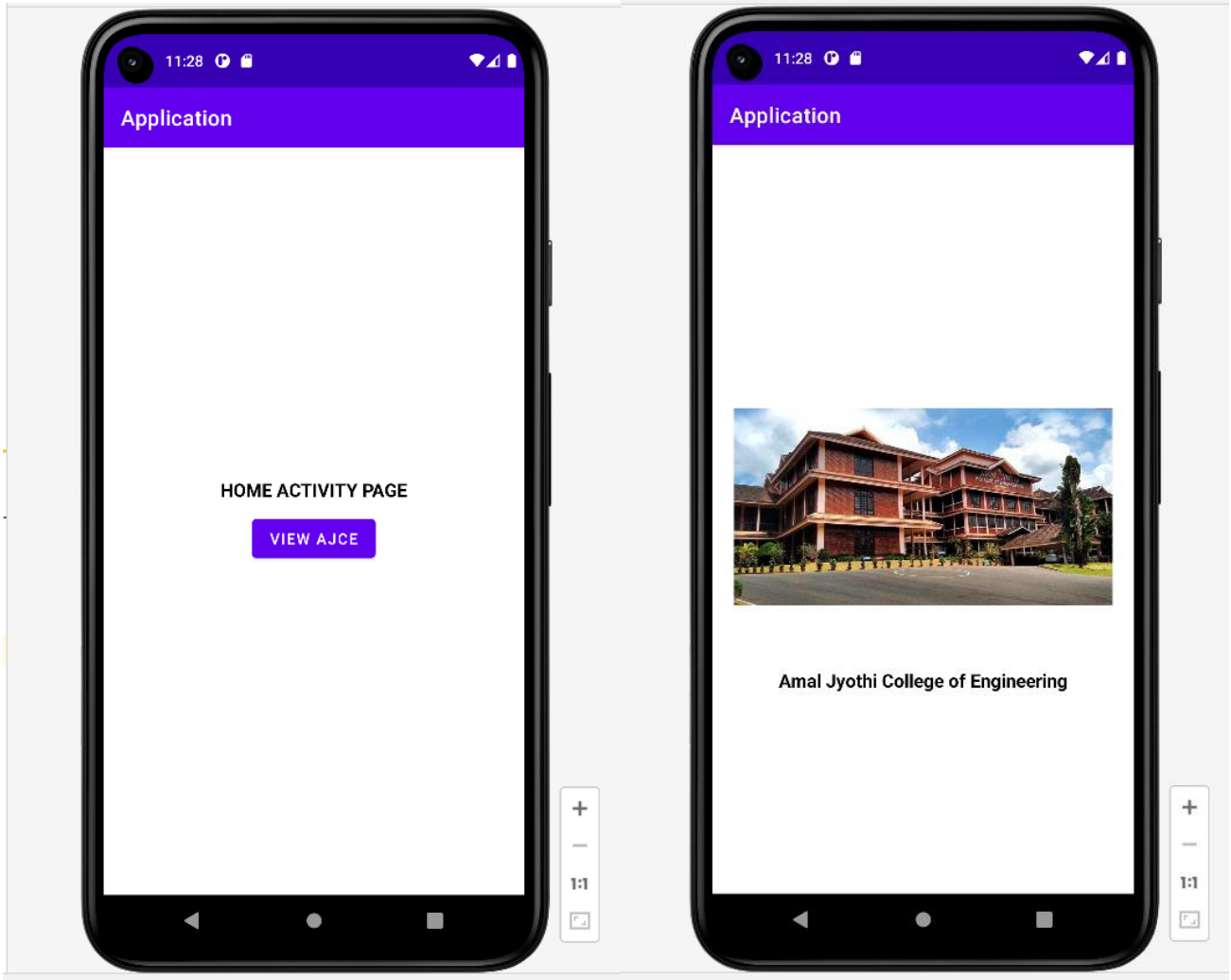
activity_ques10_result.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayoutxmlns:android="http://schemas.android.com/apk/res/android"
xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"
android:layout_height="match_parent"
android:gravity="center"
android:padding="20dp"
android:orientation="vertical"
tools:context=".Ques10ResultActivity">

<ImageView
android:layout_width="match_parent"
android:layout_height="300dp"
android:src="@drawable/amal_jyothi"/>

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Amal Jyothi College of Engineering"
android:textColor="@color/black"
android:textStyle="bold"
android:textSize="17sp"/>

</LinearLayout>
```

Ques10ResultActivity.java

```
package com.example.application;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

public class Ques10ResultActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_ques10_result);
    }
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO3 was obtained.

Experiment No.: 11

Aim

Develop application that works with explicit intents

CO3

Develop applications with multiple activities using intents, array adapter, exceptions andoptions menu.

Procedure

activity_ques11.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayoutxmlns: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=".Ques11Activity">

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="First Activity Page" />

<Button
android:id="@+id/goto_second_btn"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Go to Second Activity Page"
android:layout_marginTop="10dp"/>

</LinearLayout>
```

Ques11Activity.java

```
package com.example.application;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class Ques11Activity extends AppCompatActivity {

   Button goto_second_btn;

   @Override
   protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_ques11);

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(), Ques11SecondActivity.class);
startActivity(intent);
          }
       });

   }
}
```

activity_ques11.xml

```
package com.example.application;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class Ques11Activity extends AppCompatActivity {

   Button goto_second_btn;

   @Override
```

```
   protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_ques11);

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(), Ques11SecondActivity.class);
startActivity(intent);
        }
     });

   }
}
```

Ques11SecondActivity.java

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayoutxmlns: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=".Ques11SecondActivity">

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Second Activity Page" />

<Button
android:id="@+id/goto_third_btn"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Go to Third Page"
android:layout_marginTop="10dp"/>

</LinearLayout>
```

activity_ques11_third.xml

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

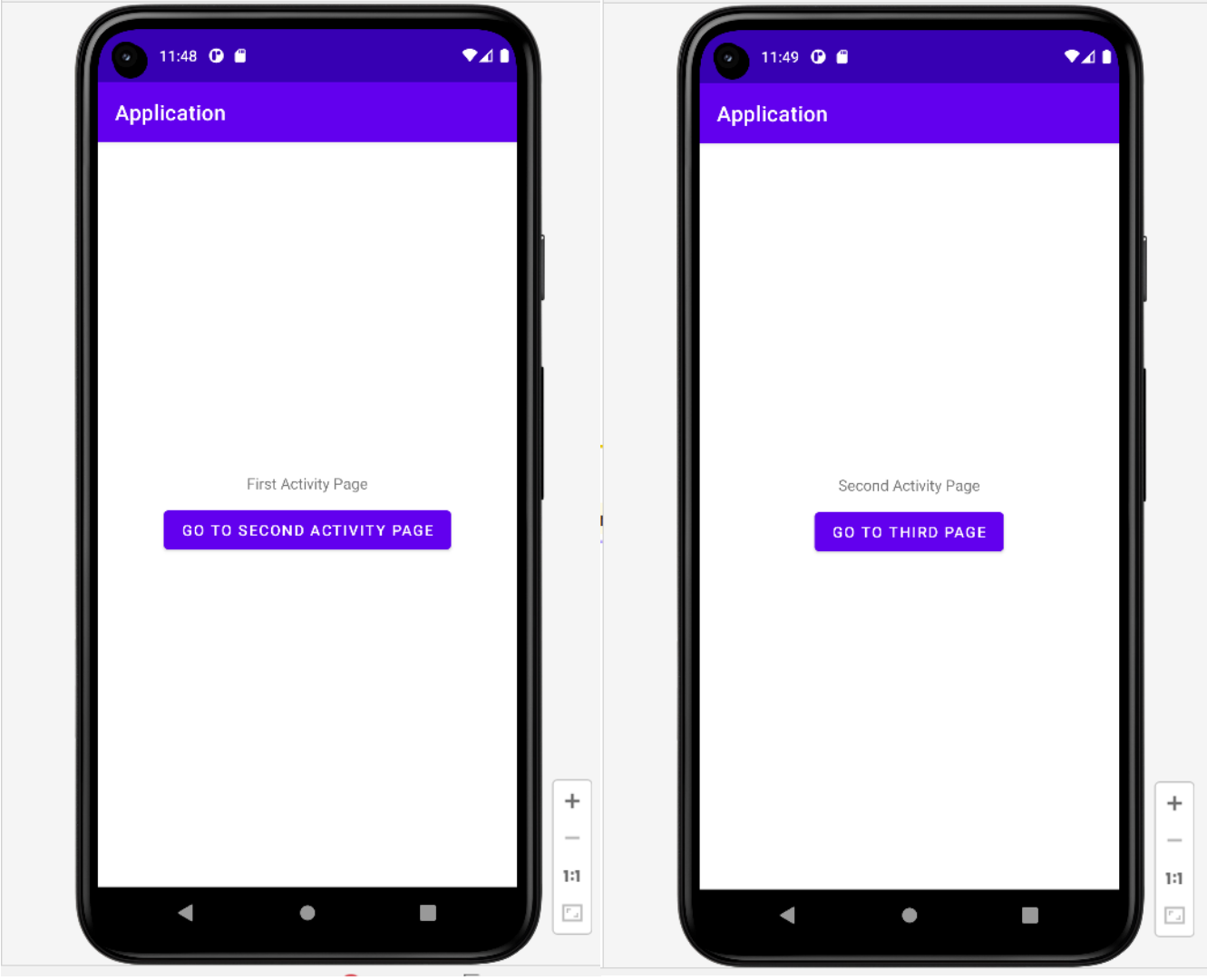
```
android:layout_width="match_parent"
android:layout_height="match_parent"
android:gravity="center"
android:orientation="vertical"
tools:context=".Ques11ThirdActivity">

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Third Activity Page" />

<Button
android:id="@+id/goto_main_btn"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Go back to Main Activity Page"
android:layout_marginTop="10dp"/>

</LinearLayout>
```

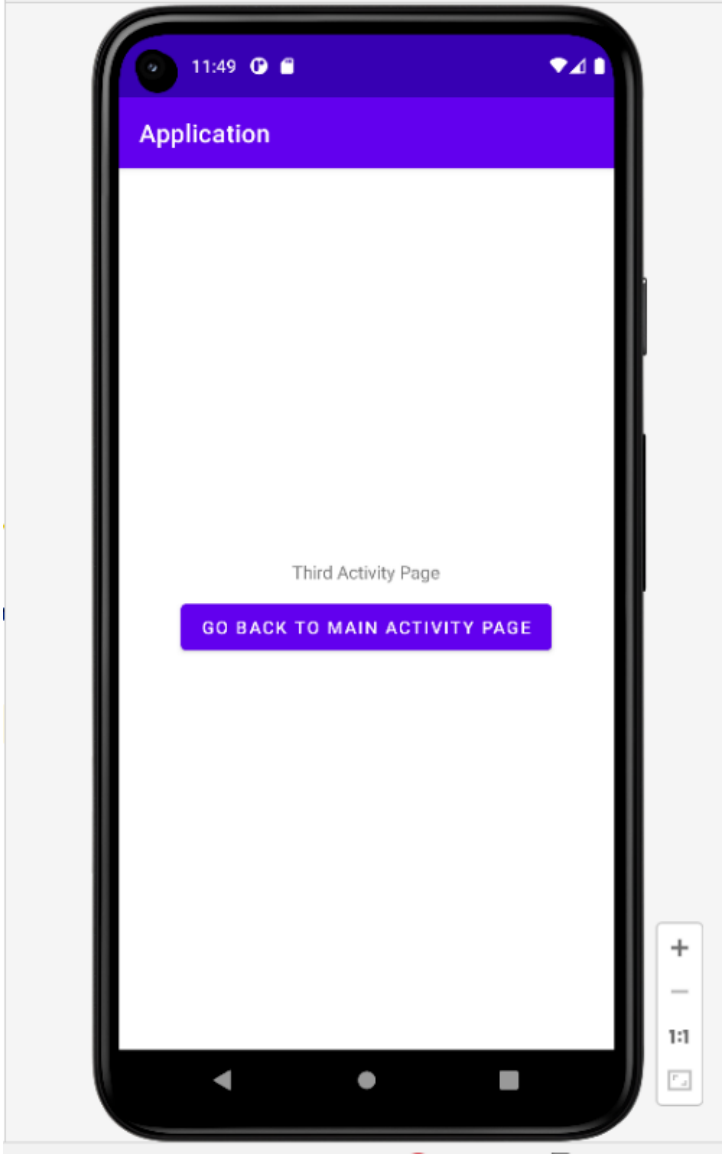
Ques11ThirdActivity.java

```
package com.example.application;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

import androidx.appcompat.app.AppCompatActivity;

public class Ques11ThirdActivity extends AppCompatActivity {

   Button goto_main_btn;

   @Override
   protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_ques11_third);

goto_main_btn= findViewById(R.id.goto_main_btn);
goto_main_btn.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
           Intent intent= new Intent(getApplicationContext(), Ques11Activity.class);
startActivity(intent);
        }
      });
```

```
    }
}
```

Output Screenshot





Result

The program was executed and the result was successfully obtained. Thus CO1was obtained.

Experiment No.: 12

Aim

Implement Options Menu to navigate to activities

CO3

Develop applications with multiple activities using intents, array adapter, exceptions andoptions menu.

Procedure

activity_ques12.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayoutxmlns:android="http://schemas.android.com/apk/res/andr
oid"
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=".Ques12Activity">

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

MainActivity.java

```
package com.example.application;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;

public class Ques12Activity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_ques12);
```

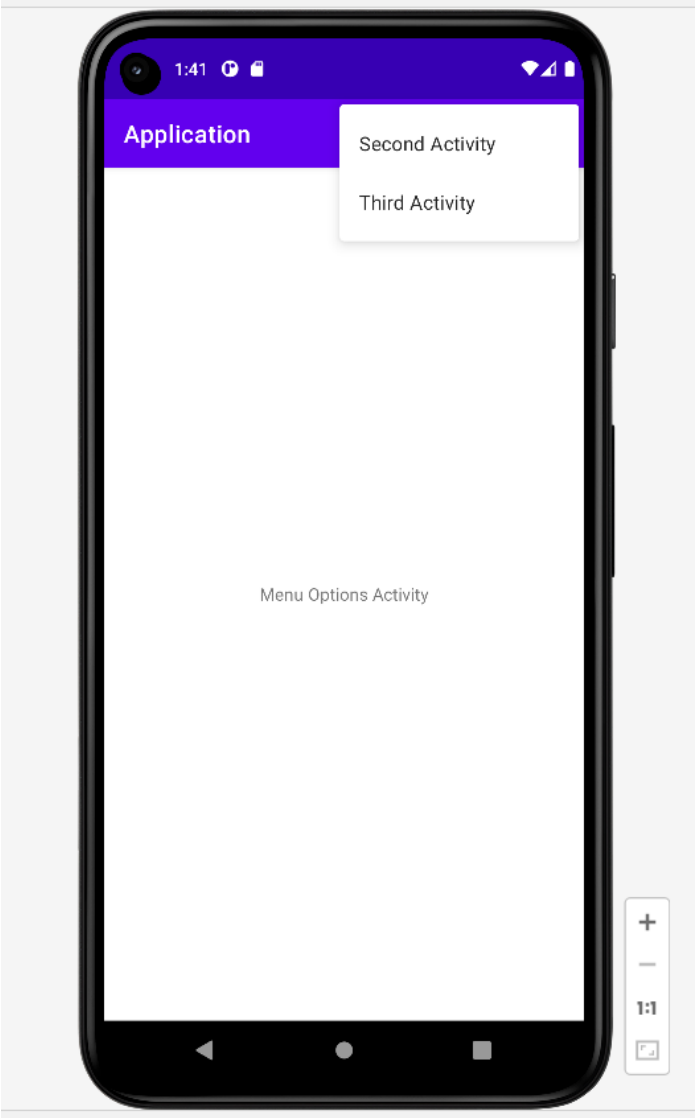
```
    }

    @Override
    public booleanonOptionsItemSelected(@NonNull MenuItem item) {
        int menu_id= item.getItemId();
        switch (menu_id){
            case R.id.second_activity:{
                Intent intent= new Intent(getApplicationContext(), SecondActivity.class);
startActivity(intent);
                break;
            }
            case R.id.third_activity:{
                Intent intent= new Intent(getApplicationContext(), ThirdActivity.class);
startActivity(intent);
                break;
            }
            default:{
                Intent intent= new Intent(getApplicationContext(), Ques12Activity.class);
startActivity(intent);
                break;
            }
        }
        return true;
    }

    @Override
    public booleanonCreateOptionsMenu(Menu menu) {
getMenuInflater().inflate(R.menu.menu_items,menu);
        return super.onCreateOptionsMenu(menu);
    }
}
```

menu_items.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">
<group>

<item
android:id="@+id/second_activity"
android:title="Second Activity"
app:showAsAction="never"
app:iconTint="@color/white"/>

<item
android:id="@+id/third_activity"
android:title="Third Activity"
```

```
app:showAsAction="never"
app:iconTint="@color/white"/>

</group>
</menu>
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO3 was obtained.

Experiment No.: 13

Aim

Develop an application that uses ArrayAdapter with ListView.

CO3

Develop applications with multiple activities using intents, array adapter, exceptions andoptions menu.

Procedure

activity_ques13.xml

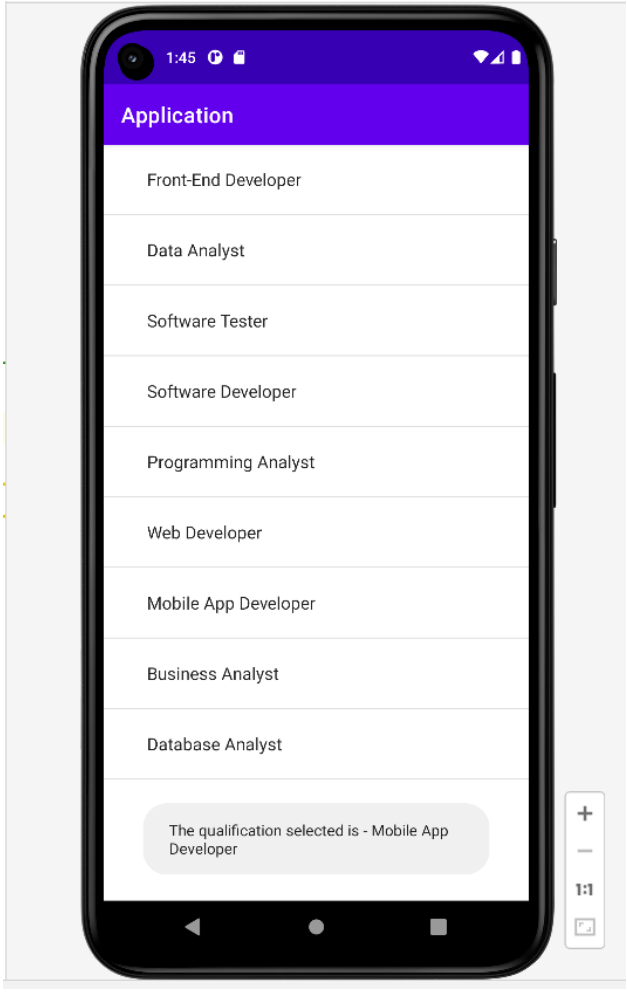
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayoutxmlns:android="http://schemas.android.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto"
xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"
android:layout_height="match_parent"
tools:context=".MainActivity">
<ListView
android:id="@+id/listview"
android:layout_width="match_parent"
android:layout_height="match_parent" />

</LinearLayout>
```

Ques13Activity.java

```
package com.example.application;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import android.widget.Toast;

public class Ques13Activity extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_ques13);
```

```
ListViewlistview;
        String[] person_qualify = {"Front-End Developer", "Data Analyst", "Software Tester", "Software
Developer", "Programming Analyst", "Web Developer", "Mobile App Developer", "Business Analyst",
"Database Analyst"};
listview = findViewById(R.id.listview);
listview.setAdapter(new
ArrayAdapter(getApplicationContext(),android.R.layout.simple_expandable_list_item_1, person_qualify));
listview.setOnItemClickListener((parent, view, position, id) -> {
Toast.makeText(this, "The qualification selected is - " +
person_qualify[position],Toast.LENGTH_SHORT).show();
        });
    }
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus, CO3 was obtained.

Experiment No.: 14

Aim

Develop an application that use GridView with images and display Alert box on selection

CO4

Implement activities with dialogs, spinner, fragments and navigation drawer by applying themes

Procedure

activity_ques14.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayoutxmlns: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=".Ques14Activity">

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Mobile Quick-Access Options"
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">

<ImageButton
android:id="@+id/wifi_btn"
```

```
android:layout_width="80dp"
android:layout_height="80dp"
android:padding="13dp"
android:src="@drawable/ic_wifi"
android:textColor="@color/white" />

<ImageButton
android:id="@+id/blutooth_btn"
android:layout_width="80dp"
android:layout_height="80dp"
android:layout_marginStart="10dp"
android:padding="13dp"
android:src="@drawable/ic_bluetooth"
android:textColor="@color/white" />

<ImageButton
android:id="@+id/volume_btn"
android:layout_width="80dp"
android:layout_height="80dp"
android:layout_marginStart="10dp"
android:padding="13dp"
android:src="@drawable/ic_volume"
android:textColor="@color/white" />

</GridLayout>

</LinearLayout>
```

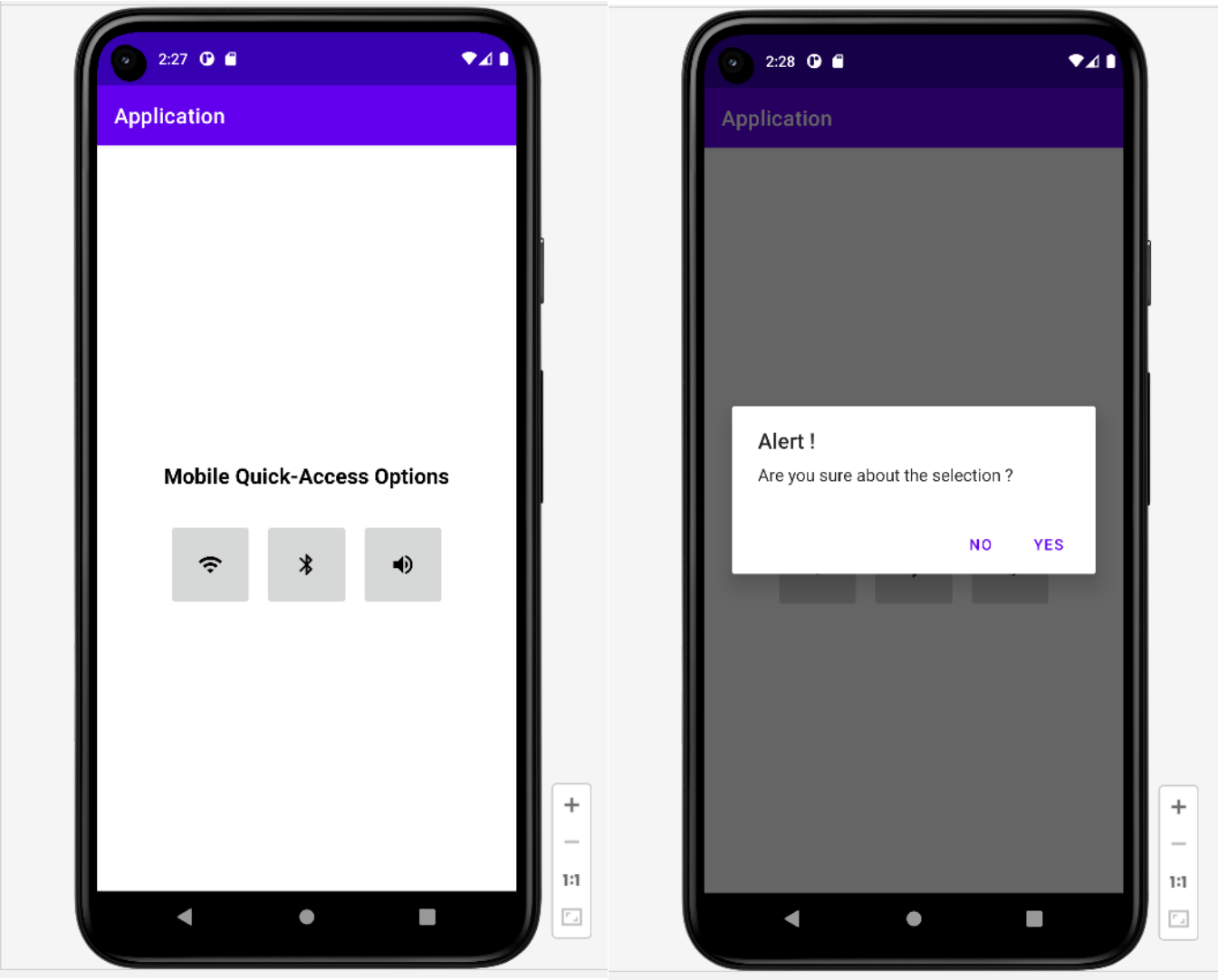
Ques14Activity.java

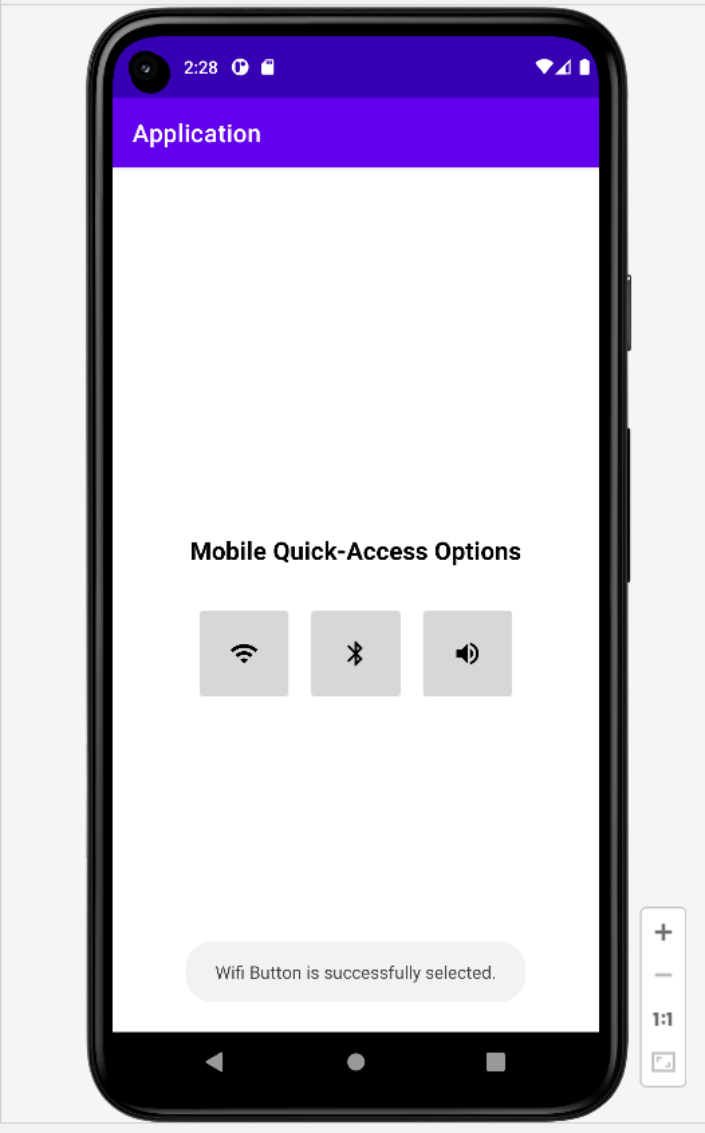
```
package com.example.application;

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.Toast;

public class Ques14Activity extends AppCompatActivity {

ImageButtonwifi_btn, blutooth_btn, volume_btn;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
```

```
setContentView(R.layout.activity_ques14);

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

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

blutooth_btn.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
myAlertBox("Bluetooth Button");
        }
    });

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

   public void myAlertBox(String buttonname){
AlertDialog.Builder builder = new AlertDialog.Builder(Ques14Activity.this);
builder.setMessage("Are you sure about the selection ?");
builder.setTitle("Alert !");
builder.setCancelable(false);
builder.setPositiveButton("Yes", new DialogInterface.OnClickListener() {
        @Override
        public void onClick(DialogInterfacedialogInterface, int i) {
Toast.makeText(getApplicationContext(), buttonname+" is successfully selected.",
Toast.LENGTH_SHORT).show();
        }
    });

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

AlertDialogalertDialog = builder.create();
alertDialog.show();
```

```
    }
}
```

Output Screenshot





Result

The program was executed and the result was successfully obtained. Thus, CO4 was obtained.

Experiment No.: 15

Aim

Develop an application that implements Spinner component and perform event handling

CO4

Implement activities with dialogs, spinner, fragments and navigation drawer by applyingthemes

Procedure

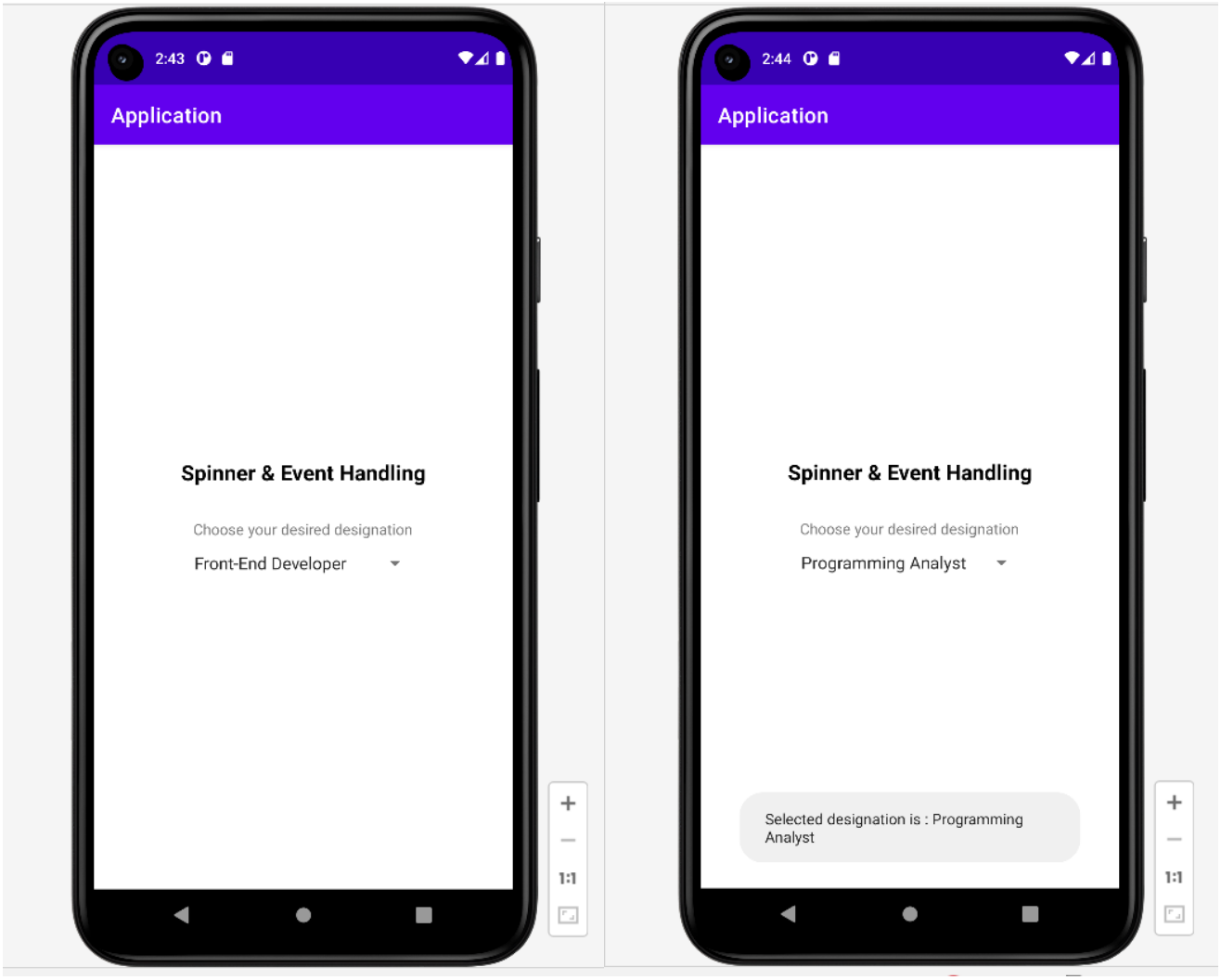
activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayoutxmlns: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=".Ques15Activity">

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Spinner &amp;amp; Event Handling"
android:textStyle="bold"
android:textSize="20sp"
android:textColor="@color/black"/>
<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Choose your desired designation"
android:layout_marginTop="30dp" />
<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.application;

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 Ques15Activity extends AppCompatActivity {

    Spinner spinner;
    String[] designations = {"Front-End Developer", "Data Analyst", "Software Tester", "Software Developer",
"Programming Analyst", "Web Developer", "Mobile App Developer", "Business Analyst", "Database
Analyst"};

    @Override
    protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_ques15);

        spinner= findViewById(R.id.spinner);
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 designation is : "+designations[i],
Toast.LENGTH_LONG).show();
            }

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

    }
}
```

Output Screenshot



Result

The program was executed and the result was successfully obtained. Thus CO4 was obtained.

Experiment No.: 16

Aim

Create database using SQLite and perform INSERT and SELECT

CO5

Develop mobile applications using SQLite.

Procedure

activity_ques16.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayoutxmlns: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=".Ques15Activity">

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Insert Table"
android:layout_gravity="center"
android:layout_marginTop="50dp"
android:textSize="25sp"
android:textStyle="bold"
android:textColor="@color/black"/>

<EditText
android:id="@+id/rollno"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:hint="Enter your 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="Enter your 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="Enter your email id"
android:layout_marginHorizontal="20dp"
android:layout_marginTop="10dp"/>

<Button
android:id="@+id/insert_btn"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Insert"
android:layout_marginTop="30dp"
android:layout_gravity="center"/>

<Button
android:id="@+id/select_btn"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="View"
android:layout_marginTop="30dp"
android:layout_gravity="center"/>

</LinearLayout>
```

MainActivity.java

```
package com.example.application;

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 Ques16Activity extends AppCompatActivity {
```

```
EditTextrollno, name, email;
   Button insert_btn, select_btn;
DBHelperdb;

   @Override
   protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_ques16);

rollno= findViewById(R.id.rollno);
      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 DBHelper(getApplicationContext());

insert_btn.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View view) {
            int rollno_num= Integer.parseInt(rollno.getText().toString());
            String name_txt= name.getText().toString();
            String email_txt= email.getText().toString();

booleaninsert_result= db.insertToDB(rollno_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("id : " + res.getString(0) + "\n");
buffer.append("Name : " + res.getString(1) + "\n");
buffer.append("email : " + res.getString(2) + "\n");
               }
AlertDialog.Builder builder = new AlertDialog.Builder(Ques16Activity.this);
builder.setCancelable(true);
```

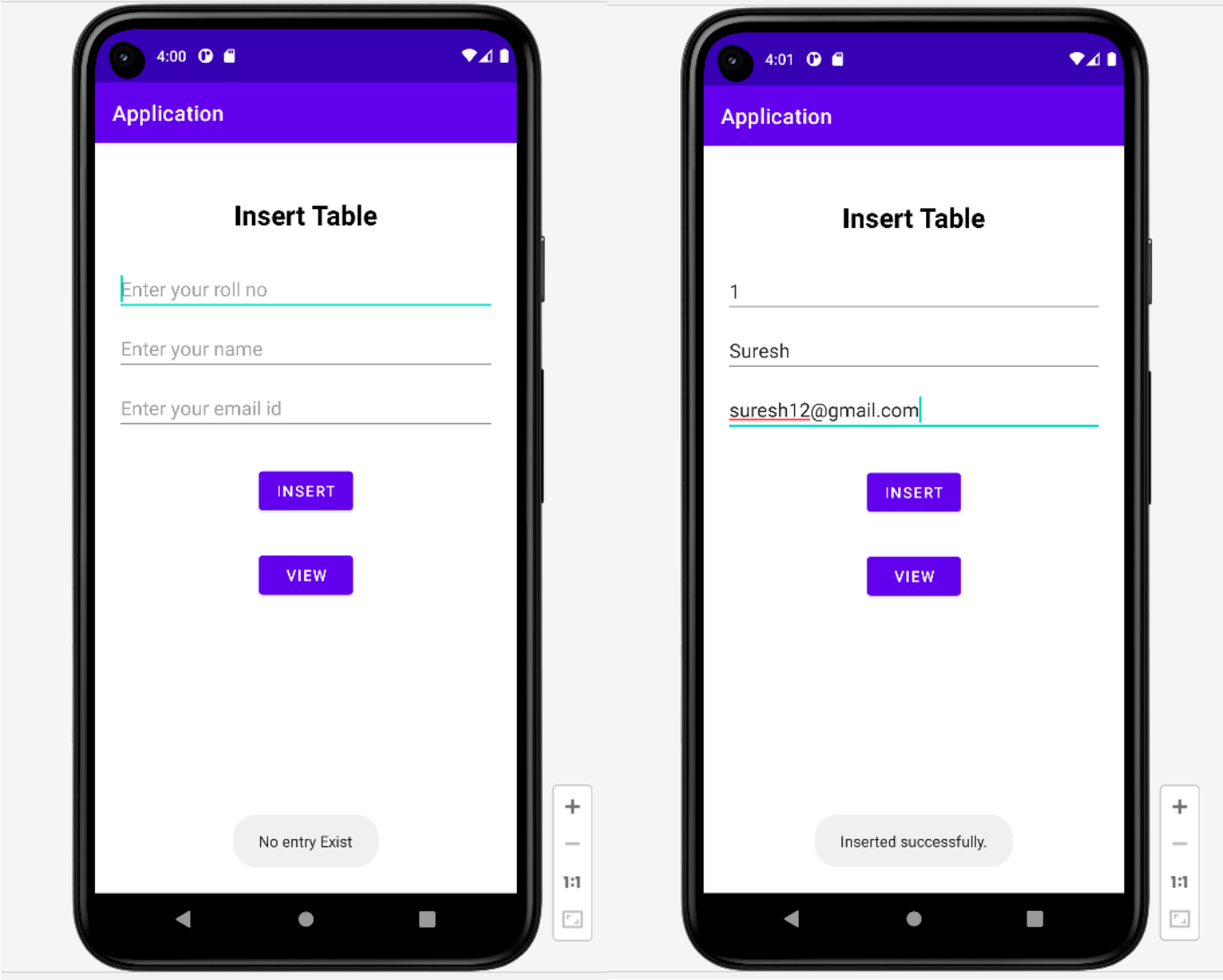
```
builder.setTitle("User Entries");
builder.setMessage(buffer.toString());
builder.show();
            }
        }
    });
  }
}
```

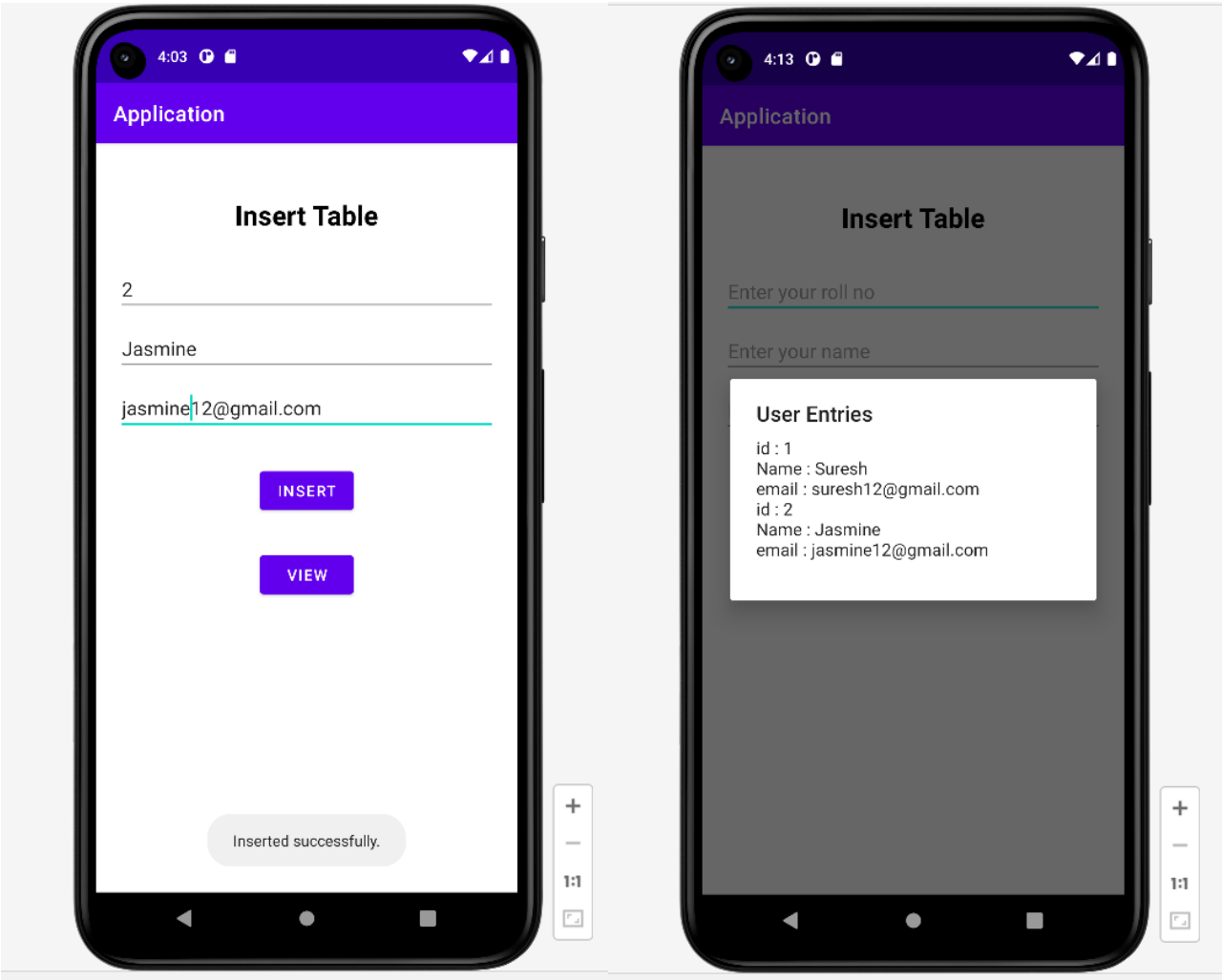
DBHelper.java

```
package com.example.application;

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 DBHelper extends SQLiteOpenHelper {

   public DBHelper(@Nullable Context context) { super(context, "MyDB", null, 1); }

   @Override
   public void onCreate(SQLiteDatabasesqLiteDatabase) {
sqLiteDatabase.execSQL("CREATE TABLE userdetails (rollno INTEGER PRIMARY KEY, name TEXT,
email TEXT)");
   }

   @Override
   public void onUpgrade(SQLiteDatabasesqLiteDatabase, int i, int i1) {
sqLiteDatabase.execSQL("DROP TABLE IF EXISTS userdetails");
   }

   public booleaninsertToDB(int rollno, String name, String email){
SQLiteDatabasedb= this.getWritableDatabase();
ContentValues values= new ContentValues();
values.put("rollno",rollno);
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;
    }
}
```

Output Screenshot





Result

The program was executed and the result was successfully obtained. Thus CO5 was obtained.

Experiment No.: 17

Aim

Perform UPDATE and DELETE on SQLite database

CO5

Develop mobile applications using SQLite.

Procedure

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"
    tools:context=".Ques15Activity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Table"
        android:layout_gravity="center"
        android:layout_marginTop="50dp"
        android:textSize="25sp" />

    <EditText
```

```
    android:id="@+id/rollno"
    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/update_btn"
    android:layout_width="296dp"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:layout_marginTop="30dp"
```

```
        android:text="Update"
        android:backgroundTint="#ff0000"/>

    <Button
        android:id="@+id/delete_btn"
        android:layout_width="289dp"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:text="Delete"
        android:backgroundTint="#ff0000"/>

    <Button
        android:id="@+id/select_btn"
        android:layout_width="291dp"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:text="View"
        android:backgroundTint="#ff0000"/>

</LinearLayout>
```

MainActivity.java

```
package com.example.application;

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 Ques17Activity extends AppCompatActivity {

EditTextrollno, name, email;
   Button update_btn, delete_btn, select_btn;
DBHelperdb;

   @Override
   protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_ques17);

rollno= findViewById(R.id.rollno);
      name= findViewById(R.id.name);
      email= findViewById(R.id.email);
update_btn= findViewById(R.id.update_btn);
delete_btn= findViewById(R.id.delete_btn);
select_btn= findViewById(R.id.select_btn);
db= new DBHelper(getApplicationContext());

update_btn.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View view) {
            int rollno_num= Integer.parseInt(rollno.getText().toString());
            String name_txt= name.getText().toString();
            String email_txt= email.getText().toString();

DBHelperdb= new DBHelper(getApplicationContext());

booleanupdate_result= db.updateToDB(rollno_num, name_txt, email_txt);
            if(update_result){
Toast.makeText(getApplicationContext(), "Updated successfully.", Toast.LENGTH_LONG).show();
            }
            else{
Toast.makeText(getApplicationContext(), "Updation failed !!", Toast.LENGTH_LONG).show();
            }
```

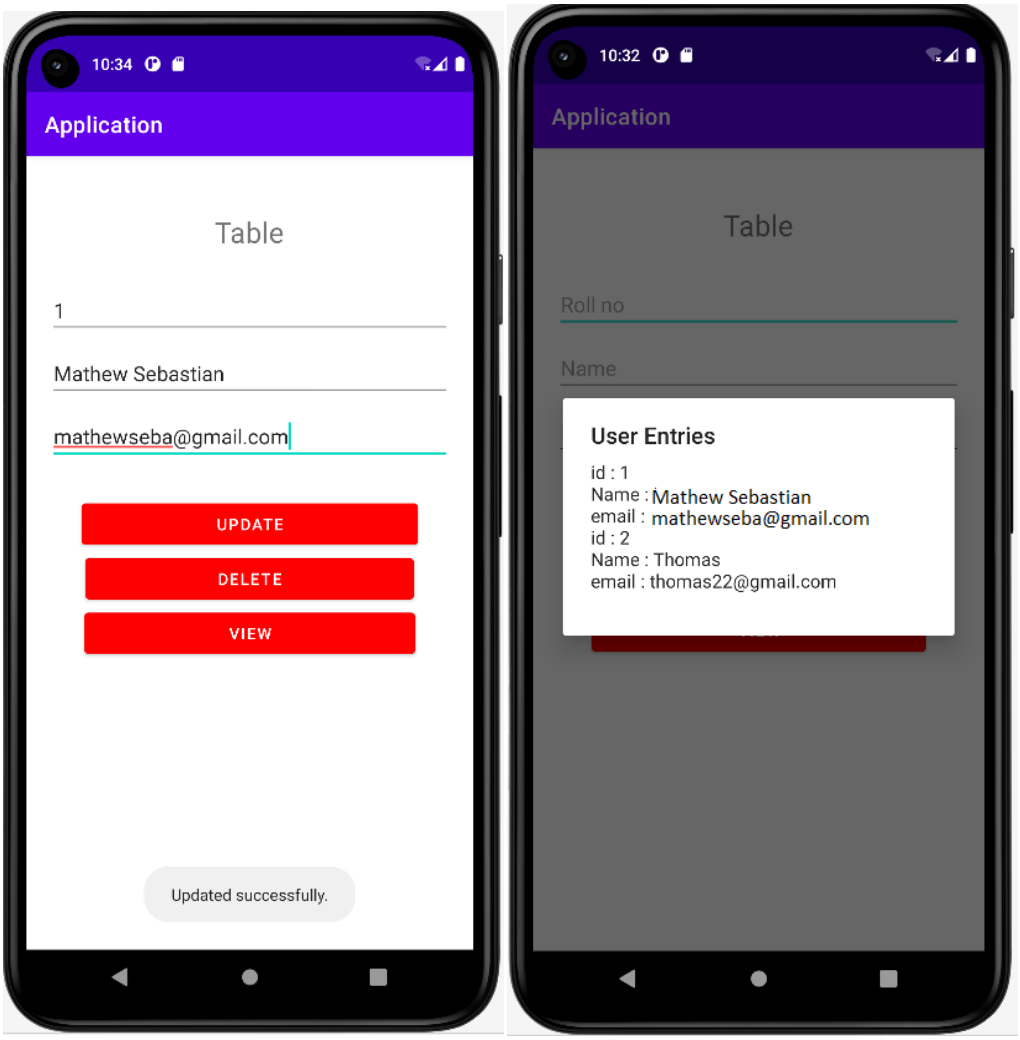
```
        }
    });

delete_btn.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            int rollno_num= Integer.parseInt(rollno.getText().toString());
DBHelperdb= new DBHelper(getApplicationContext());

booleanupdate_result= db.deleteFromDB(rollno_num);
            if(update_result){
Toast.makeText(getApplicationContext(), "Deleted successfully.", Toast.LENGTH_LONG).show();
            }
            else{
Toast.makeText(getApplicationContext(), "Deletion 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("id : " + res.getString(0) + "\n");
buffer.append("Name : " + res.getString(1) + "\n");
buffer.append("email : " + res.getString(2) + "\n");
                }
AlertDialog.Builder builder = new AlertDialog.Builder(Ques17Activity.this);
builder.setCancelable(true);
builder.setTitle("User Entries");
builder.setMessage(buffer.toString());
builder.show();
            }
        }
    });

  }
}
```

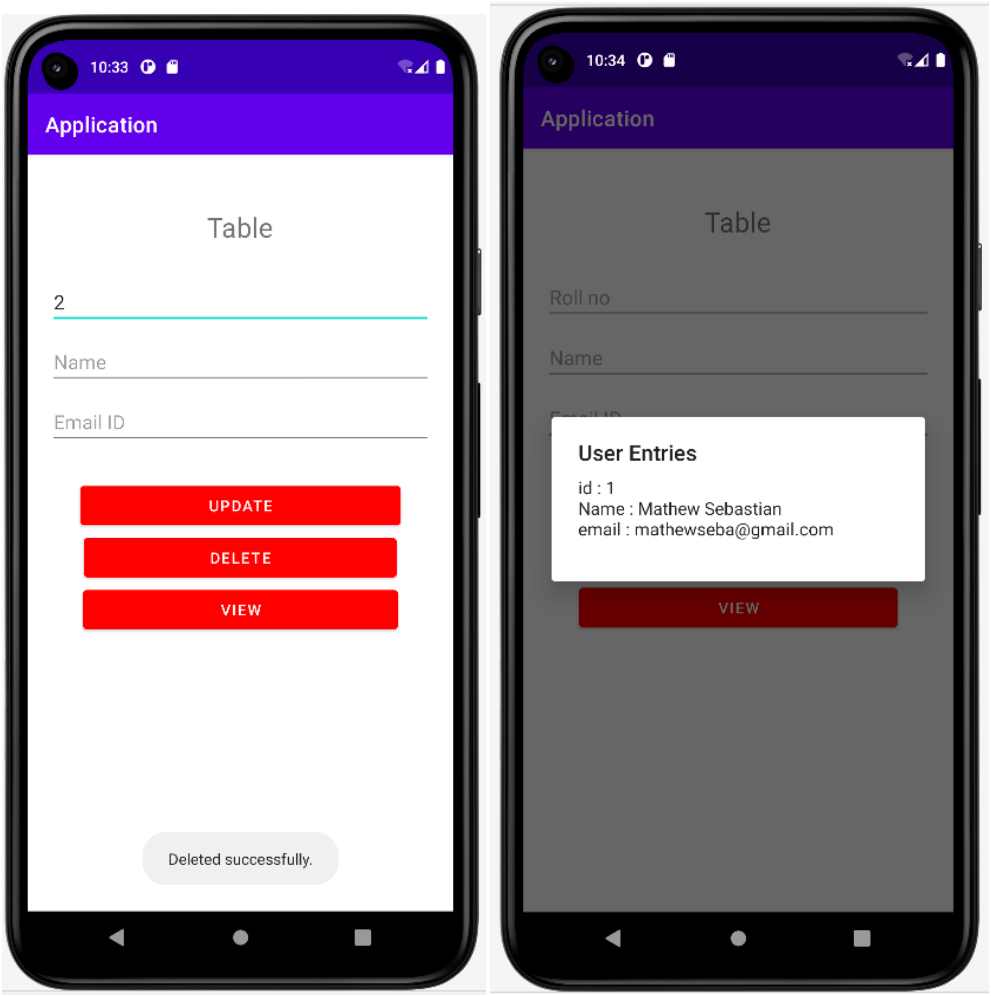
DBHelper.java

```
package com.example.application;

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 DBHelper extends SQLiteOpenHelper {

    public DBHelper(@Nullable Context context) { super(context, "MyDB", null, 1); }

    @Override
    public void onCreate(SQLiteDatabasesqLiteDatabase) {
sqLiteDatabase.execSQL("CREATE TABLE userdetails (rollno INTEGER PRIMARY KEY, name TEXT,
email TEXT)");
    }

    @Override
    public void onUpgrade(SQLiteDatabasesqLiteDatabase, int i, int i1) {
sqLiteDatabase.execSQL("DROP TABLE IF EXISTS userdetails");
    }

    public booleaninsertToDB(int rollno, String name, String email){
SQLiteDatabasedb= this.getWritableDatabase();
ContentValues values= new ContentValues();
values.put("rollno",rollno);
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 booleanupdateToDB(int rollno, String name, String email){
SQLiteDatabasedb= this.getWritableDatabase();
```

```
ContentValues values= new ContentValues();
values.put("name",name);
values.put("email",email);
      Cursor check_user= db.rawQuery("SELECT * from userdetails WHERE rollno=?",new
String[]{String.valueOf(rollno)});
      if(check_user.getCount() > 0){

         long update_user_query= db.update("userdetails",values,"rollno=?",new
String[]{String.valueOf(rollno)});
         if(update_user_query>= 0){
            return true;
         }
         else{
            return false;
         }
      }
      else{
         return false;
      }
   }

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

Output Screenshot





Result

The program was executed and the result was successfully obtained. Thus CO5 was obtained.