20MCA243 - MOBILE APPLICATION DEVELOPMENT LAB

Lab Report Submitted By

VISHNU MOHAN

Reg. No.: AJC21MCA-2111

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 **VISHNU MOHAN (AJC21MCA-2111)** 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.**

Ms. Rini Kurian   **Rev. Fr. Dr. Rubin Thottupurathu Jose**

Lab In- Charge   **Head of the Department**

Internal Examiner   **External Examiner**

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 Computer Applications 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-skilled professionals with ethical values.

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

COURSE OUTCOME

CO	Outcome	Target
CO1	Design and develop user interfaces for mobile apps using basic building blocks, UI components 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 and options menu.	60
CO4	Implement activities with dialogs, spinner, fragments and navigation drawer by applying themes	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 using Emulator	Excellent/Very Good/Good Satisfactory/Needs improvement
CO2	To what extent you understood concepts of layouts	Excellent/Very Good/Good Satisfactory/Needs improvement

CO3	To what extent you understood intents, exceptions and menus	Excellent/Very Good/Good Satisfactory/Needs improvement
CO4	To what extent you are able to implement activities applying themes	Excellent/Very Good/Good Satisfactory/Needs improvement
CO5	To what extent you understood to create applications with SQLite	Excellent/Very Good/Good Satisfactory/Needs improvement

CONTENT

15	Develop an application that implements Spinner component and perform event handling	25/10/2022	CO4	**87 – 90**
16	Create database using SQLite and perform INSERT and SELECT	01/11/2022	CO5	**91 – 99**
17	Perform UPDATE and DELETE on SQLite database	01/11/2022	CO5	**100 – 109**

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
<?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=".Ques01Activity">

  <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"
```

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


</LinearLayout>
```

MainActivity.java

```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 Ques01Activity extends AppCompatActivity {


    // Variable Creation

    EditText username,password;

    Button login;


    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_ques01);


        // Variables Initializations

        username= findViewById(R.id.username);

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

```java
        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(getApplicationContext(), "Login Successful.\nUsername is : "+username_text+"\nPassword is : "+password_text, Toast.LENGTH_LONG).show();
            }
        });


    }
}
```
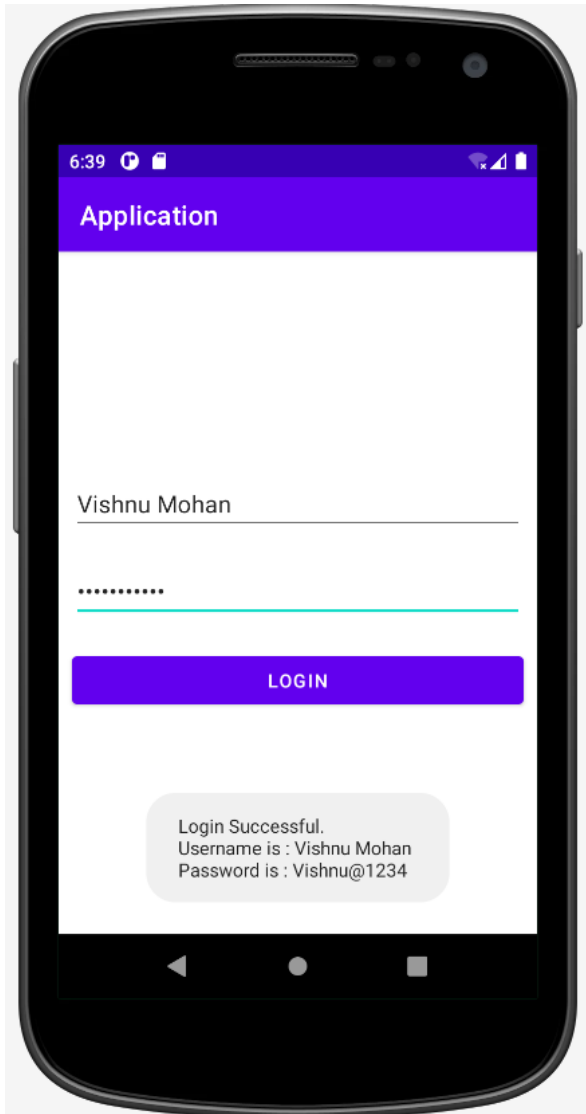
Output Screenshot

Result

The program was executed and the result was successfully obtained. Thus, CO1 was 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
<?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=".Ques02Activity">


    <TextView

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:text="Question explaining the Activity-LifeCycle" />

</LinearLayout>
```

Ques02Activity.java

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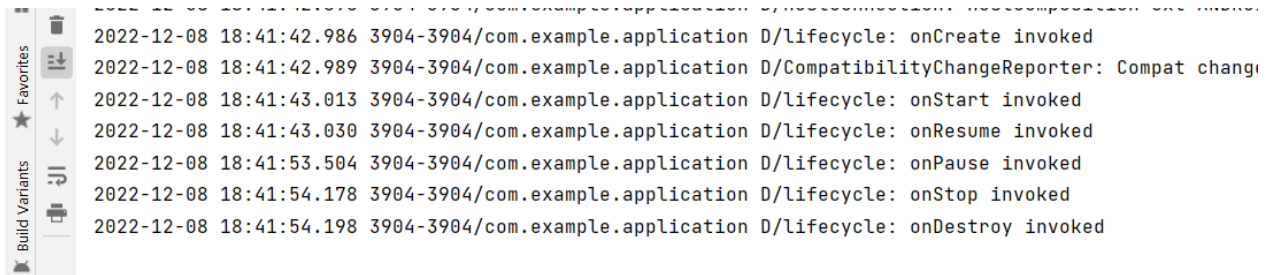
```
    protected void onDestroy() {
        super.onDestroy();
        Log.d("lifecycle", "onDestroy invoked");
        Toast.makeText(getApplicationContext(), "onDestroy invoked", Toast.LENGTH_SHORT).show();
    }

}
```

Output Screenshot

```
2022-12-08 18:41:42.986 3904-3904/com.example.application D/lifecycle: onCreate invoked
2022-12-08 18:41:42.989 3904-3904/com.example.application D/CompatibilityChangeReporter: Compat chang
2022-12-08 18:41:43.013 3904-3904/com.example.application D/lifecycle: onStart invoked
2022-12-08 18:41:43.030 3904-3904/com.example.application D/lifecycle: onResume invoked
2022-12-08 18:41:53.504 3904-3904/com.example.application D/lifecycle: onPause invoked
2022-12-08 18:41:54.178 3904-3904/com.example.application D/lifecycle: onStop invoked
2022-12-08 18:41:54.198 3904-3904/com.example.application D/lifecycle: onDestroy invoked
```

Result

The program was executed and the result was successfully obtained. Thus, CO1 was 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
<?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=".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
```

```xml
        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;

   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_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);

```java
    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();

      }

    });
```

```java
    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();

        }

    });

    }

}
```
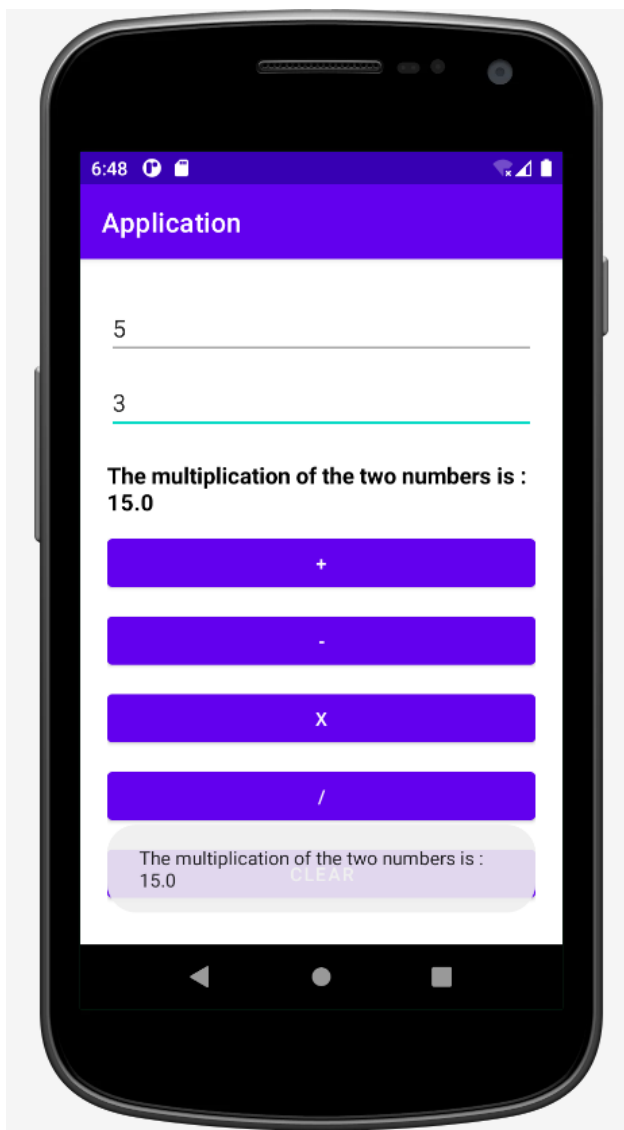
Output Screenshot

Result

The program was executed and the result was successfully obtained. Thus, CO1 was 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
<?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;
```

```java
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();
```

```java
        }
        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();

        }
      }
    });


   }
}
```
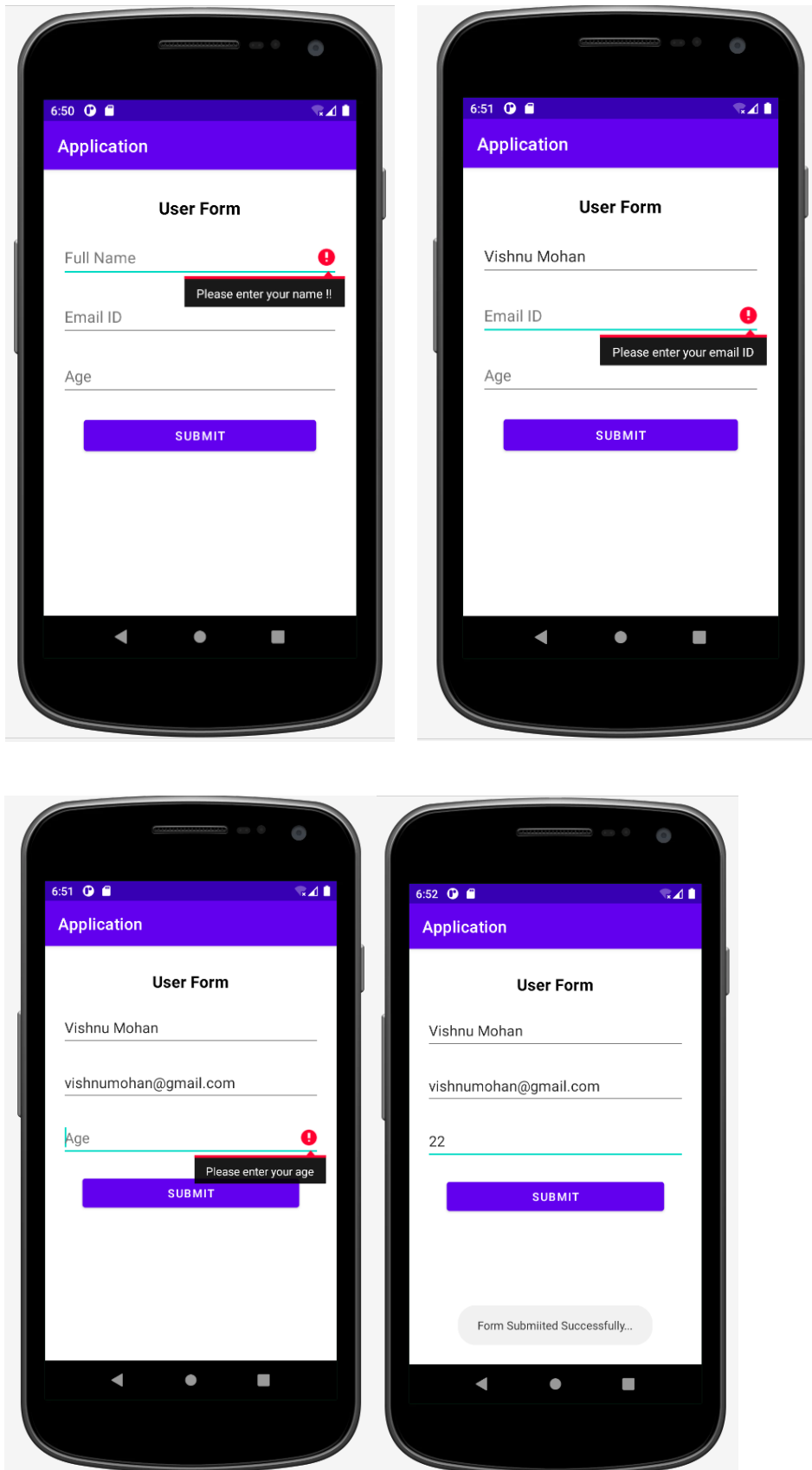
Output Screenshot

<u>Result</u>

The program was executed and the result was successfully obtained. Thus CO1 was 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
<?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

```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;
```

```java
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();
```

```java
            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
<?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
```

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

```xml
</LinearLayout>
```

Ques05ResultActivity.java

```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
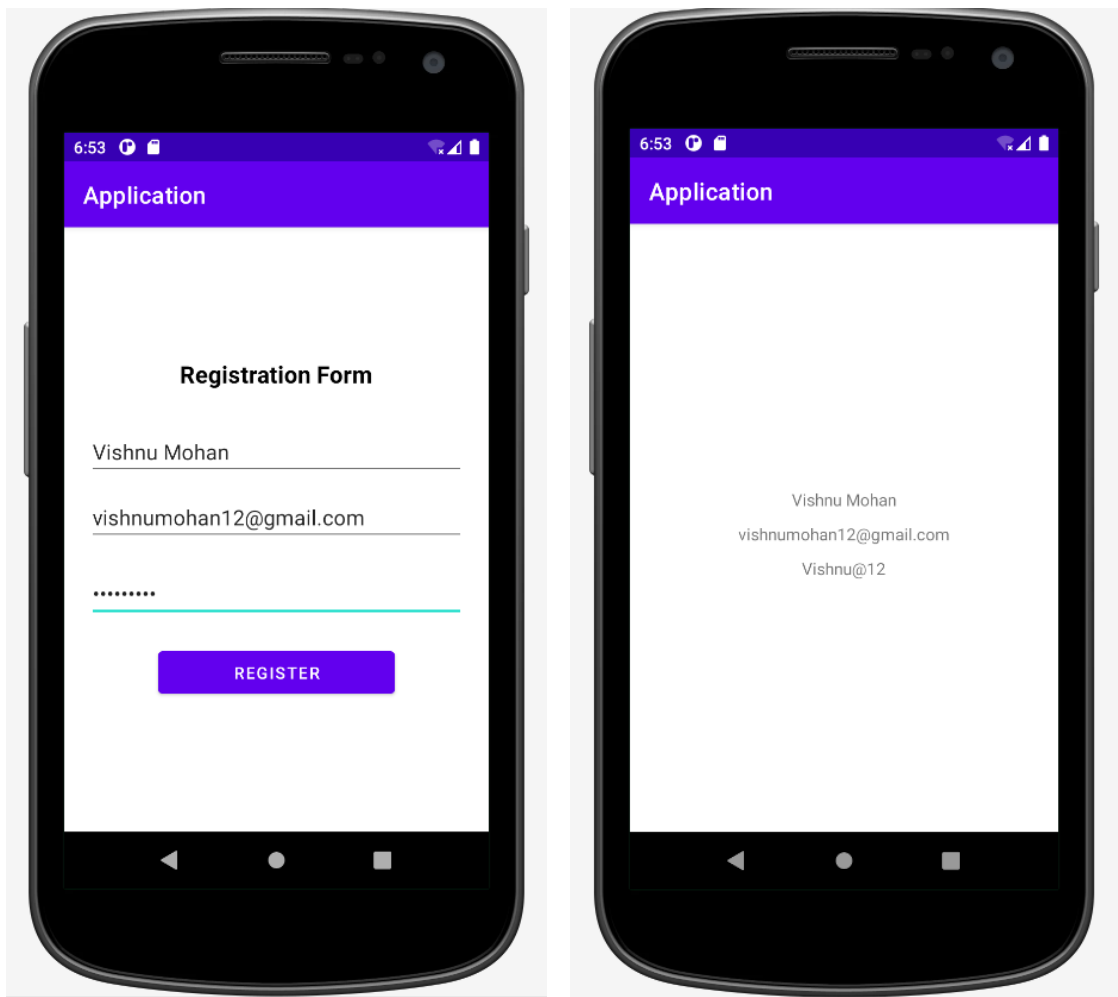
Result

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
<?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=".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">
```

```xml
<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"
```

```xml
    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"
```

```xml
    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

```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_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=".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" />
```

```xml
<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" />
```

```xml
<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>
```

Ques06GridLayoutActivity.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
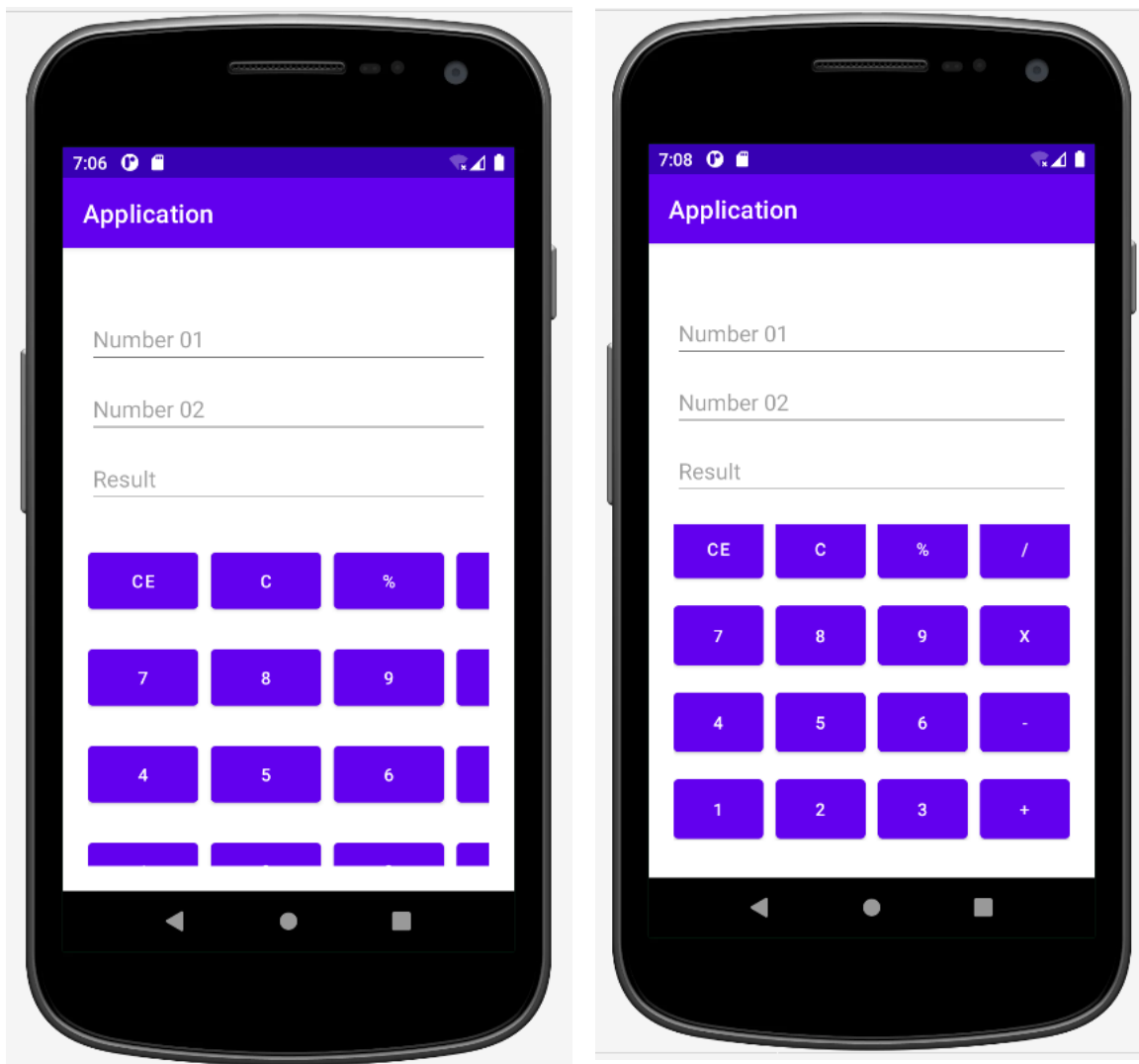
Result

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
<?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=".Ques07Activity">


    <ImageView

        android:layout_width="match_parent"

        android:layout_height="150dp"

        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="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"/>
```

```xml
<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>

</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
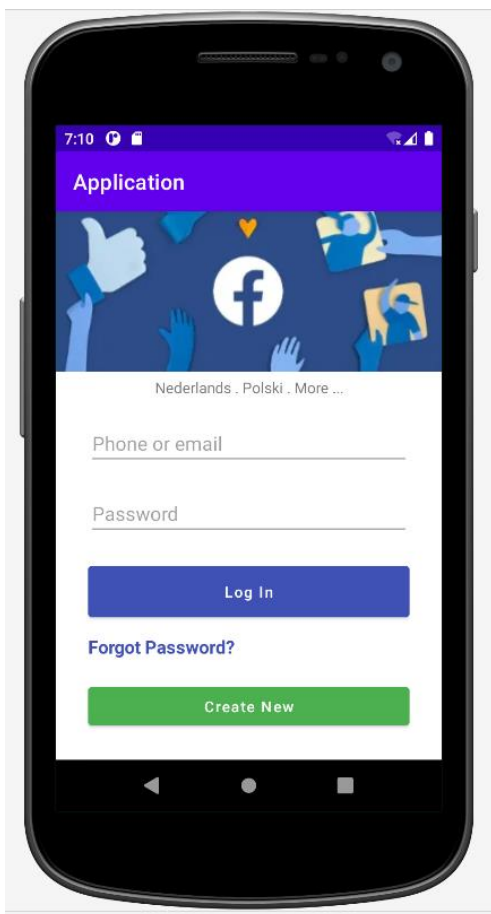
Result

The program was executed and the result was successfully obtained. Thus CO_2 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
<?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=".Ques08Activity">

    <ToggleButton
        android:id="@+id/toggle_img_btn"
        android:layout_width="60dp"
        android:layout_height="60dp"
        android:textOff=""
        android:textOn=""
        android:background="@drawable/ic_volume"
        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 {

  ToggleButton toggle_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_volume_mute));

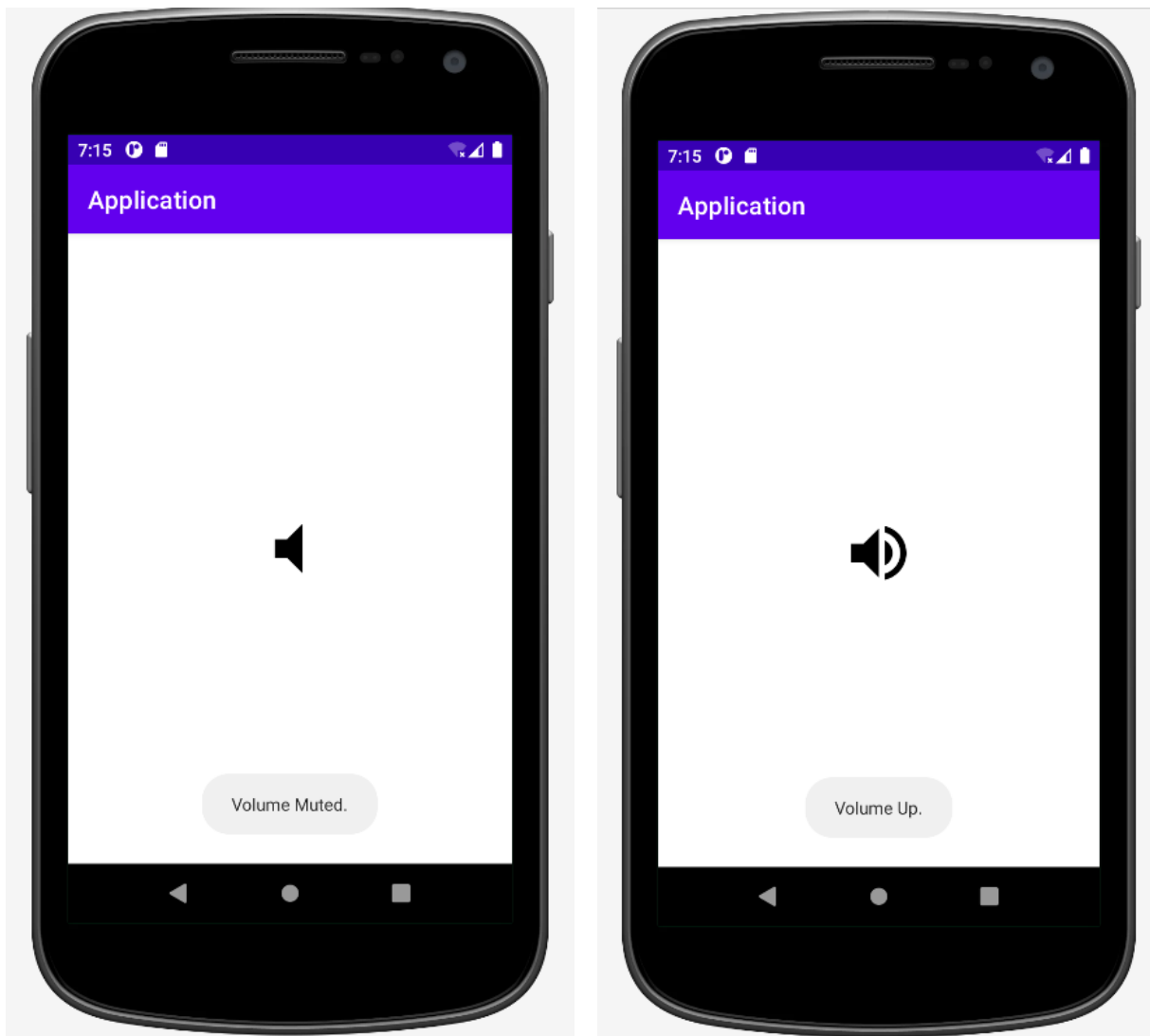   Toast.makeText(getApplicationContext(), "Volume Muted.", Toast.LENGTH_SHORT).show();

      }

      else{

        toggle_img_btn.setBackgroundDrawable(getResources().getDrawable(R.drawable.ic_volume));

```
        Toast.makeText(getApplicationContext(), "Volume Up.", 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"?>

<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=".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"

```xml
        android:layout_marginTop="20dp"

        android:text="Value of 0 / 0 : "/>
```

```xml
</LinearLayout>
```

Ques09Activity.java

```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 {


    TextView textview;


    @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);
```
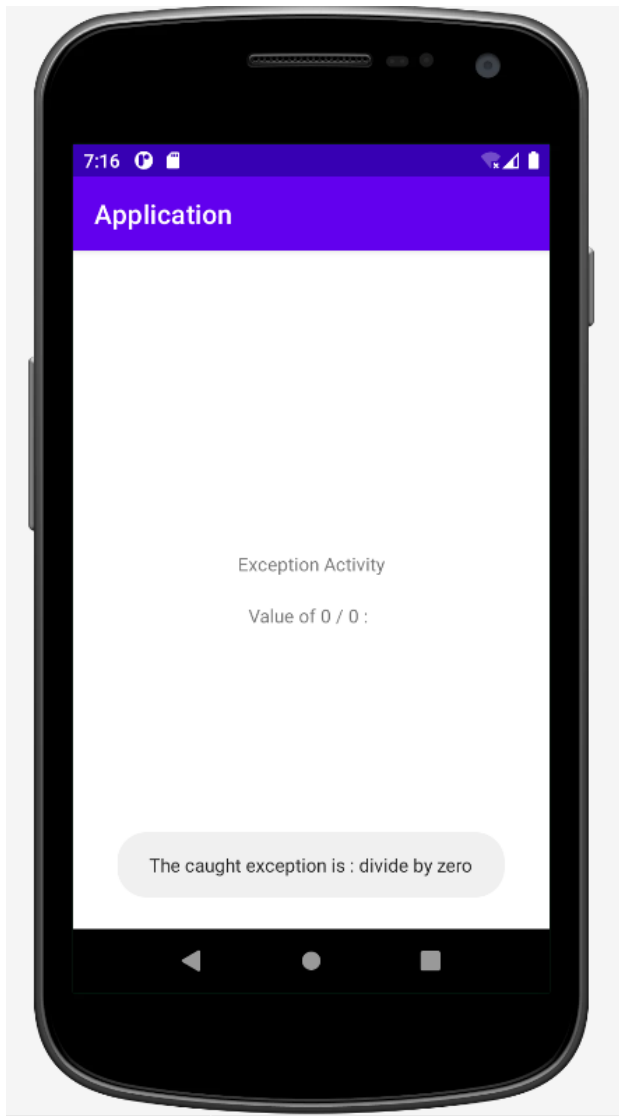
```
        Toast.makeText(getApplicationContext(), "The value is : "+a, Toast.LENGTH_LONG).show();

    }

    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
<?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=".Ques10Activity">

    <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="10dp"/>



</LinearLayout>
```

Ques10Activity.java

```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
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns: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/ic_person_pin"/>


  <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>
```

Ques10ResultActivity.java

```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);
    }
}
```
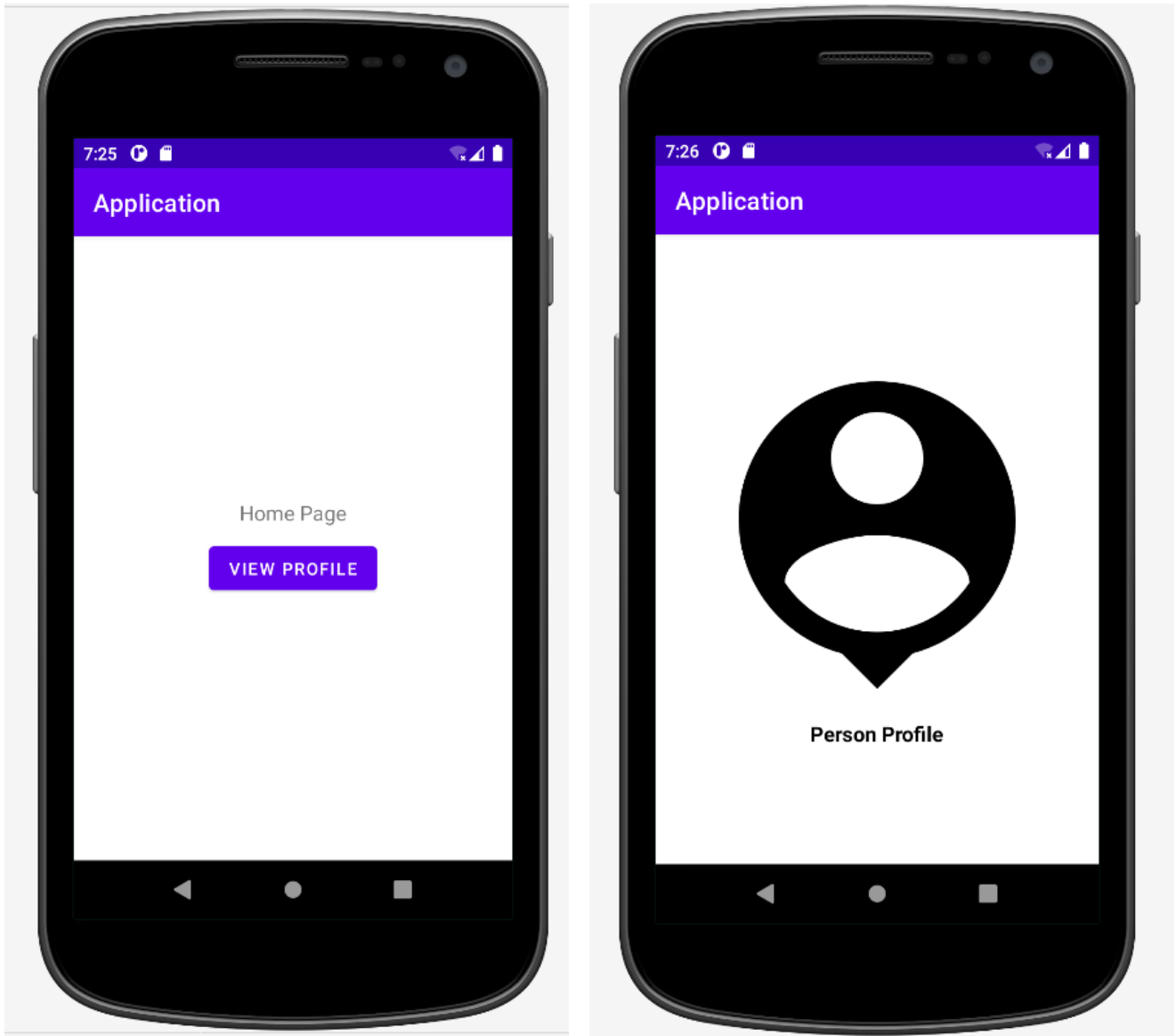
Output Screenshot

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 and options menu.

Procedure

activity_ques11.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=".Ques11Activity">

    <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>
```

Ques11Activity.java

```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(), SecondActivity.class);

                startActivity(intent);
```

```
      }

    });


  }

}
```

ques11SecondActivity.xml

```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=".SecondActivity">


  <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>
```

Ques11SecondActivity.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 SecondActivity extends AppCompatActivity {

  Button goto_third_btn;

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

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

ques11ThirdActivity.xml

```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=".ThirdActivity">


    <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>
```

Ques11ThirdActivity.java

```java
package com.example.application;


import android.content.Intent;
```

```java
import android.os.Bundle;

import android.view.View;

import android.widget.Button;


import androidx.appcompat.app.AppCompatActivity;


public class ThirdActivity extends AppCompatActivity {


    Button goto_main_btn;


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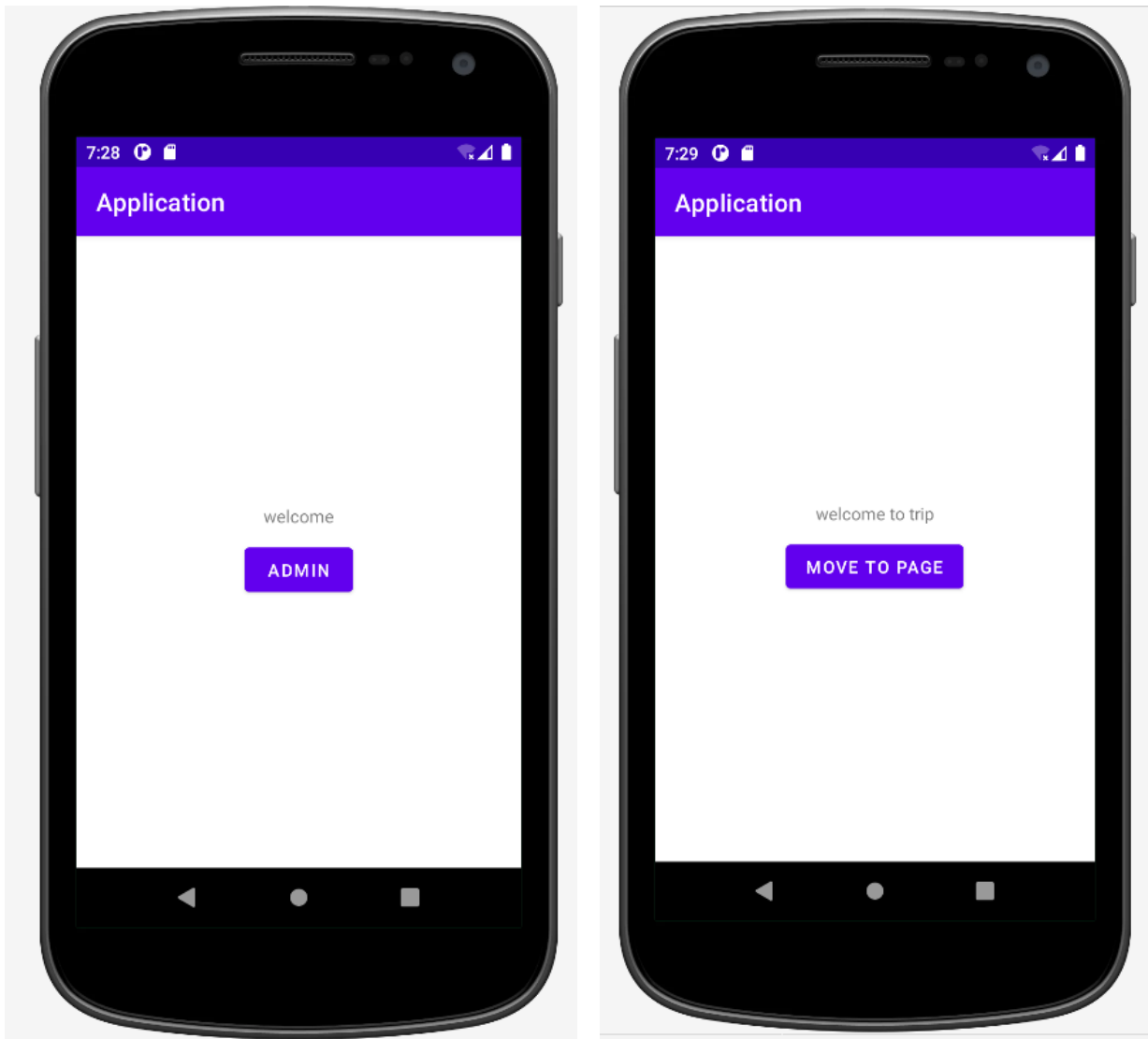
Output Screenshot

Result

The program was executed and the result was successfully obtained. Thus CO1 was obtained.

Experiment No.: 12

Aim

Implement Options Menu to navigate to activities

CO3

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

Procedure

activity_ques12.xml

```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=".Ques12Activity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="MenuOptions Menu Program"/>

</LinearLayout>
```

MainActivity.java

```java
package com.example.application;


import androidx.annotation.NonNull;
```

```java
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 boolean onOptionsItemSelected(@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 boolean onCreateOptionsMenu(Menu menu) {

    getMenuInflater().inflate(R.menu.menu_items, menu);

    return super.onCreateOptionsMenu(menu);

}
}
```

menu_items.xml

```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="Page 01"
            app:iconTint="@color/white"
            app:showAsAction="never" />

        <item
            android:id="@+id/third_activity"
            android:title="Page 02"
            app:iconTint="@color/white"
            app:showAsAction="never" />

    </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 and options menu.

Procedure

activity_ques13.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>

Ques13Activity.java

package com.example.application;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

```java
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);


        ListView listview;
        String[] person_qualify = {"Amal", "Jyothi", "College", "of", "Engineering", "Kanjirappally"};


        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 selected item is - " + person_qualify[position],
Toast.LENGTH_SHORT).show();

        });


    }
}
```
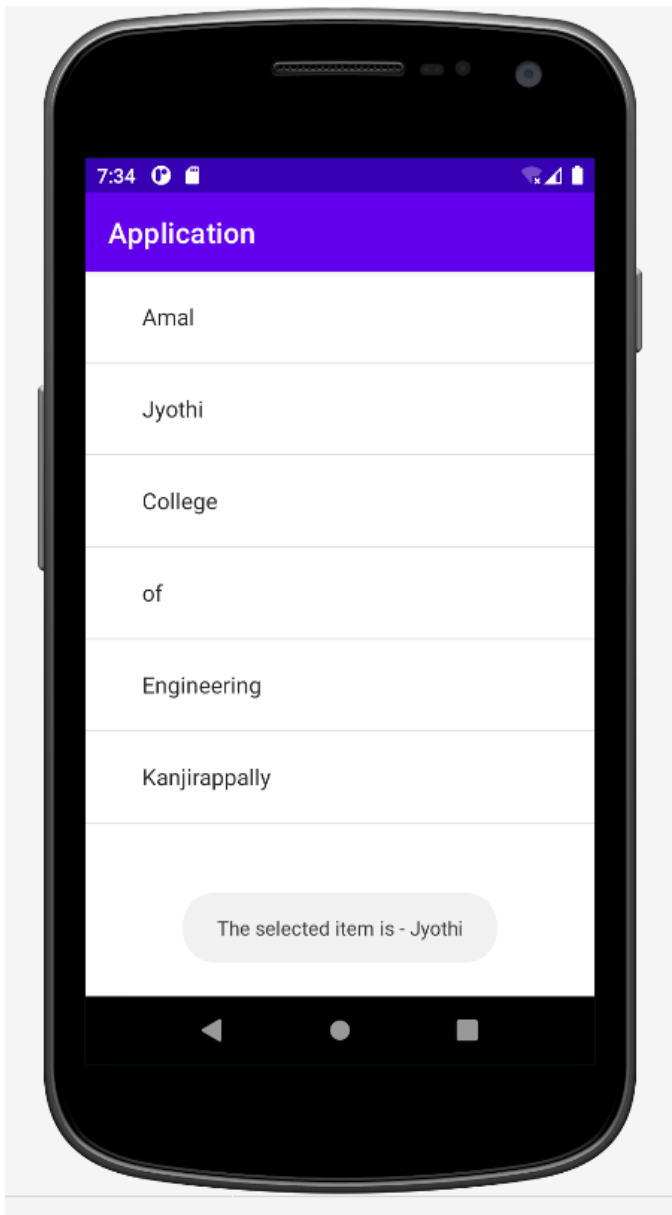
Output Screenshot

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"?>
<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=".Ques14Activity">


    <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"/>
```

```xml
<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/ic_album"

        android:textColor="@color/white" />


    <ImageView

        android:id="@+id/blutooth_btn"

        android:layout_width="80dp"

        android:layout_height="80dp"

        android:layout_marginStart="10dp"

        android:padding="13dp"

        android:src="@drawable/ic_attach_file"

        android:textColor="@color/white" />


    <ImageView

        android:id="@+id/volume_btn"

        android:layout_width="80dp"

        android:layout_height="80dp"
```

```
            android:layout_marginStart="10dp"

            android:padding="13dp"

            android:src="@drawable/ic_attach_money"

            android:textColor="@color/white" />


    </GridLayout>


</LinearLayout>
```

Ques14Activity.java

```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.ImageView;

import android.widget.Toast;


public class Ques14Activity extends AppCompatActivity {


    ImageView wifi_btn, blutooth_btn, volume_btn;


    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);
```

```java
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("Album Option");

    }

});


blutooth_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(Ques14Activity.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 Screenshot
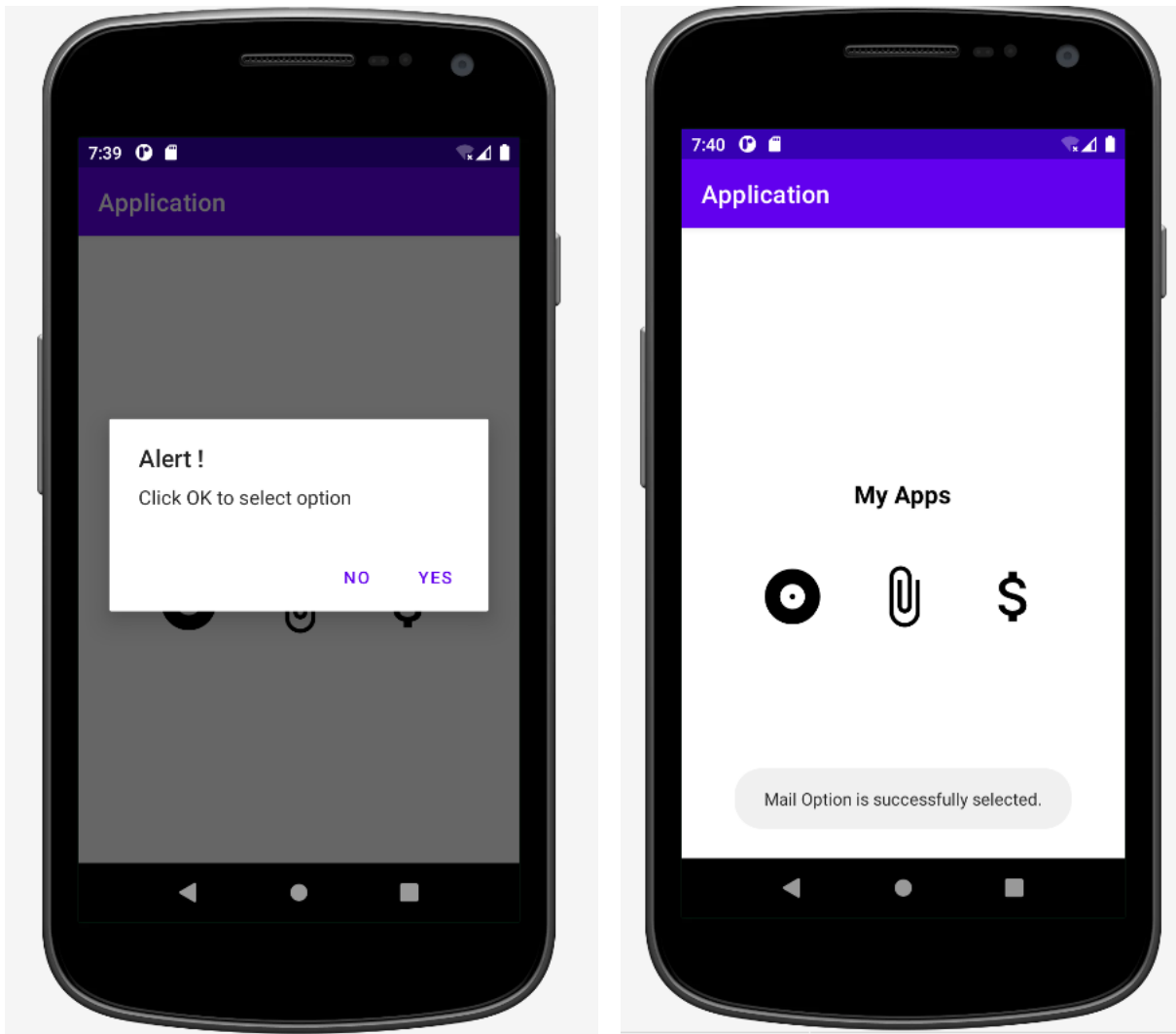
Result

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 applying themes

Procedure

activity_main.xml

```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=".Ques15Activity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Birds Spinner"
        android:textStyle="bold"
        android:textSize="20sp"
        android:textColor="@color/black"/>

    <Spinner
```

```
        android:id="@+id/spinner"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_marginTop="10dp"/>


</LinearLayout>
```

MainActivity.java

```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 = {"Select an bird","Parrot", "Crow", "Pigeon", "Eagle", "Cuckoo"};


    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_ques15);
```

```
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[i],
Toast.LENGTH_LONG).show();

    }


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

});


  }
}
```

Output Screenshot
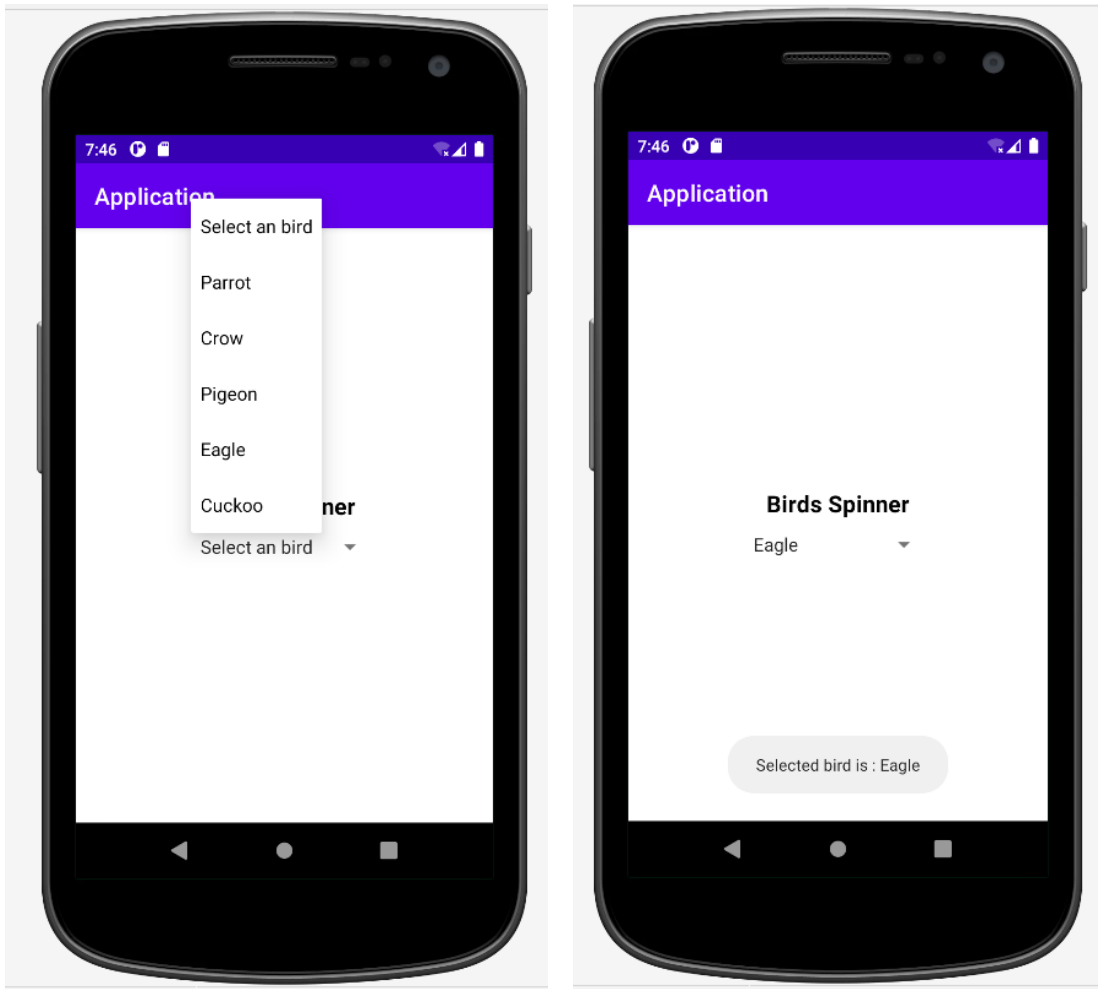
Result

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
<?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="Database Operations"
        android:layout_gravity="center"
        android:layout_marginTop="50dp"
        android:textSize="25sp"
        android:textStyle="bold" />

    <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/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

```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 {

    EditText rollno, name, email;
    Button insert_btn, select_btn;
    DBHelper db;

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

```java
        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();

                boolean insert_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(SQLiteDatabase sqLiteDatabase) {
    sqLiteDatabase.execSQL("CREATE TABLE userdetails (rollno 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 rollno, String name, String email){
    SQLiteDatabase db= this.getWritableDatabase();

```java
    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 boolean updateToDB(int rollno, 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 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)});
```
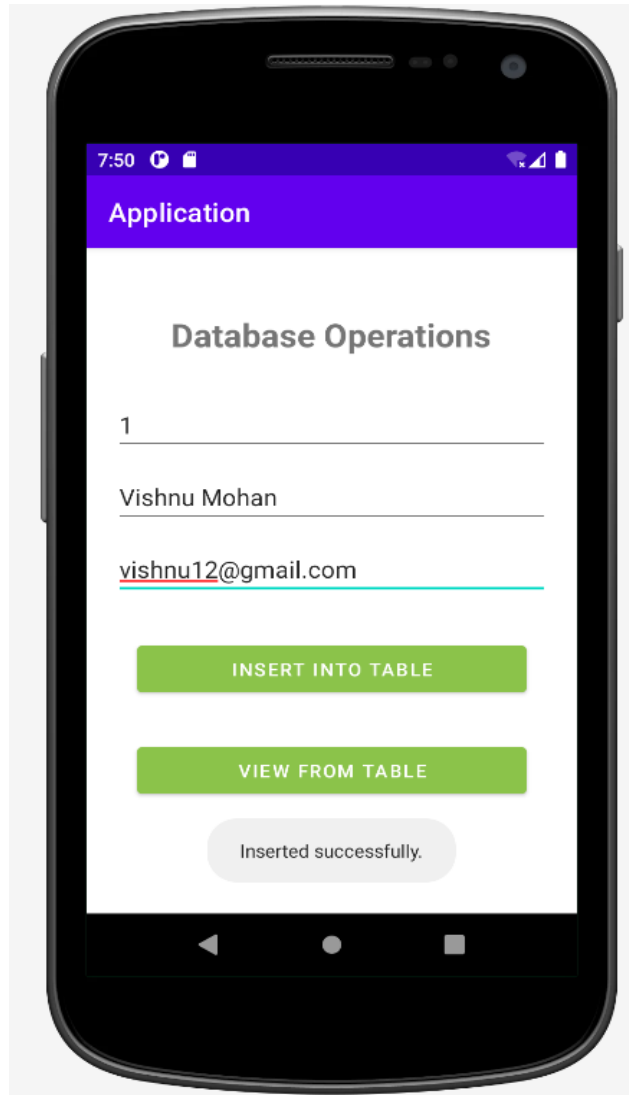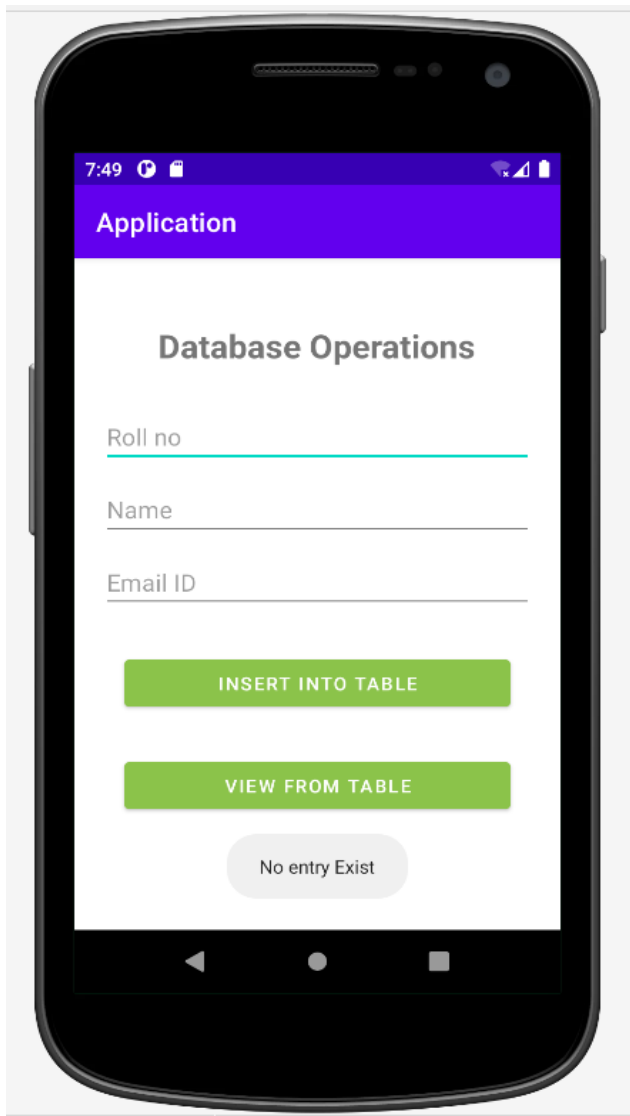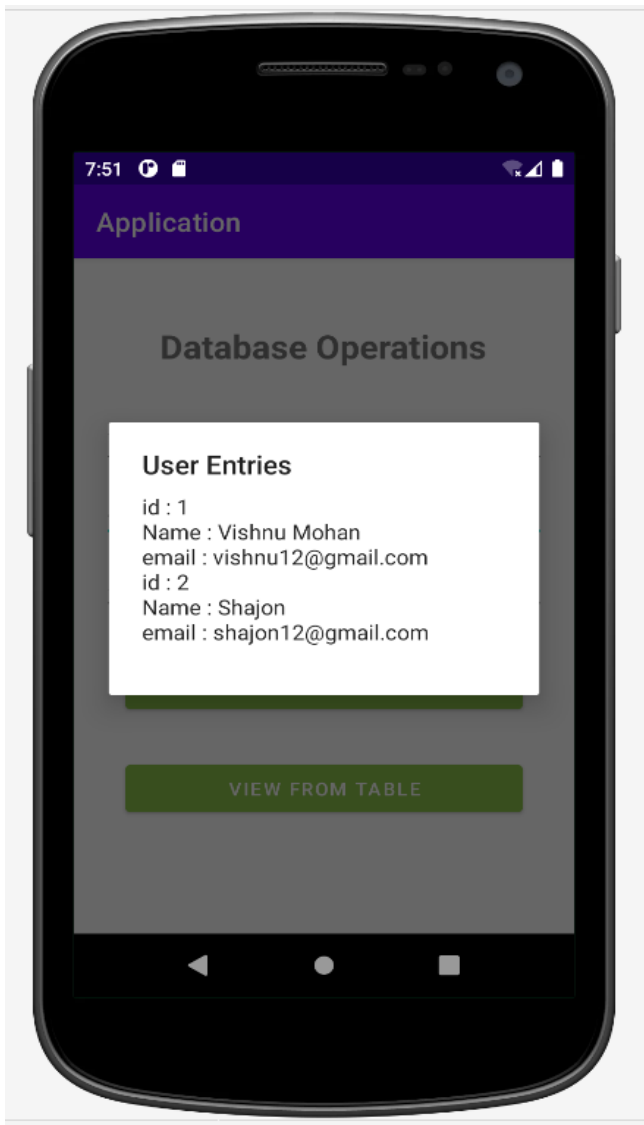
```java
        if(update_user_query >= 0){

            return true;

        }

        else{

            return false;

        }

    }

    else{

        return false;

    }

}


    public boolean deleteFromDB(int rollno){

        SQLiteDatabase db= 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.

Experiment No.: 17

Aim

Perform UPDATE and DELETE on SQLite database

CO5

Develop mobile applications using SQLite.

Procedure

activity_main.xml

```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="Database Operations"
        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="#8BC34A"/>

   <Button

      android:id="@+id/delete_btn"

      android:layout_width="289dp"

      android:layout_height="wrap_content"

      android:layout_gravity="center"

      android:text="Delete"

      android:backgroundTint="#8BC34A"/>

   <Button

      android:id="@+id/select_btn"

      android:layout_width="291dp"

      android:layout_height="wrap_content"

      android:layout_gravity="center"

      android:text="View"

      android:backgroundTint="#8BC34A"/>

</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 {

```java
    EditText rollno, name, email;
    Button update_btn, delete_btn, select_btn;
    DBHelper db;

    @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();

                DBHelper db= new DBHelper(getApplicationContext());

                boolean update_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());
                DBHelper db= new DBHelper(getApplicationContext());

                boolean update_result= db.deleteFromDB(rollno_num);
                if(update_result){
```

```java
                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

```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;
```

```java
import androidx.annotation.Nullable;

public class DBHelper extends SQLiteOpenHelper {

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

    @Override
    public void onCreate(SQLiteDatabase sqLiteDatabase) {
        sqLiteDatabase.execSQL("CREATE TABLE userdetails (rollno 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 rollno, String name, String email){
        SQLiteDatabase db= 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;
        }
    }
```
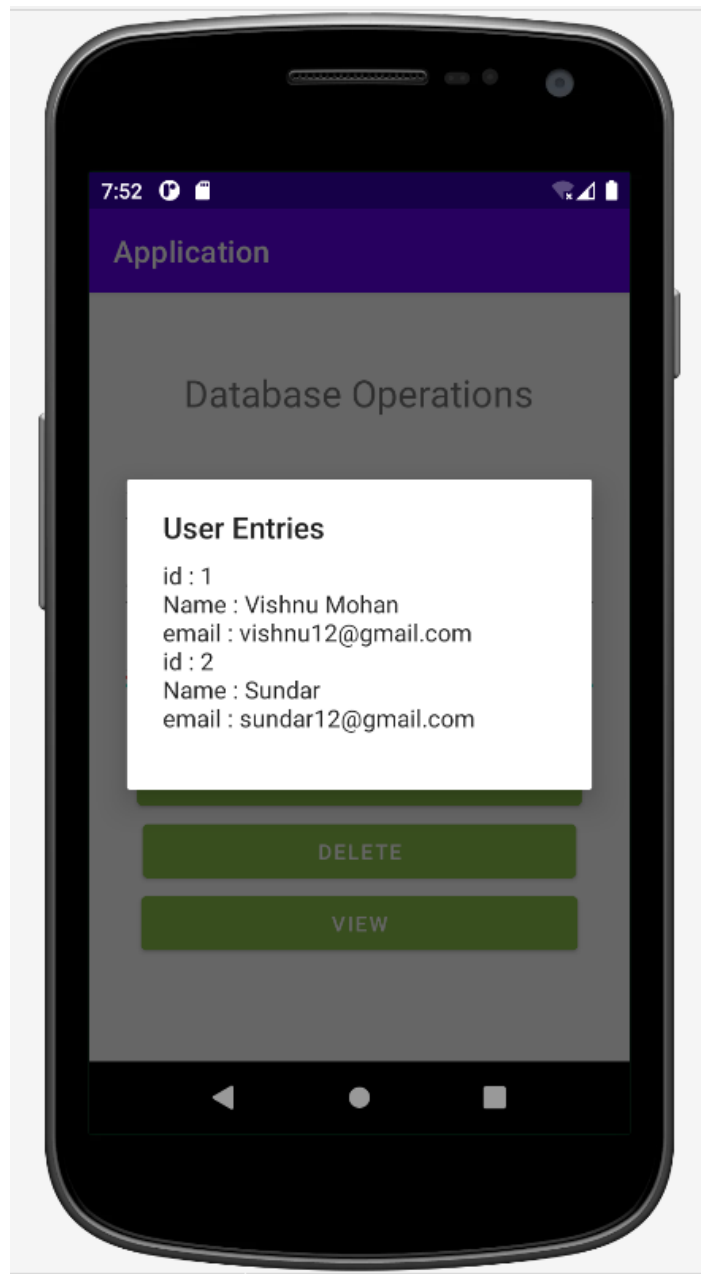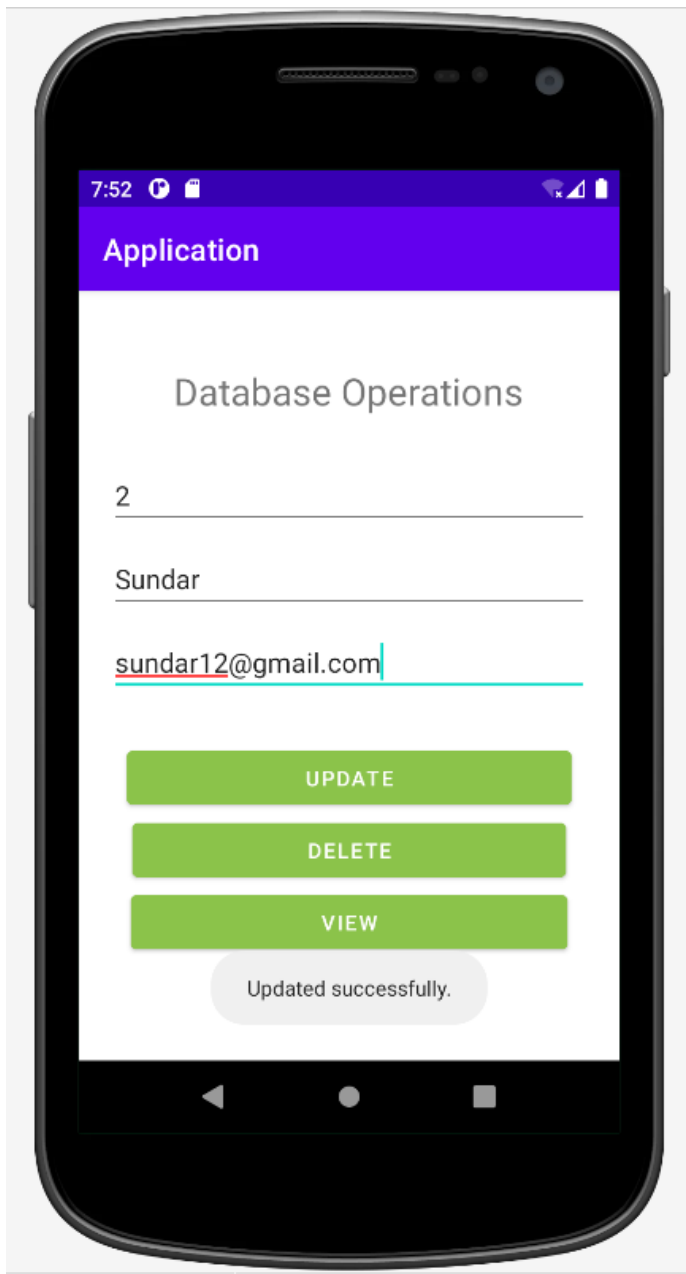
```java
    }


    public Cursor selectFromDB() {

        SQLiteDatabase DB = this.getWritableDatabase();

        Cursor cursor = DB.rawQuery("Select * from userdetails", null);

        return cursor;

    }


    public boolean updateToDB(int rollno, 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 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;

        }

    }
```
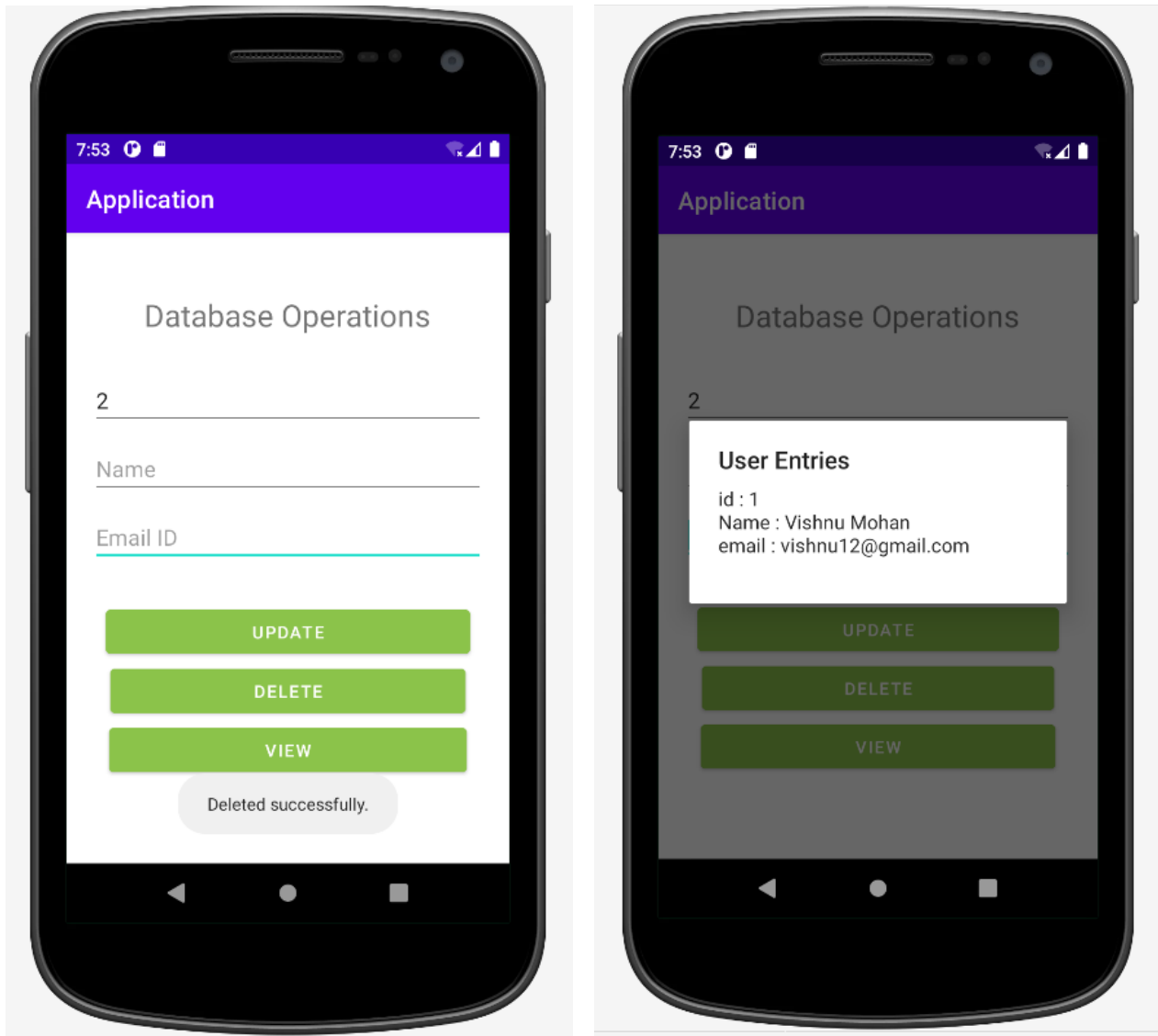
```java
   public boolean deleteFromDB(int rollno){

     SQLiteDatabase db= 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.