

20MCA243 - MOBILE APPLICATION DEVELOPMENT LAB

Lab Report Submitted By

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Reg. No.: AJC21MCA-2081

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 **NEHA ANTONY (AJC21MCA-2081)** 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 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

Sl. No.	Experiment	Date	CO	Page No.
1	Design a Login Form with username and password using Linear Layout and toast valid credentials	23/08/2022	CO1	1
2	Write a program that demonstrates Activity Lifecycle.	23/08/2022	CO1	5
3	Implementing basic arithmetic operations of a simple calculator	30/08/2022	CO1	7
4	Implement validations on various UI controls	30/08/2022	CO1	12
5	Design a registration activity and store registration details in local memory of phone using Intents and SharedPreferences	06/09/2022	CO2	21
6	Design a simple Calculator using GridLayout and Cascaded LinearLayout	13/09/2022	CO2	29
7	Create a Facebook page using RelativeLayout; set properties using .xml file	20/09/2022	CO2	41
8	Develop an application that toggles image using FrameLayout	27/09/2022	CO2	45
9	Implement Adapters and perform exception handling	27/09/2022	CO3	48
10	Implement Intent to navigate between multiple activities	04/10/2022	CO3	51
11	Develop application that works with explicit intents	04/10/2022	CO3	55
12	Implement Options Menu to navigate to activities	18/10/2022	CO3	61
13	Develop an application that uses ArrayAdapter with ListView.	18/10/2022	CO3	64
14	Develop an application that use GridView with images and display Alert box on selection	25/10/2022	CO4	66

15	Develop an application that implements Spinner component and perform event handling	25/10/2022	CO4	71
16	Create database using SQLite and perform INSERT and SELECT	01/11/2022	CO5	74
17	Perform UPDATE and DELETE on SQLite database	01/11/2022	CO5	79

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"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <EditText
        android: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 {

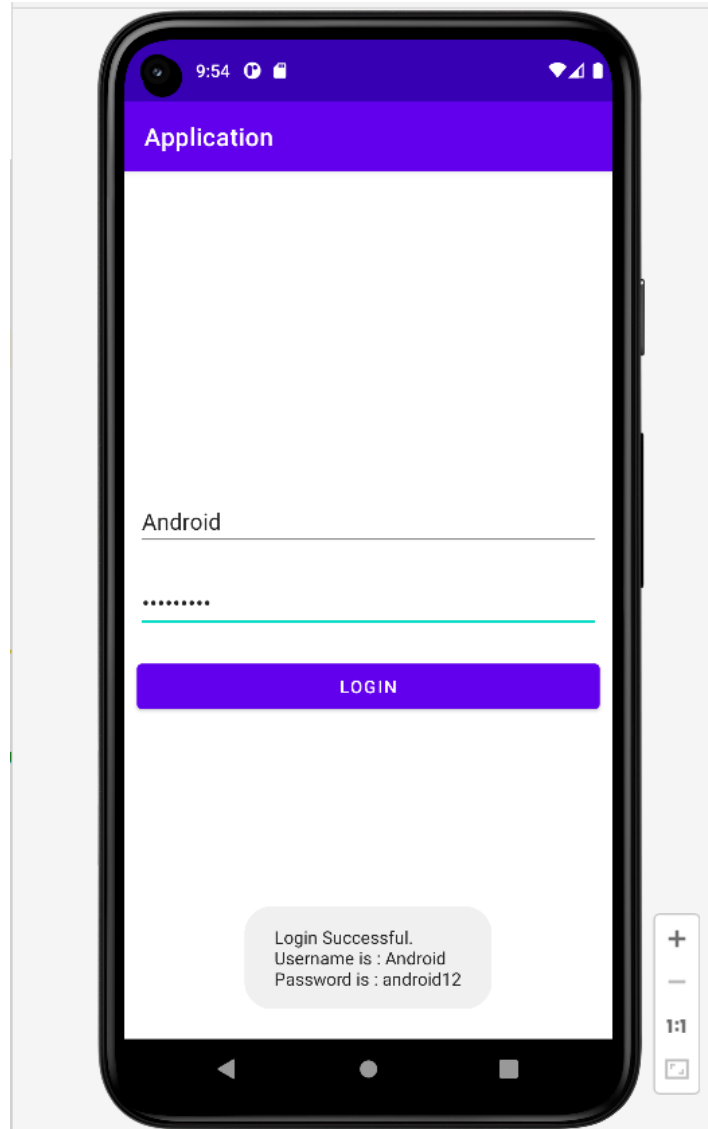
    // Variable Creation
    EditText username,password;
    Button login;

    @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, 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 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

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

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

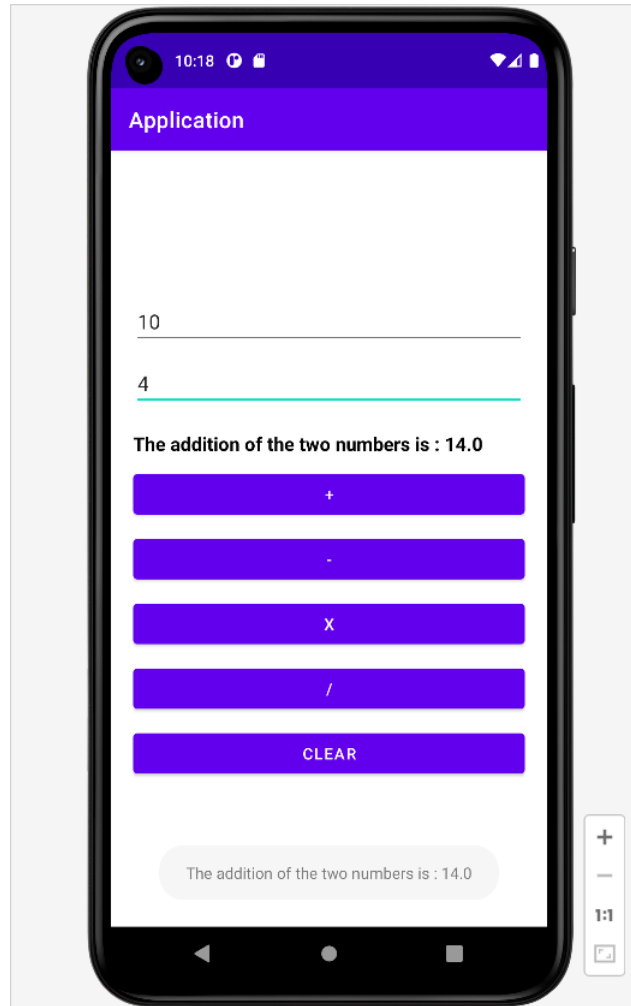
div_btn.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        String number1_text= number1.getText().toString();
        String number2_text= number2.getText().toString();
        int num1= Integer.parseInt(number1_text);
        int num2= Integer.parseInt(number2_text);
        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 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:paddingHorizontal="20dp"
    tools:context=".Ques04Activity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="UI Validation Form"
        android:textSize="20sp"
        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="40dp"
        android:hint="Enter your 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="Enter your 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="Enter your age (From 18 to 36)"
    android:inputType="number"
    android:minHeight="48dp"
    android:textColorHint="#757575"
    android:importantForAutofill="no" />
```

```
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="20dp"
    android:orientation="vertical">
```

```
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Select your favourites fast foods"/>
```

```
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal">
```

```
<CheckBox
    android:id="@+id/pizza_checkbox"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Pizza"/>
```

```
<CheckBox
    android:id="@+id/burger_checkbox"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:text="Burger"/>
```

```
<CheckBox
    android:id="@+id/kfc_checkbox"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:text="KFC"/>
```

```
</LinearLayout>
```

```
<TextView
    android:id="@+id/food_error"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textColor="#DD2C00" />
```

```
</LinearLayout>
```

```
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="vertical"
    android:layout_marginTop="20dp">
```

```
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Select your gender"/>
```

```
<RadioGroup
    android:id="@+id/gender_radiogroup"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:layout_marginTop="10dp">
```

```
<RadioButton
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Male"/>
```

```
<RadioButton
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:text="Female"/>
```

```
<RadioButton
```

```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="10dp"
        android:text="Others"/>
```

```
</RadioGroup>
```

```
<TextView
    android:id="@+id/gender_error"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textColor="#DD2C00" />
```

```
</LinearLayout>
```

```
<Button
    android:id="@+id/submit_btn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Submit"
    android:layout_marginTop="20dp"/>
```

```
</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;
    CheckBox pizza_checkbox, burger_checkbox, kfc_checkbox;
    TextView food_error, gender_error;
    RadioGroup gender_radiogroup;
    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);
    pizza_checkbox= findViewById(R.id.pizza_checkbox);
    burger_checkbox= findViewById(R.id.burger_checkbox);
    kfc_checkbox= findViewById(R.id.kfc_checkbox);
    food_error= findViewById(R.id.food_error);
    gender_error= findViewById(R.id.gender_error);
    gender_radiogroup= findViewById(R.id.gender_radiogroup);
    submit_btn= findViewById(R.id.submit_btn);

    submit_btn.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            gender_error.setText("");
            food_error.setText("");
            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();
            int gender_id= gender_radiogroup.getCheckedRadioButtonId();
            boolean ispizza_checked= pizza_checkbox.isChecked();
            boolean isburger_checked= burger_checkbox.isChecked();
            boolean iskfc_checked= kfc_checkbox.isChecked();

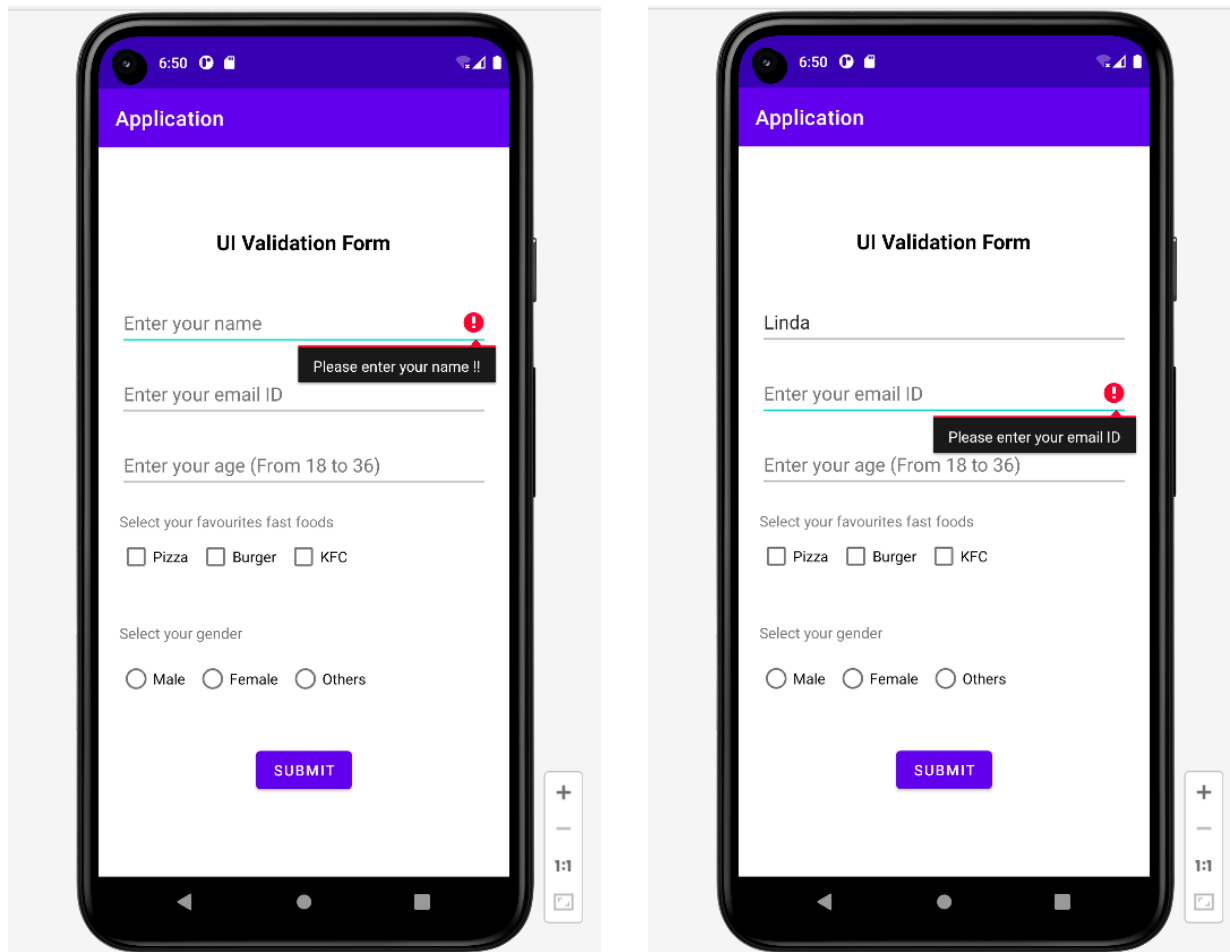
            if(name_txt.equals("")){
                name_et.setError("Please enter your name !!");
                name_et.requestFocus();
            }
            else if(email_txt.equals("")){
                email_et.setError("Please enter your email ID");
                email_et.requestFocus();
            }
            else if(age_txt.equals("")){
                age_et.setError("Please enter your age");
                age_et.requestFocus();
            }
            else if(Integer.parseInt(age_txt) < 18 || Integer.parseInt(age_txt) > 36){
                age_et.setError("Please enter valid a age from between 18 to 36 !!");
                age_et.requestFocus();
            }
        }
    });
}
```

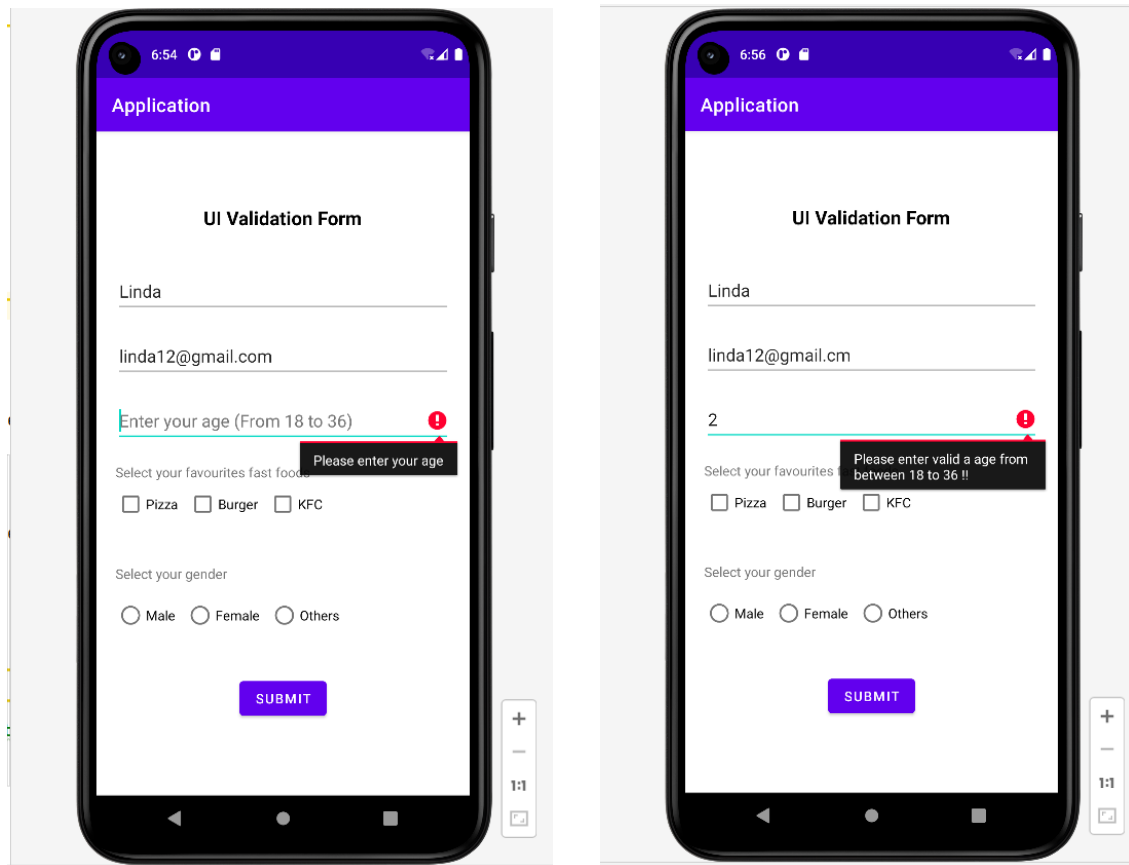
```

    else if(!ispizza_checked && !isburger_checked && !iskfc_checked){
        food_error.setText("Please select atleast one item !!");
    }
    else if(gender_id < 0){
        gender_error.setText("Please select your gender !!");
    }
    else{
        Toast.makeText(getApplicationContext(), "Form Submitted Successfully...",
        Toast.LENGTH_SHORT).show();
    }
}
});
}
}
}

```

Output Screenshot

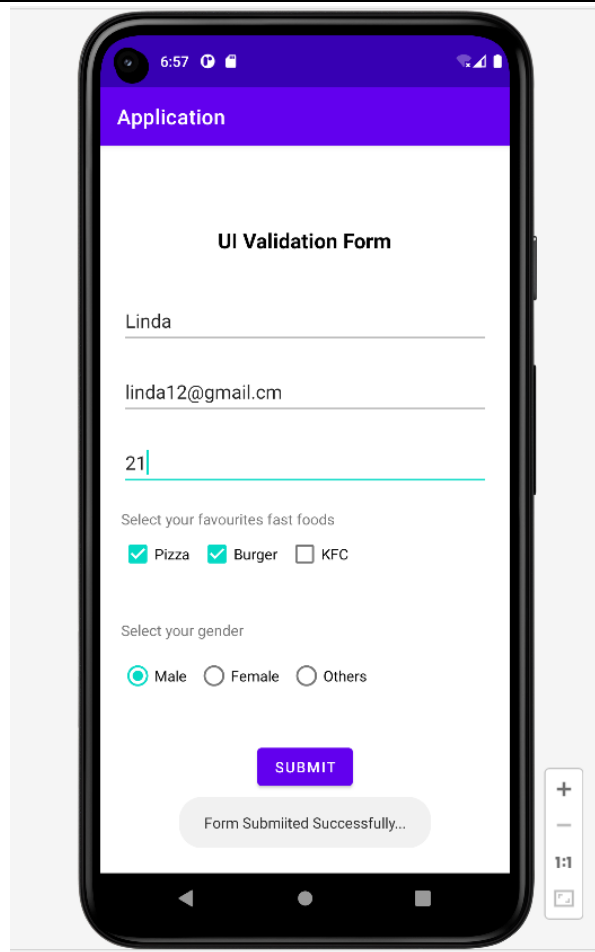




The image displays two side-by-side mobile application screens, each showing a 'UI Validation Form'. Both screens have a purple header bar with the text 'Application' and a status bar at the top showing the time as 6:56. The form is titled 'UI Validation Form' and contains the following elements:

- A text input field for the name, containing 'Linda'.
- A text input field for the email address, containing 'linda12@gmail.cm'.
- A text input field for the age, containing '21'.
- A section titled 'Select your favourites fast foods' with three checkboxes: 'Pizza', 'Burger', and 'KFC'. In the left screen, all are unchecked. In the right screen, 'Pizza' is checked.
- A red error message: 'Please select atleast one item !!'.
- A section titled 'Select your gender' with three radio buttons: 'Male', 'Female', and 'Others'. In the left screen, all are unselected. In the right screen, 'Male' is selected.
- A red error message: 'Please select your gender !!'.
- A purple 'SUBMIT' button at the bottom.

The right screen shows a validation state where the 'Please select atleast one item !!' message is present, and the 'Please select your gender !!' message is also present, indicating that the form is not yet valid for submission.



Result

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 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="Register Page"
        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"/>
```

```
<RadioGroup
    android:id="@+id/gender_radioGroup"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10dp"
    android:orientation="horizontal">

    <RadioButton
        android:id="@+id/male_gender"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Male"/>

    <RadioButton
        android:id="@+id/female_gender"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="10dp"
        android:text="Female"/>

    <RadioButton
        android:id="@+id/others_gender"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="10dp"
        android:text="Others"/>
```

```
</RadioGroup>
```

```
<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"
    android:layout_marginTop="10dp"/>
```

```
<Button
    android:id="@+id/register_btn"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10dp"
    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;
    RadioGroup gender_radioGroup;
    RadioButton male_gender, female_gender, others_gender;
    Button register_btn;
    TextView gender_error;
    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);
        gender_radioGroup= findViewById(R.id.gender_radioGroup);
        male_gender= findViewById(R.id.male_gender);
        female_gender= findViewById(R.id.female_gender);
```

```
others_gender= findViewById(R.id.others_gender);
register_btn= findViewById(R.id.register_btn);
gender_error= findViewById(R.id.gender_error);
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);
        gender_error.setText("");
        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();
        int gender_selected= gender_radioGroup.getCheckedRadioButtonId();
        String gender="Not Available";

        if(gender_selected==R.id.male_gender)
            gender="Male";
        else if(gender_selected==R.id.female_gender)
            gender="Female";
        else if(gender_selected==R.id.others_gender)
            gender="Others";

        if(fullname_text.equals("")){
            fullname.requestFocus();
            fullname.setError("Please enter fullname !!");
        }
        else if(fullname_text.length() < 3){
            fullname.requestFocus();
            fullname.setError("Fullname should be more than 2 characters !!");
        }
        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(gender_selected < 0){
            gender_error.setText("Select anyone of the gender option !!");
        }
    }
});
```

```

    }
    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.putString("reg_gender",gender);
        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"
        android:text="Name : ">

    <TextView
        android:id="@+id/emailid_result"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"

```

```

    android:layout_marginTop="10dp"
    android:text="Name : "/>

```

```

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

```

```

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

```

```

</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, gender_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);

```

```

        gender_result= findViewById(R.id.gender_result);

```

```

        password_result= findViewById(R.id.password_result);

```

```

        SharedPreferences pref= getSharedPreferences("register_data", MODE_PRIVATE);

```

```

        String name= pref.getString("reg_fullname","Not Available !!");

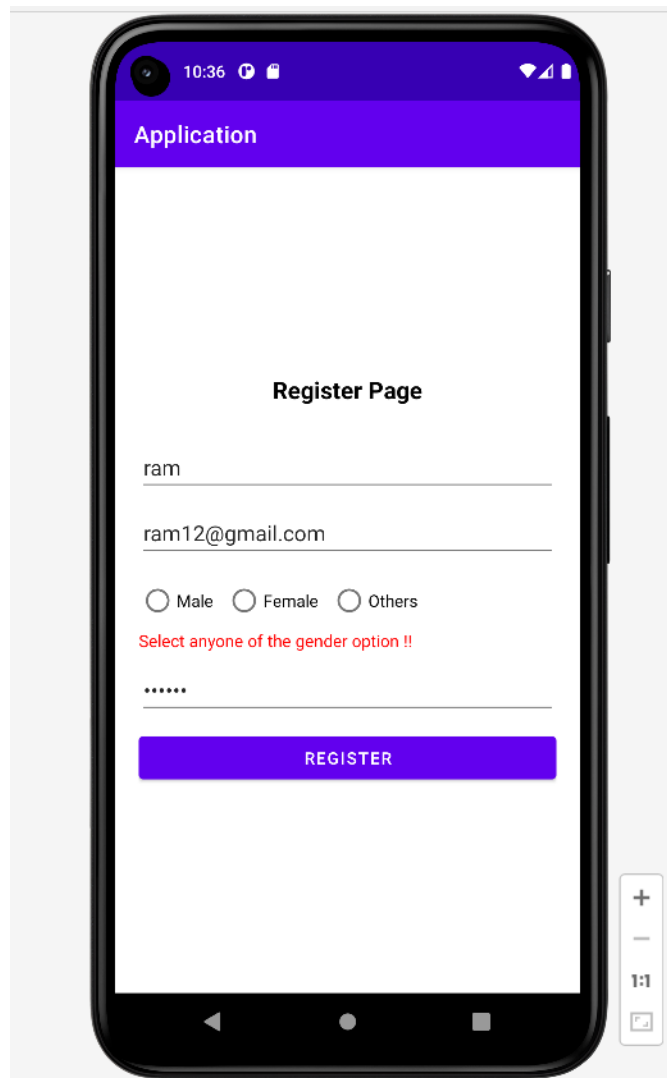
```

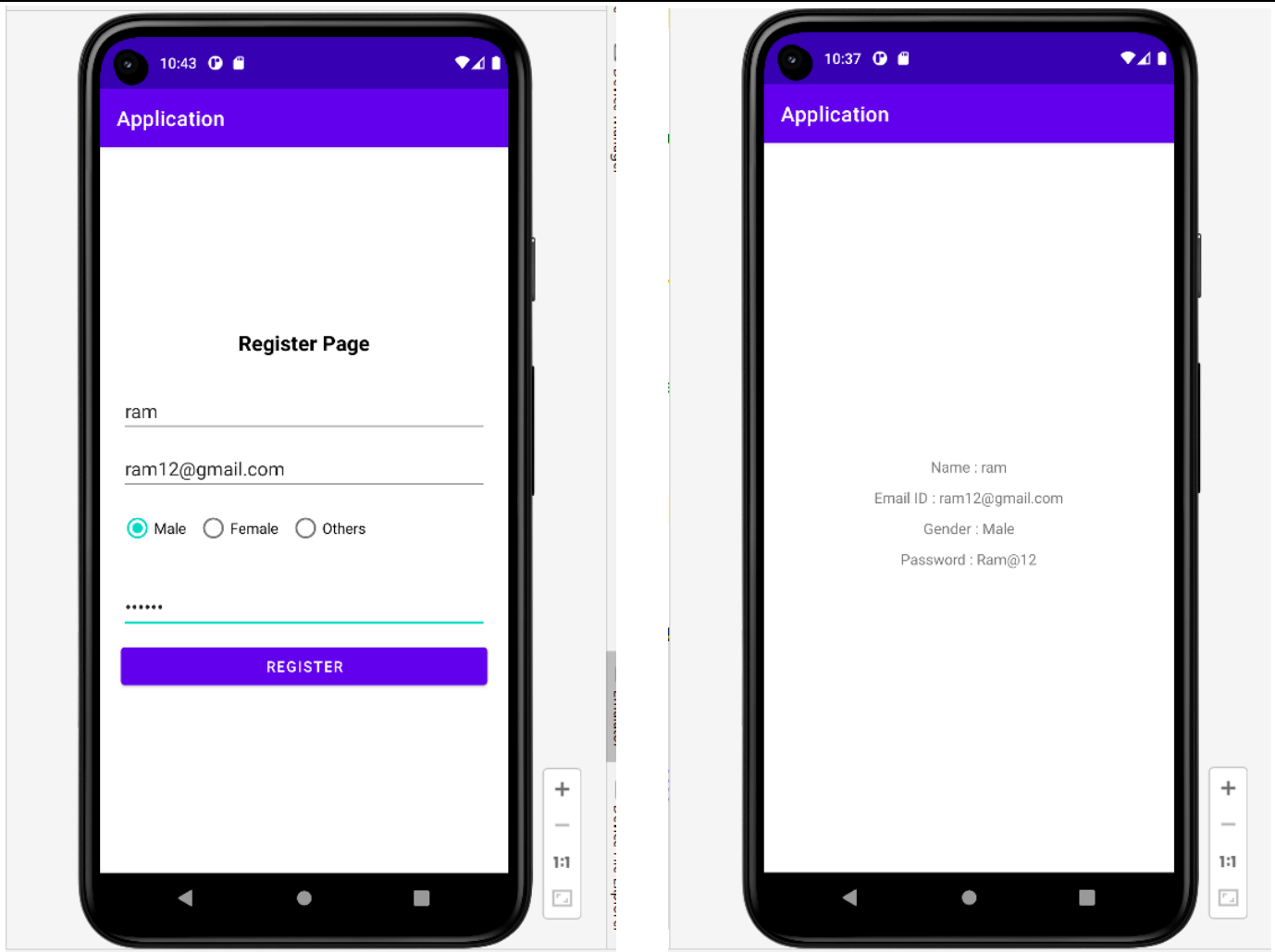


```
String email= pref.getString("reg_emailid","Not Available !!");
String password= pref.getString("reg_password","Not Available !!");
String gender= pref.getString("reg_gender","Not Available !!");

fullname_result.setText("Name : "+name);
emailid_result.setText("Email ID : "+email);
gender_result.setText("Gender : "+gender);
password_result.setText("Password : "+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"?>
<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">
```

```
<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"?>
<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" />

    <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) {
```

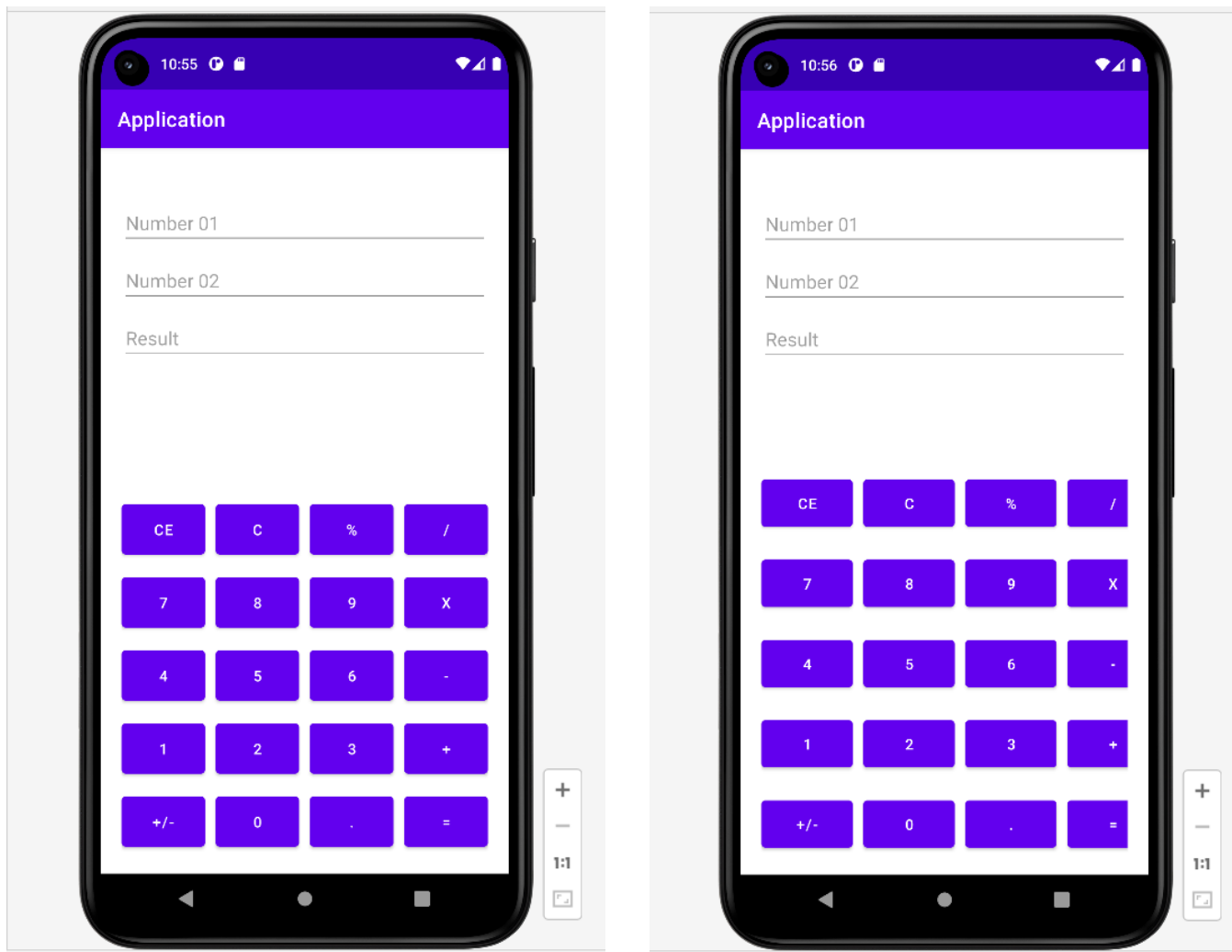
```
        super.onCreate(savedInstanceState);
```

```
        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"?>
<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="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) {
```

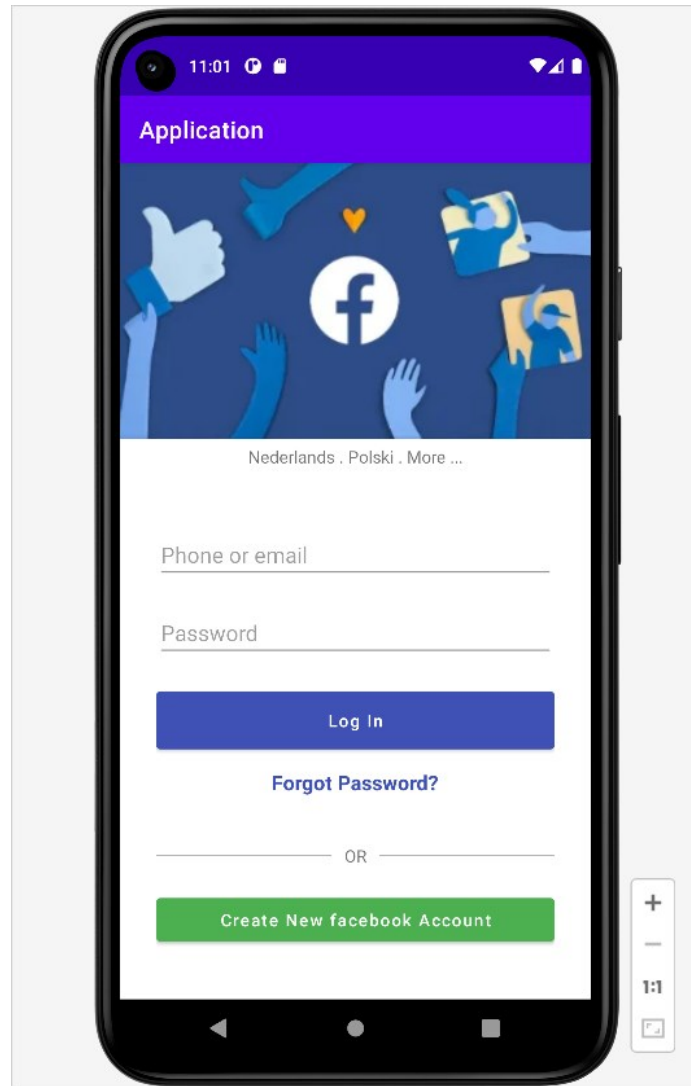
```
        super.onCreate(savedInstanceState);
```

```
        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"?>
<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_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 {

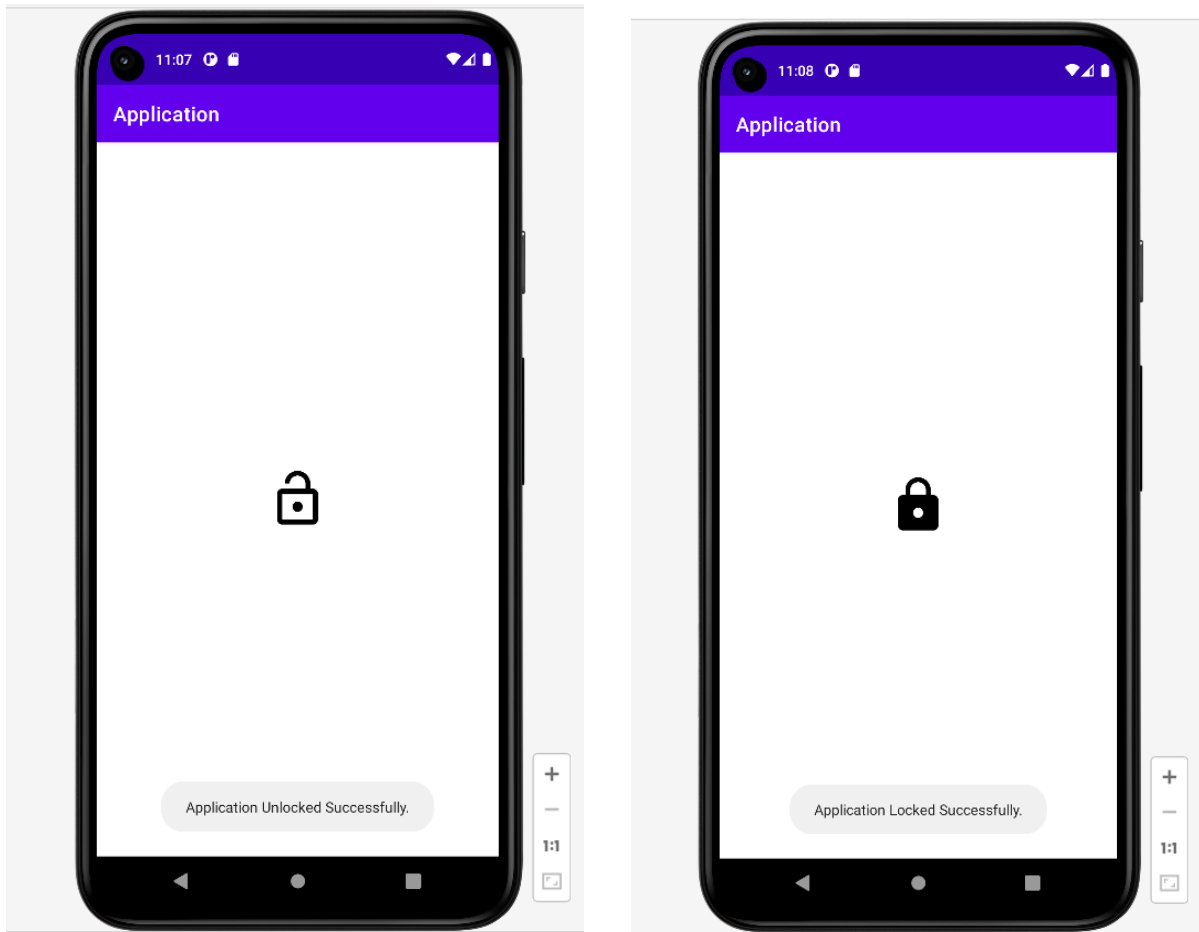
    ToggleButton toggle_img_btn;

    @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_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"?>
<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"
        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 {
```

```
    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 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 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"?>
<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/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;

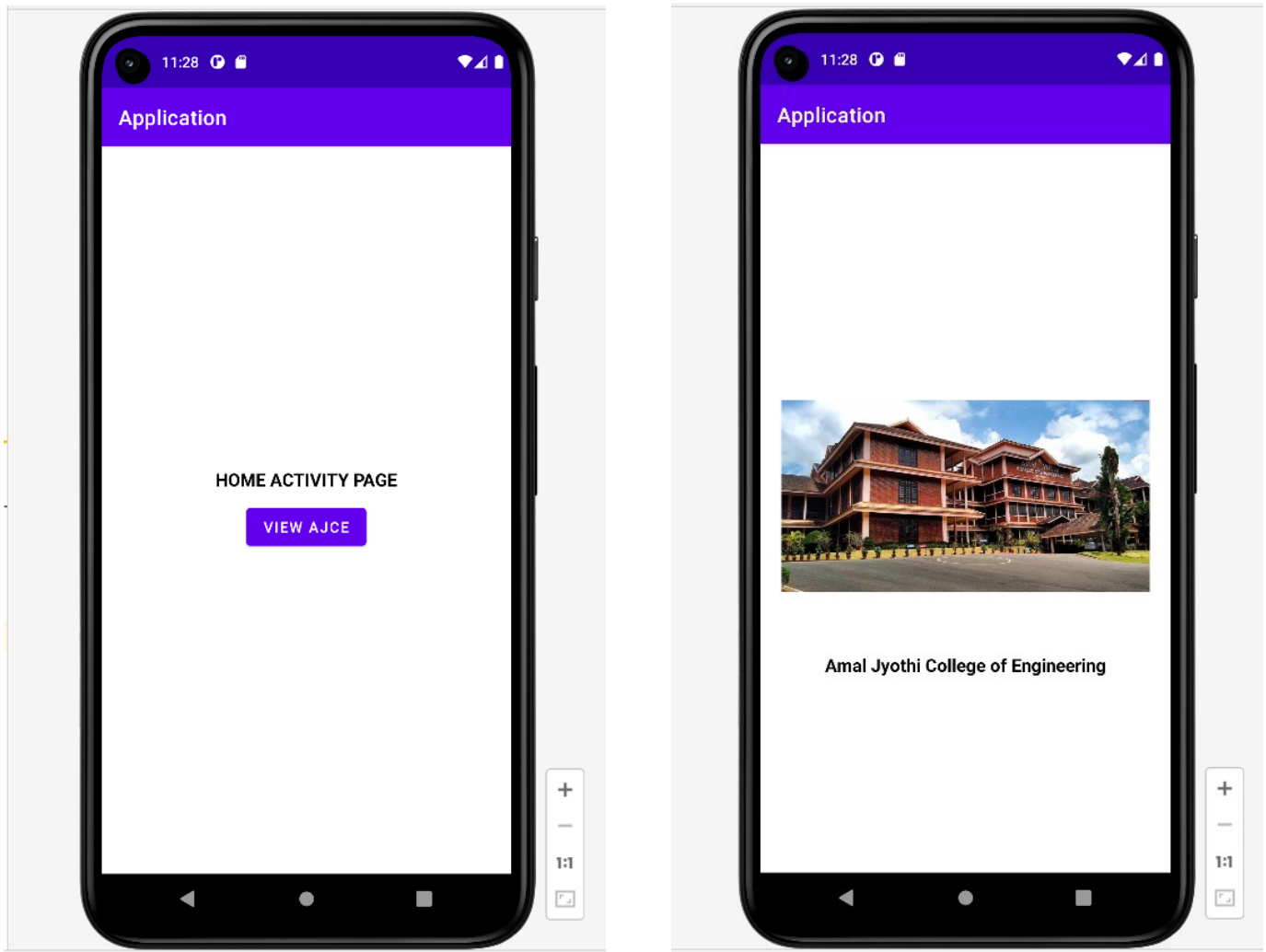
import androidx.appcompat.app.AppCompatActivity;

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 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="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"?>
<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=".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"?>
<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=".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 {

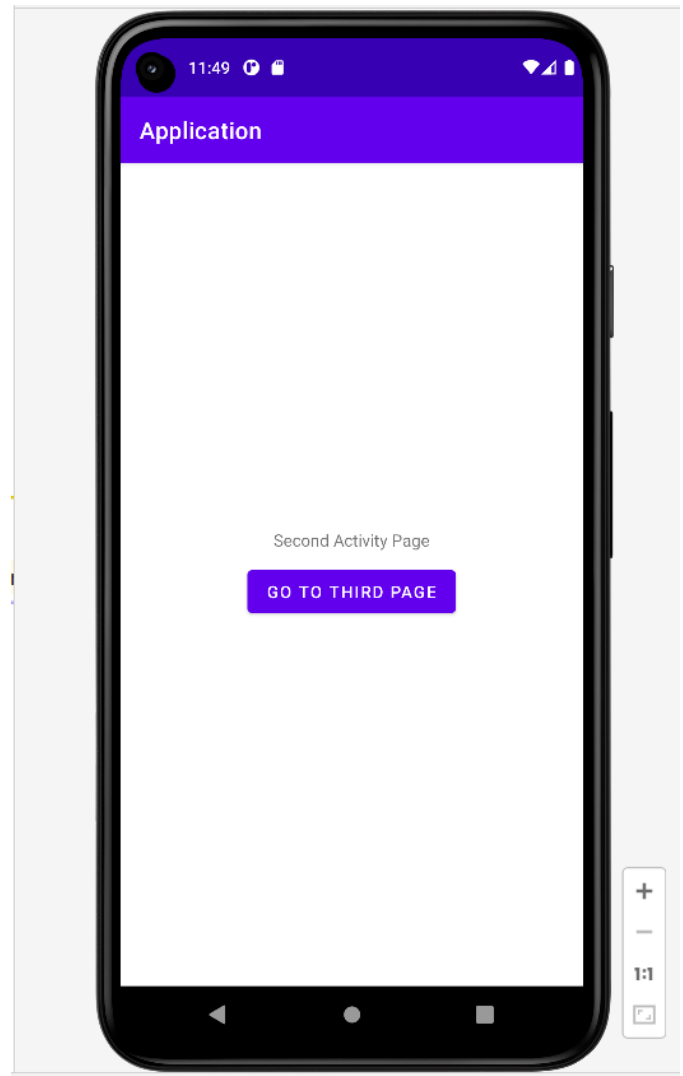
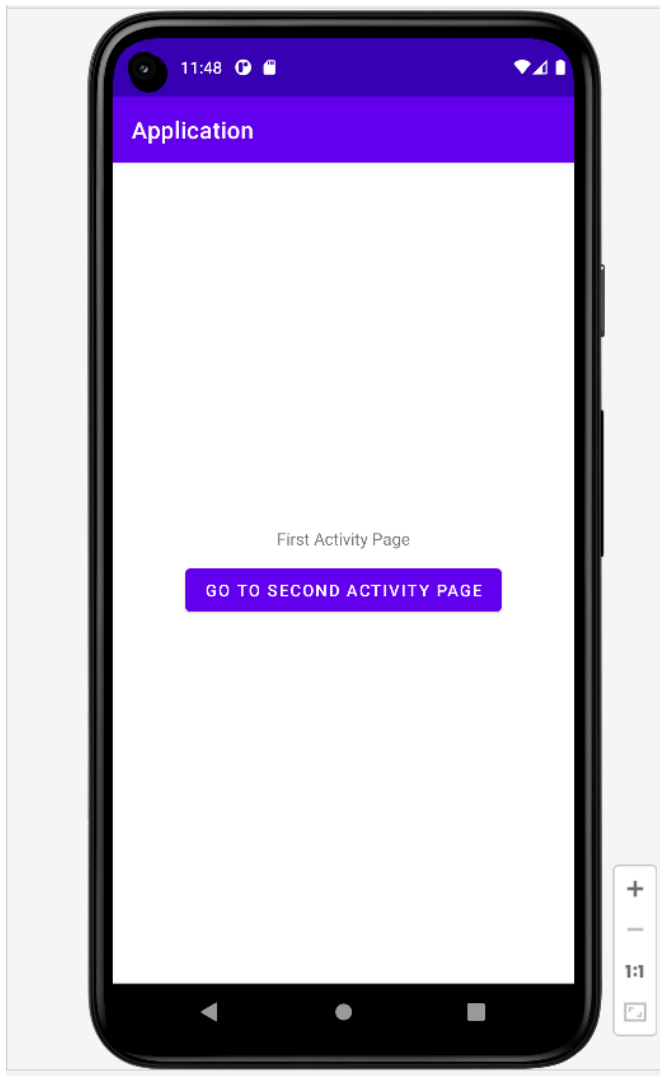
    Button goto_main_btn;

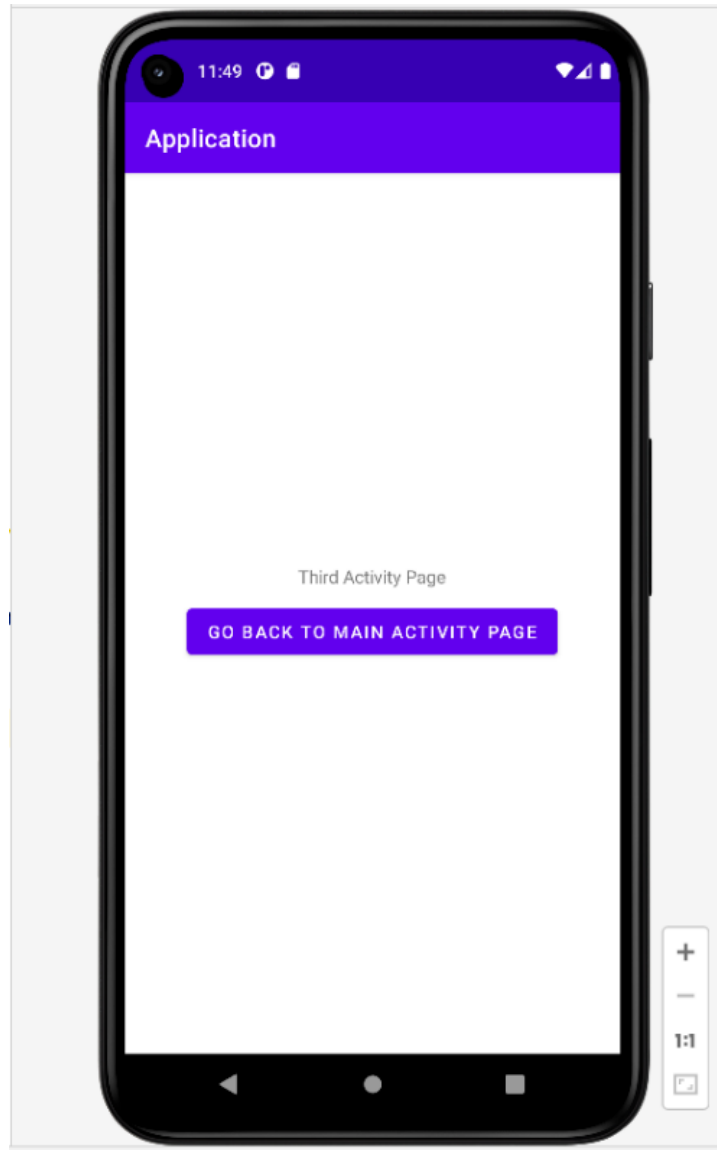
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_ques11_third);

        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 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 version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".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 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

```

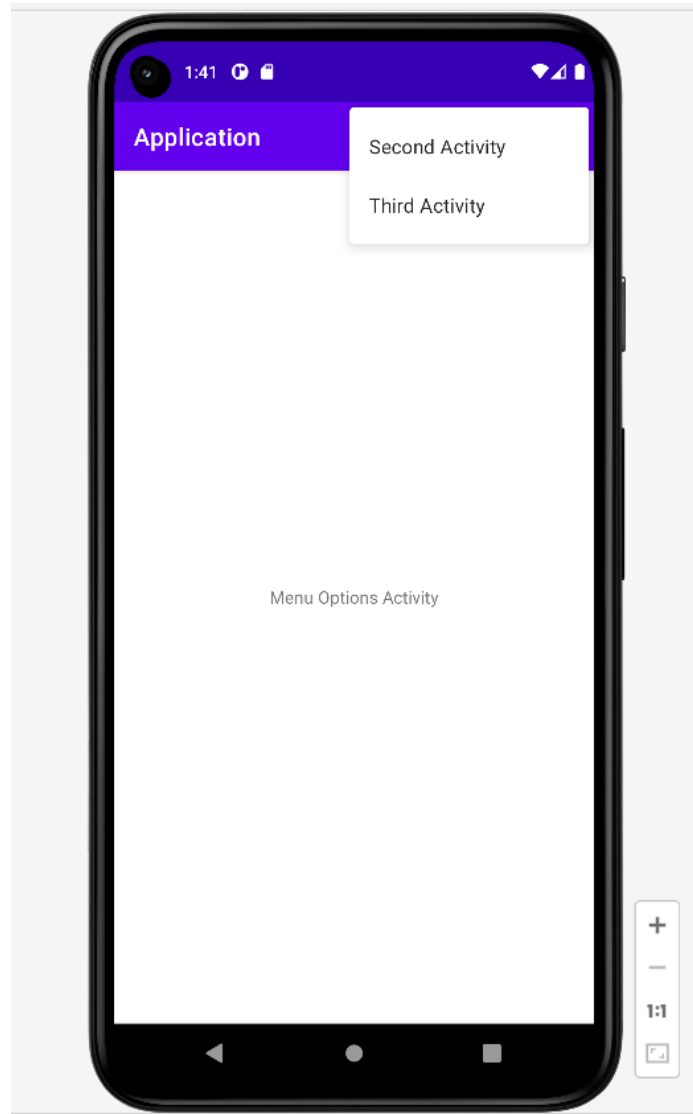
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto">
    <group>

        <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 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

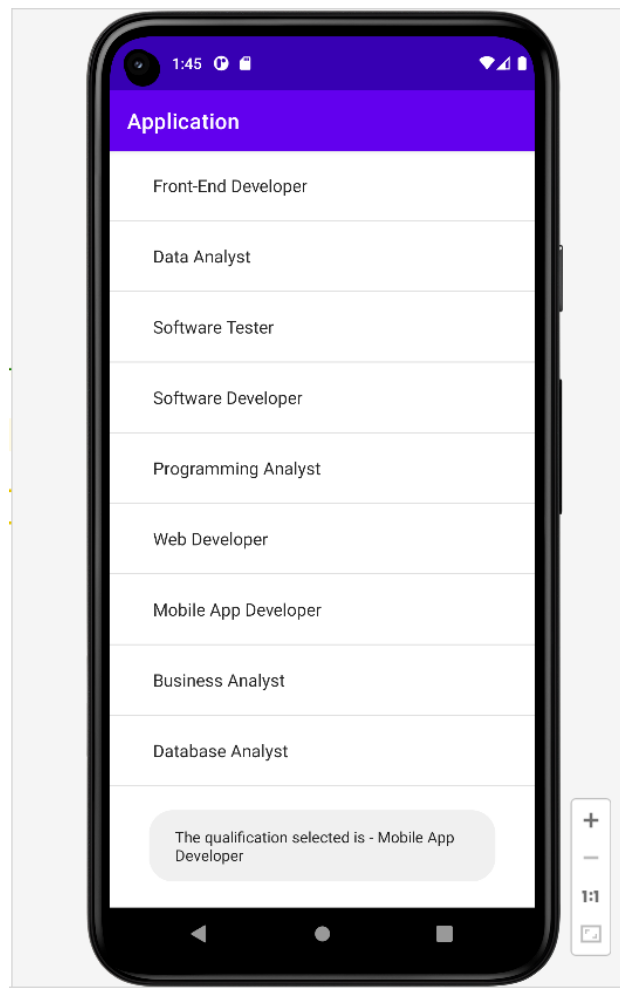
```
package com.example.application;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import android.widget.Toast;

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

        ListView listview;
        String[] person_qualify = {"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"?>
<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="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/bluetooth_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 {
```

```
    ImageButton wifi_btn, bluetooth_btn, volume_btn;
```

```
    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_ques14);
```

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

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

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

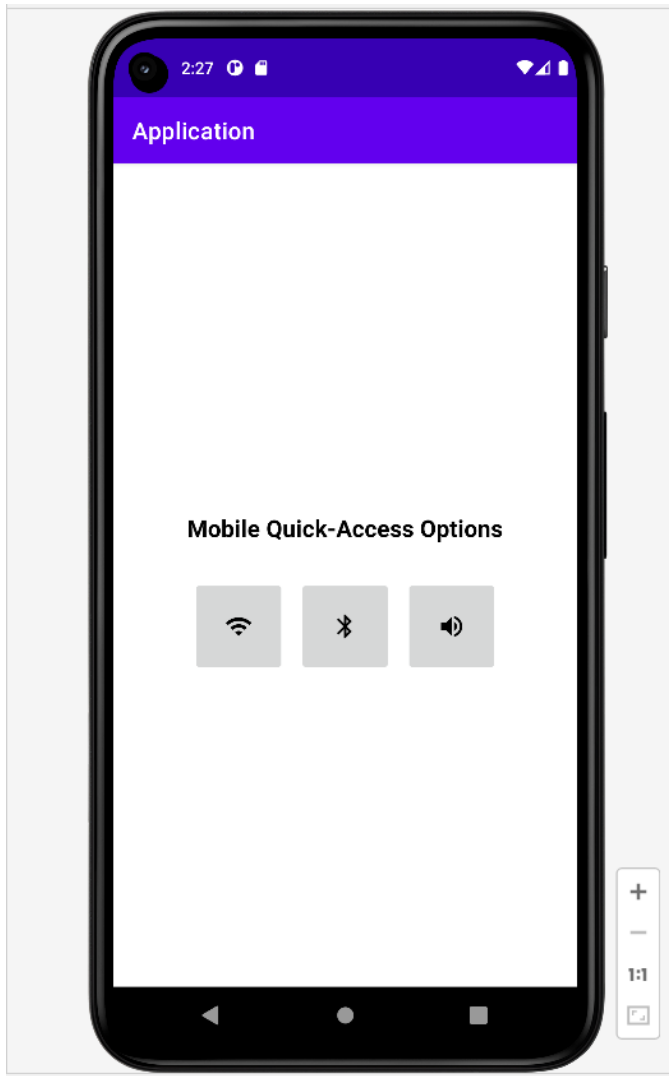
volume_btn.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        myAlertBox("Volume Button");
    }
});

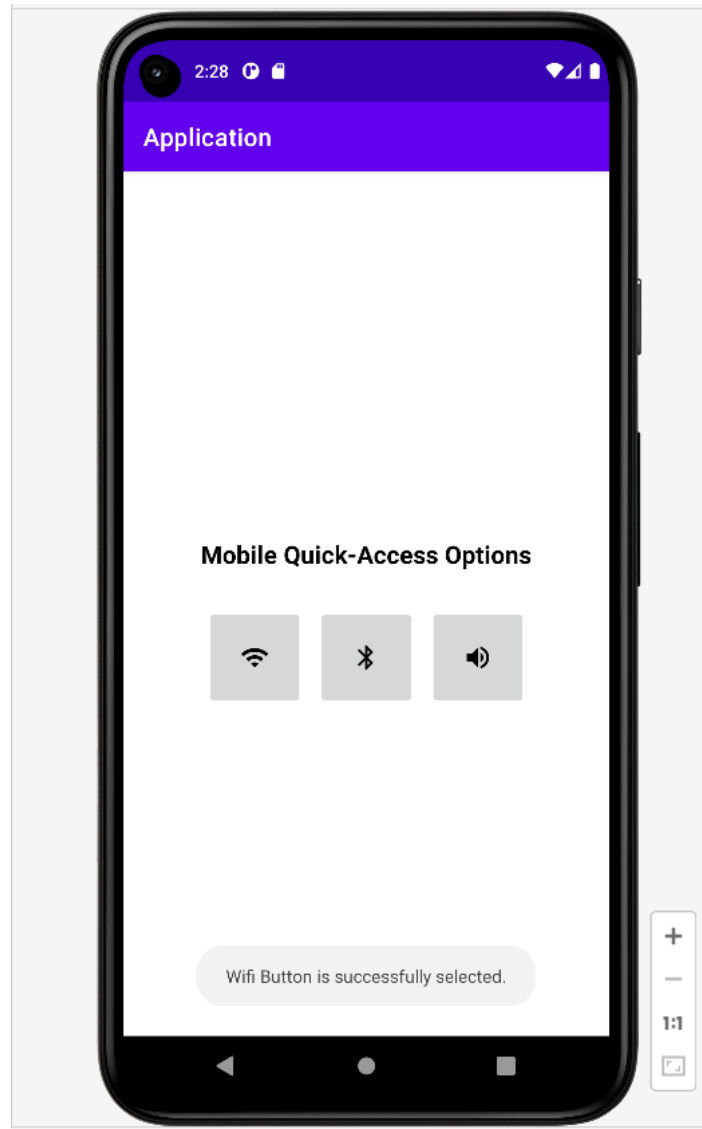
public void myAlertBox(String buttonname){
    AlertDialog.Builder builder = new AlertDialog.Builder(Ques14Activity.this);
    builder.setMessage("Are you sure about the selection ?");
    builder.setTitle("Alert !");
    builder.setCancelable(false);
    builder.setPositiveButton("Yes", new DialogInterface.OnClickListener() {
        @Override
        public void onClick(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 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="Spinner & 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.AdapterView.Adapter;
import android.widget.AdapterView.Adapter;
import android.widget.AdapterView.Adapter;
import android.widget.AdapterView.Adapter;
import android.widget.AdapterView.Adapter;

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"};

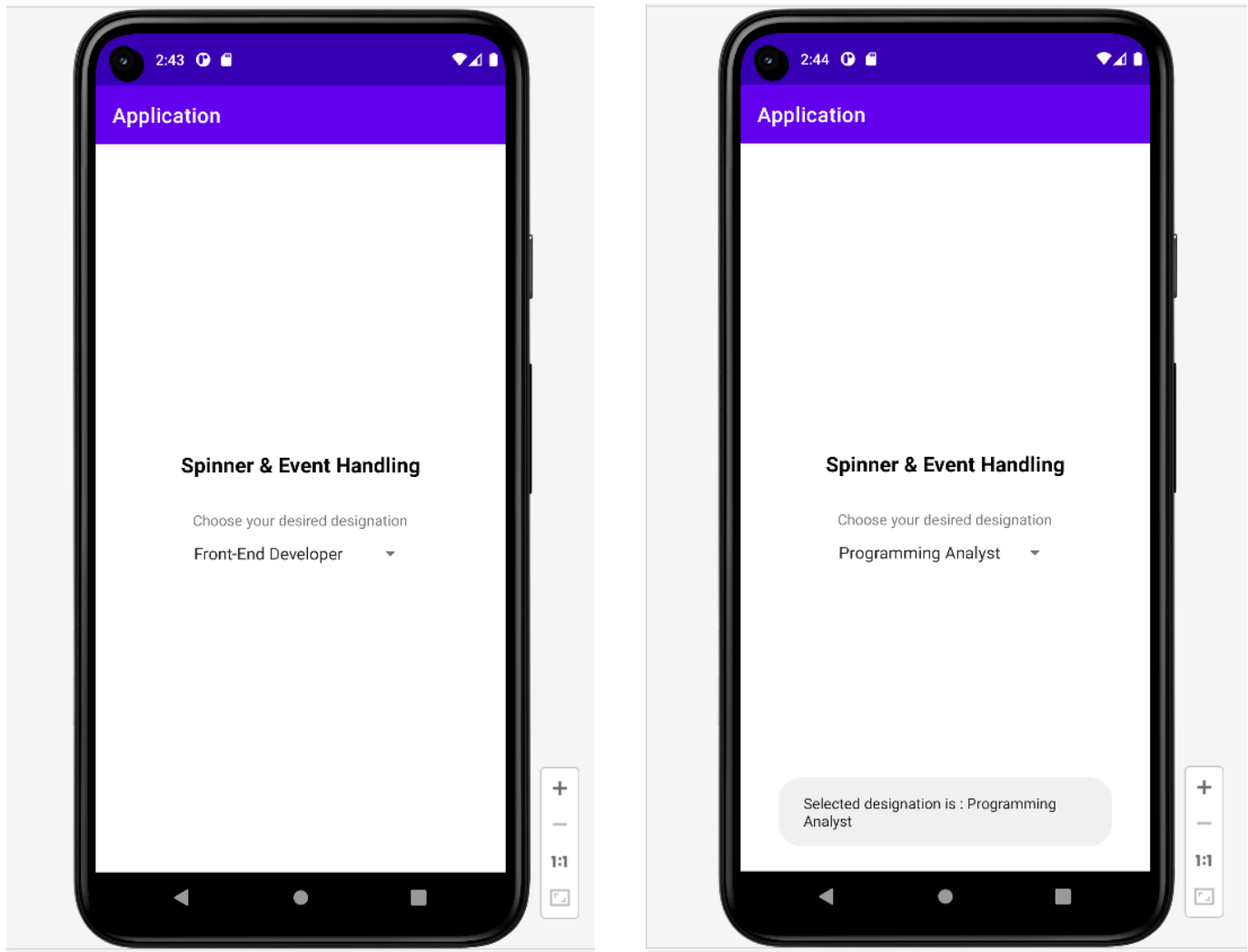
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_ques15);

        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.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            @Override
            public void onItemClick(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"?>
<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="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 {
```

```
    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);

    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();
```

```
        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 {
```

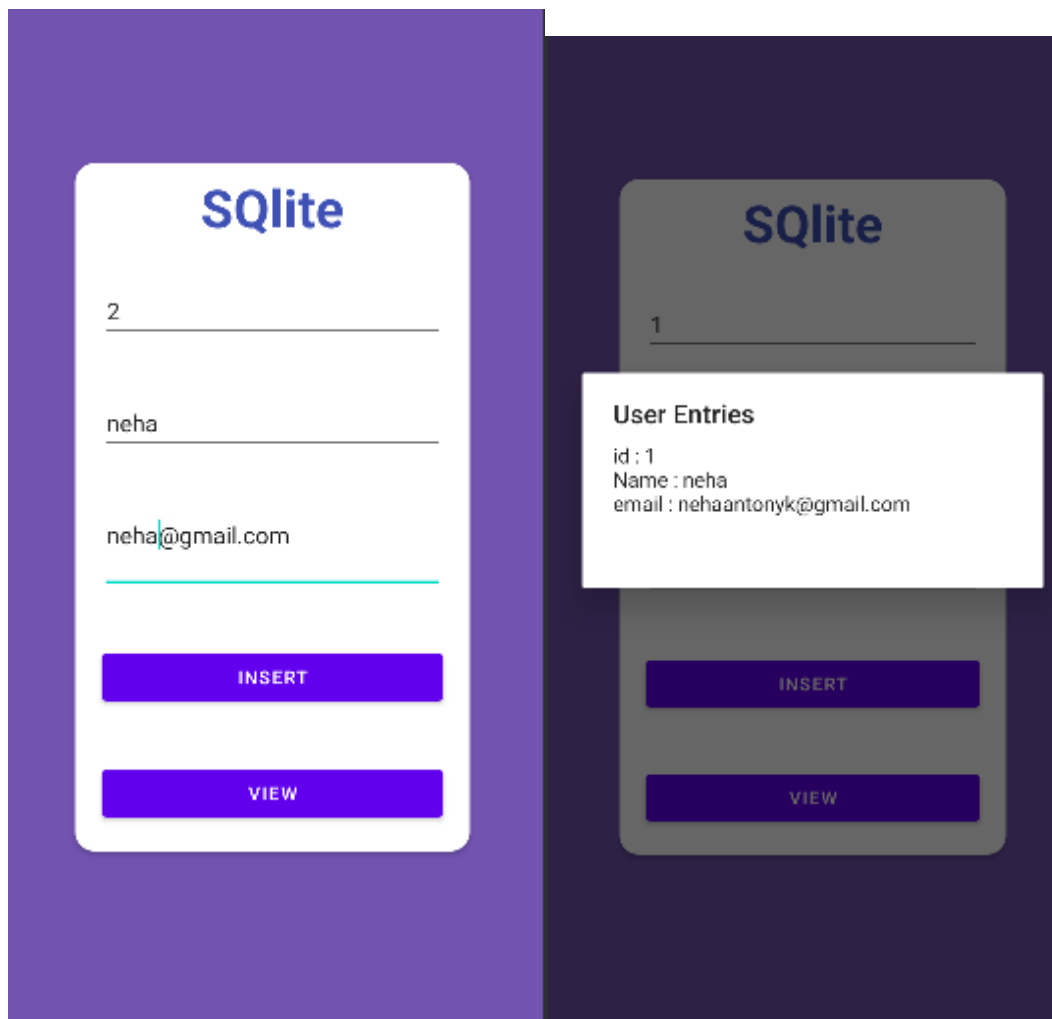
```
            return false;
```

```
        }
```

```
    }
```

```
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="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/update_btn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Update Record"
    android:layout_marginTop="30dp"
    android:layout_gravity="center"/>
```

```
<Button
    android:id="@+id/delete_btn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Delete Record"
    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 Record"
    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 Ques17Activity extends AppCompatActivity {

    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){
            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(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;
```

```
        }
```

```
    }
```

```
    public Cursor selectFromDB() {
```

```
        SQLiteDatabase DB = this.getWritableDatabase();
```

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

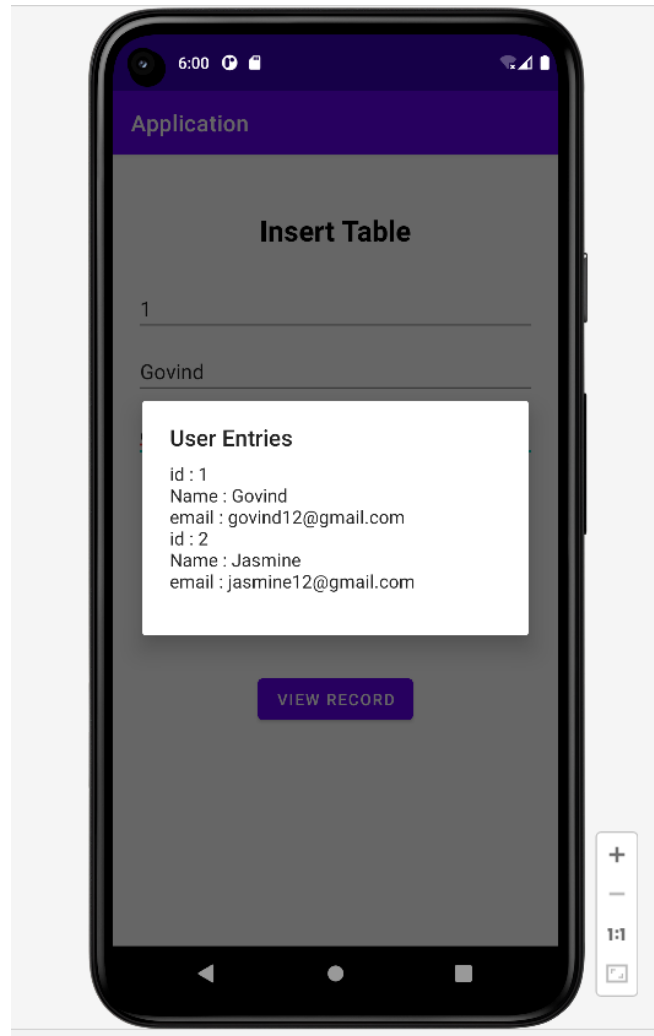
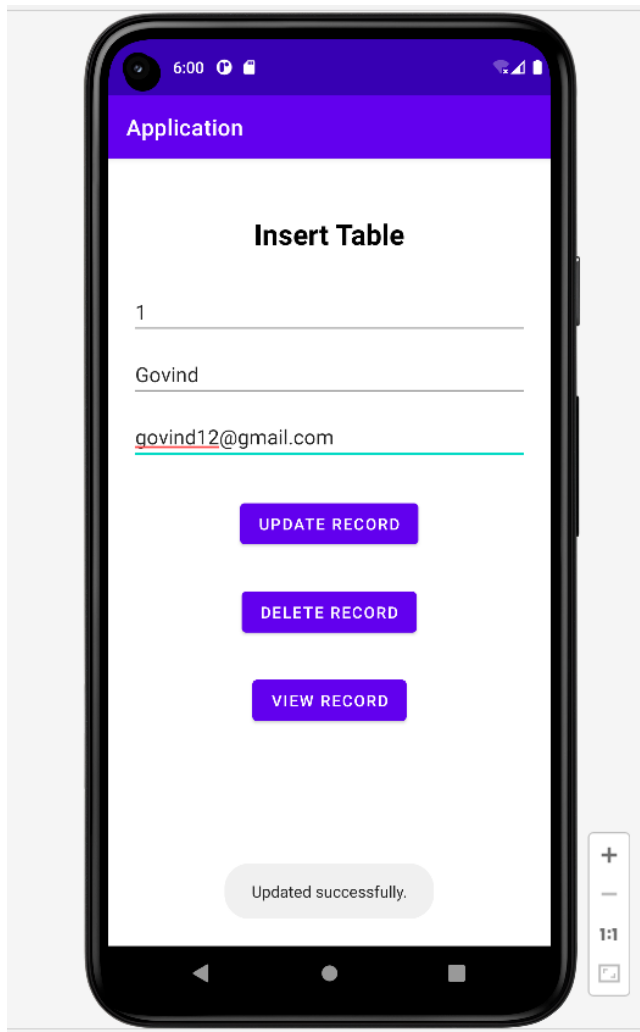
```
        return cursor;
    }

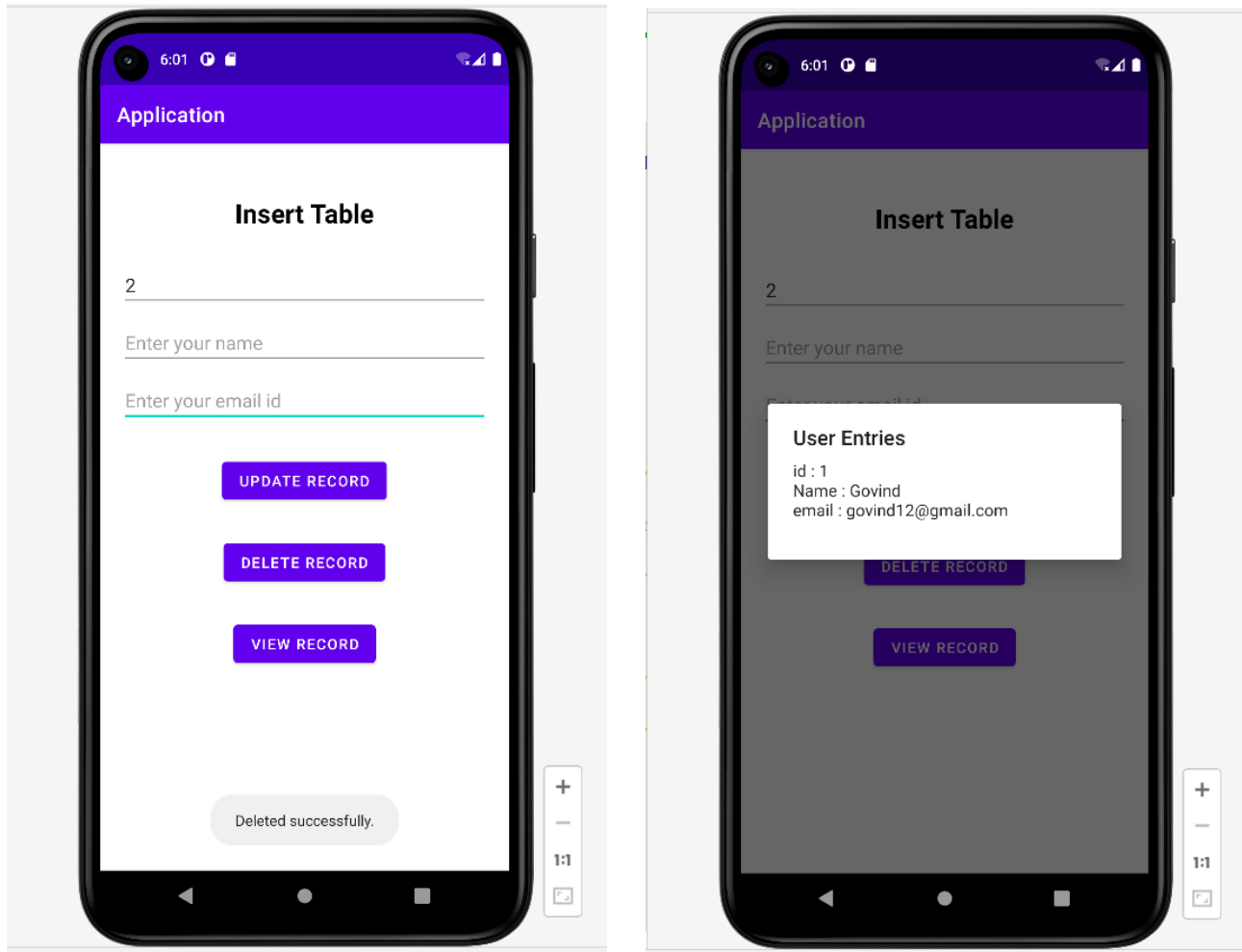
    public boolean updateToDB(int rollno, String name, String email){
        SQLiteDatabase db= this.getWritableDatabase();
        ContentValues values= new ContentValues();
        values.put("name",name);
        values.put("email",email);
        Cursor check_user= db.rawQuery("SELECT * from userdetails 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;
        }
    }

    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.

