

20MCA243 - MOBILE APPLICATION DEVELOPMENT LAB

Lab Report Submitted By

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Reg. No.: AJC21MCA-2048

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**

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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 **BHADRA RAJAN(AJC21MCA-2048)** 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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External Examiner

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

VISION

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

MISSION

- MS1 - Provide foundations and advanced technical education in both theoretical and applied Computer Applications in-line with Industry demands.
- MS2 - Create highly skilled computer professionals capable of designing and innovating real life solutions.
- MS3 - Sustain an academic environment conducive to research and teaching focused to generate up-skilled professionals with ethical values.
- MS4 - Promote entrepreneurial initiatives and innovations capable of bridging and contributing with sustainable, socially relevant technology solutions.

COURSE OUTCOME

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

COURSE END SURVEY

CO	Survey Question	Answer Format
CO1	To what extent you are able to design and develop UI using Emulator	Excellent/Very Good/Good Satisfactory/Needs improvement
CO2	To what extent you understood concepts of layouts	Excellent/Very Good/Good Satisfactory/Needs improvement
CO3	To what extent you understood intents, exceptions and menus	Excellent/Very Good/Good Satisfactory/Needs improvement
CO4	To what extent you are able to implement activities applying themes	Excellent/Very Good/Good Satisfactory/Needs improvement
CO5	To what extent you understood to create applications with SQLite	Excellent/Very Good/Good Satisfactory/Needs improvement

CONTENT

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	6
3	Implementing basic arithmetic operations of a simple calculator	30/08/2022	CO1	10
4	Implement validations on various UI controls	30/08/2022	CO1	18
5	Design a registration activity and store registration details in local memory of phone using Intents and Shared Preferences	06/09/2022	CO2	24
6	Design a simple Calculator using GridLayout and Cascaded LinearLayout	13/09/2022	CO2	32
7	Create a Facebook page using RelativeLayout; set properties using .xml file	20/09/2022	CO2	39
8	Develop an application that toggles image using FrameLayout	27/09/2022	CO2	43
9	Implement Adapters and perform exception handling	27/09/2022	CO3	46
10	Implement Intent to navigate between multiple activities	04/10/2022	CO3	49
11	Develop application that works with explicit intents	04/10/2022	CO3	54
12	Implement Options Menu to navigate to activities	18/10/2022	CO3	58
13	Develop an application that uses ArrayAdapter with ListView.	18/10/2022	CO3	69
14	Develop an application that use GridView with images and display Alert box on selection	25/10/2022	CO4	73

15	Develop an application that implements Spinner component and perform event handling	25/10/2022	CO4	78
16	Develop application using Fragments	01/11/2022	CO4	81
17	Implement Navigation drawer	01/11/2022	CO4	98
18	Create database using SQLite and perform INSERT and SELECT	08/11/2022	CO5	92
19	Perform UPDATE and DELETE on SQLite database	08/11/2022	CO5	100

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:orientation="vertical"
    android:background="#CFB1FA"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/signin"
        android:text="Sign in"
        android:textColor="@color/white"
        android:textSize="35dp"
        android:textStyle="bold"
        android:layout_marginLeft="100dp"
        android:layout_margin="70dp"
```

```
    android:gravity="center"/>

    <EditText

    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:id="@+id/username"
    android:layout_below="@id/signin"
    android:layout_marginLeft="100dp"
    android:background="#80ffffff"
    android:hint="user name"
    android:textColorHint="@color/black"
    android:textColor="@color/black"
    android:layout_margin="10dp"
    android:padding="20dp"
    android:drawableLeft="@drawable/ic_baseline_emoji_emotions_24"
    android:drawablePadding="20dp"/>

    <EditText

    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:id="@+id/password"
    android:layout_below="@id/username"
    android:background="#80ffffff"
    android:hint="password"
    android:layout_marginLeft="100dp"
    android:textColorHint="@color/black"
    android:textColor="@color/black"
    android:layout_margin="10dp"
    android:padding="20dp"
    android:drawableLeft="@drawable/ic_baseline_admin_panel_settings_24"
    android:drawablePadding="20dp"/>
```

```
<android.support.v7.widget.AppCompatButton
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/submit"
    android:layout_below="@+id/password"
    android:text="LOGIN"
    android:backgroundTint="@color/white"
    android:layout_centerHorizontal="true"
    android:layout_marginLeft="150dp"/>
</LinearLayout>
```

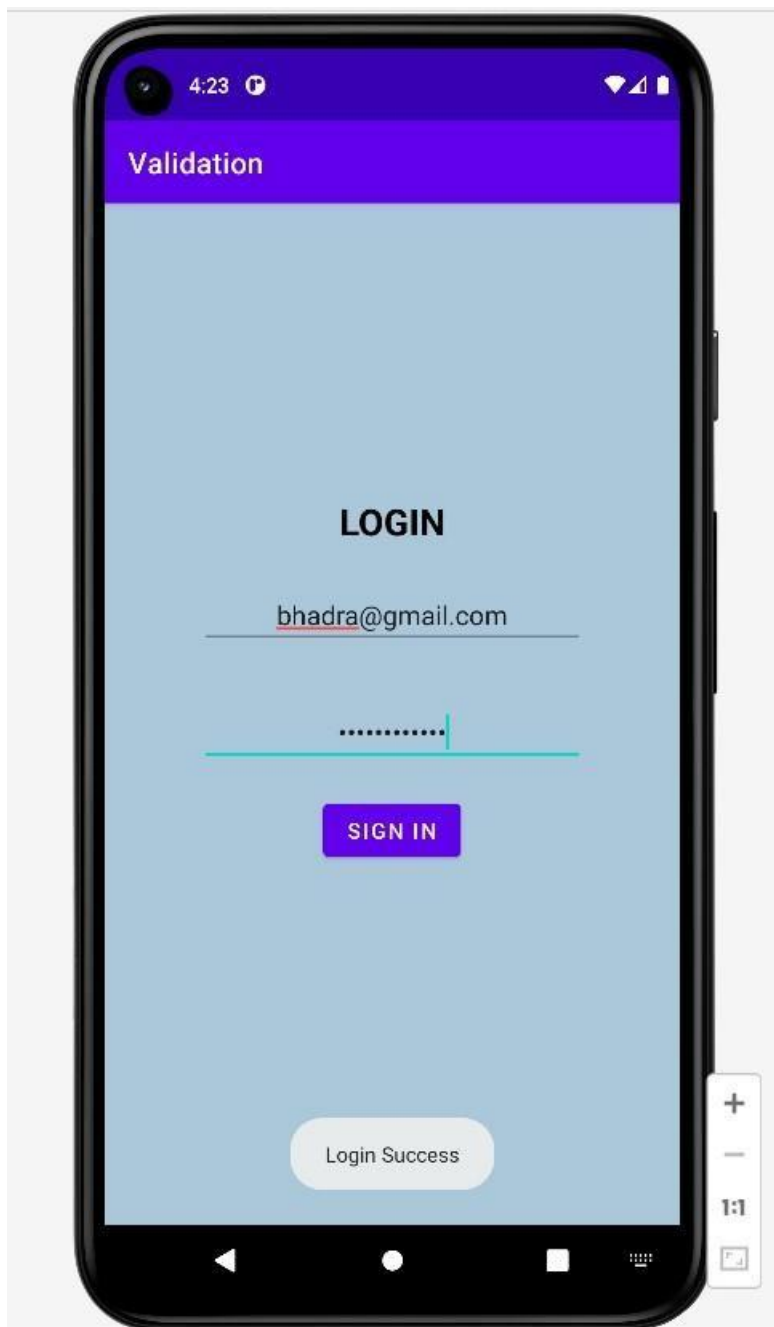
MainActivity.java

```
package com.example.login;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.util.Log;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import java.util.logging.Logger;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState)
super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    EditText et1 = (EditText) findViewById(R.id.username);
    EditText et2 = (EditText) findViewById(R.id.password);
    Button btn = (Button) findViewById(R.id.submit);
```



```
btn.setOnClickListener(view -> {  
    String uname =et1.getText().toString();  
    String pswd =et2.getText().toString();  
    if(uname.equals("harishma@gmail.com") && pswd.equals("harishma@123"))  
    {  
        Toast.makeText(this,"Logged in",Toast.LENGTH_SHORT).show();  
    }  
    else  
    {  
        Toast.makeText(this,"invalid username or  
            password",Toast.LENGTH_SHORT).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_main.xml**

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

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

    <TextView
        android:id="@+id/t1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Activity Life cycle!"
        android:textColor="#910000"
        android:textSize="40dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
```

</LinearLayout>

MainActivity.java

```
public class MainActivity extends AppCompatActivity {
```

```
    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
```

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

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

```
        Log.d("act_LC", "OnCreate Invoke");
```

```
    }
```

```
    @Override
```

```
    protected void onStart(){
```

```
        super.onStart();
```

```
        Log.d("act_LC", "onStart");
```

```
    }
```

```
    @Override
```

```
    protected void onResume(){
```

```
        super.onResume();
```

```
        Log.d("act_LC", "onResume");
```

```
    }
```

```
    @Override
```

```
    protected void onPause(){
```

```
        super.onPause();
```

```
        Log.d("act_LC", "onPause");
```

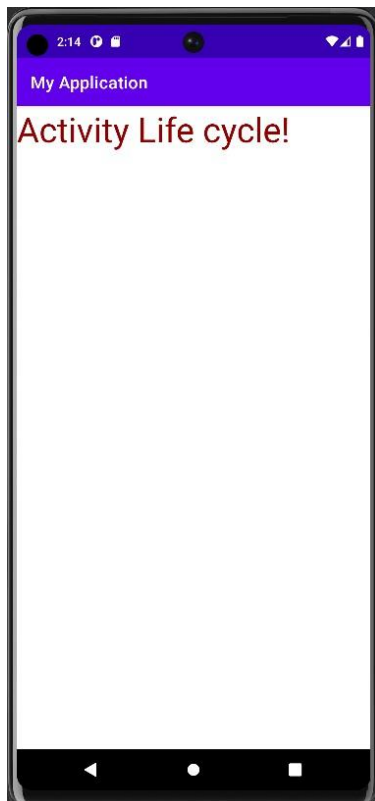
```
    }
```

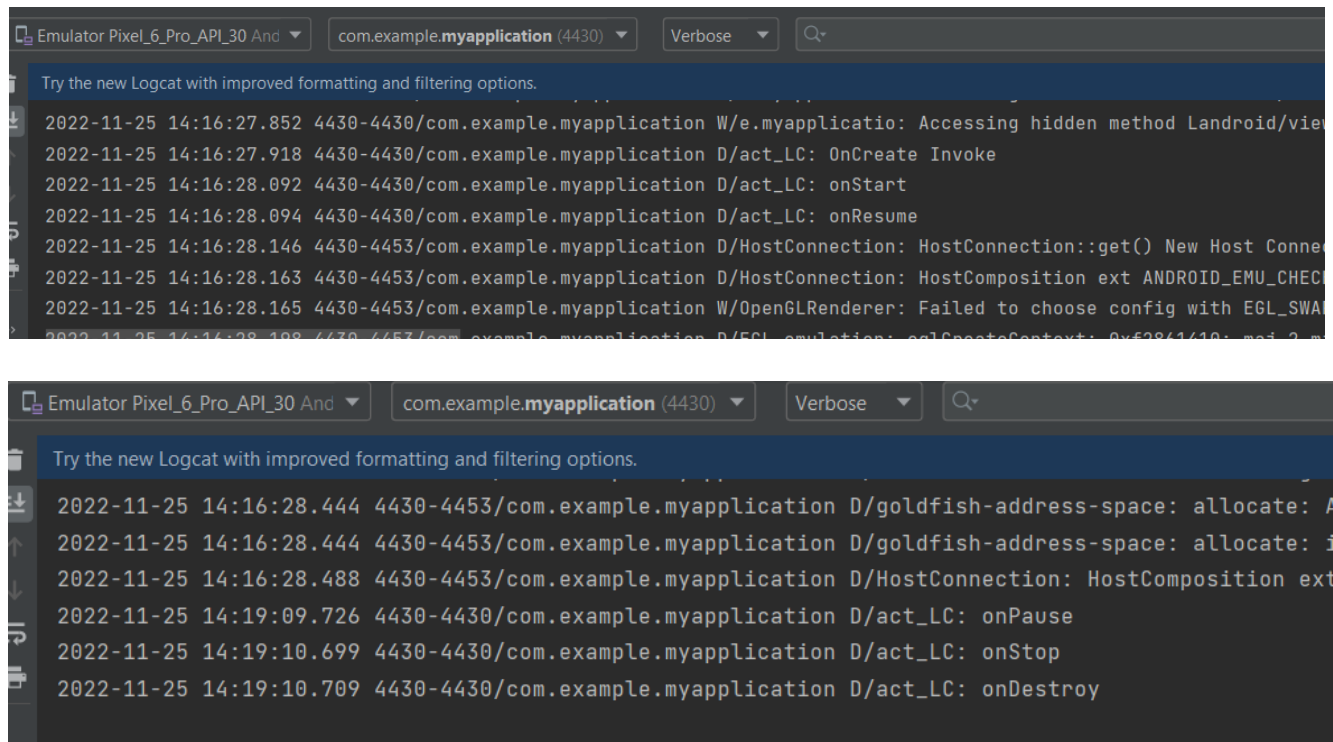
```
    @Override
```

```
    protected void onStop(){
```

```
        super.onStop();  
        Log.d("act_LC", "onStop");  
    }  
    @Override  
    protected void onRestart(){  
        super.onRestart();  
        Log.d("act_LC", "onRestart");  
    }  
    @Override  
    protected void onDestroy(){  
        super.onDestroy();  
        Log.d("act_LC", "onDestroy");  
    }  
}
```

Output Screenshot





```
Emulator Pixel_6_Pro_API_30 And  com.example.myapplication (4430)  Verbose  Q+
Try the new Logcat with improved formatting and filtering options.
2022-11-25 14:16:27.852 4430-4430/com.example.myapplication W/e.myapplication: Accessing hidden method Landroid/view/
2022-11-25 14:16:27.918 4430-4430/com.example.myapplication D/act_LC: onCreate Invoke
2022-11-25 14:16:28.092 4430-4430/com.example.myapplication D/act_LC: onStart
2022-11-25 14:16:28.094 4430-4430/com.example.myapplication D/act_LC: onResume
2022-11-25 14:16:28.146 4430-4453/com.example.myapplication D/HostConnection: HostConnection::get() New Host Conne
2022-11-25 14:16:28.163 4430-4453/com.example.myapplication D/HostConnection: HostComposition ext ANDROID_EMU_CHECK
2022-11-25 14:16:28.165 4430-4453/com.example.myapplication W/OpenGLRenderer: Failed to choose config with EGL_SWA
2022-11-25 14:16:28.188 4430-4453/com.example.myapplication D/OpenGLRenderer: OpenGLContext: 0x52841410: mod 2 m

Emulator Pixel_6_Pro_API_30 And  com.example.myapplication (4430)  Verbose  Q+
Try the new Logcat with improved formatting and filtering options.
2022-11-25 14:16:28.444 4430-4453/com.example.myapplication D/goldfish-address-space: allocate: A
2022-11-25 14:16:28.444 4430-4453/com.example.myapplication D/goldfish-address-space: allocate: f
2022-11-25 14:16:28.488 4430-4453/com.example.myapplication D/HostConnection: HostComposition ext
2022-11-25 14:19:09.726 4430-4430/com.example.myapplication D/act_LC: onPause
2022-11-25 14:19:10.699 4430-4430/com.example.myapplication D/act_LC: onStop
2022-11-25 14:19:10.709 4430-4430/com.example.myapplication D/act_LC: onDestroy
```

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_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    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:background="#D8D8D8"
    tools:context=".MainActivity">
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/text"
        android:text="Arithmetic_Sol"
        android:textColor="@color/white"
        android:textSize="25dp"
        android:textStyle="bold"
        android:fontFamily="serif-monospace"

        android:layout_margin="10dp"
```

```
android:gravity="center"/>
```

```
<EditText
```

```
    android:id="@+id/firstval"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_below="@id/text"
    android:layout_marginStart="2dp"
    android:layout_marginTop="1dp"
    android:layout_marginEnd="2dp"
    android:layout_marginBottom="2dp"
    android:background="#C9FFFFFF"
    android:drawablePadding="20dp"
    android:layout_margin="10dp"
    android:hint="Enter first value"
    android:padding="10dp"
    android:textColor="@color/black"
    android:textColorHint="@color/black" />
```

```
<EditText
```

```
    android:id="@+id/secondval"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_below="@id/firstval"
    android:layout_marginStart="2dp"
    android:layout_marginTop="1dp"
    android:layout_marginEnd="2dp"
    android:layout_marginBottom="2dp"
    android:background="#B7FFFFFF"

    android:drawablePadding="20dp"
```



```
android:layout_margin="10dp"
android:hint="Enter second value"
android:padding="10dp"
android:textColor="@color/black"
android:textColorHint="@color/black" />
```

<Button

```
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:id="@+id/add"
android:layout_below="@+id/secondval"
android:text="ADD"
android:backgroundTint="@color/white"
android:layout_centerHorizontal="true" />
```

<Button

```
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:id="@+id/sub"
android:layout_below="@+id/add"
android:text="SUB"
android:backgroundTint="@color/white"
android:layout_centerHorizontal="true" />
```

<Button

```
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:id="@+id/mult"
android:layout_below="@+id/sub"
android:text="MULT"

android:backgroundTint="@color/white"
```

```
    android:layout_centerHorizontal="true" />
```

```
<Button
```

```
    android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content"
```

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

```
    android:layout_below="@+id/mult"
```

```
    android:text="DIV"
```

```
    android:backgroundTint="@color/white"
```

```
    android:layout_centerHorizontal="true" />
```

```
<TextView
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="wrap_content"
```

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

```
    android:hint="result shows here"
```

```
    android:layout_below="@id/div"
```

```
    android:textColorHint="@color/black"
```

```
    android:textColor="@color/black"
```

```
    android:textSize="25dp"
```

```
    android:background="#B7FFFFFF"
```

```
    android:textStyle="bold"
```

```
    android:fontFamily="serif-monospace"
```

```
    android:layout_margin="10dp"
```

```
    android:gravity="center"/>
```

```
</RelativeLayout>
```

```
MainActivity.java
```

```
package com.example.basic_arithmetic_solution;
```

```
import android.support.v7.app.AppCompatActivity;
```

```
import android.os.Bundle;

import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

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

        EditText first =(EditText) findViewById(R.id.firstval);
        EditText second = (EditText) findViewById(R.id.secondval);
        Button add = (Button) findViewById(R.id.add);
        Button sub = (Button) findViewById(R.id.sub);
        Button mult = (Button) findViewById(R.id.mult);
        Button div = (Button) findViewById(R.id.div);
        TextView ans = (TextView) findViewById(R.id.viewcntnt);
        add.setOnClickListener(view -> {
            int x = Integer.parseInt(first.getText().toString());
            int y = Integer.parseInt(second.getText().toString());

            int z = x + y;
            TextView tv_data = (TextView) findViewById(R.id.viewcntnt);

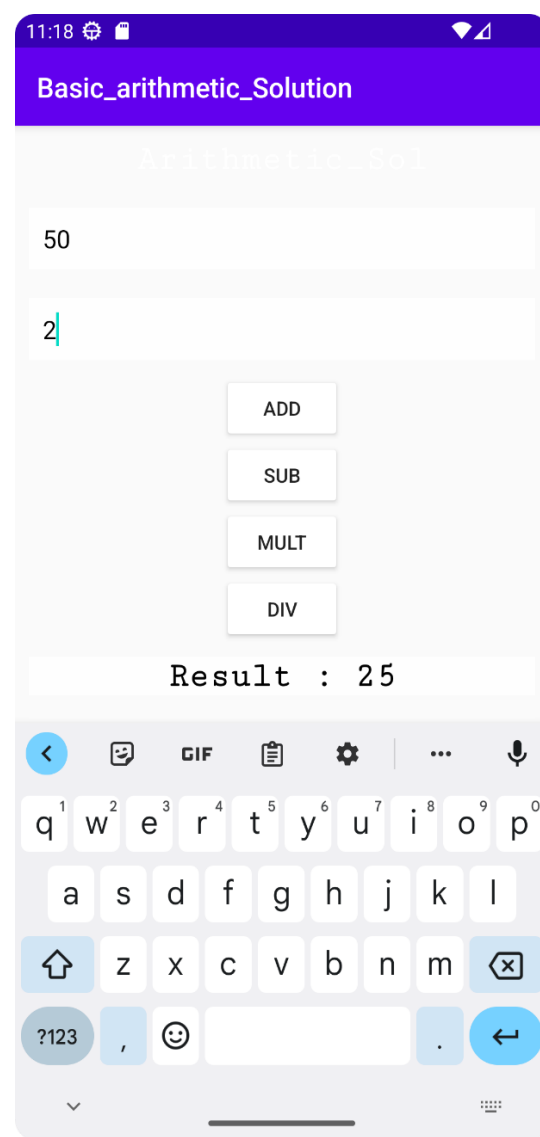
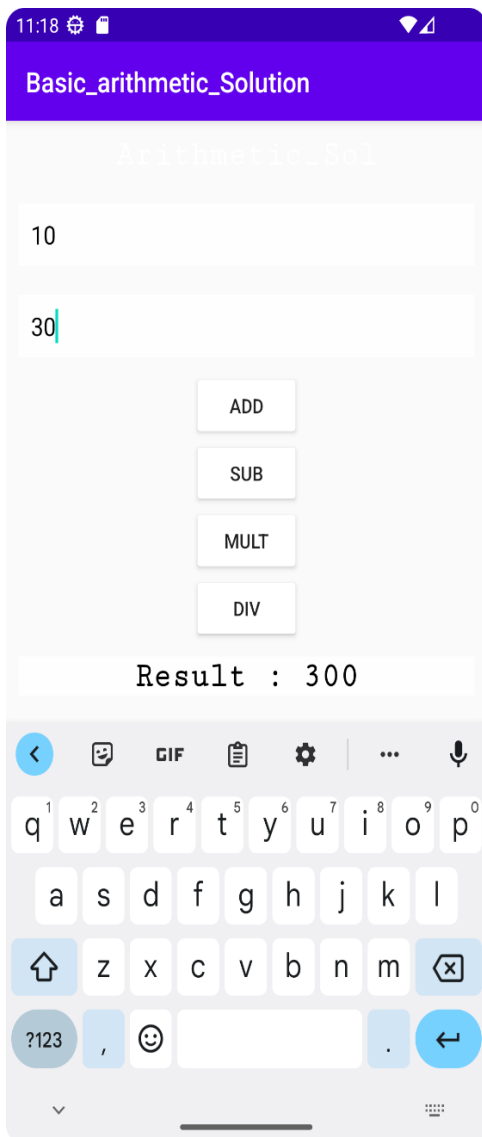
            tv_data.setText("Result : " + z);
        });

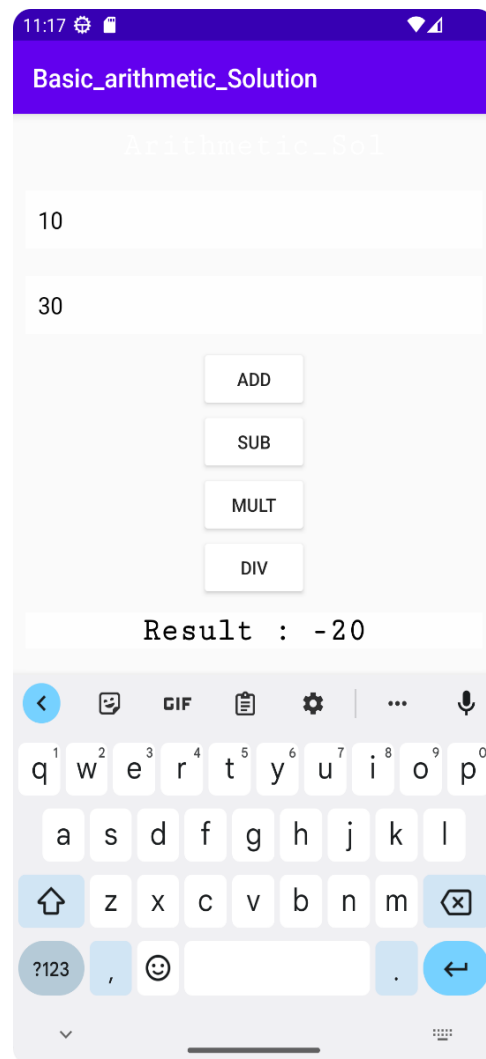
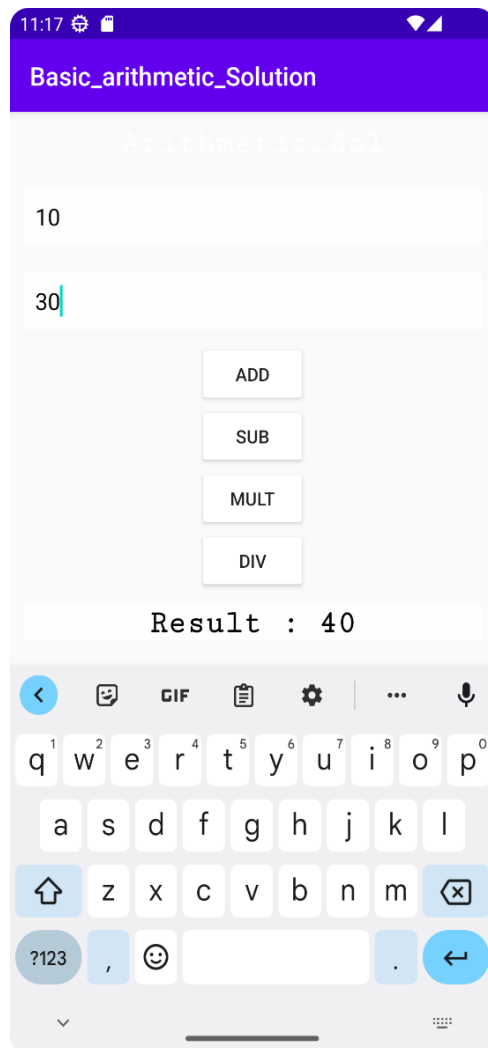
        sub.setOnClickListener(view -> {
```

```
int x = Integer.parseInt(first.getText().toString());
int y = Integer.parseInt(second.getText().toString());
int z = x - y;
TextView tv_data = (TextView) findViewById(R.id.viewcntnt);
tv_data.setText("Result : " + z);
});
mult.setOnClickListener(view -> {
    int x = Integer.parseInt(first.getText().toString());
    int y = Integer.parseInt(second.getText().toString());
    int z = x * y;
    TextView tv_data = (TextView) findViewById(R.id.viewcntnt);
    tv_data.setText("Result : " + z);
});
div.setOnClickListener(view -> {
    int x = Integer.parseInt(first.getText().toString());
    int y = Integer.parseInt(second.getText().toString());
    int z = x / y;

    TextView tv_data = (TextView) findViewById(R.id.viewcntnt);
    tv_data.setText("Result : " + z);
});}}
```

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_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:padding="50sp"
    android:background="#B287AFCA"
    android:orientation="vertical"
    android:gravity="top|center"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="LOGIN"
        android:textAlignment="center"
        android:textColor="@color/black"
        android:textSize="25sp"
        android:textStyle="bold"
```

```
android:layout_marginTop="150dp"/>
```

```
<EditText
```

```
    android:id="@+id/et_username"
    android:layout_marginLeft="15dp"
    android:layout_marginTop="25dp"
    android:layout_marginBottom="20dp"
    android:layout_marginRight="15dp"
    android:layout_centerVertical="true"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:ellipsize="start"
    android:gravity="center"
    android:hint="Email"
    android:inputType="text"
    android:thickness="0dp"
    android:shape="rectangle"
    android:width="3dp"
    android:color="#4799E8"
    android:startColor="#C8C8C8"
    android:endColor="#FFFFFF"
    android:type="linear"
    android:angle="270"/>
```

```
<EditText
```

```
    android:id="@+id/et_password"
    android:layout_marginLeft="15dp"
    android:layout_marginTop="15dp"
    android:layout_marginBottom="20dp"
```

```
        android:layout_marginRight="15dp"
        android:layout_centerVertical="true"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:ellipsize="start"
        android:gravity="center"
        android:hint="password"
        android:inputType="textPassword"
        android:thickness="0dp"
        android:shape="rectangle"
        android:width="3dp"
        android:color="#4799E8"
        android:startColor="#C8C8C8"
        android:endColor="#FFFFFF"
        android:type="linear"
        android:angle="270"/>
<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/btn_login"
    android:text="Sign in"
    android:textSize="15sp"
    android:textAlignment="center"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.validation;

import androidx.appcompat.app.AppCompatActivity;
```

```
import android.os.Bundle;

import android.util.Log;

import android.widget.Button;

import android.widget.EditText;

import android.widget.Toast;

public class MainActivity
extends AppCompatActivity {

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        EditText un = (EditText) findViewById(R.id.et_username);
        EditText ps = (EditText) findViewById(R.id.et_password);
        Button btn = (Button) findViewById(R.id.btn_login);
        btn.setOnClickListener(view -> {

            String uname = un.getText().toString();

            String pswd = ps.getText().toString();

            String specialCharRegex= ".*[@#!$%^&+=].*";

            String UpperCaseRegex= ".*[A-Z].*";

            String NumberRegex= ".*[0-9].*";

            String emailPattern = "[a-zA-Z0-9._-]+@[a-z]+\\.[a-z]+";

            if (uname.length()==0)

            {

                un.setError("user name not to be null");

            }

        })

    }

}
```

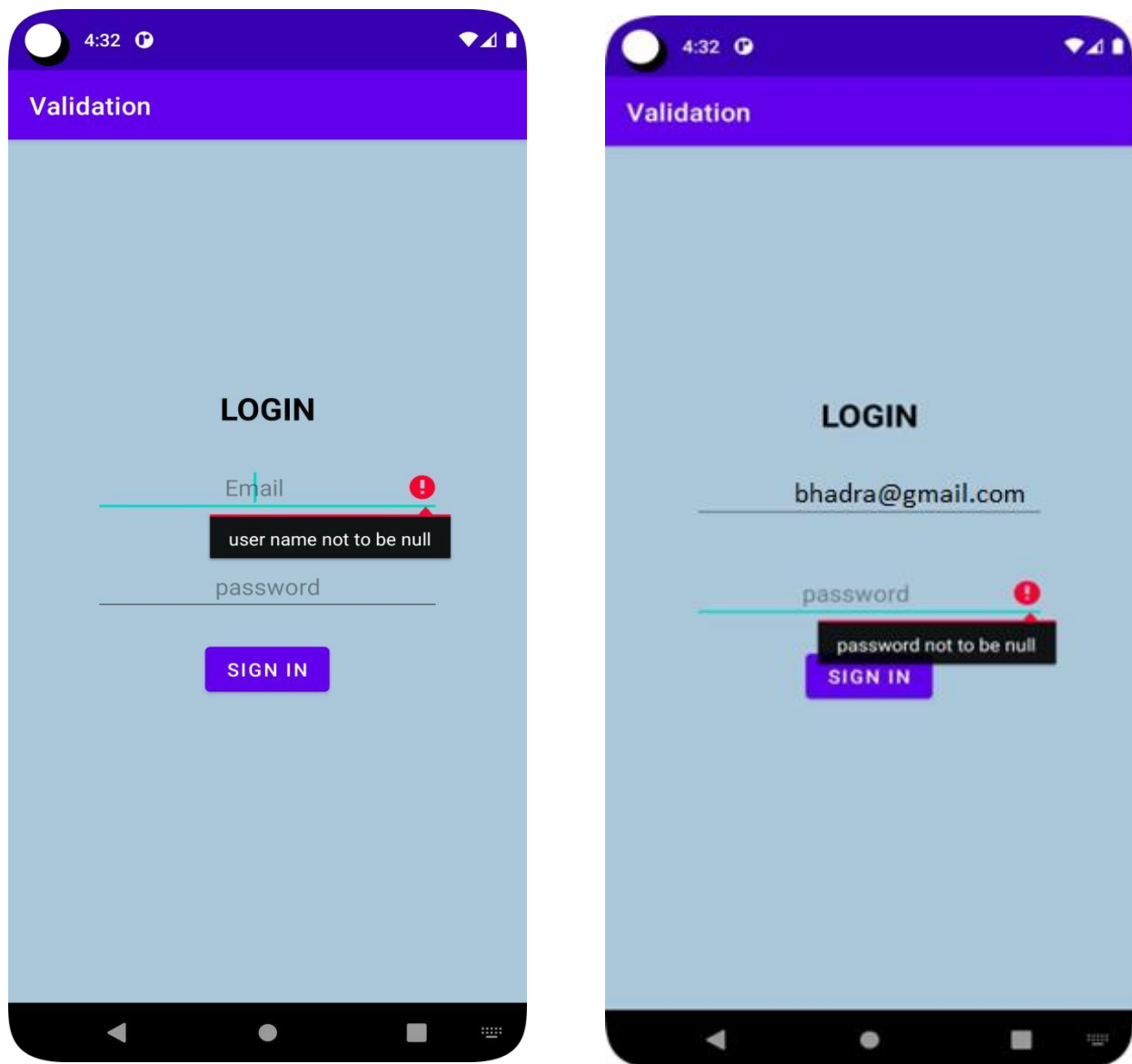
```
        else if(!uname.matches(emailPattern)){
            un.setError(" provided email is invalid");
        }

        else if(pswd.length() == 0) {
            ps.setError("password not to be null");
        }

        else if((!pswd.matches(specialCharRegex)) && (!pswd.matches(UpperCaseRegex))&&
(!pswd.matches(NumberRegex))){
            ps.setError("include Special character and uppercase");
        }
        else
        {
            if (uname.equals("ajcemca@gmail.com") && pswd.equals("Ajcemca@2022")) {
                Toast.makeText(this, "Login Success", Toast.LENGTH_SHORT).show();

            } else if (uname != ("ajcemca@gmail.com") && pswd.equals("Ajcemca@2022")) {
                Toast.makeText(this, "Invalid username", Toast.LENGTH_SHORT).show();
            } else if (uname.equals("ajcemca@gmail.com") && pswd != ("Ajcemca@2022")) {
                Toast.makeText(this, "Invalid password", Toast.LENGTH_SHORT).show();
            } else {
                Toast.makeText(this, "Invalid username and password",
Toast.LENGTH_SHORT).show();
            }
        }
    });
}
```

Output Screenshot



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 Shared Preferences

CO2

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

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=".MainActivity">
    <TextView
        android:id="@+id/textView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Registration"
        android:textSize="26dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
    <EditText
```

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

```
android:layout_width="match_parent"
```

```
android:layout_height="wrap_content"
```

```
android:hint="enter name"/>
```

```
<EditText
```

```
    android:id="@+id/eD2"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="wrap_content"
```

```
    android:hint="enter email"/>
```

```
<EditText
```

```
    android:id="@+id/eD3"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="wrap_content"
```

```
    android:hint="enter password"/>
```

```
<EditText
```

```
    android:id="@+id/eD4"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="wrap_content"
```

```
    android:hint="re-enter password"/>
```

```
<LinearLayout
```

```
    android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content">
```

```
    <Button
```

```
        android:id="@+id/btn1"
```

```
        android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
```

```
android:text="save"
```

```
/>
```

```
<Button
```

```
    android:id="@+id/btn2"
```

```
    android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content"
```

```
    android:text="view"
```

```
/>
```

```
<Button
```

```
    android:id="@+id/btn3"
```

```
    android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content"
```

```
    android:text="clear"
```

```
/>
```

```
</LinearLayout>
```

```
<TextView
```

```
    android:id="@+id/textView1"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="wrap_content"
```

```
    app:layout_constraintBottom_toBottomOf="parent"
```

```
    app:layout_constraintEnd_toEndOf="parent"
```

```
    app:layout_constraintStart_toStartOf="parent"
```

```
    app:layout_constraintTop_toTopOf="parent" />
```

```
<TextView
```

```
    android:id="@+id/textView2"
```

```
android:layout_width="match_parent"
android:layout_height="wrap_content"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />
```

```
<TextView
    android:id="@+id/textView3"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
```

```
<TextView
    android:id="@+id/textView4"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
```

```
</LinearLayout>
```

MainActivity.java

```
package com.example.sharedpreference;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Context;
```



```
import android.content.SharedPreferences;
import android.os.Bundle;
import android.view.View; import
android.widget.Button; import
android.widget.EditText; import
android.widget.TextView;import
android.widget.Toast;

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

        Button btn = (Button) findViewById(R.id.btn1);
        Button btn2 = (Button) findViewById(R.id.btn2);
        Button btn3 = (Button) findViewById(R.id.btn3);
        TextView tv = (TextView) findViewById(R.id.textView);
        EditText eD = (EditText) findViewById(R.id.eD);
        EditText eD2 = (EditText) findViewById(R.id.eD2);
        EditText eD3 = (EditText) findViewById(R.id.eD3);
        EditText eD4 = (EditText) findViewById(R.id.eD4);
        TextView tv1 = (TextView) findViewById(R.id.textView1);
        TextView tv2 = (TextView) findViewById(R.id.textView2);
        TextView tv3 = (TextView) findViewById(R.id.textView3);
        TextView tv4 = (TextView) findViewById(R.id.textView4);

        SharedPreferences pref =getApplicationContext().getSharedPreferences("storage",
        Context.MODE_PRIVATE);

        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
```

```
        SharedPreferences.Editor ed = pref.edit();

        String a=eD.getText().toString();

        String e=eD2.getText().toString();
        String p=eD3.getText().toString();
        String cp=eD4.getText().toString();

        Toast.makeText(MainActivity.this, "Data inserted Successfully",
        Toast.LENGTH_SHORT).show();

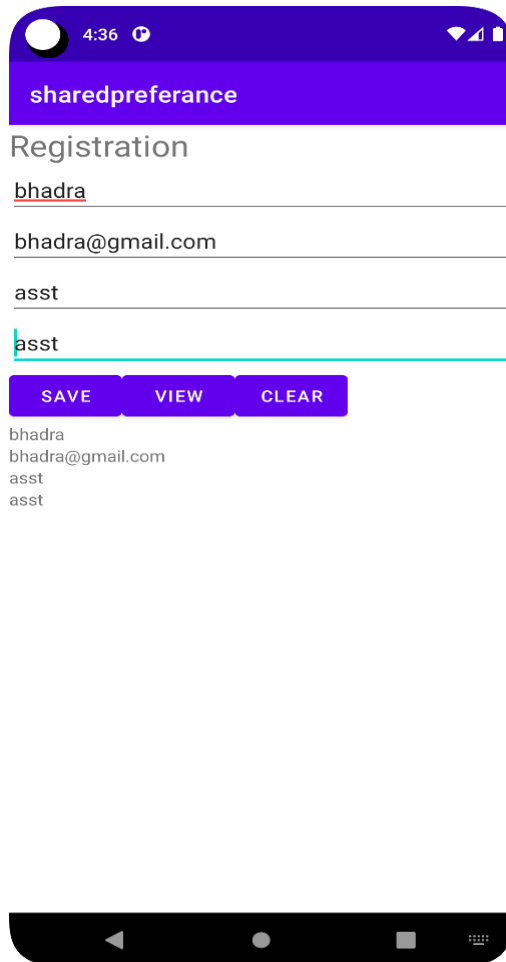
        ed.putString("NameKey",a);
        ed.putString("email", e);
        ed.putString("password", p);
        ed.putString("cpswd", cp);
        ed.commit();
    }
});

btn2.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        tv1.setText(pref.getString("NameKey",null));
        eD.setText(pref.getString("NameKey",null));
        tv2.setText(pref.getString("email",null));
        eD2.setText(pref.getString("email",null));
        tv3.setText(pref.getString("password",null));
        eD3.setText(pref.getString("password",null));
        tv4.setText(pref.getString("cpswd",null));
        eD4.setText(pref.getString("cpswd",null));

        Toast.makeText(MainActivity.this, "Data inserted Successfully",
        Toast.LENGTH_SHORT).show();
    }
});
```

```
btn3.setOnClickListener(new View.OnClickListener() {  
    @Override  
  
    public void onClick(View view) {  
        tv1.setText("");  
        tv2.setText("");  
        tv3.setText("");  
        tv4.setText("");  
        eD.setText("");  
        eD2.setText("");  
        eD3.setText("");  
        eD4.setText("");  
    }  
});  
}  
}
```

Output Screenshot



Result

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

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

```
<?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=".MainActivity">
```

```
    <LinearLayout
```

```
        android:layout_width="match_parent"
```

```
        android:orientation="vertical"
```

```
        android:layout_height="wrap_content">
```

```
        <EditText
```

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

```
            android:layout_width="402dp"
```

```
            android:layout_height="85dp"
```

```
            android:layout_weight="1"
```

```
            android:ems="10"
```

```
            android:inputType="textPersonName"
```

```
        android:text="0"
        tools:ignore="MissingConstraints"
        tools:layout_editor_absoluteX="0dp"
        tools:layout_editor_absoluteY="-1dp" />
</LinearLayout>
```

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

```
<Button
    android:id="@+id/btn7"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_weight="0.25"
    android:text="7"
    tools:layout_editor_absoluteX="55dp"
    tools:layout_editor_absoluteY="84dp" />
```

```
<Button
    android:id="@+id/btn8"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_weight="0.25"
    android:text="8" />
```

```
<Button
```

```
android:id="@+id/btn9"
android:layout_width="0dp"
android:layout_height="wrap_content"
android:layout_weight="0.25"
android:text="9" />
```

```
<Button
```

```
    android:id="@+id/btndiv"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_weight="0.25"
    android:text="/" />
```

```
</LinearLayout>
```

```
<LinearLayout
```

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

```
<Button
```

```
    android:id="@+id/btn4"
    android:layout_width="0dp"
    android:layout_weight="0.25"
    android:layout_height="wrap_content"
    android:text="4" />
```

```
<Button
```

```
    android:id="@+id/btn5"
```

```
android:layout_width="0dp"
```

```
    android:layout_weight="0.25"
```

```
    android:layout_height="wrap_content"
```

```
    android:text="5" />
```

```
<Button
```

```
    android:id="@+id/btn6"
```

```
    android:layout_width="0dp"
```

```
    android:layout_weight="0.25"
```

```
    android:layout_height="wrap_content"
```

```
    android:text="6" />
```

```
<Button
```

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

```
    android:layout_width="0dp"
```

```
    android:layout_weight="0.25"
```

```
    android:layout_height="wrap_content"
```

```
    android:text="x" />
```

```
</LinearLayout>
```

```
<LinearLayout
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="wrap_content"
```

```
    android:orientation="horizontal">
```

```
<Button
```

```
    android:id="@+id/btn3"
```

```
    android:layout_width="0dp"
```

```
    android:layout_weight="0.25"
```

```
android:layout_height="wrap_content"
```

```
    android:text="3" />
```

```
<Button
```

```
    android:id="@+id/btn2"
```

```
    android:layout_width="0dp"
```

```
    android:layout_weight="0.25"
```

```
    android:layout_height="wrap_content"
```

```
    android:text="2" />
```

```
<Button
```

```
    android:id="@+id/btn1"
```

```
    android:layout_width="0dp"
```

```
    android:layout_weight="0.25"
```

```
    android:layout_height="wrap_content"
```

```
    android:text="1" />
```

```
<Button
```

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

```
    android:layout_width="0dp"
```

```
    android:layout_weight="0.25"
```

```
    android:layout_height="wrap_content"
```

```
    android:text="-" />
```

```
</LinearLayout>
```

```
<LinearLayout
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="wrap_content"
```

```
    android:orientation="horizontal">
```

```
<Button
```

```
android:id="@+id/btn0"  
android:layout_width="0dp"  
android:layout_weight="0.25"  
android:layout_height="wrap_content"  
android:text="0" />
```

```
<Button
```

```
android:id="@+id/btndot"  
android:layout_width="0dp"  
android:layout_weight="0.25"  
android:layout_height="wrap_content"  
android:text="." />
```

```
<Button
```

```
android:id="@+id/btnequ"  
android:layout_width="0dp"  
android:layout_weight="0.25"  
android:layout_height="wrap_content"  
android:text="=" />
```

```
<Button
```

```
android:id="@+id/btnplus"  
android:layout_width="0dp"  
android:layout_weight="0.25"  
android:layout_height="wrap_content"  
android:text="+" />
```

```
</LinearLayout>
```

```
</LinearLayout>
```

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 Relative Layout; set properties using .xml file

CO2

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

Procedure

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout 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:background="#1E62DA"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/fb"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="130dp"
        android:layout_marginTop="200dp"
        android:text="Facebook"
        android:textAlignment="center"
        android:textColor="@color/white"
        android:textSize="30dp"
```

```
    android:textStyle="bold" />
```

```
<EditText
```

```
    android:id="@+id/uname"
    android:layout_width="match_parent"
    android:layout_height="40dp"
    android:layout_below="@id/fb"
    android:background="#81FFFFFF"
    android:layout_margin="10dp"
    android:text="Email or Phone"
    android:padding="10dp"/>
```

```
<EditText
```

```
    android:id="@+id/pswd"
    android:layout_width="match_parent"
    android:layout_height="40dp"
    android:layout_below="@id/uname"
    android:background="#81FFFFFF"
    android:layout_margin="10dp"
    android:text="Password"
    android:padding="10dp"/>
```

```
<TextView
```

```
    android:id="@+id/signin"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/pswd"
    android:layout_marginLeft="190dp"
    android:paddingTop="50dp"
    android:textColor="@color/white"
    android:text="sign in"/>
```

```
<TextView
```

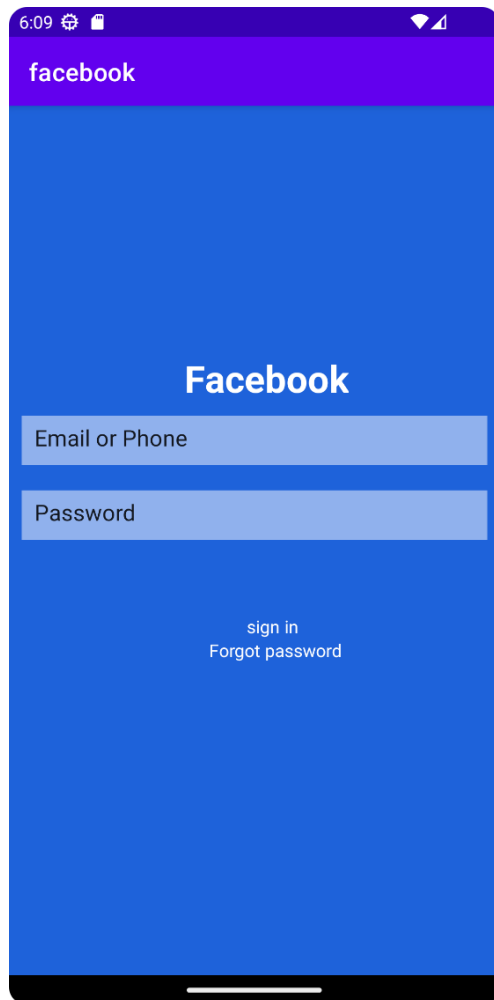
```
android:id="@+id/frgt"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_below="@+id/signin"
android:layout_marginLeft="160dp"
android:textColor="@color/white"
android:text="Forgot password"/>
```

```
<ImageView
```

```
    android:id="@+id/imageView"
    android:layout_width="97dp"
    android:layout_height="97dp"
    android:layout_marginTop="90dp"
    android:layout_marginLeft="140dp"
    app:srcCompat="@drawable/fb" />
```

```
</RelativeLayout>
```

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 Frame Layout

CO2

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

Procedure

activity_main.xml

```
<FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <ImageView
        android:id="@+id/first_image"
        android:src="@drawable/e"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:scaleType="fitXY" />
    <ImageView
        android:id="@+id/second_image"
        android:background="@color/white"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:scaleType="fitXY" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Click the image to switch"
```



```
        android:layout_gravity="center_horizontal|bottom"
        android:padding="5dip"
        android:textColor="#ffffff"
        android:textStyle="bold"
        android:background="#333333"
        android:layout_marginBottom="10dip" />
</FrameLayout>
```

MainActivity.java

```
package com.example.a8prgm;
import android.app.Activity;
import android.os.Bundle;
import android.widget.ImageView;
import android.view.View.OnClickListener;
import android.view.View;
import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        final ImageView first_image = (ImageView)this.findViewById(R.id.first_image);
        final ImageView second_image = (ImageView)this.findViewById(R.id.second_image);
        first_image.setOnClickListener(new OnClickListener(){
            public void onClick(View view) {
                Toast.makeText(MainActivity.this, "Button clicked.",
                Toast.LENGTH_SHORT).show();
            }
        });
    }
}
```

```
        second_image.setVisibility(View.VISIBLE);
        view.setVisibility(View.GONE);
    }
});
second_image.setOnClickListener(new OnClickListener(){
    public void onClick(View view) {
        first_image.setVisibility(View.VISIBLE);
        view.setVisibility(View.GONE);
    }
});
}
}
```

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_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=".MainActivity">

    <EditText
        android:id="@+id/first"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:ems="10"
        android:hint="enter first value"
        />

    <EditText
```

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

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:ems="10"

        android:hint="enter second value" />
<Button

        android:id="@+id/btn"

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:text="Button" />
</LinearLayout>
```

MainActivity.java

```
package com.example.myapplication;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

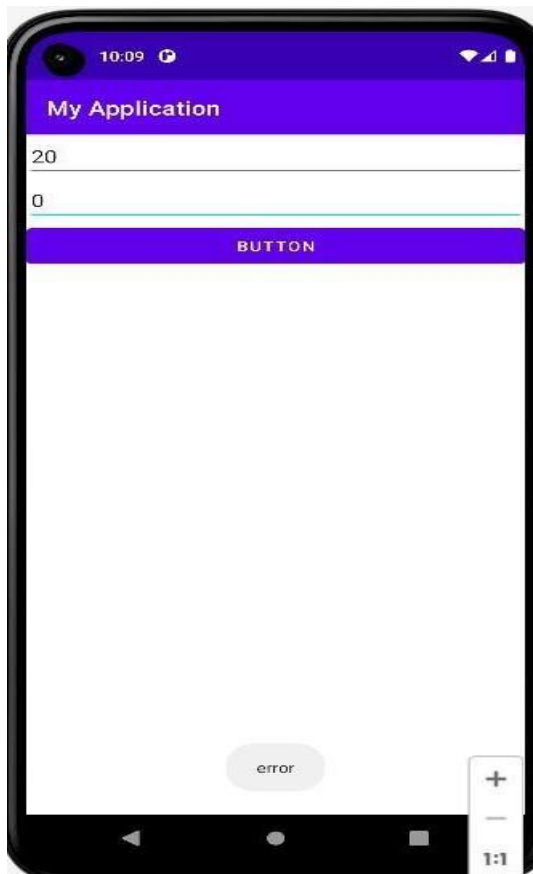
    @Override

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

        int x = Integer.parseInt(et1.getText().toString());
        int y = Integer.parseInt(et2.getText().toString());
```

```
try{  
    int c = x / y;  
    Toast.makeText(getApplicationContext(), "result :"+c,  
    Toast.LENGTH_SHORT).show();  
}catch (Exception e){  
    Toast.makeText(getApplicationContext(), "error", Toast.LENGTH_SHORT).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_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:padding="50sp"
    android:background="#E886F162"
    android:orientation="vertical"
    android:gravity="top|center"
    tools:context=".MainActivity">
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/btn_click"
        android:text="Click"
        android:textSize="15sp"
        android:textAlignment="center"/>
    <TextView
        android:id="@+id/tvid"
```

```
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:color="#4799E8"
        android:text="first page"
        android:textColor="@color/black"
        android:background="@color/teal_200"/>
</LinearLayout>
```

activity2.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:padding="50sp"
    android:background="#E886F162"
    android:orientation="vertical"
    android:gravity="top|center"
    tools:context=".MainActivity">
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/btn_click1"
        android:text="Click"
        android:textSize="15sp"
        android:textAlignment="center"/>
    <TextView
        android:id="@+id/tvid1"
```

```
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:color="#4799E8"
        android:text="second page"
        android:textColor="@color/black"
        android:background="@color/teal_200"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.explicit_intent;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Button btn = (Button) findViewById(R.id.btn_click);
        TextView tv = (TextView) findViewById(R.id.tv_id);

        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent i = new Intent(getApplicationContext(),Activity2.class);
                startActivity(i);
            }
        });
    }
}
```

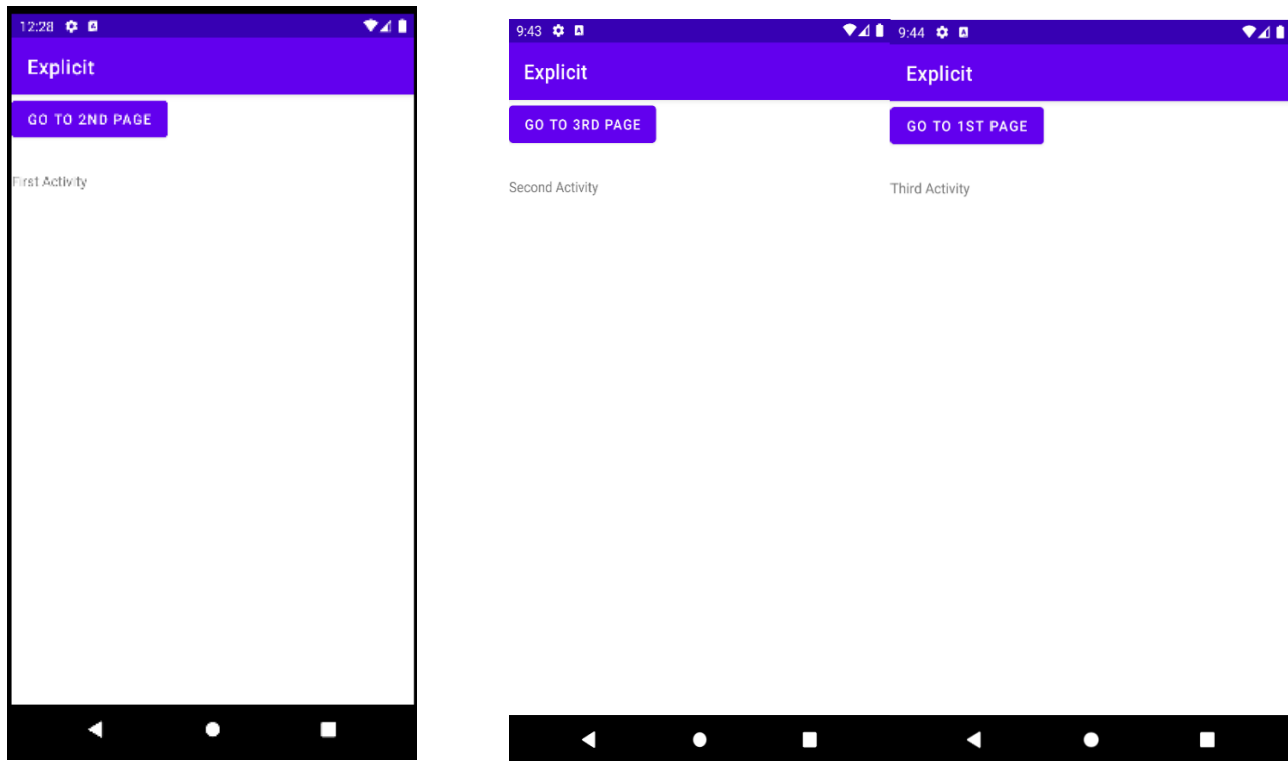


```
    }  
    });  
}  
}
```

Activity2.java

```
package com.example.explicit_intent;  
  
import androidx.appcompat.app.AppCompatActivity;  
import android.content.Intent;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.TextView;  
  
public class Activity2 extends AppCompatActivity {  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity2);  
        Button btn = (Button) findViewById(R.id.btn_click1);  
        TextView tv = (TextView) findViewById(R.id.tvid1);  
        btn.setOnClickListener(new View.OnClickListener() {  
            @Override  
            public void onClick(View view) {  
                Intent i = new Intent(getApplicationContext(), MainActivity.class);  
                startActivity(i);  
            }  
        });  
    }  
}
```

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 implicit intents

CO3

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

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:padding="50sp"
    android:background="#B2C6CBCF"
    android:orientation="vertical"
    android:gravity="top|center"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/et_text"
        android:layout_marginLeft="15dp"
        android:layout_marginTop="15dp"
        android:layout_marginBottom="20dp"
        android:layout_marginRight="15dp"
        android:layout_centerVertical="true"
        android:layout_width="match_parent"
```

```
android:layout_height="wrap_content"
android:ellipsize="start"
android:gravity="center"
android:hint="url here"
android:inputType="text"
android:thickness="0dp"
android:shape="rectangle"
android:width="3dp"
android:color="#4799E8"
android:startColor="#C8C8C8"
android:endColor="#FFFFFF"
android:type="linear"
android:angle="270"/>
```

```
<Button
```

```
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/btn_click"
    android:text="Click"
    android:textSize="15sp"
    android:textAlignment="center"/>
```

```
</LinearLayout>
```

MainActivity.java

```
package com.example.implicit_intent;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
```

```
import android.widget.Button;
```

```
import android.widget.EditText;
```

```
public class MainActivity extends AppCompatActivity {
```

```
    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
```

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

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

```
        EditText et = (EditText) findViewById(R.id.et_text);
```

```
        Button btn = (Button) findViewById(R.id.btn_click);
```

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

```
            @Override
```

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

```
                String url = et.getText().toString();
```

```
                Intent intent = new Intent(Intent.ACTION_VIEW, Uri.parse(url));
```

```
                startActivity(intent);
```

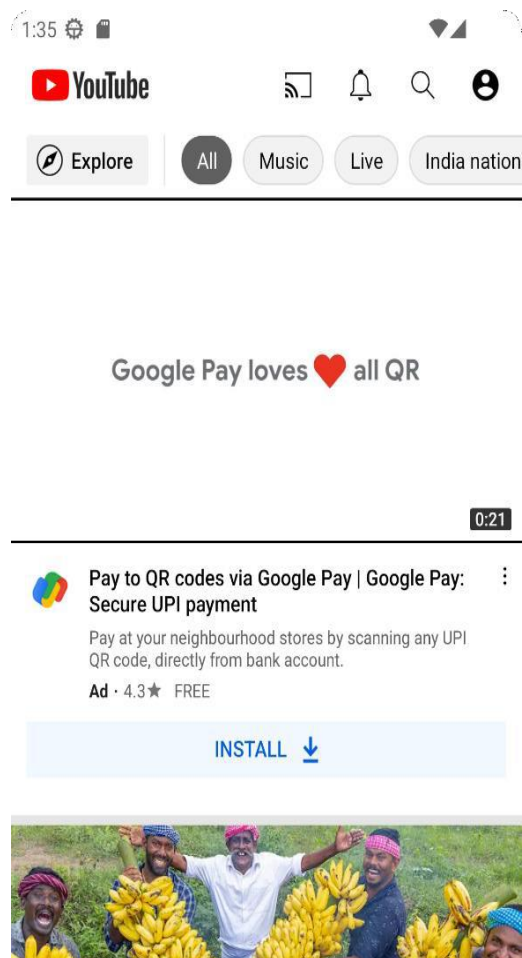
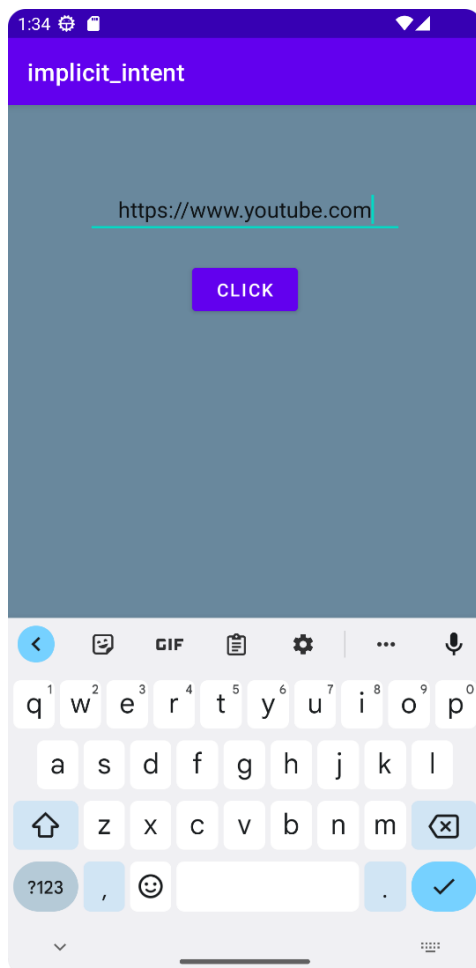
```
            }
```

```
        });
```

```
    }
```

```
}
```

Output Screenshot



Result

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

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

<androidx.coordinatorlayout.widget.CoordinatorLayout
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">

    <com.google.android.material.appbar.AppBarLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:theme="@style/Theme.Optionmenu.AppBarOverlay">

        <androidx.appcompat.widget.Toolbar
            android:id="@+id/toolbar"
            android:layout_width="match_parent"
            android:layout_height="?attr/actionBarSize"
            android:background="?attr/colorPrimary"
            app:popupTheme="@style/Theme.Optionmenu.PopupOverlay" />

    </com.google.android.material.appbar.AppBarLayout>

    <include layout="@layout/content_main" />

    <com.google.android.material.floatingactionbutton.FloatingActionButton
```

```
        android:id="@+id/fab"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="bottom|end"
        android:layout_marginEnd="@dimen/fab_margin"
        android:layout_marginBottom="16dp"
        app:srcCompat="@android:drawable/ic_dialog_email" />
</androidx.coordinatorlayout.widget.CoordinatorLayout>
```

fragment_first.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=".FirstFragment">

    <TextView
        android:id="@+id/textview_first"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/hello_first_fragment"
        app:layout_constraintBottom_toTopOf="@id/button_first"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/button_first"
        android:layout_width="wrap_content"
```



```
        android:layout_height="wrap_content"
        android:text="@string/next"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@id/textview_first" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

fragment_second.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=".SecondFragment">
    <TextView
        android:id="@+id/textview_second"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        app:layout_constraintBottom_toTopOf="@id/button_second"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
    <Button
        android:id="@+id/button_second"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/previous"
```

```
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@id/textview_second" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

activity_settings.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=".Settings">

    <TextView

        android:id="@+id/textView"
        android:layout_width="410dp"
        android:layout_height="44dp"
        android:text="Settings"
        android:textSize="20dp"
        tools:layout_editor_absoluteX="0dp"
        tools:layout_editor_absoluteY="103dp" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

menu_main.xml

```
<menu 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"
tools:context="com.fb.optionmenu.MainActivity">
<item
    android:id="@+id/action_settings"
    android:orderInCategory="100"
    android:title="@string/action_settings"
    app:showAsAction="never" />
</menu>
```

MainActivity.java

```
package com.fb.optionmenu;
import android.content.Intent;
import android.os.Bundle;
import com.google.android.material.snackbar.Snackbar;
import androidx.appcompat.app.AppCompatActivity;
import android.view.View;
import androidx.navigation.NavController;
import androidx.navigation.Navigation;
import androidx.navigation.ui.AppBarConfiguration;
import androidx.navigation.ui.NavigationUI;
import com.fb.optionmenu.databinding.ActivityMainBinding;
import android.view.Menu;
import android.view.MenuItem;
public class MainActivity extends AppCompatActivity {
    private AppBarConfiguration appBarConfiguration;
    private ActivityMainBinding binding;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
```

```
super.onCreate(savedInstanceState);

binding = ActivityMainBinding.inflate(getLayoutInflater());

setContentView(binding.getRoot());

setSupportActionBar(binding.toolbar);

NavController navController = Navigation.findNavController(this,
R.id.nav_host_fragment_content_main);

appBarConfiguration = new
AppBarConfiguration.Builder(navController.getGraph()).build();

NavigationUI.setupActionBarWithNavController(this, navController, appBarConfiguration);

binding.fab.setOnClickListener(new View.OnClickListener() {

    @Override

    public void onClick(View view) {

        Snackbar.make(view, "Replace with your own action", Snackbar.LENGTH_LONG)

            .setAction("Action", null).show();

    }

});

}

@Override

public boolean onCreateOptionsMenu(Menu menu) {

    // Inflate the menu; this adds items to the action bar if it is present.

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

    return true;

}

@Override

public boolean onOptionsItemSelected(MenuItem item) {

    // Handle action bar item clicks here. The action bar will

    // automatically handle clicks on the Home/Up button, so long

    // as you specify a parent activity in AndroidManifest.xml.
```

```
int id = item.getItemId();

//noinspection SimplifiableIfStatement
if (id == R.id.action_settings) {
    Intent intent = new Intent(MainActivity.this,Settings.class);
    startActivity(intent);
    return true;
}

return super.onOptionsItemSelected(item);
}

@Override

public boolean onSupportNavigateUp() {
    NavController navController = Navigation.findNavController(this,
R.id.nav_host_fragment_content_main);

    return NavigationUI.navigateUp(navController, appBarConfiguration)
        || super.onSupportNavigateUp();
}
}
```

FirstFragment.java

```
package com.fb.optionmenu;

import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import androidx.annotation.NonNull;
import androidx.fragment.app.Fragment;
import androidx.navigation.fragment.NavHostFragment;
import com.fb.optionmenu.databinding.FragmentFirstBinding;

public class FirstFragment extends Fragment {
```

```
private FragmentFirstBinding binding;

@Override

public View onCreateView(
    LayoutInflater inflater, ViewGroup container,
    Bundle savedInstanceState
) {
    binding = FragmentFirstBinding.inflate(inflater, container, false);
    return binding.getRoot();
}

public void onViewCreated(@NonNull View view, Bundle savedInstanceState) {
    super.onViewCreated(view, savedInstanceState);
    binding.buttonFirst.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            NavHostFragment.findNavController(FirstFragment.this)
                .navigate(R.id.action_FirstFragment_to_SecondFragment);
        }
    });
}

@Override
public void onDestroyView() {
    super.onDestroyView();
    binding = null;
}

}
```

SecondFragment.java

```
package com.fb.optionmenu;
```

```
import android.os.Bundle;

import android.view.LayoutInflater;

import android.view.View;

import android.view.ViewGroup;

import androidx.annotation.NonNull;

import androidx.fragment.app.Fragment;

import androidx.navigation.fragment.NavHostFragment;

import com.fb.optionmenu.databinding.FragmentSecondBinding;

public class SecondFragment extends Fragment {

    private FragmentSecondBinding binding;

    @Override

    public View onCreateView(

        LayoutInflater inflater, ViewGroup container,

        Bundle savedInstanceState

    ) {

        binding = FragmentSecondBinding.inflate(inflater, container, false);

        return binding.getRoot();

    }

    public void onViewCreated(@NonNull View view, Bundle savedInstanceState) {

        super.onViewCreated(view, savedInstanceState);

        binding.buttonSecond.setOnClickListener(new View.OnClickListener() {

            @Override

            public void onClick(View view) {

                NavHostFragment.findNavController(SecondFragment.this)

                    .navigate(R.id.action_SecondFragment_to_FirstFragment);

            }

        });

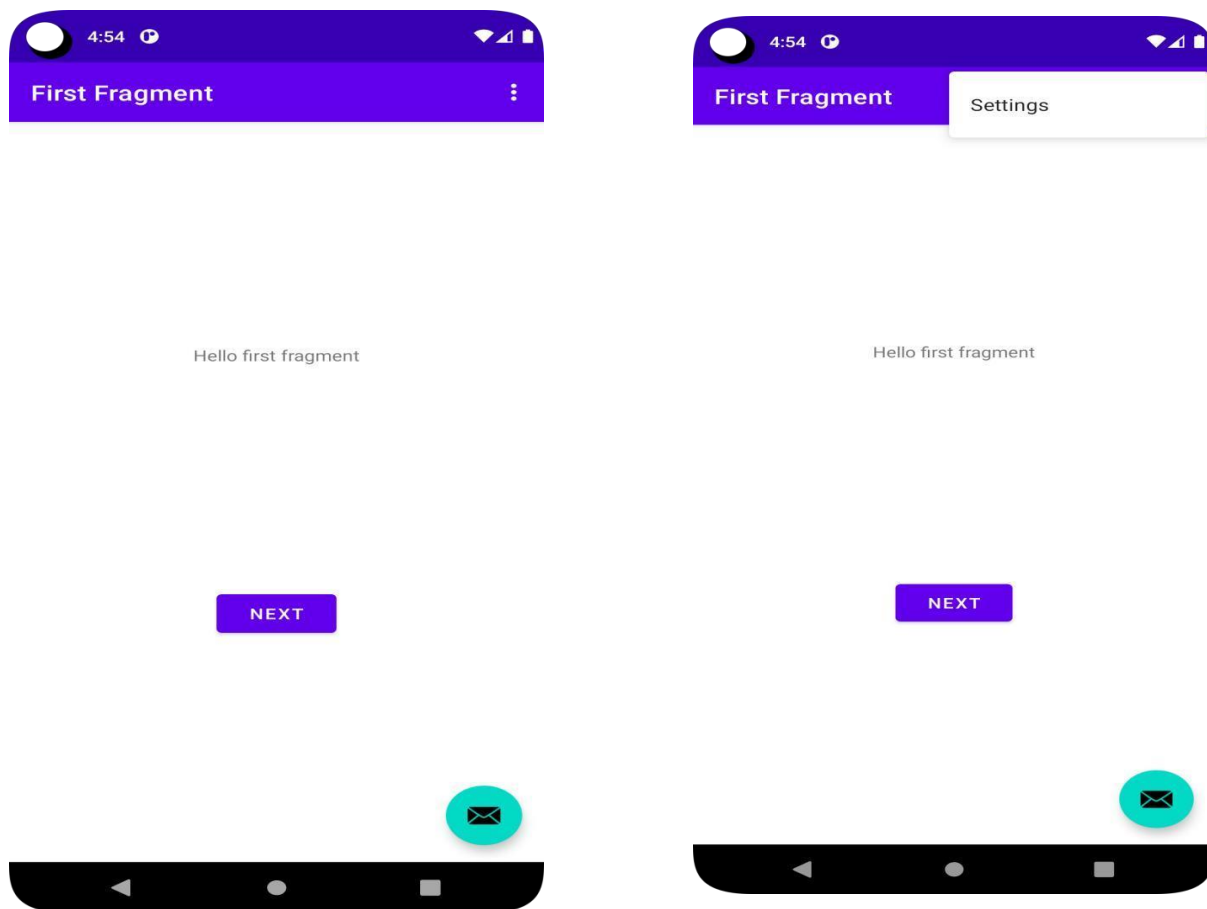
    }

}
```

@Override

```
public void onDestroyView() {  
    super.onDestroyView();  
    binding = null;  
}  
}
```

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 Array Adapter with List View.

CO3

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

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=".MainActivity">
    <ListView
        android:id="@+id/listview"
        android:layout_width="match_parent"
        android:layout_height="match_parent">
    </ListView>
</LinearLayout>
```

listfile.xml

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

```
    android:layout_height="match_parent">
```

```
<LinearLayout
```

```
    android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content">
```

```
<ImageView
```

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

```
    android:layout_width="80dp"
```

```
    android:layout_height="80dp"
```

```
    android:layout_margin="5dp"/>
```

```
<TextView
```

```
    android:id="@+id/tv1"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="wrap_content"
```

```
    android:layout_margin="5dp"
```

```
    android:textColor="#01B0C1"/>
```

```
</LinearLayout>
```

```
<TextView
```

```
    android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content"
```

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

```
    android:layout_margin="5dp"
```

```
    android:textColor="#01B0C1"/>
```

```
</LinearLayout>
```

MainActivity.java

```
package com.example.listview;
```

```
import androidx.appcompat.app.AppCompatActivity;
```

```
import android.os.Bundle;
```

```
import android.widget.ListView;
```

```
import android.widget.SimpleAdapter;

import java.util.ArrayList;

import java.util.HashMap;

public class MainActivity extends AppCompatActivity {

    String[] StudName = {"alan","arun","amal","anton"};

    int[] studicon = {R.drawable.propic,R.drawable.propic,R.drawable.propic,R.drawable.propic};

    String[] phnno = {"9946440708","9876543210","9846948959","8078747708"};

    String[] email =
{"alan@gmail.com","arun@gmail.com","amal@gmail.com","anton@gmail.com"};

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        ListView lv = (ListView) findViewById(R.id.listview);

        ArrayList<HashMap<String,Object>>arrayList = new ArrayList<>();

        for(int i = 0; i<StudName.length;i++){

            HashMap<String,Object> map = new HashMap<>();

            map.put("contactName",StudName[i]);

            map.put("profile",studicon[i]);

            map.put("contactno",phnno[i]);

            arrayList.add((map));

        }

        String[] from = {"profile","contactName","contactno"};

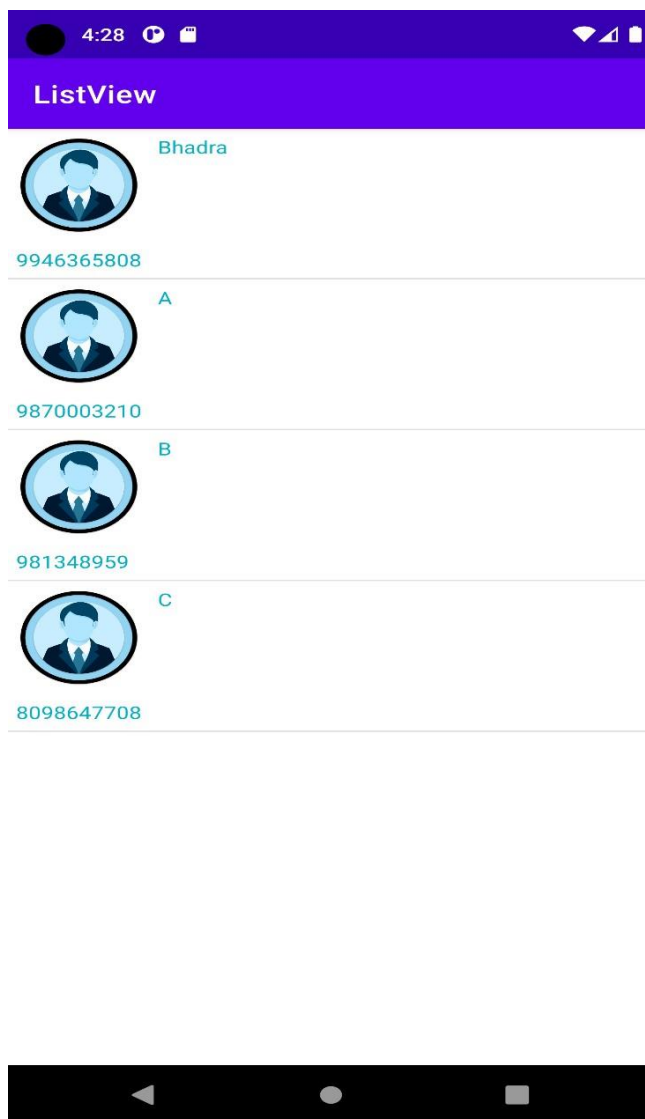
        int[] to = {R.id.img,R.id.tv1,R.id.phn};

        SimpleAdapter adaptor= new SimpleAdapter(this,arrayList,R.layout.listfile,from,to);

        lv.setAdapter(adaptor);

    }
}
```

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 Grid View with images and display Alert box on selection

CO4

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

Procedureactivity_main.xml

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

<RelativeLayout 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">

    <GridView
        android:id="@+id/gv1"
        android:verticalSpacing="1dp"
        android:horizontalSpacing="1dp"
        android:numColumns="2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content">

    </GridView>

</RelativeLayout>
```

row_data.xml

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

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
```

```
android:layout_height="match_parent">
```

```
<RelativeLayout
```

```
    android:id="@+id/gv12"
```

```
    android:layout_width="190dp"
```

```
    android:layout_height="180dp"
```

```
    android:background="#fff">
```

```
<TextView
```

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

```
    android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content"
```

```
    android:layout_centerHorizontal="true"
```

```
    android:text="Apple"
```

```
    android:textSize="25dp" />
```

```
<ImageView
```

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

```
    android:layout_width="90dp"
```

```
    android:layout_height="90dp"
```

```
    android:layout_alignParentStart="true"
```

```
    android:layout_alignParentTop="true"
```

```
    android:layout_alignParentEnd="true"
```

```
    android:layout_alignParentBottom="true"
```

```
    android:layout_marginStart="50dp"
```

```
    android:layout_marginTop="45dp"
```

```
    android:layout_marginEnd="50dp"
```

```
    android:layout_marginBottom="45dp"
```

```
    android:src="@drawable/img1" />
```

```
</RelativeLayout>
```

</RelativeLayout>

MainActivity.java

```
package com.fb.Exp14;

import androidx.appcompat.app.AppCompatActivity;
import android.media.Image;
import android.os.Bundle;
import android.view.View;
import android.view.ViewGroup;
import android.widget.AdapterView;
import android.widget.BaseAdapter;
import android.widget.CursorAdapter;
import android.widget.GridView;
import android.widget.ImageView;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    GridView gridView;

    String[] frtname={"Flower","Fruit"};
    int[] frting={R.drawable.img1,R.drawable.img2};

    @Override

    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        gridView= findViewById(R.id.gv1);
        CustomAdaptor customadaptor = new CustomAdaptor();
        gridView.setAdapter(customadaptor);
        gridView.setOnItemClickListener(new AdapterView.OnItemClickListener() {

            @Override
```

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

            Toast.makeText(MainActivity.this, "name :"+frtname[i],
Toast.LENGTH_SHORT).show();

        }

    });

}

private class CustomAdaptor extends BaseAdapter {

    @Override

    public int getCount() {

        return frting.length;

    }

    @Override

    public Object getItem(int i) {

        return null;

    }

    @Override

    public long getItemId(int i) {

        return 0;

    }


    @Override

    public View getView(int i, View view, ViewGroup viewGroup) {

        View view1 =getLayoutInflater().inflate(R.layout.row_data,null);

        TextView name=view1.findViewById(R.id.tv1);

        ImageView img = view1.findViewById(R.id.imageView);

        name.setText(frtname[i]);

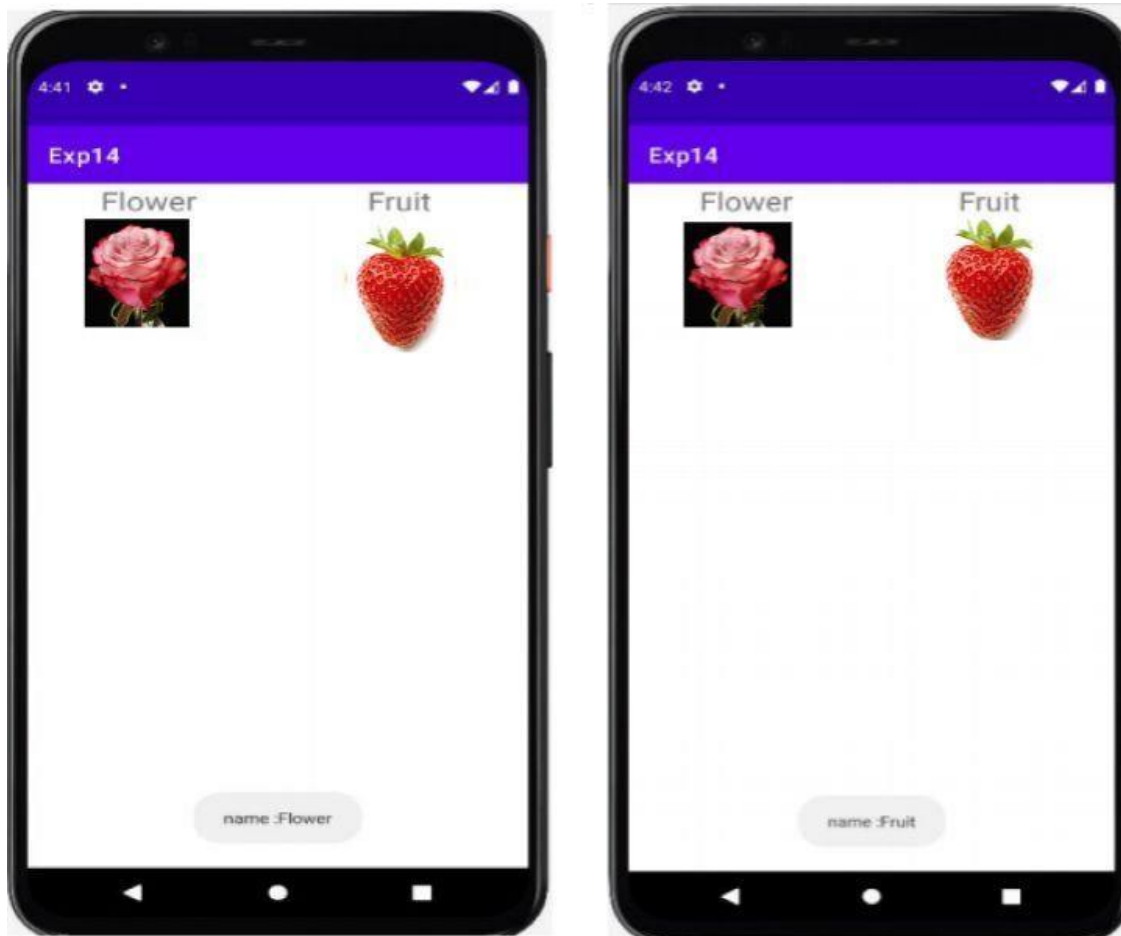
        img.setImageResource(frting[i]);

        return view1;

    }

}}
```

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"?>

<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <Spinner
        android:id="@+id/spinner"
        android:layout_width="360dp"
        android:layout_height="36dp"
        android:layout_marginStart="4dp"
        android:layout_marginTop="20dp"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView2" />

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="160dp"
```

```
        android:layout_marginTop="100dp"
        android:text="Fruits"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.example.spinner;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.AdapterView.OnItemClickListener;
import android.widget.ArrayAdapter;
import android.widget.Spinner;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity implements
    AdapterView.OnItemClickListener{

    String[] pets={"apple","grapes","orange"};@Override

    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Spinner spin = (Spinner) findViewById(R.id.spinner);
        spin.setOnItemSelectedListener(this);
        ArrayAdapter aa = new ArrayAdapter(this, android.R.layout.simple_spinner_item,pets);
        aa.setDropDownViewResource(android.R.layout.simple_spinner_dropdown_item);
        spin.setAdapter(aa);}

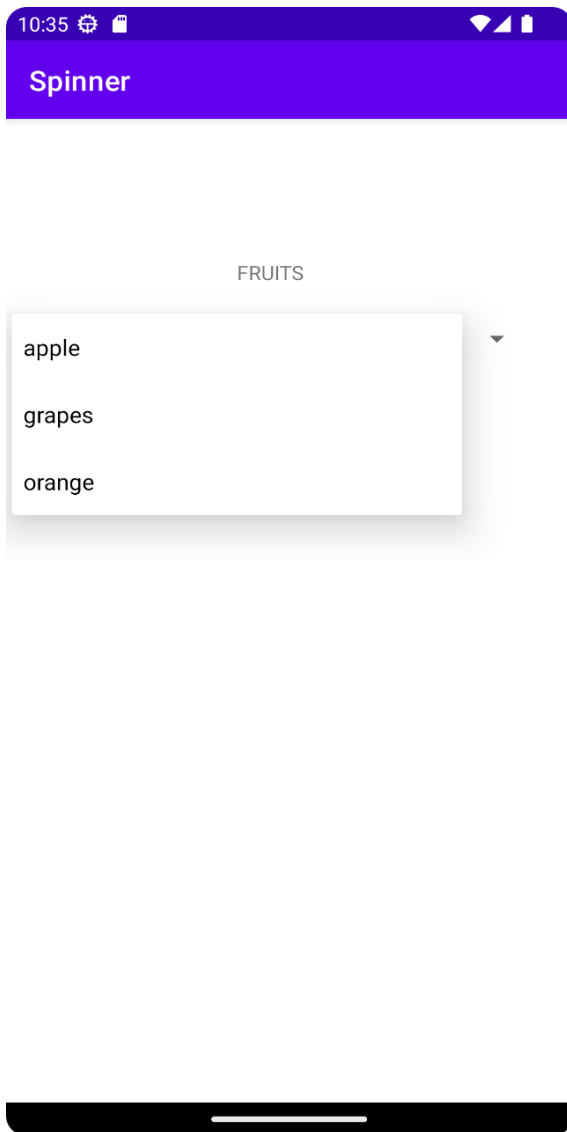
    @Override

    public void onItemClick(AdapterView<?> parent, View view, int i, long l) {
        Toast.makeText(getApplicationContext(),pets[i], Toast.LENGTH_SHORT).show();}
```

@Override

```
public void onNothingSelected(AdapterView<?> parent) {  
    Toast.makeText(this, "nothing Selected", Toast.LENGTH_SHORT).show();}}
```

Output Screenshot



Result

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

Experiment No.: 16**Aim**

Develop application using Fragments

CO4

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

Procedure**activity_main.xml**

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

<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"

    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="@color/purple_700"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/btn2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="40dp"
        android:layout_marginEnd="40dp"
        android:text="Fragment-two"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toEndOf="@+id/btn1"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
```

```
        android:id="@+id/btn1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="40dp"
        android:layout_marginEnd="16dp"
        android:text="Fragment-one"
        app:layout_constraintEnd_toStartOf="@+id/btn2"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
<FrameLayout
    android:id="@+id/frid"
    android:layout_width="409dp"
    android:layout_height="629dp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/btn2">
</FrameLayout>
</androidx.constraintlayout.widget.ConstraintLayout>
```

fragment_first.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=".FirstFragment">
    <TextView
```

```
        android:id="@+id/tvfrag"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="First fragment"
        android:textColor="#5E0000"
        android:textSize="36dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

fragment_second.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=".SecondFragment">
    <TextView
        android:id="@+id/secondtv"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Second Fragment"
        android:textColor="#001165"
        android:textSize="36dp"
        app:layout_constraintBottom_toBottomOf="parent"
```



```
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.example.fragment;

import androidx.appcompat.app.AppCompatActivity;
import androidx.fragment.app.Fragment;
import androidx.fragment.app.FragmentManager;
import androidx.fragment.app.FragmentTransaction;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity {

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

        Button btn1= (Button) findViewById(R.id.btn1);
        Button btn2= (Button) findViewById(R.id.btn2);
        btn1.setOnClickListener(new View.OnClickListener() {

            @Override
            public void onClick(View view) {
                loadFragment(new FirstFragment());
            }
        });
        btn2.setOnClickListener(new View.OnClickListener() {
```

```
@Override

public void onClick(View view) {

    loadFragment(new SecondFragment());

}

});

}

private void loadFragment(Fragment f) {

    FragmentManager fm = getSupportFragmentManager();

    FragmentTransaction ft = fm.beginTransaction();

    ft.replace(R.id.frid,f);

    ft.commit();

}

}
```

FirstFragment.java

```
package com.example.fragment;

import android.os.Bundle;

import androidx.fragment.app.Fragment;

import android.view.LayoutInflater;

import android.view.View;

import android.view.ViewGroup;

public class FirstFragment extends Fragment {

    View view;

    @Override

    public View onCreateView(LayoutInflater inflater, ViewGroup container,

        Bundle savedInstanceState) {

        // Inflate the layout for this fragment

        return view = inflater.inflate(R.layout.fragment_first, container, false);

    }

}
```

```
}
```

SecondFragment.java

```
package com.example.fragment;

import android.os.Bundle;

import androidx.fragment.app.Fragment;

import android.view.LayoutInflater;

import android.view.View;

import android.view.ViewGroup;

public class SecondFragment extends Fragment {

    View view;

    @Override

    public View onCreateView(LayoutInflater inflater, ViewGroup container,

                             Bundle savedInstanceState) {

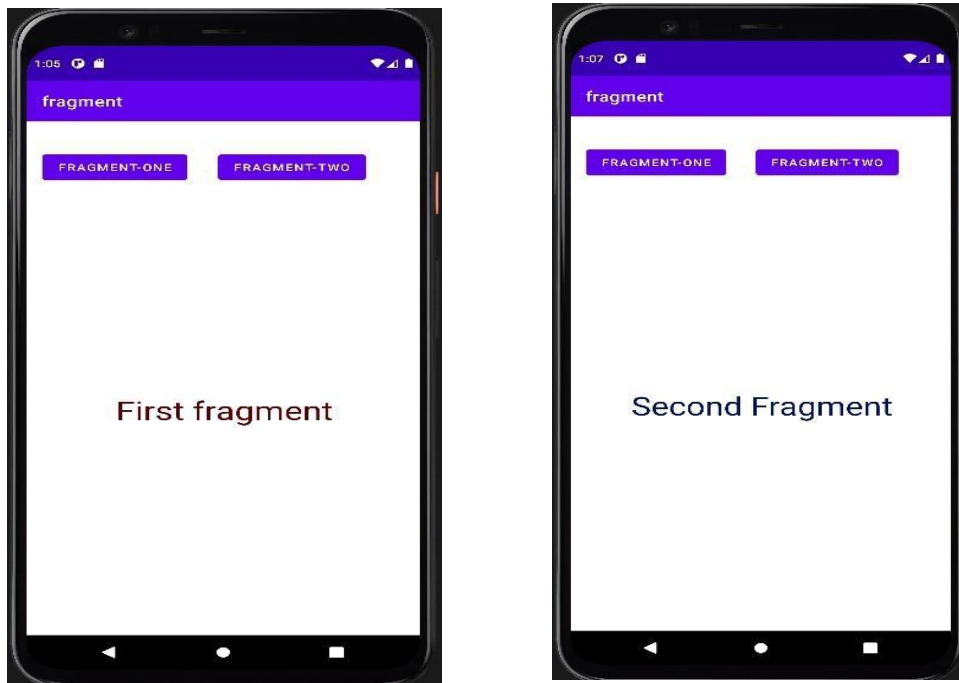
        // Inflate the layout for this fragment

        return view = inflater.inflate(R.layout.fragment_second, container, false);

    }

}
```

Output Screenshot



Result

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

Experiment No.: 17**Aim**

Implement Navigation drawer

CO4

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

Procedure

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

<!-- the root view must be the DrawerLayout -->

<androidx.drawerlayout.widget.DrawerLayout

    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/my_drawer_layout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    tools:ignore="HardcodedText">

    <LinearLayout

        android:layout_width="match_parent"
        android:layout_height="match_parent">

        <TextView

            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_marginTop="128dp"
            android:gravity="center"
            android:text="Welcome to ajce"
```

```
        android:textSize="18sp" />

    </LinearLayout>

    <!-- this the navigation view which draws and shows the navigation drawer -->

    <!-- include the menu created in the menu folder -->

    <com.google.android.material.navigation.NavigationView

        android:layout_width="wrap_content"

        android:layout_height="match_parent"

        android:layout_gravity="start"

        app:menu="@menu/navigation_menu" />

</androidx.drawerlayout.widget.DrawerLayout>
```

Navigation_menu.xml

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

<menu xmlns:android="http://schemas.android.com/apk/res/android"

    xmlns:tools="http://schemas.android.com/tools"

    tools:ignore="HardcodedText">

    <item

        android:id="@+id/nav_account"

        android:title="My Account" />

    <item

        android:id="@+id/nav_settings"

        android:title="Settings" />

    <item

        android:id="@+id/nav_logout"

        android:title="Logout" />

</menu>
```

MainActivity.java

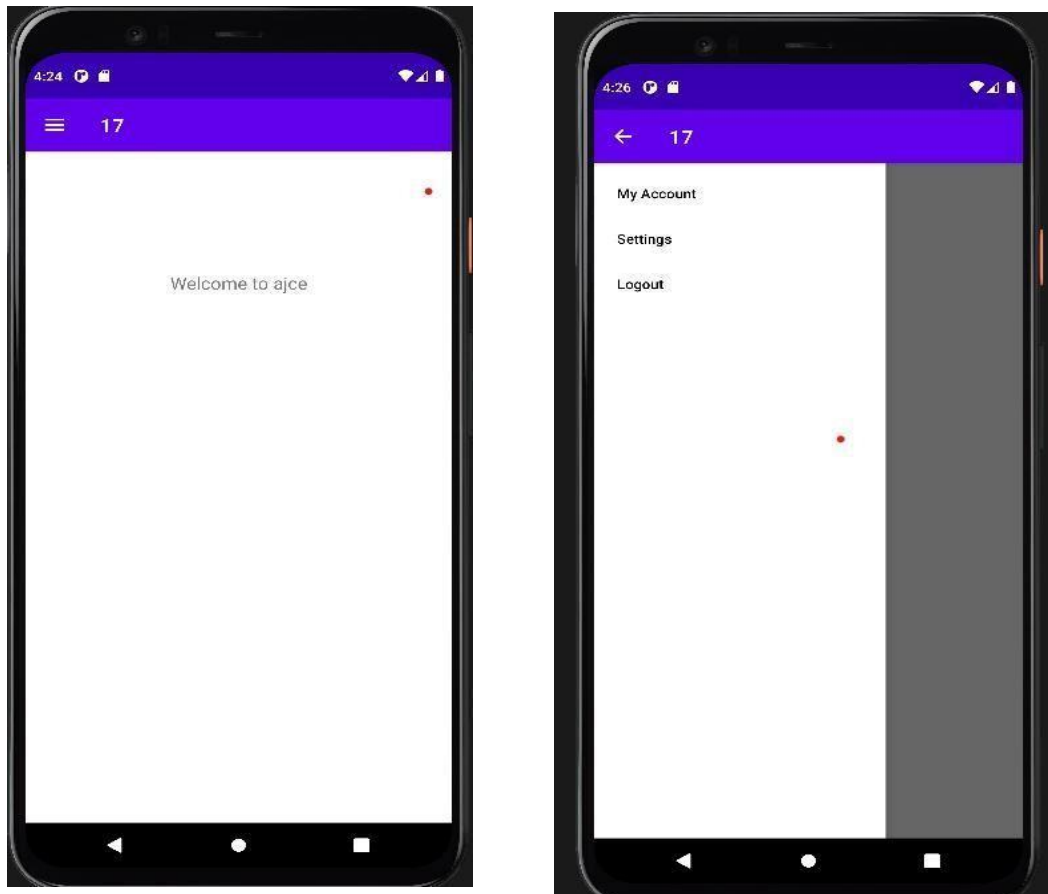
```
import androidx.annotation.NonNull;

import androidx.appcompat.app.ActionBarDrawerToggle;
```

```
import androidx.appcompat.app.AppCompatActivity;
import androidx.drawerlayout.widget.DrawerLayout;
import android.os.Bundle;
import android.view.MenuItem;

public class MainActivity extends AppCompatActivity {
    public DrawerLayout drawerLayout;
    public ActionBarDrawerToggle actionBarDrawerToggle;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        drawerLayout = findViewById(R.id.my_drawer_layout);
        actionBarDrawerToggle = new ActionBarDrawerToggle(this, drawerLayout,
R.string.nav_open, R.string.nav_close);
        drawerLayout.addDrawerListener(actionBarDrawerToggle);
        actionBarDrawerToggle.syncState();
        getSupportActionBar().setDisplayHomeAsUpEnabled(true);
    }
    @Override
    public boolean onOptionsItemSelected(@NonNull MenuItem item) {
        if (actionBarDrawerToggle.onOptionsItemSelected(item)) {
            return true;
        }
        return super.onOptionsItemSelected(item);
    }
}
```

Output Screenshot



Result

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

Experiment No.: 18**Aim**

Create database using SQLite and perform INSERT and SELECT

CO5

Develop mobile applications using SQLite.

Procedure**Activity_main.xml**

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

<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"

    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Enter the Details Below!"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.108" />
    <EditText
        android:id="@+id/editTextTextPersonName"
        android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
        android:layout_marginStart="116dp"
        android:layout_marginTop="24dp"
        android:ems="10"
        android:inputType="textPersonName"
        android:hint="Enter Name Here"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView" />
<EditText
        android:id="@+id/editTextTextPersonName4"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="116dp"
        android:layout_marginTop="36dp"
        android:ems="10"
        android:inputType="textPersonName"
        android:hint="Enter contact Here"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editTextTextPersonName" />
<EditText
        android:id="@+id/editTextTextPersonName5"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="116dp"
        android:layout_marginTop="40dp"
        android:ems="10"
        android:inputType="textPersonName"
        android:hint="Enter DOB"
        app:layout_constraintStart_toStartOf="parent"
```

```
        app:layout_constraintTop_toBottomOf="@+id/editTextTextPersonName4" />
    <Button
        android:id="@+id/button5"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="76dp"
        android:layout_marginTop="64dp"
        android:hint="Insert data"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editTextTextPersonName5" />
    <Button
        android:id="@+id/button7"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="8dp"
        android:layout_marginTop="64dp"
        android:text="View Details"
        app:layout_constraintStart_toEndOf="@+id/button5"
        app:layout_constraintTop_toBottomOf="@+id/editTextTextPersonName5" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.fb.insertview;

import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;

import android.database.Cursor;
import android.os.Bundle;
import android.view.View;
```

```
import android.widget.Button;

import android.widget.EditText;

import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    EditText name,age,contact;

    Button create1;

    DBHelper DB;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        name = (EditText) findViewById(R.id.editTextTextPersonName);

        age =(EditText) findViewById(R.id.editTextTextPersonName4);

        contact = (EditText) findViewById(R.id.editTextTextPersonName5);

        create1 = (Button) findViewById(R.id.button5);

        Button read = (Button)findViewById(R.id.button7);

        DB=new DBHelper(this);

        create1.setOnClickListener(new View.OnClickListener() {

            @Override

            public void onClick(View v) {

                String nameTXT=name.getText().toString();

                String ageTXT=age.getText().toString();

                String contactTXT=contact.getText().toString();

                Boolean checkinsertdata = DB.insertuserdatas(nameTXT,ageTXT,contactTXT);

                if(checkinsertdata == true)

                {

                    Toast.makeText(MainActivity.this, "data inserted", Toast.LENGTH_SHORT).show();

                }

                else
```

```
        {
            Toast.makeText(MainActivity.this, "failed to insert", Toast.LENGTH_SHORT).show();
        }
    }
});

read.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        Cursor res = DB.getdata();
        if(res.getCount()==0)
        {
            Toast.makeText(MainActivity.this, "no datas found", Toast.LENGTH_SHORT).show();
            return;
        }

        StringBuffer buffer = new StringBuffer();
        while(res.moveToNext())
        {
            buffer.append("name:"+res.getString(0)+"\n");
            buffer.append("age:"+res.getString(1)+"\n");
            buffer.append("contact:"+res.getString(2)+"\n\n");
        }

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

```
}
```

DBHelper.java

```
package com.fb.insertview;

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(Context context) {
        super(context, "user1.db", null, 1);
    }

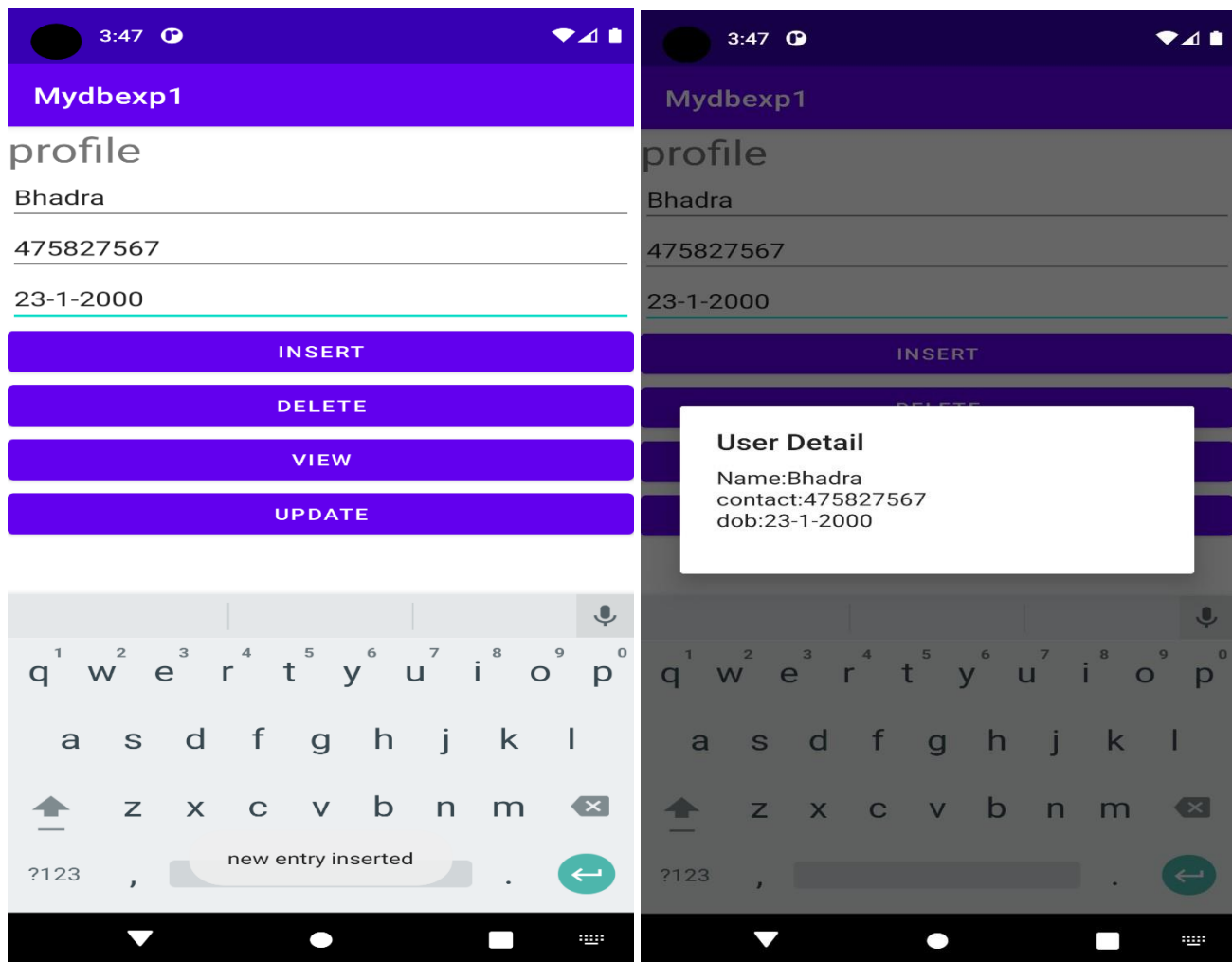
    @Override
    public void onCreate(SQLiteDatabase db) {
        db.execSQL("create table studdetails (name TEXT primary key, age TEXT, contact TEXT)");
    }

    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
        db.execSQL("drop table if exists studdetails");
    }

    public Boolean insertuserdatas (String name, String age,String contact) {
        SQLiteDatabase DB = this.getWritableDatabase();
        ContentValues contentvalues = new ContentValues();
        contentvalues.put("name", name);
        contentvalues.put("age", age);
        contentvalues.put("contact", contact);
```

```
        long result = DB.insert("studdetails", null, contentvalues);  
        if (result==-1) {  
            return false;  
        } else {  
            return true;  
        }  
    }  
}  
public Cursor getdata()  
{  
    SQLiteDatabase DB = this.getWritableDatabase();  
    Cursor cursor = DB.rawQuery("select * from studdetails",null);  
    return cursor;  
}  
}
```

Output Screenshot



Result

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

Experiment No.: 19**Aim**

Perform UPDATE and DELETE on SQLite database

CO5

Develop mobile applications using SQLite.

Procedure**Main activity.xml**

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

<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"

    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView

        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Enter the Details Below!"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.108" />

    <EditText

        android:id="@+id/editTextTextPersonName"
        android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
        android:layout_marginStart="116dp"
        android:layout_marginTop="24dp"
        android:ems="10"
        android:inputType="textPersonName"
        android:hint="Enter Name Here"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView" />
<EditText
        android:id="@+id/editTextTextPersonName4"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="116dp"
        android:layout_marginTop="36dp"
        android:ems="10"
        android:inputType="textPersonName"
        android:hint="Enter contact Here"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editTextTextPersonName" />
<EditText
        android:id="@+id/editTextTextPersonName5"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="116dp"
        android:layout_marginTop="40dp"
        android:ems="10"
        android:inputType="textPersonName"
        android:hint="Enter DOB"
        app:layout_constraintStart_toStartOf="parent"
```

```
app:layout_constraintTop_toBottomOf="@+id/editTextTextPersonName4" />

<Button
    android:id="@+id/button5"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="4dp"
    android:layout_marginTop="48dp"
    android:hint="Create"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/editTextTextPersonName5" />

<Button
    android:id="@+id/button6"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="8dp"
    android:layout_marginTop="48dp"
    android:text="Update"
    app:layout_constraintStart_toEndOf="@+id/button5"
    app:layout_constraintTop_toBottomOf="@+id/editTextTextPersonName5" />

<Button
    android:id="@+id/button7"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="8dp"
    android:layout_marginTop="48dp"
    android:text="Read"
    app:layout_constraintStart_toEndOf="@+id/button6"
    app:layout_constraintTop_toBottomOf="@+id/editTextTextPersonName5" />

<Button
```

```
        android:id="@+id/button8"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="4dp"
        android:layout_marginTop="48dp"
        android:text="Delete"
        app:layout_constraintStart_toEndOf="@+id/button7"
        app:layout_constraintTop_toBottomOf="@+id/editTextTextPersonName5" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.example.curdoperation;

import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;

import android.database.Cursor;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    EditText name,contact,dob;
    Button create1;
    DBHelper DB;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
```

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

name = (EditText) findViewById(R.id.editTextTextPersonName);
contact =(EditText) findViewById(R.id.editTextTextPersonName4);
dob = (EditText) findViewById(R.id.editTextTextPersonName5);
create1 = (Button) findViewById(R.id.button5);
Button update = (Button)findViewById(R.id.button6);
Button delete = (Button)findViewById(R.id.button8);
Button read = (Button)findViewById(R.id.button7);
DB=new DBHelper(this);
create1.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        String nameTXT=name.getText().toString();
        String contactTXT=contact.getText().toString();
        String dobTXT=dob.getText().toString();
        Boolean checkinsertdata = DB.insertuserdatas(nameTXT,contactTXT,dobTXT);
        if(checkinsertdata == true)
        {
            Toast.makeText(MainActivity.this, "data inserted",
Toast.LENGTH_SHORT).show();
        }
        else
        {
            Toast.makeText(MainActivity.this, "failed to insert",
Toast.LENGTH_SHORT).show();
        }
    }
});
update.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        String nameTXT=name.getText().toString();
```

```
String contactTXT=contact.getText().toString();

String dobTXT=dob.getText().toString();

Boolean checkupdatedata = DB.updateuserdatas(nameTXT,contactTXT,dobTXT);

if(checkupdatedata == true)

{

    Toast.makeText(MainActivity.this, "data updated", Toast.LENGTH_SHORT).show();

}

else

    {

        Toast.makeText(MainActivity.this, "failed to update,Toast.LENGTH_SHORT).show();

        }

    }

});

delete.setOnClickListener(new View.OnClickListener() {

    @Override

    public void onClick(View v) {

        String nameTXT=name.getText().toString();

        Boolean checkdeletedata = DB.deleteuserdatas(nameTXT);

        if(checkdeletedata == true)

        {

            Toast.makeText(MainActivity.this, "row deleted", Toast.LENGTH_SHORT).show();

        }

        else

        {

            Toast.makeText(MainActivity.this, "failed to delete row", Toast.LENGTH_SHORT).show();

        }

    }

});

read.setOnClickListener(new View.OnClickListener() {

    @Override

    public void onClick(View v) {
```

```
        Cursor res = DB.getdata();
        if(res.getCount()==0)
        {
            Toast.makeText(MainActivity.this, "no datas found",
Toast.LENGTH_SHORT).show();
            return;
        }
        StringBuffer buffer = new StringBuffer();
        while(res.moveToNext())
        {
            buffer.append("name:"+res.getString(0)+"\n");
            buffer.append("contact:"+res.getString(1)+"\n");
            buffer.append("dob:"+res.getString(2)+"\n\n");
        }
        AlertDialog.Builder builder = new AlertDialog.Builder(MainActivity.this);
        builder.setCancelable(true);
        builder.setTitle("user DEtails");
        builder.setMessage(buffer.toString());
        builder.show();
    }
}); }}
```

DBHelper.java

```
package com.example.curdoperation;
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(Context context) {
```

```
        super(context, "userdata.db", null, 1);
```

```
    }
```

```
    @Override
```

```
    public void onCreate(SQLiteDatabase db) {
```

```
        db.execSQL("create table userdetails (name TEXT primary key, contact TEXT , dob TEXT)");
```

```
    }
```

```
    @Override
```

```
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
```

```
        db.execSQL("drop table if exists userdetails");
```

```
    }
```

```
    public Boolean insertuserdatas (String name,String contact, String dob) {
```

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

```
        ContentValues contentvalues = new ContentValues();
```

```
        contentvalues.put("name", name);
```

```
        contentvalues.put("contact", contact);
```

```
        contentvalues.put("dob", dob);
```

```
        long result = DB.insert("userdetails", null, contentvalues);
```

```
        if (result==-1) {
```

```
            return false;
```

```
        } else {
```

```
            return true;
```

```
        }
```



```
}

public Boolean updateuserdatas (String name,String contact, String dob) {

    SQLiteDatabase DB = this.getWritableDatabase();

    ContentValues contentvalues = new ContentValues();

    contentvalues.put("contact", contact);

    contentvalues.put("dob", dob);

    Cursor cursor = DB.rawQuery("select * from userdetails where name= ?",new
String[]{name});

    if(cursor.getCount(>0)

    {

        long result = DB.update("userdetails", contentvalues,"name=?", new String[]{name});

        if (result== -1) {

            return false;

        } else {

            return true;

        }

    }

    else

    {

        return false;

    }

}

public Boolean deleteuserdatas (String name) {

    SQLiteDatabase DB = this.getWritableDatabase();

    ContentValues contentvalues = new ContentValues();

    Cursor cursor = DB.rawQuery("select * from userdetails where name= ?",new
String[]{name});

    if(cursor.getCount(>0)

    {

        long result = DB.delete("userdetails","name=?", new String[]{name});

        if (result== -1) {

            return false;

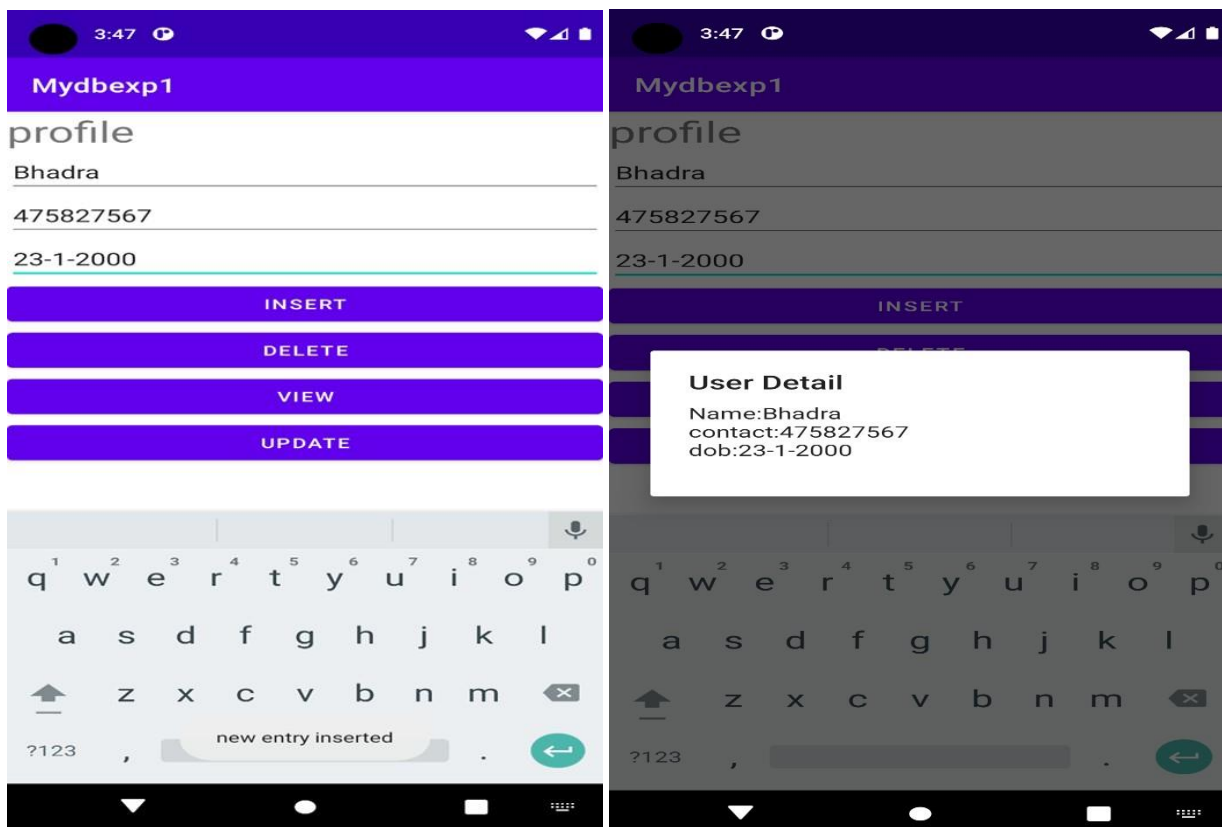
        }

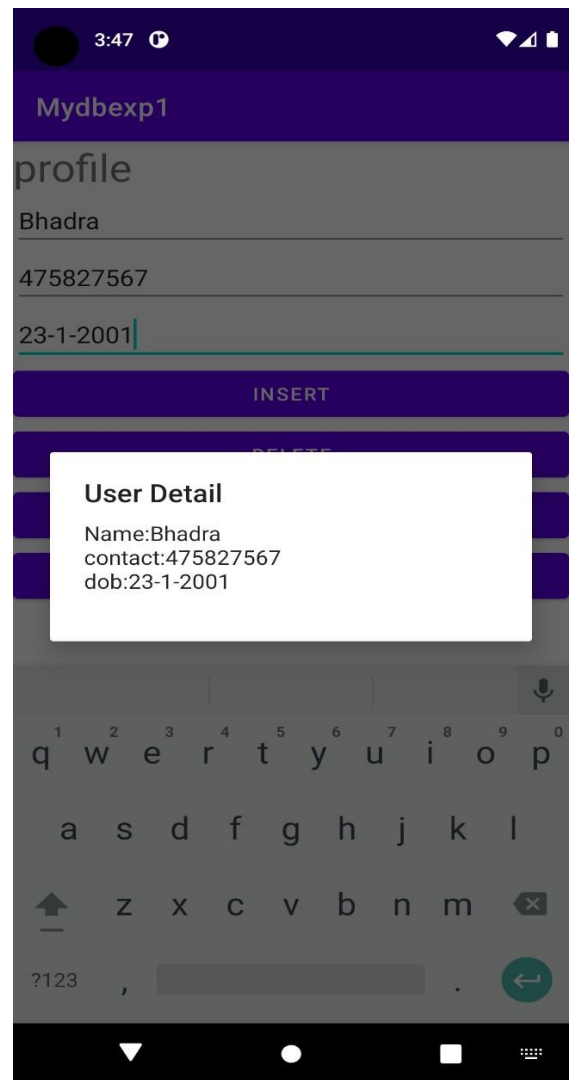
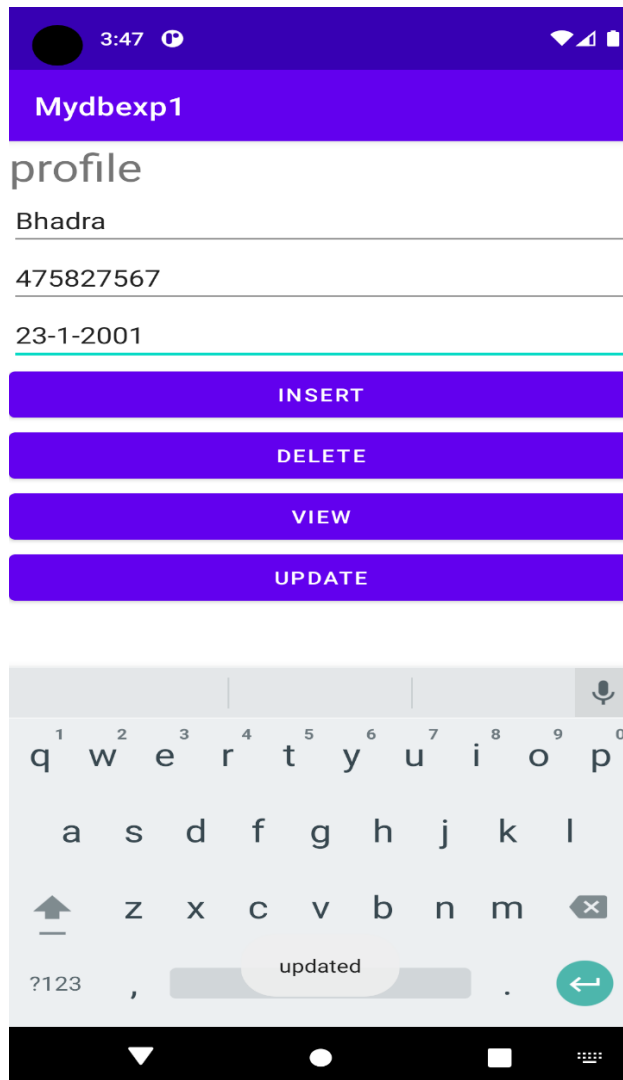
    }

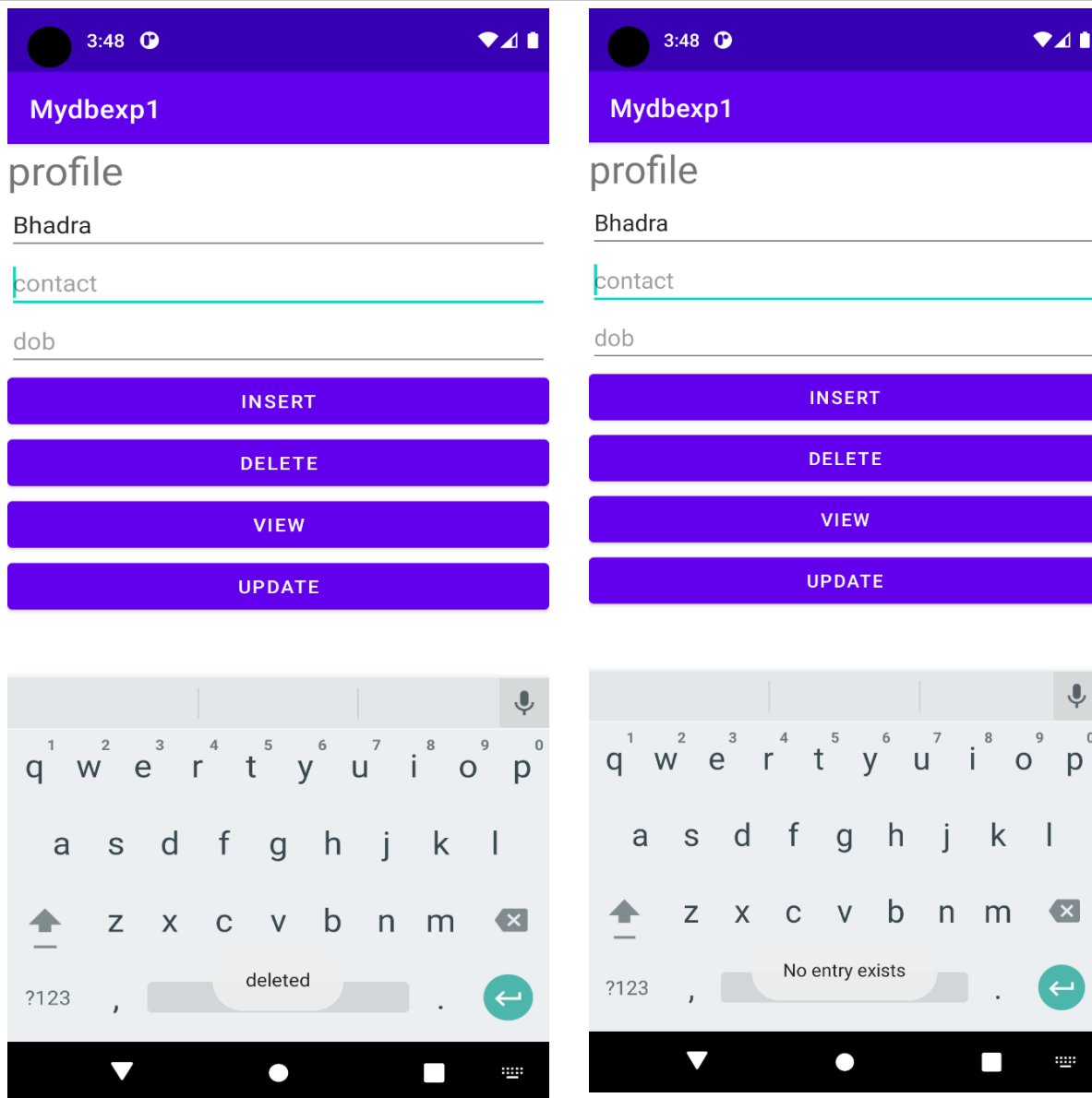
}
```

```
    } else {  
        return true;  
    }  
else  
{  
    return false;  
}  
  
public Cursor getdata()  
{  
    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.