20MCA243 MOBILE APPLICATION DEVELOPMENT LAB

Lab Report Submitted By

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In Partial fulfillment for the Award of the Degree Of

**MASTER OF COMPUTER APPLICATIONS (2 Year)
(MCA)
APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

**AMAL JYOTHI COLLEGE OF ENGINEERING
KANJIRAPPALLY**

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

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DEPARTMENT OF COMPUTER APPLICATIONS
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<u>CERTIFICATE</u>

This is to certify that the lab report, "**20MCA243 MOBILE APPLICATION DEVELOPMENT LAB"** is the bonafide work of **BILLAN JACOB JOHN (Reg.No: AJC20MCA-2034)** in partial fulfillment of the requirements for the award of the Degree of Master of Computer Applications under APJ Abdul Kalam Technological University during the year 2021-22.

Ms. Nimmy Francis
Staff In-Charge

CONTENT

Program no: 1

Aim: Program to develop the android mobile application which consist of GUI components for Login Page creation.

XML Code:

```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">
        <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="30dp"
        android:text="SIGN IN"
        android:textAppearance="?android:attr/textAppearance" />
        <TextView
        android:id="@+id/userName"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="@dimen/activity_horizontal_margin"
```

```
android:layout_marginTop="110dp"

android:text="UserName:"

android:textColor="#000000"

android:textSize="20sp" />

<TextView

android:id="@+id/password"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:layout_below="@+id/userName"

android:layout_margin="@dimen/activity_horizontal_margin"

android:text="Password"

android:textColor="#000000"

android:textSize="20sp" />

<EditText

android:id="@+id/edt_userName"

android:layout_width="fill_parent"

android:layout_height="40dp"

android:layout_marginLeft="@dimen/activity_horizontal_margin"

android:layout_marginTop="100dp"

android:layout_toRightOf="@+id/userName"

android:hint="User Name" />

<EditText

android:layout_width="fill_parent"

android:layout_height="40dp"

android:layout_below="@+id/edt_userName"

android:layout_centerVertical="true"

android:layout_toRightOf="@+id/password"
```

```
        android:hint="Password" />


        <Button

        android:id="@+id/btnLogin"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_below="@+id/password"

        android:layout_centerHorizontal="true"

        android:layout_marginTop="20dp"

        android:background="#00bfff"

        android:text="Login"

        android:textColor="#ffffff"

        android:textStyle="bold" />

</RelativeLayout>
```

Java Code:

```java
package com.example.a20_01_login;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

        @Override

        protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        }

}
```

Output:

Program no: 2

Aim: Program to display the content of EditText in TextView on button click.

XML Code:

```xml
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
        xmlns:tools="http://schemas.android.com/tools"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        tools:context=".MainActivity">
        <EditText
        android:id="@+id/mytext"
        android:layout_width="fill_parent"
        android:layout_height="40dp"
        android:layout_marginLeft="10dp"
        android:layout_marginTop="100dp"
        android:hint="Text" />
        <TextView
        android:id="@+id/output"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="160dp"
        android:layout_marginTop="300dp"
        android:hint="Text"
        android:textColor="#000000"
        android:textSize="20sp" />
```

```
<Button

android:id="@+id/mybutton"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:layout_centerHorizontal="true"

android:layout_marginTop="200dp"

android:background="#00bfff"

android:text="Submit"

android:textColor="#ffffff"

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

Java Code:

```
package com.example.a20_01_textview;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

        TextView txt1, txt2;

        Button btn;

        @Override

        protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        txt1 = (TextView) findViewById(R.id.mytext);
```

txt2 = (TextView) findViewById(R.id.output);

btn=(Button) findViewById(R.id.mybutton);

btn.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v)

{

    txt2.setText(txt1.getText().toString());   }

});

} }

Output:
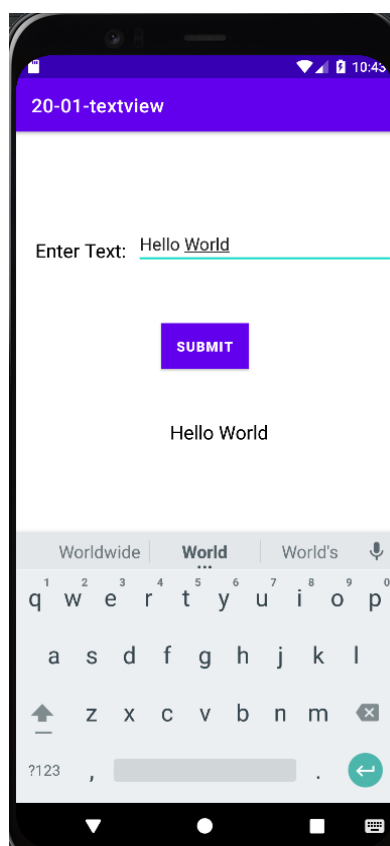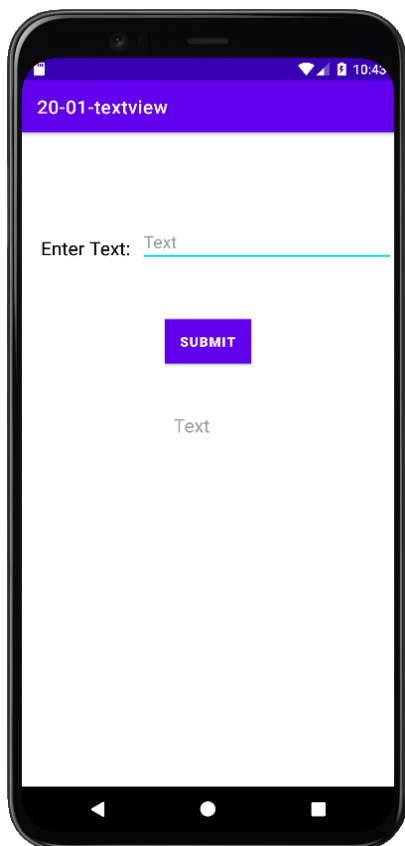
Program no: 3

Aim: Design a Login Form with username and password using LinearLayout and toast valid credentials

XML Code:

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    xmlns:card_view="http://schemas.android.com/apk/res-auto"
    tools:context=".MainActivity"
    android:orientation="vertical"
    android:background="#9FC667">
    <androidx.cardview.widget.CardView
        android:layout_margin="64dp"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        card_view:cardCornerRadius="50dp"
        card_view:cardElevation="10dp"
        android:background="#fff">
        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:orientation="vertical"
            android:padding="24dp">
```

```xml
<TextView

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:layout_gravity="center_horizontal"

    android:text="Login Page"

    android:textAlignment="center"

    android:textSize="36sp" />

<TextView

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:text="Username"

    android:textColor="@color/black"

    android:textSize="22sp" />

<EditText

    android:id="@+id/activity_main_usernameEditText"

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:inputType="text" />

<TextView

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:text="Password"

    android:textColor="@color/black"

    android:textSize="22sp" />

<EditText

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

```
                android:layout_width="match_parent"

                android:layout_height="wrap_content"

                android:inputType="textPassword" />

            <Button

                android:id="@+id/activity_main_loginButton"

                android:layout_width="match_parent"

                android:layout_height="wrap_content"

                android:text="LOGIN"

                android:textSize="20sp" />

        </LinearLayout>

    </androidx.cardview.widget.CardView>

</LinearLayout>
```

Java Code:

```
package com.example.qn3;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.Toast;


public class MainActivity extends AppCompatActivity {

    private EditText usernameEditText;

    private EditText passwordEditText;

    private Button loginButton;

    @Override
```

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

    super.onCreate(savedInstanceState);

    setContentView(R.layout.activity_main);


    usernameEditText = findViewById(R.id.activity_main_usernameEditText);

    passwordEditText = findViewById(R.id.activity_main_passwordEditText);

    loginButton = findViewById(R.id.activity_main_loginButton);

    loginButton.setOnClickListener(new View.OnClickListener() {

        @Override

        public void onClick(View v) {

            if (usernameEditText.getText().length() > 0 &&
passwordEditText.getText().length() > 0) {

                String toastMessage = "Username: " + usernameEditText.getText().toString() +
", Password: " + passwordEditText.getText().toString();

                Toast.makeText(getApplicationContext(), toastMessage,
Toast.LENGTH_SHORT).show();

            } else {

                String toastMessage = "Username or Password are not populated";

                Toast.makeText(getApplicationContext(), toastMessage,
Toast.LENGTH_SHORT).show();

            }

        }

    });

    }

}
```

Output:
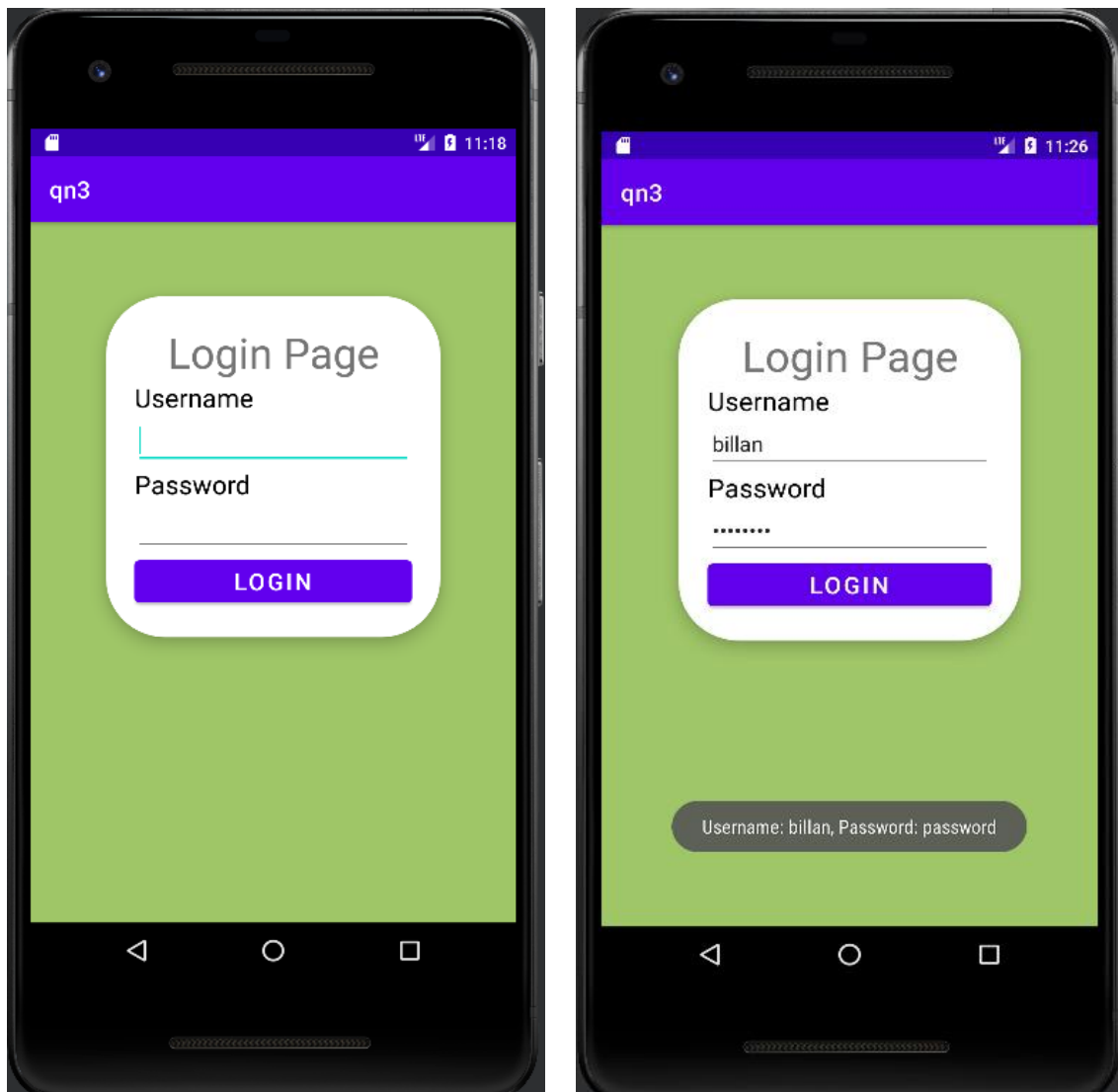
Program no: 4

Aim: Implementing basic arithmetic operations of a simple calculator

XML Code:

```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"
    android:padding="20dp"
    android:orientation="vertical"
    android:background="@color/white">
    <TextView
        android:layout_gravity="center"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Calculator"
        android:textSize="25sp"
        android:layout_marginTop="30dp"
        android:layout_marginBottom="20dp"
        android:textColor="@android:color/black" />
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
```

```
    android:orientation="horizontal"

    android:layout_marginTop="30dp"

    android:layout_marginBottom="20dp"

    android:layout_gravity="center">

    <EditText

        android:id="@+id/first_no"

        android:layout_width="102dp"

        android:layout_height="59dp"

        android:ems="10"

        android:layout_marginHorizontal="50dp"

        android:hint="Number 1" />

    <EditText

        android:id="@+id/second_no"

        android:layout_width="102dp"

        android:layout_height="59dp"

        android:ems="10"

        android:hint="Number 2" />

</LinearLayout>


<LinearLayout

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:orientation="horizontal"

    android:layout_marginBottom="20dp"

    android:layout_gravity="center">

    <TextView

        android:layout_marginTop="30dp"
```

```
        android:textSize="25sp"

        android:id="@+id/answer"

        android:layout_width="102dp"

        android:layout_height="59dp"

        android:layout_marginHorizontal="50dp"

        android:hint="Answer" />

</LinearLayout>

<LinearLayout

    android:orientation="horizontal"

    android:layout_marginTop="30dp"

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:layout_marginBottom="30dp"

    android:layout_gravity="center">


    <Button

        android:id="@+id/sub"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_marginLeft="10dp"

        android:text="-"

        android:textSize="25sp"

        android:layout_marginBottom="16dp" />

    <Button

        android:id="@+id/add"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"
```

```
        android:layout_marginBottom="16dp"

        android:text="+"

        android:textSize="25sp"

        android:layout_marginLeft="10dp"

        tools:ignore="OnClick" />

    <Button

        android:id="@+id/div"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:text="/"

        android:textSize="25sp"

        android:layout_marginLeft="10dp"

        android:layout_marginBottom="16dp" />

    <Button

        android:id="@+id/mul"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_marginBottom="16dp"

        android:text="X"

        android:layout_marginLeft="10dp"

        android:textSize="25sp"/>

</LinearLayout>

<LinearLayout

    android:layout_marginTop="30dp"

    android:orientation="horizontal"

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"
```

```
        android:layout_marginBottom="30dp"

        android:layout_gravity="center">

    <Button

        android:id="@+id/equals"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:text="="

        android:textSize="35sp"/>

  </LinearLayout>

</LinearLayout>
```

Java Code:

```java
package com.example.calculator5;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    EditText no1 , no2;

    Button add ,mul ,div , sub,equal;

    TextView answer;

    double ans = 0;

    @Override

    protected void onCreate(Bundle savedInstanceState) {
```

```
super.onCreate(savedInstanceState);

setContentView(R.layout.activity_main);


no1 = findViewById(R.id.first_no);

no2 = findViewById(R.id.second_no);

add = findViewById(R.id.add);

mul = findViewById(R.id.mul);

div = findViewById(R.id.div);

sub = findViewById(R.id.sub);

equal = findViewById(R.id.equals);

answer = findViewById(R.id.answer);

add.setOnClickListener(new View.OnClickListener() {

    @Override

    public void onClick(View v) {

        String num1 = no1.getText().toString();

        String num2 = no2.getText().toString();

        if (num1.isEmpty() || num2.isEmpty()) {

            Toast.makeText(getApplicationContext(),"Enter
Numbers",Toast.LENGTH_SHORT).show();

        }

        else {

            double a = Double.parseDouble(no1.getText().toString());

            double b = Double.parseDouble(no2.getText().toString());

            ans = a + b;

        }

    }

});
```

```java
sub.setOnClickListener(new View.OnClickListener() {

    @Override

    public void onClick(View v) {

        String num1 = no1.getText().toString();

        String num2 = no2.getText().toString();

        if (num1.isEmpty() || num2.isEmpty()) {

            Toast.makeText(getApplicationContext(),"Enter
Numbers",Toast.LENGTH_SHORT).show();

        }

        else {

            double a = Double.parseDouble(no1.getText().toString());

            double b = Double.parseDouble(no2.getText().toString());

            ans = a - b;

        }

    }

});
mul.setOnClickListener(new View.OnClickListener() {

    @Override

    public void onClick(View v) {

        String num1 = no1.getText().toString();

        String num2 = no2.getText().toString();


        if (num1.isEmpty() || num2.isEmpty()) {

            Toast.makeText(getApplicationContext(),"Enter
Numbers",Toast.LENGTH_SHORT).show();

        }

        else {

            double a = Double.parseDouble(no1.getText().toString());
```

```java
            double b = Double.parseDouble(no2.getText().toString());

            ans = a * b;

        }

    }

});

div.setOnClickListener(new View.OnClickListener() {

    @Override

    public void onClick(View v) {

        String num1 = no1.getText().toString();

        String num2 = no2.getText().toString();

        if (num1.isEmpty() || num2.isEmpty()) {

            Toast.makeText(getApplicationContext(), "Enter Numbers",
Toast.LENGTH_SHORT).show();

        } else {

            double a = Double.parseDouble(no1.getText().toString());

            double b = Double.parseDouble(no2.getText().toString());

            if (b != 0)

                ans = a / b;

            else

                Toast.makeText(getApplicationContext(), "Enter Valid Numbers",
Toast.LENGTH_SHORT).show();

        }

    }

});

equal.setOnClickListener(new View.OnClickListener() {

    @Override

    public void onClick(View v) {

        String ans1 = String.valueOf(ans);
```
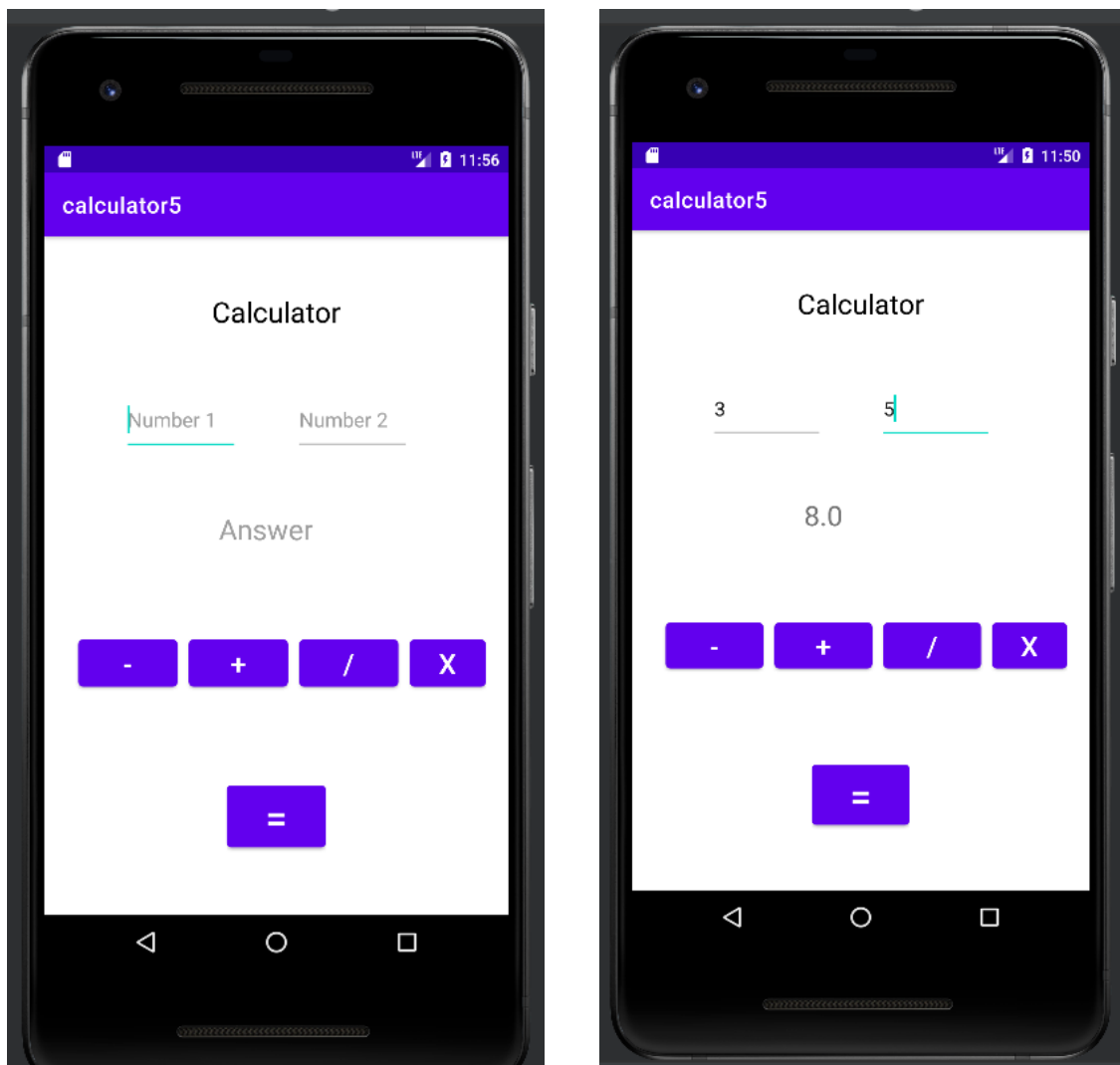
```
        answer.setText(ans1);

        ans= 0;

    }

});


}

}
```

Output:

Program no: 5

Aim: Implement validations on various UI controls.

XML Code:

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

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

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

    android:layout_width="match_parent"

    android:layout_height="match_parent"

    android:orientation="vertical"

    tools:context=".MainActivity"

    tools:ignore="HardcodedText">

    <EditText

        android:id="@+id/firstName"

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:layout_marginStart="16dp"

        android:layout_marginTop="16dp"

        android:layout_marginEnd="16dp"

        android:hint="First Name"

        android:inputType="text" />

 <EditText

        android:id="@+id/lastName"

        android:layout_width="match_parent"

        android:layout_height="wrap_content"
```

```
    android:layout_marginStart="16dp"

    android:layout_marginTop="16dp"

    android:layout_marginEnd="16dp"

    android:hint="Last Name"

    android:inputType="text" />

<EditText

    android:id="@+id/email"

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:layout_marginStart="16dp"

    android:layout_marginTop="16dp"

    android:layout_marginEnd="16dp"

    android:hint="Email"

    android:inputType="textEmailAddress" />

<EditText

    android:id="@+id/password"

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:layout_marginStart="16dp"

    android:layout_marginTop="16dp"

    android:layout_marginEnd="16dp"

    android:hint="Password"

    android:inputType="textPassword" />

<LinearLayout

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:layout_marginTop="8dp"
```

```xml
        android:gravity="end"

        android:orientation="horizontal">

        <Button

            android:id="@+id/cancelButton"

            style="@style/Widget.AppCompat.Button.Borderless"

            android:layout_width="wrap_content"

            android:layout_height="wrap_content"

            android:layout_marginEnd="4dp"

            android:text="CANCEL"

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

        <Button

            android:id="@+id/proceedButton"

            android:layout_width="wrap_content"

            android:layout_height="wrap_content"

            android:layout_marginEnd="16dp"

            android:backgroundTint="@color/black"

            android:text="PROCEED"

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

            tools:ignore="ButtonStyle" />

    </LinearLayout>

</LinearLayout>
```

Java Code:

```java
package com.example.ui_validation;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;

import android.os.Bundle;
```

```java
import android.view.View;

import android.widget.Button;

import android.widget.EditText;

public class MainActivity extends AppCompatActivity {

    Button bCancel, bProceed;

    EditText etFirstName, etLastName, etEmail, etPassword;

    boolean isAllFieldsChecked = false;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        bProceed = findViewById(R.id.proceedButton);

        bCancel = findViewById(R.id.cancelButton);

        etFirstName = findViewById(R.id.firstName);

        etLastName = findViewById(R.id.lastName);

        etEmail = findViewById(R.id.email);

        etPassword = findViewById(R.id.password);

        bProceed.setOnClickListener(new View.OnClickListener() {

            @Override

            public void onClick(View v) {

                isAllFieldsChecked = CheckAllFields();

                if (isAllFieldsChecked) {

                    Intent i = new Intent(MainActivity.this, MainActivity2.class);

                    startActivity(i);

                }

            }

        });
```

```java
bCancel.setOnClickListener(new View.OnClickListener() {

    @Override

    public void onClick(View v) {

        MainActivity.this.finish();

        System.exit(0);

    }

});

}

private boolean CheckAllFields() {

    if (etFirstName.length() == 0) {

        etFirstName.setError("This field is required");

        return false;

    }

    if (etLastName.length() == 0) {

        etLastName.setError("This field is required");

        return false;

    }

    if (etEmail.length() == 0) {

        etEmail.setError("Email is required");

        return false;

    }

    if (etPassword.length() == 0) {

        etPassword.setError("Password is required");

        return false;

    } else if (etPassword.length() < 8) {

        etPassword.setError("Password must be minimum 8 characters");

        return false;
```

```
    }
return true; }          }
```

Output:
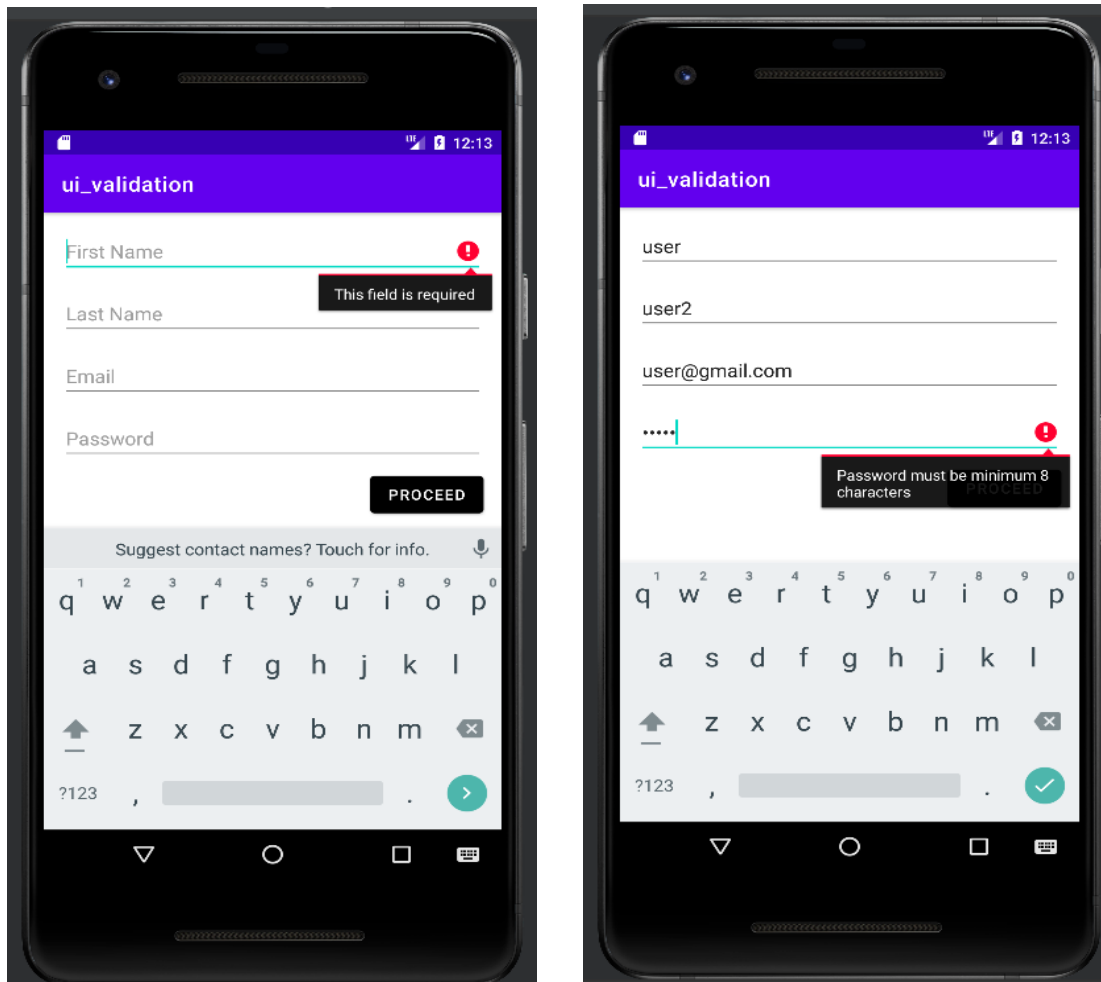
Program no: 6

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

XML Code:

```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=".explicit_intent">

    <TextView

        android:id="@+id/textView3"

        android:layout_width="60dp"

        android:layout_height="17dp"

        android:text="Name"

        app:layout_constraintBottom_toBottomOf="parent"

        app:layout_constraintEnd_toEndOf="parent"

        app:layout_constraintHorizontal_bias="0.091"

        app:layout_constraintStart_toStartOf="parent"

        app:layout_constraintTop_toTopOf="parent"

        app:layout_constraintVertical_bias="0.222" />

    <EditText

        android:id="@+id/name"

        android:layout_width="wrap_content"
```

```
android:layout_height="wrap_content"

android:ems="10"

android:inputType="textPersonName"

app:layout_constraintBottom_toBottomOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintHorizontal_bias="0.756"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintTop_toTopOf="parent"

app:layout_constraintVertical_bias="0.215" />

<TextView

    android:id="@+id/textView4"

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:text="Email ID"

    app:layout_constraintBottom_toBottomOf="parent"

    app:layout_constraintEnd_toEndOf="parent"

    app:layout_constraintHorizontal_bias="0.096"

    app:layout_constraintStart_toStartOf="parent"

    app:layout_constraintTop_toTopOf="parent"

    app:layout_constraintVertical_bias="0.325" />

<EditText

    android:id="@+id/em"

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:ems="10"

    android:inputType="textPersonName"

    app:layout_constraintBottom_toBottomOf="parent"
```

```
        app:layout_constraintEnd_toEndOf="parent"

        app:layout_constraintHorizontal_bias="0.761"

        app:layout_constraintStart_toStartOf="parent"

        app:layout_constraintTop_toTopOf="parent"

        app:layout_constraintVertical_bias="0.319" />

    <TextView

        android:id="@+id/textView5"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:text="Phone No."

        app:layout_constraintBottom_toBottomOf="parent"

        app:layout_constraintEnd_toEndOf="parent"

        app:layout_constraintHorizontal_bias="0.09"

        app:layout_constraintStart_toStartOf="parent"

        app:layout_constraintTop_toTopOf="parent"

        app:layout_constraintVertical_bias="0.435" />

    <EditText

        android:id="@+id/ph"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:ems="10"

        android:inputType="number"

        app:layout_constraintBottom_toBottomOf="parent"

        app:layout_constraintEnd_toEndOf="parent"

        app:layout_constraintHorizontal_bias="0.761"

        app:layout_constraintStart_toStartOf="parent"

        app:layout_constraintTop_toTopOf="parent"
```

```
    app:layout_constraintVertical_bias="0.431" />

<Button

    android:id="@+id/sav"

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:text="SAVE"

    app:layout_constraintBottom_toBottomOf="parent"

    app:layout_constraintEnd_toEndOf="parent"

    app:layout_constraintHorizontal_bias="0.413"

    app:layout_constraintStart_toStartOf="parent"

    app:layout_constraintTop_toTopOf="parent"

    app:layout_constraintVertical_bias="0.562" />

<TextView

    android:id="@+id/textView6"

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:text="Enter Your Details"

    android:textSize="25sp"

    android:textStyle="bold"

    app:layout_constraintBottom_toBottomOf="parent"

    app:layout_constraintEnd_toEndOf="parent"

    app:layout_constraintHorizontal_bias="0.464"

    app:layout_constraintStart_toStartOf="parent"

    app:layout_constraintTop_toTopOf="parent"

    app:layout_constraintVertical_bias="0.133" />

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

Display

```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=".display">

    <TextView

  android:id="@+id/textView2"

  android:layout_width="wrap_content"

  android:layout_height="wrap_content"

    android:text="Your Details Using Intent"

  android:textStyle="bold"

    android:textSize="20sp"

  app:layout_constraintBottom_toBottomOf="parent"

  app:layout_constraintEnd_toEndOf="parent"

  app:layout_constraintHorizontal_bias="0.498"

  app:layout_constraintStart_toStartOf="parent"

    app:layout_constraintTop_toTopOf="parent"

  app:layout_constraintVertical_bias="0.146" />

    <TextView

  android:id="@+id/dis"

  android:layout_width="wrap_content"
```

```
android:layout_height="wrap_content"

    android:textStyle="italic"

android:textSize="15sp"

app:layout_constraintBottom_toBottomOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintHorizontal_bias="0.498"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintTop_toTopOf="parent"

app:layout_constraintVertical_bias="0.233" />

    <TextView

android:id="@+id/textView3"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

    android:text="Your Details Using Shared Preference"

android:textSize="20sp"

android:textStyle="bold"

app:layout_constraintBottom_toBottomOf="parent"

app:layout_constraintEnd_toEndOf="parent"

    app:layout_constraintHorizontal_bias="0.771"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintTop_toTopOf="parent"

app:layout_constraintVertical_bias="0.467" />

    <TextView

android:id="@+id/dis1"

    android:layout_width="wrap_content"
```

android:layout_height="wrap_content"

android:textSize="15sp"

android:textStyle="italic"

app:layout_constraintBottom_toBottomOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintHorizontal_bias="0.527"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintTop_toTopOf="parent"

app:layout_constraintVertical_bias="0.571" />

</androidx.constraintlayout.widget.ConstraintLayout>

Java Code:

```java
package com.example.sharedpreference;

import androidx.appcompat.app.ActionBar;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;

import android.content.SharedPreferences;

import android.os.Bundle;

import android.view.View;

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);

    ActionBar a=getSupportActionBar();

a.setTitle("Welcome");

    Button sub=findViewById(R.id.sav);

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

    EditText email=findViewById(R.id.em);

    EditText phone=findViewById(R.id.ph);

    sub.setOnClickListener(new View.OnClickListener() {

    @Override

    public void onClick(View view) {

            Intent i=new Intent(MainActivity.this,display.class);

            String user= nam.getText().toString();

        i.putExtra("Name",user);

            String E_mail=email.getText().toString();

        i.putExtra("Email",E_mail);

            String Phones=phone.getText().toString();

        i.putExtra("Phone",Phones);

            startActivity(i);

            SharedPreferences sharedPreferences =
getSharedPreferences("MySharedPref",MODE_PRIVATE);

            SharedPreferences.Editor myEdit = sharedPreferences.edit();

            myEdit.putString("name", nam.getText().toString());

            myEdit.putString("email", email.getText().toString());

            myEdit.putString("phone", phone.getText().toString());
```

```
        myEdit.apply();

    }

    });



    }

}
```

Display

```
package com.example.sharedpreference;

import androidx.appcompat.app.ActionBar;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;

import android.content.SharedPreferences;

import android.os.Bundle;

import android.widget.TextView;

public class display extends AppCompatActivity {

    @Override

    protected void onCreate(Bundle savedInstanceState) {

    super.onCreate(savedInstanceState);

    setContentView(R.layout.activity_display);

    ActionBar a=getSupportActionBar();

    a.setTitle("Display");

    TextView diss=findViewById(R.id.dis);

    TextView diss1=findViewById(R.id.dis1);

    Intent i=getIntent();

    String name=i.getStringExtra("Name");
```

```java
        String email=i.getStringExtra("Email");

        String phone=i.getStringExtra("Phone");

        diss.setText("Name : "+name+"\nEmail : "+email+"\nPhone : "+phone);

        SharedPreferences sharedPreferences =
getSharedPreferences("MySharedPref",MODE_PRIVATE);

        String Name=sharedPreferences.getString("name","");

        String Email=sharedPreferences.getString("email","");

        String Phone=sharedPreferences.getString("phone","");

        diss1.setText("Name : "+Name+"\nEmail : "+Email+"\nPhone : "+Phone);


    }

}
```
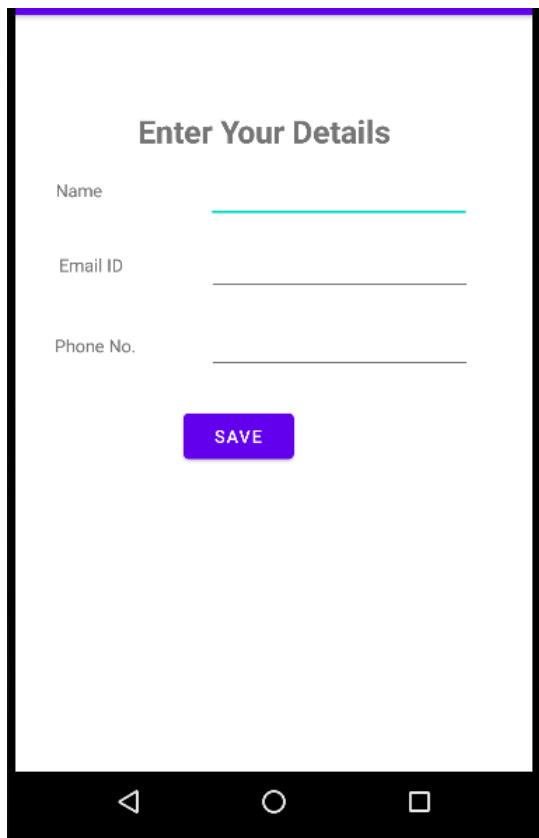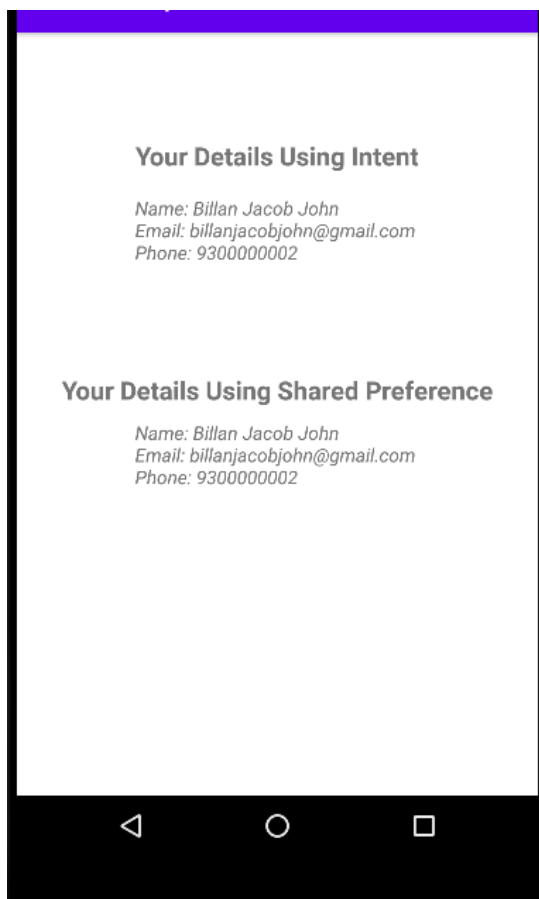
Output:

Program no: 7

Aim: Design a simple Calculator using GridLayout and Cascaded LinearLayout

XML Code:

```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:background="#ecf0f1"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="0.3"
        android:orientation="horizontal">
        <TextView
            android:id="@+id/display"
            android:layout_width="match_parent"
            android:layout_height="201dp"
            android:textColor="@color/black"
            android:background="#ecf0f1"
            android:textSize="30sp" />
    </LinearLayout>
```

```xml
<LinearLayout

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:layout_weight="0.2"

    android:orientation="horizontal">

    <Button

        android:id="@+id/buttonDel"

        android:layout_width="wrap_content"

        android:layout_height="92dp"

        android:layout_margin="4dp"

        android:layout_weight="0.25"

        android:text="DELETE"

        android:textColor="#ecf0f1"

        android:textSize="20sp" />

    <Button

        android:id="@+id/buttoneql"

        android:layout_width="wrap_content"

        android:layout_height="92dp"

        android:layout_margin="4dp"

        android:layout_weight="0.25"

        android:text="="

        android:textColor="#ecf0f1"

        android:textSize="20sp" />

</LinearLayout>

<LinearLayout

    android:layout_width="match_parent"

    android:layout_height="wrap_content"
```

```
android:layout_weight="0.2"

android:orientation="horizontal">

<Button

    android:id="@+id/button1"

    android:layout_width="wrap_content"

    android:layout_height="match_parent"

    android:layout_margin="1dp"

    android:layout_weight="0.25"

    android:text="1"

    android:textColor="#ecf0f1"

    android:textSize="20sp" />

<Button

    android:id="@+id/button2"

    android:layout_width="wrap_content"

    android:layout_height="match_parent"

    android:layout_margin="1dp"

    android:layout_weight="0.25"

    android:text="2"

    android:textColor="#ecf0f1"

    android:textSize="20sp" />

<Button

    android:id="@+id/button3"

    android:layout_width="wrap_content"

    android:layout_height="match_parent"

    android:layout_margin="1dp"

    android:layout_weight="0.25"

    android:text="3"
```

```
            android:textColor="#ecf0f1"

            android:textSize="20sp" />

    <Button

            android:id="@+id/buttondiv"

            android:layout_width="wrap_content"

            android:layout_height="match_parent"

            android:layout_margin="1dp"

            android:layout_weight="0.25"

            android:text="/"

            android:textColor="#ecf0f1"

            android:textSize="30sp" />

</LinearLayout>

<LinearLayout

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:layout_weight="0.2"

    android:orientation="horizontal">

    <Button

            android:id="@+id/button4"

            android:layout_width="wrap_content"

            android:layout_height="match_parent"

            android:layout_margin="1dp"

            android:layout_weight="0.25"

            android:text="4"

            android:textColor="#ecf0f1"

            android:textSize="20sp" />

    <Button
```

```
    android:id="@+id/button5"

    android:layout_width="wrap_content"

    android:layout_height="match_parent"

    android:layout_margin="1dp"

    android:layout_weight="0.25"

    android:text="5"

    android:textColor="#ecf0f1"

    android:textSize="20sp" />

<Button

    android:id="@+id/button6"

    android:layout_width="wrap_content"

    android:layout_height="match_parent"

    android:layout_margin="1dp"

    android:layout_weight="0.25"

    android:text="6"

    android:textColor="#ecf0f1"

    android:textSize="20sp" />

<Button

    android:id="@+id/buttonsub"

    android:layout_width="wrap_content"

    android:layout_height="match_parent"

    android:layout_margin="1dp"

    android:layout_weight="0.25"

    android:text="-"

    android:textColor="#ecf0f1"

    android:textSize="30sp" />

</LinearLayout>
```

```xml
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_weight="0.2"
    android:orientation="horizontal">
    <Button
        android:id="@+id/button7"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:text="7"
        android:textColor="#ecf0f1"
        android:textSize="20sp" />
    <Button
        android:id="@+id/button8"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:text="8"
        android:textColor="#ecf0f1"
        android:textSize="20sp" />
    <Button
        android:id="@+id/button9"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
```

```
    android:layout_margin="1dp"

    android:layout_weight="0.25"

    android:text="9"

    android:textColor="#ecf0f1"

    android:textSize="20sp" />

<Button

    android:id="@+id/buttonmul"

    android:layout_width="wrap_content"

    android:layout_height="match_parent"

    android:layout_margin="1dp"

    android:layout_weight="0.25"

    android:text="x"

    android:textColor="#ecf0f1"

    android:textSize="30sp" />

</LinearLayout>

<LinearLayout

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:layout_weight="0.2"

    android:orientation="horizontal">

    <Button

        android:id="@+id/buttonDot"

        android:layout_width="wrap_content"

        android:layout_height="match_parent"

        android:layout_margin="1dp"

        android:layout_weight="0.25"
```

```
    android:text="."

    android:textColor="#ecf0f1"

    android:textSize="20sp" />

<Button

    android:id="@+id/button0"

    android:layout_width="wrap_content"

    android:layout_height="match_parent"

    android:layout_margin="1dp"

    android:layout_weight="0.25"

    android:text="0"

    android:textColor="#ecf0f1"

    android:textSize="20sp" />

<Button

    android:id="@+id/Remainder"

    android:layout_width="wrap_content"

    android:layout_height="match_parent"

    android:layout_margin="1dp"

    android:layout_weight="0.25"

    android:text="%"

    android:textColor="#ecf0f1"

    android:textSize="30sp" />

<Button

    android:id="@+id/buttonadd"

    android:layout_width="wrap_content"

    android:layout_height="match_parent"

    android:layout_margin="1dp"

    android:layout_weight="0.25"
```

```xml
            android:onClick="onClick"

            android:text="+"

            android:textColor="#ecf0f1"

            android:textSize="30sp" />

    </LinearLayout>

</LinearLayout>
```

Java Code:

```java
package com.example.calculator;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.TextView;


public class MainActivity extends AppCompatActivity {

    double input1 = 0, input2 = 0;

    TextView edt1;

    boolean Addition, Subtract, Multiplication, Division, mRemainder, decimal;

    Button button0, button1, button2, button3, button4, button5, button6, button7, button8, button9, buttonAdd, buttonSub,

            buttonMul, buttonDivision, buttonEqual, buttonDel, buttonDot, Remainder;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

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

```java
button0 = (Button) findViewById(R.id.button0);

button1 = (Button) findViewById(R.id.button1);

button2 = (Button) findViewById(R.id.button2);

button3 = (Button) findViewById(R.id.button3);

button4 = (Button) findViewById(R.id.button4);

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

button6 = (Button) findViewById(R.id.button6);

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

button8 = (Button) findViewById(R.id.button8);

button9 = (Button) findViewById(R.id.button9);

buttonDot = (Button) findViewById(R.id.buttonDot);

buttonAdd = (Button) findViewById(R.id.buttonadd);

buttonSub = (Button) findViewById(R.id.buttonsub);

buttonMul = (Button) findViewById(R.id.buttonmul);

buttonDivision = (Button) findViewById(R.id.buttondiv);

Remainder = (Button) findViewById(R.id.Remainder);

buttonDel = (Button) findViewById(R.id.buttonDel);

buttonEqual = (Button) findViewById(R.id.buttoneql);

edt1 = (TextView) findViewById(R.id.display);

button1.setOnClickListener(new View.OnClickListener() {

    @Override

    public void onClick(View v) {

        edt1.setText(edt1.getText() + "1");

    }

});

button2.setOnClickListener(new View.OnClickListener() {

    @Override
```

```java
    public void onClick(View v) {

      edt1.setText(edt1.getText() + "2");

    }

});

button3.setOnClickListener(new View.OnClickListener() {

  @Override

  public void onClick(View v) {

    edt1.setText(edt1.getText() + "3");

  }

});

button4.setOnClickListener(new View.OnClickListener() {

  @Override

  public void onClick(View v) {

    edt1.setText(edt1.getText() + "4");

  }

});

button5.setOnClickListener(new View.OnClickListener() {

  @Override

  public void onClick(View v) {

    edt1.setText(edt1.getText() + "5");

  }

});

button6.setOnClickListener(new View.OnClickListener() {

  @Override

  public void onClick(View v) {

    edt1.setText(edt1.getText() + "6");

  }
```

```java
    });

    button7.setOnClickListener(new View.OnClickListener() {

        @Override

        public void onClick(View v) {

            edt1.setText(edt1.getText() + "7");

        }

    });

    button8.setOnClickListener(new View.OnClickListener() {

        @Override

        public void onClick(View v) {

            edt1.setText(edt1.getText() + "8");

        }

    });

    button9.setOnClickListener(new View.OnClickListener() {

        @Override

        public void onClick(View v) {

            edt1.setText(edt1.getText() + "9");

        }

    });

    button0.setOnClickListener(new View.OnClickListener() {

        @Override

        public void onClick(View v) {

            edt1.setText(edt1.getText() + "0");

        }

    });


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

```java
    @Override

    public void onClick(View v) {

       if (edt1.getText().length() != 0) {

          input1 = Float.parseFloat(edt1.getText() + "");

          Addition = true;

          decimal = false;

          edt1.setText(null);

       }

    }

});

buttonSub.setOnClickListener(new View.OnClickListener() {

    @Override

    public void onClick(View v) {

       if (edt1.getText().length() != 0) {

          input1 = Float.parseFloat(edt1.getText() + "");

          Subtract = true;

          decimal = false;

          edt1.setText(null);

       }

    }

});


buttonMul.setOnClickListener(new View.OnClickListener() {

    @Override

    public void onClick(View v) {

       if (edt1.getText().length() != 0) {

          input1 = Float.parseFloat(edt1.getText() + "");
```

```java
                Multiplication = true;

                decimal = false;

                edt1.setText(null);

            }

        }

    });

    buttonDivision.setOnClickListener(new View.OnClickListener() {

        @Override

        public void onClick(View v) {

            if (edt1.getText().length() != 0) {

                input1 = Float.parseFloat(edt1.getText() + "");

                Division = true;

                decimal = false;

                edt1.setText(null);

            }

        }

    });

    Remainder.setOnClickListener(new View.OnClickListener() {

        @Override

        public void onClick(View v) {

            if (edt1.getText().length() != 0) {

                input1 = Float.parseFloat(edt1.getText() + "");

                mRemainder = true;

                decimal = false;

                edt1.setText(null);

            }

        }
```

```
        });

        buttonEqual.setOnClickListener(new View.OnClickListener() {

            @Override

            public void onClick(View v) {

                if (Addition || Subtract || Multiplication || Division || mRemainder) {

                    input2 = Float.parseFloat(edt1.getText() + "");

                }

                if (Addition) {


                    edt1.setText(input1 + input2 + "");

                    Addition = false;

                }

                if (Subtract) {


                    edt1.setText(input1 - input2 + "");

                    Subtract = false;

                }

                if (Multiplication) {

                    edt1.setText(input1 * input2 + "");

                    Multiplication = false;

                }


                if (Division) {

                    edt1.setText(input1 / input2 + "");

                    Division = false;

                }

                if (mRemainder) {
```

```java
            edt1.setText(input1 % input2 + "");

            mRemainder = false;

          }

        }

    });

    buttonDel.setOnClickListener(new View.OnClickListener() {

      @Override

      public void onClick(View v) {

        edt1.setText("");

        input1 = 0.0;

        input2 = 0.0;

      }

    });

    buttonDot.setOnClickListener(new View.OnClickListener() {

      @Override

      public void onClick(View v) {

        if (decimal) {

          //do nothing or you can show the error

        } else {

          edt1.setText(edt1.getText() + ".");

          decimal = true;

        }

      }

    });

  }

  public void onClick(View view) {

  }   }
```
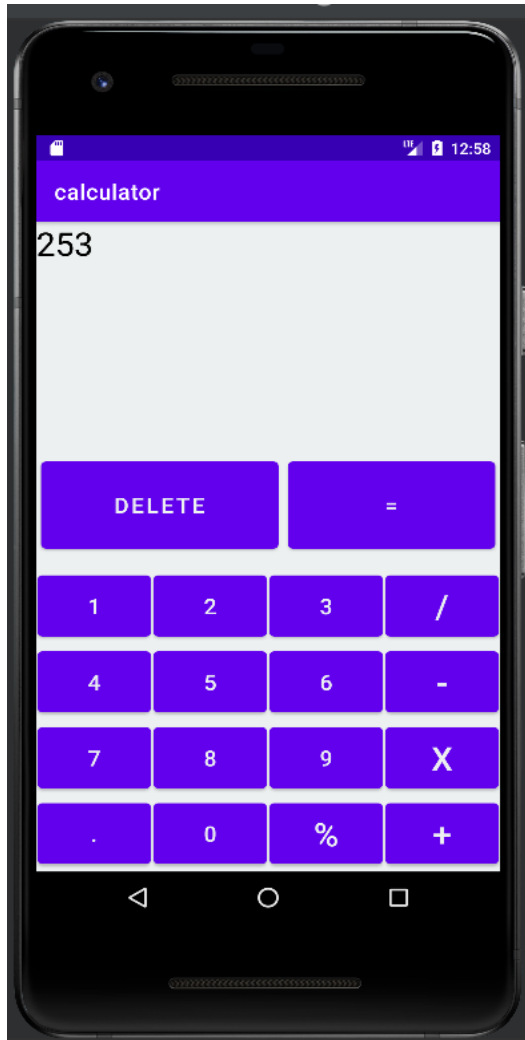
Output:

Program no: 8

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

XML Code:

```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:background="@color/white"

    tools:context=".MainActivity">

        <LinearLayout

    android:layout_width="match_parent"

    android:layout_height="match_parent"

    android:background="#29487D"

    android:gravity="center|top"

        android:orientation="vertical">


        <LinearLayout

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:layout_marginTop="70dp"

    android:layout_marginBottom="100dp"
```

```xml
android:orientation="vertical">

    <TextView

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:fontFamily="@font/fb"

    android:text="facebook"

    android:textSize="36dp"

    android:padding="10dp"

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

    </LinearLayout>

    <LinearLayout

android:layout_width="match_parent"

android:layout_height="wrap_content"

android:padding="15dp"

    android:orientation="vertical"

android:layout_margin="20dp">

    <EditText

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:hint="Email or Phone"

    android:layout_marginBottom="30dp"

    android:textColorHint="#594F4F"

    android:background="@drawable/bg_box"/>

    <EditText

    android:layout_width="match_parent"
```

```xml
        android:layout_height="wrap_content"

          android:layout_marginBottom="30dp"

        android:background="@drawable/bg_box"

        android:hint="password"

        android:textColorHint="#594F4F"/>

        <Button

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:text="Log In"

        android:background="@color/design_default_color_primary"

        android:textAllCaps="false"/>

        </LinearLayout>

        <LinearLayout

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:orientation="horizontal"

    android:layout_marginTop="180dp"

    android:layout_gravity="bottom"

    android:gravity="center">

        <TextView

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:gravity="end"

        android:textStyle="bold"

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

```
android:layout_marginRight="75dp"

    android:layout_weight="50"

android:text="SignUp for Facebook"/>

<TextView

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:gravity="end"

android:textColor="@color/white"

android:layout_marginEnd="50dp"

android:layout_weight="1"

android:textStyle="bold"

android:text="?"/>

</LinearLayout>

</LinearLayout>

</LinearLayout>
```

Java Code:

```java
package com.example.facebook;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

    @Override

    protected void onCreate(Bundle savedInstanceState) {

    super.onCreate(savedInstanceState);

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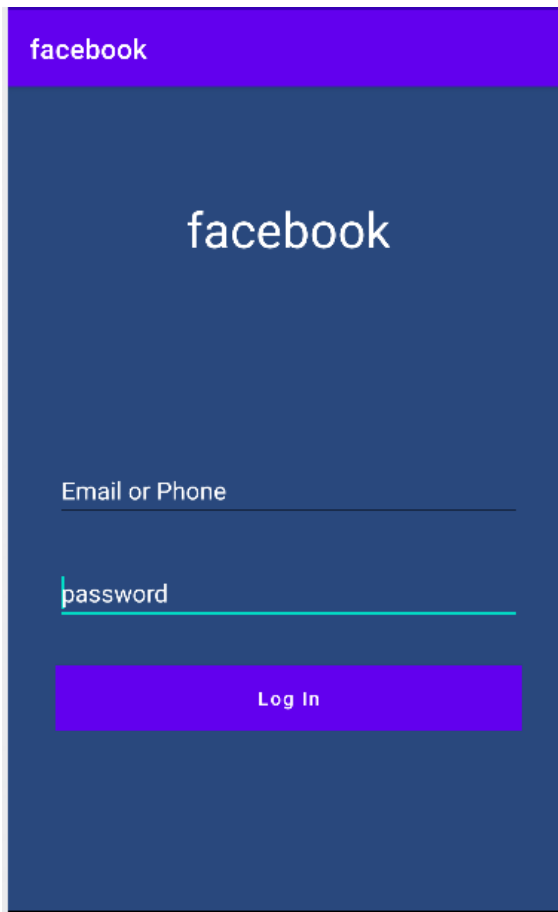
```
    getSupportActionBar().hide();

        }

}
```

Output:

Program no: 9

Aim: Develop an application that toggles image using FrameLayout

XML Code:

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

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

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

    android:layout_width="match_parent"

    android:layout_height="match_parent"

    android:layout_gravity="center"

    android:background="@color/teal_700"

    tools:context=".MainActivity">

        <ImageView

    android:id="@+id/image2"

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:layout_gravity="center"

    android:src="@drawable/image2"

    android:visibility="gone"/>

        <ImageView

    android:id="@+id/image1"

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:layout_gravity="center"
```

```
        android:src="@drawable/image1"/>
```

</FrameLayout>

Java Code:

```java
package com.example.frame_layout;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.ImageView;

public class MainActivity extends AppCompatActivity implements View.OnClickListener {

    ImageView img1,img2;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

    super.onCreate(savedInstanceState);

    setContentView(R.layout.activity_main);

        img1 =findViewById(R.id.image1);

        img2 =findViewById(R.id.image2);

    img1.setOnClickListener(this);

    img2.setOnClickListener(this);

        }


    public void onClick(View v)

    {

    int id=v.getId();

    switch (id){
```

```
    case R.id.image1:

      img1.setVisibility(View.GONE);

      img2.setVisibility(View.VISIBLE);

          break;

    case R.id.image2:

      img1.setVisibility(View.VISIBLE);

        img2.setVisibility(View.GONE);

         break;

    }

    }

}
```
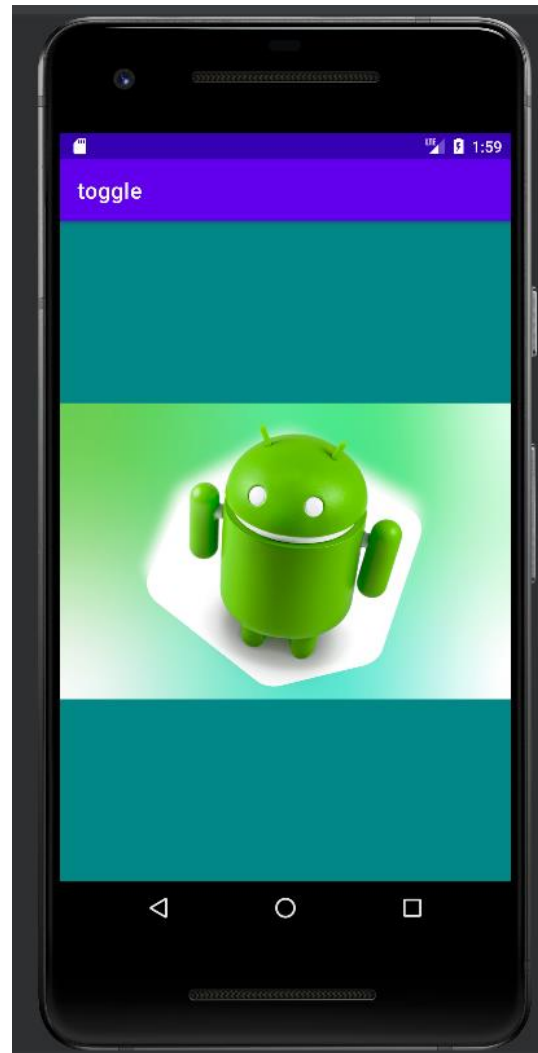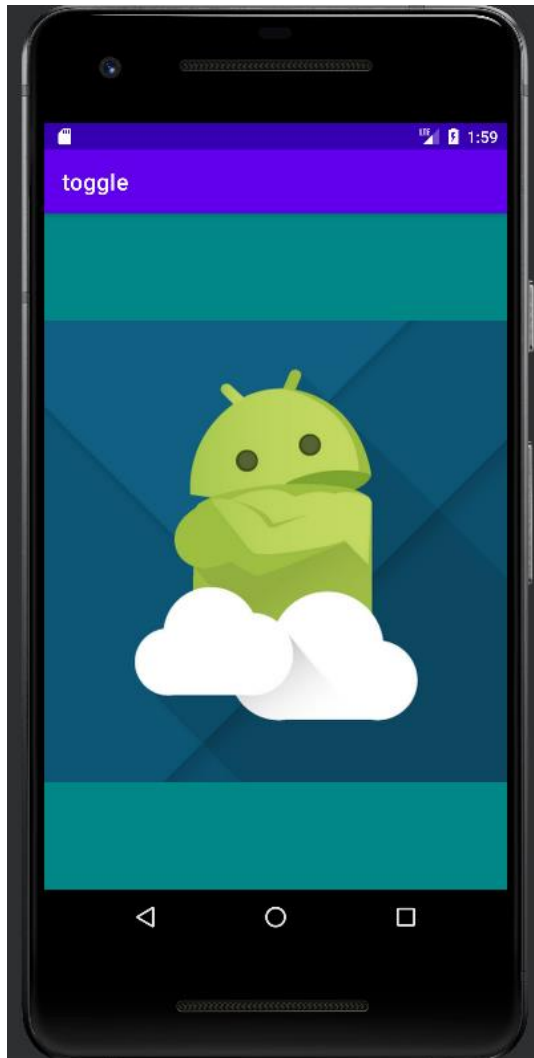
Output:

Program no: 10

Aim: Implement Adapters and perform exception handling

XML Code:

```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">

<ListView android:layout_width="409dp"
android:layout_height="354dp"
tools:layout_editor_absoluteX="1dp"
tools:layout_editor_absoluteY="1dp"
android:id="@+id/list1"/>

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

Java Code:

```java
package com.example.myadapter;

import androidx.appcompat.app.AppCompatActivity; import
android.os.Bundle;

import android.view.View;

import android.widget.AdapterView;
import android.widget.ArrayAdapter;
```

```java
import android.widget.ListView; import
android.widget.TextView; import
android.widget.Toast;

public class MainActivity extends AppCompatActivity implements
AdapterView.OnItemClickListener {

    ListView
    l1;
    @Override

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

        String[] cars = {"BMW", "BENZ", "AUDI"};

        try {

            ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
    R.layout.support_simple_spinner_dropdown_item, cars);

            l1.setAdapter(adapter);
            l1.setOnItemClickListener(this);

        }

        catch (Exception e)

        {

            Toast.makeText(this,e.getMessage(),Toast.LENGTH_SHORT).show();

        }       }


        @Override

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

            TextView tem=(TextView) view;
```
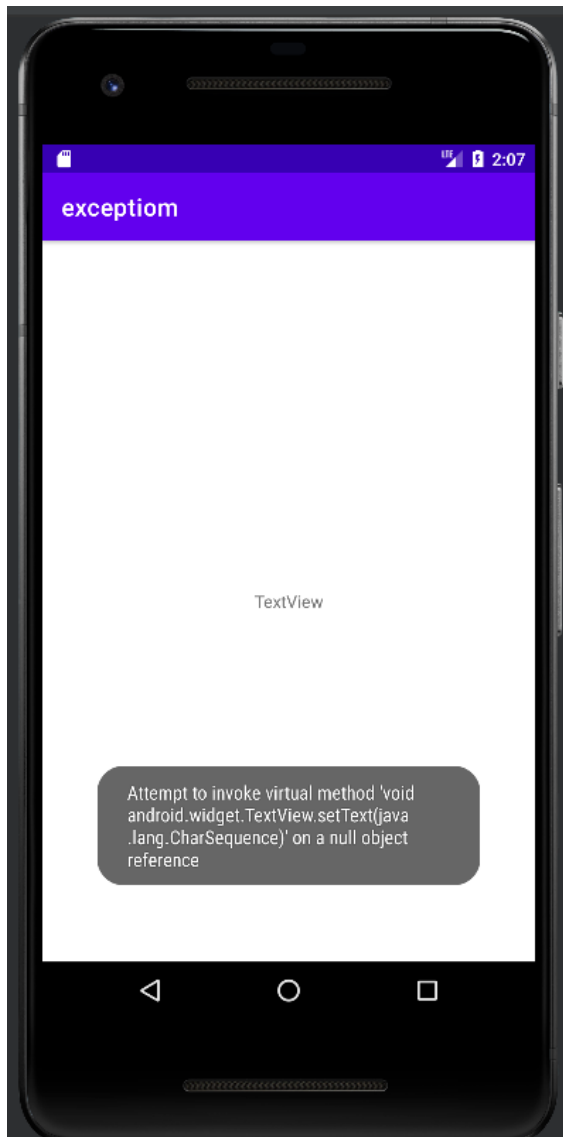
Toast.makeText(this, tem.getText(), Toast.LENGTH_LONG).show();

}

Output:

Program no: 11

Aim: Implement Intent to navigate between multiple activities

XML Code:

<?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:onClick="callActivity"

tools:context=".intent_activity">

<EditText

android:id="@+id/name"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:ems="10"

android:hint="Name"

android:inputType="textPersonName"

app:layout_constraintBottom_toBottomOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintHorizontal_bias="0.437"

app:layout_constraintStart_toStartOf="parent"

```
app:layout_constraintTop_toTopOf="parent"

app:layout_constraintVertical_bias="0.148" />

<EditText

android:id="@+id/address"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:ems="10"

android:hint="Address"

android:inputType="textPersonName"

app:layout_constraintBottom_toBottomOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintHorizontal_bias="0.437"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintTop_toTopOf="parent"

app:layout_constraintVertical_bias="0.313" />

<EditText

android:id="@+id/email"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:ems="10"

android:hint="Email"

android:inputType="textPersonName"

app:layout_constraintBottom_toBottomOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintHorizontal_bias="0.437"
```

```
app:layout_constraintStart_toStartOf="parent"

app:layout_constraintTop_toTopOf="parent"

app:layout_constraintVertical_bias="0.475" />

<Button

android:id="@+id/button"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:text="Submit"

android:onClick="callActivity"

app:layout_constraintBottom_toBottomOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintHorizontal_bias="0.454"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintTop_toTopOf="parent"

app:layout_constraintVertical_bias="0.609" />

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

Display.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"
```

```xml
tools:context=".intent_act2">

<TextView

android:id="@+id/view3"

android:layout_width="189dp"

android:layout_height="36dp"

android:textAlignment="center"

app:layout_constraintBottom_toBottomOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintHorizontal_bias="0.459"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintTop_toTopOf="parent"

app:layout_constraintVertical_bias="0.398" />

<TextView

android:id="@+id/view1"

android:layout_width="189dp"

android:layout_height="36dp"

android:textAlignment="center"

app:layout_constraintBottom_toBottomOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintHorizontal_bias="0.459"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintTop_toTopOf="parent"

app:layout_constraintVertical_bias="0.22" />

<TextView

android:id="@+id/view2"
```

android:layout_width="189dp"

android:layout_height="36dp"

android:textAlignment="center"

app:layout_constraintBottom_toBottomOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintHorizontal_bias="0.459"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintTop_toTopOf="parent"

app:layout_constraintVertical_bias="0.306" />

</androidx.constraintlayout.widget.ConstraintLayout>

Java Code:

package com.example.vaidyakare;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

public class intent_activity extends AppCompatActivity {

Button b1;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity_intent);

```java
}

public void callActivity(View view) {

Intent i = new Intent(intent_activity.this, intent_act2.class);

final EditText editText1 = (EditText)findViewById(R.id.name);

String msg = editText1.getText().toString();

final EditText editText2 = (EditText)findViewById(R.id.address);

String add = editText2.getText().toString();

final EditText editText3 = (EditText)findViewById(R.id.email);

String em = editText3.getText().toString();

i.putExtra("Value1", msg);

i.putExtra("Value2", add);

i.putExtra("Value3", em);

startActivity(i);

}

}
```

Display.java

```java
package com.example.vaidyakare;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.widget.TextView;

public class intent_act2 extends AppCompatActivity {

TextView view1;

TextView view2;

TextView view3;
```

```
@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity_intent_act2);

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

view2 = (TextView) findViewById(R.id.view2);

view3 = (TextView) findViewById(R.id.view3);

Bundle extras = getIntent().getExtras();

String value1 = extras.getString("Value1");

String value2 = extras.getString("Value2");

String value3 = extras.getString("Value3");

view1.setText(value1);

view2.setText(value2);

view3.setText(value3);

}

}
```
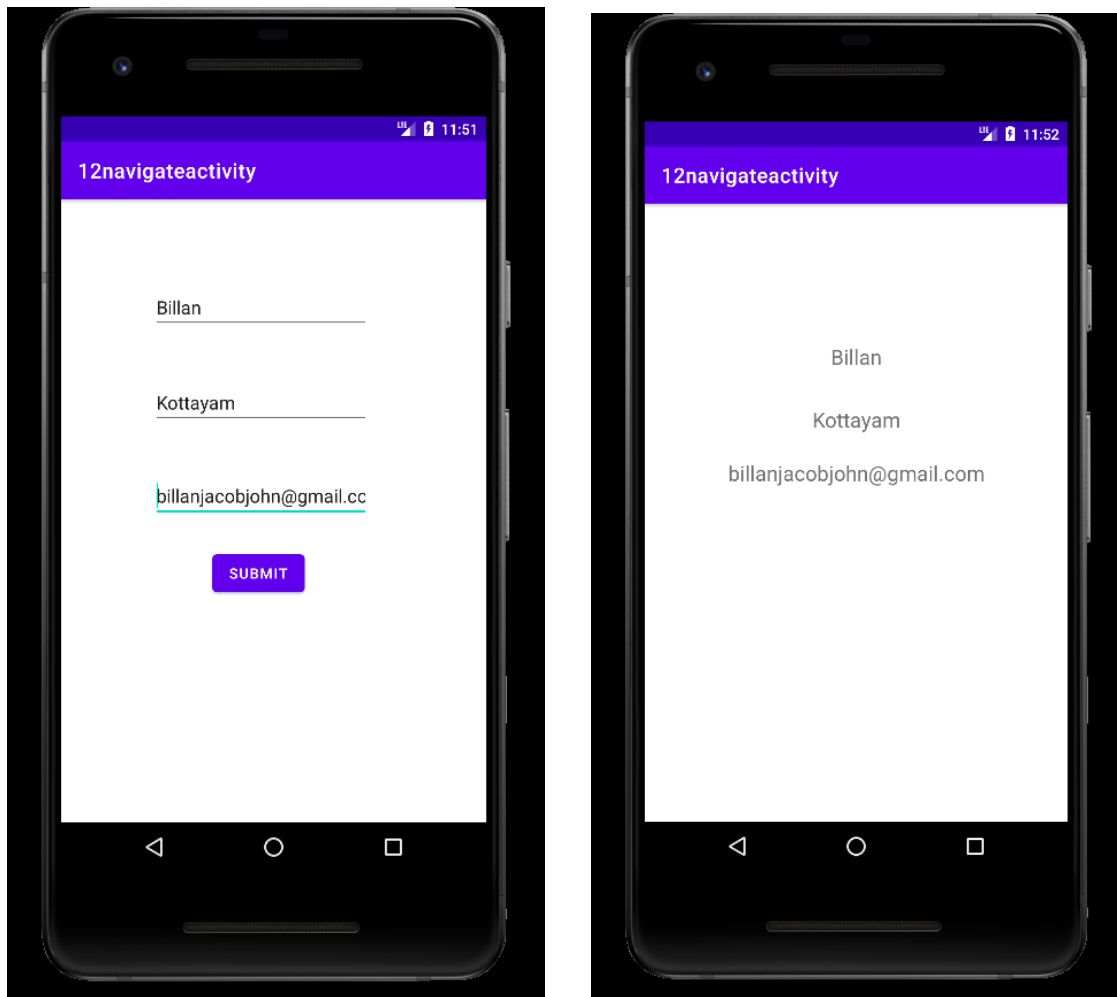
Output:

Program no: 12

Aim: Develop an application that works with explicit intents

XML Code:

```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">

    <Button

        android:id="@+id/cm"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:text="Refer Google"

        app:layout_constraintBottom_toBottomOf="parent"

        app:layout_constraintEnd_toEndOf="parent"

        app:layout_constraintStart_toStartOf="parent"

        app:layout_constraintTop_toTopOf="parent" />

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

Java Code:

```java
package com.example.a13explicit;

import androidx.appcompat.app.ActionBar;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;

import android.net.Uri;

import android.net.UrlQuerySanitizer;

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 click = findViewById(R.id.cm);

    click.setOnClickListener(new View.OnClickListener() {

      @Override

      public void onClick(View view) {

        Intent j = new Intent(Intent.ACTION_VIEW,

            Uri.parse("https://www.google.com/"));

        startActivity(j);

      }

    });

  }   }
```
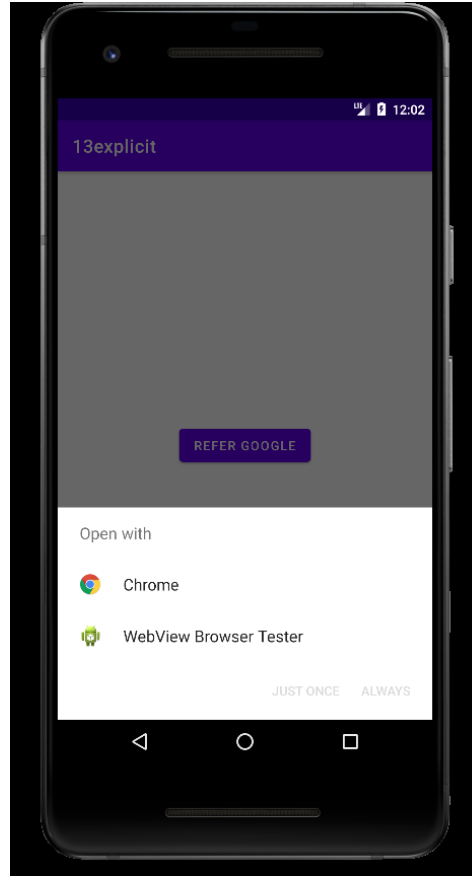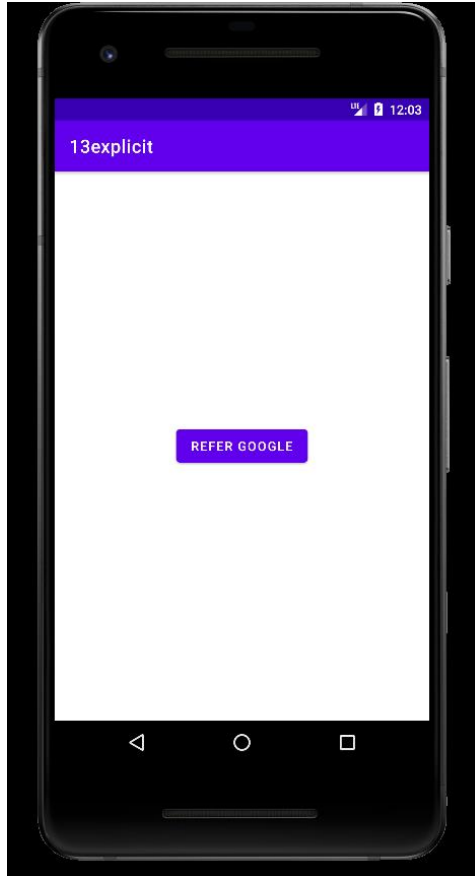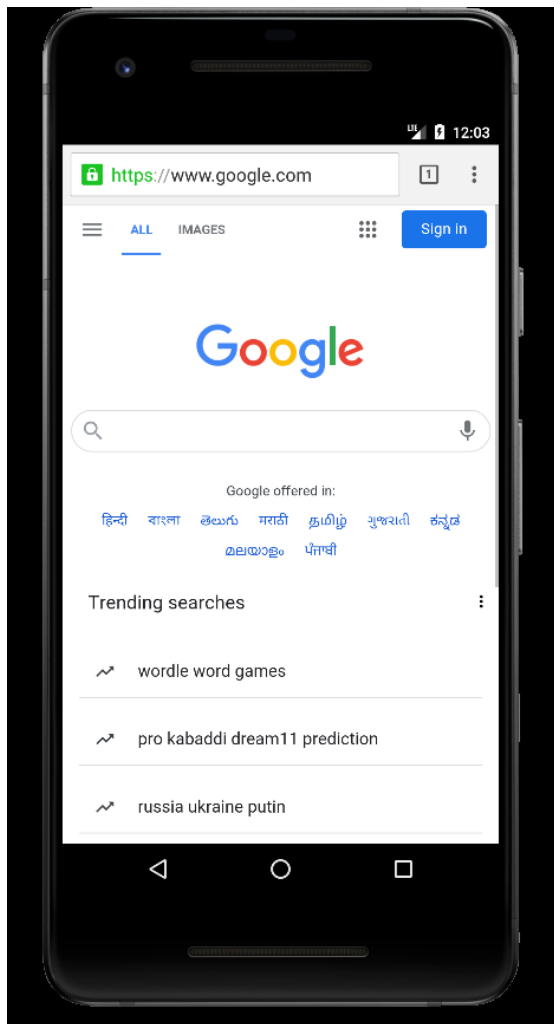
Output:

Program no: 13

Aim: Implement Options Menu to navigate to activities

XML Code:

ActivityMain.xml

```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:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Welcome Home..!"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintLeft_toLeftOf="parent"
    app:layout_constraintRight_toRightOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Menu_list.xml

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

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

    <item android:id="@+id/item1" android:title="Home"/>

    <item android:id="@+id/item2" android:title="Settings"/>

    <item android:id="@+id/item3" android:title="About"/>

    <item android:id="@+id/item4" android:title="Help"/>

    <item android:id="@+id/item5" android:title="LogOut"/>

</menu>
```

Java Code:

```java
package com.example.a13explicit;

import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;

import android.os.Bundle;

import android.view.Menu;

import android.view.MenuItem;

import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

    }

    @Override
```

```java
public boolean onCreateOptionsMenu(Menu menu) {

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

    return true;

}

@Override

public boolean onOptionsItemSelected(MenuItem item) {

    switch (item.getItemId()) {

        case R.id.item1:

            Toast.makeText(getApplicationContext(), "Home clicked",

                Toast.LENGTH_SHORT).show();

            return true;

        case R.id.item2:

            Toast.makeText(getApplicationContext(), "Settings clicked",

                Toast.LENGTH_SHORT).show();

            return true;

        case R.id.item3:

            Toast.makeText(getApplicationContext(), "About clicked",

                Toast.LENGTH_SHORT).show();

            return true;

        case R.id.item4:

            Toast.makeText(getApplicationContext(), "Help clicked",

                Toast.LENGTH_SHORT).show();

            return true;

        case R.id.item5:

            Toast.makeText(getApplicationContext(), "Logout clicked",
```

```
                Toast.LENGTH_SHORT).show();

        return true;

    default:

        return super.onOptionsItemSelected(item);

    }

  }

}
```

Output:
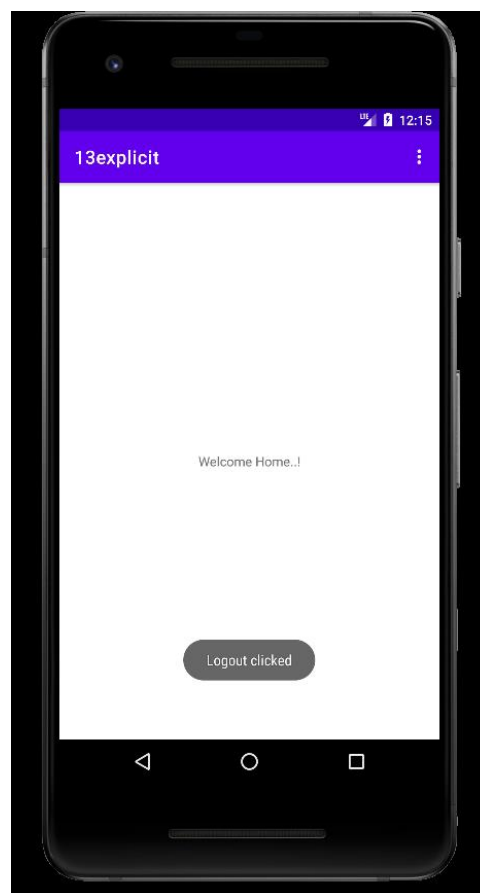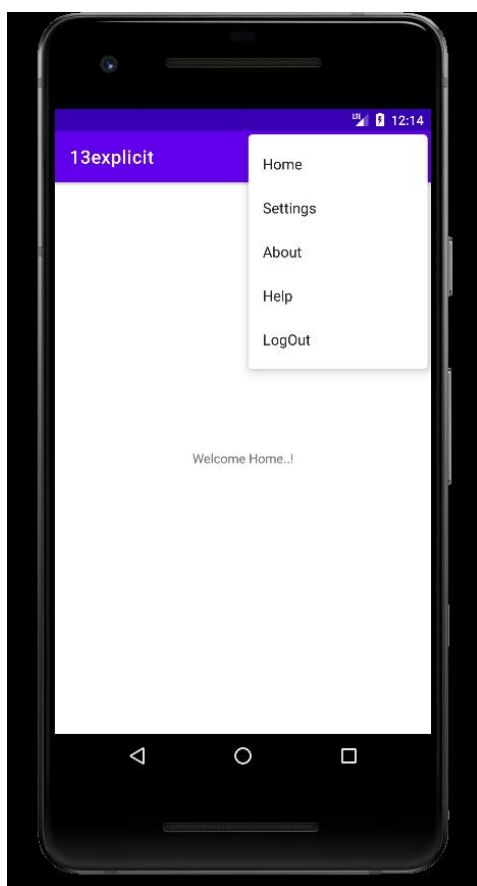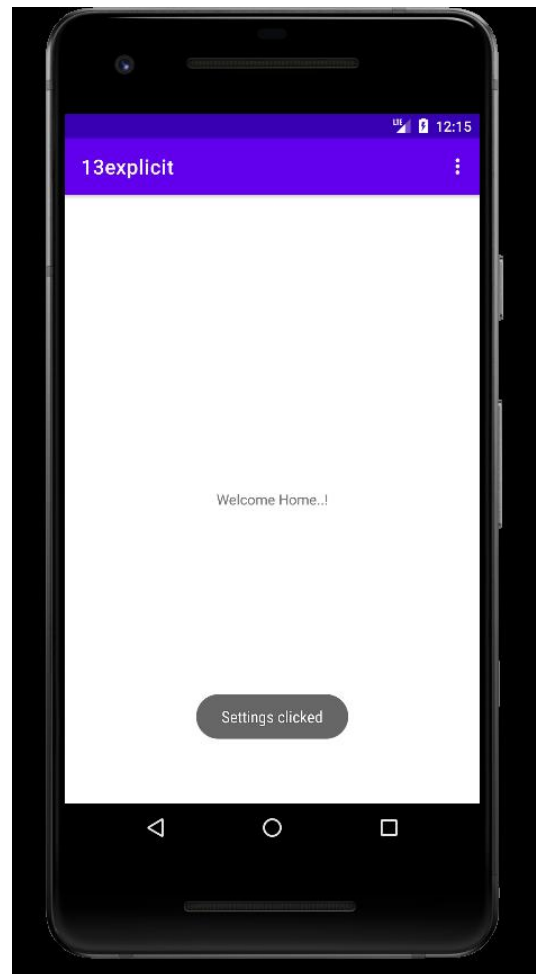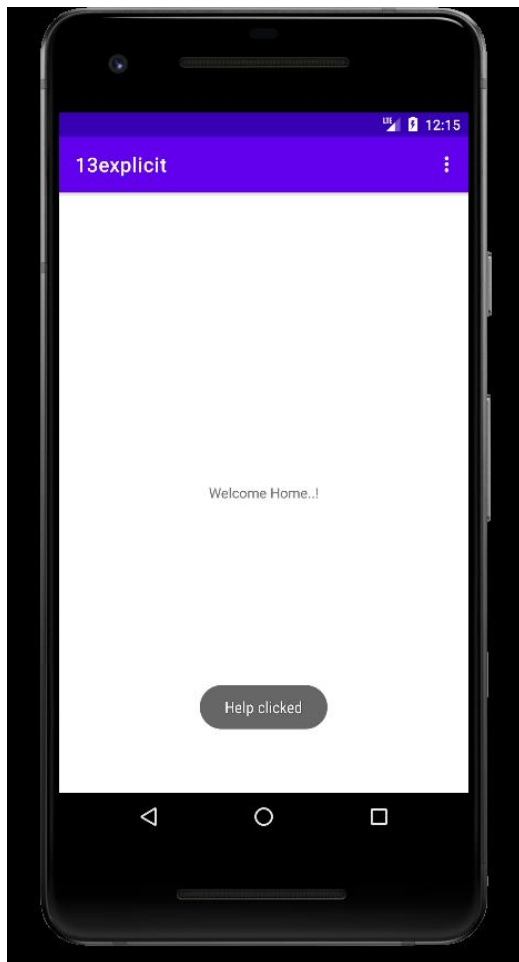
Program no: 14

Aim: Develop an application that uses ArrayAdapter with ListView

XML Code:

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

<LinearLayout

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

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

xmlns:app="http://schemas.android.com/apk/res-auto"

android:layout_width="match_parent"

android:layout_height="match_parent"

tools:context=".arrayAdapter">

<ListView

android:id="@+id/mobile_list"

android:layout_width="match_parent"

android:layout_height="wrap_content" >

</ListView>

</LinearLayout>
```

Java Code

```java
package com.example.vaidyakare;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;
```

```java
import android.widget.AdapterView;

import android.widget.ArrayAdapter;

import android.widget.ListView;

import android.widget.TextView;

import android.widget.Toast;

public class arrayAdapter extends AppCompatActivity implements

AdapterView.OnItemClickListener {

ListView l;

String[] days = {"Sunday", "Monday", "Tuesday", "Wednesday", "Thursday", "Friday",

"Saturday"};

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity_array_adapter);

l = findViewById(R.id.mobile_list);

ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,

R.layout.support_simple_spinner_dropdown_item, days);

l.setAdapter(adapter);

l.setOnItemClickListener(this);        }

@Override

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

TextView temp = (TextView) view;

Toast.makeText(this, "You clicked " + temp.getText() + " at " + i,

Toast.LENGTH_LONG).show();

}        }
```

Output:
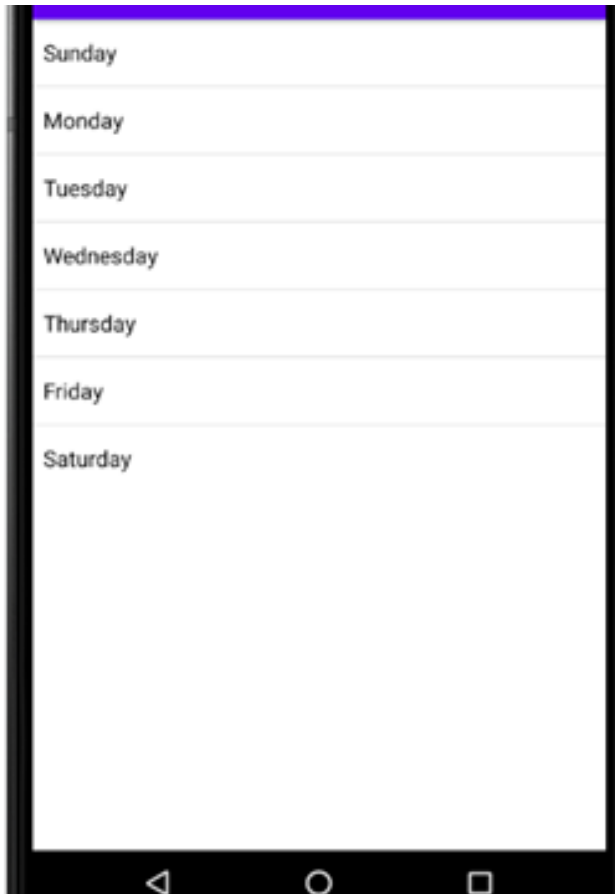
Program no: 15

Aim: Program to develop an application that use GridView with images and display Alert box on selection.

XML Code

Activitymain

```xml
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity" >
    <GridView
        android:numColumns="auto_fit"
        android:gravity="center"
        android:columnWidth="100dp"
        android:stretchMode="columnWidth"
        android:layout_width="fill_parent"
        android:layout_height="fill_parent"
        android:id="@+id/grid"
        />
</LinearLayout>
```

Grid_single.xml

```xml
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
```

```
android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:padding="5dp" >

<ImageView

    android:id="@+id/grid_image"

    android:layout_width="50dp"

    android:layout_height="50dp">

</ImageView>

<TextView

    android:id="@+id/grid_text"

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:layout_marginTop="15dp"

    android:textSize="9sp" >

</TextView>

</LinearLayout>
```

Java Code

```java
package com.example.a15_gridview;

import android.os.Bundle;

import android.app.Activity;

import android.view.View;

import android.widget.AdapterView;

import android.widget.GridView;

import android.widget.Toast;
```

```java
public class MainActivity extends Activity {GridView grid;
    String[] web = {
        "Android",
        "Java",
        "C++"
    } ;
    int[] imageId = {
        R.drawable.a,
        R.drawable.b,
        R.drawable.c,
    };
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        CustomGrid adapter = new CustomGrid(MainActivity.this, web, imageId);
        grid=(GridView)findViewById(R.id.grid);
        grid.setAdapter(adapter);
        grid.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            @Override
            public void onItemClick(AdapterView<?> parent, View view,
                        int position, long id) {
                Toast.makeText(MainActivity.this, "You Clicked at " +web[+
                    position], Toast.LENGTH_SHORT).show();
            }
        });
    } }
```

customGrid.java

package com.example.a15_gridview;

import android.content.Context;

import android.view.LayoutInflater;

import android.view.View;

import android.view.ViewGroup;

import android.widget.BaseAdapter;

import android.widget.ImageView;

import android.widget.TextView;

class CustomGrid extends BaseAdapter{

   private Context mContext;

   private final String[] web;

   private final int[] Imageid;

   public CustomGrid(Context c,String[] web,int[] Imageid) {

     mContext = c;

     this.Imageid = Imageid;

     this.web = web;

   }

   @Override

   public int getCount() {

// TODO Auto-generated method stub

     return web.length;

   }

   @Override

   public Object getItem(int position) {

// TODO Auto-generated method stub

     return null;

```
    }

    @Override

    public long getItemId(int position) {

// TODO Auto-generated method stub

        return 0;

    }

    @Override

    public View getView(int position, View convertView, ViewGroup parent) {

// TODO Auto-generated method stub

        View grid;

        LayoutInflater inflater = (LayoutInflater) mContext

            .getSystemService(Context.LAYOUT_INFLATER_SERVICE);

        if (convertView == null) {

            grid = new View(mContext);

            grid = inflater.inflate(R.layout.grid_single, null);

            TextView textView = (TextView) grid.findViewById(R.id.grid_text);

            ImageView imageView =

                (ImageView)grid.findViewById(R.id.grid_image);

            textView.setText(web[position]);

            imageView.setImageResource(Imageid[position]);

        } else {

            grid = (View) convertView;

        }

        return grid;

    }

}
```

Output
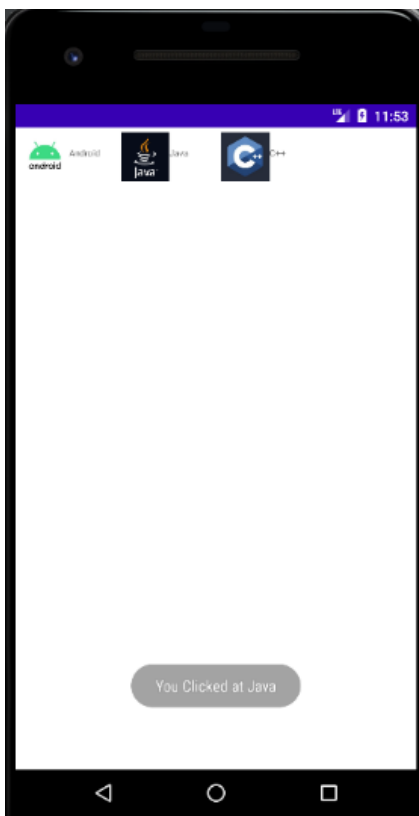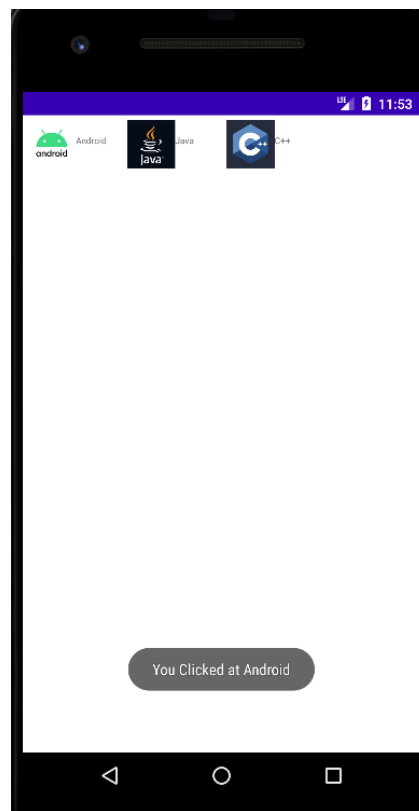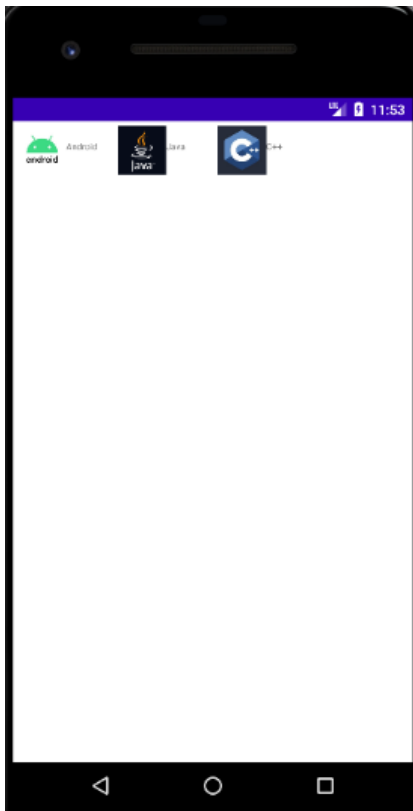
Program no: 16

Aim: Program to develop an application that implements Spinner component and perform event handling.

XML Code

```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="149dp"
        android:layout_height="40dp"
        android:layout_marginStart="8dp"
        android:layout_marginEnd="8dp"
        android:layout_marginBottom="8dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.502"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.498" />
```

</androidx.constraintlayout.widget.ConstraintLayout>

Java Code

```java
package com.example.spinner;


import androidx.appcompat.app.AppCompatActivity;


import android.content.Context;

import android.os.Bundle;

import android.view.View;

import android.widget.AdapterView;

import android.widget.ArrayAdapter;

import android.widget.Spinner;

import android.widget.Toast;


public class MainActivity extends AppCompatActivity implements
AdapterView.OnItemSelectedListener {

    String[] country={"India","Nepal","Russia","Canada","Other"};


    @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 a =new
ArrayAdapter(this,android.R.layout.simple_spinner_item,country);
```

```
        a.setDropDownViewResource(android.R.layout.simple_spinner_dropdown_item);

        spin.setAdapter(a);

    }


    @Override

    public void onItemSelected(AdapterView<?> arg0, View arg1, int position, long id) {

        Toast.makeText(getApplicationContext(),country[position],
Toast.LENGTH_SHORT).show();

    }


    @Override

    public void onNothingSelected(AdapterView<?> arg1) {


    }
}
```

Output
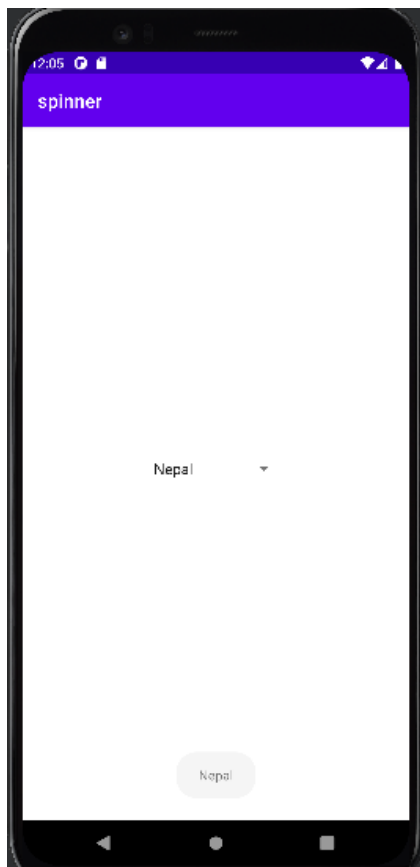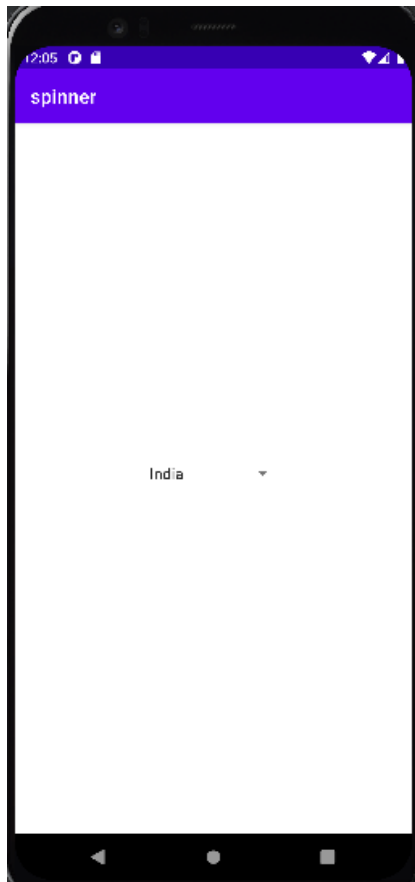
Program no: 17

Aim: Program to apply themes via code from manifest file.

XML Code

```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">
    <EditText
        android:layout_width="387dp"
        android:layout_height="177dp"
        android:text="BILLAN"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.081"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.057" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Colors.xml

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

<resources>

    <color name="colorPrimary">#35947d</color>

    <color name="colorSec">#779435</color>

    <color name="colorTh">#30E344</color>

    <color name="colorFou">#0A801A</color>

</resources>
```

Themes.xml

```xml
<resources xmlns:tools="http://schemas.android.com/tools">

    <!-- Base application theme. -->

    <!-- Base application theme. -->

    <style name="Theme.Themes"
parent="Theme.MaterialComponents.DayNight.DarkActionBar">

        <item name="colorPrimary">@color/colorPrimary</item>

        <item name="colorSecondary">@color/colorSec</item>

        <item name="colorPrimaryDark">@color/colorTh</item>

        <item name="colorAccent">@color/colorFou</item>

        <item name="android:textColorPrimary">@color/colorFou</item>

        <item name="android:textSize">40dp</item>

    </style>       </resources>
```

Night/teams

```xml
<resources xmlns:tools="http://schemas.android.com/tools">

<!-- Base application theme. -->

<style name="Theme.Themes"
parent="Theme.MaterialComponents.DayNight.DarkActionBar">
```

```xml
    <item name="colorPrimary">@color/colorPrimary</item>

    <item name="colorSecondary">@color/colorSec</item>

    <item name="colorPrimaryDark">@color/colorTh</item>

    <item name="colorAccent">@color/colorFou</item>

    <item name="android:textSize">40dp</item>

  </style>       </resources>
```

new_style.xml

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

<resources>

  <!-- Base application theme. -->

  <style name="Theme.new_style"
parent="Theme.MaterialComponents.DayNight.DarkActionBar">

    <item name="colorPrimary">@color/colorPrimary</item>

    <item name="colorSecondary">@color/colorSec</item>

    <item name="colorPrimaryDark">@color/colorTh</item>

    <item name="colorAccent">@color/colorFou</item>

    <item name="android:textColorPrimary">@color/colorFou</item>

    <item name="android:textSize">40dp</item>

  </style>

</resources>
```

AndroidManifest.xml

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

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

  package="com.example.theme">

  <application
```

```
        android:allowBackup="true"

        android:icon="@mipmap/ic_launcher"

        android:label="@string/app_name"

        android:roundIcon="@mipmap/ic_launcher_round"

        android:supportsRtl="true"

        android:theme="@style/Theme.new_style">

        <activity

            android:name=".MainActivity"

            android:exported="true" >

            <intent-filter>

                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />

            </intent-filter>

        </activity>

    </application>

</manifest>
```

Java code:

```java
package com.example.theme;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

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

Output

Program no: 18

Aim: Develop application using Fragments.

XML Code

Activity_main.xml

```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">

   <FrameLayout

      android:id="@+id/frameLayout"

      android:layout_width="match_parent"

      android:layout_height="match_parent"

      android:layout_marginTop="300dp"/>

   <Button

      android:id="@+id/firstFragment"

      android:layout_width="188dp"

      android:layout_height="62dp"

      android:text="First Fragment"

      app:layout_constraintBottom_toTopOf="@+id/frameLayout"

      app:layout_constraintEnd_toEndOf="parent"
```

```
        app:layout_constraintHorizontal_bias="0.498"

        app:layout_constraintStart_toStartOf="parent"

        app:layout_constraintTop_toTopOf="parent"

        app:layout_constraintVertical_bias="0.214" />

    <Button

        android:id="@+id/secondFragment"

        android:layout_width="188dp"

        android:layout_height="62dp"

        android:text="Second Fragment"

        app:layout_constraintBottom_toTopOf="@+id/frameLayout"

        app:layout_constraintEnd_toEndOf="parent"

        app:layout_constraintHorizontal_bias="0.498"

        app:layout_constraintStart_toStartOf="parent"

        app:layout_constraintTop_toBottomOf="@+id/firstFragment"

        app:layout_constraintVertical_bias="0.38" />

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

Fragment_first.xml

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

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

    android:layout_width="match_parent"

    android:layout_height="match_parent"

    tools:context=".FirstFragment">

    <!--TextView and Button displayed in First Fragment -->

    <TextView

        android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"

        android:layout_centerHorizontal="true"

        android:layout_marginTop="100dp"

        android:text="This is First Fragment"

        android:textColor="@color/black"

        android:textSize="25sp" />

</RelativeLayout>
```

Fragment_second.xml

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

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

    android:layout_width="match_parent"

    android:layout_height="match_parent"

    tools:context=".SecondFragment">


    <!--TextView and Button displayed in Second Fragment -->
    <TextView

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_centerHorizontal="true"

        android:layout_marginTop="100dp"

        android:text="This is Second Fragment"

        android:textColor="@color/black"

        android:textSize="25sp" />

</RelativeLayout>
```

Java code

MainActivity.java

```java
package com.example.fragment;import android.app.Fragment;

import android.app.FragmentManager;

import android.app.FragmentTransaction;


import android.os.Bundle;

import android.view.View;

import android.widget.Button;


import androidx.appcompat.app.AppCompatActivity;


public class MainActivity extends AppCompatActivity {


    Button firstFragment, secondFragment;


    @Override
    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);
// get the reference of Button's

        firstFragment = (Button) findViewById(R.id.firstFragment);

        secondFragment = (Button) findViewById(R.id.secondFragment);


// perform setOnClickListener event on First Button

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

```
        @Override

        public void onClick(View v) {

// load First Fragment

            loadFragment(new FirstFragment());

        }

    });

// perform setOnClickListener event on Second Button

    secondFragment.setOnClickListener(new View.OnClickListener() {

        @Override

        public void onClick(View v) {

// load Second Fragment

            loadFragment(new SecondFragment());

        }

    });


  }


  private void loadFragment(Fragment fragment) {

// create a FragmentManager

    FragmentManager fm = getFragmentManager();

// create a FragmentTransaction to begin the transaction and replace the Fragment

    FragmentTransaction fragmentTransaction = fm.beginTransaction();

// replace the FrameLayout with new Fragment

    fragmentTransaction.replace(R.id.frameLayout, fragment);

    fragmentTransaction.commit(); // save the changes

  }

}
```

Firstfragment.java

package com.example.fragment;import android.app.Fragment;

import android.app.FragmentManager;

import android.app.FragmentTransaction;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

   Button firstFragment, secondFragment;

   @Override

   protected void onCreate(Bundle savedInstanceState) {

     super.onCreate(savedInstanceState);

     setContentView(R.layout.activity_main);

// get the reference of Button's

     firstFragment = (Button) findViewById(R.id.firstFragment);

     secondFragment = (Button) findViewById(R.id.secondFragment);

// perform setOnClickListener event on First Button

     firstFragment.setOnClickListener(new View.OnClickListener() {

       @Override

       public void onClick(View v) {

// load First Fragment

         loadFragment(new FirstFragment());

       }

     });

// perform setOnClickListener event on Second Button

     secondFragment.setOnClickListener(new View.OnClickListener() {

```java
        @Override

        public void onClick(View v) {

// load Second Fragment

            loadFragment(new SecondFragment());

        }

    });


    }

    private void loadFragment(Fragment fragment) {

// create a FragmentManager

        FragmentManager fm = getFragmentManager();

// create a FragmentTransaction to begin the transaction and replace the Fragment

        FragmentTransaction fragmentTransaction = fm.beginTransaction();

// replace the FrameLayout with new Fragment

        fragmentTransaction.replace(R.id.frameLayout, fragment);

        fragmentTransaction.commit(); // save the changes

    }

}
```

SeconfFragment.java

```java
package com.example.fragment;

import android.app.Fragment;

import android.os.Bundle;

import android.view.LayoutInflater;

import android.view.View;

import android.view.ViewGroup;

import android.widget.Button;
```

```java
import android.widget.Toast;

public class SecondFragment extends Fragment {

    View view;

    Button secondButton;

    @Override

    public View onCreateView(LayoutInflater inflater, ViewGroup container,

                Bundle savedInstanceState) {

// Inflate the layout for this fragment

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

        return view;

    }

}
```

Output
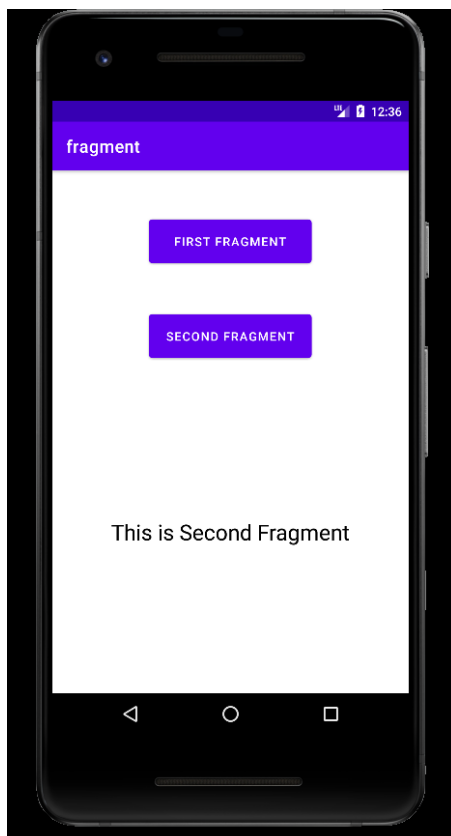
Program no: 19

Aim: Program to implement Navigation drawer.

XML Code

```xml
<?xml version="1.0" encoding="utf-8"?>
<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:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    android:id="@+id/drawer">
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent">
        <TextView
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:id="@+id/textview"
            android:text="welcome"
            android:textSize="30dp">
        </TextView>
    </LinearLayout>
    <com.google.android.material.navigation.NavigationView
        android:layout_width="match_parent"
```

```
        android:layout_height="match_parent"

        app:menu="@menu/menu"

        android:id="@+id/navigation_view"

        android:layout_gravity="start">

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

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

Menu.xml

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

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

    <item

        android:id="@+id/nav_MyAccount"

        android:title="MyAccount"/>

    <item

        android:id="@+id/nav_settings"

        android:title="Settings"/>

    <item

        android:id="@+id/nav_logout"

        android:title="Logout"/>

</menu>
```

Strings.xml

```xml
<resources>

    <string name="app_name">navigation</string>

    <string name="new_open">Open</string>

    <string name="new_close">Close</string>

</resources>
```

Output
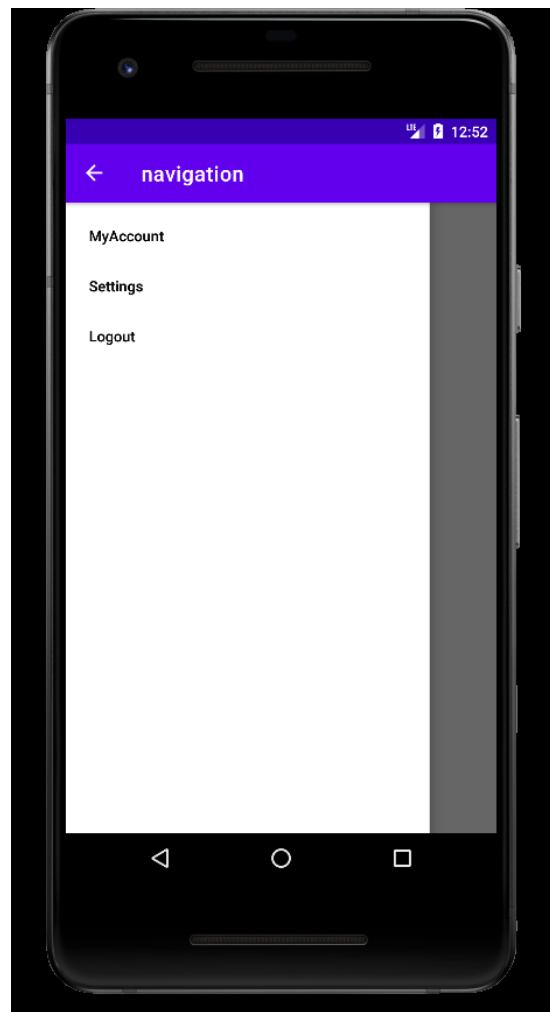
Program no:20

Aim: Program to implement activity lifecycle

XML Code

```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:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

Java code

```java
package com.example.activitylifecycle;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.util.Log;
public class MainActivity extends AppCompatActivity {
  protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    Log.d("lifecycle","onCreate invoked");
  }
  @Override
  protected void onStart() {
    super.onStart();
    Log.d("lifecycle","onStart invoked");
  }
  @Override

  protected void onResume() {
    super.onResume();
    Log.d("lifecycle","onResume invoked");
  }
  @Override
  protected void onPause() {
    super.onPause();
    Log.d("lifecycle","onPause invoked");
  }
  @Override
  protected void onStop() {
    super.onStop();
    Log.d("lifecycle","onStop invoked");
  }
  @Override
```

```
    protected void onRestart() {

        super.onRestart();

        Log.d("lifecycle","onRestart invoked");

    }

    @Override

    protected void onDestroy() {

        super.onDestroy();

        Log.d("lifecycle","onDestroy invoked");

    }

}
```

Output

```
2022-03-03 09:44:40.729 8395-8395/com.example.activitylifecycle D/lifecycle: onCreate invoked
2022-03-03 09:44:40.736 8395-8395/com.example.activitylifecycle D/lifecycle: onStart invoked
2022-03-03 09:44:40.745 8395-8395/com.example.activitylifecycle D/lifecycle: onResume invoked
2022-03-03 09:44:40.874 8395-8415/com.example.activitylifecycle D/HostConnection: HostConnection::get() New Host Conr
2022-03-03 09:44:40.902 8395-8415/com.example.activitylifecycle D/HostConnection: HostComposition ext ANDROID_EMU_CHE
2022-03-03 09:44:40.905 8395-8415/com.example.activitylifecycle W/OpenGLRenderer: Failed to choose config with EGL_SW
2022-03-03 09:44:40.924 8395-8415/com.example.activitylifecycle D/EGL_emulation: eglCreateContext: 0xf40df030: maj 2
2022-03-03 09:44:40.970 8395-8415/com.example.activitylifecycle D/EGL_emulation: eglMakeCurrent: 0xf40df030: ver 2 0
2022-03-03 09:44:41.035 8395-8415/com.example.activitylifecycle I/Gralloc4: mapper 4.x is not supported
2022-03-03 09:44:41.035 8395-8415/com.example.activitylifecycle D/HostConnection: createUnique: call
2022-03-03 09:44:41.036 8395-8415/com.example.activitylifecycle D/HostConnection: HostConnection::get() New Host Conr
2022-03-03 09:44:41.070 8395-8415/com.example.activitylifecycle D/goldfish-address-space: allocate: Ask for block of
2022-03-03 09:44:41.071 8395-8415/com.example.activitylifecycle D/goldfish-address-space: allocate: ioctl allocate re
2022-03-03 09:44:41.090 8395-8415/com.example.activitylifecycle D/HostConnection: HostComposition ext ANDROID_EMU_CHE
2022-03-03 09:44:41.496 8395-8415/com.example.activitylifecycle I/OpenGLRenderer: Davey! duration=703ms; Flags=1, Int
2022-03-03 10:16:13.039 8395-8395/com.example.activitylifecycle D/lifecycle: onPause invoked
2022-03-03 10:16:14.334 8395-8395/com.example.activitylifecycle D/lifecycle: onStop invoked
2022-03-03 10:16:14.337 8395-8395/com.example.activitylifecycle D/lifecycle: onDestroy invoked
```

Program no: 21

Aim: Program to implement various SQLite operations : (INSERT, UPDATE ,DELETE , SELECT)

XML Code

```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:padding="10dp"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/texttitle"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="20dp"
        android:text="Please enter the details below"
        android:textSize="24dp" />
    <EditText
        android:id="@+id/name"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/texttitle"
```

```
        android:hint="Name"

        android:inputType="textPersonName"

        android:textSize="24dp" />

    <EditText

        android:id="@+id/contact"

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:layout_below="@+id/name"

        android:hint="Contact"

        android:inputType="number"

        android:textSize="24dp" />

    <EditText

        android:id="@+id/dob"

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:layout_below="@+id/contact"

        android:hint="Date of birth"

        android:inputType="number"

        android:textSize="24dp" /

    <Button

        android:id="@+id/buttonInsert"

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:layout_below="@+id/dob"

        android:layout_marginTop="30dp"

        android:text="Insert new Data"

        android:textSize="24dp" />
```

```xml
    <Button

        android:id="@+id/buttonUpdate"

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:layout_below="@+id/buttonInsert"

        android:text="Update Data"

        android:textSize="24dp" />

    <Button

        android:id="@+id/buttondelete"

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:layout_below="@+id/buttonUpdate"

        android:text="Delete existing data"

        android:textSize="24dp" />

    <Button

        android:id="@+id/buttonView"

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:layout_below="@+id/buttondelete"

        android:text="View data"

        android:textSize="24dp" /

</RelativeLayout>
```

Java code

Mainactivity.java

```java
package com.example.db2;

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 insert, update, delete, view;

    DBHelper DB

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        name=findViewById(R.id.name);

        contact=findViewById(R.id.contact);

        dob=findViewById(R.id.dob);

        insert=findViewById(R.id.buttonInsert);

        update=findViewById(R.id.buttonUpdate);

        delete=findViewById(R.id.buttondelete);
```

```java
        view=findViewById(R.id.buttonView);

        DB=new DBHelper(this);

        insert.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.insertuserdata(nameTXT,contactTXT,dobTXT);

             if(checkinsertdata==true)

               Toast.makeText(MainActivity.this, "New Entry Inserted",
Toast.LENGTH_SHORT).show();

               else

               Toast.makeText(MainActivity.this, "unable 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.updateuserdata(nameTXT,contactTXT,dobTXT);

             if(checkupdatedata==true)

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

               else
```

```
            Toast.makeText(MainActivity.this, "Not updated",
Toast.LENGTH_SHORT).show();

        }

    });

    delete.setOnClickListener(new View.OnClickListener() {

        @Override

        public void onClick(View v) {

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

            Boolean checkdeletedata=DB.deletedata(nameTXT);

            if(checkdeletedata==true)

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

            else

                Toast.makeText(MainActivity.this, "Not deleted",
Toast.LENGTH_SHORT).show();

        }

    });

    view.setOnClickListener(new View.OnClickListener() {

        @Override

        public void onClick(View v) {

            Cursor res=DB.getdata();

            if(res.getCount()==0){

                Toast.makeText(MainActivity.this, "No entry exists",
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("Date of Birth:"+res.getString(2)+"\n");

        }

        AlertDialog.Builder builder=new AlertDialog.Builder(MainActivity.this);

        builder.setCancelable(true);

        builder.setTitle("User Entries");

        builder.setMessage(buffer.toString());

        builder.show();

    }

});

    }

}
```

DBHelper.java

```
package com.example.db2;

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", null, 1);

    }
```

```java
@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 insertuserdata(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 updateuserdata(String name, String contact, String dob){

    SQLiteDatabase DB=this.getWritableDatabase();

    ContentValues contentValues=new ContentValues();

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

```java
        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 deletedata(String name){

        SQLiteDatabase DB=this.getWritableDatabase();

        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