20MCA243 MOBILE APPLICATION DEVELOPMENT LAB

Lab Report SubmittedBy

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Reg. No. : AJC20MCA-2041

In Partial fulfillment for the Award of the Degree Of

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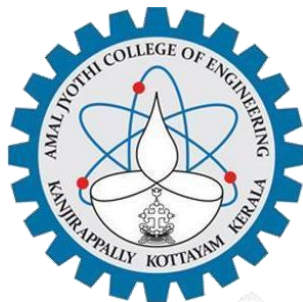## APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

AMAL JYOTHI COLLEGE OF ENGINEERING KANJIRAPPALLY

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DEPARTMENT OF COMPUTER APPLICATIONS
AMAL JYOTHI COLLEGE OF ENGINEERING
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CERTIFICATE

This is to certify that the lab report, "**20MCA243 MOBILE APPLICATION DEVELOPMENT LAB"** is the bonafide work of **HIMA M S (Reg.No:AJC20MCA-2041)** in partialfulfillment 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.

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Program No: 01

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"?>

<androidx.constraintlayout.widget.ConstraintLayoutxmlns: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=".LoginActivity">


<TextView

android:id="@+id/loginText"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:layout_marginTop="10dp"

android:text="@string/login"

android:textColor="@color/black"

android:textSize="30sp"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintHorizontal_bias="0.498"

app:layout_constraintStart_toStartOf="parent"


<RelativeLayout

android:id="@+id/loginLoginLayout"

android:layout_width="match_parent"
```

```
android:layout_height="wrap_content"

android:layout_marginStart="5dp"

android:layout_marginEnd="5dp"

app:layout_constraintBottom_toBottomOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintHorizontal_bias="1.0"

app:layout_constraintVertical_bias="0.098">

<EditText

android:id="@+id/loginUsername"

android:layout_width="match_parent"

android:layout_height="40dp"

android:layout_marginTop="40dp"

android:layout_alignParentTop="true"

android:hint="@string/username"

android:layout_alignParentStart="true"

android:padding="10dp"

android:textColor="@color/white"

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


<EditText

android:id="@+id/loginPassword"

android:layout_width="match_parent"

android:layout_height="40dp"

android:layout_below="@+id/loginUsername"

android:layout_alignParentStart="true"

android:layout_alignParentEnd="true"

android:layout_marginStart="20dp"

android:hint="@string/password"

android:inputType="textPassword"
```

```
android:padding="10dp"

android:textColor="@color/white"

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


<TextView

android:id="@+id/forgotPasswordText"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:layout_marginTop="20dp"

android:text="@string/forgot_password"

android:clickable="true"

android:textSize="20sp"

android:layout_marginStart="30dp"

android:layout_alignParentStart="true"

android:layout_below="@+id/loginPassword"/>

android:id="@+id/shadowLoginButton"

android:padding="10dp"

android:layout_below="@+id/forgotPasswordText"

android:layout_marginTop="30dp">


<Button

android:id="@+id/loginButton"

android:layout_width="match_parent"

android:layout_height="46dp"

android:text="@string/sign_in" />

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

Java Code:

```java
import androidx.annotation.NonNull;

import androidx.appcompat.app.AlertDialog;

import androidx.appcompat.app.AppCompatActivity;


import android.view.View;

import android.view.ViewGroup;

import android.widget.Button;

import android.widget.EditText;

import android.widget.ImageView;

import android.widget.TextView;

import android.widget.Toast;

public class LoginActivity extends AppCompatActivity {


EditTextloginName, loginPwd;

 Button login;

   @Override

   protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity_login);

loginName = findViewById(R.id.loginUsername);

loginPwd = findViewById(R.id.loginPassword);

     login = findViewById(R.id.loginButton);

login.setOnClickListener(new View.OnClickListener() {

       @Override

       public void onClick(View v) {

          String uName, passwd;

uName = loginName.getText().toString();

          passwd = loginPwd.getText().toString();
```

Toast.makeText(LoginActivity.this"Welcome", Toast.LENGTH_SHORT).show();

```
        }

    });

  }

}
```

Output:

Program No: 02

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

XML Code:

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

<androidx.constraintlayout.widget.ConstraintLayoutxmlns: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/txt1"

android:layout_width="182dp"

android:layout_height="54dp"


app:layout_constraintBottom_toBottomOf="parent"

app:layout_constraintHorizontal_bias="0.497"

app:layout_constraintLeft_toLeftOf="parent"

app:layout_constraintRight_toRightOf="parent"

app:layout_constraintTop_toBottomOf="@+id/btn1"

app:layout_constraintVertical_bias="0.356" />


<EditText

android:id="@+id/edt1"

android:layout_width="300dp"
```

android:layout_height="40dp"

android:layout_marginTop="136dp"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintHorizontal_bias="0.495"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintTop_toTopOf="parent"

app:layout_constraintVertical_bias="0.85" />

<Button

android:id="@+id/btn1"

android:layout_width="122dp"

android:layout_height="43dp"

android:layout_marginTop="48dp"

android:text="Button"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintHorizontal_bias="0.498"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintTop_toBottomOf="@+id/edt1" />

</androidx.constraintlayout.widget.ConstraintLayout>

Java Code:

package com.example.textview;

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;

```java
public class MainActivity extends AppCompatActivity {
    Button b1;
EditText e1;
TextView t1;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
        e1 = findViewById(R.id.edt1);
        b1=findViewById(R.id.btn1);
        t1=findViewById(R.id.txt1);
        b1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String value=e1.getText().toString();
                t1.setText(value);
            }
        });
    }
}
```

Output:
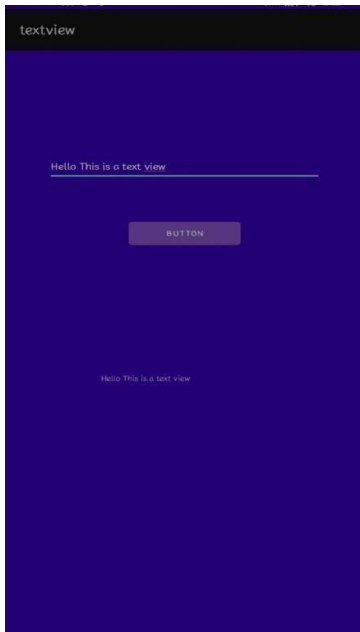
Program No: 03

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"?>

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

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

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

android:layout_width="match_parent"

android:layout_height="match_parent"

android:orientation="vertical"

android:background="#ecdaf2"

tools:context=".MainActivity">


<TextView

android:id="@+id/txt1"

android:layout_width="match_parent"

android:layout_height="wrap_content"

android:layout_marginTop="10dp"

android:padding="20dp"

android:textAlignment="center"

android:textSize="20sp"

android:text="Login form"/>


<EditText

android:id="@+id/edt1"

android:layout_width="match_parent"

android:layout_height="wrap_content"
```

```
android:layout_marginTop="100dp"

android:paddingStart="10dp"

android:hint="Username" />

<TextView

android:id="@+id/t1"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:visibility="gone"

android:padding="10dp"

android:text="*Please enter username"

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


<EditText

android:id="@+id/edt2"

android:layout_width="match_parent"

android:layout_height="wrap_content"

android:layout_marginTop="50dp"

android:paddingStart="10dp"

android:hint="Password" />

<TextView

android:id="@+id/t2"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:visibility="gone"

android:padding="10dp"

android:text="*Please enter password"

android:textColor="@color/red"/>
```

```xml
<Button

android:id="@+id/btn1"

android:layout_width="150dp"

android:layout_height="40dp"

android:layout_gravity="center"

android:text="Sign In"

android:layout_marginTop="20dp"/>

</LinearLayout>
```

Java Code:

```java
package com.example.loginformvalidation;

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 e1,e2;

TextView t1, t2;

    Button b1;

    @Override

 protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity_main);

    e1=findViewById(R.id.edt1);

    e2=findViewById(R.id.edt2);

    t1 = findViewById(R.id.t1);
```

```java
        t2 = findViewById(R.id.t2);

        b1=findViewById(R.id.btn1);

        b1.setOnClickListener(new View.OnClickListener() {

            @Override

            public void onClick(View v) {

                String username,password;

                username=e1.getText().toString();

                password=e2.getText().toString();

                if (username.isEmpty()){

                    t1.setVisibility(View.VISIBLE);

Toast.makeText(MainActivity.this, "Username is empty", Toast.LENGTH_SHORT).show();

                }

                else if (password.isEmpty()){

                    t2.setVisibility(View.VISIBLE);

Toast.makeText(MainActivity.this, "Password is empty", Toast.LENGTH_SHORT).show();

}else

Toast.makeText(MainActivity.this, "Login success", Toast.LENGTH_SHORT).show();

            }

        });

    }

}
```

Output:

Program No: 04

Aim: Implementing basic arithmetic operations of a simple calculator

XML Code:

```xml
<?xmlversion="1.0"encoding="utf-8"?>
<LinearLayoutxmlns:android="http://schemas.android.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto"
xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"
android:layout_height="match_parent"
tools:context=".MainActivity"
android:padding="20dp"
android:orientation="vertical"
android:background="@color/pastel">

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="CALCULATOR"
android:textSize="25sp"
android:layout_marginBottom="16dp"
android:textColor="@android:color/black"/>

<LinearLayout
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:orientation="horizontal"
android:layout_marginBottom="20dp">

<EditText
android:id="@+id/first_no"
android:layout_width="102dp"
android:layout_height="59dp"
android:ems="10"
android:layout_marginHorizontal="50dp"
android:hint="Enter"/>

<EditText
android:id="@+id/second_no"
android:layout_width="102dp"
android:layout_height="59dp"
android:ems="10"
android:hint="Enter"/>

</LinearLayout>
```

```
<LinearLayout
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:orientation="horizontal"
android:layout_marginBottom="20dp">

<TextView
android:textSize="35sp"
android:id="@+id/answer"
android:layout_width="102dp"
android:layout_height="59dp"
android:layout_marginHorizontal="50dp"
android:hint="ans"/>

</LinearLayout>

<LinearLayout
android:orientation="vertical"
android:layout_marginLeft="250dp"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginBottom="30dp">

<Button
android:id="@+id/sub"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
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"
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_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:textSize="25sp"/>

<Button
android:id="@+id/equals"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginBottom="16dp"
android:text="="
android:textSize="35sp"/>
</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.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);
```

```java
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;

    }

  }

});

sub.setOnClickListener(new View.OnClickListener() {

  @Override

  public void onClick(View v) {

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

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

```java
        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());
                double b = Double.parseDouble(no2.getText().toString());
                ans = a * b;
            }
        }
    });
```

```java
        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;

            }

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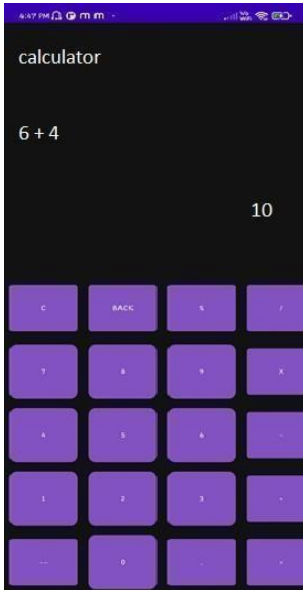
```
    }
}
```

Output:

Program No: 05

Aim: Implement validations on various UI controls

XML Code:

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

<androidx.constraintlayout.widget.ConstraintLayoutxmlns: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/txt1"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:text="Validation on UI Components"

app:layout_constraintLeft_toLeftOf="parent"

android:textSize="25sp"

app:layout_constraintRight_toRightOf="parent"

android:layout_marginTop="30dp"

app:layout_constraintTop_toTopOf="parent" />


<EditText

android:id="@+id/edt1"

android:layout_width="match_parent"

android:layout_height="wrap_content"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintEnd_toEndOf="parent"
```

```xml
app:layout_constraintTop_toBottomOf="@+id/txt1"

android:padding="20dp"

android:layout_marginTop="100dp"

android:hint="Text 1"

android:layout_marginHorizontal="10dp"/>


<EditText

android:id="@+id/edt2"

android:layout_width="match_parent"

android:layout_height="wrap_content"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintTop_toBottomOf="@+id/edt1"

android:padding="20dp"

android:layout_marginTop="20dp"

android:hint="Text 2"

android:layout_marginHorizontal="10dp"/>

<EditText

android:id="@+id/edt3"

android:layout_width="match_parent"

android:layout_height="wrap_content"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintTop_toBottomOf="@+id/edt2"

android:padding="20dp"

android:layout_marginTop="20dp"

android:hint="Text 3"

android:layout_marginHorizontal="10dp"/>
```

```
<Button

android:id="@+id/btn1"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintTop_toBottomOf="@+id/edt3"

android:layout_marginTop="50dp"

android:text="Submit"/>

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

Java Code:

```java
package com.example.newapp2;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

public class MainActivity extends AppCompatActivity {

EditText e1, e2, e3;

    Button b1;

@Override

    protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity_main);


    e1 = findViewById(R.id.edt1);
```

```java
        e2 = findViewById(R.id.edt2);

        e3 = findViewById(R.id.edt3);

        b1 = findViewById(R.id.btn1);


        b1.setOnClickListener(new View.OnClickListener() {

            @Override

            public void onClick(View v) {

                String a, b, c;

                a = e1.getText().toString();

                b = e2.getText().toString();

                c = e3.getText().toString();


                if(a.isEmpty()){

                    e1.setError("First field is required");

}else if(b.isEmpty()){

                    e2.setError("Second field is required");

}else if(c.isEmpty()){

                    e3.setError("Third field is required");

                }

            }

        });

}

}
```

Output:

Program No:06

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

XML Code:

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

<androidx.constraintlayout.widget.ConstraintLayoutxmlns: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/txt1"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:text="Registration"

android:layout_marginTop="50dp"

android:textSize="25sp"

app:layout_constraintLeft_toLeftOf="parent"

app:layout_constraintRight_toRightOf="parent"

app:layout_constraintTop_toTopOf="parent" />


<EditText

android:id="@+id/edt1"

android:layout_width="match_parent"
```

```
android:layout_height="wrap_content"

android:layout_marginTop="100dp"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintEnd_toEndOf="parent"

android:paddingStart="10dp"

app:layout_constraintTop_toBottomOf="@+id/txt1"

android:hint="Name"/>

<EditText

android:id="@+id/edt2"

android:layout_width="match_parent"

android:layout_height="wrap_content"

android:layout_marginTop="10dp"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintEnd_toEndOf="parent"

android:paddingStart="10dp"

app:layout_constraintTop_toBottomOf="@+id/edt1"

android:hint="Email"/>

<EditText

android:id="@+id/edt3"

android:layout_width="match_parent"

android:layout_height="wrap_content"

android:layout_marginTop="10dp"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintEnd_toEndOf="parent"

android:paddingStart="10dp"

app:layout_constraintTop_toBottomOf="@+id/edt2"

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

```
<Button

android:layout_width="wrap_content"

android:id="@+id/btn1"

android:layout_height="wrap_content"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintTop_toBottomOf="@+id/edt3"

android:layout_marginTop="30dp"

android:text="Register"/>

</androidx.constraintlayout.widget.ConstraintLayout>

.constraintlayout.widget.ConstraintLayout>
```

#activity2.xml

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

<androidx.constraintlayout.widget.ConstraintLayoutxmlns: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=".MainActivity2">

<TextView

android:id="@+id/txt1"

android:layout_width="match_parent"

android:layout_height="wrap_content"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintTop_toTopOf="parent"
```

```xml
android:layout_marginTop="70dp"

android:layout_marginHorizontal="20dp"/>


<TextView

android:id="@+id/txt2"

android:layout_width="match_parent"

android:layout_height="wrap_content"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintTop_toBottomOf="@+id/txt1"

android:layout_marginTop="70dp"

android:layout_marginHorizontal="20dp"/>


<TextView

android:id="@+id/txt3"

android:layout_width="match_parent"

android:layout_height="wrap_content"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintTop_toBottomOf="@+id/txt2"

android:layout_marginTop="70dp"

android:layout_marginHorizontal="20dp"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

Java Code:

```java
package com.example.sharedpref;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;

import android.content.SharedPreferences;
```

```java
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 e1, e2, e3;

    Button b1;
 @Override
    protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);


    e1 = findViewById(R.id.edt1);

    e2 = findViewById(R.id.edt2);

    e3 = findViewById(R.id.edt3);

    b1 = findViewById(R.id.btn1);
b1.setOnClickListener(new View.OnClickListener() {

        @Override

        public void onClick(View v) {

            String a, b, c;

            a = e1.getText().toString();

            b = e2.getText().toString();

            c = e3.getText().toString();
SharedPreferencessharedPreferences = getSharedPreferences("myKey", MODE_PRIVATE);

SharedPreferences.Editor editor = sharedPreferences.edit();

editor.putString("name", a);

editor.putString("email", b);
```

```java
editor.putString("password", c);

editor.apply();

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

startActivity(intent);
        }
    });


    }
}
```

#mainactivity2.java

```java
package com.example.sharedpref;

import androidx.appcompat.app.AppCompatActivity;

import android.content.SharedPreferences;

import android.os.Bundle;

import android.widget.TextView;

import android.widget.Toast;

public class MainActivity2 extends AppCompatActivity {


TextView t1, t2, t3;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity_main2);


        t1 = findViewById(R.id.txt1);

        t2 = findViewById(R.id.txt2);

        t3 = findViewById(R.id.txt3);
```

```
SharedPreferencessharedPreferences = getSharedPreferences("myKey", MODE_PRIVATE);
     String name, email, password;
     name = "Name: "+sharedPreferences.getString("name", "");
     email = "Email: "+sharedPreferences.getString("email", "");
     password = "Password: "+sharedPreferences.getString("password", "");


     t1.setText(name);
     t2.setText(email);
     t3.setText(password);
   }
}
```
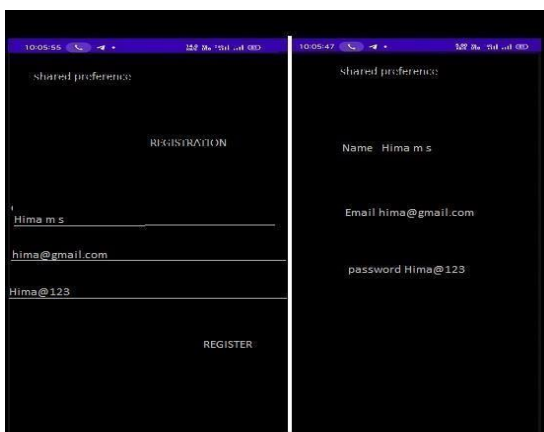
Output:

Program No: 07

Aim: Design a simple Calculator using GridLayout and Cascaded LinearLayout

XML Code:

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

<androidx.constraintlayout.widget.ConstraintLayoutxmlns: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/txt1"

android:layout_width="match_parent"

android:layout_height="wrap_content"

android:text="2 X 5 + 10"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintTop_toTopOf="parent"

android:padding="20dp"/>


<TextView

android:id="@+id/txt2"

android:layout_width="match_parent"

android:layout_height="wrap_content"

android:text="20"

app:layout_constraintStart_toStartOf="parent"
```

```
android:gravity="end"

app:layout_constraintBottom_toTopOf="@+id/grid"

android:layout_marginTop="60dp"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintTop_toBottomOf="@+id/txt1"

android:padding="20dp"/>


<GridLayout

android:id="@+id/grid"

android:layout_width="match_parent"

android:layout_height="wrap_content"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintEnd_toEndOf="parent"

android:rowCount="3"

android:columnCount="4"

app:layout_constraintBottom_toBottomOf="parent">


<Button

android:layout_height="80dp"

android:layout_width="wrap_content"

android:layout_margin="7dp"

android:text="C"/>

<Button

android:layout_height="80dp"

android:layout_width="wrap_content"

android:layout_margin="7dp"

android:text="Back"/>

<Button

android:layout_height="80dp"
```

```
android:layout_width="wrap_content"

android:layout_margin="7dp"

android:text="%"/>

<Button

android:layout_height="80dp"

android:layout_width="wrap_content"

android:layout_margin="7dp"

android:text="/"/>

<Button

android:layout_height="80dp"

android:layout_width="wrap_content"

android:background="@drawable/button_number"

android:layout_margin="7dp"

android:text="7"/>

<Button

android:layout_height="80dp"

android:layout_width="wrap_content"

android:layout_margin="7dp"

android:background="@drawable/button_number"

android:text="8"/>

<Button

android:layout_height="80dp"

android:layout_width="wrap_content"

android:layout_margin="7dp"

android:background="@drawable/button_number"

android:text="9"/>

<Button

android:layout_height="80dp"

android:layout_width="wrap_content"
```

```
android:layout_margin="7dp"

android:text="X"/>


<Button

android:layout_height="80dp"

android:layout_width="wrap_content"

android:background="@drawable/button_number"

android:layout_margin="7dp"

android:text="4"/>

<Button

android:layout_height="80dp"

android:layout_width="wrap_content"

android:background="@drawable/button_number"

android:layout_margin="7dp"

android:text="5"/>

<Button

android:layout_height="80dp"

android:layout_width="wrap_content"

android:background="@drawable/button_number"

android:layout_margin="7dp"

android:text="6"/>

<Button

android:layout_height="80dp"

android:layout_width="wrap_content"

android:layout_margin="7dp"

android:text="-"/>


<Button

android:layout_height="80dp"
```

```
android:layout_width="wrap_content"

android:background="@drawable/button_number"

android:layout_margin="7dp"

android:text="1"/>

<Button

android:layout_height="80dp"

android:layout_width="wrap_content"

android:background="@drawable/button_number"

android:layout_margin="7dp"

android:text="2"/>

<Button

android:layout_height="80dp"

android:layout_width="wrap_content"

android:background="@drawable/button_number"

android:layout_margin="7dp"

android:text="3"/>

<Button

android:layout_height="80dp"

android:layout_width="wrap_content"

android:layout_margin="7dp"

android:text="+"/>


<Button

android:layout_height="80dp"

android:layout_width="wrap_content"

android:layout_margin="7dp"

android:text="--"/>

<Button

android:layout_height="80dp"
```

android:layout_width="wrap_content"

android:background="@drawable/button_number"

android:layout_margin="7dp"

android:text="0"/>

<Button

android:layout_height="80dp"

android:layout_width="wrap_content"

android:layout_margin="7dp"

android:text="."/>

<Button

android:layout_height="80dp"

android:layout_width="wrap_content"

android:layout_margin="7dp"

android:text="="/>

</GridLayout>

</androidx.constraintlayout.widget.ConstraintLayout>

Java Code:

```
package com.example.cal;

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: 08

Aim: Create a facebook page using relative layout set properties

XML Code:

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

<RelativeLayoutxmlns: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/blue"

tools:context=".MainActivity">

<TextView

android:id="@+id/t1"

android:layout_width="264dp"

android:layout_height="40dp"

android:layout_alignParentStart="true"

android:layout_alignParentTop="true"

android:textColor="@color/white"

android:layout_alignParentEnd="true"

android:layout_marginTop="50dp"

android:text="FACEBOOK"

android:textAlignment="center"

android:textSize="40dp" />

<EditText

android:id="@+id/ed1"
```

```
android:layout_width="match_parent"

android:layout_height="50dp"

android:layout_below="@+id/t1"

android:layout_alignParentStart="true"

android:layout_alignParentEnd="true"

android:layout_marginHorizontal="40dp"

android:layout_marginTop="150dp"

android:textColor="@color/white"

android:textColorHint="@color/white"

android:hint="Username"

android:paddingStart="10px" />


<EditText

android:id="@+id/ed2"

android:layout_width="match_parent"

android:layout_height="50dp"

android:layout_below="@+id/ed1"

android:layout_alignParentStart="true"

android:layout_alignParentEnd="true"

android:textColor="@color/white"

android:textColorHint="@color/white"

android:layout_marginHorizontal="40dp"

android:layout_marginTop="50dp"

android:hint="Password"

android:paddingStart="10px" />
<Button

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

android:layout_width="334dp"

android:layout_height="50dp"

android:layout_below="@+id/ed2"

android:layout_marginTop="31dp"

android:layout_alignParentStart="true"

android:layout_alignParentEnd="true"

android:background="@color/purple_700"

android:layout_marginHorizontal="400px"

android:text="SignIn"/>

<Button

android:id="@+id/btn2"

android:layout_width="match_parent"

android:layout_height="50dp"

android:layout_below="@+id/btn1"

android:layout_marginTop="100dp"

android:background="@color/green"

android:text="Dont have an account? Register here"

android:layout_marginHorizontal="20dp" />

</RelativeLayout>

Java Code:

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);

    }

}

Output:

Program No: 09

Aim: Develop an application that toggles image using FrameLayout

XML Code:

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

<FrameLayoutxmlns: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.ConstraintLayoutxmlns:android="http://schemas.android.com/apk/res/android"

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

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

android:layout_width="match_parent"

android:layout_height="match_parent"

android:background="@color/purple_500"

tools:context=".MainActivity">

<TextView

android:id="@+id/txt1"

android:layout_width="match_parent"

android:padding="20dp"

android:textAlignment="center"

android:layout_marginHorizontal="10dp"

android:layout_height="wrap_content"

android:textSize="30sp"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintTop_toTopOf="parent"

android:layout_marginTop="100dp"

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

```xml
<EditText

android:id="@+id/edt1"

android:layout_width="match_parent"

android:layout_height="wrap_content"

android:padding="20dp"

android:layout_marginHorizontal="20dp"

android:hint="Enter first number"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintTop_toBottomOf="@+id/txt1"

android:layout_marginTop="100dp"/>


<EditText

android:id="@+id/edt2"

android:layout_width="match_parent"

android:layout_height="wrap_content"

android:padding="20dp"

android:hint="Enter second number"

android:layout_marginHorizontal="20dp"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintTop_toBottomOf="@+id/edt1"

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

android:id="@+id/btn1"

android:layout_width="wrap_content"

android:layout_height="wrap_content"
```

android:text="Divide"

app:layout_constraintTop_toBottomOf="@+id/edt2"

android:layout_marginTop="30dp"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintEnd_toEndOf="parent"/>

<TextView

android:id="@+id/txt2"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:layout_marginTop="20dp"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintTop_toBottomOf="@+id/btn1"/>

</androidx.constraintlayout.widget.ConstraintLayout>

Java Code:

package com.example.exceptionhandling;

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;

public class MainActivity extends AppCompatActivity {

EditText e1, e2;

   Button b1;

TextView t1;

```
    @Override

    protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity_main);

        e1 = findViewById(R.id.edt1);

        e2 = findViewById(R.id.edt2);

        b1 = findViewById(R.id.btn1);

        t1 = findViewById(R.id.txt2);

        b1.setOnClickListener(new View.OnClickListener() {

            @Override

            public void onClick(View v) {

                String a, b;

                int c, d;

                a = e1.getText().toString();

                b = e2.getText().toString();

try{

                int res = Integer.parseInt(a)/Integer.parseInt(b);

                t1.setText(res);

}catch(Exception e){

                t1.setText(e.toString());

            }

        }

    });

  }

}
```

Output:

Program No: 11

Aim: Implement Intent to navigate between multiple activities

XML Code:

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

<androidx.constraintlayout.widget.ConstraintLayoutxmlns: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:background="@color/teal_200"

android:layout_height="match_parent"

tools:context=".MainActivity">

<TextView

android:id="@+id/txt1"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:text="Activity 1"

app:layout_constraintLeft_toLeftOf="parent"

android:layout_marginTop="50dp"

android:textSize="30sp"

app:layout_constraintRight_toRightOf="parent"

app:layout_constraintTop_toTopOf="parent" />

<Button

android:id="@+id/btn1"

android:layout_width="wrap_content"

android:layout_height="wrap_content"
```

android:text="Move to next activity"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintTop_toBottomOf="@id/txt1"

app:layout_constraintBottom_toBottomOf="parent"/>

</androidx.constraintlayout.widget.ConstraintLayout>

#activity_main2.xml

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

<androidx.constraintlayout.widget.ConstraintLayoutxmlns: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=".MainActivity2">

<TextView

android:id="@+id/txt2"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:textSize="30sp"

android:text="Activity 2"

app:layout_constraintLeft_toLeftOf="parent"

android:layout_marginTop="50dp"

app:layout_constraintRight_toRightOf="parent"

app:layout_constraintTop_toTopOf="parent" />

<Button

android:id="@+id/btn2"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:text="Back"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintTop_toBottomOf="@id/txt2"

app:layout_constraintBottom_toBottomOf="parent"/>

</androidx.constraintlayout.widget.ConstraintLayout>

Java Code:

package com.example.intent;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

public class MainActivity extends AppCompatActivity {

   Button b1;

   @Override

   protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity_main);

     b1 = findViewById(R.id.btn1);

     b1.setOnClickListener(new View.OnClickListener() {

       @Override

```
        public void onClick(View v) {

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

startActivity(intent);

        }

    });

  }

}
```

#Mainactivity2

```
package com.example.intent;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

public class MainActivity2 extends AppCompatActivity {

    Button b1;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity_main2);

        b1 = findViewById(R.id.btn2);

        b1.setOnClickListener(new View.OnClickListener() {

            @Override

            public void onClick(View v) {

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

startActivity(intent);
```
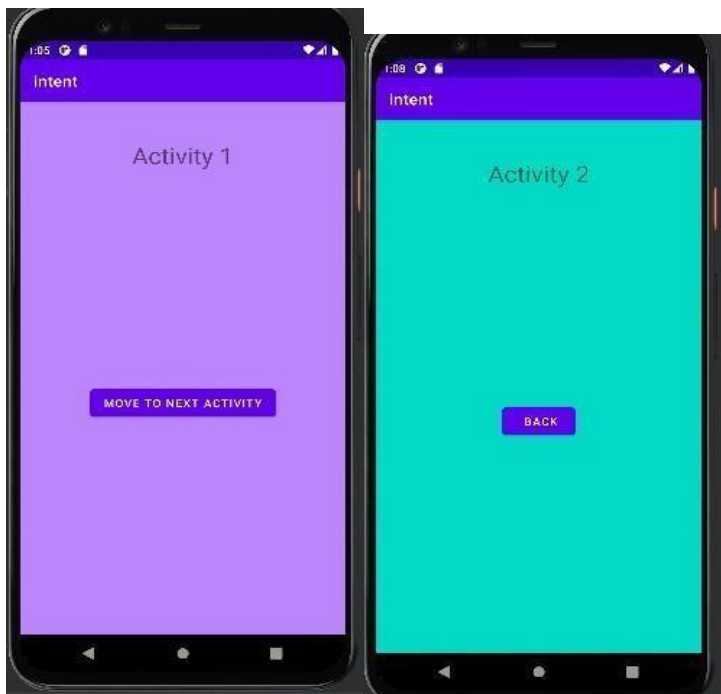
```
        }

    });

}

}
```

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.ConstraintLayoutxmlns: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="#fba9dc"

tools:context=".MainActivity">

<Button

android:id="@+id/btn1"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintTop_toTopOf="parent"

app:layout_constraintBottom_toBottomOf="parent"

android:text="Button" />

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

Java Code:

```java
package com.example.explicit;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;

import android.net.Uri;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

public class MainActivity extends AppCompatActivity {

    Button b1;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity_main);

        b1=findViewById(R.id.btn1);

        b1.setOnClickListener(new View.OnClickListener() {

            @Override

            public void onClick(View v) {

  Intent b=newIntent(Intent.ACTION_VIEW, Uri.parse("https://www.tutorialspoint.com"));

startActivity(b);

            }

        });

    }

}
```
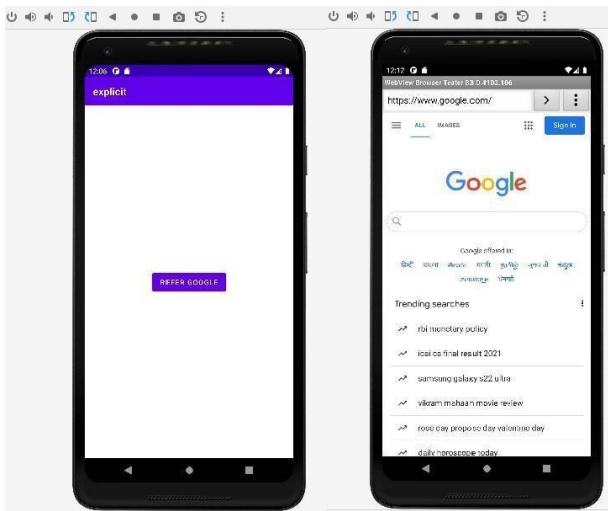
Output:

Program No: 13

Aim: Implement Options Menu to navigate to activities

XML Code:

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

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

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

tools:showIn="navigation_view">

<group android:checkableBehavior="single">

<item

android:id="@+id/nav_home"

android:icon="@drawable/ic_menu_camera"

android:title="@string/menu_home" />

<item

android:id="@+id/nav_gallery"

android:icon="@drawable/ic_menu_gallery"

android:title="Account" />

<item

android:id="@+id/nav_slideshow"

android:icon="@drawable/ic_menu_slideshow"

android:title="Logout" />

</group>

</menu>
```

#main

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

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

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

<item

android:id="@+id/action_settings"

android:orderInCategory="100"

android:title="@string/action_settings"

app:showAsAction="never" />

</menu>

#activity_main

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

<androidx.drawerlayout.widget.DrawerLayoutxmlns:android="http://schemas.android.com/apk/res/android"

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

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

android:id="@+id/drawer_layout"

android:layout_width="match_parent"

android:layout_height="match_parent"

android:fitsSystemWindows="true"

tools:openDrawer="start">

<include

android:id="@+id/app_bar_main"

android:layout="@layout/app_bar_main"

android:layout_width="match_parent"

android:layout_height="match_parent" />

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

android:id="@+id/nav_view"

android:layout_width="wrap_content"android:layout_height="match_parent"

android:layout_gravity="start"

android:fitsSystemWindows="true"

app:headerLayout="@layout/nav_header_main"

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

</androidx.drawerlayout.widget.DrawerLayout>

#activity_main2

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

<androidx.constraintlayout.widget.ConstraintLayoutxmlns: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/teal_700"

tools:context=".MainActivity2">

<TextView

android:layout_width="match_parent"

android:layout_height="wrap_content"

app:layout_constraintBottom_toBottomOf="parent"

app:layout_constraintEnd_toEndOf="parent"

android:text="Account Page"

android:textSize="30sp"

android:textAlignment="center"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintTop_toTopOf="parent"

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

Java Code:

```java
package com.example.nav;

import android.os.Bundle;

import android.view.View;

import android.view.Menu;

import com.google.android.material.snackbar.Snackbar;

import com.google.android.material.navigation.NavigationView;

import androidx.navigation.NavController;

import androidx.navigation.Navigation;

import androidx.navigation.ui.AppBarConfiguration;

import androidx.navigation.ui.NavigationUI;

import androidx.drawerlayout.widget.DrawerLayout;

import androidx.appcompat.app.AppCompatActivity;

import com.example.nav.databinding.ActivityMainBinding;

public class MainActivity extends AppCompatActivity {

    private AppBarConfigurationmAppBarConfiguration;

    private ActivityMainBinding binding;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

        binding = ActivityMainBinding.inflate(getLayoutInflater());

setContentView(binding.getRoot());

setSupportActionBar(binding.appBarMain.toolbar);

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

            @Override

            public void onClick(View view) {
```

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

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

        }

    });

DrawerLayout drawer = binding.drawerLayout;

NavigationViewnavigationView = binding.navView;

    // Passing each menu ID as a set of Ids because each

    // menu should be considered as top level destinations.

mAppBarConfiguration = new AppBarConfiguration.Builder(

R.id.nav_home, R.id.nav_gallery, R.id.nav_slideshow)

.setOpenableLayout(drawer)

.build();

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

NavigationUI.setupActionBarWithNavController(this,navController,
mAppBarConfiguration);

NavigationUI.setupWithNavController(navigationView, navController);

  }

  @Override

  public booleanonCreateOptionsMenu(Menu menu) {

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

    return true;

  }

  @Override

  public booleanonSupportNavigateUp() {

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

 return NavigationUI.navigateUp(navController, mAppBarConfiguration)
```

```
                || super.onSupportNavigateUp();

    }

}
```

#mainactivity2

package com.example.nav;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

public class MainActivity2 extends AppCompatActivity {

    @Override

    protected void onCreate(Bundle savedInstanceState) {
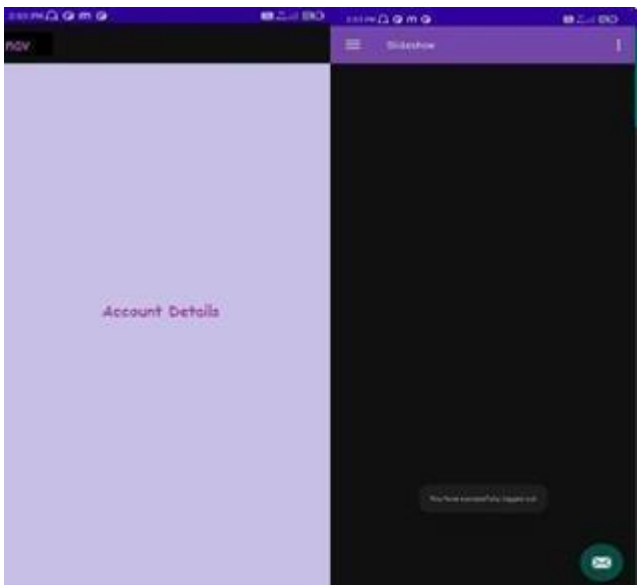
super.onCreate(savedInstanceState);

setContentView(R.layout.activity_main2);

    }

}

Output:

Program No: 14

Aim: DevelopanapplicationthatusesArrayAdapterwithListView

XML Code:

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

android:layout_width="match_parent"an

droid:layout_height="match_parent"toos

:context=".arrayAdapter">

<ListViewandroid:id="@+id/mobile_list"

android:layout_width="match_parent"

android:layout_height="wrap_content">

</ListView>
</LinearLayout>
```

Java Code:

```java
packagecom.example.ArrayAdapter;

importandroidx.appcompat.app.AppCompatActivity;

importandroid.os.Bundle;

importandroid.view.View;

importandroid.widget.AdapterView;
```

```
importandroid.widget.ArrayAdapter\

importandroid.widget.ListView;

importandroid.widget.TextView;

importandroid.widget.Toast;

public class arrayAdapter extends AppCompatActivity implementsAdapterView.OnItemClckListener{

ListViewl;

String[]Months={"January",”February","March","April","June","July"};

@Override

protected void onCreate(Bundle savedInstanceState) {super.onCreate(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_dropdo
wn_item,months);

l.setAdapter(adapter);

l.setOnItemClickListener(this);

}

@Override

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

{TextViewtemp =(TextView)view;

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

i,Toast.LENGTH_LONG).show();

}
```
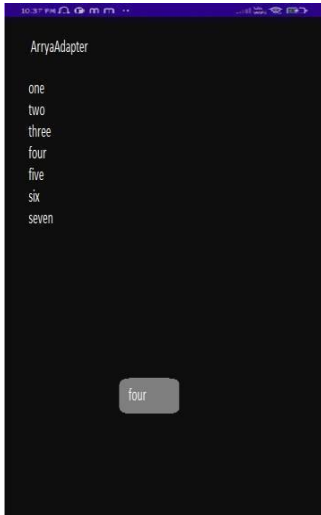
}

Output:

Program No:15

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

XML Code

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

<androidx.constraintlayout.widget.ConstraintLayout

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">

<!-- android:numColumns=2 is the number of columns for Grid View

android:horizontalSpacing is the space between horizontal

grid items.-->

<GridView

android:id="@+id/idGVcourses"

android:layout_width="match_parent"

android:layout_height="match_parent"

android:horizontalSpacing="6dp"

android:numColumns="2"

android:verticalSpacing="6dp" />

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

Java Code:

package com.example.myapp;

import androidx.annotation.NonNull;

import androidx.appcompat.app.AlertDialog;

import androidx.appcompat.app.AppCompatActivity;

import android.content.DialogInterface;

import android.content.Intent;

import android.os.Bundle; import android.view.Menu;

import android.view.MenuItem;

import android.view.View;

import android.widget.Button;

import android.widget.ImageView;

import android.widget.TextView;

import android.widget.Toast;

public class MainActivity3 extends AppCompatActivity

ImageView i;

AlertDialog.Builder builder;

AlertDialog alertDialog;

Button b;

//option

menu

@Override

public boolean onCreateOptionsMenu(Menu menu) {

getMenuInflater().inflate(R.menu.*menu*,menu); return

true;

//return super.onCreateOptionsMenu(menu);

}

```java
@Override

public boolean onOptionsItemSelected(@NonNull MenuItem item) {

item.setIcon(R.drawable.about);

//i=findViewById(R.id.imageView);

TextView t =findViewById(R.id.textView4);

//handle item selection

switch (item.getItemId()) {

case R.id.it3:

builder=new AlertDialog.Builder(MainActivity3.this);

builder.setMessage("Do you want to

close?").setTitle("AlertDialog").setPositiveButton("OK", new

DialogInterface.OnClickListener() {

@Override

public void onClick(DialogInterface dialog, int which)

{

finish();

}

}).setNegativeButton("Cancel", new DialogInterface.OnClickListener()

{

@Override

public void onClick(DialogInterface dialog, int which) {

dialog.dismiss();

}

});

alertDialog=builder.create();

alertDialog.show();

return true;
```

```
case R.id.it4:

builder=new AlertDialog.Builder(MainActivity3.this);

View popupView=getLayoutInflater().inflate(R.layout.popup1,null);

builder.setView(popupView);

alertDialog=builder.create();

alertDialog.show();

return true;

default:

return super.onOptionsItemSelected(item);

}

}

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity_main3);

}}
```

Popup.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"

ndroid:orientation="vertical">

<ImageView android:id="@+id/imageView2"

android:layout_width="wrap_content" a
```

ndroid:layout_height="wrap_content"

android:layout_weight="1"

android:src="@drawable/help" />

<TextView

android:id="@+id/textView3"

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:layout_weight="1"

android:text="help" />

</LinearLayout>

Menu.xml

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

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

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

<item

android:id="@+id/it3"

android:title="Alert" />
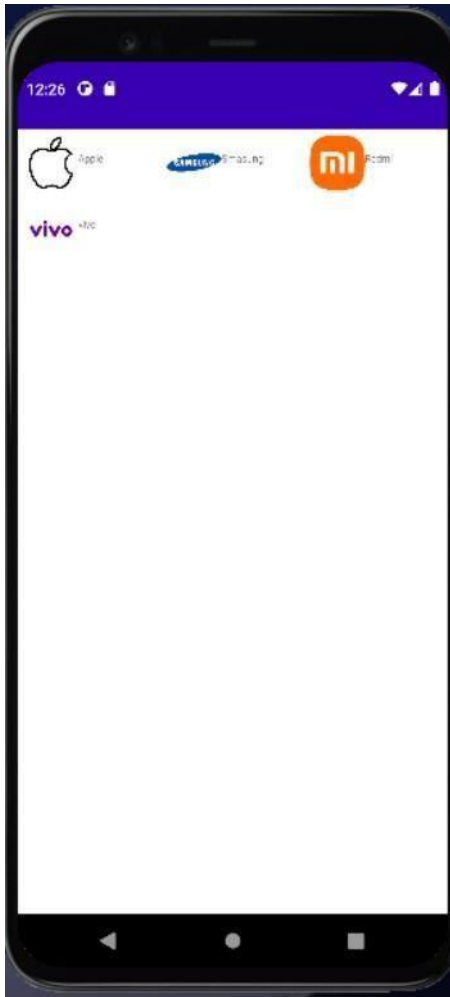
<item

android:id="@+id/it4"

android:title="Pop Up" />

</menu>

Output

Program No: 16

Aim: Develop an application that implements spinner component and perform event handling.

XML Code:

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayoutxmlns: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="197dp"
      android:layout_height="70dp"
      tools:layout_editor_absoluteX="92dp"
      tools:layout_editor_absoluteY="297dp"
      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="0.48"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

Java Code:

```java
package com.example.spinnercomponents;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
```

```
import android.view.View;

import android.widget.AdapterView;

import android.widget.ArrayAdapter;

import android.widget.Spinner;

import android.widget.Toast;

public class MainActivity extends AppCompatActivity implements

  AdapterView.OnItemSelectedListener {

  String[] country ={"india","china","japan","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 aa = new ArrayAdapter(this,android.R.layout. simple_spinner_item,country);

          aa.setDropDownViewResource(android.R.layout.simple_spinner_item);

    spin.setAdapter(aa);

  }

  @Override

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

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

  }

  @Override

  public void onNothingSelected(AdapterView<?>arg0){

}

}
```
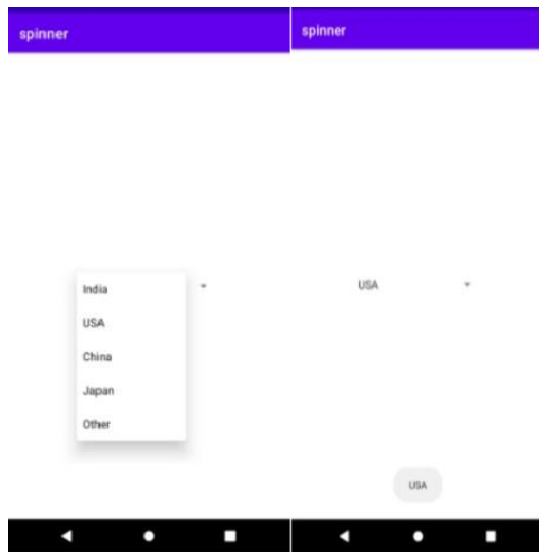
Output:

Program No: 17

Aim: Apply themes vis code and manifest file

XML Code:

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    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=".MainActivity">

    <EditText
        android:id="@+id/editTextTextPersonName"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:inputType="textPersonName"
        android:minHeight="48dp"
        android:text="Haritha"
        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.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);

    }

}
```

#colors.xml

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

<resources>

    <color name="colorPrimary">#673AB7</color>

    <color name="color_primary_dark">#8BC34A</color>

    <color name="color_accent">#00BCD4</color>

    <color name="color_text_color_primary">#3B65FF</color>

</resources>
```

#new_style.xml

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

<!-- Base application theme. -->

<stylename="Theme.new_style"
parent="Theme.MaterialComponents.DayNight.DarkActionBar">

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

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

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

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

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

</style>
```

</resources>

#values\themes.xml

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

<!-- Base application theme. -->

<stylename="Theme.Themes" parent="Theme.MaterialComponents.DayNight.DarkActionBar">

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

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

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

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

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

</style>

</resources>

#**AndroidMainfest.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>
```

#night\themes.xml

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

<!-- Base application theme. -->

<stylename="Theme.Themes"
parent="Theme.MaterialComponents.DayNight.DarkActionBar">


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

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

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

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

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

</style>

</resources>
```

Output:

Program No: 18

Aim: Program to develop an application using Fragments

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:orientation="vertical"
tools:context=".MainActivity">

<Button
android:id="@+id/firstFragment"
android:layout_width="match_parent"
android:layout_height="101dp"
android:background="@color/design_default_color_primary_variant"
android:insetLeft="8dp"
android:insetTop="5dp"
android:insetRight="8dp"
android:insetBottom="10dp"
android:text="FirstFragment"
android:textColor="@color/white"
android:textSize="20sp"
app:layout_constraintBottom_toBottomOf="parent"
```

```
app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintTop_toTopOf="parent"

app:layout_constraintVertical_bias="0.231" />

<Button

android:id="@+id/secondFragment"

android:layout_width="418dp"

android:layout_height="101dp"

android:background="@color/design_default_color_primary_variant"

android:insetLeft="8dp"

android:insetTop="5dp"

android:insetRight="8dp"

android:insetBottom="10dp"

android:text="Second Fragment"

android:textColor="@color/white"

android:textSize="20sp"

app:layout_constraintBottom_toBottomOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintTop_toTopOf="parent"

app:layout_constraintVertical_bias="0.45" />


<FrameLayout

android:id="@+id/frameLayout"

android:layout_width="match_parent"

android:layout_height="530dp"

app:layout_constraintTop_toBottomOf="parent"
```

tools:layout_editor_absoluteX="-68dp">

</FrameLayout>

</LinearLayout>

Java Code:

MainActivity.java

```java
package com.example.fragment;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.app.Fragment;

import android.app.FragmentManager;

import android.app.FragmentTransaction;

import android.view.View;

import android.widget.Button;


public class MainActivity extends AppCompatActivity {

    Button firstFragment, secondFragment;


    @Override
    protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    firstFragment = (Button) findViewById(R.id.firstFragment);
    secondFragment = (Button) findViewById(R.id.secondFragment);
```

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

@Override

public void onClick(View v) {

        loadFragment(new FirstFragment());

}

    });

secondFragment.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {


        loadFragment(new SecondFragment());

}

    });


}

private void loadFragment(Fragment fragment) {

 FragmentManager fm = getFragmentManager();

FragmentTransaction fragmentTransaction = fm.beginTransaction();

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

fragmentTransaction.commit(); // save the changes

}

}
```

FirstFragment.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;

import android.widget.Toast;

public class FirstFragment extends Fragment {

View view;

Button firstButton;

@Override

public View onCreateView(LayoutInflater inflater, ViewGroup container,

Bundle savedInstanceState) {

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

firstButton = (Button) view.findViewById(R.id.firstButton);

firstButton.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

  Toast.makeText(getActivity(), "First Fragment", Toast.LENGTH_LONG).show();

}

  });

    return view;

}

```
}
```

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="com.example.fragment.FirstFragment">


<TextView

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:layout_centerHorizontal="true"

android:layout_marginTop="100dp"

android:text="First Fragment"

android:textColor="@color/black"

android:textSize="25sp" />


<Button

android:id="@+id/firstButton"

android:layout_width="fill_parent"

android:layout_height="wrap_content"

android:layout_centerInParent="true"

android:layout_marginLeft="20dp"

android:layout_marginRight="20dp"

android:background="@color/design_default_color_primary_variant"

android:text="First Fragment"

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

android:textSize="20sp"

android:textStyle="bold" />

</RelativeLayout>

SecondFragment.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;

import android.widget.Toast;

public class SecondFragment extends Fragment {

    View view;

Button secondButton;

@Override

public View onCreateView(LayoutInflater inflater, ViewGroup container,

Bundle savedInstanceState) {

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

secondButton = (Button) view.findViewById(R.id.secondButton);

secondButton.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {
```

Toast.makeText(getActivity(), "Second Fragment", Toast.LENGTH_LONG).show();

}

});

return view;

}

}

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="com.example.fragment.SecondFragment">

<TextView

android:layout_width="wrap_content"

android:layout_height="wrap_content"

android:layout_centerHorizontal="true"

android:layout_marginTop="100dp"

android:text="Second Fragment"

android:textColor="@color/black"

android:textSize="25sp" />

<Button

android:id="@+id/secondButton"

android:layout_width="fill_parent"

android:layout_height="wrap_content"

android:layout_centerInParent="true"

android:layout_marginLeft="20dp"

android:layout_marginRight="20dp"

android:background="@color/design_default_color_primary_variant"

android:text="Second Fragment"

android:textColor="@color/white"

android:textSize="20sp"

android:textStyle="bold" />

</RelativeLayout>

Output:

Program No:19

Aim: Implement Navigation drawer

XML Code:

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.drawerlayout.widget.DrawerLayoutxmlns: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="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" />
</LinearLayout>
    <com.google.android.material.navigation.NavigationView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:id="@+id/navigation_view"
        app:menu="@menu/navigation_menu"
        android:layout_gravity="start"/>
```

</androidx.drawerlayout.widget.DrawerLayout>

Java Code:

```java
package com.example.drawernavigation;

import androidx.annotation.NonNull;

import androidx.appcompat.app.ActionBarDrawerToggle;

import androidx.appcompat.app.AppCompatActivity;

import androidx.drawerlayout.widget.DrawerLayout;

import android.app.ActionBar;

import android.os.Bundle;

import android.view.MenuItem;

import android.widget.Toast;

import com.google.android.material.navigation.NavigationView;

public class MainActivity extends AppCompatActivity implements
NavigationView.OnNavigationItemSelectedListener {

    public DrawerLayoutdrawerLayout;

    public ActionBarDrawerToggleactionBarDrawerToggle;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        drawerLayout = findViewById(R.id.drawer);

        actionBarDrawerToggle  =  new  ActionBarDrawerToggle(this,  drawerLayout,
    R.string.nav_open, R.string.nav_close);

        drawerLayout.addDrawerListener(actionBarDrawerToggle);

        actionBarDrawerToggle.syncState();

        getSupportActionBar().setDisplayHomeAsUpEnabled(true);

        NavigationViewnavigationView = findViewById(R.id.navigation_view);

        navigationView.setNavigationItemSelectedListener(this);

    }

    @Override

    public booleanonOptionsItemSelected(@NonNull MenuItem item) {

        if (actionBarDrawerToggle.onOptionsItemSelected(item)) {
```

```
        return true;
    }
    return super.onOptionsItemSelected(item);
}
@Override
public booleanonNavigationItemSelected(@NonNull MenuItem item) {
    int id = item.getItemId();
    if (id == R.id.nav_account) {
        Toast.makeText(this, "home", Toast.LENGTH_SHORT).show();
    }
    if (id == R.id.nav_settings) {
        Toast.makeText(this, "settings", Toast.LENGTH_SHORT).show();
    }
    if (id == R.id.nav_logout) {
        Toast.makeText(this, "logout", Toast.LENGTH_SHORT).show();
    }
    return false;
}
}
```

#navigation_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_account"
  android:title="MY Account"/>
  <item
    android:id="@+id/nav_settings"
    android:title="Settings"/>
  <item
    android:id="@+id/nav_logout"
    android:title="logout"/>
</menu>
```

#strings.xml

```
<resources>

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

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

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

</resources>
```

#build.gradle(:app)

```
plugins {

    id 'com.android.application'

}

android {

    compileSdk 31

    defaultConfig {

        applicationId "com.example.drawernavigation"

        minSdk 21

        targetSdk 31

        versionCode 1

        versionName "1.0"

        testInstrumentationRunner "androidx.test.runner.AndroidJUnitRunner"

    }

    buildTypes {

        release {

            minifyEnabled false

            proguardFilesgetDefaultProguardFile('proguard-android-optimize.txt'),'proguard-
rules.pro'

        }

    }

    compileOptions {

        sourceCompatibility JavaVersion.VERSION_1_8

        targetCompatibility JavaVersion.VERSION_1_8
```

```
    }
}
dependencies {
    implementation 'androidx.appcompat:appcompat:1.4.1'
    implementation 'com.google.android.material:material:1.5.0'
    implementation 'androidx.constraintlayout:constraintlayout:2.1.3'
    implementation 'androidx.drawerlayout:drawerlayout:1.1.1'
    testImplementation 'junit:junit:4.+'
    androidTestImplementation 'androidx.test.ext:junit:1.1.3'
    androidTestImplementation 'androidx.test.espresso:espresso-core:3.4.0'
    implementation "com.google.android.material:material:1.4.1"
}
```

Output:
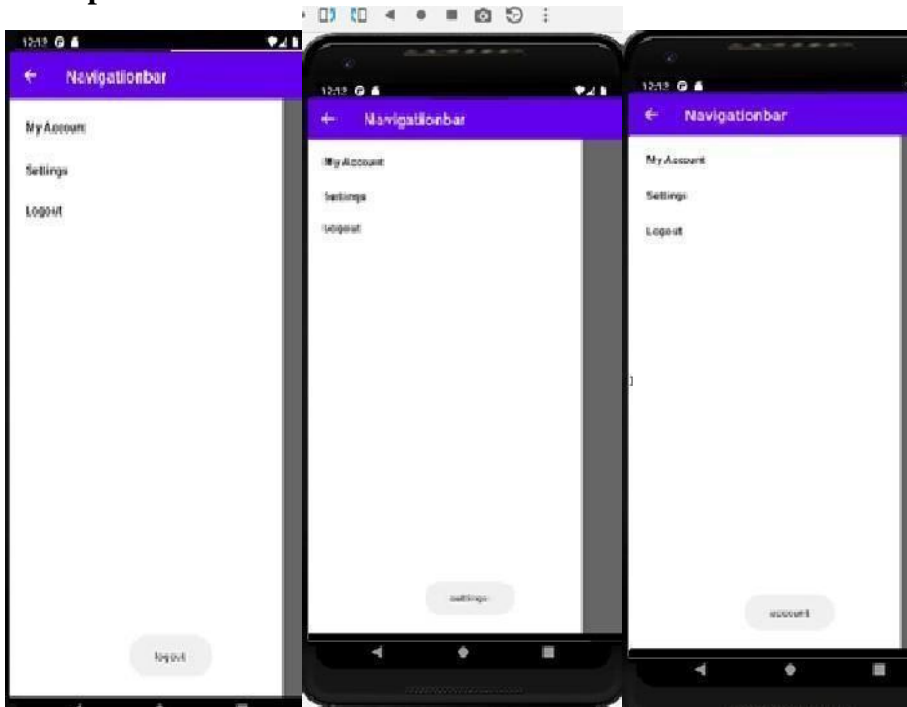
Program no:20

Aim: Program to implement activity lifecycle

XML Code:

```xml
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout xmlns:android="http://sche
mas.androi .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="example.javatpoint.com.activitylifecycle.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" />

</android.support.constraint.ConstraintLayout>
```

Java Code:

```java
package example.javatpoint.com.activitylifecycle;

import android.app.Activity;

import android.os.Bundle;

import android.util.Log;


public class MainActivity extends Activity {


    @Override
    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() {
```

```java
    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:


```
2022-02-24 10:46:25.818 8920-8943/com.example.lifecycle D/libEGL: loaded /vendor/lib/egl/libEGL_emulation.so
2022-02-24 10:46:25.854 8920-8943/com.example.lifecycle D/libEGL: loaded /vendor/lib/egl/libGLESv1_CM_emulation.so
2022-02-24 10:46:25.884 8920-8943/com.example.lifecycle D/libEGL: loaded /vendor/lib/egl/libGLESv2_emulation.so
2022-02-24 10:46:25.968 8920-8920/com.example.lifecycle D/lifecycle: onCreate invoked
2022-02-24 10:46:25.977 8920-8920/com.example.lifecycle D/lifecycle: onStart invoked
2022-02-24 10:46:25.985 8920-8920/com.example.lifecycle D/lifecycle: onResume invoked
2022-02-24 10:46:26.078 8920-8941/com.example.lifecycle D/HostConnection: HostConnection::get() New Host Connection established 0xe87df960, tid 8941
2022-02-24 10:46:26.084 8920-8941/com.example.lifecycle D/HostConnection: HostComposition ext ANDROID_EMU_CHECKSUM_HELPER_v1 ANDROID_EMU_native_sync_v2 ANDROID_
2022-02-24 10:46:26.094 8920-8941/com.example.lifecycle W/OpenGLRenderer: Failed to choose config with EGL_SWAP_BEHAVIOR_PRESERVED, retrying without...
2022-02-24 10:46:26.295 8920-8941/com.example.lifecycle D/EGL_emulation: eglCreateContext: 0xe87dff10: maj 2 min 0 rcv 2
2022-02-24 10:46:26.304 8920-8941/com.example.lifecycle D/EGL_emulation: eglMakeCurrent: 0xe87dff10: ver 2 0 (tinfo 0xe8b18f50) (first time)
2022-02-24 10:46:26.317 8920-8941/com.example.lifecycle I/Gralloc4: mapper 4.x is not supported
2022-02-24 10:46:26.318 8920-8941/com.example.lifecycle D/HostConnection: createUnique: call
2022-02-24 10:46:26.320 8920-8941/com.example.lifecycle D/HostConnection: HostConnection::get() New Host Connection established 0xe87df030, tid 8941
2022-02-24 10:46:26.331 8920-8941/com.example.lifecycle D/goldfish-address-space: allocate: Ask for block of size 0x100
2022-02-24 10:46:26.332 8920-8941/com.example.lifecycle D/goldfish-address-space: allocate: ioctl allocate returned offset 0x3f3ffe000 size 0x2000
2022-02-24 10:46:26.343 8920-8941/com.example.lifecycle D/HostConnection: HostComposition ext ANDROID_EMU_CHECKSUM_HELPER_v1 ANDROID_EMU_native_sync_v2 ANDROID_
2022-02-24 10:46:26.651 8920-8932/com.example.lifecycl I/ample.lifecycl: Background young concurrent copying GC freed 19135(1233KB) AllocSpace objects, 0(0B) L
2022-02-24 10:46:26.652 8920-8934/com.example.lifecycle W/System: A resource failed to call close.
2022-02-24 10:46:58.113 8920-8920/com.example.lifecycle D/lifecycle: onPause invoked
2022-02-24 10:46:59.121 8920-8920/com.example.lifecycle D/lifecycle: onStop invoked
2022-02-24 10:46:59.132 8920-8920/com.example.lifecycle D/lifecycle: onDestroy invoked
2022-02-24 10:47:03.281 8920-8934/com.example.lifecycle W/Sys                 failed to call release.
                                                      Launch succeeded
```

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:hint="Name"
```

```
        android:textSize="24dp"

        android:layout_below="@+id/texttitle"

        android:inputType="textPersonName" />

    <EditText

        android:id="@+id/contact"

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:hint="Contact"

        android:textSize="24dp"

        android:layout_below="@+id/name"

        android:inputType="number"/>

    <EditText

        android:id="@+id/dob"

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:hint="Date of birth"

        android:textSize="24dp"

        android:layout_below="@+id/contact"

        android:inputType="number" />

    <Button

        android:id="@+id/buttonInsert"

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:textSize="24dp"

        android:text="Insert new Data"

        android:layout_marginTop="30dp"

        android:layout_below="@+id/dob" />
```

```
<Button

    android:id="@+id/buttonUpdate"

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:textSize="24dp"

    android:text="Update Data"

    android:layout_below="@+id/buttonInsert"/>

<Button

    android:id="@+id/buttondelete"

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:textSize="24dp"

    android:text="Delete existing data"

    android:layout_below="@+id/buttonUpdate"/>

<Button

    android:id="@+id/buttonView"

    android:layout_width="match_parent"

    android:layout_height="wrap_content"

    android:textSize="24dp"

    android:text="View data"

    android:layout_below="@+id/buttondelete"/>


</RelativeLayout>
```

DBHelper.java

package com.example.sqlite_app;

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;

```java
public class DBHelper extends SQLiteOpenHelper {
    public DBHelper(Context context) {
        super(context, "Userdata", null, 1);
    }

    @Override
    public void onCreate(SQLiteDatabase DB) {
        DB.execSQL("create Table Userdetails(name TEXT primary key, contact TEXT, dob TEXT)");

    }

    @Override
    public void onUpgrade(SQLiteDatabase DB, int oldVersion, int newVersion) {
        DB.execSQL("drop Table if exists Userdetails");
```

```
    }
    public Boolean 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);

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;
```

```java
}

}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;

}

}
```

Mainactivity

package com.example.sqlite_app;

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;

```java
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);

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);
```

```java
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();


    }

 });



 }
}
```

Output