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1.OBJECTIVE : To Create a Simple Calculator

activity_main.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:id="@+id/relative1"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/edt1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" />

    <Button
        android:id="@+id/button1"
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignEnd="@+id/button4"
        android:layout_alignRight="@+id/button4"
        android:layout_below="@+id/edt1"
        android:layout_marginTop="94dp"
        android:text="1" />

    <Button
        android:id="@+id/button2"
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content"
    android:layout_alignTop="@+id/button1"
    android:layout_toLeftOf="@+id/button3"
    android:layout_toStartOf="@+id/button3"
    android:text="2" />
```

```
<Button
    android:id="@+id/button3"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignTop="@+id/button2"
    android:layout_centerHorizontal="true"
    android:text="3" />
```

```
<Button
    android:id="@+id/button4"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/button1"
    android:layout_toLeftOf="@+id/button2"
    android:text="4" />
```

```
<Button
    android:id="@+id/button5"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignBottom="@+id/button4"
    android:layout_alignLeft="@+id/button2"
    android:layout_alignStart="@+id/button2"
    android:text="5" />
```

```
<Button
    android:id="@+id/button6"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignLeft="@+id/button3"
    android:layout_alignStart="@+id/button3"
    android:layout_below="@+id/button3"
    android:text="6" />
```

```
<Button
    android:id="@+id/button7"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/button4"
    android:layout_toLeftOf="@+id/button2"
    android:text="7" />
```

```
<Button
    android:id="@+id/button8"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignLeft="@+id/button5"
    android:layout_alignStart="@+id/button5"
    android:layout_below="@+id/button5"
    android:text="8" />
```

```
<Button
    android:id="@+id/button9"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
```

```
    android:layout_alignLeft="@+id/button6"
    android:layout_alignStart="@+id/button6"
    android:layout_below="@+id/button6"
    android:text="9" />
```

```
<Button
    android:id="@+id/buttonadd"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignEnd="@+id/edt1"
    android:layout_alignRight="@+id/edt1"
    android:layout_alignTop="@+id/button3"
    android:layout_marginLeft="46dp"
    android:layout_marginStart="46dp"
    android:layout_toRightOf="@+id/button3"
    android:text="+" />
```

```
<Button
    android:id="@+id/buttonsub"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignEnd="@+id/buttonadd"
    android:layout_alignLeft="@+id/buttonadd"
    android:layout_alignRight="@+id/buttonadd"
    android:layout_alignStart="@+id/buttonadd"
    android:layout_below="@+id/buttonadd"
    android:text="-" />
```

```
<Button
    android:id="@+id/buttonmul"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content"
    android:layout_alignLeft="@+id/buttonsub"
    android:layout_alignParentEnd="true"
    android:layout_alignParentRight="true"
    android:layout_alignStart="@+id/buttonsub"
    android:layout_below="@+id/buttonsub"
    android:text="*" />
```

```
<Button
    android:id="@+id/button10"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/button7"
    android:layout_toLeftOf="@+id/button2"
    android:text="." />
```

```
<Button
    android:id="@+id/button0"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignLeft="@+id/button8"
    android:layout_alignStart="@+id/button8"
    android:layout_below="@+id/button8"
    android:text="0" />
```

```
<Button
    android:id="@+id/buttonC"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignLeft="@+id/button9"
    android:layout_alignStart="@+id/button9"
```

```
    android:layout_below="@+id/button9"
    android:text="C" />

<Button
    android:id="@+id/buttondiv"
    style="?android:attr/buttonStyleSmall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignEnd="@+id/buttonmul"
    android:layout_alignLeft="@+id/buttonmul"
    android:layout_alignRight="@+id/buttonmul"
    android:layout_alignStart="@+id/buttonmul"
    android:layout_below="@+id/buttonmul"
    android:text="/" />

<Button
    android:id="@+id/buttononeql"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignEnd="@+id/buttondiv"
    android:layout_alignLeft="@+id/button10"
    android:layout_alignRight="@+id/buttondiv"
    android:layout_alignStart="@+id/button10"
    android:layout_below="@+id/button0"
    android:layout_marginTop="37dp"
    android:text="=" />

</RelativeLayout>
```

MainActivity.java

```
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.view.View;
```

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

public class MainActivity extends AppCompatActivity {

    Button button0, button1, button2, button3, button4, button5, button6,
        button7, button8, button9, buttonAdd, buttonSub, buttonDivision,
        buttonMul, button10, buttonC, buttonEqual;
    EditText crunchifyEditText;

    float mValueOne, mValueTwo;

    boolean crunchifyAddition, mSubtract, crunchifyMultiplication, crunchifyDivision;

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

        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);
        button10 = (Button) findViewById(R.id.button10);
        buttonAdd = (Button) findViewById(R.id.buttonadd);
        buttonSub = (Button) findViewById(R.id.buttonsub);
        buttonMul = (Button) findViewById(R.id.buttonmul);
        buttonDivision = (Button) findViewById(R.id.buttondiv);
```

```
buttonC = (Button) findViewById(R.id.buttonC);
buttonEqual = (Button) findViewById(R.id.buttonEqual);
crunchifyEditText = (EditText) findViewById(R.id.edt1);

button1.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        crunchifyEditText.setText(crunchifyEditText.getText() + "1");
    }
});

button2.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        crunchifyEditText.setText(crunchifyEditText.getText() + "2");
    }
});

button3.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        crunchifyEditText.setText(crunchifyEditText.getText() + "3");
    }
});

button4.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        crunchifyEditText.setText(crunchifyEditText.getText() + "4");
    }
});

button5.setOnClickListener(new View.OnClickListener() {
```

```
    @Override
    public void onClick(View v) {
        crunchifyEditText.setText(crunchifyEditText.getText() + "5");
    }
});

button6.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        crunchifyEditText.setText(crunchifyEditText.getText() + "6");
    }
});

button7.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        crunchifyEditText.setText(crunchifyEditText.getText() + "7");
    }
});

button8.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        crunchifyEditText.setText(crunchifyEditText.getText() + "8");
    }
});

button9.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        crunchifyEditText.setText(crunchifyEditText.getText() + "9");
    }
});
```

```
button0.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        crunchifyEditText.setText(crunchifyEditText.getText() + "0");
    }
});

buttonAdd.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {

        if (crunchifyEditText == null) {
            crunchifyEditText.setText("");
        } else {
            mValueOne = Float.parseFloat(crunchifyEditText.getText() + "");
            crunchifyAddition = true;
            crunchifyEditText.setText(null);
        }
    }
});

buttonSub.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        mValueOne = Float.parseFloat(crunchifyEditText.getText() + "");
        mSubtract = true;
        crunchifyEditText.setText(null);
    }
});

buttonMul.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        mValueOne = Float.parseFloat(crunchifyEditText.getText() + "");
```

```
        crunchifyMultiplication = true;
        crunchifyEditText.setText(null);
    }
});

buttonDivision.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        mValueOne = Float.parseFloat(crunchifyEditText.getText() + "");
        crunchifyDivision = true;
        crunchifyEditText.setText(null);
    }
});

buttonEqual.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        mValueTwo = Float.parseFloat(crunchifyEditText.getText() + "");

        if (crunchifyAddition == true) {
            crunchifyEditText.setText(mValueOne + mValueTwo + "");
            crunchifyAddition = false;
        }

        if (mSubtract == true) {
            crunchifyEditText.setText(mValueOne - mValueTwo + "");
            mSubtract = false;
        }

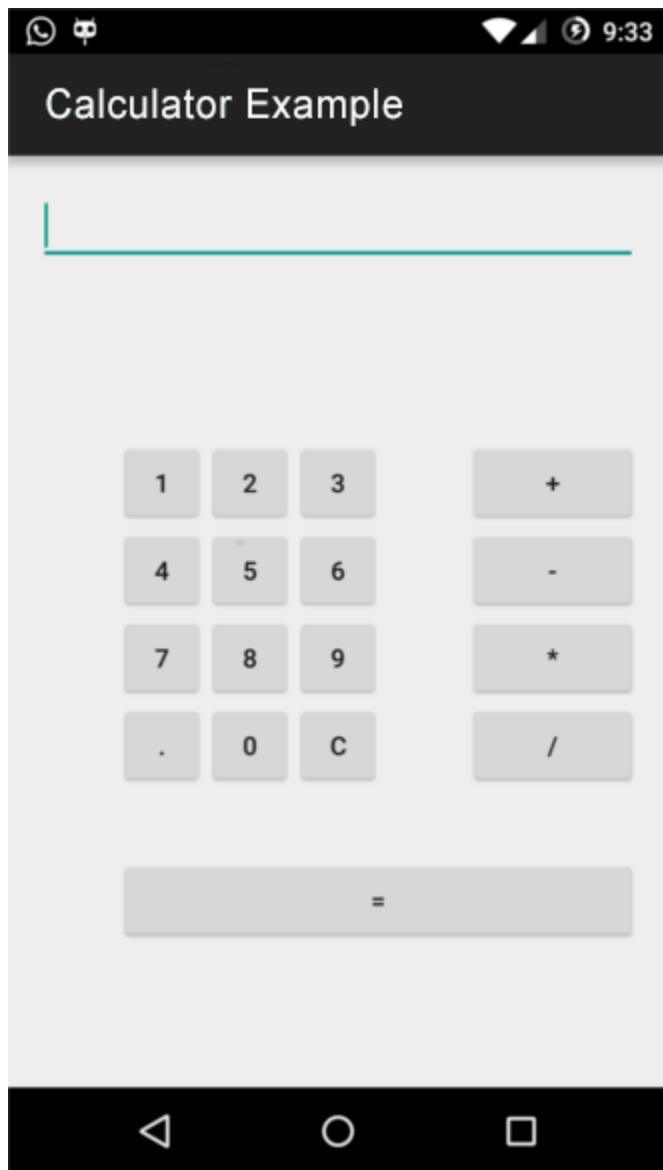
        if (crunchifyMultiplication == true) {
            crunchifyEditText.setText(mValueOne * mValueTwo + "");
            crunchifyMultiplication = false;
        }
    }
});
```

```
if (crunchifyDivision == true) {
    crunchifyEditText.setText(mValueOne / mValueTwo + "");
    crunchifyDivision = false;
}
}
});

buttonC.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        crunchifyEditText.setText("");
    }
});
});

button10.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        crunchifyEditText.setText(crunchifyEditText.getText() + ".");
    }
});
}
}
```

OUTPUT



1. OBJECTIVE : Create an App that explain the lifecycle of an activity.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.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="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>
```

MainActivity.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");
}

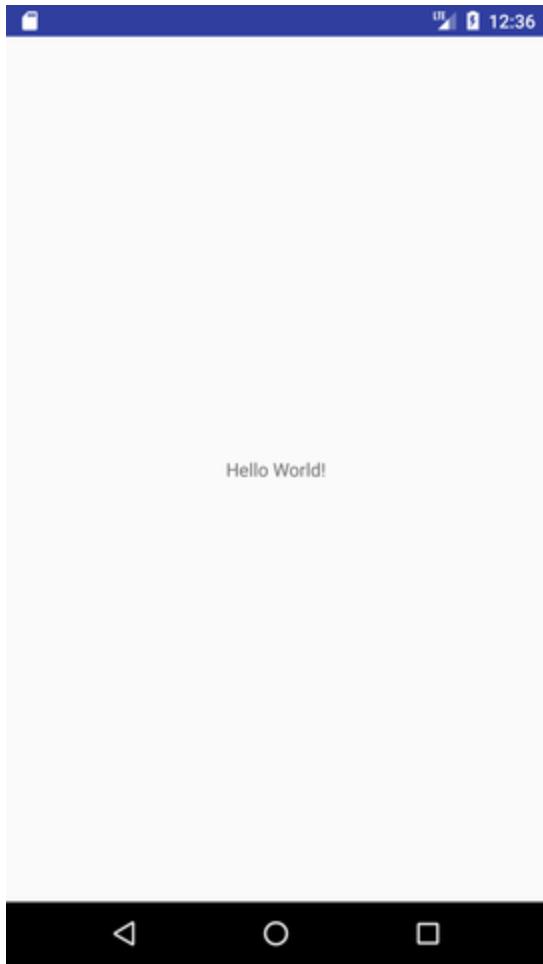
@Override
protected void onPause() {
    super.onPause();
    Log.d("lifecycle","onPause invoked");
}

@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



2. OBJECTIVE : Create an App for Registration Form.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
```

```
tools:context="com.razormist.simpleregistrationandloginapplication.MainActivity">

<EditText
    android:id="@+id/et_username"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentTop="true"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="65dp"
    android:ems="10"
    android:inputType="text"
    android:hint="Username"/>

<EditText
    android:id="@+id/et_password"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="65dp"
    android:ems="10"
    android:layout_below="@+id/et_username"
    android:inputType="textPassword"
    android:hint="Password"/>

<EditText
    android:id="@+id/et_cpassword"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="65dp"
    android:ems="10"
    android:layout_below="@+id/et_password"
    android:inputType="textPassword"
    android:hint="Confirm Password"/>

<Button
    android:id="@+id/btn_register"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="65dp"
    android:ems="10"
    android:text="Register"
    android:layout_below="@+id/et_cpassword" />

<Button
    android:id="@+id/btn_login"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="65dp"
    android:ems="10"
```

```
    android:text="Login"
    android:layout_alignParentBottom="true"/>

</RelativeLayout>
```

activity_login.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="com.razormist.simpleregistrationandloginapplication.Login">

    <EditText
        android:id="@+id/et_lusername"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="145dp"
        android:ems="10"
        android:inputType="text"
        android:hint="Username" />

    <EditText
        android:id="@+id/et_lpassword"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/et_lusername"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="50dp"
        android:ems="10"
        android:inputType="textPassword"
        android:hint="Password" />

    <Button
        android:id="@+id/btn_lllogin"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/et_lpassword"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="50dp"
        android:ems="10"
        android:text="Login"/>
```

```

<Button
    android:id="@+id/btn_lregister"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentBottom="true"
    android:layout_centerHorizontal="true"
    android:ems="10"
    android:text="Register"/>

</RelativeLayout>

```

Android Manifest file

```

<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.razormist.simpleregistrationandloginapplication">

    <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/AppTheme">
        <activity
            android:name=".Login"
            android:configChanges="orientation"
            android:screenOrientation="portrait">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
        <activity
            android:name=".MainActivity"
            android:configChanges="orientation"
            android:label="@string/app_name"
            android:theme="@style/AppTheme">
            <intent-filter>
                <action
                    android:name="com.razormist.simpleregistrationandloginapplication.Login
                    " />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>

</manifest>

```

MainActivity class

```
package com.razormist.simpleregistrationandloginapplication;

import android.content.Intent;
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 {
    DatabaseHelper databaseHelper;

    EditText et_username, et_password, et_cpassword;
    Button btn_register, btn_login;

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

        databaseHelper = new DatabaseHelper(this);
        et_username = (EditText) findViewById(R.id.et_username);
        et_password = (EditText) findViewById(R.id.et_password);
        et_cpassword = (EditText) findViewById(R.id.et_cpassword);
        btn_register = (Button) findViewById(R.id.btn_register);
        btn_login = (Button) findViewById(R.id.btn_login);

        btn_login.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent = new Intent(MainActivity.this, Login.class);
                startActivity(intent);
            }
        });

        btn_register.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String username = et_username.getText().toString();
                String password = et_password.getText().toString();
                String confirm_password = et_cpassword.getText().toString();

                if(username.equals("") || password.equals("") ||
                confirm_password.equals("")){
                    Toast.makeText(getApplicationContext(), "Fields Required",
                    Toast.LENGTH_SHORT).show();
                }else{
                    if(password.equals(confirm_password)){

```

```
Boolean checkusername = databaseHelper.CheckUsername(username);
if(checkusername == true) {
Boolean insert = databaseHelper.Insert(username, password);
if(insert == true) {
Toast.makeText(getApplicationContext(), "Registered",
Toast.LENGTH_SHORT).show();
et_username.setText("");
et_password.setText("");
et_cpassword.setText("");
}
else{
Toast.makeText(getApplicationContext(), "Username already taken",
Toast.LENGTH_SHORT).show();
}
else{
Toast.makeText(getApplicationContext(), "Password does not match",
Toast.LENGTH_SHORT).show();
}
}
}
}
});
```

3. OBJECTIVE : Create a Simple game.

activity_main.xml

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

    <!--title text-->
    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="23dp"
        android:text="GFG Tic Tac Toe"
        android:textSize="45sp"
```

```
        android:textStyle="bold"
        app:fontFamily="cursive"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <!--image of the grid-->
    <ImageView
        android:id="@+id/imageView"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:contentDescription="Start"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView"
        app:srcCompat="@drawable/grid" />

    <LinearLayout
        android:id="@+id/linearLayout"
        android:layout_width="0dp"
        android:layout_height="420dp"
        android:orientation="vertical"
        app:layout_constraintBottom_toBottomOf="@+id/imageView"
        app:layout_constraintEnd_toEndOf="@+id/imageView"
        app:layout_constraintStart_toStartOf="@+id/imageView"
        app:layout_constraintTop_toTopOf="@+id/imageView">

        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:orientation="horizontal">

            <!--images of the grid boxes-->
            <ImageView
                android:id="@+id/imageView0"
                android:layout_width="match_parent"
                android:layout_height="match_parent"
                android:layout_weight="1"
                android:onClick="playerTap"
                android:padding="20sp"
                android:tag="0" />

            <ImageView
                android:id="@+id/imageView1"
```

```
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:onClick="playerTap"
        android:padding="20sp"
        android:tag="1" />

    <ImageView
        android:id="@+id/imageView2"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:onClick="playerTap"
        android:padding="20sp"
        android:tag="2" />
    </LinearLayout>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:orientation="horizontal">

        <ImageView
            android:id="@+id/imageView3"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:onClick="playerTap"
            android:padding="20sp"
            android:tag="3" />

        <ImageView
            android:id="@+id/imageView4"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:onClick="playerTap"
            android:padding="20sp"
            android:tag="4" />

        <ImageView
            android:id="@+id/imageView5"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
```

```
        android:layout_weight="1"
        android:onClick="playerTap"
        android:padding="20sp"
        android:tag="5" />
    </LinearLayout>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:orientation="horizontal">

        <ImageView
            android:id="@+id/imageView6"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:onClick="playerTap"
            android:padding="20sp"
            android:tag="6" />

        <ImageView
            android:id="@+id/imageView7"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:onClick="playerTap"
            android:padding="20sp"
            android:tag="7" />

        <ImageView
            android:id="@+id/imageView8"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:onClick="playerTap"
            android:padding="20sp"
            android:tag="8" />
    </LinearLayout>

</LinearLayout>

<!--game status text display-->
<TextView
    android:id="@+id/status"
```

```

        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="15sp"
        android:text="Status"
        android:textSize="28sp"
        android:textStyle="italic"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/linearLayout" />

</androidx.constraintlayout.widget.ConstraintLayout>

```

MainActivity.java

```

import android.os.Bundle;
import android.view.View;
import android.widget.ImageView;
import android.widget.TextView;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
    boolean gameActive = true;

    // Player representation
    // 0 - X
    // 1 - O
    int activePlayer = 0;
    int[] gameState = {2, 2, 2, 2, 2, 2, 2, 2, 2};

    // State meanings:
    //     0 - X
    //     1 - O
    //     2 - Null
    // put all win positions in a 2D array
    int[][] winPositions = {{0, 1, 2}, {3, 4, 5}, {6, 7, 8},
                           {0, 3, 6}, {1, 4, 7}, {2, 5, 8},
                           {0, 4, 8}, {2, 4, 6}};
    public static int counter = 0;

    // this function will be called every time a

```

```
// players tap in an empty box of the grid
public void playerTap(View view) {
    ImageView img = (ImageView) view;
    int tappedImage = Integer.parseInt(img.getTag().toString());

    // game reset function will be called
    // if someone wins or the boxes are full
    if (!gameActive) {
        gameReset(view);
    }

    // if the tapped image is empty
    if (gameState[tappedImage] == 2) {
        // increase the counter
        // after every tap
        counter++;

        // check if its the last box
        if (counter == 9) {
            // reset the game
            gameActive = false;
        }

        // mark this position
        gameState[tappedImage] = activePlayer;

        // this will give a motion
        // effect to the image
        img.setTranslationY(-1000f);

        // change the active player
        // from 0 to 1 or 1 to 0
        if (activePlayer == 0) {
            // set the image of x
            img.setImageResource(R.drawable.x);
            activePlayer = 1;
            TextView status = findViewById(R.id.status);

            // change the status
            status.setText("O's Turn - Tap to play");
        } else {
            // set the image of o
            img.setImageResource(R.drawable.o);
            activePlayer = 0;
            TextView status = findViewById(R.id.status);
        }
    }
}
```

```

        // change the status
        status.setText("X's Turn - Tap to play");
    }
    img.animate().translationYBy(1000f).setDuration(300);
}
int flag = 0;
// Check if any player has won
for (int[] winPosition : winPositions) {
    if (gameState[winPosition[0]] == gameState[winPosition[1]] &&
        gameState[winPosition[1]] == gameState[winPosition[2]] &&
&&
        gameState[winPosition[0]] != 2) {
        flag = 1;

        // Somebody has won! - Find out who!
        String winnerStr;

        // game reset function be called
        gameActive = false;
        if (gameState[winPosition[0]] == 0) {
            winnerStr = "X has won";
        } else {
            winnerStr = "O has won";
        }
        // Update the status bar for winner announcement
        TextView status = findViewById(R.id.status);
        status.setText(winnerStr);
    }
}
// set the status if the match draw
if (counter == 9 && flag == 0) {
    TextView status = findViewById(R.id.status);
    status.setText("Match Draw");
}
}

// reset the game
public void gameReset(View view) {
    gameActive = true;
    activePlayer = 0;
    for (int i = 0; i < gameState.length; i++) {
        gameState[i] = 2;
    }
    // remove all the images from the boxes inside the grid
}

```

```

        ((ImageView) findViewById(R.id.imageView0)).setImageResource(0);
        ((ImageView) findViewById(R.id.imageView1)).setImageResource(0);
        ((ImageView) findViewById(R.id.imageView2)).setImageResource(0);
        ((ImageView) findViewById(R.id.imageView3)).setImageResource(0);
        ((ImageView) findViewById(R.id.imageView4)).setImageResource(0);
        ((ImageView) findViewById(R.id.imageView5)).setImageResource(0);
        ((ImageView) findViewById(R.id.imageView6)).setImageResource(0);
        ((ImageView) findViewById(R.id.imageView7)).setImageResource(0);
        ((ImageView) findViewById(R.id.imageView8)).setImageResource(0);

        TextView status = findViewById(R.id.status);
        status.setText("X's Turn - Tap to play");
    }

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

```

4. OBJECTIVE : Create a Music Player.

activity_main.xml

```

<RelativeLayout xmlns:androclass="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:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"

```

```
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context=".MainActivity" >

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_marginTop="30dp"
        android:text="Audio Controller" />

    <Button
        android:id="@+id/button1"
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignLeft="@+id/textView1"
        android:layout_below="@+id/textView1"
        android:layout_marginTop="48dp"
        android:text="start" />

    <Button
        android:id="@+id/button2"
        style="?android:attr/buttonStyleSmall"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignTop="@+id/button1"
        android:layout_toRightOf="@+id/button1"
        android:text="pause" />

    <Button
        android:id="@+id/button3"
        style="?android:attr/buttonStyleSmall"
```

```
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignTop="@+id/button2"
    android:layout_toRightOf="@+id/button2"
    android:text="stop" />

</RelativeLayout>
```

MainActivity.java

```
package com.example.audiomediaplayer1;

import android.media.MediaPlayer;
import android.net.Uri;
import android.os.Bundle;
import android.app.Activity;
import android.view.Menu;
import android.widget.MediaController;
import android.widget.VideoView;

public class MainActivity extends Activity {

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

        MediaPlayer mp=new MediaPlayer();
        try{
            mp.setDataSource("/sdcard/Music/maine.mp3");//Write your location here
            mp.prepare();
            mp.start();

        }catch(Exception e){e.printStackTrace();}
```

```

    }

@Override
public boolean onCreateOptionsMenu(Menu menu) {
    // Inflate the menu; this adds items to the action bar if it is present.
    getMenuInflater().inflate(R.menu.activity_main, menu);
    return true;
}

}

```

5. OBJECTIVE : Create a Chat Application.

activity_main.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"
    android:background="#efefef"
    android:orientation="vertical"

    tools:context=".MainActivity">

    <ListView
        android:id="@+id/msgview"

```

```
    android:layout_width="fill_parent"
    android:layout_height="0dp"
    android:layout_weight="1"
    android:background="@null"
    android:divider="@null"
    android:stackFromBottom="true"
    android:transcriptMode="alwaysScroll">></ListView>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:weightSum="3">

    <EditText
        android:id="@+id/msg"
        android:layout_width="0dp"
        android:layout_height="fill_parent"
        android:layout_weight="2" />

    <Button
```

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

    android:layout_width="0dp"

    android:layout_height="fill_parent"

    android:layout_weight="1"

    android:text="Send" />

</LinearLayout>

</LinearLayout>
```

left.xml

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

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

    android:layout_width="match_parent"

    android:layout_height="match_parent">

    <TextView

        android:id="@+id/msgr"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_gravity="left"

        android:layout_marginBottom="5dp"

        android:layout_marginRight="20dp"
```

```
    android:background="@drawable/textview"

    android:paddingBottom="8dp"

    android:paddingLeft="10dp"

    android:paddingRight="10dp"

    android:paddingTop="5dp"

    android:text="Sampleleft"

    android:textColor="#000" />

</RelativeLayout>
```

right.xml

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

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

    android:layout_width="match_parent"

    android:layout_height="match_parent"

    android:orientation="vertical">

    <TextView

        android:id="@+id/msgr"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_gravity="right"

        android:layout_marginBottom="8dp"
```

```
    android:layout_marginLeft="20dp"

    android:background="@drawable/textview"

    android:paddingBottom="5dp"

    android:paddingLeft="10dp"

    android:paddingRight="10dp"

    android:paddingTop="5dp"

    android:text="Sample"

    android:textColor="#000" />

</LinearLayout>
```

textview.xml

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

<layer-list xmlns:android="http://schemas.android.com/apk/res/android">

    <item>

        <shape>

            <stroke

                android:width="1dp"

                android:color="#CECECE" />

            <solid android:color="#DDDBDB" />

        </shape>

    </item>

</layer-list>
```

```
        android:bottom="2dp"

        android:left="5dp"

        android:right="5dp"

        android:top="2dp" />

<corners android:radius="8dp" />

</shape>

</item>

</layer-list>
```

MainActivity.java

```
package trinitytuts.chatapplication;

import android.app.Activity;
import android.database.DataSetObserver;
import android.os.Bundle;
import android.view.KeyEvent;
import android.view.View;
import android.widget.AbsListView;
import android.widget.Button;
import android.widget.EditText;
import android.widget.ListView;
```

```
public class MainActivity extends Activity {  
  
    private static final String TAG = "ChatActivity";  
  
    private ChatArrayAdapter chatArrayAdapter;  
  
    private ListView listView;  
  
    private EditText chatText;  
  
    private Button buttonSend;  
  
    private boolean side = false;  
  
    @Override  
    public void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
  
        setContentView(R.layout.activity_main);  
  
        buttonSend = (Button) findViewById(R.id.send);  
  
        listView = (ListView) findViewById(R.id.msgview);
```

```
        chatArrayAdapter = new ChatArrayAdapter(getApplicationContext(), R.layout.chat_list_right);
        listView.setAdapter(chatArrayAdapter);

        chatText = (EditText) findViewById(R.id.msg);
        chatText.setOnKeyListener(new View.OnKeyListener() {
            public boolean onKey(View v, int keyCode, KeyEvent event) {
                if ((event.getAction() == KeyEvent.ACTION_DOWN) && (keyCode == KeyEvent.KEYCODE_ENTER)) {
                    return sendChatMessage();
                }
                return false;
            }
        });

        buttonSend.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View arg0) {
                sendChatMessage();
            }
        });

        listView.setTranscriptMode(AbsListView.TRANSCRIPT_MODE_ALWAYS_SCROLL);
    }
}
```

```

listView.setAdapter(chatArrayAdapter);

//to scroll the list view to bottom on data change

chatArrayAdapter.registerDataSetObserver(new DataSetObserver() {

    @Override

    public void onChanged() {

        super.onChanged();

        listView.setSelection(chatArrayAdapter.getCount() - 1);

    }

}) ;

}

private boolean sendChatMessage() {

    chatArrayAdapter.add(new ChatMessage(side, chatText.getText().toString()));

    chatText.setText("");

    side = !side;

    return true;

}

```

ArrayAdapter

```
private boolean sendChatMessage() {
```

```
        chatArrayAdapter.add(new ChatMessage(side, chatText.getText().toString()));

        chatText.setText("");

        side = !side;

        return true;

    }
}
```

ChatArrayAdapter.java

```
package trinitytuts.chatapplication;

import android.content.Context;
import android.util.Log;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.ArrayAdapter;
import android.widget.LinearLayout;
import android.widget.TextView;

import java.util.ArrayList;
import java.util.List;

class ChatArrayAdapter extends ArrayAdapter<ChatMessage> {
```

```
private TextView chatText;

private List<ChatMessage> chatMessageList = new ArrayList<ChatMessage>();

private Context context;

@Override

public void add(ChatMessage object) {

    chatMessageList.add(object);

    super.add(object);

}

public ChatArrayAdapter(Context context, int textViewResourceId) {

    super(context, textViewResourceId);

    this.context = context;

}

public int getCount() {

    return this.chatMessageList.size();

}

public ChatMessage getItem(int index) {
```

```

        return this.chatMessageList.get(index);

    }

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

    ChatMessage chatMessageObj = getItem(position);

    View row = convertView;

    LayoutInflator inflater = (LayoutInflator) this.getContext().getSystemService(Context.LAYOUT_INFLATER_SERVICE);

    if (chatMessageObj.left) {

        row = inflater.inflate(R.layout.right, parent, false);

    } else{

        row = inflater.inflate(R.layout.left, parent, false);

    }

    chatText = (TextView) row.findViewById(R.id.msgr);

    chatText.setText(chatMessageObj.message);

    return row;

}

```

6. OBJECTIVE : Create an application using navigation drawer.

Activity_main.xml

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

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

    <item
          android:id="@+id/nav_account"
          android:title="My Account" />

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

    <item
          android:id="@+id/nav_logout"
          android:title="Logout" />

</menu>
```

styles.xml file

```
<resources>
```

```
<string name="app_name">Navigation Drawer</string>

<!--to toggle the open close button
   of the navigation drawer-->
<string name="nav_open">Open</string>
<string name="nav_close">Close</string>
</resources>
```

MainActivity.java

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

public class MainActivity extends AppCompatActivity {

    public DrawerLayout drawerLayout;
    public ActionBarDrawerToggle actionBarDrawerToggle;

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

        // drawer layout instance to toggle the menu icon to open
        // drawer and back button to close drawer
        drawerLayout = findViewById(R.id.my_drawer_layout);
        actionBarDrawerToggle = new ActionBarDrawerToggle(this,
                drawerLayout, R.string.nav_open, R.string.nav_close);

        // pass the Open and Close toggle for the drawer layout listener
        // to toggle the button
        drawerLayout.addDrawerListener(actionBarDrawerToggle);
        actionBarDrawerToggle.syncState();

        // to make the Navigation drawer icon always appear on the action
        // bar
        getSupportActionBar().setDisplayHomeAsUpEnabled(true);
    }
}
```

```

// override the onOptionsItemSelected()
// function to implement
// the item click listener callback
// to open and close the navigation
// drawer when the icon is clicked
@Override
public boolean onOptionsItemSelected(@NonNull MenuItem item) {

    if ( actionBarDrawerToggle.onOptionsItemSelected(item)) {
        return true;
    }
    return super.onOptionsItemSelected(item);
}
}

```

7. OBJECTIVE : Create an application for Notification.

Activity_main.xml

```

<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout xmlns:android="http://schemas.an
droid.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.androidnotification.MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="ANDROID NOTIFICATION"
        app:layout_constraintBottom_toBottomOf="parent"

```

```
    app:layout_constraintLeft_toLeftOf="parent"
    app:layout_constraintRight_toRightOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.091"
    android:textAppearance="@style/Base.TextAppearance.AppCompat.Medium" />

<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/button"
    android:layout_marginBottom="112dp"
    android:layout_marginEnd="8dp"
    android:layout_marginStart="8dp"
    android:text="Notify"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent" />

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

activity_notification_view.xml

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.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="example.javatpoint.com.androidnotification.NotificationView">
```

```
<TextView
```

```
    android:id="@+id/textView2"
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:gravity="center"
    android:text="your detail of notification..."
    android:textAppearance="@style/Base.TextAppearance.AppCompat.Medium" />

<TextView
    android:id="@+id/textView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginBottom="8dp"
    android:layout_marginEnd="8dp"
    android:layout_marginStart="8dp"
    android:layout_marginTop="8dp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.096"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/textView2"
    app:layout_constraintVertical_bias="0.206"
    android:textAppearance="@style/Base.TextAppearance.AppCompat.Medium"/>

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

MainActivity.java

```
package example.javatpoint.com.androidnotification;

import android.app.NotificationManager;
import android.app.PendingIntent;
```

```
import android.content.Context;
import android.content.Intent;
import android.support.v4.app.NotificationCompat;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity {
    Button button;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        button = findViewById(R.id.button);
        button.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                addNotification();
            }
        });
    }

    private void addNotification() {
        NotificationCompat.Builder builder =
            new NotificationCompat.Builder(this)
                .setSmallIcon(R.drawable.messageicon) //set icon for notification
                .setContentTitle("Notifications Example") //set title of notification
                .setContentText("This is a notification message")//this is notification message
                .setAutoCancel(true) // makes auto cancel of notification
                .setPriority(NotificationCompat.PRIORITY_DEFAULT); //set priority of notification
    }
}
```

```

Intent notificationIntent = new Intent(this, NotificationView.class);
notificationIntent.addFlags(Intent.FLAG_ACTIVITY_CLEAR_TOP);
//notification message will get at NotificationView
notificationIntent.putExtra("message", "This is a notification message");

PendingIntent pendingIntent = PendingIntent.getActivity(this, 0, notificationIntent,
PendingIntent.FLAG_UPDATE_CURRENT);
builder.setContentIntent(pendingIntent);

// Add as notification
NotificationManager manager = (NotificationManager) getSystemService(Context.NOTIFICATION_SERVICE);
manager.notify(0, builder.build());
}
}

```

NotificationView.java

```

package example.javatpoint.com.androidnotification;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.TextView;
import android.widget.Toast;

public class NotificationView extends AppCompatActivity {
    TextView textView;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_notification_view);
        textView = findViewById(R.id.textView);
    }
}

```

```
//getting the notification message
String message=getIntent().getStringExtra("message");
textView.setText(message);
}
}
```

strings.xml

```
<resources>
    <string name="app_name">AndroidNotification</string>
    <string name="notification_activity">NotificationView</string>
</resources>
```

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="example.javatpoint.com.androidnotification">
```

<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/AppTheme">
```

<activity android:name=".MainActivity">

<intent-filter>

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

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

</intent-filter>

</activity>

<activity android:name=".NotificationView"

```
    android:label="@string/notification_activity"
```

```
    android:parentActivityName=".MainActivity">
```

<meta-data

```

        android:name="android.support.PARENT_ACTIVITY"
        android:value=".MainActivity"/>
    </activity>
</application>

</manifest>

```

8. OBJECTIVE : Create an application of game.

activity_main.xml

```

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

    <!--title text-->
    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="23dp"
        android:text="GFG Tic Tac Toe"
        android:textSize="45sp"
        android:textStyle="bold"
        app:fontFamily="cursive"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <!--image of the grid-->
    <ImageView
        android:id="@+id/imageView"

```

```
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:contentDescription="Start"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView"
        app:srcCompat="@drawable/grid" />

<LinearLayout
    android:id="@+id/linearLayout"
    android:layout_width="0dp"
    android:layout_height="420dp"
    android:orientation="vertical"
    app:layout_constraintBottom_toBottomOf="@+id/imageView"
    app:layout_constraintEnd_toEndOf="@+id/imageView"
    app:layout_constraintStart_toStartOf="@+id/imageView"
    app:layout_constraintTop_toTopOf="@+id/imageView">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:orientation="horizontal">

        <!--images of the grid boxes-->
        <ImageView
            android:id="@+id/imageView0"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:onClick="playerTap"
            android:padding="20sp"
            android:tag="0" />

        <ImageView
            android:id="@+id/imageView1"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:onClick="playerTap"
            android:padding="20sp"
            android:tag="1" />

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

```
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:onClick="playerTap"
        android:padding="20sp"
        android:tag="2" />
    </LinearLayout>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:orientation="horizontal">

        <ImageView
            android:id="@+id/imageView3"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:onClick="playerTap"
            android:padding="20sp"
            android:tag="3" />

        <ImageView
            android:id="@+id/imageView4"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:onClick="playerTap"
            android:padding="20sp"
            android:tag="4" />

        <ImageView
            android:id="@+id/imageView5"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:onClick="playerTap"
            android:padding="20sp"
            android:tag="5" />
    </LinearLayout>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
```

```
        android:layout_weight="1"
        android:orientation="horizontal">

    <ImageView
        android:id="@+id/imageView6"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:onClick="playerTap"
        android:padding="20sp"
        android:tag="6" />

    <ImageView
        android:id="@+id/imageView7"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:onClick="playerTap"
        android:padding="20sp"
        android:tag="7" />

    <ImageView
        android:id="@+id/imageView8"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:onClick="playerTap"
        android:padding="20sp"
        android:tag="8" />
    </LinearLayout>

</LinearLayout>

<!--game status text display-->
<TextView
    android:id="@+id/status"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginBottom="15sp"
    android:text="Status"
    android:textSize="28sp"
    android:textStyle="italic"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
```

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

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

MainActivity.java

```
import android.os.Bundle;
import android.view.View;
import android.widget.ImageView;
import android.widget.TextView;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
    boolean gameActive = true;

    // Player representation
    // 0 - X
    // 1 - O
    int activePlayer = 0;
    int[] gameState = {2, 2, 2, 2, 2, 2, 2, 2, 2};

    // State meanings:
    // 0 - X
    // 1 - O
    // 2 - Null
    // put all win positions in a 2D array
    int[][] winPositions = {{0, 1, 2}, {3, 4, 5}, {6, 7, 8},
                           {0, 3, 6}, {1, 4, 7}, {2, 5, 8},
                           {0, 4, 8}, {2, 4, 6}};
    public static int counter = 0;

    // this function will be called every time a
    // players tap in an empty box of the grid
    public void playerTap(View view) {
        ImageView img = (ImageView) view;
        int tappedImage = Integer.parseInt(img.getTag().toString());

        // game reset function will be called
        // if someone wins or the boxes are full
        if (!gameActive) {
            gameReset(view);
```

```
}

// if the tapped image is empty
if (gameState[tappedImage] == 2) {
    // increase the counter
    // after every tap
    counter++;

    // check if its the last box
    if (counter == 9) {
        // reset the game
        gameActive = false;
    }

    // mark this position
    gameState[tappedImage] = activePlayer;

    // this will give a motion
    // effect to the image
    img.setTranslationY(-1000f);

    // change the active player
    // from 0 to 1 or 1 to 0
    if (activePlayer == 0) {
        // set the image of x
        img.setImageResource(R.drawable.x);
        activePlayer = 1;
        TextView status = findViewById(R.id.status);

        // change the status
        status.setText("O's Turn - Tap to play");
    } else {
        // set the image of o
        img.setImageResource(R.drawable.o);
        activePlayer = 0;
        TextView status = findViewById(R.id.status);

        // change the status
        status.setText("X's Turn - Tap to play");
    }
    img.animate().translationYBy(1000f).setDuration(300);
}

int flag = 0;
// Check if any player has won
for (int[] winPosition : winPositions) {
```

```

    if (gameState[winPosition[0]] == gameState[winPosition[1]] &&
        gameState[winPosition[1]] == gameState[winPosition[2]])
&&
        gameState[winPosition[0]] != 2) {
    flag = 1;

    // Somebody has won! - Find out who!
    String winnerStr;

    // game reset function be called
    gameActive = false;
    if (gameState[winPosition[0]] == 0) {
        winnerStr = "X has won";
    } else {
        winnerStr = "O has won";
    }
    // Update the status bar for winner announcement
    TextView status = findViewById(R.id.status);
    status.setText(winnerStr);
}
}

// set the status if the match draw
if (counter == 9 && flag == 0) {
    TextView status = findViewById(R.id.status);
    status.setText("Match Draw");
}
}

// reset the game
public void gameReset(View view) {
    gameActive = true;
    activePlayer = 0;
    for (int i = 0; i < gameState.length; i++) {
        gameState[i] = 2;
    }
    // remove all the images from the boxes inside the grid
    ((ImageView) findViewById(R.id.imageView0)).setImageResource(0);
    ((ImageView) findViewById(R.id.imageView1)).setImageResource(0);
    ((ImageView) findViewById(R.id.imageView2)).setImageResource(0);
    ((ImageView) findViewById(R.id.imageView3)).setImageResource(0);
    ((ImageView) findViewById(R.id.imageView4)).setImageResource(0);
    ((ImageView) findViewById(R.id.imageView5)).setImageResource(0);
    ((ImageView) findViewById(R.id.imageView6)).setImageResource(0);
    ((ImageView) findViewById(R.id.imageView7)).setImageResource(0);
    ((ImageView) findViewById(R.id.imageView8)).setImageResource(0);
}
}

```

```

        TextView status = findViewById(R.id.status);
        status.setText("X's Turn - Tap to play");
    }

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

```

9. OBJECTIVE : Create an application of android tutorial using SQLite.

activity_main.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:id="@+id/activity_main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context="com.example.sqliteoperations.MainActivity"
    android:background="@android:color/holo_blue_dark">

    <TextView
        android:text="@string/username"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"

```

```
    android:layout_marginTop="12dp"
    android:id="@+id/textView"
    android:textSize="18sp"
    android:textStyle="bold|italic"
    android:layout_alignParentLeft="true"
    android:layout_alignParentStart="true"
    android:gravity="center" />

<EditText
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:inputType="textPersonName"
    android:ems="10"
    android:id="@+id/editName"
    android:textStyle="bold|italic"
    android:layout_below="@+id/textView"
    android:layout_alignParentRight="true"
    android:layout_alignParentEnd="true"
    android:hint="Enter Name"
    android:gravity="center_vertical|center" />

<TextView
    android:text="@string/password"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="13dp"
    android:id="@+id/textView2"
    android:textStyle="bold|italic"
    android:textSize="18sp"
    android:layout_below="@+id/editName"
    android:layout_alignParentRight="true"
    android:layout_alignParentEnd="true"
    android:gravity="center"
    android:hint="Enter Password" />
```

```
<Button
    android:text="@string/view_data"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/button2"
    android:textSize="18sp"
    android:onClick="viewdata"
    android:textStyle="bold|italic"
    android:layout_alignBaseline="@+id/button"
    android:layout_alignBottom="@+id/button"
    android:layout_alignRight="@+id/button4"
    android:layout_alignEnd="@+id/button4" />
```

```
<Button
    android:text="@string/add_user"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/button"
    android:textStyle="bold|italic"
    android:textSize="18sp"
    android:onClick="addUser"
    android:layout_marginLeft="28dp"
    android:layout_marginStart="28dp"
    android:layout_below="@+id/editPass"
    android:layout_alignParentLeft="true"
    android:layout_alignParentStart="true"
    android:layout_marginTop="23dp" />
```

```
<Button
    android:text="@string/update"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/button3"
```

```
    android:onClick="update"
    android:textStyle="normal|bold"
    android:layout_below="@+id/editText3"
    android:layout_alignLeft="@+id/button4"
    android:layout_alignStart="@+id/button4"
    android:layout_marginTop="13dp" />

<EditText
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:inputType="textPersonName"
    android:ems="10"
    android:id="@+id/editText6"
    android:layout_alignTop="@+id/button4"
    android:layout_alignParentLeft="true"
    android:layout_alignParentStart="true"
    android:freezesText="false"
    android:hint="Enter Name to Delete Data"
    android:layout_toLeftOf="@+id/button2"
    android:layout_toStartOf="@+id/button2" />

<Button
    android:text="@string/delete"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginRight="21dp"
    android:layout_marginEnd="21dp"
    android:id="@+id/button4"
    android:onClick="delete"
    android:textStyle="normal|bold"
    tools:ignore="RelativeOverlap"
    android:layout_marginBottom="41dp"
    android:layout_alignParentBottom="true"
    android:layout_alignParentRight="true"
```

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

<EditText
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:inputType="textPersonName"
    android:ems="10"
    android:layout_marginTop="47dp"
    android:id="@+id/editText3"
    android:textStyle="bold|italic"
    android:textSize="14sp"
    android:layout_below="@+id/button"
    android:layout_alignParentLeft="true"
    android:layout_alignParentStart="true"
    android:layout_marginLeft="7dp"
    android:layout_marginStart="7dp"
    android:hint="Current Name" />

<EditText
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:inputType="textPassword"
    android:ems="10"
    android:layout_marginTop="11dp"
    android:id="@+id/editPass"
    android:hint="Enter Password"
    android:gravity="center_vertical|center"
    android:textSize="18sp"
    android:layout_below="@+id/textView2"
    android:layout_alignParentLeft="true"
    android:layout_alignParentStart="true"
    android:textAllCaps="false"
    android:textStyle="normal|bold" />
```

```
<EditText  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:inputType="textPersonName"  
    android:ems="10"  
    android:id="@+id/editText5"  
    android:textStyle="bold|italic"  
    android:textSize="14sp"  
    android:hint="New Name"  
    android:layout_alignTop="@+id/button3"  
    android:layout_alignLeft="@+id/editText3"  
    android:layout_alignStart="@+id/editText3"  
    android:layout_marginTop="32dp" />  
</RelativeLayout>
```

MainActivity.java

```
package com.example.sqliteoperations;  
  
import android.support.v7.app.AppCompatActivity;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.EditText;  
  
public class MainActivity extends AppCompatActivity {  
    EditText Name, Pass , updateold, updatenew, delete;  
    myDbAdapter helper;  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main);  
        Name= (EditText) findViewById(R.id.editName);  
        Pass= (EditText) findViewById(R.id.editPass);
```

```
updateold= (EditText) findViewById(R.id.editText3);
updatenew= (EditText) findViewById(R.id.editText5);
delete = (EditText) findViewById(R.id.editText6);

helper = new myDbAdapter(this);
}

public void addUser(View view)
{
    String t1 = Name.getText().toString();
    String t2 = Pass.getText().toString();
    if(t1.isEmpty() || t2.isEmpty())
    {
        Message.message(getApplicationContext(),"Enter Both Name and Password");
    }
    else
    {
        long id = helper.insertData(t1,t2);
        if(id<=0)
        {
            Message.message(getApplicationContext(),"Insertion Unsuccessful");
            Name.setText("");
            Pass.setText("");
        } else
        {
            Message.message(getApplicationContext(),"Insertion Successful");
            Name.setText("");
            Pass.setText("");
        }
    }
}

public void viewdata(View view)
{
    String data = helper.getData();
```

```
        Message.message(this,data);
    }

public void update( View view)
{
    String u1 = updateold.getText().toString();
    String u2 = updatenew.getText().toString();
    if(u1.isEmpty() || u2.isEmpty())
    {
        Message.message(getApplicationContext(),"Enter Data");
    }
    else
    {
        int a= helper.updateName( u1, u2);
        if(a<=0)
        {
            Message.message(getApplicationContext(),"Unsuccessful");
            updateold.setText("");
            updatenew.setText("");
        } else {
            Message.message(getApplicationContext(),"Updated");
            updateold.setText("");
            updatenew.setText("");
        }
    }
}

public void delete( View view)
{
    String uname = delete.getText().toString();
    if(uname.isEmpty())
    {
        Message.message(getApplicationContext(),"Enter Data");
    }
}
```

```
        else{
            int a= helper.delete(uname);
            if(a<=0)
            {
                Message.message(getApplicationContext(),"Unsuccessful");
                delete.setText("");
            }
            else
            {
                Message.message(this, "DELETED");
                delete.setText("");
            }
        }
    }
}
```

myDbAdapter. Java

```
package com.example.sqliteoperations;

import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;

public class myDbAdapter {
    myDbHelper myhelper;
    public myDbAdapter(Context context)
    {
        myhelper = new myDbHelper(context);
    }
}
```

```
public long insertData(String name, String pass)
{
    SQLiteDatabase dbb = myhelper.getWritableDatabase();
    ContentValues contentValues = new ContentValues();
    contentValues.put(myDbHelper.NAME, name);
    contentValues.put(myDbHelper.MyPASSWORD, pass);
    long id = dbb.insert(myDbHelper.TABLE_NAME, null , contentValues);
    return id;
}

public String getData()
{
    SQLiteDatabase db = myhelper.getWritableDatabase();
    String[] columns = {myDbHelper.UID,myDbHelper.NAME,myDbHelper.MyPASSWORD};
    Cursor cursor =db.query(myDbHelper.TABLE_NAME,columns,null,null,null,null,null,1);
    StringBuffer buffer= new StringBuffer();
    while (cursor.moveToNext())
    {
        int cid =cursor.getInt(cursor.getColumnIndex(myDbHelper.UID));
        String name =cursor.getString(cursor.getColumnIndex(myDbHelper.NAME));
        String password =cursor.getString(cursor.getColumnIndex(myDbHelper.MyPASSWORD));
        buffer.append(cid+ " " + name + " " + password +"\n");
    }
    return buffer.toString();
}

public int delete(String uname)
{
    SQLiteDatabase db = myhelper.getWritableDatabase();
    String[] whereArgs ={uname};
```

```

        int count =db.delete(myDbHelper.TABLE_NAME ,myDbHelper.NAME+" = ?" ,whereArgs)
    ;
    return  count;
}

public int updateName(String oldName , String newName)
{
    SQLiteDatabase db = myhelper.getWritableDatabase();
    ContentValues contentValues = new ContentValues();
    contentValues.put(myDbHelper.NAME,newName);
    String[] whereArgs= {oldName};
    int count =db.update(myDbHelper.TABLE_NAME,contentValues, myDbHelper.NAME+" = ?" ,whereArgs );
    return count;
}

static class myDbHelper extends SQLiteOpenHelper
{
    private static final String DATABASE_NAME = "myDatabase";      // Database Name
    private static final String TABLE_NAME = "myTable";    // Table Name
    private static final int DATABASE_Version = 1;..      // Database Version
    private static final String UID="_id";      // Column I (Primary Key)
    private static final String NAME = "Name";      //Column II
    private static final String MyPASSWORD= "Password";      // Column III
    private static final String CREATE_TABLE = "CREATE TABLE "+TABLE_NAME+
        " ("+UID+" INTEGER PRIMARY KEY AUTOINCREMENT, "+NAME+" VARCHAR(255) ,
"+ MyPASSWORD+" VARCHAR(225));";
    private static final String DROP_TABLE ="DROP TABLE IF EXISTS "+TABLE_NAME;
    private Context context;

    public myDbHelper(Context context) {
        super(context, DATABASE_NAME, null, DATABASE_Version);
        this.context=context;
    }
}

```

```

public void onCreate(SQLiteDatabase db) {

    try {
        db.execSQL(CREATE_TABLE);
    } catch (Exception e) {
        Message.message(context,""+e);
    }
}

@Override
public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
    try {
        Message.message(context,"OnUpgrade");
        db.execSQL(DROP_TABLE);
        onCreate(db);
    }catch (Exception e) {
        Message.message(context,""+e);
    }
}
}

```

Message.class

```

package com.example.sqliteoperations;

import android.content.Context;
import android.widget.Toast;

public class Message {
    public static void message(Context context, String message) {
        Toast.makeText(context, message, Toast.LENGTH_LONG).show();
    }
}

```

}