

## Exercise 1

### Application using GUI components

#### AIM:

Generate a registration form for a hospital to register new patient details

#### CODE:

##### activity.xml

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

    <androidx.constraintlayout.widget.ConstraintLayout
        android:layout_width="433dp"
        android:layout_height="698dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.021">

        <TextView
            android:id="@+id/textView5"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Reg Time"
            android:textColor="#100000"
            android:textSize="25sp"
            tools:layout_editor_absoluteX="28dp"
            tools:layout_editor_absoluteY="394dp" />

        <TextView
            android:id="@+id/textView7"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Addiction"
            android:textColor="#100000"
            android:textSize="25sp"
            tools:layout_editor_absoluteX="28dp"
            tools:layout_editor_absoluteY="453dp" />

        <EditText
```

```
android:id="@+id/editTextTextPersonName2"
android:layout_width="250dp"
android:layout_height="63dp"
android:ems="10"
android:inputType="textPersonName"
tools:layout_editor_absoluteX="170dp"
tools:layout_editor_absoluteY="365dp" />
```

```
<TextView
    android:id="@+id/textView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Patient Registration"
    android:textColor="#000000"
    android:textSize="30sp"
    tools:layout_editor_absoluteX="91dp"
    tools:layout_editor_absoluteY="1dp" />
```

```
<EditText
    android:id="@+id/editTextTextPersonName"
    android:layout_width="248dp"
    android:layout_height="48dp"
    android:ems="10"
    android:inputType="textPersonName"
    tools:layout_editor_absoluteX="169dp"
    tools:layout_editor_absoluteY="53dp" />
```

```
<TextView
    android:id="@+id/textView6"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Address"
    android:textColor="#100000"
    android:textSize="25sp"
    tools:layout_editor_absoluteX="24dp"
    tools:layout_editor_absoluteY="166dp" />
```

```
<TextView
    android:id="@+id/textView9"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="DOB"
    android:textColor="#100000"
    android:textSize="25sp"
    tools:layout_editor_absoluteX="24dp"
    tools:layout_editor_absoluteY="117dp" />
```

```
<TextView
    android:id="@+id/textView8"
```

```
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Ph Number "
    android:textColor="#100000"
    android:textSize="25sp"
    tools:layout_editor_absoluteX="24dp"
    tools:layout_editor_absoluteY="230dp" />
```

```
<TextView
    android:id="@+id/textView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Gender"
    android:textColor="#100000"
    android:textSize="25sp"
    tools:layout_editor_absoluteX="28dp"
    tools:layout_editor_absoluteY="282dp" />
```

```
<TextView
    android:id="@+id/textView3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Marital "
    android:textColor="#100000"
    android:textSize="25sp"
    tools:layout_editor_absoluteX="28dp"
    tools:layout_editor_absoluteY="340dp" />
```

```
<TextView
    android:id="@+id/textView4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Name"
    android:textColor="#100000"
    android:textSize="25sp"
    tools:layout_editor_absoluteX="24dp"
    tools:layout_editor_absoluteY="67dp" />
```

```
<RadioGroup
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    tools:layout_editor_absoluteX="203dp"
    tools:layout_editor_absoluteY="189dp" />
```

```
<RadioGroup
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    tools:layout_editor_absoluteX="160dp"
    tools:layout_editor_absoluteY="200dp" />
```

```
<RadioButton
    android:id="@+id/radioButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Single"
    android:textSize="25sp"
    tools:layout_editor_absoluteX="166dp"
    tools:layout_editor_absoluteY="340dp" />
```

```
<RadioButton
    android:id="@+id/radioButton4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Married"
    android:textSize="25sp"
    tools:layout_editor_absoluteX="287dp"
    tools:layout_editor_absoluteY="340dp" />
```

```
<RadioButton
    android:id="@+id/radioButton3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Male"
    android:textSize="25sp"
    tools:layout_editor_absoluteX="166dp"
    tools:layout_editor_absoluteY="282dp" />
```

```
<RadioButton
    android:id="@+id/radioButton2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Female"
    android:textSize="25sp"
    tools:layout_editor_absoluteX="287dp"
    tools:layout_editor_absoluteY="275dp" />
```

```
<CheckBox
    android:id="@+id/checkBox"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Alcohol"
    android:textSize="25sp"
    tools:layout_editor_absoluteX="168dp"
    tools:layout_editor_absoluteY="454dp" />
```

```
<CheckBox
    android:id="@+id/checkBox2"
    android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content"
    android:text="Smoking"
    android:textSize="25sp"
    tools:layout_editor_absoluteX="287dp"
    tools:layout_editor_absoluteY="453dp" />
```

```
<Button
    android:id="@+id/button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Submit"
    android:textSize="25sp"
    tools:layout_editor_absoluteX="80dp"
    tools:layout_editor_absoluteY="524dp" />
```

```
<Button
    android:id="@+id/button2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Reset"
    android:textSize="25sp"
    tools:layout_editor_absoluteX="225dp"
    tools:layout_editor_absoluteY="524dp" />
```

```
<EditText
    android:id="@+id/editTextDate"
    android:layout_width="244dp"
    android:layout_height="46dp"
    android:ems="10"
    android:inputType="date"
    tools:layout_editor_absoluteX="173dp"
    tools:layout_editor_absoluteY="100dp" />
```

```
<EditText
    android:id="@+id/editTextPhone"
    android:layout_width="244dp"
    android:layout_height="52dp"
    android:ems="10"
    android:inputType="phone"
    tools:layout_editor_absoluteX="166dp"
    tools:layout_editor_absoluteY="212dp" />
```

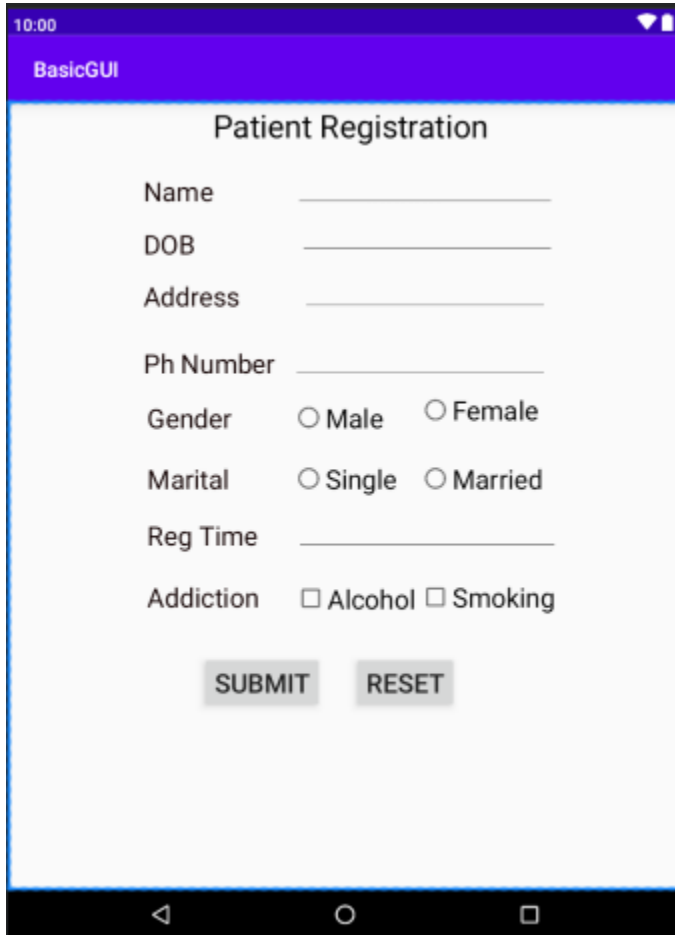
```
<EditText
    android:id="@+id/editTextTextPostalAddress"
    android:layout_width="234dp"
    android:layout_height="41dp"
    android:ems="10"
    android:inputType="textPostalAddress"
    tools:layout_editor_absoluteX="176dp"
```

```
tools:layout_editor_absoluteY="159dp" />
```

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

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

## **OUTPUT:**



The screenshot displays a mobile application interface with a purple header bar labeled "BasicGUI". The main content area is titled "Patient Registration" and contains the following form elements:

- Name:
- DOB:
- Address:
- Ph Number:
- Gender: ☐ Male ☐ Female
- Marital: ☐ Single ☐ Married
- Reg Time:
- Addiction: ☐ Alcohol ☐ Smoking

At the bottom of the form are two buttons: "SUBMIT" and "RESET". The application is running on an Android device, as indicated by the status bar at the top (showing 10:00) and the navigation bar at the bottom.

## Ex-2: Develop an application to simulate keyboard

### Aim:

To develop an android application to simulate a keyboard

### Program:

(MainActivity.java)

```
package com.ex3;
```

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

```
import android.content.Context;
import android.graphics.Color;
import android.os.Bundle;
import android.text.TextUtils;
import android.view.View;
import android.view.inputmethod.InputMethodManager;
import android.widget.Button;
import android.widget.EdgeEffect;
import android.widget.EditText;
import android.widget.TableLayout;
import android.widget.Toast;
```

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

```
    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        AppCompatActivity.setDefaultNightMode(AppCompatActivity.MODE_NIGHT_NO);
        TableLayout table=findViewById(R.id.table);
        table.setVisibility(View.INVISIBLE);
        EditText nativeKB=findViewById(R.id.editText1);
        EditText myKB=findViewById(R.id.editText2);
        Button one=findViewById(R.id.one);
        Button two=findViewById(R.id.two);
        Button three=findViewById(R.id.three);
        Button four=findViewById(R.id.four);
        Button five=findViewById(R.id.five);
        Button six=findViewById(R.id.six);
        Button seven=findViewById(R.id.seven);
        Button eight=findViewById(R.id.eight);
        Button nine=findViewById(R.id.nine);
        Button zero=findViewById(R.id.zero);
        Button space=findViewById(R.id.space);
        space.setBackgroundColor(Color.BLACK);
        space.setTextColor(Color.WHITE);
        Button clr=findViewById(R.id.clr);
```

```

clr.setBackgroundColor(Color.BLACK);
clr.setTextColor(Color.WHITE);
Button enter=findViewById(R.id.enter);
enter.setBackgroundColor(Color.BLACK);
enter.setTextColor(Color.WHITE);
Button comma=findViewById(R.id.comma);
Button period=findViewById(R.id.period);
Button cap=findViewById(R.id.cap);
cap.setBackgroundColor(Color.BLACK);
cap.setTextColor(Color.WHITE);
Button num=findViewById(R.id.num);
num.setBackgroundColor(Color.BLACK);
num.setTextColor(Color.WHITE);
Button a=findViewById(R.id.a);
Button b=findViewById(R.id.b);
Button c=findViewById(R.id.c);
Button d=findViewById(R.id.d);
Button e=findViewById(R.id.e);
Button f=findViewById(R.id.f);
Button g=findViewById(R.id.g);
Button h=findViewById(R.id.h);
Button i=findViewById(R.id.i);
Button j=findViewById(R.id.j);
Button k=findViewById(R.id.k);
Button l=findViewById(R.id.l);
Button m=findViewById(R.id.m);
Button n=findViewById(R.id.n);
Button o=findViewById(R.id.o);
Button p=findViewById(R.id.p);
Button q=findViewById(R.id.q);
Button r=findViewById(R.id.r);
Button s=findViewById(R.id.s);
Button t=findViewById(R.id.t);
Button u=findViewById(R.id.u);
Button v=findViewById(R.id.v);
Button w=findViewById(R.id.w);
Button x=findViewById(R.id.x);
Button y=findViewById(R.id.y);
Button z=findViewById(R.id.z);
nativeKB.setCursorVisible(false);
myKB.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        table.setVisibility(View.VISIBLE);
        closeKeyboard();
        myKB.setShowSoftInputOnFocus(false);
    }
});
nativeKB.setOnClickListener(new View.OnClickListener() {

```



```
@Override
public void onClick(View v) {
    table.setVisibility(View.INVISIBLE);
}
});
one.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("1");}
});

two.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("2");}
});

three.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("3");}
});

four.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("4");}
});

five.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("5");}
});

six.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("6");}
});

seven.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("7");}
});

eight.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("8");}
});

nine.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("9");}
});
```

```
zero.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {myKB.append("0");}  
});
```

```
a.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {myKB.append("a");}  
});
```

```
b.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {myKB.append("b");}  
});
```

```
c.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {myKB.append("c");}  
});
```

```
d.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {myKB.append("d");}  
});
```

```
e.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {myKB.append("e");}  
});
```

```
f.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {myKB.append("f");}  
});
```

```
g.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {myKB.append("g");}  
});
```

```
h.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {myKB.append("h");}  
});
```

```
i.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {myKB.append("i");}  
});
```

```
j.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("j");}
});

k.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("k");}
});

l.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("l");}
});

m.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("m");}
});

n.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("n");}
});

o.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("o");}
});

p.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("p");}
});

q.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("q");}
});

r.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("r");}
});

s.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("s");}
});
```

```

t.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("t");}
});

u.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("u");}
});

v.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("v");}
});

w.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("w");}
});

x.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("x");}
});

y.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("y");}
});

z.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append("z");}
});

space.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {myKB.append(" ");}
});

clr.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        if(!TextUtils.isEmpty(myKB.getText())){
            String txt = myKB.getText().toString();
            txt = txt.substring(0,txt.length()-1);
            myKB.setText(txt);
        }
    }
});

```

```

        clr.setOnLongClickListener(new View.OnLongClickListener() {
            public boolean onLongClick(View v) {
                myKB.getText().clear();
                return true;
            }
        });
        comma.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {myKB.append(",");}
        });

        period.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {myKB.append(".");}
        });

        enter.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Toast.makeText(getApplicationContext(),"LOL Nothing to
Submit",Toast.LENGTH_SHORT).show();
            }
        });

        cap.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Toast.makeText(getApplicationContext(),"Coming
Soon",Toast.LENGTH_SHORT).show();
            }
        });

        num.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Toast.makeText(getApplicationContext(),"Coming
Soon",Toast.LENGTH_SHORT).show();
            }
        });

    }

    private void closeKeyboard() {
        View view = this.getCurrentFocus();
        if (view != null) {
            InputMethodManager imm = (InputMethodManager)
getSystemService(Context.INPUT_METHOD_SERVICE);
            imm.hideSoftInputFromWindow(view.getWindowToken(), 0);
        }
    }

```

```
}  
}
```

### (activity\_main.xml)

```
<?xml version="1.0" encoding="utf-8"?>  
<androidx.constraintlayout.widget.ConstraintLayout  
    xmlns:android="http://schemas.android.com/apk/res/android"  
    xmlns:app="http://schemas.android.com/apk/res-auto"  
    xmlns:tools="http://schemas.android.com/tools"  
    android:layout_width="match_parent"  
    android:layout_height="match_parent"  
    tools:context=".MainActivity">  
  
    <EditText  
        android:id="@+id/editText1"  
        android:layout_width="331dp"  
        android:layout_height="66dp"  
        android:layout_marginStart="40dp"  
        android:layout_marginTop="203dp"  
        android:layout_marginEnd="40dp"  
        android:layout_marginBottom="462dp"  
        android:ems="10"  
        android:hint="Native Keyboard..."  
        android:inputType="textPersonName"  
        app:layout_constraintBottom_toBottomOf="parent"  
        app:layout_constraintEnd_toEndOf="parent"  
        app:layout_constraintStart_toStartOf="parent"  
        app:layout_constraintTop_toTopOf="parent" />  
  
    <EditText  
        android:id="@+id/editText2"  
        android:layout_width="331dp"  
        android:layout_height="66dp"  
        android:layout_marginStart="40dp"  
        android:layout_marginTop="278dp"  
        android:layout_marginEnd="40dp"  
        android:layout_marginBottom="387dp"  
        android:ems="10"  
        android:hint="My Keyboard....."  
        app:layout_constraintBottom_toBottomOf="parent"  
        app:layout_constraintEnd_toEndOf="parent"  
        app:layout_constraintHorizontal_bias="0.0"  
        app:layout_constraintStart_toStartOf="parent"  
        android:focusableInTouchMode="false"  
        app:layout_constraintTop_toTopOf="parent"  
        app:layout_constraintVertical_bias="0.0"  
        android:imeOptions="flagNoExtractUi"  
        android:inputType="textNoSuggestions"/>
```

```

<TableLayout
    android:id="@+id/table"
    android:layout_width="409dp"
    android:layout_height="300dp"
    android:layout_alignParentRight="true"
    android:layout_marginTop="431dp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent">

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

        <Button
            android:id="@+id/one"
            android:layout_width="wrap_content"
            android:layout_height="60dp"
            android:layout_weight="1"
            android:backgroundTint="@color/cardview_dark_background"
            android:text="1"
            android:textAllCaps="false"

            tools:ignore="TouchTargetSizeCheck" />

        <Button
            android:id="@+id/two"
            android:layout_width="wrap_content"
            android:layout_height="60dp"
            android:layout_marginLeft="1dp"
            android:layout_marginRight="1dp"
            android:layout_weight="1"
            android:backgroundTint="@color/cardview_dark_background"
            android:text="2"
            android:textAllCaps="false"
            tools:ignore="TouchTargetSizeCheck" />

        <Button
            android:id="@+id/three"
            android:layout_width="wrap_content"
            android:layout_height="60dp"
            android:layout_marginLeft="1dp"
            android:layout_marginRight="1dp"
            android:layout_weight="1"
            android:backgroundTint="@color/cardview_dark_background"
            android:text="3"
            android:textAllCaps="false"
            tools:ignore="TouchTargetSizeCheck" />

```

```
<Button
    android:id="@+id/four"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="4"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/five"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="5"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/six"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="6"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/seven"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="7"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/eight"
```



```
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="8"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/nine"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="9"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/zero"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="0"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
</TableRow>
```

```
<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent">
```

```
    <Button
        android:id="@+id/q"
        android:layout_width="wrap_content"
        android:layout_height="60dp"
        android:layout_weight="1"
        android:backgroundTint="@color/cardview_dark_background"
        android:text="q"
        android:textAllCaps="false"

        tools:ignore="TouchTargetSizeCheck" />
```

```
    <Button
        android:id="@+id/w"
```

```
android:layout_width="wrap_content"
android:layout_height="60dp"
android:layout_marginLeft="1dp"
android:layout_marginRight="1dp"
android:layout_weight="1"
android:backgroundTint="@color/cardview_dark_background"
android:text="w"
android:textAllCaps="false"
tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/e"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="e"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/r"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="r"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/t"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="t"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/y"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
```

```
android:layout_marginLeft="1dp"
android:layout_marginRight="1dp"
android:layout_weight="1"
android:backgroundTint="@color/cardview_dark_background"
android:text="y"
android:textAllCaps="false"
tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/u"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="u"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/i"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="i"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/o"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="o"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/p"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
```

```
        android:text="p"
        android:textAllCaps="false"
        tools:ignore="TouchTargetSizeCheck" />
</TableRow>
```

```
<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent">
```

```
<Button
    android:id="@+id/a"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="a"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/s"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="s"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/d"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="d"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/f"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
```

```
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="f"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/g"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="g"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/h"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="h"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/j"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="j"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/k"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
```

```
    android:text="k"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/l"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="l"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
</TableRow>
```

```
<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent">
```

```
<Button
    android:id="@+id/cap"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:text="⇕"
    android:textAllCaps="false"
    android:textColor="#101010"
    android:textSize="16sp"
    app:cornerRadius="30px"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/z"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="z"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/x"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
```

```
android:layout_marginLeft="1dp"
android:layout_marginRight="1dp"
android:layout_weight="1"
android:backgroundTint="@color/cardview_dark_background"
android:text="x"
android:textAllCaps="false"
tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/c"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="c"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/v"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="v"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/b"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="b"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/n"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
```

```
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="n"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/m"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="0.8"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="m"
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/clr"
    android:layout_width="wrap_content"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="0.7"
    android:text="☒"
    android:textAllCaps="false"
    android:textColor="#000000"
    android:textSize="18sp"
    app:cornerRadius="30px"
    tools:ignore="TouchTargetSizeCheck" />
```

```
</TableRow>
```

```
<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent">
```

```
<Button
    android:id="@+id/comma"
    android:layout_width="0dp"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text=","
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />
```



```

<Button
    android:id="@+id/period"
    android:layout_width="0dp"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="1"
    android:backgroundTint="@color/cardview_dark_background"
    android:text="."
    android:textAllCaps="false"
    tools:ignore="TouchTargetSizeCheck" />

```

```

<Button
    android:id="@+id/enter"
    android:layout_width="0dp"
    android:layout_height="60dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp"
    android:layout_weight="2"
    android:text="↵"
    android:textAllCaps="false"
    android:textColor="#090909"
    android:textSize="20sp"
    app:cornerRadius="50px"
    tools:ignore="TouchTargetSizeCheck" />

```

```

</TableRow>

```

```

</TableLayout>

```

```

</androidx.constraintlayout.widget.ConstraintLayout>

```

## App snapshots:

Ex2-Virtual-Keyboard

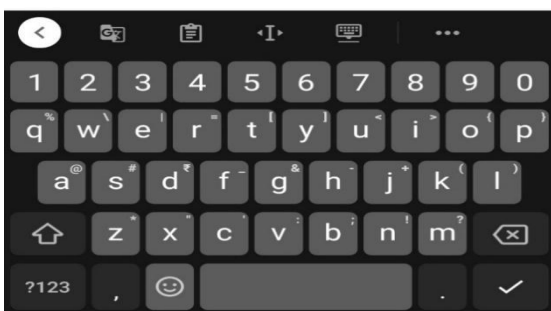
Ex2-Virtual-Keyboard

Native Keyboard....

My Keyboard.....

Native Keyboard....

My Keyboard.....



### Ex-3: Android Application using Graphics

**Aim:**

To develop an android application using Graphics.

**Program:**

**(MainActivity.java)**

```
package com.ex4;
```

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

```
import android.os.Bundle;
import android.view.View;
import android.view.animation.Animation;
import android.view.animation.AnimationUtils;
import android.widget.Button;
import android.widget.ImageView;
```

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

```
    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        AppCompatActivity.setDefaultNightMode(AppCompatActivity.MODE_NIGHT_NO);
```

```
    }
```

```
    public void nextPage(View view){
        setContentView(R.layout.graphicslayout);
    }
```

```
    public void homePage(View view){
        setContentView(R.layout.activity_main);
    }
```

```
    public void move(View view){
        ImageView image = (ImageView)findViewById(R.id.imageView);
        Animation animation = AnimationUtils.loadAnimation(getApplicationContext(),
R.anim.move);
        image.startAnimation(animation);
    }
```

```
    public void rotate(View view){
        ImageView image = (ImageView)findViewById(R.id.imageView);
        Animation animation = AnimationUtils.loadAnimation(getApplicationContext(),
R.anim.rotate);
        image.startAnimation(animation);
    }
```

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

```

        ImageView image = (ImageView)findViewById(R.id.imageView);
        Animation animation
=AnimationUtils.loadAnimation(getApplicationContext(),R.anim.blink);
        image.startAnimation(animation);
    }

```

```

    public void zoom(View view){
        ImageView image = (ImageView)findViewById(R.id.imageView);
        Animation animation =
AnimationUtils.loadAnimation(getApplicationContext(),R.anim.zoom);
        image.startAnimation(animation);
    }
}

```

(blink.xml)

```

<?xml version="1.0" encoding="utf-8"?>
<set xmlns:android="http://schemas.android.com/apk/res/android">
    <alpha android:fromAlpha="0.0"
        android:toAlpha="1.0"
        android:interpolator="@android:anim/accelerate_interpolator"
        android:duration="500"
        android:repeatMode="reverse"
        android:repeatCount="3"/>
</set>

```

(move.xml)

```

<?xml version="1.0" encoding="utf-8"?>
<set
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:interpolator="@android:anim/linear_interpolator"
    android:fillAfter="true">

    <translate
        android:fromXDelta="0%p"
        android:toYDelta="15%p"
        android:duration="2000"
    />
</set>

```

(rotate.xml)

```

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

    <rotate xmlns:android="http://schemas.android.com/apk/res/android"
        android:fromDegrees="0"
        android:toDegrees="360"
        android:pivotX="50%"
        android:pivotY="50%"
        android:duration="3000" >
    </rotate>

```

</set>

(zoom.xml)

```
<?xml version="1.0" encoding="utf-8"?>
<set xmlns:android="http://schemas.android.com/apk/res/android">
    <scale xmlns:android="http://schemas.android.com/apk/res/android"
        android:fromXScale="1.0"
        android:fromYScale="1.0"
        android:toXScale="1.2"
        android:toYScale="1.2"
        android:duration="3000"
        android:pivotX="50%"
        android:pivotY="50%"/>
</set>
```

(activity\_main.xml)

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

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="177dp"
        android:layout_marginTop="356dp"
        android:layout_marginEnd="179dp"
        android:layout_marginBottom="356dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/button"
        android:layout_width="413dp"
        android:layout_height="48dp"
        android:layout_marginTop="667dp"
        android:layout_marginBottom="16dp"
        android:onClick="nextPage"
        android:text="Next »"
        app:layout_constraintBottom_toBottomOf="parent"
```

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

```
<ImageView
    android:id="@+id/imageView1"
    android:layout_width="343dp"
    android:layout_height="505dp"
    android:layout_marginStart="34dp"
    android:layout_marginTop="113dp"
    android:layout_marginEnd="34dp"
    android:layout_marginBottom="49dp"
    app:layout_constraintBottom_toTopOf="@+id/button"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:srcCompat="@drawable/shapes" />
```

```
<TextView
    android:id="@+id/textView2"
    android:layout_width="399dp"
    android:layout_height="34dp"
    android:layout_marginStart="6dp"
    android:layout_marginTop="41dp"
    android:layout_marginEnd="6dp"
    android:layout_marginBottom="38dp"
    android:onClick="nextPage"
    android:text="1 - SHAPES"
    android:textAlignment="center"
    android:textColor="#F40404"
    android:textSize="30sp"
    app:layout_constraintBottom_toTopOf="@+id/imageView1"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
```

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

(graphicslayout.xml)

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

```
<Button
```

```
android:id="@+id/button1"
android:layout_width="413dp"
android:layout_height="48dp"
android:layout_marginTop="667dp"
android:layout_marginBottom="16dp"
android:onClick="homePage"
android:text="« Back"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />
```

```
<TableLayout
    android:id="@+id/tableLayout"
    android:layout_width="366dp"
    android:layout_height="47dp"
    android:layout_marginStart="22dp"
    android:layout_marginTop="619dp"
    android:layout_marginEnd="22dp"
    android:layout_marginBottom="1dp"
    app:layout_constraintBottom_toTopOf="@+id/button1"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent">
```

```
<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent">
```

```
<Button
    android:id="@+id/blink"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:onClick="blink"
    android:text="Blink"
    android:layout_marginRight="2dp"
    tools:ignore="TouchTargetSizeCheck" />
```

```
<Button
    android:id="@+id/move"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:onClick="move"
    android:text="move"
    android:layout_marginRight="2dp"
    tools:ignore="TouchTargetSizeCheck" />
```

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

```

        android:layout_height="wrap_content"
        android:onClick="rotate"
        android:text="rotate"
        android:layout_marginRight="2dp"
        tools:ignore="TouchTargetSizeCheck" />

<Button
    android:id="@+id/zoom"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:onClick="zoom"
    android:text="zoom"
    tools:ignore="TouchTargetSizeCheck" />
</TableRow>

</TableLayout>

<ImageView
    android:id="@+id/imageView"
    android:layout_width="306dp"
    android:layout_height="384dp"
    android:layout_marginStart="36dp"
    android:layout_marginTop="101dp"
    android:layout_marginEnd="59dp"
    android:layout_marginBottom="124dp"
    app:layout_constraintBottom_toTopOf="@+id/tableLayout"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="1.0"
    app:srcCompat="@drawable/cj" />

<TextView
    android:id="@+id/textView2"
    android:layout_width="399dp"
    android:layout_height="48dp"
    android:layout_marginStart="6dp"
    android:layout_marginTop="41dp"
    android:layout_marginEnd="6dp"
    android:layout_marginBottom="36dp"
    android:onClick="homePage"
    android:text="2,3 - GRAPHICS"
    android:textAlignment="center"
    android:textColor="#588A1E"
    android:textSize="30sp"
    app:layout_constraintBottom_toTopOf="@+id/imageView"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

```

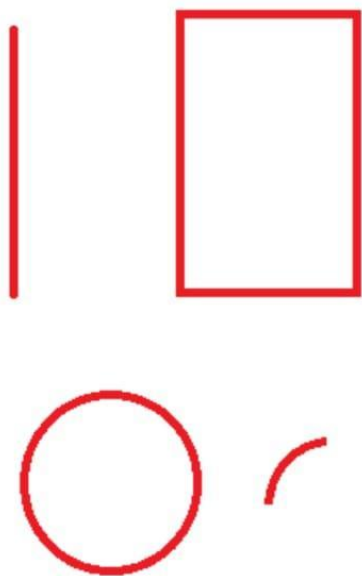
</androidx.constraintlayout.widget.ConstraintLayout>

### App snapshots:

#### 1. Shapes

Ex4-Graphics

### 1 - SHAPES



NEXT >>>

#### 2. Blink



## 2,3 - GRAPHICS



BLINK

MOVE

ROTATE

ZOOM

◀◀ BACK

### 3. Move

## 2,3 - GRAPHICS



BLINK

MOVE

ROTATE

ZOOM

<<< BACK

4. Rotate

## 2,3 - GRAPHICS



BLINK

MOVE

ROTATE

ZOOM

◀◀ BACK

### 5. Zoom

## 2,3 - GRAPHICS



BLINK

MOVE

ROTATE

ZOOM

◀◀ BACK

### Learning Outcome :

At the end of this assignment, I was able to develop an android application using Graphics.

## Ex-4: Database Operation

### Aim:

To develop an android application to perform Database operation.

### Program:

#### (MainActivity.java)

```
package com.example.ex5;
import androidx.appcompat.app.AppCompatActivity;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.database.Cursor;
import android.os.Bundle;
import android.text.TextUtils;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.Spinner;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
    DBHelper db;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        AppCompatActivity.setDefaultNightMode(AppCompatActivity.MODE_NIGHT_NO);
        db=new DBHelper(this);
        Button insert=findViewById(R.id.insert);
        insert.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                setContentView(R.layout.activity_insert);
                EditText name= findViewById(R.id.name);
                RadioGroup gender= findViewById(R.id.gender);
                Spinner department= findViewById(R.id.department);
                EditText salary= findViewById(R.id.salary);
                EditText employee_code= findViewById(R.id.employee_code);
                Button insert=findViewById(R.id.insert);
                insert.setOnClickListener(new View.OnClickListener() {
                    @Override
                    public void onClick(View v) {
                        if (TextUtils.isEmpty(name.getText())) {
                            Toast.makeText(MainActivity.this, "Enter your name ",
                                Toast.LENGTH_SHORT).show();
                        } else if (TextUtils.isEmpty(salary.getText())) {
                            Toast.makeText(MainActivity.this, "Enter your salary ",
                                Toast.LENGTH_SHORT).show();
                        }
                    }
                });
            }
        });
    }
}
```

```

        } else if (!(((RadioButton) findViewById(R.id.male)).isChecked() ||
((RadioButton) findViewById(R.id.female)).isChecked())) {
            Toast.makeText(MainActivity.this, "Select Your Gender ",
Toast.LENGTH_SHORT).show();
        } else if (TextUtils.isEmpty(employee_code.getText())) {
            Toast.makeText(MainActivity.this, "Enter your employee code",
Toast.LENGTH_SHORT).show();
        } else {
            String name_value = name.getText().toString();
            String department_value = department.getSelectedItem().toString();
            String employee_code_value = employee_code.getText().toString();
            String gender_value = ((RadioButton)
findViewById(gender.getCheckedRadioButtonId())).getText().toString();
            Double salary_value =
Double.parseDouble(String.valueOf(salary.getText()));
            Boolean checkInsertData = db.insertUserdata(employee_code_value,
name_value, gender_value, department_value, salary_value);
            if (checkInsertData == true)
            {
                Toast.makeText(MainActivity.this, "New Entry Inserted",
Toast.LENGTH_SHORT).show();
                Intent i = new Intent(MainActivity.this,MainActivity.class);
                finish();
                startActivity(i);
            }
            else
                Toast.makeText(MainActivity.this, "New Entry Not Inserted",
Toast.LENGTH_SHORT).show();
        }
    }
});
Button back=findViewById(R.id.back);
back.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        Intent i = new Intent(MainActivity.this,MainActivity.class);
        finish();
        startActivity(i);
    }
});
}
});
Button update=findViewById(R.id.update);
update.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        setContentView(R.layout.activity_update);
        EditText name = findViewById(R.id.name);
        EditText salary = findViewById(R.id.salary);
        EditText employee_code = findViewById(R.id.employee_code);

```

```

Button back = findViewById(R.id.back);
back.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        Intent i = new Intent(MainActivity.this, MainActivity.class);
        finish();
        startActivity(i);
    }
});
Button get = findViewById(R.id.get);
get.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        if (TextUtils.isEmpty(employee_code.getText())) {
            Toast.makeText(MainActivity.this, "Enter your employee code ",
Toast.LENGTH_SHORT).show();
        } else {
            String employee_code_value = employee_code.getText().toString();
            Cursor res = db.getUserdata(employee_code_value);
            if (res.getCount() == 0) {
                Toast.makeText(MainActivity.this, "No Entry Exists",
Toast.LENGTH_SHORT).show();
                return;
            } else {
                res.moveToNext();
                String name_value = res.getString(1);
                Double salary_value = res.getDouble(4);
                name.setText(name_value);
                salary.setText(salary_value.toString());
            }
        }
    }
});
Button update = findViewById(R.id.update);
update.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        String name_value = name.getText().toString();
        String employee_code_value = employee_code.getText().toString();
        Double salary_value = Double.parseDouble(String.valueOf(salary.getText()));

        Boolean checkUpdateData = db.updateUserdata(employee_code_value,
name_value, salary_value);
        if (checkUpdateData == true)
            Toast.makeText(MainActivity.this, "Entry Updated",
Toast.LENGTH_SHORT).show();
        else
            Toast.makeText(MainActivity.this, "New Entry Not Updated",
Toast.LENGTH_SHORT).show();
    }
});

```

```

    });
}
});
Button delete = findViewById(R.id.delete);
delete.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        setContentView(R.layout.activity_delete);
        Button back=findViewById(R.id.back);
        back.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent i = new Intent(MainActivity.this,MainActivity.class);
                finish();
                startActivity(i);
            }
        });
    }

    Button delete=findViewById(R.id.delete);
    delete.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            EditText employee_code = findViewById(R.id.employee_code);
            String employee_code_value = employee_code.getText().toString();
            Boolean checkDeleteData = db.deleteUserdata(employee_code_value);
            if (checkDeleteData == true)
                Toast.makeText(MainActivity.this, "Entry Deleted",
Toast.LENGTH_SHORT).show();
            else
                Toast.makeText(MainActivity.this, "Entry Not Deleted",
Toast.LENGTH_SHORT).show();
            employee_code.setText("");
        }
    });

}
});
Button delete_all = findViewById(R.id.delete_all);
delete_all.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        Boolean checkDeleteData = db.deleteAll();
        if (checkDeleteData == true)
            Toast.makeText(MainActivity.this, "Table Deleted",
Toast.LENGTH_SHORT).show();
        else
            Toast.makeText(MainActivity.this, "Table Not Deleted",
Toast.LENGTH_SHORT).show();
    }
});

```



```

Button retrieve = findViewById(R.id.retrieve_id);
retrieve.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        setContentView(R.layout.activity_retrieve);
        EditText name = findViewById(R.id.name);
        EditText department = findViewById(R.id.department);
        EditText gender = findViewById(R.id.gender);
        EditText salary = findViewById(R.id.salary);
        EditText employee_code = findViewById(R.id.employee_code);

        Button back = findViewById(R.id.back);
        back.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent i = new Intent(MainActivity.this, MainActivity.class);
                finish();
                startActivity(i);
            }
        });
        Button view = findViewById(R.id.view);
        view.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if (TextUtils.isEmpty(employee_code.getText())) {
                    Toast.makeText(MainActivity.this, "Enter your employee code ",
Toast.LENGTH_SHORT).show();
                } else {
                    String employee_code_value = employee_code.getText().toString();
                    Cursor res = db.getUserdata(employee_code_value);
                    if (res.getCount() == 0) {
                        Toast.makeText(MainActivity.this, "No Entry Exists",
Toast.LENGTH_SHORT).show();
                        return;
                    } else {
                        res.moveToNext();
                        String name_value = res.getString(1);
                        String gender_value = res.getString(2);
                        String department_value = res.getString(3);
                        Double salary_value = res.getDouble(4);
                        name.setText(name_value);
                        gender.setText(gender_value.toString());
                        department.setText(department_value.toString());
                        salary.setText(salary_value.toString());
                    }
                }
            }
        });
    }
});

```



```

import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
public class DBHelper extends SQLiteOpenHelper {

    public DBHelper(MainActivity context) {
        super(context, "Userdata.db", null, 1);
    }
    @Override
    public void onCreate(SQLiteDatabase db) {
        db.execSQL("CREATE TABLE Userdata(employee_code TEXT primary key,name
TEXT,gender TEXT,department TEXT,salary REAL)");
    }
    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
        db.execSQL("DROP TABLE IF EXISTS Userdata");
    }
    public Boolean insertUserdata(String employee_code,String name,String gender,String
department,Double salary)
    {
        SQLiteDatabase db=this.getWritableDatabase();
        ContentValues cv=new ContentValues();
        cv.put("employee_code",employee_code);
        cv.put("name",name);
        cv.put("gender",gender);
        cv.put("department",department);
        cv.put("salary",salary);
        long result=db.insert("Userdata",null,cv);
        if(result==-1)
            return false;
        else
            return true;
    }
    public Boolean updateUserdata(String employee_code,String name,Double salary)
    {
        SQLiteDatabase db=this.getWritableDatabase();
        ContentValues cv=new ContentValues();
        cv.put("name",name);
        cv.put("salary",salary);
        Cursor cursor=db.rawQuery("SELECT * FROM Userdata WHERE
employee_code=?",new String[] {employee_code});
        if(cursor.getCount()>0) {
            long result = db.update("Userdata", cv, "employee_code=?", new
String[]{employee_code});
            if (result == -1)
                return false;
            else
                return true;
        }else
        {

```

```

        return false;
    }
}
public Boolean deleteUserdata(String employee_code)
{
    SQLiteDatabase db=this.getWritableDatabase();
    ContentValues cv=new ContentValues();

    Cursor cursor=db.rawQuery("SELECT * FROM Userdata WHERE
employee_code=?",new String[] {employee_code});
    if(cursor.getCount()>0) {
        long result = db.delete("Userdata", "employee_code=?", new
String[]{employee_code});
        if (result == -1)
            return false;
        else
            return true;
    }else
    {
        return false;
    }
}
public Cursor getUserdata (String employee_code)
{
    SQLiteDatabase db = this.getWritableDatabase();
    Cursor cursor=db.rawQuery("SELECT * FROM Userdata WHERE
employee_code=?",new String[] {employee_code});
    return cursor;
}
public Cursor getUserdataDept (String department)
{
    SQLiteDatabase db = this.getWritableDatabase();
    Cursor cursor=db.rawQuery("SELECT * FROM Userdata WHERE department=?",new
String[] {department});
    return cursor;
}
public Boolean deleteAll()
{
    SQLiteDatabase db=this.getWritableDatabase();
    db.delete("Userdata",null,null);
    return true;
}
}

```

(activity\_main.xml)

```

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

```

```
xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"
android:layout_height="match_parent"
tools:context=".MainActivity">
<Button
    android:id="@+id/insert"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Insert"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.508"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.104" />
<Button
    android:id="@+id/delete"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Delete"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.377" />
<Button
    android:id="@+id/update"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Update"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.501"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.238" />
<Button
    android:id="@+id/retrieve_id"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Retrieve by id"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.642" />
<Button
    android:id="@+id/delete_all"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
```

```

        android:text="Delete All"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.499" />
<Button
    android:id="@+id/retrieve_dept"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Retrieve by Department"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.52"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.772" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

activity\_insert.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="#DDFFFF"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/salary_label"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Salary"
        android:textColor="#0066CC"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.144"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.632" />
    <TextView
        android:id="@+id/heading"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Insert"
        android:textColor="#336600"
        android:textSize="25sp"
        android:typeface="sans"

```

```

        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.047"/>
<Button
    android:id="@+id/insert"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Insert"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.75"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.832" />
<Button
    android:id="@+id/back"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Back"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.281"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.832" />
<EditText
    android:id="@+id/employee_code"
    android:layout_width="196dp"
    android:layout_height="41dp"
    android:ems="10"
    android:inputType="textPersonName"
    android:text=""
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.827"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.407" />
<TextView
    android:id="@+id/gender_label"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Gender"
    android:textColor="#0066CC"
    android:textStyle="bold"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"

```

```

        app:layout_constraintHorizontal_bias="0.144"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/name_label"
        app:layout_constraintVertical_bias="0.1" />
<TextView
    android:id="@+id/name_label"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Name"
    android:textColor="#0066CC"
    android:textStyle="bold"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.14"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.18" />
<RadioGroup
    android:id="@+id/gender"
    android:layout_width="179dp"
    android:layout_height="52dp"
    android:orientation="horizontal"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.771"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/name"
    app:layout_constraintVertical_bias="0.071">
    <RadioButton
        android:id="@+id/male"
        android:layout_width="93dp"
        android:layout_height="match_parent"
        android:text="Male" />
    <RadioButton
        android:id="@+id/female"
        android:layout_width="89dp"
        android:layout_height="match_parent"
        android:text="Female" />
</RadioGroup>
<EditText
    android:id="@+id/salary"
    android:layout_width="184dp"
    android:layout_height="41dp"
    android:ems="10"
    android:inputType="numberDecimal"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.789"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"

```



```
app:layout_constraintVertical_bias="0.639" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

## App snapshots:

### 1. Front page



### 2. Insert

The 'Insert' form in the 'Ex4\_database' app has a purple header bar with the text 'Ex4\_database'. The form itself has a light blue background. At the top, the word 'Insert' is displayed in bold green text. Below this, there are five input fields, each with a label on the left and a text input on the right: 'Name' with the value 'Sivaguru', 'Gender' with radio buttons for 'Male' (selected) and 'Female', 'Employee Code' with the value '153', 'Department' with a dropdown menu showing 'Software Engineer', and 'Salary' with the value '75000'. At the bottom of the form, there are two purple buttons with white text: 'BACK' and 'INSERT'.

### 3. Update

Ex4\_database

**Update**

Employee Code

153

Name

Sivaguru R

Salary

75000.0

BACK

GET DATA

UPDATE

### 4. Delete

Ex4\_database

**Delete**

Employee Code

180

BACK

DELETE

## 5. View By ID

Ex4\_database

### View By Id

Employee Code	<input type="text" value="153"/>
Name	<input type="text" value="Sivaguru R"/>
Gender	<input type="text" value="Male"/>
Department	<input type="text" value="Software Engineer"/>
Salary	<input type="text" value="75000.0"/>

## 6. View by Department

Ex4\_database

### View By Department

Department	Software Engineer ▼
------------	---------------------

Name : Sivaguru R  
Employee Code : 153  
Gender : Male  
Salary : 75000.0

## Ex-5: Android Application using multi-threading

### Aim:

To implement Android application that uses Multithreading.

### Program:

(MainActivity.java)

```
package com.example.ex6;
```

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

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

```
import android.view.View;
```

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

```
import android.widget.TextView;
```

```
public class MainActivity extends AppCompatActivity {  
    private TextView banner, coord, counter_text;
```

```
    private Button counter;
```

```
    @Override
```

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

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

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

```
        banner = (TextView) findViewById(R.id.banner);
```

```
        counter_text = (TextView) findViewById(R.id.counter);
```

```
        coord = (TextView) findViewById(R.id.coord);
```

```
        counter = (Button) findViewById(R.id.button);
```

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

```
            @Override
```

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

```
                int current = Integer.parseInt(counter_text.getText().toString());
```

```
                current++;
```

```
                counter_text.setText(String.valueOf(current));
```

```
            }));
```

```
//Ways to convert from integer to string and back and forth
```

```
//from integer to string :- Integer.toString(num)
```

```
//String.valueOf(num)
```

```
//from string to int :- Integer.parseInt(str)
```

```
//Integer.parseInt(str)
```

```
/*
```

To create a new thread, either create a class that extends Thread and override void run() function

To start the thread, do thread.start()

Or another way to create thread is,

\*/

```
new Thread(new Runnable() {
    public void run() {
        int i = 0;
        while (i++ < 100) {
            try {
                Thread.sleep(100);
            } catch (InterruptedException e) {
                e.printStackTrace();
            }
            runOnUiThread(new Runnable() {
                @Override
                public void run() {
                    banner.animate().translationXBy(20f);
                    coord.animate().translationXBy(20f);
                    int[] location = new int[2];
                    banner.getLocationOnScreen(location);
                    coord.setText("Location: (" + location[0] + ", " + location[1] + ")");
                }
            });
        }
    }
}).start();
```

```
new Thread(new Runnable() {
    @Override
    public void run() {
        int i=0;
        while(i++ < 100)
        {
            try {
                Thread.sleep(100);
            }
            catch(Exception e)
            {
                e.printStackTrace();
            }

            runOnUiThread(new Runnable() {
                @Override
                public void run() {
                    banner.animate().rotationXBy(45);
                }
            });
        }
    }
}).start();
```

```

        }
    });
}
}
}).start();

}
}

//UI changes can only be done by the main thread
//if a background thread has to update the UI then inside the thread
//It has to create a runOnUiThread(new Runnable(){
//
//    void run(){
//
//    }
//
//}

//For animating - translateXBy 20
//To get the coordinates use .. getLocation.onScreen();

```

(activity\_main.xml)

```

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

```

```

<TextView
    android:id="@+id/banner"
    android:layout_width="133dp"
    android:layout_height="45dp"
    android:layout_marginStart="16dp"
    android:layout_marginTop="204dp"
    android:background="#FFEB3B"
    android:backgroundTint="#FFC107"
    android:text="Sample Text"
    android:textSize="20sp"
    android:textStyle="bold"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

```

```

<TextView
    android:id="@+id/coord"
    android:layout_width="133dp"
    android:layout_height="45dp"
    android:layout_marginStart="16dp"
    android:layout_marginTop="260dp"
    android:text="TextView"
    app:layout_constraintStart_toStartOf="parent"

```

```

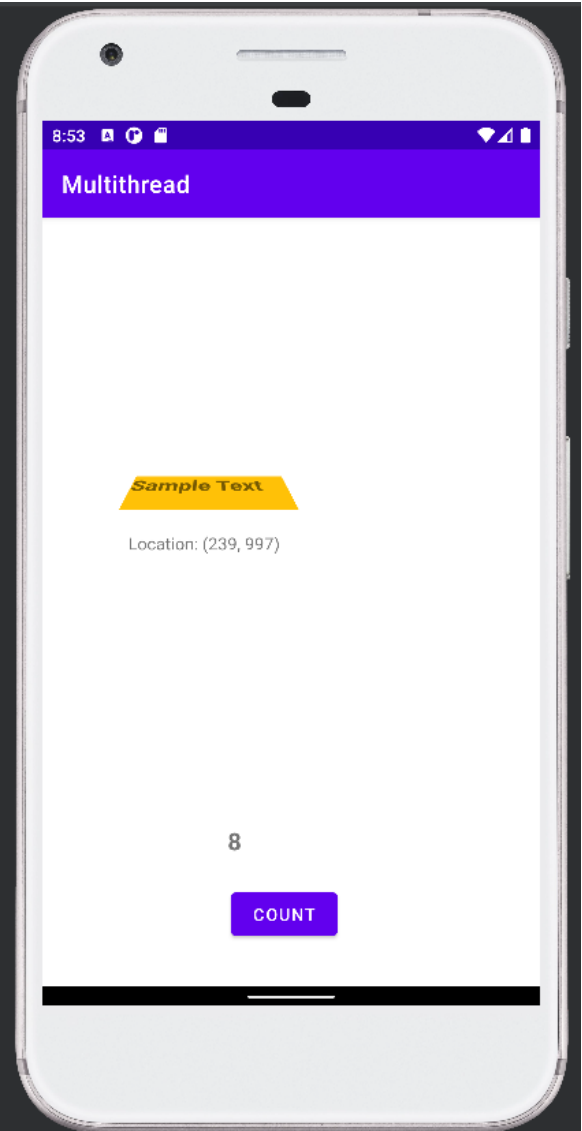
        app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="156dp"
    android:layout_marginTop="552dp"
    android:text="Count"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

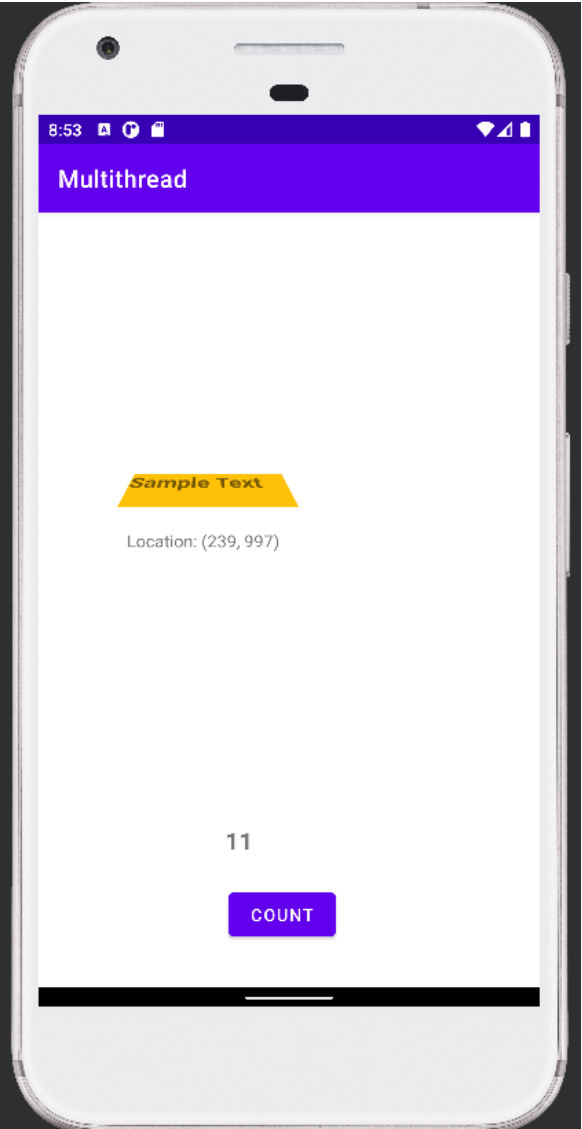
<TextView
    android:id="@+id/counter"
    android:layout_width="105dp"
    android:layout_height="35dp"
    android:layout_marginStart="153dp"
    android:layout_marginTop="502dp"
    android:text="1"
    android:textSize="20sp"
    android:textStyle="bold"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

### **App snapshots:**







## Ex-6 : SD Card

### Aim:

To develop an android application that read from and write data to the SD Card.

### Program:

(AndroidManifest.xml)

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.sdcard">
    <uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE"/>
    <uses-permission
android:name="android.permission.WRITE_EXTERNAL_STORAGE"/>

    <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.Sdcard">
        <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>
```

(MainActivity.java)

```
package com.example.sdcard;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.os.Environment;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;

import java.io.BufferedReader;
import java.io.File;
```

```

import java.io.FileNotFoundException;
import java.io.FileOutputStream;
import java.io.FileReader;
import java.io.IOException;

public class MainActivity extends AppCompatActivity {

    Button read,write;
    TextView ReadBox;
    EditText WriteBox;
    String fileName,filePath,fileContents;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        read =findViewById(R.id.Read);
        write = findViewById(R.id.Write);
        ReadBox = findViewById(R.id.ReadBox);
        WriteBox = findViewById(R.id.WriteBox);

        fileName ="myFile.txt";
        filePath = "FileDir";
        if(!isExternalStorageAvailableRW()){
            write.setEnabled(false);
        }
        write.setOnClickListener(view -> {
            ReadBox.setText("");
            fileContents = WriteBox.getText().toString().trim();
            if(!fileContents.equals("")) {
                //Get external files dir
                File myExtFile = new File(getExternalFilesDir(filePath), fileName);
                try {
                    FileOutputStream fos = new FileOutputStream(myExtFile);
                    fos.write(fileContents.getBytes());
                }
                catch (FileNotFoundException e){
                    e.printStackTrace();
                }
                catch (IOException e){
                    e.printStackTrace();
                }
                WriteBox.setText("");
                Toast.makeText(MainActivity.this, "TextFile written on SD Card",
Toast.LENGTH_SHORT).show();
            }
            else{
                Toast.makeText(MainActivity.this, "Input Field Empty",
Toast.LENGTH_SHORT).show();
            }
        });
    }
}

```

```

read.setOnClickListener(view -> {
    FileReader fr;
    File myExtFile = new File(getExternalFilesDir(filePath),fileName);
    StringBuilder sb = new StringBuilder();
    String contents = "";
    try{
        fr = new FileReader(myExtFile);
        BufferedReader br = new BufferedReader(fr);
        String line = br.readLine();
        while(line!=null){
            contents += line;
            line = br.readLine();
        }
        ReadBox.setText(contents);
    }
    catch (FileNotFoundException e){
        e.printStackTrace();
    }
    catch (IOException e){
        e.printStackTrace();
    }
    });
}

private boolean isExternalStorageAvailableRW() {
    String ExternalStorageState = Environment.getExternalStorageState();
    if(ExternalStorageState.equals(Environment.MEDIA_MOUNTED)){
        return true;
    }
    return false;
}
}

(activity_main.xml)
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    android:gravity="center"
    android:orientation="vertical"
    android:padding="16dp">

    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Type the text here to save on SD Card"

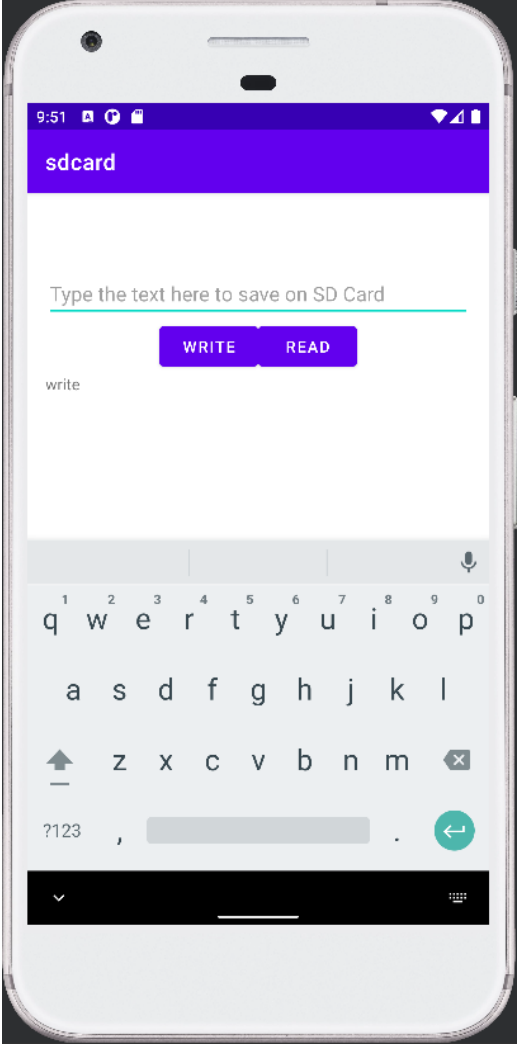
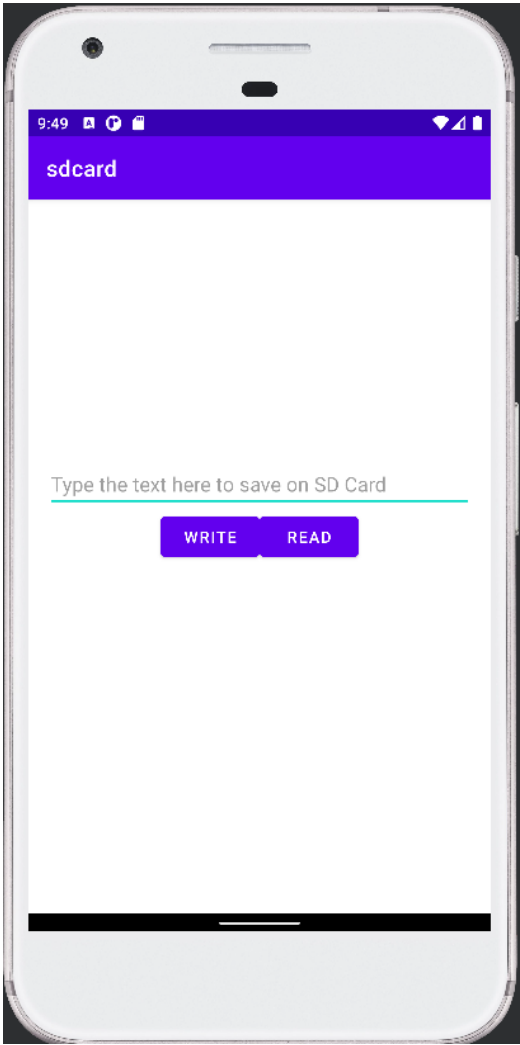
```

```
        android:id="@+id/WriteBox"
    />
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:gravity="center"
>

</LinearLayout>
<ScrollView
    android:layout_width="match_parent"
    android:layout_height="80dp"
>
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/ReadBox"
        android:text=""/>

</ScrollView>
</LinearLayout>
```

**App snapshots:**



## Ex-7 : Android Location Tracker Application

### Aim:

To implement Android Application to display the user's current location in terms of Latitude and Longitude.

### Program:

#### (AndroidManifest.xml)

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.gps">
    <uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION"
/>
    <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportRtl="true"
        android:theme="@style/Theme.Gps">
        <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>
```

#### (MainActivity.java)

```
package com.example.gps;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;

import android.Manifest;
import android.annotation.SuppressLint;
import android.location.Location;
import android.location.LocationListener;
import android.location.LocationManager;
import android.os.Bundle;
import android.widget.Button;
import android.widget.TextView;
```

```

public class MainActivity extends AppCompatActivity {
    TextView lat;
    TextView lon;
    Button click;
    LocationManager locMg;
    LocationListener lis;

    @SuppressWarnings("MissingPermission")
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        lat = (TextView) findViewById(R.id.lat);
        lon = (TextView) findViewById(R.id.lon);
        click = (Button) findViewById(R.id.gps);
        locMg = (LocationManager) getSystemService(LOCATION_SERVICE);
        lis = new LocationListener() {
            @Override
            public void onLocationChanged(@NonNull Location location) {
                lat.setText(""+location.getLatitude());
                lon.setText(""+location.getLongitude());
            }
        };
        ActivityCompat.requestPermissions(this, new
String[]{Manifest.permission.ACCESS_FINE_LOCATION}, 1);
        click.setOnClickListener(view -> {
            locMg.requestLocationUpdates("gps", 5000, 0, lis);
        });
    }
}

```

(activity\_main.xml)

```

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

    <TextView
        android:id="@+id/textView"
        android:layout_width="98dp"
        android:layout_height="40dp"
        android:layout_marginStart="38dp"
        android:layout_marginLeft="38dp"

```



```
android:layout_marginTop="176dp"
android:layout_marginEnd="300dp"
android:layout_marginRight="300dp"
android:text="latitude"
android:textColor="#090808"
android:textSize="24sp"
android:textStyle="bold"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />
```

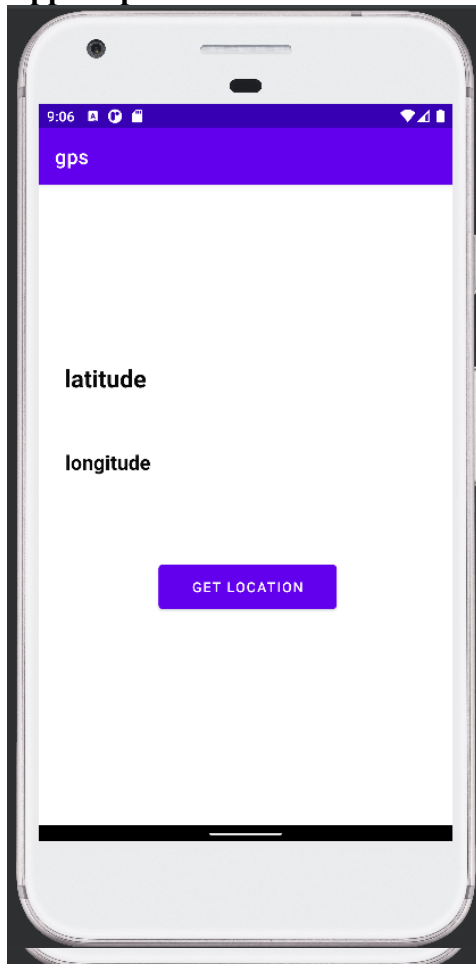
```
<TextView
    android:id="@+id/textView3"
    android:layout_width="99dp"
    android:layout_height="38dp"
    android:layout_marginStart="26dp"
    android:layout_marginLeft="26dp"
    android:layout_marginTop="46dp"
    android:layout_marginEnd="286dp"
    android:layout_marginRight="286dp"
    android:text="longitude"
    android:textColor="#090808"
    android:textSize="20sp"
    android:textStyle="bold"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/textView" />
```

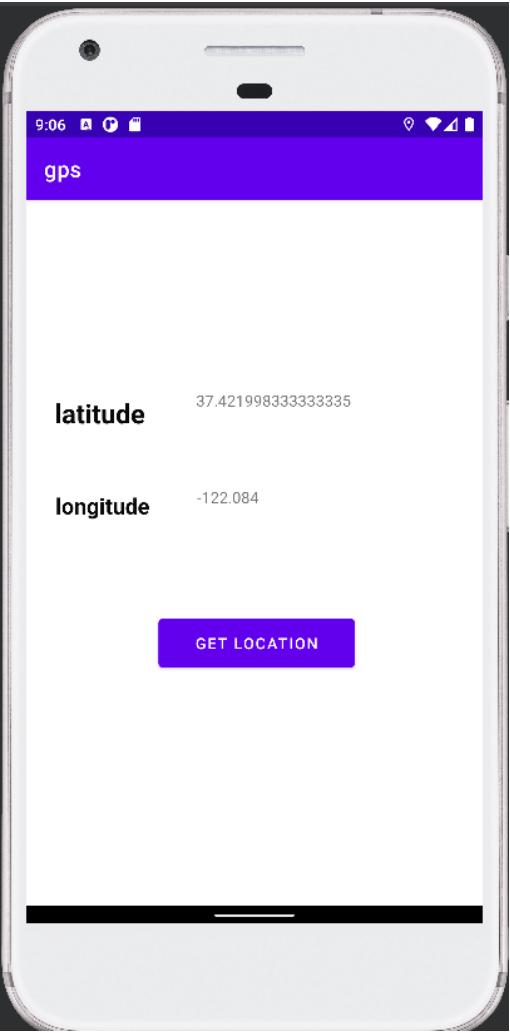
```
<TextView
    android:id="@+id/lon"
    android:layout_width="251dp"
    android:layout_height="42dp"
    android:layout_marginStart="28dp"
    android:layout_marginLeft="28dp"
    android:layout_marginTop="42dp"
    android:layout_marginEnd="6dp"
    android:layout_marginRight="6dp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toEndOf="@+id/textView3"
    app:layout_constraintTop_toBottomOf="@+id/lat" />
```

```
<Button
    android:id="@+id/gps"
    android:layout_width="177dp"
    android:layout_height="56dp"
    android:layout_marginStart="119dp"
    android:layout_marginLeft="119dp"
    android:layout_marginTop="71dp"
    android:layout_marginEnd="115dp"
```

```
        android:layout_marginRight="115dp"
        android:text="GET LOCATION"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView3" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

### App snapshots:





## Ex-8 : Sending SMS and Notification

### Aim:

To develop an android app that sends SMS and creates an alert upon receiving the SMS..

### Program:

(AndroidManifest.xml)

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

    <uses-permission android:name="android.permission.READ_SMS"/>
    <uses-permission android:name="android.permission.RECEIVE_SMS"/>
    <uses-permission android:name="android.permission.SEND_SMS"/>
    <uses-permission android:name="android.permission.READ_PHONE_STATE"/>

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportRtl="true"
        android:theme="@style/Theme.SMS">
        <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>
```

(MainActivity.java)

```
package com.example.sms;

import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import android.app.PendingIntent;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.content.IntentFilter;
import android.os.Bundle;
```

```

import android.telephony.SmsManager;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;

import static android.Manifest.permission.READ_PHONE_STATE;
import static android.Manifest.permission.READ_SMS;
import static android.Manifest.permission.RECEIVE_SMS;
import static android.Manifest.permission.SEND_SMS;
public class MainActivity extends AppCompatActivity {
    EditText contact_no,user_message;
    Button send;
    TextView msgs;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        ActivityCompat.requestPermissions(MainActivity.this,new
            String[]{READ_SMS,RECEIVE_SMS,SEND_SMS,READ_PHONE_STATE},1);
        contact_no = findViewById(R.id.contact_number);
        user_message = findViewById(R.id.user_message);
        send = findViewById(R.id.sendButton);
        send.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                sendMsg(contact_no.getText().toString(), user_message.getText().toString());
            }
        });

        void sendMsg(String number, String message)
        {
            SmsManager manager = SmsManager.getDefault();
            manager.sendTextMessage(number, null, message, null, null);
        }
    }
}

```

(activity\_main.xml)

```

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

```

```
tools:context=".MainActivity">
```

```
<Button
    android:id="@+id/sendButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="128dp"
    android:layout_marginTop="444dp"
    android:backgroundTint="#FF5722"
    android:text="Send SMS"
    app:icon="@android:drawable/ic_menu_send"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
```

```
<TextView
    android:id="@+id/contact_number_text"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="28dp"
    android:layout_marginTop="264dp"
    android:text="Contact Number"
    android:textSize="18sp"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
```

```
<EditText
    android:id="@+id/contact_number"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="176dp"
    android:layout_marginTop="244dp"
    android:ems="10"
    android:hint="Number"
    android:inputType="number|textPersonName"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
```

```
<EditText
    android:id="@+id/user_message"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="176dp"
    android:layout_marginTop="308dp"
    android:ems="10"
    android:gravity="start|top"
    android:hint="Message"
    android:inputType="textMultiLine"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

## App snapshots:

