

1. Design an application that contains Phone Contacts in vertical linear manner. Selected contact appears at the top of the list with a large italicized font and a blue background.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto"
xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"
android:layout_height="match_parent"
android:backgroundTint="#F48236"
tools:context=".MainActivity">

<TextView
    android:id="@+id/textView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Hello World!"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

<ListView
    android:id="@+id/ListView"
    android:layout_width="330dp"
    android:layout_height="480dp"
    android:background="#FF7A22"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/pc" />

<TextView
    android:id="@+id/pc"
    android:layout_width="330dp"
    android:layout_height="81dp"
    android:layout_marginBottom="152dp"
    android:background="#FFD500"
    android:text="Divya"
    android:textAppearance="@style/TextAppearance.AppCompat.Display1"
    app:layout_constraintBottom_toTopOf="@+id/textView"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

String.xml

```
<resources>
    <string name="app_name">Shruthi_Lab1</string>
    <string name="name">Selected Phone Contacts Will DisplayHere</string>
    <string-array name="li_contact">
        <item>Shruthi 8861041307</item>
```

```

        <item>Usha 9901458843</item>
    <item>Monika 9141619225</item>
    <item>Nishchitha 9535193464</item>
        <item>Shruthi 8861041307</item>
        <item>Usha 9901458843</item>
        <item>Monika 9141619225</item>
        <item>Nishchitha 9535193464</item>
    </string-array>
</resources>

```

Mainactivity.java

```

package com.example.Shruthi_Lab1;

import androidx.appcompat.app.AppCompatActivity;
import android.annotation.SuppressLint;
import android.graphics.Typeface;
import android.os.Bundle;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {
    ListView lv;

    TextView tv;
    String[] li;
    @SuppressLint({"MissingInflaterId", "MissingInflatedId"})

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

        li = getResources().getStringArray(R.array.li_contact);
        lv = findViewById(R.id.ListView);
        tv = findViewById(R.id.pc);
        final ArrayAdapter<String> adapter = new ArrayAdapter(
            this, android.R.layout.simple_list_item_1, android.R.id.text1, li);
        lv.setAdapter(adapter);
        lv.setOnItemClickListener(((adapterView, view, i, l) -> {
            String value = adapter.getItem(i);
            tv.setText(value);
            tv.setTypeface( null, Typeface.ITALIC);
        }));
    }
}

```

2.Create an application that uses Layout Managers and Event Listeners.

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="403dp"
    android:layout_height="50dp"
    android:background="#5709E1"
    android:gravity="center"
    android:text="Event Listeners"
    android:textSize="34sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.485"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.144"
    tools:ignore="HardcodedText,TextContrastCheck,TextSizeCheck" />
```

```
<TextView
    android:id="@+id/txt_disp"
    android:layout_width="349dp"
    android:layout_height="61dp"
    android:background="#4A70FB"
    android:gravity="center"
    android:text="SIT MCA"
    android:textSize="34sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.437"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.312"
    tools:ignore="HardcodedText,TextContrastCheck,TextSizeCheck" />
```

```
<Button
    android:id="@+id/butt_convert"
    android:layout_width="279dp"
    android:layout_height="61dp"
    android:backgroundTint="#6FE81A"
    android:drawableTint="#2166DD"
    android:text="Convert to Italic"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.468"
    app:strokeColor="#00BC2121"
    tools:ignore="HardcodedText,TextContrastCheck,TextSizeCheck" />
```

```
<TextView
    android:id="@+id/textView3"
    android:layout_width="315dp"
    android:layout_height="68dp"
```

```

    android:background="#5A6FE3"
    android:gravity="center"
    android:text="Department"
    android:textSize="34sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.63"
    tools:ignore="HardcodedText,TextContrastCheck" />

```

```

<Spinner
    android:id="@+id/disp_spinner"
    android:layout_width="338dp"
    android:layout_height="68dp"
    android:background="#F8EECF"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.497"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.815"
    tools:ignore="MissingConstraints,SpeakableTextPresentCheck,VisualLintBounds" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

String.xml

```

<resources>

    <string name="app_name">shruthi_lab2</string>
    <string name="EV">Event Listener</string>
    <string name="Display_Name">SIT MCA</string>
    <string name="butt_value">Convert to Italic</string>
    <string name="Dept">Department</string>
    <string name="Spinner_value">Select the Department</string>
    <string-array name="deparment">
        <item>Select your Department</item>
        <item>MCA</item>
        <item>MBA</item>
        <item>BE</item>
    </string-array>
</resources>

```

Mainactivity.java

```

package com.example.shruthi_lab2;

import androidx.appcompat.app.AppCompatActivity;
import androidx.recyclerview.widget.RecyclerView;

import android.annotation.SuppressLint;
import android.graphics.Typeface;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;

```

```

import android.widget.Button;
import android.widget.Spinner;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    TextView tvview;
    Button btn_convert;
    Spinner s1;

    String [] dept;

    @SuppressWarnings("MissingInflatedId")
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        btn_convert=findViewById(R.id.butt_convert);
        dept=getResources().getStringArray(R.array.deparment);
        Spinner s1=findViewById(R.id.disp_spinner);
        ArrayAdapter<String> adapter=new
ArrayAdapter<>(this,android.R.layout.simple_dropdown_item_1line,dept);
        s1.setAdapter(adapter);
        s1.setOnItemSelectedListener(new AdapterView.OnItemSelectedListener()
        {
            @Override
            public void onItemSelected(AdapterView <?> adapterView, View view, int i, long l)
            {
                int index=adapterView.getSelectedItemPosition();
                if(index>0)
                {
                    Toast.makeText(getBaseContext(),"You Have Selected" +dept[index],
Toast.LENGTH_SHORT).show();
                }
            }
            @Override
            public void onNothingSelected(AdapterView<?> adapterView){

            }
        });

        btn_convert.setOnClickListener(new View.OnClickListener()
        {
            @Override
            public void onClick(View view) {
                tvview=findViewById(R.id.txt_disp);
                tvview.setTypeface(null, Typeface.BOLD_ITALIC);
            }
        });
    }
}

```

3. Develop a standard calculator application to perform basic calculations like addition, subtraction, multiplication and division.

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/txt_num_1"
        android:layout_width="147dp"
        android:layout_height="53dp"
        android:gravity="center"
        android:text="Second Number"
        android:textSize="16sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.094"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.31"
        tools:ignore="HardcodedText,TextSizeCheck" />

    <TextView
        android:id="@+id/textView"
        android:layout_width="259dp"
        android:layout_height="44dp"
        android:background="#3F51B5"
        android:gravity="center"
        android:text="Basic Calculator"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.064"
        tools:ignore="HardcodedText,TextContrastCheck,TextSizeCheck" />

    <TextView
        android:id="@+id/txt_num"
        android:layout_width="144dp"
        android:layout_height="51dp"
        android:layout_marginTop="124dp"
        android:gravity="center"
        android:text="First Number"
        android:textSize="16sp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.104"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        tools:ignore="HardcodedText,MissingConstraints" />
```

```
<EditText
    android:id="@+id/edit_first_num"
    android:layout_width="165dp"
    android:layout_height="42dp"
    android:ems="10"
    android:inputType="numberDecimal"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.825"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.193"
```

```
tools:ignore="Autofill,LabelFor,MissingConstraints,SpeakableTextPresentCheck,TouchTargetSizeCheck"
/>
```

```
<EditText
    android:id="@+id/edit_num2"
    android:layout_width="162dp"
    android:layout_height="44dp"
    android:ems="10"
    android:inputType="numberDecimal"
    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="0.318"
```

```
tools:ignore="Autofill,LabelFor,MissingConstraints,SpeakableTextPresentCheck,TouchTargetSizeCheck"
/>
```

```
<TextView
    android:id="@+id/txt_result"
    android:layout_width="283dp"
    android:layout_height="48dp"
    android:background="#2196F3"
    android:gravity="center"
    android:text="Result will be displayed here"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.445"
    tools:ignore="HardcodedText,TextSizeCheck" />
```

```
<Button
    android:id="@+id/btt_add"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:backgroundTint="#3F51B5"
    android:onClick="add"
    android:text="Addition"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.151"
```

```
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/txt_result"
app:layout_constraintVertical_bias="0.217"
tools:ignore="HardcodedText" />
```

<Button

```
android:id="@+id/btt_sub"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:backgroundTint="#3F51B5"
android:onClick="sub"
android:text="Subtraction"
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="0.62"
tools:ignore="HardcodedText" />
```

<Button

```
android:id="@+id/btt_mul"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:backgroundTint="#3F51B5"
android:onClick="mul"
android:text="Multiplication"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.173"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.751"
tools:ignore="HardcodedText" />
```

<Button

```
android:id="@+id/btt_div"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:backgroundTint="#3F51B5"
android:onClick="div"
android:text="Division"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.794"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.751"
tools:ignore="HardcodedText" />
```

<Button

```
android:id="@+id/btt_clr"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:backgroundTint="#3F51B5"
android:onClick="clear_data"
android:text="Clear"
app:layout_constraintBottom_toBottomOf="parent"
```



```

        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.447"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.891"
        tools:ignore="HardcodedText" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

MainActivity.java

```

package com.example.shruthi_lab3;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

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

    public void add(View view){
        float num1; float num2; float sum;
        EditText t1=findViewById(R.id.edit_first_num);
        EditText t2=findViewById(R.id.edit_num2);
        TextView t3=findViewById(R.id.txt_result);
        t3.setText("Result");
        if(t1.length()==0 || t2.length()==0)
            Toast.makeText(this, "Enter the values for number1 or number2",
Toast.LENGTH_SHORT).show();
        else{
            try{
                num1=Float.parseFloat(t1.getText().toString());
                num2=Float.parseFloat(t2.getText().toString());
                sum=num1+num2;
                t3.setText("Result:"+Float.toString(sum));
            }
            catch(NumberFormatException e)
            {
                Toast toast=Toast.makeText(getApplicationContext(),"Enter number
only",Toast.LENGTH_LONG);
                toast.show();
            }
        }
    }

    public void sub(View view){
        float num1; float num2; float sum;
        EditText t1=findViewById(R.id.edit_first_num);
        EditText t2=findViewById(R.id.edit_num2);
        TextView t3=findViewById(R.id.txt_result);
        t3.setText("Result");
    }
}

```

```

        if(t1.length()==0 || t2.length()==0)
            Toast.makeText(this, "Enter the values for number1 or number2",
Toast.LENGTH_SHORT).show();
        else{
            try{
                num1=Float.parseFloat(t1.getText().toString());
                num2=Float.parseFloat(t2.getText().toString());
                sum=num1-num2;
                t3.setText("Result:"+Float.toString(sum));
            }
            catch(NumberFormatException e)
            {
                Toast toast=Toast.makeText(getApplicationContext(),"Enter number
only",Toast.LENGTH_LONG);
                toast.show();
            }
        }
    }

    public void mul(View view){
        float num1; float num2; float sum;
        EditText t1=findViewById(R.id.edit_first_num);
        EditText t2=findViewById(R.id.edit_num2);
        TextView t3=findViewById(R.id.txt_result);
        t3.setText("Result");
        if(t1.length()==0 || t2.length()==0)
            Toast.makeText(this, "Enter the values for number1 or number2",
Toast.LENGTH_SHORT).show();
        else{
            try{
                num1=Float.parseFloat(t1.getText().toString());
                num2=Float.parseFloat(t2.getText().toString());
                sum=num1*num2;
                t3.setText("Result:"+Float.toString(sum));
            }
            catch(NumberFormatException e)
            {
                Toast toast=Toast.makeText(getApplicationContext(),"Enter number
only",Toast.LENGTH_LONG);
                toast.show();
            }
        }
    }

    public void div(View view){
        float num1; float num2; float sum;
        EditText t1=findViewById(R.id.edit_first_num);
        EditText t2=findViewById(R.id.edit_num2);
        TextView t3=findViewById(R.id.txt_result);
        t3.setText("Result");
        if(t1.length()==0 || t2.length()==0)
            Toast.makeText(this, "Enter the values for number1 or number2",
Toast.LENGTH_SHORT).show();
        else{
            try{
                num1=Float.parseFloat(t1.getText().toString());
                num2=Float.parseFloat(t2.getText().toString());
                if(num2!=0){
                    sum=num1/num2;
                    t3.setText("Result:"+Float.toString(sum));
                }
            }
            catch(NumberFormatException e)
            {
                Toast toast=Toast.makeText(getApplicationContext(),"Enter number
only",Toast.LENGTH_LONG);
                toast.show();
            }
        }
    }
}

```

```

        }
        else
            Toast.makeText(this, "Enter the second number other than 0",
Toast.LENGTH_SHORT).show();
        }
        catch(NumberFormatException e)
        {
            Toast toast=Toast.makeText(getApplicationContext(),"Enter number
only",Toast.LENGTH_LONG);
            toast.show();
        }
    }
}
public void clear_data(View v)
{
    Float num1,num2,sum;
    EditText t1=findViewById(R.id.edit_first_num);
    EditText t2=findViewById(R.id.edit_num2);
    TextView t3=findViewById(R.id.txt_result);
    t1.setText("");
    t1.setSelection(0);
    t2.setText("");
    t3.setText("Result");
}
}

```

4.Develop an application that draws basic graphical primitives (rectangle, circle) on the screen.

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="338dp"
        android:layout_height="55dp"
        android:background="#2196F3"
        android:gravity="center"
        android:text="Drawing the Shapes"
        android:textSize="34sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.493"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.087"
    />
</androidx.constraintlayout.widget.ConstraintLayout>

```

```
tools:ignore="HardcodedText,TextSizeCheck" />
```

```
<ImageView  
    android:id="@+id/ivg"  
    android:layout_width="214dp"  
    android:layout_height="159dp"  
    android:contentDescription="TODO"  
    app:layout_constraintBottom_toBottomOf="parent"  
    app:layout_constraintEnd_toEndOf="parent"  
    app:layout_constraintStart_toStartOf="parent"  
    app:layout_constraintTop_toTopOf="parent"  
    app:layout_constraintVertical_bias="0.303"  
    tools:ignore="ContentDescription,HardcodedText,ImageContrastCheck"  
    tools:srcCompat="@tools:sample/avatars" />
```

```
<Button  
    android:id="@+id/btt_rect"  
    android:layout_width="127dp"  
    android:layout_height="56dp"  
    android:onClick="Draw_shru"  
    android:text="Rectangle"  
    app:layout_constraintBottom_toBottomOf="parent"  
    app:layout_constraintEnd_toEndOf="parent"  
    app:layout_constraintHorizontal_bias="0.167"  
    app:layout_constraintStart_toStartOf="parent"  
    app:layout_constraintTop_toTopOf="parent"  
    app:layout_constraintVertical_bias="0.569"  
    tools:ignore="HardcodedText,TextSizeCheck,VisualLintOverlap" />
```

```
<Button  
    android:id="@+id/btt_circle"  
    android:layout_width="127dp"  
    android:layout_height="54dp"  
    android:layout_marginStart="248dp"  
    android:onClick="Draw_shru"  
    android:text="Circle"  
    app:layout_constraintBottom_toBottomOf="parent"  
    app:layout_constraintStart_toStartOf="parent"  
    app:layout_constraintTop_toTopOf="parent"  
    app:layout_constraintVertical_bias="0.569"  
    tools:ignore="HardcodedText" />
```

```
<Button  
    android:id="@+id/btt_line"  
    android:layout_width="127dp"  
    android:layout_height="54dp"  
    android:onClick="Draw_shru"  
    android:text="Line"  
    app:layout_constraintBottom_toBottomOf="parent"  
    app:layout_constraintEnd_toEndOf="parent"  
    app:layout_constraintHorizontal_bias="0.167"  
    app:layout_constraintStart_toStartOf="parent"  
    app:layout_constraintTop_toTopOf="parent"  
    app:layout_constraintVertical_bias="0.721"  
    tools:ignore="HardcodedText" />
```

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

```

    android:layout_width="120dp"
    android:layout_height="59dp"
    android:onClick="Draw_shru"
    android:text="Square"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.868"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.722"
    tools:ignore="HardcodedText" />

```

```

<Button
    android:id="@+id/btt_reset"
    android:layout_width="129dp"
    android:layout_height="58dp"
    android:onClick="Draw_shru"
    android:text="Clear"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.167"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.893"
    tools:ignore="HardcodedText" />

```

MainActivity.java

```

package com.chandru.shruthi_lab4;

import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;
import android.graphics.Bitmap;
import android.graphics.Canvas;
import android.graphics.Color;
import android.graphics.Paint;
import android.graphics.Rect;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    ImageView iv;
    Button button,button1,button2,button3,button4,button5;
    Bitmap bitmap;
    Canvas canvas;
    Paint paint;
    Rect rect;
    int CanvasRadius;
    int CanvasPadding=7;

    @SuppressWarnings("MissingInflatedId")
    @Override
    protected void onCreate(Bundle savedInstanceState) {

```

```

super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);

iv=(ImageView)findViewById(R.id.ivg);
button=(Button)findViewById(R.id.btt_rect);
button1=(Button)findViewById(R.id.btt_circle);
button2=(Button)findViewById(R.id.btt_line);
button3=(Button)findViewById(R.id.btt_square);
button4=(Button)findViewById(R.id.btt_reset);
button5=(Button)findViewById(R.id.btt_exit);
}
public void Draw_shru(View view)
{
    bitmap=Bitmap.createBitmap(400,250,Bitmap.Config.RGB_565);
    canvas=new Canvas(bitmap);
    canvas.drawColor(Color.CYAN);
    paint=new Paint();
    paint.setStyle(Paint.Style.FILL_AND_STROKE);
    paint.setColor(Color.BLUE);
    paint.setAntiAlias(true);

    if(view == button)
    {
        rect=new Rect(55,55,350,200);
        canvas.drawRect(rect,paint);
        iv.setImageBitmap(bitmap);
        Toast toast=Toast.makeText(getApplicationContext(),"Rectangle Image Drawn",
Toast.LENGTH_LONG);
        toast.show();
    }
    if(view == button1)
    {
        CanvasRadius=Math.min(canvas.getWidth(),canvas.getHeight())/2;
        canvas.drawCircle(canvas.getWidth()/2,canvas.getHeight()/2,CanvasRadius-
CanvasPadding,paint);
        iv.setImageBitmap(bitmap);
        Toast toast=Toast.makeText(getApplicationContext(),"Circle Image Drawn",
Toast.LENGTH_LONG);
        toast.show();
    }
    if(view == button2)
    {
        canvas.drawLine(200,55,200,300,paint);
        iv.setImageBitmap(bitmap);
        Toast toast=Toast.makeText(getApplicationContext(),"Straight Line Drawn",
Toast.LENGTH_LONG);
        toast.show();
    }
    if(view == button3)
    {
        rect=new Rect(55,55,200,200);
        canvas.drawRect(rect,paint);
        iv.setImageBitmap(bitmap);
        Toast toast=Toast.makeText(getApplicationContext(),"Square Drawn", Toast.LENGTH_LONG);
        toast.show();
    }
    if(view == button4)
    {

```

```

        iv.setImageDrawable(null);
    }
    if(view == button5)
    {
        finish();
    }
}
}

```

5. Build a mobile application that create, save, update and delete data in a SQL lite/cloud database connectivity.

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/button_clear"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:backgroundTint="#3F51B5"
    android:text="Clear"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.448"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="@+id/button_add"
    app:layout_constraintVertical_bias="0.414" />

```

```

<Button
    android:id="@+id/button_view"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:backgroundTint="#3F51B5"
    android:text="View All"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.733"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.633" />

```

```

<Button
    android:id="@+id/button_delete"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:backgroundTint="#3F51B5"
    android:text="Delete"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"

```

```
app:layout_constraintHorizontal_bias="0.163"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.633" />
```

<Button

```
android:id="@+id/button_update"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:backgroundTint="#3F51B5"
android:text="Update"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.707"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.523" />
```

<EditText

```
android:id="@+id/ed_surname"
android:layout_width="190dp"
android:layout_height="52dp"
android:ems="10"
android:inputType="textPersonName"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.864"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.285"
tools:ignore="SpeakableTextPresentCheck" />
```

<TextView

```
android:id="@+id/textView"
android:layout_width="301dp"
android:layout_height="49dp"
android:background="#2196F3"
android:gravity="center"
android:text="DataBase Connectivity"
android:textSize="24sp"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.498"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.058" />
```

<TextView

```
android:id="@+id/txt_name"
android:layout_width="140dp"
android:layout_height="52dp"
android:text="Name"
android:textSize="24sp"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.101"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
```



```
app:layout_constraintVertical_bias="0.189" />
```

```
<TextView
```

```
    android:id="@+id/txt_surname"  
    android:layout_width="140dp"  
    android:layout_height="53dp"  
    android:text="SurName"  
    android:textSize="24sp"  
    app:layout_constraintBottom_toBottomOf="parent"  
    app:layout_constraintEnd_toEndOf="parent"  
    app:layout_constraintHorizontal_bias="0.099"  
    app:layout_constraintStart_toStartOf="parent"  
    app:layout_constraintTop_toTopOf="parent"  
    app:layout_constraintVertical_bias="0.286" />
```

```
<TextView
```

```
    android:id="@+id/txt_id"  
    android:layout_width="136dp"  
    android:layout_height="56dp"  
    android:text="ID"  
    android:textSize="24sp"  
    app:layout_constraintBottom_toBottomOf="parent"  
    app:layout_constraintEnd_toEndOf="parent"  
    app:layout_constraintHorizontal_bias="0.098"  
    app:layout_constraintStart_toStartOf="parent"  
    app:layout_constraintTop_toTopOf="parent"  
    app:layout_constraintVertical_bias="0.392" />
```

```
<EditText
```

```
    android:id="@+id/ed_name"  
    android:layout_width="190dp"  
    android:layout_height="52dp"  
    android:ems="10"  
    android:inputType="textPersonName"  
    app:layout_constraintBottom_toBottomOf="parent"  
    app:layout_constraintEnd_toEndOf="parent"  
    app:layout_constraintHorizontal_bias="0.864"  
    app:layout_constraintStart_toStartOf="parent"  
    app:layout_constraintTop_toTopOf="parent"  
    app:layout_constraintVertical_bias="0.188"  
    tools:ignore="SpeakableTextPresentCheck" />
```

```
<EditText
```

```
    android:id="@+id/ed_id"  
    android:layout_width="191dp"  
    android:layout_height="52dp"  
    android:ems="10"  
    android:inputType="number"  
    app:layout_constraintBottom_toBottomOf="parent"  
    app:layout_constraintEnd_toEndOf="parent"  
    app:layout_constraintHorizontal_bias="0.868"  
    app:layout_constraintStart_toStartOf="parent"  
    app:layout_constraintTop_toTopOf="parent"  
    app:layout_constraintVertical_bias="0.396"  
    tools:ignore="SpeakableTextPresentCheck" />
```

```
<Button
```

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

```

        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:backgroundTint="#3F51B5"
        android:text="Add Data"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.173"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.523" />

<TextView
    android:id="@+id/txt_data_display"
    android:layout_width="343dp"
    android:layout_height="144dp"
    android:background="#2196F3"
    android:text="The result will be displayed here"
    android:textSize="24sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.505"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.974" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

DBHelper.java

```

package com.example.shruthi_lab5;

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

import androidx.annotation.Nullable;

public class DBHelper extends SQLiteOpenHelper {

    public static final String
    database_name="student.db",tablename="student_table",col_1="id",col_2="Name",col_3="Surname";

    public DBHelper(@Nullable Context context)
    {
        super(context,database_name,null,1);
    }

    @Override
    public void onCreate(SQLiteDatabase db) {
        String query=("Create Table "+tablename+"(Id Integer Primary key Autoincrement,Name
        Text,Surname Text)");
        db.execSQL(query);
    }

    @Override
    public void onUpgrade(SQLiteDatabase db, int i, int i1) {
        db.execSQL("Drop Table If Exists "+tablename);
    }
}

```

```

    onCreate(db);
}

public boolean insertData(String id,String Name,String Surname)
{
    SQLiteDatabase db=this.getWritableDatabase();
    ContentValues contentValues=new ContentValues();
    if(id.length()==0 || Name.length()==0 ||Surname.length()==0)
    {
        return false;
    }
    else
    {
        contentValues.put(col_1,id);
        contentValues.put(col_2,Name);
        contentValues.put(col_3,Surname);
        long result=db.insert(tablename,null,contentValues);
        if(result==1)
            return true;
        else
            return false;
    }
}

public Cursor getAllData()
{
    SQLiteDatabase db=this.getWritableDatabase();
    Cursor res=db.rawQuery("select * from "+tablename,null);
    return res;
}

public boolean updateData(String id,String Name,String Surname)
{
    int i;
    SQLiteDatabase db=this.getWritableDatabase();
    if(id.length()==0 || Name.length()==0 ||Surname.length()==0)
    {
        return false;
    }
    ContentValues contentValues=new ContentValues();
    contentValues.put(col_1,id);
    contentValues.put(col_2,Name);
    contentValues.put(col_3,Surname);
    i=db.update(tablename,contentValues,"Id=?",new String[]{id});
    if(i>0)
    {
        return true;
    }
    else
    {
        return false;
    }
}

public Integer DeleteData(String id)
{
    SQLiteDatabase db=this.getWritableDatabase();
    return db.delete(tablename,"Id=?",new String[]{id});
}

```

```
}  
}
```

MainActivity.java

```
package com.example.shruthi_lab5;
```

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

```
import android.annotation.SuppressLint;
```

```
import android.database.Cursor;
```

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

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

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

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

```
import android.widget.Toast;
```

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

```
    DBHelper mydb;
```

```
    EditText ename, esurname, eid;
```

```
    TextView tv_chow;
```

```
    Button btt_add, btt_view, btt_del, btt_update, btt_cls;
```

```
    @SuppressWarnings("MissingInflatedId")
```

```
    @Override
```

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

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

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

```
        mydb= new DBHelper(this);
```

```
        eid=findViewById(R.id.ed_id);
```

```
        ename=findViewById(R.id.ed_name);
```

```
        esurname=findViewById(R.id.ed_surname);
```

```
        btt_add=findViewById(R.id.button_add);
```

```
        btt_update=findViewById(R.id.button_update);
```

```
        btt_del=findViewById(R.id.button_delete);
```

```
        btt_view=findViewById(R.id.button_view);
```

```
        btt_cls=findViewById(R.id.button_clear);
```

```
        tv_chow=findViewById(R.id.txt_data_display);
```

```
        AddData();
```

```
        viewALLData();
```

```
        UpdateData();
```

```
        DeleteData();
```

```
        ClearData();
```

```
    }
```

```
    private void ClearData()
```

```
    {
```

```
        btt_cls.setOnClickListener((view ->
```

```
        {
```

```
            ename.setText("");
```

```
            eid.setText("");
```

```
            esurname.setText("");
```

```
            ename.requestFocus();
```

```
        }));
```

```
    }
```

```

public void viewALLData()
{
    btt_view.setOnClickListener((view ->
    {
        Cursor res=mydb.getAllData();

        if(res.getCount()==0)
            Toast.makeText(this, "NO DATA", Toast.LENGTH_SHORT).show();
        else
        {
            StringBuffer buffer =new StringBuffer();
            while(res.moveToNext())
            {
                buffer.append("Id:"+res.getString(0)+"\t");
                buffer.append("Name:"+res.getString(1)+"\t");
                buffer.append("SurName:"+res.getString(2)+"\t");
                buffer.append("\n");
            }
            tv_chow.setText("Data from Database \n"+buffer.toString());
        }
    }));
}

public void UpdateData()
{
    btt_update.setOnClickListener((view ->
    {
        boolean
ud=mydb.updateData(eid.getText().toString(),ename.getText().toString(),esurname.getText().toString());
        if(ud==true)
            Toast.makeText(this, "Record updated", Toast.LENGTH_SHORT).show();
        else
            Toast.makeText(this, "Record not updated", Toast.LENGTH_SHORT).show();
    }));
}

public void AddData()
{
    btt_add.setOnClickListener((view ->
    {
        boolean
isinserted=mydb.insertData(eid.getText().toString(),ename.getText().toString(),esurname.getText().toString());
        if(isinserted==true)
            Toast.makeText(this, "Record is not inserted", Toast.LENGTH_SHORT).show();
        else
            Toast.makeText(this, "Record is inserted", Toast.LENGTH_SHORT).show();

    }));
}

public void DeleteData()
{
    btt_del.setOnClickListener((view ->
    {
        Integer dr=mydb.DeleteData(eid.getText().toString());
        if(dr>0)

```

```

        Toast.makeText(this, "Record is Deleted", Toast.LENGTH_SHORT).show();
    else
        Toast.makeText(this, "Record is not Deleted", Toast.LENGTH_SHORT).show();
    });
}
}

```

6. Develop an application that implements Multi-threading.

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="347dp"
        android:layout_height="58dp"
        android:background="#2196F3"
        android:gravity="center"
        android:text="Implement Multithreading Demo"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.056" />

    <ImageView
        android:id="@+id/imageview"
        android:layout_width="303dp"
        android:layout_height="225dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.494"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.291"
        tools:srcCompat="@tools:sample/avatars" />

    <Button
        android:id="@+id/button1"
        android:layout_width="195dp"
        android:layout_height="62dp"
        android:text="Load Image 1"
        android:textSize="20sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.452"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"

```

```
app:layout_constraintVertical_bias="0.669" />
```

```
<Button
    android:id="@+id/button2"
    android:layout_width="191dp"
    android:layout_height="65dp"
    android:text="Load Image 2"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.44"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.833" />
```

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

MainActivity.java

```
package com.example.shruthi_lab6;
```

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

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

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

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

```
import android.widget.ImageView;
```

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

```
    ImageView img;
```

```
    Button bt1, bt2;
```

```
    int count=0;
```

```
    @Override
```

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

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

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

```
        bt1=(Button)findViewById(R.id.button1);
```

```
        bt2=(Button)findViewById(R.id.button2);
```

```
        img=(ImageView)findViewById(R.id.imageview);
```

```
        bt1.setOnClickListener(new View.OnClickListener() {
```

```
            @Override
```

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

```
                new Thread(new Runnable() {
```

```
                    @Override
```

```
                    public void run() {
```

```
                        img.post(new Runnable() {
```

```
                            @Override
```

```
                            public void run() {
```

```
                                if(count==0){
```

```
                                    img.setImageResource(R.drawable.india);
```

```
                                    count=count+1;
```

```
                                }
```

```
                                else {
```

```
                                    img.setImageResource(R.drawable.karnataka);
```

```
                                    count=count+1;
```

```
                                }
```

```
                            }
```

```
                        }
```

```
                    }
```

```
                }
```

```
            }
```

```
        }
```

```

        });
    }
}).start();
}
});
bt2.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        new Thread(new Runnable() {
            @Override
            public void run() {
                img.post(new Runnable() {
                    @Override
                    public void run() {
                        img.setImageResource(R.drawable.swamiji);
                    }
                });
            }
        }).start();
    }
});
}
}
}

```

7. Develop a mobile application that displays the Google maps and different view in maps

AndroidManiFest.xml

```

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

```

```

<application

```

```

    android:allowBackup="true"
    android:dataExtractionRules="@xml/data_extraction_rules"
    android:fullBackupContent="@xml/backup_rules"
    android:icon="@mipmap/ic_launcher"
    android:label="@string/app_name"
    android:supportsRtl="true"
    android:theme="@style/Theme.Shruthi_Lab7"
    tools:targetApi="31">

```

```

<!--

```

TODO: Before you run your application, you need a Google Maps API key.

To get one, follow the directions here:

```

/

```

Once you have your API key (it starts with "AIza"), define a new property in your project's local.properties file (e.g. MAPS_API_KEY=Aiza...), and replace the "YOUR_API_KEY" string in this file with "\${MAPS_API_KEY}".


```
-->
<meta-data
    android:name="com.google.android.geo.API_KEY"
    android:value="AIzaSyBhXOe3OAzYE00oIqUrYWKDnT5UxZ4rr9M" />

<activity
    android:name=".MapsActivity"
    android:exported="true"
    android:label="@string/title_activity_maps">
    <intent-filter>
        <action android:name="android.intent.action.MAIN" />

        <category android:name="android.intent.category.LAUNCHER" />
    </intent-filter>
</activity>
</application>

</manifest>
```

MapsActivity.java

```
package com.example.shruthi_lab7;

import androidx.fragment.app.FragmentActivity;

import android.os.Bundle;

import com.google.android.gms.maps.CameraUpdateFactory;
import com.google.android.gms.maps.GoogleMap;
import com.google.android.gms.maps.OnMapReadyCallback;
import com.google.android.gms.maps.SupportMapFragment;
import com.google.android.gms.maps.model.LatLng;
import com.google.android.gms.maps.model.MarkerOptions;
import com.example.shruthi_lab7.databinding.ActivityMapsBinding;

public class MapsActivity extends FragmentActivity implements OnMapReadyCallback {

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

        com.example.shruthi_lab7.databinding.ActivityMapsBinding binding =
            ActivityMapsBinding.inflate(getLayoutInflater());
        setContentView(binding.getRoot());

        // Obtain the SupportMapFragment and get notified when the map is ready to be used.
        SupportMapFragment mapFragment = (SupportMapFragment) getSupportFragmentManager()
            .findFragmentById(R.id.map);
        assert mapFragment != null;
        mapFragment.getMapAsync(this);
    }

    /**
     * Manipulates the map once available.
     * This callback is triggered when the map is ready to be used.
     * This is where we can add markers or lines, add listeners or move the camera. In this case,
     * we just add a marker near Sydney, Australia.
     * If Google Play services is not installed on the device, the user will be prompted to install
```

```
* it inside the SupportMapFragment. This method will only be triggered once the user has  
* installed Google Play services and returned to the app.  
*/  
@Override  
public void onMapReady(GoogleMap googleMap) {  
  
    // Add a marker in Sydney and move the camera  
    LatLng sit = new LatLng(13.32713800859216, 77.12598750836499);  
    googleMap.addMarker(new MarkerOptions().position(sit).title("Siddaganga Institute Of  
Technology"));  
    googleMap.moveCamera(CameraUpdateFactory.newLatLng(sit));  
}  
}
```