

RAJALAKSHMI ENGINEERING COLLEGE
RAJALAKSHMI NAGAR, THANDALAM – 602 105



RAJALAKSHMI
ENGINEERING COLLEGE

CS19611

Mobile Application Development Laboratory

Laboratory Record Note Book

Name :TAMILINI D K Year

/ Branch / Section : ...III / BE CSE D

Register No. : ... 220701299.

Semester : 06

Academic Year : 2025-26

RAJALAKSHMI ENGINEERING COLLEGE
RAJALAKSHMI NAGAR, THANDALAM – 602 105

BONAFIDE CERTIFICATE

Name :TAMILINI D K

Academic Year : . . 2025-26 . . . Semester : .. . 06. . . Branch : . . BE CSE D. .

220701299

Register No.

Certified that this is the bonafide record of work done by the above student in
the CS19611 Mobile Application Development Laboratory during the year 2025
- 2026

Signature of Faculty in-charge

Submitted for the Practical Examination held on14/05/2025

Internal Examiner

External Examiner

Reg. No. : __220701331____ Name : _____SHIIV R S_____

Year : _____3rd____ Branch : BE CSE Sec : __D__

SNO.	DATE	TITLE	PG NO.	SIGN
1		GUI Components	7	
2		Simple Calculator	12	
3		Graphical Primitives	21	
4		Android Fragments	27	
5		SQLite	36	
6		Form Validation	45	
7		SD Card	53	
8		Alert Dialog Box	58	
9		Alarm	64	
10		Telephony Services	70	
11		Send SMS	76	
12		Send Email	81	
13		Text to Speech	86	
14		Speech to Text	91	
15		Image Capture	96	

Ex. No. : 01 Date :

Register No. : Name :

GUI Components

Aim

Develop an application to change the font and color of the text and display toast message when the user presses the button.

Procedure

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">

    <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.GUIComponents"
        tools:targetApi="31">
        <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>
```

```
<?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:id="@+id/linearLayout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context=".MainActivity" >

    <TextView
        android:id="@+id/tvText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Rajalakshmi Engineering College"
        android:textAlignment="center"
        android:textSize="16sp" />

    <Button
        android:id="@+id/btFontSize"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:inputType="textCapSentences"
        android:text="Change Font Size"
        android:textSize="16sp" />

    <Button
        android:id="@+id/btFontColor"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:inputType="textCapSentences"
        android:text="Change Font Color"
        android:textSize="16sp" />

    <Button
        android:id="@+id/btBackgroundColor"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:inputType="textCapSentences"
        android:text="Change Background Color"
        android:textSize="16sp" />
</LinearLayout>
```

```

package org.rajalakshmi.guicomponents

import android.graphics.Color
import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.widget.Button
import android.widget.LinearLayout
import android.widget.TextView

class MainActivity : AppCompatActivity() {
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        val tvText : TextView = findViewById(R.id.tvText)
        val btFontSize : Button = findViewById(R.id.btFontSize)  val btFontColor : Button =
        findViewById(R.id.btFontColor)  val btBackgroundColor : Button = findViewById(R.id.btBackgroundColor)  val
        linearLayout : LinearLayout = findViewById(R.id.linearLayout)

        var fontSize : Float = 5f
        var fontColor : Int = 0
        var backgroundColor : Int = 0

        btFontSize.setOnClickListener {
            tvText.setTextSize(fontSize)
            fontSize = (fontSize + 5) % 50
        }

        btFontColor.setOnClickListener {
            when(fontColor % 3) {
                0 -> tvText.setTextColor(Color.RED)
                1 -> tvText.setTextColor(Color.GREEN)
                2 -> tvText.setTextColor(Color.BLUE)
            }
            fontColor++
        }

        btBackgroundColor.setOnClickListener {
            when(backgroundColor % 3) {
                0 -> linearLayout.setBackgroundColor(Color.RED) 1 ->
                linearLayout.setBackgroundColor(Color.GREEN) 2 ->
                linearLayout.setBackgroundColor(Color.BLUE) }
            backgroundColor++
        }
    }
}

```



Result

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College 11
Ex. No. : 02 Date :

Register No. : Name :

Simple Calculator

Aim

Develop a simple calculator to perform arithmetic and mathematical functions using Math class.

Procedure

```

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

<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.SimpleCalculator"
    tools:targetApi="31">
    <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>

```

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College **13**
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"
android:orientation="vertical"
tools:context=".MainActivity">
```

```
<TextView
android:id="@+id/tvExpression"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:textSize="60sp" />
```

```
<TextView
android:id="@+id/tvResult"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:textSize="60sp" />
```

```
<LinearLayout
android:layout_width="match_parent"
android:layout_height="50dp"
android:orientation="horizontal">
```

```
<Button
android:id="@+id/btSeven"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_weight="1"
android:text="7" />
```

```
<Button
android:id="@+id/btEight"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_weight="1"
android:text="8" />
```

```
<Button
android:id="@+id/btNine"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_weight="1"
android:text="9" />
```

```
<Button
android:id="@+id/btDivision"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_weight="1"
android:text="/" />
</LinearLayout>
```

```
<LinearLayout
android:layout_width="match_parent"
android:layout_height="50dp"
android:orientation="horizontal">
```

14 Dept. of Computer Science and Engineering | Rajalakshmi Engineering College

```
<Button
android:id="@+id/btFour" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_weight="1"
android:text="4" />
```

```
<Button
android:id="@+id/btFive" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_weight="1"
android:text="5" />
```

```
<Button
    android:id="@+id/btSix"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"    android:layout_weight="1"
    android:text="6" />
```

```
<Button
    android:id="@+id/btMultiplication"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"    android:layout_weight="1"
    android:text="X" />
</LinearLayout>
```

```
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="50dp"
    android:orientation="horizontal">
```

```
<Button
    android:id="@+id/btOne"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"    android:layout_weight="1"
    android:text="1" />
```

```
<Button
    android:id="@+id/btTwo"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"    android:layout_weight="1"
    android:text="2" />
```

```
<Button
    android:id="@+id/btThree"    android:layout_width="wrap_content"
    android:layout_height="wrap_content"    android:layout_weight="1"
    android:text="3" />
```

```
<Button
    android:id="@+id/btSubtraction"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"    android:layout_weight="1"
    android:text="-" />
```

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College 15

```
</LinearLayout>
```

```
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="50dp"
    android:orientation="horizontal">
```

```
<Button
    android:id="@+id/btDecimal"    android:layout_width="wrap_content"
    android:layout_height="wrap_content"    android:layout_weight="1"
    android:text="." />
```

```
<Button
    android:id="@+id/btZero"    android:layout_width="wrap_content"
    android:layout_height="wrap_content"    android:layout_weight="1"
    android:text="0" />
```

```
<Button
    android:id="@+id/btEqual"    android:layout_width="wrap_content"
    android:layout_height="wrap_content"    android:layout_weight="1"
    android:text="=" />
```

```
<Button
    android:id="@+id/btAddition"    android:layout_width="wrap_content"
    android:layout_height="wrap_content"    android:layout_weight="1"
```

```

android:text="+" />
</LinearLayout>

<Button
android:id="@+id/btClear"
android:layout_width="match_parent"
android:layout_height="wrap_content" android:text="Clear"
android:textAllCaps="false" /> </LinearLayout>

```

16 Dept. of Computer Science and Engineering | Rajalakshmi Engineering College MainActivity.xml

```
package org.rajalakshmi.simplecalculator
```

```

import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.widget.Button
import android.widget.TextView

```

```

class MainActivity : AppCompatActivity() {
    var input1 :Double = 0.0
    var input2 :Double = 0.0
    var addition : Boolean = false
    var subtraction : Boolean = false
    var multiplication : Boolean = false
    var division : Boolean = false
    var decimal : Boolean = false
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

```

```

        val tvExpression : TextView = findViewById(R.id.tvExpression) val tvResult : TextView =
        findViewById(R.id.tvResult) val btZero : Button = findViewById(R.id.btZero)
        val btOne : Button = findViewById(R.id.btOne)
        val btTwo : Button = findViewById(R.id.btTwo)
        val btThree : Button = findViewById(R.id.btThree) val btFour : Button =
        findViewById(R.id.btFour)
        val btFive : Button = findViewById(R.id.btFive)
        val btSix : Button = findViewById(R.id.btSix)
        val btSeven : Button = findViewById(R.id.btSeven) val btEight : Button =
        findViewById(R.id.btEight) val btNine : Button = findViewById(R.id.btNine)
        val btAddition : Button = findViewById(R.id.btAddition) val btSubtraction : Button =
        findViewById(R.id.btSubtraction) val btMultiplication : Button = findViewById(R.id.btMultiplication) val
        btDivision : Button = findViewById(R.id.btDivision) val btDecimal : Button = findViewById(R.id.btDecimal)
        val btEqual : Button = findViewById(R.id.btEqual) val btClear : Button = findViewById(R.id.btClear)

```

```

        btZero.setOnClickListener {

```

```

tvExpression.setText("${tvExpression.text}0") }
btOne.setOnClickListener {
tvExpression.setText("${tvExpression.text}1") }
btTwo.setOnClickListener {
tvExpression.setText("${tvExpression.text}2") }
btThree.setOnClickListener {
tvExpression.setText("${tvExpression.text}3") }
btFour.setOnClickListener {
tvExpression.setText("${tvExpression.text}4") }
btFive.setOnClickListener {
tvExpression.setText("${tvExpression.text}5") }
btSix.setOnClickListener {
tvExpression.setText("${tvExpression.text}6")

```

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College 17

```

}
btSeven.setOnClickListener {
tvExpression.setText("${tvExpression.text}7") }
btEight.setOnClickListener {
tvExpression.setText("${tvExpression.text}8") }
btNine.setOnClickListener {
tvExpression.setText("${tvExpression.text}9") }
btDecimal.setOnClickListener {
if(!decimal) {
tvExpression.setText("${tvExpression.text}.") decimal = true
}
}
btAddition.setOnClickListener {
if (tvExpression.getText().length != 0) { input1 = "${tvExpression.text}".toDouble()
addition = true
decimal = false
tvExpression.setText(null)
}
}
btSubtraction.setOnClickListener {
if (tvExpression.getText().length != 0) { input1 = "${tvExpression.text}".toDouble()
subtraction = true
decimal = false
tvExpression.setText(null)
}
}
btMultiplication.setOnClickListener {
if (tvExpression.getText().length != 0) { input1 = "${tvExpression.text}".toDouble()
multiplication = true
decimal = false
tvExpression.setText(null)
}
}
btDivision.setOnClickListener {
if (tvExpression.getText().length != 0) { input1 = "${tvExpression.text}".toDouble()
division = true
decimal = false
tvExpression.setText(null)
}
}
btEqual.setOnClickListener() {
input2 = "${tvExpression.text}".toDouble() if (addition) {
tvExpression.setText("${input1} + ${input2}") val raddition : Double = input1 + input2
tvResult.setText("${raddition}") addition = false
}
if (subtraction) {
tvExpression.setText("${input1} - ${input2}") val rsubtraction : Double = input1 - input2
tvResult.setText("${rsubtraction}") subtraction = false
}
}

```

18 Dept. of Computer Science and Engineering | Rajalakshmi Engineering College

```

if (multiplication) {
    tvExpression.setText("${input1} * ${input2}")    val rmultiplication : Double = input1 * input2
    tvResult.setText("${rmultiplication}")    multiplication = false
}
if (division) {
    tvExpression.setText("${input1} / ${input2}")    val rdivision : Double = input1 / input2
    tvResult.setText("${rdivision}")    division = false
}
}

btClear.setOnClickListener {
    tvExpression.setText("")
    tvResult.setText("")
    input1 = 0.0
    input2 = 0.0
    decimal = false
}
}
}

```



20 Dept. of Computer Science and Engineering | Rajalakshmi Engineering College
Ex. No. : 03 Date :

Register No. : Name :

Graphical Primitives

Aim

Develop an android application to draw the circle, ellipse, rectangle and some text using Android Graphical primitives.

Procedure

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College **21**
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">
```

```

<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.GraphicalPrimitives"
  tools:targetApi="31">
  <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>

```

22 Dept. of Computer Science and Engineering | Rajalakshmi Engineering College
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">

<org.rajalakshmi.graphicalprimitives.SampleCanvas
android:layout_width="match_parent"
android:layout_height="match_parent">
</org.rajalakshmi.graphicalprimitives.SampleCanvas>
</androidx.constraintlayout.widget.ConstraintLayout>
```

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College 23
MainActivity.kt

```
package org.rajalakshmi.graphicalprimitives
```

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

```
class MainActivity : AppCompatActivity() { override fun
onCreate(savedInstanceState: Bundle?) { super.onCreate(savedInstanceState)
```

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

24 Dept. of Computer Science and Engineering | Rajalakshmi Engineering College
SampleCanvas.kt

```
package org.rajalakshmi.graphicalprimitives
```

```
import android.content.Context  
import android.graphics.Canvas  
import android.graphics.Color  
import android.graphics.Paint  
import android.util.AttributeSet  
import android.view.View
```

```

class SampleCanvas @JvmOverloads constructor(
    context: Context, attrs: AttributeSet? = null, defStyleAttr: Int = 0 ) : View(context, attrs, defStyleAttr) {

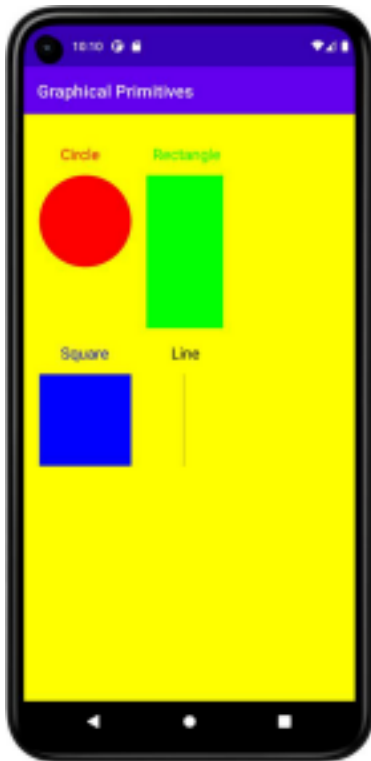
    override fun onDraw(canvas: Canvas?) {
        super.onDraw(canvas)

        val paint : Paint = Paint()
        paint.setColor(Color.YELLOW)
        canvas?.drawPaint(paint)
        paint.setTextSize(50f);
        paint.setColor(Color.RED);
        canvas?.drawText("Circle", 120f, 150f, paint); canvas?.drawCircle(200f,
350f, 150f, paint);
        paint.setColor(Color.GREEN);
        canvas?.drawText("Rectangle", 420f, 150f, paint); canvas?.drawRect(400f, 200f,
650f, 700f, paint); paint.setColor(Color.BLUE);
        canvas?.drawText("Square", 120f, 800f, paint); canvas?.drawRect(50f, 850f,
350f, 1150f, paint); paint.setColor(Color.BLACK);
        canvas?.drawText("Line", 480f, 800f, paint);
        canvas?.drawLine(520f, 850f, 520f, 1150f, paint);

    }
}

```

Output



Result

--

26 Dept. of Computer Science and Engineering | Rajalakshmi Engineering College
Ex. No. : 04 Date :

Register No. : Name :

Android Fragments

Aim

Develop an android application to create two activities named as Student Basic Details (Register No., Name, Department) and Student Mark Details (SSLC, HSC, UG). Write an android code to combine these two activities in single screen using android fragment.

Procedure

```

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

<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:supportRtl="true"
    android:theme="@style/Theme.AndroidFragments"
    tools:targetApi="31">
    <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>

```

28 Dept. of Computer Science and Engineering | Rajalakshmi Engineering College
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"
android:orientation="vertical"
tools:context=".MainActivity">

<TextView
android:id="@+id/tvTitle"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Student Details"
android:textAlignment="center"
android:textSize="24sp" />

<LinearLayout
android:layout_width="match_parent"
android:layout_height="match_parent"
android:orientation="vertical">

<fragment
android:id="@+id/fragmentBasic"
android:name="org.rajalakshmi.androidfragments.StudentBasicDetails" android:layout_width="match_parent"
android:layout_height="300dp" />

<fragment
android:id="@+id/fragmentMark"
android:name="org.rajalakshmi.androidfragments.StudentMarkDetails" android:layout_width="match_parent"
android:layout_height="300dp" />

</LinearLayout>
</LinearLayout>

```

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College 29
fragment_student_basic_details.xml

```

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

```

```

tools:context=".StudentBasicDetails">
<TextView
android:id="@+id/tvBasicDetails"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Basic Details"
android:textAlignment="center"
android:textSize="24sp" />
<TextView
android:id="@+id/tvRegisterNumber"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginTop="50dp"
android:text="Register No." />
<EditText
android:id="@+id/etRegisterNumber"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginLeft="150dp"
android:layout_marginTop="50dp"
android:ems="10"
android:hint="Register Number"
android:inputType="textPersonName" />
<TextView
android:id="@+id/tvName"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginTop="125dp"
android:text="Name" />
<EditText
android:id="@+id/etName"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginLeft="150dp"
android:layout_marginTop="125dp"
android:ems="10"
android:hint="Name"
android:inputType="textPersonName" />
<TextView
android:id="@+id/tvDepartment"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginTop="200dp"
android:text="Department" />
<EditText
android:id="@+id/etDepartment"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginLeft="150dp"
android:layout_marginTop="200dp"
android:ems="10"
android:hint="Department"
android:inputType="textPersonName" />
</FrameLayout>

```

30 Dept. of Computer Science and Engineering | Rajalakshmi Engineering College
fragment_student_mark_details.xml

```

<?xml version="1.0" encoding="utf-8"?>
<FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"
android:layout_height="match_parent"
tools:context=".StudentMarkDetails">
<TextView

```

```

android:id="@+id/tvBasicDetails"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Mark Details"
android:textAlignment="center"
android:textSize="24sp" />
<TextView
android:id="@+id/tvSSLC"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginTop="50dp"
android:text="S.S.L.C." />
<EditText
android:id="@+id/etSSLC"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginLeft="150dp"
android:layout_marginTop="50dp"
android:ems="10"
android:hint="S.S.L.C. Mark"
android:inputType="textPersonName" />
<TextView
android:id="@+id/tvHSc"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginTop="125dp"
android:text="H.Sc." />
<EditText
android:id="@+id/etHSC"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginLeft="150dp"
android:layout_marginTop="125dp"
android:ems="10"
android:hint="H.Sc. Mark"
android:inputType="textPersonName" />
<TextView
android:id="@+id/tvUG"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginTop="200dp"
android:text="U.G." />
<EditText
android:id="@+id/etUG"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginLeft="150dp"
android:layout_marginTop="200dp"
android:ems="10"
android:hint="U.G. C.G.P.A."
android:inputType="textPersonName" />
</FrameLayout>

```

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College 31

MainActivity.kt

```
package org.rajalakshmi.androidfragments
```

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

```
class MainActivity : AppCompatActivity() {
    override fun
    onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)
    }
}
```

32 Dept. of Computer Science and Engineering | Rajalakshmi Engineering College
StudentBasicDetails.kt

```
package org.rajalakshmi.androidfragments
import android.os.Bundle
import androidx.fragment.app.Fragment
import android.view.LayoutInflater
import android.view.View
import android.view.ViewGroup
// TODO: Rename parameter arguments, choose names that match // the fragment
initialization parameters, e.g. ARG_ITEM_NUMBER private const val ARG_PARAM1 =
"param1"
private const val ARG_PARAM2 = "param2"

/**
 * A simple [Fragment] subclass.
```

```

* Use the [StudentBasicDetails.newInstance] factory method to * create an instance of
this fragment.
*/
class StudentBasicDetails : Fragment() {
// TODO: Rename and change types of parameters
private var param1: String? = null
private var param2: String? = null

override fun onCreate(savedInstanceState: Bundle?) {
super.onCreate(savedInstanceState)
arguments?.let {
param1 = it.getString(ARG_PARAM1)
param2 = it.getString(ARG_PARAM2)
}
}

override fun onCreateView(
inflater: LayoutInflater, container: ViewGroup?, savedInstanceState: Bundle?
): View? {
// Inflate the layout for this fragment
return inflater.inflate(R.layout.fragment_student_basic_details, container, false)
}

companion object {
/**
* Use this factory method to create a new instance of * this fragment using the provided
parameters. *
* @param param1 Parameter 1.
* @param param2 Parameter 2.
* @return A new instance of fragment StudentBasicDetails. */
// TODO: Rename and change types and number of parameters @JvmStatic
fun newInstance(param1: String, param2: String) = StudentBasicDetails().apply {
arguments = Bundle().apply {
putString(ARG_PARAM1, param1)
putString(ARG_PARAM2, param2)
}
}
}
}

```

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College 33
StudentMarkDetails.kt

```

package org.rajalakshmi.androidfragments
import android.os.Bundle
import androidx.fragment.app.Fragment
import android.view.LayoutInflater
import android.view.View
import android.view.ViewGroup
// TODO: Rename parameter arguments, choose names that match // the fragment
initialization parameters, e.g. ARG_ITEM_NUMBER private const val ARG_PARAM1 =
"param1"
private const val ARG_PARAM2 = "param2"

/**
* A simple [Fragment] subclass.
* Use the [StudentMarkDetails.newInstance] factory method to * create an instance of
this fragment.
*/
class StudentMarkDetails : Fragment() {
// TODO: Rename and change types of parameters
private var param1: String? = null
private var param2: String? = null

```

```

override fun onCreate(savedInstanceState: Bundle?) {
    super.onCreate(savedInstanceState)
    arguments?.let {
        param1 = it.getString(ARG_PARAM1)
        param2 = it.getString(ARG_PARAM2)
    }
}

override fun onCreateView(
    inflater: LayoutInflater, container: ViewGroup?, savedInstanceState: Bundle?
): View? {
    // Inflate the layout for this fragment
    return inflater.inflate(R.layout.fragment_student_mark_details, container, false)
}

companion object {
    /**
     * Use this factory method to create a new instance of * this fragment using the provided
     parameters. *
     * @param param1 Parameter 1.
     * @param param2 Parameter 2.
     * @return A new instance of fragment StudentMarkDetails. */
    // TODO: Rename and change types and number of parameters @JvmStatic
    fun newInstance(param1: String, param2: String) = StudentMarkDetails().apply {
        arguments = Bundle().apply {
            putString(ARG_PARAM1, param1)
            putString(ARG_PARAM2, param2)
        }
    }
}

```

34 Dept. of Computer Science and Engineering | Rajalakshmi Engineering College
Output



Result

--

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College 35
Ex. No. : 05 Date :

Register No. : Name :

SQLite

Aim

Create a Database table with the following structure using SQLite: Student (Register Number, Name, CGPA). Develop an android application to perform the following operation using SQLite developer classes. 1. Insert student Details 2. Update the student Record 3. Delete a specified record. 4. View the details.

Procedure

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

    <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.SQLite"
        tools:targetApi="31">
        <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>

```

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College **37**
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"
android:orientation="vertical"
tools:context=".MainActivity" >

<TextView
android:id="@+id/tvRegisterNumber"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Register Number" />

<EditText
android:id="@+id/etRegisterNumber"

```

```

android:layout_width="match_parent"
android:layout_height="wrap_content"
android:ems="10"
android:inputType="textPersonName" />

```

```

<TextView
android:id="@+id/tvName"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Name" />

```

```

<EditText
android:id="@+id/etName"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:ems="10"
android:inputType="textPersonName" />

```

```

<TextView
android:id="@+id/tvCGPA"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="CGPA" />

```

```

<EditText
android:id="@+id/etCGPA"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:ems="10"
android:inputType="textPersonName" />

```

```

<Button
android:id="@+id/btAdd"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Add"
android:textAllCaps="false" />

```

```

<Button
android:id="@+id/btView"
android:layout_width="match_parent"
android:layout_height="wrap_content"

```

38 Dept. of Computer Science and Engineering | Rajalakshmi Engineering College

```

android:text="View"
android:textAllCaps="false" />

```

```

<Button
android:id="@+id/btModify"
android:layout_width="match_parent"
android:layout_height="wrap_content" android:text="Modify"
android:textAllCaps="false" />

```

```

<Button
android:id="@+id/btDelete"
android:layout_width="match_parent"
android:layout_height="wrap_content" android:text="Delete"
android:textAllCaps="false" />

```

```

<Button
android:id="@+id/btClear"
android:layout_width="match_parent"
android:layout_height="wrap_content" android:text="Clear"
android:textAllCaps="false" /> </LinearLayout>

```

DBContract.kt

```
package org.rajalakshmi.sqlite

import android.provider.BaseColumns

object DBContract {
    class UserEntry : BaseColumns {
        companion object {
            val TABLE_NAME = "students"
            val COLUMN_REGISTER_NUMBER = "registernumber" val COLUMN_NAME =
            "name"
            val COLUMN_CGPA = "cgpa"
        }
    }
}
```

UserModel.kt

```
package org.rajalakshmi.sqlite

class UserModel (val registernumber : String, val name : String, val cgpa : String)
```

```
package org.rajalakshmi.sqlite

import android.annotation.SuppressLint
import android.content.ContentValues
import android.content.Context
import android.database.Cursor
import android.database.sqlite.SQLiteConstraintException
import android.database.sqlite.SQLiteDatabase
import android.database.sqlite.SQLiteException
import android.database.sqlite.SQLiteOpenHelper

class UsersDBHelper(context: Context) : SQLiteOpenHelper(context, DATABASE_NAME, null,
    DATABASE_VERSION) {
    override fun onCreate(db: SQLiteDatabase?) {
        db?.execSQL(SQL_CREATE_ENTRIES)
    }

    override fun onUpgrade(db: SQLiteDatabase?, oldVersion: Int, newVersion: Int) {
        db?.execSQL(SQL_DELETE_ENTRIES)
        onCreate(db)
    }

    @Throws(SQLiteConstraintException::class)
    fun insertUser(user: UserModel): Boolean {
        // Gets the data repository in write mode
```

```

val db = writableDatabase

// Create a new map of values, where column names are the keys val values = ContentValues()
values.put(DBContract.UserEntry.COLUMN_REGISTER_NUMBER, user.registernumber)
values.put(DBContract.UserEntry.COLUMN_NAME, user.name)
values.put(DBContract.UserEntry.COLUMN_CGPA, user.cgpa)

// Insert the new row, returning the primary key value of the new row val newRowId =
db.insert(DBContract.UserEntry.TABLE_NAME, null, values)

return true
}

@SuppressLint("Range")
fun readUser(registerNumber : String): ArrayList<UserModel> { val users =
ArrayList<UserModel>()
val db = writableDatabase
var cursor: Cursor? = null
try {
cursor = db.rawQuery("select * from " +
DBContract.UserEntry.TABLE_NAME + " WHERE " +
DBContract.UserEntry.COLUMN_REGISTER_NUMBER + " = " + registerNumber + "", null)
}
catch (e: SQLiteException) {
db.execSQL(SQL_CREATE_ENTRIES)
return ArrayList()
}
}
var name : String
var cgpa : String
if (cursor!!.moveToFirst()) {

```

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College 41

```

while (cursor.isAfterLast == false) {
name =
cursor.getString(cursor.getColumnIndex(DBContract.UserEntry.COLUMN_NAME)) cgpa =
cursor.getString(cursor.getColumnIndex(DBContract.UserEntry.COLUMN_CGPA))
users.add(UserModel(registerNumber, name, cgpa)) cursor.moveToNext()
}
}
return users
}

@Throws(SQLiteConstraintException::class)
fun deleteUser(userid: String): Boolean {
val db = writableDatabase
val selection = DBContract.UserEntry.COLUMN_REGISTER_NUMBER + " LIKE ?" val selectionArgs =
arrayOf(userid)
db.delete(DBContract.UserEntry.TABLE_NAME, selection, selectionArgs) return true
}

companion object {
// If you change the database schema, you must increment the database version.
val DATABASE_VERSION = 1
val DATABASE_NAME = "FeedReader.db"

private val SQL_CREATE_ENTRIES =
"CREATE TABLE " + DBContract.UserEntry.TABLE_NAME + " (" +
DBContract.UserEntry.COLUMN_REGISTER_NUMBER + " TEXT PRIMARY KEY," +
DBContract.UserEntry.COLUMN_NAME + " TEXT," +
DBContract.UserEntry.COLUMN_CGPA + " TEXT)" private val SQL_DELETE_ENTRIES =
"DROP TABLE IF EXISTS " + DBContract.UserEntry.TABLE_NAME
}
}

```

```
package org.rajalakshmi.sqlite

import android.database.sqlite.SQLiteConstraintException
import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.widget.Button
import android.widget.EditText
import android.widget.Toast

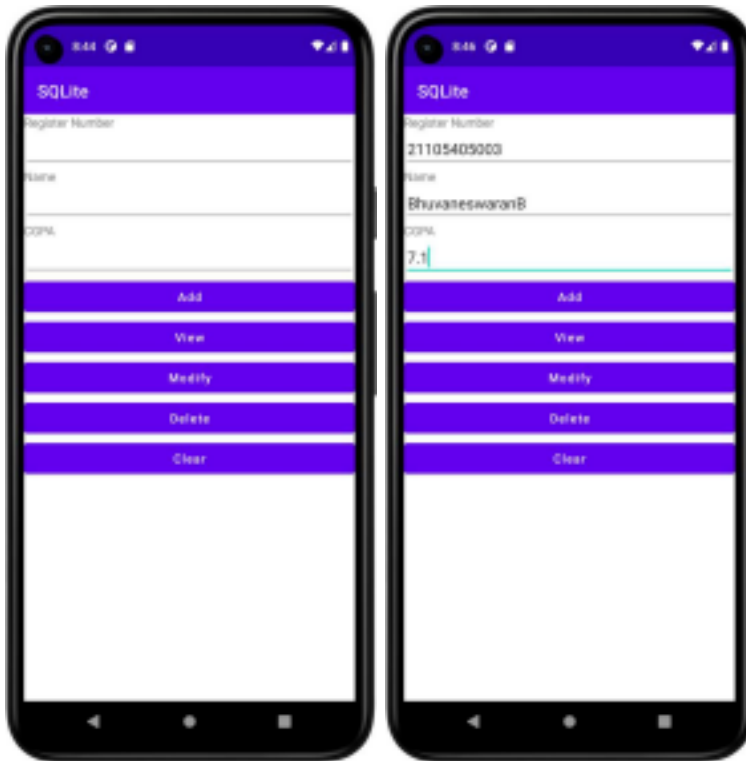
class MainActivity : AppCompatActivity() {
    lateinit var usersDBHelper : UsersDBHelper
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        val etRegisterNumber : EditText = findViewById(R.id.etRegisterNumber)  val etName : EditText =
        findViewById(R.id.etName)
        val etCGPA : EditText = findViewById(R.id.etCGPA)
        val btAdd : Button = findViewById(R.id.btAdd)
        val btView : Button = findViewById(R.id.btView)
        val btModify : Button = findViewById(R.id.btModify)
        val btDelete : Button = findViewById(R.id.btDelete)
        val btClear : Button = findViewById(R.id.btClear)
        usersDBHelper = UsersDBHelper(this)
        btAdd.setOnClickListener {
            val registerNumber : String = etRegisterNumber.text.toString()  val name : String = etName.text.toString()
            val cgpa : String = etCGPA.text.toString()
            var result = usersDBHelper.insertUser(UserModel(registerNumber = registerNumber, name = name, cgpa =
            cgpa))
            etRegisterNumber.setText("")
            etName.setText("")
            etCGPA.setText("")
        }

        btView.setOnClickListener {
            var users = usersDBHelper.readUser(etRegisterNumber.text.toString())  users.forEach {
                etName.setText(it.name)
                etCGPA.setText(it.cgpa)
            }
        }

        btDelete.setOnClickListener {
            var registerNumber = etRegisterNumber.text.toString()  val result =
            usersDBHelper.deleteUser(registerNumber)  if(result)
            Toast.makeText(applicationContext, "User Deleted...!", Toast.LENGTH_LONG).show()
        }

        btClear.setOnClickListener {
            etRegisterNumber.setText("")
            etName.setText("")
            etCGPA.setText("")
        }
    }
}
```



44 Dept. of Computer Science and Engineering | Rajalakshmi Engineering College
Ex. No. : 06 Date :

Register No. : Name :

Form Validation

Aim

Design an android activity with two text boxes where the user can enter (username and ID) and a button (validate). Validate the entered username and ID field for the following using android code. i) Both the fields should not be empty ii) Name field should have alphabets iii) ID field should have numeric values (only 4-digit).

Procedure

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College **45**
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">
```



```

<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:supportRtl="true"
  android:theme="@style/Theme.FormValidation"
  tools:targetApi="31">
  <activity
    android:name=".MainActivity2"
    android:exported="false" />
  <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>

```

46 Dept. of Computer Science and Engineering | Rajalakshmi Engineering College
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"
  android:orientation="vertical"

```

```

tools:context=".MainActivity">

<EditText
android:id="@+id/etUserName"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:ems="10"
android:hint="Enter the username...!"
android:inputType="textPersonName" />

<EditText
android:id="@+id/etPinNumber"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:ems="10"
android:hint="Enter the pin number...!"
android:inputType="textPersonName" />

<Button
android:id="@+id/btLogin"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Login"
android:textAllCaps="false" />

<Button
android:id="@+id/btClear"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Clear"
android:textAllCaps="false" />
</LinearLayout>

```

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College **47**
activity_main2.xml

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto" xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"
android:layout_height="match_parent"
android:orientation="vertical"
tools:context=".MainActivity2">

```

```
<TextView
  android:id="@+id/tvLoginSuccess"
  android:layout_width="match_parent"
  android:layout_height="wrap_content"
  android:text="Login Success...!"
  android:textAlignment="center"
  android:textSize="24sp" />
</LinearLayout>
```

48 Dept. of Computer Science and Engineering | Rajalakshmi Engineering College
MainActivity.kt

```
package org.rajalakshmi.formvalidation
```

```
import android.content.Intent
import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.widget.Button
import android.widget.EditText
import android.widget.Toast
```

```

class MainActivity : AppCompatActivity() {
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        val etUserName : EditText = findViewById(R.id.etUserName)  val etPinNumber : EditText =
        findViewById(R.id.etPinNumber)  val btLogin : Button = findViewById(R.id.btLogin)  val btClear :
        Button = findViewById(R.id.btClear)

        btLogin.setOnClickListener {
            val checkUserName = "[a-zA-Z]+".toRegex()
            val checkPinNo = "[0-9]{4}".toRegex()
            if(checkUserName.matches(etUserName.text.toString()) &&
            checkPinNo.matches(etPinNumber.text.toString())) {
                val intent = Intent(this, MainActivity2::class.java)  startActivity(intent)
            }
            else {
                Toast.makeText(applicationContext, "Invalid User Name / Pin No.",Toast.LENGTH_LONG).show()
            }
        }

        btClear.setOnClickListener {
            etUserName.text.clear()
            etPinNumber.text.clear()
        }
    }
}

```

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College 49
 MainActivity2.kt

```

package org.rajalakshmi.formvalidation

```

```

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

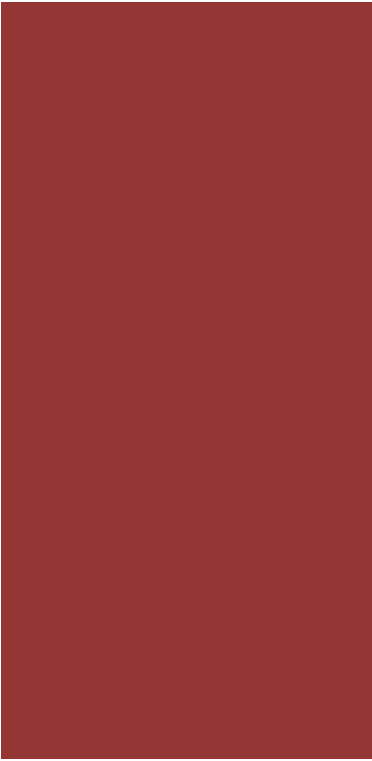
```

```

class MainActivity2 : AppCompatActivity() {  override fun
onCreate(savedInstanceState: Bundle?) {  super.onCreate(savedInstanceState)
setContentView(R.layout.activity_main2)  }
}

```





Result

--

Register No. : Name :

SD Card

Aim

Implement an application to write the Register Number, Name and CGPA to SD card in text file format.

Procedure

```

<?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.WRITE_EXTERNAL_STORAGE"/> <uses-permission
android:name="android.permission.READ_EXTERNAL_STORAGE"/> <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.SDCard"
  tools:targetApi="31">
    <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>

```

54 Dept. of Computer Science and Engineering | Rajalakshmi Engineering College
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"
android:orientation="vertical"
tools:context=".MainActivity">

<EditText
android:id="@+id/etRegisterNumber"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:ems="10"
android:hint="Enter the register number...!"
android:inputType="textPersonName" />

<EditText
android:id="@+id/etName"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:ems="10"
android:hint="Enter the name...!"
android:inputType="textPersonName" />

<EditText
android:id="@+id/etCGPA"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:ems="10"
android:hint="Enter the CGPA...!"
android:inputType="textPersonName" />

<Button
android:id="@+id/btSave"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Save"
android:textAllCaps="false" />

<Button
android:id="@+id/btLoad"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Load"
android:textAllCaps="false" />
</LinearLayout>

```

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College **55**
 MainActivity.kt

```
package org.rajalakshmi.sdcard
```

```
import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.widget.Button
```

```

import android.widget.EditText
import java.io.*

class MainActivity : AppCompatActivity() {
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        val etRegisterNumber : EditText = findViewById(R.id.etRegisterNumber)  val etName : EditText =
        findViewById(R.id.etName)
        val etCGPA : EditText = findViewById(R.id.etCGPA)
        val btSave : Button = findViewById(R.id.btSave)
        val btLoad : Button = findViewById(R.id.btLoad)

        btSave.setOnClickListener {
            val registerNumber = etRegisterNumber.text.toString()  val name = etName.text.toString()
            val cgpa = etCGPA.text.toString()

            val file = File(getExternalFilesDir(null), "student.txt")  val outputStream = FileOutputStream(file, false)
            outputStream.write("$registerNumber,$name,$cgpa\n".toByteArray())  outputStream.close()

            etRegisterNumber.text.clear()
            etName.text.clear()
            etCGPA.text.clear()
        }

        btLoad.setOnClickListener {
            val file = File(getExternalFilesDir(null), "student.txt")  val inputStream = FileInputStream(file)

            val inputStreamReader = InputStreamReader(inputStream)  val bufferedReader =
            BufferedReader(inputStreamReader)  var line: String
            line = bufferedReader.readLine()
            val parts = line.split(",")
            etRegisterNumber.setText(parts[0])
            etName.setText(parts[1])
            etCGPA.setText(parts[2])
            inputStream.close()
        }
    }
}

```

Result

--

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College 57
Ex. No. : 08 Date :

Register No. : Name :

Alert Dialog Box

Aim

Implement an application to display the alert box message.

Procedure

```

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

<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.AlertDialogBox"
    tools:targetApi="31">
    <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>

```

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College **59**
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"
android:orientation="vertical"
tools:context=".MainActivity">

<EditText
android:id="@+id/etText"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:ems="10"
android:hint="Enter the text...!"
android:inputType="textPersonName" />

<Button
android:id="@+id/btDisplay"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Display"
android:textAllCaps="false" />
</LinearLayout>

```

60 Dept. of Computer Science and Engineering | Rajalakshmi Engineering College
 MainActivity.kt

```

package org.rajalakshmi.alerdialogbox

import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.widget.Button
import android.widget.EditText

```

```

import android.widget.Toast
import androidx.appcompat.app.AlertDialog

class MainActivity : AppCompatActivity() {
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        val etText : EditText = findViewById(R.id.etText)  val btDisplay : Button =
        findViewById(R.id.btDisplay)

        btDisplay.setOnClickListener {
            val alertDialog = AlertDialog.Builder(this)
            .setTitle("MAD Lab")
            .setMessage(etText.text.toString())
            .setPositiveButton("OK") { dialog, which -> Toast.makeText(applicationContext, "You clicked OK",
            Toast.LENGTH_LONG).show()
            }
            .setNegativeButton("Cancel") { dialog, which -> Toast.makeText(applicationContext, "You clicked Cancel",
            Toast.LENGTH_LONG).show()
            }
            .create()
            alertDialog.show()
        }
    }
}

```

Output

Result

--

Register No. : Name :

Alarm

Aim

Write a mobile application to set the alarm using android Alarm Manager

class. Procedure

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.SCHEDULE_EXACT_ALARM"/> <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.MyApplication"
    tools:targetApi="31">
    <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>
      <receiver android:name=".AlarmReceiver">
      </receiver>
    </application>
  </manifest>
```

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

```

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto" xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"
android:layout_height="match_parent"
android:orientation="vertical"
tools:context=".MainActivity">

<TimePicker
android:id="@+id/timePicker"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_gravity="center" />

<Button
android:id="@+id/btSetAlarm"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Set Alarm"
android:textAllCaps="false" />

<Button
android:id="@+id/btnStopAlarm"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Stop Alarm"
android:textAllCaps="false" />

</LinearLayout>

```

```

import android.app.PendingIntent
import android.content.Intent
import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.widget.Button
import android.widget.TimePicker
import android.widget.Toast
import java.util.*

class MainActivity : AppCompatActivity() {
    lateinit var pendingIntent: PendingIntent
    private lateinit var alarmManager: AlarmManager
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        val alarmTimePicker: TimePicker = findViewById(R.id.timePicker)
        val btSetAlarm : Button = findViewById(R.id.btSetAlarm)
        val btStopAlarm : Button = findViewById(R.id.btnStopAlarm)
        alarmManager = getSystemService(ALARM_SERVICE) as AlarmManager

        btSetAlarm.setOnClickListener {
            Toast.makeText(applicationContext, "Alarm ON...!", Toast.LENGTH_LONG).show()
            val calendar: Calendar = Calendar.getInstance()
            calendar.set(Calendar.HOUR_OF_DAY, alarmTimePicker.hour)
            calendar.set(Calendar.MINUTE, alarmTimePicker.minute)
            val intent = Intent(this, AlarmReceiver::class.java)
            pendingIntent = PendingIntent.getBroadcast(this.applicationContext, 2, intent,
                PendingIntent.FLAG_CANCEL_CURRENT)
            val time: Long = calendar.timeInMillis - (calendar.timeInMillis % 60000)
            alarmManager.setRepeating(AlarmManager.RTC_WAKEUP, time, 10000, pendingIntent)
        }

        btStopAlarm.setOnClickListener {
            alarmManager.cancel(pendingIntent)
            Toast.makeText(applicationContext, "Alarm OFF...!", Toast.LENGTH_LONG).show()
        }
    }
}

```

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College 67

AlarmReceiver.kt

```

package org.rajalakshmi.myapplication

import android.content.BroadcastReceiver
import android.content.Context
import android.content.Intent
import android.media.Ringtone
import android.media.RingtoneManager
import android.net.Uri
import android.widget.Toast

class AlarmReceiver : BroadcastReceiver() {

```

```
override fun onReceive(context: Context?, intent: Intent?) { Toast.makeText(context, "Alarm Ringing...!",  
Toast.LENGTH_LONG).show() var ringtone: Ringtone  
val alarmUri: Uri =  
RingtoneManager.getDefaultUri(RingtoneManager.TYPE_ALARM)  
ringtone = RingtoneManager.getRingtone(context, alarmUri) ringtone.play()  
}  
}
```

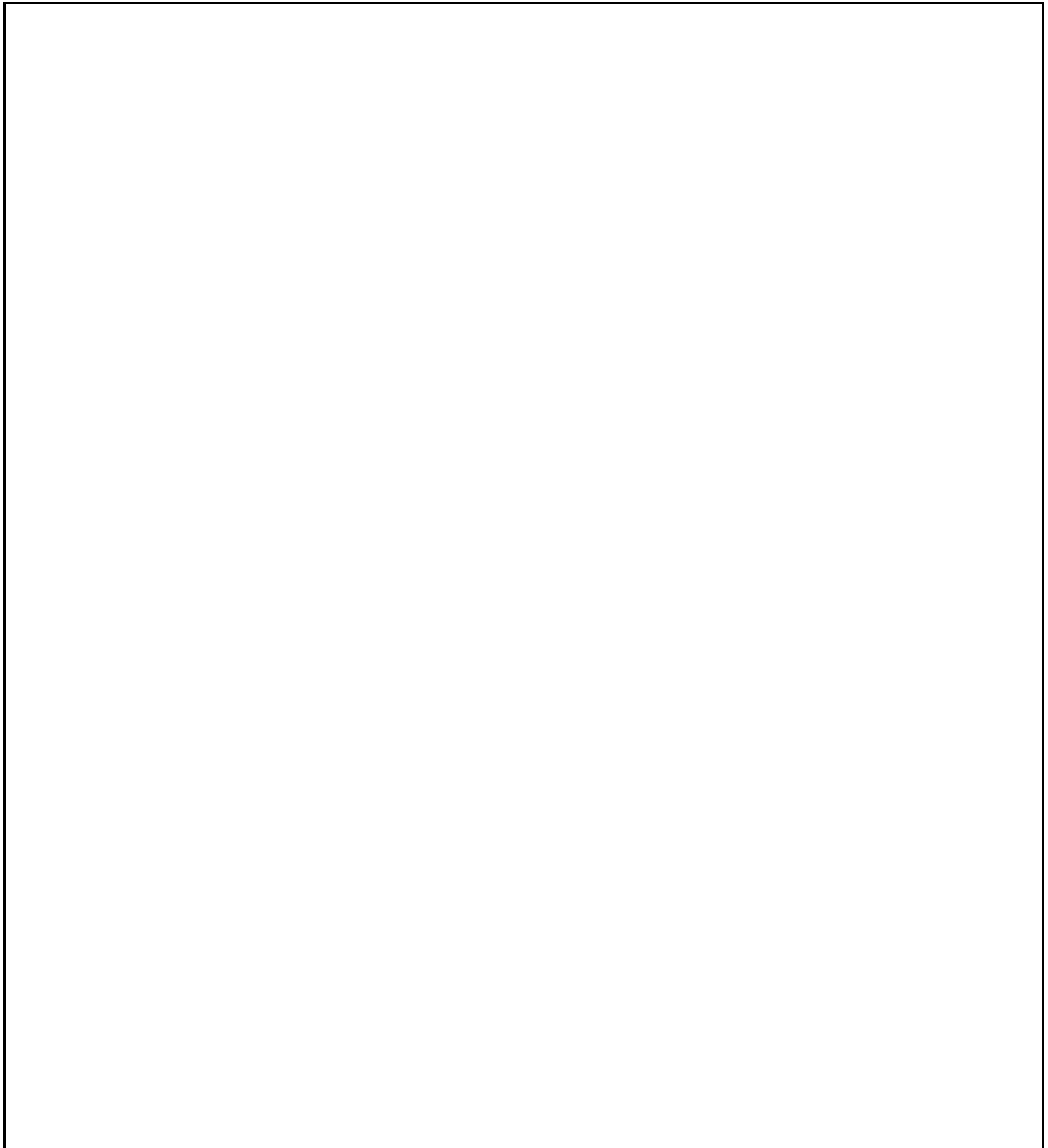
Dept. of Computer Science and Engineering | Rajalakshmi Engineering College 69
Ex. No. : 10 Date :

Register No. : Name :

Telephony Services

Aim

Develop an android application to display the information of the telephony services. Procedure



70 Dept. of Computer Science and Engineering | Rajalakshmi Engineering College
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.READ_PHONE_STATE"/> <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:supportRtl="true"
android:theme="@style/Theme.TelephonyServices"
tools:targetApi="31">
<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>

```

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College **71**
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"
android:orientation="vertical"
tools:context=".MainActivity">

<TextView

```

```
android:id="@+id/tvNetworkOperatorName"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Network Operator Name" />
```

```
<EditText
android:id="@+id/etNetworkOperatorName"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:ems="10"
android:inputType="textPersonName" />
```

```
<TextView
android:id="@+id/tvPhoneType"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Phone Type" />
```

```
<EditText
android:id="@+id/etPhoneType"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:ems="10"
android:inputType="textPersonName" />
```

```
<TextView
android:id="@+id/tvNetworkCountryISO"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Network Country ISO" />
```

```
<EditText
android:id="@+id/etNetworkCountryISO"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:ems="10"
android:inputType="textPersonName" />
```

```
<TextView
android:id="@+id/tvSIMCountryISO"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="SIM Country ISO" />
```

```
<EditText
android:id="@+id/etSIMCountryISO"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:ems="10"
```

72 Dept. of Computer Science and Engineering | Rajalakshmi Engineering College

```
android:inputType="textPersonName" />
```

```
<TextView
android:id="@+id/tvDeviceSoftwareVersion"
android:layout_width="match_parent"
android:layout_height="wrap_content" android:text="Device Software
Version" />
```

```
<EditText
android:id="@+id/etDeviceSoftwareVersion"
android:layout_width="match_parent"
android:layout_height="wrap_content" android:ems="10"
android:inputType="textPersonName" />
```

```
<Button
    android:id="@+id/btGetTelephonyServices"
    android:layout_width="match_parent"
    android:layout_height="wrap_content" android:text="Get Telephony
    Services" android:textAllCaps="false" /> </LinearLayout>
```

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College 73

MainActivity.kt

```
package org.rajalakshmi.telephonyservices
```

```
import android.content.Context
import android.content.pm.PackageManager
import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.telephony.TelephonyManager
import android.widget.Button
import android.widget.EditText
import androidx.core.app.ActivityCompat
```

```
class MainActivity : AppCompatActivity() {
    private val REQUEST_CODE_PHONE_STATE = 1000
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)
```

```

val etNetworkOperatorName : EditText =
findViewById(R.id.etNetworkOperatorName)
val etPhoneType : EditText = findViewById(R.id.etPhoneType) val etNetworkCountryISO :
EditText =
findViewById(R.id.etNetworkCountryISO)
val etSIMCountryISO : EditText = findViewById(R.id.etSIMCountryISO) val etDeviceSoftwareVersion :
EditText =
findViewById(R.id.etDeviceSoftwareVersion)
val btGetTelephonyServices : Button =
findViewById(R.id.btGetTelephonyServices)
val telephonyManager = getSystemService(Context.TELEPHONY_SERVICE) as TelephonyManager

if (ActivityCompat.checkSelfPermission(this,
android.Manifest.permission.READ_PHONE_STATE) !=
PackageManager.PERMISSION_GRANTED ) {
    ActivityCompat.requestPermissions(this,
arrayOf(android.Manifest.permission.READ_PHONE_STATE), REQUEST_CODE_PHONE_STATE) }
btGetTelephonyServices.setOnClickListener {
    val networkOperatorName = telephonyManager.networkOperatorName val phoneType: Int =
telephonyManager.getPhoneType() var strphoneType : String = ""
    val networkCountryISO: String =
telephonyManager.getNetworkCountryIso()
    val SIMCountryISO: String = telephonyManager.getSimCountryIso() val deviceSoftwareVersion: String? =
telephonyManager.getDeviceSoftwareVersion()

    when (phoneType) {
        TelephonyManager.PHONE_TYPE_CDMA -> strphoneType = "CDMA"
        TelephonyManager.PHONE_TYPE_GSM -> strphoneType = "GSM"
        TelephonyManager.PHONE_TYPE_NONE -> strphoneType = "NONE" }
    etNetworkOperatorName.setText(networkOperatorName)
    etPhoneType.setText(strphoneType)
    etNetworkCountryISO.setText(networkCountryISO)
    etSIMCountryISO.setText(SIMCountryISO)
    etDeviceSoftwareVersion.setText(deviceSoftwareVersion) }
}
}

```

Result

--

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College 75
Ex. No. : 11 Date :

Register No. : Name :

Send SMS

Aim

Develop an application to send SMS.

Procedure

```

xmlns:tools="http://schemas.android.com/tools">
<uses-permission android:name="android.permission.SEND_SMS"/> <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:supportRtl="true"
android:theme="@style/Theme.SendSMS"
tools:targetApi="31">
<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>

```

Dept. of Computer Science and Engineering | Rajalakshmi Engineering College **77**
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"

```

```

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

<EditText
android:id="@+id/etPhoneNumber"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:ems="10"
android:hint="Enter the phone number...!"
android:inputType="textPersonName" />

<EditText
android:id="@+id/etMessage"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:ems="10"
android:hint="Enter the message...!"
android:inputType="textPersonName" />

<Button
android:id="@+id/btSend"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:text="Send"
android:textAllCaps="false" />
</LinearLayout>

```

78 Dept. of Computer Science and Engineering | Rajalakshmi Engineering College
MainActivity.kt

```
package org.rajalakshmi.sendsms
```

```

import android.os.Build
import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.telephony.SmsManager
import android.widget.Button

```



```

import android.widget.EditText
import android.widget.Toast
import androidx.core.app.ActivityCompat

class MainActivity : AppCompatActivity() {
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        val etPhoneNumber : EditText = findViewById(R.id.etPhoneNumber) val etMessage : EditText =
        findViewById(R.id.etMessage) val btSend : Button = findViewById(R.id.btSend)
        ActivityCompat.requestPermissions(this,
        arrayOf(android.Manifest.permission.SEND_SMS),1000)

        btSend.setOnClickListener {
            val phoneNumber = etPhoneNumber.text.toString() val message =
            etMessage.text.toString()
            val smsManager: SmsManager
            smsManager = SmsManager.getDefault()
            smsManager.sendTextMessage(phoneNumber, null, message, null, null) Toast.makeText(applicationContext,
            "Message Sent", Toast.LENGTH_LONG).show()
        }
    }
}

```

Output

Result

--