

**CS – 31 Mobile Application Development in Android using Kotlin**

**BCA Semester – 6**



# Journal

**H & H Kotak Institute of Science, Rajkot**

**BCA Department**



# H & H B Kotak Institute of Science, Rajkot

## BCA Department

### Laboratory Certificate

This is to certify that Smt./Shri \_\_\_\_\_ has  
satisfactory completed **BCA Semester-6** practical experiments of subject **CS-31**  
**Mobile Application Development in Android using Kotlin** during the academic year  
\_\_\_\_\_. Her/His enrollment number is \_\_\_\_\_  
registered at Saurashtra University, Rajkot.

Date: \_\_\_\_\_

\_\_\_\_\_  
Subject In-Charge

\_\_\_\_\_  
Head of the Department

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# **Unit-1**

## **Introduction to Kotlin Programming**

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**1. Hello World Program**

```

1  /*Hello World Program*/
2
3  fun main() {
4      println("Hello World")
5      print("Hello ")
6      print("World")
7  }

```

**2. Mutable variable**

```

1  //Mutable Variable in Kotlin
2  fun main() {
3      var name = "Java Programing"
4      println("Name = $name")
5
6      name = "Kotlin Progaming"
7      println("Name = $name")
8  }

```

**3. Basic data types**

```

1  //Basic data types in kotlin
2
3  fun main(args: Array<String>) {
4      val a: Int = 10000
5      val d: Double = 100.00
6      val f: Float = 100.00f
7      val l: Long = 10000000004
8      val s: Short = 10
9      val b: Byte = 1
10     val letter: Char = 'A'
11     val strVar: String="Kotlin"
12
13     println("Int Value is $a")
14     println("Double Value is $d")
15     println("Float Value is $f")
16     println("Long Value is $l" )
17     println("Short Value is $s")
18     println("Byte Value is $b")
19     println("Char Value is $letter")
20     println("String Value = $strVar")
21 }

```

**4. Use of Array**

```

1  //Array data type in kotlin
2
3  fun main(args: Array<String>) {
4      val numbers: IntArray = intArrayOf(10, 20, 30, 40, 50)
5      println("Value at 3rd position : " + numbers[2])
6  }

```

**5. Arithmetic Operators**

```

1  //Arithmetic Operators in Kotlin
2
3  fun main() {
4      var a: Int=10
5      var b: Int=20
6      println("a+b= " + (a+b))

```

```
7      println("a-b= " + (a-b))
8      println("a*b= " + (a*b))
9      println("a/b= " + (a/b))
10     println("a%b= " + (a%b))
11 }
```

## 6. UDF

```
1 //Kotlin UDF.
2 fun main(args: Array<String>) {
3     printHello()
4 }
5
6 fun printHello(){
7     println("Hello, World!")
8 }
```

## 7. Passing parameters and returning value by UDF

```
1 //Parameter pass into function and return value.
2
3 fun main(args: Array<String>) {
4     val a = 10
5     val b = 20
6
7     val result = sumTwo(a, b)
8     println( result )
9
10 }
11
12 fun sumTwo(a:Int, b:Int):Int{
13     val x = a + b
14
15     return x
16 }
```

## 8. Function recursion

```
1 //Function recursion in Kotlin
2
3 fun main(args: Array<String>) {
4     val a = 4
5
6     val result = factorial(a)
7     println( result )
8 }
9
10 fun factorial(a:Int):Int{
11     val result:Int
12
13     if( a <= 1){
14         result = a
15     }else{
16         result = a*factorial(a-1)
17     }
18     return result
19 }
```

**9. Range in Kotlin**

```

1 //when loop with range.
2
3 fun main(args: Array<String>) {
4     val day = 2
5     when (day) {
6         in 1..5 -> println("Weekday")
7         else -> println("Weekend")
8     }
9 }

```

**10. if returning value**

```

1 //if returning value.
2
3 fun main(args: Array<String>) {
4     val age: Int = 10
5
6     val result = if (age > 18) {
7         "Adult"
8     } else {
9         "Minor"
10    }
11    println(result)
12 }

```

**11. for loop with array**

```

1 //for loop with array.
2
3 fun main(args: Array<String>) {
4     var fruits = arrayOf("Orange", "Apple", "Mango", "Banana")
5
6     for (item in fruits) {
7         println(item)
8     }
9 }

```

**12. Break and Continue**

```

1 //use of Break and Continue.
2
3 fun main(){
4     var a: Int = 0
5     while(true) {
6         a++
7         if(a%2==0) continue
8         if(a>10) break
9         println(a)
10    }
11 }

```

**13. List Collection**

```

1 //Creating and Display List (Collection).
2
3 fun main() {
4     val theList = mutableListOf("one", "two", "three", "four")
5     theList.add("five")
6     println(theList.toString())
7 }

```

**14. Set Collection**

```
1 //Creating and Display Sets (Collection).
2
3 fun main() {
4     val theSet = mutableSetOf("one", "two", "three", "four")
5     theSet.add("five")
6     println(theSet.sorted())
7 }
```

**15. Map Collection**

```
1 //Creating and Display Map (Collection).
2
3 fun main() {
4     val theMap = mapOf(Pair("one", 1), Pair("two", 2),
5 Pair("three", 3))
6     //val theMap = mapOf(Pair("one", 1), Pair("two", 2),
7 Pair("three", 3))
8     println(theMap)
9     println("Entries: " + theMap.entries)
10    println("Keys:" + theMap.keys)
11    println("Values:" + theMap.values)
12 }
```

**16. Class and Objects**

```
1 //Class and Object in Kotlin
2
3 class myClass {
4     // Property (data member)
5     private var name: String = "Kotlin Programing"
6
7     // Member function
8     fun printMe() {
9         print("New Programing Language - " + name)
10    }
11 }
12 fun main(args: Array<String>) {
13     val obj = myClass() // Create object obj of myClass class
14     obj.printMe() // Call a member function using object
15 }
```

**17. Constructor**

```
1 //Constructor in Kotlin
2
3 class Person{
4     // Member Variables
5     var name: String
6     var age: Int
7
8     // Initializer Block
9     init {
10         println("Initializer Block")
11     }
12
13     // Secondary Constructor
14     constructor ( _name: String, _age: Int) {
15         this.name = _name
```



```

16         this.age = _age
17         println("Name = $name")
18         println("Age = $age")
19     }
20 }
21
22 fun main(args: Array<String>) {
23     val zara = Person("Malay Dave", 40)
24 }

```

## 18. Inheritance

```

1 //Inheritance in Kotlin
2
3 open class ABC {
4     open fun think () {
5         print("Hey!! i am thinking ")
6     }
7 }
8 class BCD: ABC() { // inheritance happens using default
9     constructor
10    override fun think() {
11        print("I Am from Child")
12    }
13 }
14 fun main(args: Array<String>) {
15     var a = BCD()
16     a.think()
17 }

```

## 19. Visibility Modes

```

1 //Protected Visibility Control in Kotlin
2
3 open class A() {
4     protected val i = 1
5 }
6 class B : A() {
7     fun getValue() : Int {
8         return i
9     }
10 }
11
12 fun main() {
13     var obj = B()
14     println(obj.getValue())
15 }

```

## 20. Exception Handling

```

1 //Exception Handling in Kotlin
2
3 fun main(args: Array<String>) {
4     try {
5         val myVar:Int = 12;
6         val v:String = "Kotlin Programing";
7         v.toInt();
8     } catch(e:Exception) {
9         e.printStackTrace();
10    } finally {

```

```
11         println("Exception Handeling in Kotlin");  
12     }  
13 }
```

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## **Unit – 2**

# **Introduction to Android & Android Application Design**

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**21. Hello World in Android****activity\_main.xml**  
-----

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <androidx.constraintlayout.widget.ConstraintLayout
3 xmlns:android="http://schemas.android.com/apk/res/android"
4   xmlns:app="http://schemas.android.com/apk/res-auto"
5   xmlns:tools="http://schemas.android.com/tools"
6   android:layout_width="match_parent"
7   android:layout_height="match_parent"
8   tools:context=".MainActivity">
9
10   <TextView
11       android:layout_width="wrap_content"
12       android:layout_height="wrap_content"
13       android:text="@string/hello"
14       android:textSize="24sp"
15       app:layout_constraintBottom_toBottomOf="parent"
16       app:layout_constraintEnd_toEndOf="parent"
17       app:layout_constraintStart_toStartOf="parent"
18       app:layout_constraintTop_toTopOf="parent" />
19
20 </androidx.constraintlayout.widget.ConstraintLayout>
```

  
-----**MainActivity.kt**  
-----

```
1 package com.example.helloworldkotlin
2
3 import androidx.appcompat.app.AppCompatActivity
4 import android.os.Bundle
5
6 class MainActivity : AppCompatActivity() {
7     override fun onCreate(savedInstanceState: Bundle?) {
8         super.onCreate(savedInstanceState)
9         setContentView(R.layout.activity_main)
10    }
11 }
```

  
-----**Strings.xml**  
-----

```
1 <resources>
2   <string name="app_name">HelloWorldKotlin</string>
3   <string name="hello">Hello World</string>
4 </resources>
```



## 22. Activity Life Cycle

activity\_main.xml

```

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

```

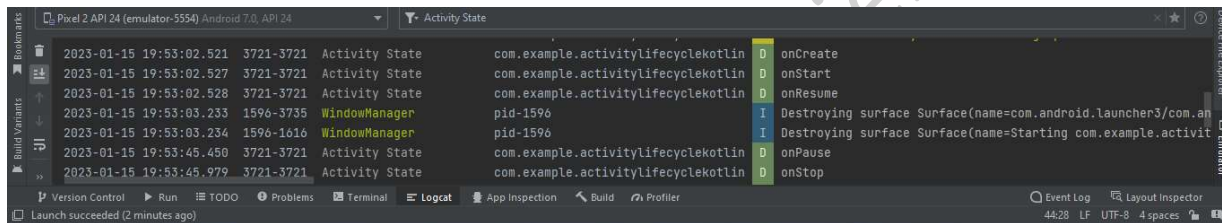
MainActivity.kt

```

1 package com.example.activitylifecyclekotlin
2
3 import androidx.appcompat.app.AppCompatActivity
4 import android.os.Bundle
5 import android.util.Log
6
7 class MainActivity : AppCompatActivity() {
8     override fun onCreate(savedInstanceState: Bundle?) {
9         super.onCreate(savedInstanceState)
10        setContentView(R.layout.activity_main)
11        print("onCreate")
12    }
13
14    override fun onStart() {
15        super.onStart()
16        print("onStart")
17    }
18
19    override fun onResume() {
20        super.onResume()
21        print("onResume")
22    }
23
24    override fun onPause() {
25        super.onPause()
26        print("onPause")
27    }
28

```

```
29     override fun onStop() {
30         super.onStop()
31         print("onStop")
32     }
33
34     override fun onRestart() {
35         super.onRestart()
36         print("onRestart")
37     }
38
39     override fun onDestroy() {
40         super.onDestroy()
41         print("onDestroy")
42     }
43
44     fun print(msg: String){
45         Log.d("Activity State ",msg)
46     }
47
48 }
```



## **Unit – 3**

# **Android User Interface Design**

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**23. EditText and Toast**

```

activity_main.xml
-----
1  <?xml version="1.0" encoding="utf-8"?>
2  <androidx.constraintlayout.widget.ConstraintLayout
3  xmlns:android="http://schemas.android.com/apk/res/android"
4      xmlns:app="http://schemas.android.com/apk/res-auto"
5      xmlns:tools="http://schemas.android.com/tools"
6      android:layout_width="match_parent"
7      android:layout_height="match_parent"
8      tools:context=".MainActivity">
9
10     <EditText
11         android:id="@+id/editTextTextPersonName2"
12         android:layout_width="wrap_content"
13         android:layout_height="wrap_content"
14         android:layout_marginStart="156dp"
15         android:ems="10"
16         android:inputType="textPersonName"
17         android:textAlignment="textStart"
18         app:layout_constraintStart_toStartOf="parent"
19         tools:ignore="MissingConstraints"
20         tools:layout_editor_absoluteY="68dp" />
21
22     <Button
23         android:id="@+id/button2"
24         android:layout_width="wrap_content"
25         android:layout_height="wrap_content"
26         android:layout_marginTop="32dp"
27         android:text="Show Text"
28         app:layout_constraintEnd_toEndOf="parent"
29         app:layout_constraintHorizontal_bias="0.498"
30         app:layout_constraintStart_toStartOf="parent"
31         app:layout_constraintTop_toBottomOf="@+id/editTextTextPersonName2" />
32
33     <TextView
34         android:id="@+id/textView"
35         android:layout_width="wrap_content"
36         android:layout_height="wrap_content"
37         android:text="Enter Text:"
38         android:textSize="24sp"
39         tools:layout_editor_absoluteX="16dp"
40         tools:layout_editor_absoluteY="68dp"
41         tools:ignore="MissingConstraints" />
42
43
44 </androidx.constraintlayout.widget.ConstraintLayout>
-----
MainActivity.kt
-----
1  package com.example.helloworld
2
3  import androidx.appcompat.app.AppCompatActivity
4  import android.os.Bundle
5  import android.widget.Button;
6  import android.view.View;
7  import android.widget.EditText;
8  import android.widget.Toast;
9
10 class MainActivity : AppCompatActivity() {
11
12     override fun onCreate(savedInstanceState: Bundle?) {
13         super.onCreate(savedInstanceState)

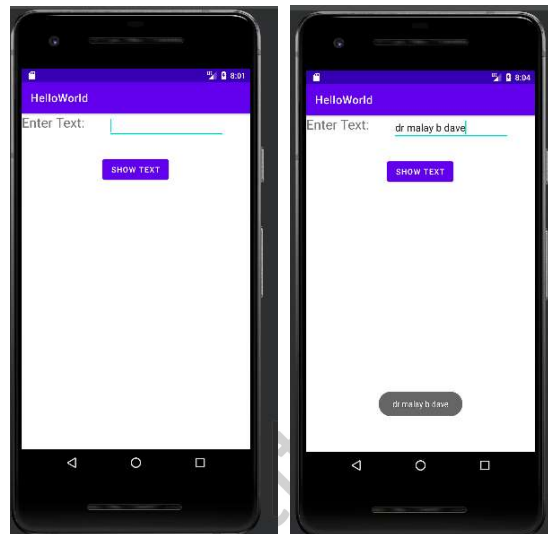
```



```

14 setContentView(R.layout.activity_main)
15
16 val but1 = findViewById<Button>(R.id.button2);
17 val txt1 = findViewById<EditText>(R.id.editTextTextPersonName2);
18
19 but1.setOnClickListener {
20
21 Toast.makeText(applicationContext,txt1.text.toString(),Toast.LENGTH_LONG).show()
22     }
23 }
24 }

```



#### 24. Two EditText and Toast

```

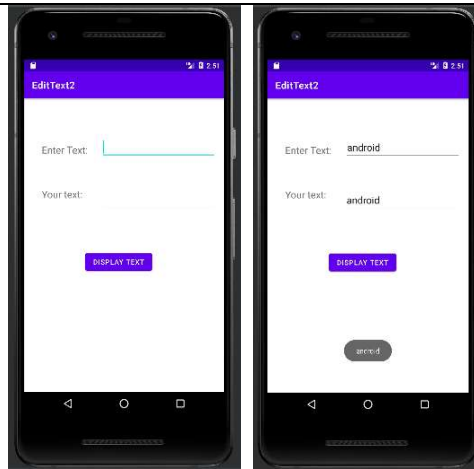
activity_main.xml
-----
1 <?xml version="1.0" encoding="utf-8"?>
2 <androidx.constraintlayout.widget.ConstraintLayout
3 xmlns:android="http://schemas.android.com/apk/res/android"
4   xmlns:app="http://schemas.android.com/apk/res-auto"
5   xmlns:tools="http://schemas.android.com/tools"
6   android:layout_width="match_parent"
7   android:layout_height="match_parent"
8   tools:context=".MainActivity">
9
10  <TextView
11      android:id="@+id/textView"
12      android:layout_width="wrap_content"
13      android:layout_height="wrap_content"
14      android:layout_marginStart="36dp"
15      android:layout_marginTop="92dp"
16      android:text="Enter Text:"
17      android:textSize="20sp"
18      app:layout_constraintStart_toStartOf="parent"
19      app:layout_constraintTop_toTopOf="parent" />
20
21  <EditText
22      android:id="@+id/editTextTextPersonName"
23      android:layout_width="wrap_content"
24      android:layout_height="wrap_content"
25      android:layout_marginStart="28dp"
26      android:layout_marginTop="76dp"
27      android:ems="10"
28      android:inputType="textPersonName"

```

```

29     android:textSize="20sp"
30     app:layout_constraintStart_toEndOf="@+id/textView"
31     app:layout_constraintTop_toTopOf="parent" />
32
33     <TextView
34         android:id="@+id/textView2"
35         android:layout_width="98dp"
36         android:layout_height="34dp"
37         android:layout_marginStart="36dp"
38         android:layout_marginTop="64dp"
39         android:text="Your text:"
40         android:textSize="20sp"
41         app:layout_constraintStart_toStartOf="parent"
42         app:layout_constraintTop_toBottomOf="@+id/textView" />
43     <EditText
44         android:id="@+id/editTextTextPersonName2"
45         android:layout_width="wrap_content"
46         android:layout_height="wrap_content"
47         android:layout_marginStart="24dp"
48         android:layout_marginTop="60dp"
49         android:ems="10"
50         android:inputType="textPersonName"
51         android:textSize="20sp"
52         app:layout_constraintStart_toEndOf="@+id/textView2"
53         app:layout_constraintTop_toBottomOf="@+id/editTextTextPersonName" />
54     <Button
55         android:id="@+id/button"
56         android:layout_width="wrap_content"
57         android:layout_height="wrap_content"
58         android:layout_marginTop="312dp"
59         android:text="Display Text"
60         app:layout_constraintEnd_toEndOf="parent"
61         app:layout_constraintHorizontal_bias="0.46"
62         app:layout_constraintStart_toStartOf="parent"
63         app:layout_constraintTop_toTopOf="parent" />
64 </androidx.constraintlayout.widget.ConstraintLayout>
65 -----
66 MainActivity.kt
67 -----
68 package com.example.edittxt2
69
70 import androidx.appcompat.app.AppCompatActivity
71 import android.os.Bundle
72 import android.widget.Button
73 import android.widget.EditText
74 import android.widget.Toast
75
76 class MainActivity : AppCompatActivity() {
77     override fun onCreate(savedInstanceState: Bundle?) {
78         super.onCreate(savedInstanceState)
79         setContentView(R.layout.activity_main)
80         val text1 = findViewById<EditText>(R.id.editTextTextPersonName)
81         val text2 = findViewById<EditText>(R.id.editTextTextPersonName2)
82         val but1=findViewById<Button>(R.id.button)
83
84         but1.setOnClickListener {
85             text2.setText(text1.text.toString())
86         }
87
88         Toast.makeText(applicationContext,text1.text.toString(),Toast.LENGTH_LONG).show()
89     }
90 }
91
92 }

```



## 25. Check Box

```

activity_main.xml
-----
1  <?xml version="1.0" encoding="utf-8"?>
2  <androidx.constraintlayout.widget.ConstraintLayout
3  xmlns:android="http://schemas.android.com/apk/res/android"
4      xmlns:app="http://schemas.android.com/apk/res-auto"
5      xmlns:tools="http://schemas.android.com/tools"
6      android:layout_width="match_parent"
7      android:layout_height="match_parent"
8      tools:context=".MainActivity">
9
10     <TextView
11         android:id="@+id/textView"
12         android:layout_width="wrap_content"
13         android:layout_height="wrap_content"
14         android:text="Select Item(s):"
15         android:textSize="24sp"
16         app:layout_constraintBottom_toBottomOf="parent"
17         app:layout_constraintEnd_toEndOf="parent"
18         app:layout_constraintStart_toStartOf="parent"
19         app:layout_constraintTop_toTopOf="parent"
20         app:layout_constraintVertical_bias="0.14" />
21
22     <LinearLayout
23         android:layout_width="315dp"
24         android:layout_height="160dp"
25         android:layout_marginTop="160dp"
26         android:orientation="vertical"
27         app:layout_constraintEnd_toEndOf="parent"
28         app:layout_constraintStart_toStartOf="parent"
29         app:layout_constraintTop_toTopOf="parent">
30
31         <CheckBox
32             android:id="@+id/chkPizza"
33             android:layout_width="wrap_content"
34             android:layout_height="wrap_content"
35             android:text="Pizza"
36             android:textSize="24sp" />
37
38         <CheckBox
39             android:id="@+id/chkHotDog"
40             android:layout_width="wrap_content"
41             android:layout_height="wrap_content"
42             android:text="Hot Dog"
43             android:textSize="24sp" />

```

```

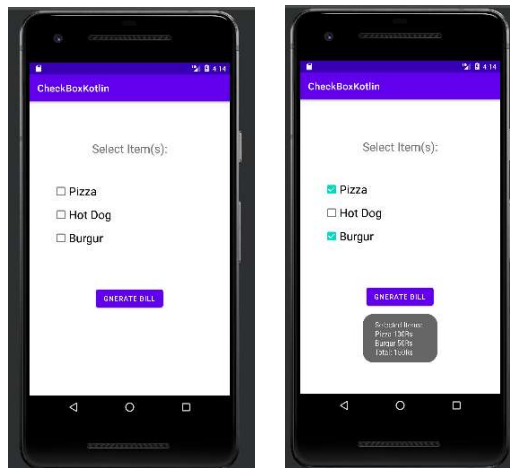
44
45         <CheckBox
46             android:id="@+id/chkBurgur"
47             android:layout_width="wrap_content"
48             android:layout_height="wrap_content"
49             android:text="Burgur"
50             android:textSize="24sp" />
51
52     </LinearLayout>
53
54     <Button
55         android:id="@+id/button"
56         android:layout_width="wrap_content"
57         android:layout_height="wrap_content"
58         android:layout_marginTop="380dp"
59         android:text="Gnerate Bill"
60         app:layout_constraintEnd_toEndOf="parent"
61         app:layout_constraintHorizontal_bias="0.498"
62         app:layout_constraintStart_toStartOf="parent"
63         app:layout_constraintTop_toTopOf="parent" />
64
65 </androidx.constraintlayout.widget.ConstraintLayout>
-----
MainActivity.kt
-----
1 package com.example.checkboxkotlin
2
3 import android.os.Bundle
4 import android.widget.Button
5 import android.widget.CheckBox
6 import android.widget.Toast
7 import androidx.appcompat.app.AppCompatActivity
8
9 class MainActivity : AppCompatActivity() {
10     override fun onCreate(savedInstanceState: Bundle?) {
11         super.onCreate(savedInstanceState)
12         setContentView(R.layout.activity_main)
13
14         val p=findViewById<CheckBox>(R.id.chkPizza)
15         val h=findViewById<CheckBox>(R.id.chkHotDog)
16         val b=findViewById<CheckBox>(R.id.chkBurgur)
17         val g=findViewById<Button>(R.id.button)
18
19         g.setOnClickListener {
20
21             var totalamount = 0
22             var result = StringBuilder()
23             result.append("Selected Items:")
24             if(p.isChecked()){
25                 result.append("\nPizza 100Rs")
26                 totalamount+=100
27             }
28             if(h.isChecked()){
29                 result.append("\nHot Dog 80Rs")
30                 totalamount+=80
31             }
32             if(b.isChecked()){
33                 result.append("\nBurgur 50Rs")
34                 totalamount+=50
35             }
36             result.append("\nTotal: "+totalamount+"Rs")
37             Toast.makeText(applicationContext, result.toString(),
38 Toast.LENGTH_LONG).show()

```

```

39     }
40 }
41 }

```



## 26. Radio Button

```

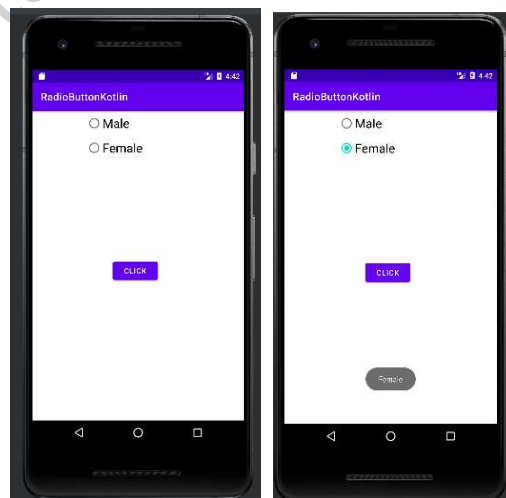
activity_main.xml
-----
1  <?xml version="1.0" encoding="utf-8"?>
2  <androidx.constraintlayout.widget.ConstraintLayout
3  xmlns:android="http://schemas.android.com/apk/res/android"
4      xmlns:app="http://schemas.android.com/apk/res-auto"
5      xmlns:tools="http://schemas.android.com/tools"
6      android:layout_width="match_parent"
7      android:layout_height="match_parent"
8      tools:context=".MainActivity">
9
10     <RadioGroup
11         android:id="@+id/radioGroup"
12         android:layout_width="203dp"
13         android:layout_height="115dp"
14         app:layout_constraintEnd_toEndOf="parent"
15         app:layout_constraintStart_toStartOf="parent"
16         tools:layout_editor_absoluteY="90dp">
17
18         <RadioButton
19             android:id="@+id/radioButton"
20             android:layout_width="match_parent"
21             android:layout_height="wrap_content"
22             android:text="Male"
23             android:textSize="24sp" />
24
25         <RadioButton
26             android:id="@+id/radioButton2"
27             android:layout_width="match_parent"
28             android:layout_height="wrap_content"
29             android:text="Female"
30             android:textSize="24sp" />
31     </RadioGroup>
32
33     <Button
34         android:id="@+id/button"
35         android:layout_width="wrap_content"
36         android:layout_height="wrap_content"
37         android:layout_marginStart="156dp"
38         android:layout_marginTop="288dp"
39         android:text="Click"

```

```

40         app:layout_constraintStart_toStartOf="parent"
41         app:layout_constraintTop_toTopOf="parent" />
42     </androidx.constraintlayout.widget.ConstraintLayout>
-----
MainActivity.kt
-----
1  package com.example.radiobuttonkotlin
2
3  import androidx.appcompat.app.AppCompatActivity
4  import android.os.Bundle
5  import android.widget.Button
6  import android.widget.RadioButton
7  import android.widget.RadioGroup
8  import android.widget.Toast
9
10 class MainActivity : AppCompatActivity() {
11     override fun onCreate(savedInstanceState: Bundle?) {
12         super.onCreate(savedInstanceState)
13         setContentView(R.layout.activity_main)
14
15         val radioGroup=findViewById<RadioGroup>(R.id.radioGroup)
16         val button=findViewById<Button>(R.id.button)
17
18         button.setOnClickListener {
19             var selectedId:Int = radioGroup.getCheckedRadioButtonId()
20             var generatedButton = findViewById<RadioButton>(selectedId)
21             if (selectedId!=-1)
22             {
23                 Toast.makeText(applicationContext,"Nothing selected",
24 Toast.LENGTH_SHORT).show()
25             }
26             else
27             {
28
29 Toast.makeText(applicationContext,generatedButton.text.toString(),
30 Toast.LENGTH_SHORT).show()
31             }
32         }
33     }

```



## 27. Spinner

```

activity_main.xml
-----
1  <?xml version="1.0" encoding="utf-8"?>
2  <androidx.constraintlayout.widget.ConstraintLayout
3  xmlns:android="http://schemas.android.com/apk/res/android"
4      xmlns:app="http://schemas.android.com/apk/res-auto"
5      xmlns:tools="http://schemas.android.com/tools"
6      android:layout_width="match_parent"
7      android:layout_height="match_parent"
8      tools:context=".MainActivity">
9
10     <TextView
11         android:id="@+id/textView"
12         android:layout_width="wrap_content"
13         android:layout_height="wrap_content"
14         android:text="Select Languages:"
15         app:layout_constraintBottom_toBottomOf="parent"
16         app:layout_constraintEnd_toEndOf="parent"
17         app:layout_constraintStart_toStartOf="parent"
18         app:layout_constraintTop_toTopOf="parent"
19         app:layout_constraintVertical_bias="0.195" />
20
21     <Spinner
22         android:id="@+id/spinner"
23         android:layout_width="wrap_content"
24         android:layout_height="wrap_content"
25         android:layout_marginTop="76dp"
26         app:layout_constraintEnd_toEndOf="parent"
27         app:layout_constraintStart_toStartOf="parent"
28         app:layout_constraintTop_toBottomOf="@+id/textView" />
29
30 </androidx.constraintlayout.widget.ConstraintLayout>
-----
strings.xml
-----
1  <resources>
2      <string name="app_name">SpinnerKotlin</string>
3      <string-array name="Languages">
4          <item>Java</item>
5          <item>Kotlin</item>
6          <item>Swift</item>
7          <item>Python</item>
8          <item>Scala</item>
9          <item>Perl</item>
10     </string-array>
11 </resources>
-----
MainActivity.kt
-----
1  package com.example.spinnerkotlin
2
3  import androidx.appcompat.app.AppCompatActivity
4  import android.os.Bundle
5  import android.view.View
6  import android.widget.AdapterView
7  import android.widget.AdapterView.OnItemClickListener
8  import android.widget.ArrayAdapter
9  import android.widget.Spinner
10 import android.widget.Toast
11
12 class MainActivity : AppCompatActivity() {
13     override fun onCreate(savedInstanceState: Bundle?) {
14         super.onCreate(savedInstanceState)

```

```

14      setContentView(R.layout.activity_main)
15
16      val languages = resources.getStringArray(R.array.Languages)
17
18      // access the spinner
19      val spinner = findViewById<Spinner>(R.id.spinner)
20      if (spinner != null) {
21          val adapter = ArrayAdapter(this,
22              android.R.layout.simple_spinner_item, languages)
23          spinner.adapter = adapter
24
25          spinner.onItemSelectedListener = object :
26              AdapterView.OnItemSelectedListener {
27              override fun onItemSelected(parent: AdapterView<*>,
28                  view: View, position: Int, id: Long)
29          {
30              Toast.makeText(this@MainActivity,
31                  "Language: " +
32                      "" + languages[position],
33                  Toast.LENGTH_SHORT).show()
34          }
35
36          override fun onNothingSelected(parent: AdapterView<*>) {
37              // write code to perform some action
38          }
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```



```

11         android:id="@+id/textView"
12         android:layout_width="wrap_content"
13         android:layout_height="wrap_content"
14         android:text="First Activity"
15         android:textSize="24sp"
16         app:layout_constraintBottom_toBottomOf="parent"
17         app:layout_constraintEnd_toEndOf="parent"
18         app:layout_constraintStart_toStartOf="parent"
19         app:layout_constraintTop_toTopOf="parent" />
20
21     <Button
22         android:id="@+id/button"
23         android:layout_width="wrap_content"
24         android:layout_height="wrap_content"
25         android:layout_marginTop="52dp"
26         android:text="Next"
27         app:layout_constraintEnd_toEndOf="parent"
28         app:layout_constraintHorizontal_bias="0.498"
29         app:layout_constraintStart_toStartOf="parent"
30         app:layout_constraintTop_toBottomOf="@+id/textView" />
31
32 </androidx.constraintlayout.widget.ConstraintLayout>
-----
activity_main2.xml
-----
1 <?xml version="1.0" encoding="utf-8"?>
2 <androidx.constraintlayout.widget.ConstraintLayout
3 xmlns:android="http://schemas.android.com/apk/res/android"
4   xmlns:app="http://schemas.android.com/apk/res-auto"
5   xmlns:tools="http://schemas.android.com/tools"
6   android:layout_width="match_parent"
7   android:layout_height="match_parent"
8   tools:context=".MainActivity2">
9
10     <TextView
11         android:id="@+id/textView2"
12         android:layout_width="wrap_content"
13         android:layout_height="wrap_content"
14         android:text="Second Activity"
15         android:textSize="24sp"
16         app:layout_constraintBottom_toBottomOf="parent"
17         app:layout_constraintEnd_toEndOf="parent"
18         app:layout_constraintStart_toStartOf="parent"
19         app:layout_constraintTop_toTopOf="parent" />
20
21     <Button
22         android:id="@+id/button2"
23         android:layout_width="wrap_content"
24         android:layout_height="wrap_content"
25         android:layout_marginTop="56dp"
26         android:text="Previous"
27         app:layout_constraintEnd_toEndOf="parent"
28         app:layout_constraintHorizontal_bias="0.498"
29         app:layout_constraintStart_toStartOf="parent"
30         app:layout_constraintTop_toBottomOf="@+id/textView2" />
31 </androidx.constraintlayout.widget.ConstraintLayout>
-----
MainActivity.kt
-----
1 package com.example.intentdemo;
2
3 import androidx.appcompat.app.AppCompatActivity;
4

```

```

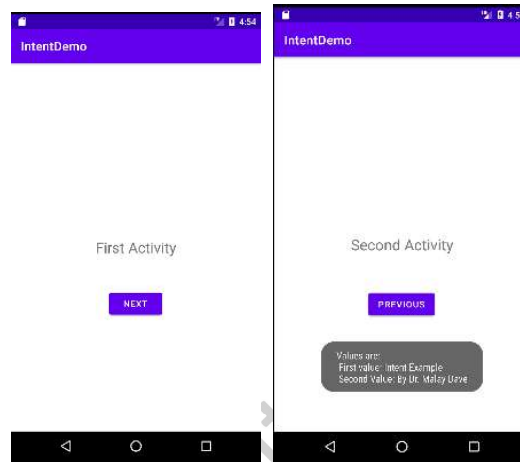
5 import android.content.Intent;
6 import android.os.Bundle;
7 import android.view.View;
8 import android.widget.Button;
9
10 public class MainActivity extends AppCompatActivity {
11
12     Button but1;
13
14     @Override
15     protected void onCreate(Bundle savedInstanceState) {
16         super.onCreate(savedInstanceState);
17         setContentView(R.layout.activity_main);
18
19         process();
20     }
21     void process() {
22         but1=(Button) findViewById(R.id.button);
23
24         but1.setOnClickListener(new View.OnClickListener() {
25             @Override
26             public void onClick(View view) {
27                 Intent i = new Intent(getApplicationContext(),
MainActivity2.class);
28                 i.putExtra("Value1", "Intent Example");
29                 i.putExtra("Value2", "By Dr. Malay Dave");
30                 startActivity(i);
31             }
32         });
33     }
34 }
35
-----
1 MainActivity2.kt
2 -----
3 package com.example.intentdemo;
4
5 import androidx.appcompat.app.AppCompatActivity;
6
7 import android.content.Intent;
8 import android.os.Bundle;
9 import android.view.View;
10 import android.widget.Button;
11 import android.widget.Toast;
12
13 public class MainActivity2 extends AppCompatActivity {
14
15     Button but2;
16
17     @Override
18     protected void onCreate(Bundle savedInstanceState) {
19         super.onCreate(savedInstanceState);
20         setContentView(R.layout.activity_main2);
21
22         Bundle extras = getIntent().getExtras();
23         String value1 = extras.getString("Value1");
24         String value2 = extras.getString("Value2");
25         Toast.makeText(getApplicationContext(), "Values are:\n First value: " +
value1 + "\n Second Value: " + value2, Toast.LENGTH_LONG).show();
26
27         process();
28     }
29

```

```

30 void process() {
31     but2=(Button) findViewById(R.id.button2);
32     but2.setOnClickListener(new View.OnClickListener() {
33         @Override
34         public void onClick(View view) {
35             Intent i = new Intent(getApplicationContext(),
36 MainActivity.class);
37             startActivity(i);
38         }
39     });
40 }

```



## 29. Implicit Intent

```

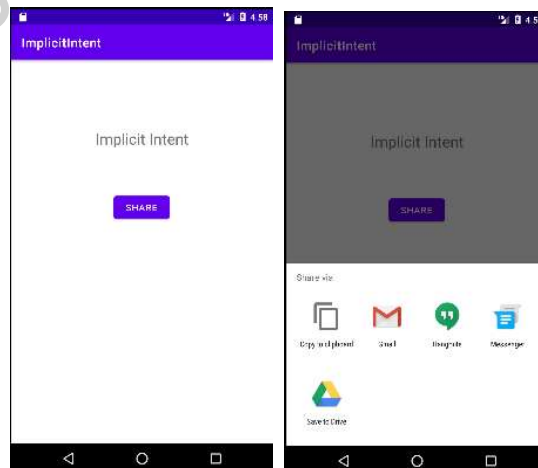
activity_main.xml
-----
1 <?xml version="1.0" encoding="utf-8"?>
2 <androidx.constraintlayout.widget.ConstraintLayout
3 xmlns:android="http://schemas.android.com/apk/res/android"
4   xmlns:app="http://schemas.android.com/apk/res-auto"
5   xmlns:tools="http://schemas.android.com/tools"
6   android:layout_width="match_parent"
7   android:layout_height="match_parent"
8   tools:context=".MainActivity">
9
10  <TextView
11      android:id="@+id/textView"
12      android:layout_width="wrap_content"
13      android:layout_height="wrap_content"
14      android:text="Implicit Intent"
15      android:textSize="24sp"
16      app:layout_constraintBottom_toBottomOf="parent"
17      app:layout_constraintEnd_toEndOf="parent"
18      app:layout_constraintStart_toStartOf="parent"
19      app:layout_constraintTop_toTopOf="parent"
20      app:layout_constraintVertical_bias="0.188" />
21
22  <Button
23      android:id="@+id/button"
24      android:layout_width="wrap_content"
25      android:layout_height="wrap_content"
26      android:layout_marginTop="68dp"
27      android:text="Share"
28      app:layout_constraintEnd_toEndOf="parent"
29      app:layout_constraintHorizontal_bias="0.498"
30      app:layout_constraintStart_toStartOf="parent"

```

```

31         app:layout_constraintTop_toBottomOf="@+id/textView" />
32
33     </androidx.constraintlayout.widget.ConstraintLayout>
-----
MainActivity.kt
-----
1  package com.example.implicitintent;
2
3  import androidx.appcompat.app.AppCompatActivity;
4
5  import android.content.Intent;
6  import android.os.Bundle;
7  import android.view.View;
8  import android.widget.Button;
9
10 public class MainActivity extends AppCompatActivity {
11
12     Button but;
13
14     @Override
15     protected void onCreate(Bundle savedInstanceState) {
16         super.onCreate(savedInstanceState);
17         setContentView(R.layout.activity_main);
18
19         but=(Button) findViewById(R.id.button);
20
21         but.setOnClickListener(new View.OnClickListener() {
22             @Override
23             public void onClick(View view) {
24                 Intent shareIntent = new
25 Intent(android.content.Intent.ACTION_SEND);
26                 shareIntent.setType("text/plain");
27                 shareIntent.putExtra(Intent.EXTRA_SUBJECT,"Insert Subject here");
28                 String app_url = " https://www.google.co.in";
29                 shareIntent.putExtra(android.content.Intent.EXTRA_TEXT,app_url);
30                 startActivity(Intent.createChooser(shareIntent, "Share via"));
31             }
32         });
33
34     }
35 }

```



**30. AlertDialog**

```

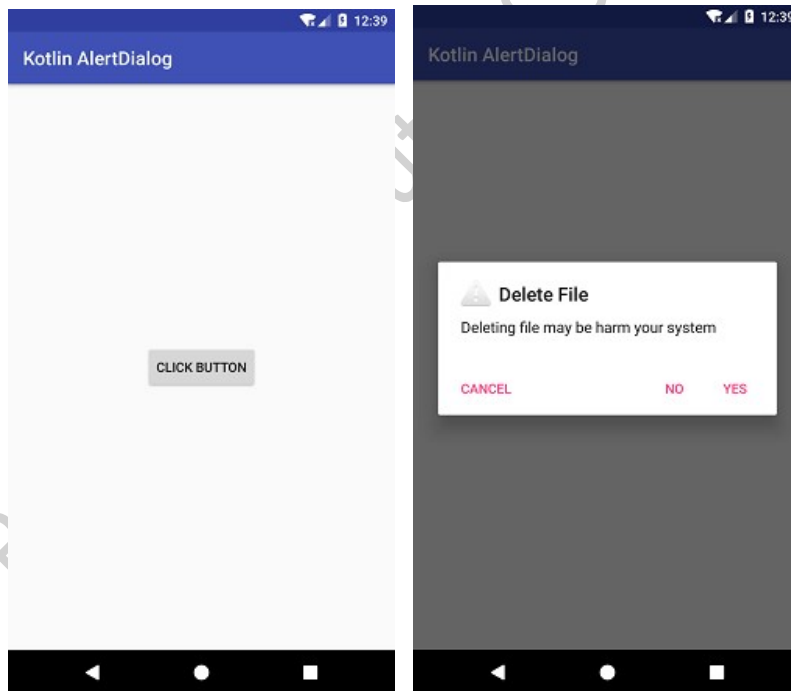
activity_main.xml
-----
1  <?xml version="1.0" encoding="utf-8"?>
2  <android.support.constraint.ConstraintLayout
3  xmlns:android="http://schemas.android.com/apk/res/android"
4      xmlns:app="http://schemas.android.com/apk/res-auto"
5      xmlns:tools="http://schemas.android.com/tools"
6      android:layout_width="match_parent"
7      android:layout_height="match_parent"
8      tools:context="example.com.kotlinalertdialog.MainActivity">
9
10     <Button
11         android:id="@+id/button"
12         android:layout_width="wrap_content"
13         android:layout_height="wrap_content"
14         android:layout_marginBottom="8dp"
15         android:layout_marginEnd="8dp"
16         android:layout_marginStart="8dp"
17         android:layout_marginTop="8dp"
18         android:text="@string/button"
19         app:layout_constraintBottom_toBottomOf="parent"
20         app:layout_constraintEnd_toEndOf="parent"
21         app:layout_constraintStart_toStartOf="parent"
22         app:layout_constraintTop_toTopOf="parent" />
23
24 </android.support.constraint.ConstraintLayout>
-----

strings.xml
-----
1  <resources>
2      <string name="app_name">Kotlin AlertDialog</string>
3      <string name="button">click button</string>
4      <string name="dialogTitle">Delete File</string>
5      <string name="dialogMessage">Deleting file may be harm your system</string>
6
7  </resources>
-----

MainActivity.kt
-----
1  package example.com.kotlinalertdialog
2
3  import android.support.v7.app.AppCompatActivity
4  import android.os.Bundle
5  import android.support.v7.app.AlertDialog
6  import android.widget.Button
7  import android.widget.Toast
8
9  class MainActivity : AppCompatActivity() {
10
11      override fun onCreate(savedInstanceState: Bundle?) {
12          super.onCreate(savedInstanceState)
13          setContentView(R.layout.activity_main)
14
15          val button = findViewById<Button>(R.id.button)
16
17          button.setOnClickListener {
18              val builder = AlertDialog.Builder(this)
19              //set title for alert dialog
20              builder.setTitle(R.string.dialogTitle)
21              //set message for alert dialog
22              builder.setMessage(R.string.dialogMessage)
23              builder.setIcon(android.R.drawable.ic_dialog_alert)

```

```
24
25     //performing positive action
26     builder.setPositiveButton("Yes"){dialogInterface, which ->
27         Toast.makeText(applicationContext,"clicked
28 yes",Toast.LENGTH_LONG).show()
29     }
30     //performing cancel action
31     builder.setNegativeButton("Cancel"){dialogInterface , which ->
32         Toast.makeText(applicationContext,"clicked cancel\n operation
33 cancel",Toast.LENGTH_LONG).show()
34     }
35     //performing negative action
36     builder.setNegativeButton("No"){dialogInterface, which ->
37         Toast.makeText(applicationContext,"clicked
38 No",Toast.LENGTH_LONG).show()
39     }
40     // Create the AlertDialog
41     val alertDialog: AlertDialog = builder.create()
42     // Set other dialog properties
43     alertDialog.setCancelable(false)
44     alertDialog.show()
45 }
46 }
48 }
```



## **Unit – 4**

# **Database Connectivity Using SQLite and Content Provider**

H & H B Kotak Institute of Science, Rajkot

**31. Write Data into External Storage**

```

activity_main.xml
-----
1  <?xml version="1.0" encoding="utf-8"?>
2  <RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
3      xmlns:app="http://schemas.android.com/apk/res-auto"
4      xmlns:tools="http://schemas.android.com/tools"
5      android:layout_width="match_parent"
6      android:layout_height="match_parent"
7      tools:context="example.com.kotlinexternalstoragereadwrite.MainActivity">
8
9
10     <TextView
11         android:id="@+id/textView"
12         android:layout_width="wrap_content"
13         android:layout_height="wrap_content"
14         android:layout_alignLeft="@+id/textView2"
15         android:layout_alignParentTop="true"
16         android:layout_alignStart="@+id/textView2"
17         android:layout_marginTop="68dp"
18         android:text="File Name"
19         android:textAppearance="@style/Base.TextAppearance.AppCompat.Medium"
20         app:layout_constraintBottom_toBottomOf="parent"
21         app:layout_constraintEnd_toEndOf="parent"
22         app:layout_constraintHorizontal_bias="0.027"
23         app:layout_constraintStart_toStartOf="parent"
24         app:layout_constraintTop_toTopOf="parent"
25         app:layout_constraintVertical_bias="0.065" />
26
27     <TextView
28         android:id="@+id/textView2"
29         android:layout_width="wrap_content"
30         android:layout_height="wrap_content"
31         android:layout_alignBottom="@+id/editTextData"
32         android:layout_alignParentLeft="true"
33         android:layout_alignParentStart="true"
34         android:layout_marginBottom="36dp"
35         android:layout_marginLeft="50dp"
36         android:layout_marginStart="50dp"
37         android:text="File Data"
38         android:textAppearance="@style/Base.TextAppearance.AppCompat.Medium"
39         app:layout_constraintBottom_toBottomOf="parent"
40         app:layout_constraintEnd_toEndOf="parent"
41         app:layout_constraintHorizontal_bias="0.027"
42         app:layout_constraintStart_toStartOf="parent"
43         app:layout_constraintTop_toBottomOf="@+id/textView"
44         app:layout_constraintVertical_bias="0.167" />
45
46     <EditText
47         android:id="@+id/editTextFile"
48         android:layout_width="wrap_content"
49         android:layout_height="wrap_content"
50         android:layout_alignLeft="@+id/editTextData"
51         android:layout_alignStart="@+id/editTextData"
52         android:layout_alignTop="@+id/textView"
53         android:ems="10"
54         android:inputType="none" />
55
56     <EditText
57         android:id="@+id/editTextData"
58         android:layout_width="wrap_content"
59         android:layout_height="wrap_content"
60         android:layout_alignParentEnd="true"

```



```

61         android:layout_alignParentRight="true"
62         android:layout_below="@+id/editTextFile"
63         android:layout_marginEnd="37dp"
64         android:layout_marginRight="37dp"
65         android:layout_marginTop="30dp"
66         android:ems="10"
67         android:inputType="none"
68         android:lines="5" />
69
70     <Button
71         android:id="@+id/button_save"
72         android:layout_width="wrap_content"
73         android:layout_height="wrap_content"
74         android:layout_alignParentBottom="true"
75         android:layout_marginBottom="68dp"
76         android:layout_toLeftOf="@+id/editTextData"
77         android:layout_toStartOf="@+id/editTextData"
78         android:text="Save" />
79
80     <Button
81         android:id="@+id/button_view"
82         android:layout_width="wrap_content"
83         android:layout_height="wrap_content"
84         android:layout_alignBottom="@+id/button_save"
85         android:layout_alignEnd="@+id/editTextData"
86         android:layout_alignRight="@+id/editTextData"
87         android:layout_marginEnd="43dp"
88         android:layout_marginRight="43dp"
89         android:text="View" />
90
91 </RelativeLayout>
-----
MainActivity.kt
-----
1 package example.com.kotlinexternalstoragereadwrite
2
3 import android.support.v7.app.AppCompatActivity
4 import android.os.Bundle
5 import android.view.View
6 import android.widget.Button
7 import android.widget.EditText
8 import android.widget.Toast
9 import android.os.Environment
10 import java.io.*
11
12 class MainActivity : AppCompatActivity() {
13     private val filepath = "MyFileStorage"
14     internal var myExternalFile: File?=null
15     private val isExternalStorageReadOnly: Boolean get() {
16         val extStorageState = Environment.getExternalStorageState()
17         return if (Environment.MEDIA_MOUNTED_READ_ONLY.equals(extStorageState)) {
18             true
19         } else {
20             false
21         }
22     }
23     private val isExternalStorageAvailable: Boolean get() {
24         val extStorageState = Environment.getExternalStorageState()
25         return if (Environment.MEDIA_MOUNTED.equals(extStorageState)) {
26             true
27         } else{
28             false
29         }
30     }

```

```

30     }
31
32     override fun onCreate(savedInstanceState: Bundle?) {
33         super.onCreate(savedInstanceState)
34         setContentView(R.layout.activity_main)
35         val fileName = findViewById(R.id.editTextFile) as EditText
36         val fileData = findViewById(R.id.editTextData) as EditText
37         val saveButton = findViewById<Button>(R.id.button_save) as Button
38         val viewButton = findViewById(R.id.button_view) as Button
39
40         saveButton.setOnClickListener(View.OnClickListener {
41             myExternalFile = File(getExternalFilesDir(filepath),
fileName.text.toString())
42             try {
43                 val fileOutputStream = FileOutputStream(myExternalFile)
44                 fileOutputStream.write(fileData.text.toString().toByteArray())
45                 fileOutputStream.close()
46             } catch (e: IOException) {
47                 e.printStackTrace()
48             }
49             Toast.makeText(applicationContext, "data save", Toast.LENGTH_SHORT).show()
50         })
51         viewButton.setOnClickListener(View.OnClickListener {
52             myExternalFile = File(getExternalFilesDir(filepath),
fileName.text.toString())
53
54             val filename = fileName.text.toString()
55             myExternalFile = File(getExternalFilesDir(filepath), filename)
56             if(filename.toString() != null && filename.toString().trim() != "") {
57                 var fileInputStream = FileInputStream(myExternalFile)
58                 var inputStreamReader: InputStreamReader =
InputStreamReader(fileInputStream)
59                 val bufferedReader: BufferedReader = BufferedReader(inputStreamReader)
60                 val stringBuilder: StringBuilder = StringBuilder()
61                 var text: String? = null
62                 while ({ text = bufferedReader.readLine(); text }() != null) {
63                     stringBuilder.append(text)
64                 }
65                 fileInputStream.close()
66                 //Displaying data on EditText
67                 Toast.makeText(applicationContext, stringBuilder.toString(), Toast.LENGTH_SHORT).show()
68             }
69         })
70
71         if (!isExternalStorageAvailable || isExternalStorageReadOnly) {
72             saveButton.isEnabled = false
73         }
74     }
75 }

```

---

AndroidManifest.xml

```

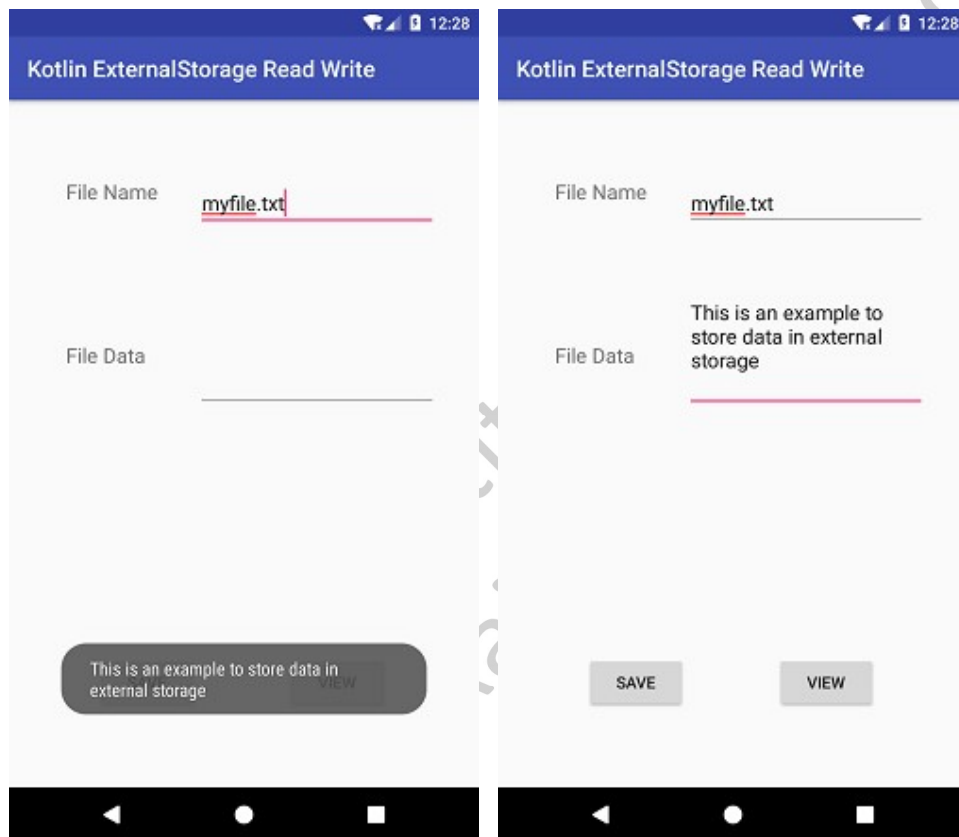
1 -----
2 <?xml version="1.0" encoding="utf-8"?>
3 <manifest xmlns:android="http://schemas.android.com/apk/res/android"
4     package="example.javatpoint.com.kotlinexternalstoragereadwrite">
5     <uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE"/>
6     <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"/>
7     <application
8         android:allowBackup="true"
9         android:icon="@mipmap/ic_launcher"
10        android:label="@string/app_name"
11        android:roundIcon="@mipmap/ic_launcher_round"
12        android:supportRtl="true"

```

```

13     android:theme="@style/AppTheme">
14     <activity android:name=".MainActivity">
15         <intent-filter>
16             <action android:name="android.intent.action.MAIN" />
17
18             <category android:name="android.intent.category.LAUNCHER" />
19         </intent-filter>
20     </activity>
21 </application>
22 </manifest>

```



### 32. SharedPreferences

```

activity_main.xml
-----
1  <?xml version="1.0" encoding="utf-8"?>
2  <android.support.constraint.ConstraintLayout
3  xmlns:android="http://schemas.android.com/apk/res/android"
4      xmlns:app="http://schemas.android.com/apk/res-auto"
5      xmlns:tools="http://schemas.android.com/tools"
6      android:layout_width="match_parent"
7      android:layout_height="match_parent"
8      tools:context="example.com.kotlinsharedpreference.MainActivity">
9
10     <TableLayout
11         android:layout_width="368dp"
12         android:layout_height="495dp"
13         android:layout_marginBottom="8dp"
14         android:layout_marginEnd="8dp"
15         android:layout_marginStart="8dp"
16         android:layout_marginTop="8dp"

```

```

17     app:layout_constraintBottom_toBottomOf="parent"
18     app:layout_constraintEnd_toEndOf="parent"
19     app:layout_constraintStart_toStartOf="parent"
20     app:layout_constraintTop_toTopOf="parent">
21     <TableRow>
22         <TextView
23             android:layout_width="wrap_content"
24             android:layout_height="wrap_content"
25             android:layout_column="0"
26             android:layout_marginLeft="10sp"
27             android:layout_marginStart="10sp"
28             android:text="Enter Id"
29             android:textAppearance="@style/Base.TextAppearance.AppCompat.Medium"
30         />
31         <EditText
32             android:id="@+id/editId"
33             android:layout_width="201dp"
34             android:layout_height="wrap_content"
35             android:layout_column="1"
36             android:layout_marginLeft="50sp"
37             android:layout_marginStart="50sp"
38             android:hint="id"
39             android:textAppearance="@style/Base.TextAppearance.AppCompat.Medium"
40         />
41     </TableRow>
42     <TableRow>
43         <TextView
44             android:layout_width="wrap_content"
45             android:layout_height="wrap_content"
46             android:layout_column="0"
47             android:layout_marginLeft="10sp"
48             android:layout_marginStart="10sp"
49             android:text="Enter Name"
50             android:textAppearance="@style/Base.TextAppearance.AppCompat.Medium"
51         />
52         <EditText
53             android:id="@+id/editName"
54             android:layout_width="wrap_content"
55             android:layout_height="wrap_content"
56             android:layout_column="1"
57             android:layout_marginLeft="50sp"
58             android:layout_marginStart="50sp"
59             android:hint="name"
60             android:textAppearance="@style/Base.TextAppearance.AppCompat.Medium"
61         />
62     </TableRow>
63     <TableRow android:layout_marginTop="60dp">
64         <TextView
65             android:layout_width="wrap_content"
66             android:layout_height="wrap_content"
67             android:layout_column="0"
68             android:layout_marginLeft="10sp"
69             android:layout_marginStart="10sp"
70             android:text="Your Id"
71             android:textAppearance="@style/Base.TextAppearance.AppCompat.Medium"
72         />
73         <TextView
74             android:id="@+id/textViewShowId"
75             android:layout_width="wrap_content"
76             android:layout_height="wrap_content"
77             android:layout_column="1"

```

```

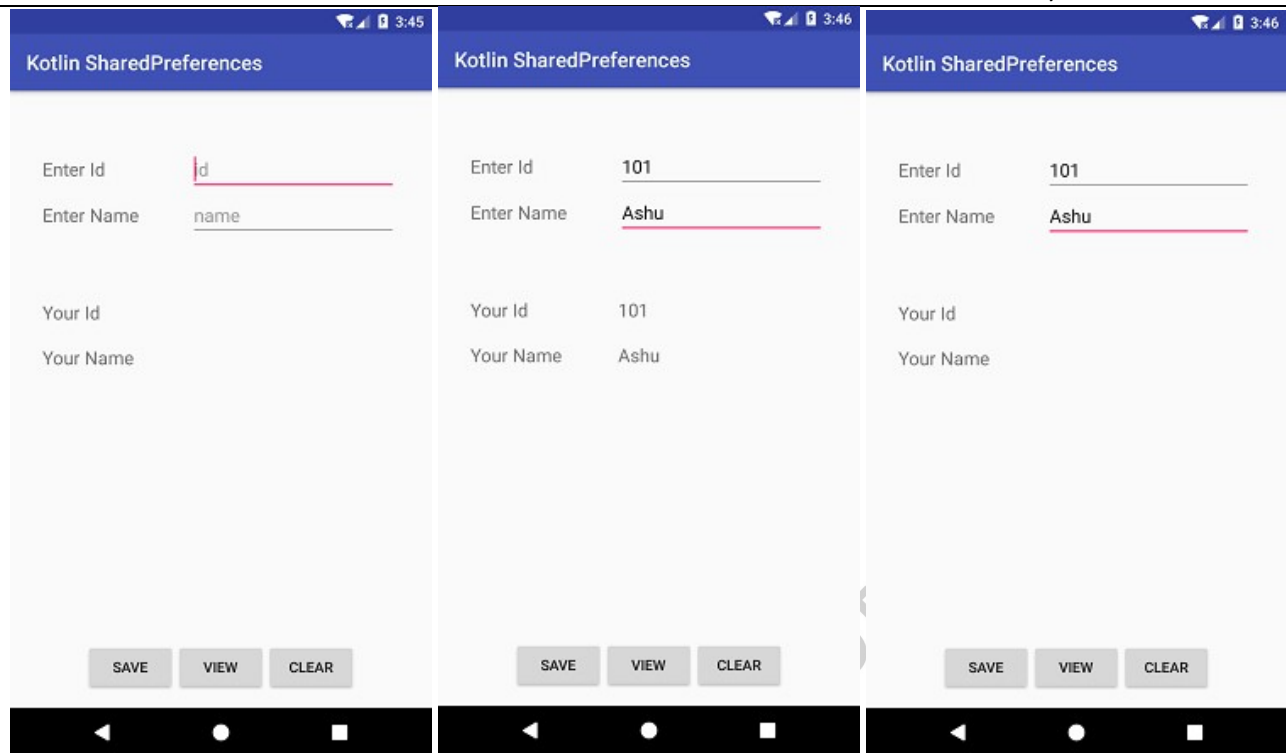
76         android:layout_marginLeft="50sp"
77         android:layout_marginStart="50sp"
78         android:textAppearance="@style/Base.TextAppearance.AppCompat.Medium"
79     />
80     </TableRow>
81     <TableRow android:layout_marginTop="20dp">
82         <TextView
83             android:layout_width="wrap_content"
84             android:layout_height="wrap_content"
85             android:layout_column="0"
86             android:layout_marginLeft="10sp"
87             android:layout_marginStart="10sp"
88             android:text="Your Name"
89             android:textAppearance="@style/Base.TextAppearance.AppCompat.Medium"
90         />
91         <TextView
92             android:id="@+id/textViewShowName"
93             android:layout_width="wrap_content"
94             android:layout_height="wrap_content"
95             android:layout_column="1"
96             android:layout_marginLeft="50sp"
97             android:layout_marginStart="50sp"
98             android:textAppearance="@style/Base.TextAppearance.AppCompat.Medium"
99         />
100     </TableRow>
101 </TableLayout>
102 <LinearLayout
103     android:layout_width="fill_parent"
104     android:layout_height="wrap_content"
105     android:layout_marginBottom="16dp"
106     android:layout_marginEnd="8dp"
107     android:layout_marginStart="8dp"
108     android:orientation="horizontal"
109     android:gravity="center"
110     app:layout_constraintBottom_toBottomOf="parent"
111     app:layout_constraintEnd_toEndOf="parent"
112     app:layout_constraintHorizontal_bias="0.0"
113     app:layout_constraintStart_toStartOf="parent">
114     <Button
115         android:id="@+id/save"
116         android:layout_width="wrap_content"
117         android:layout_height="wrap_content"
118         android:text="Save" />
119     <Button
120         android:id="@+id/view"
121         android:layout_width="wrap_content"
122         android:layout_height="wrap_content"
123         android:text="View" />
124     <Button
125         android:id="@+id/clear"
126         android:layout_width="wrap_content"
127         android:layout_height="wrap_content"
128         android:text="Clear" />
129 </LinearLayout>
</android.support.constraint.ConstraintLayout>
-----
MainActivity.kt
-----
1 package example.com.kotlinsharedpreference
2
3 import android.content.Context
4 import android.content.SharedPreferences

```

```

5  import android.support.v7.app.AppCompatActivity
6  import android.os.Bundle
7  import android.view.View
8  import android.widget.Button
9  import android.widget.EditText
10 import android.widget.TextView
11
12
13
14 class MainActivity : AppCompatActivity() {
15
16     private val sharedPrefFile = "kotlinsharedpreference"
17
18     override fun onCreate(savedInstanceState: Bundle?) {
19         super.onCreate(savedInstanceState)
20         setContentView(R.layout.activity_main)
21
22         val inputId = findViewById<EditText>(R.id.editId)
23         val inputName = findViewById<EditText>(R.id.editName)
24         val outputId = findViewById<TextView>(R.id.textViewShowId)
25         val outputName = findViewById<TextView>(R.id.textViewShowName)
26
27         val btnSave = findViewById<Button>(R.id.save)
28         val btnView = findViewById<Button>(R.id.view)
29         val btnClear = findViewById<Button>(R.id.clear)
30         val sharedPreferences: SharedPreferences =
31 this.getSharedPreferences(sharedPrefFile, Context.MODE_PRIVATE)
32         btnSave.setOnClickListener(View.OnClickListener {
33             val id: Int = Integer.parseInt(inputId.text.toString())
34             val name: String = inputName.text.toString()
35             val editor: SharedPreferences.Editor = sharedPreferences.edit()
36             editor.putInt("id_key", id)
37             editor.putString("name_key", name)
38             editor.apply()
39             editor.commit()
40         })
41         btnView.setOnClickListener {
42             val sharedIdValue = sharedPreferences.getInt("id_key", 0)
43             val sharedNameValue =
44 sharedPreferences.getString("name_key", "defaultname")
45             if(sharedIdValue.equals(0) && sharedNameValue.equals("defaultname")){
46                 outputName.setText("default name: ${sharedNameValue}").toString()
47                 outputId.setText("default id: ${sharedIdValue.toString()}")
48             }else{
49                 outputName.setText(sharedNameValue).toString()
50                 outputId.setText(sharedIdValue.toString())
51             }
52         }
53     }
54
55     btnClear.setOnClickListener(View.OnClickListener {
56         val editor = sharedPreferences.edit()
57         editor.clear()
58         editor.apply()
59         outputName.setText("").toString()
60         outputId.setText("").toString()
61     })
62 }
63 }

```



### 33. SQLite Example

```

MainActivity.kt
-----
1  package com.example.sqlitedemojava;
2
3  import androidx.appcompat.app.AppCompatActivity;
4
5  import android.os.Bundle;
6  import android.util.Log;
7
8  import java.util.List;
9
10 public class MainActivity extends AppCompatActivity {
11
12     @Override
13     protected void onCreate(Bundle savedInstanceState) {
14         super.onCreate(savedInstanceState);
15         setContentView(R.layout.activity_main);
16
17         DatabaseHandler db = new DatabaseHandler(this);
18
19         // Inserting Contacts
20         Log.d("Insert: ", "Inserting ..");
21         db.addContact(new Contact("Ravi", "9100000000"));
22         db.addContact(new Contact("Srinivas", "9199999999"));
23         db.addContact(new Contact("Tommy", "9522222222"));
24         db.addContact(new Contact("Karthik", "9533333333"));
25
26         // Reading all contacts
27         Log.d("Reading: ", "Reading all contacts..");
28         List<Contact> contacts = db.getAllContacts();
29
30         for (Contact cn : contacts) {
31             String log = "Id: " + cn.getID() + " ,Name: " + cn.getName() + " ,Phone: " +
32                 cn.getPhoneNumber();

```

```

33         // Writing Contacts to log
34         Log.d("Name: ", log);
35     }
36
37 }
38 }
-----
DatabaseHandler.java
-----
1 package com.example.sqlitedemojava;
2
3 import android.content.ContentValues;
4 import android.content.Context;
5 import android.database.Cursor;
6 import android.database.sqlite.SQLiteDatabase;
7 import android.database.sqlite.SQLiteOpenHelper;
8 import java.util.ArrayList;
9 import java.util.List;
10
11 public class DatabaseHandler extends SQLiteOpenHelper {
12     private static final int DATABASE_VERSION = 1;
13     private static final String DATABASE_NAME = "contactsManager";
14     private static final String TABLE_CONTACTS = "contacts";
15     private static final String KEY_ID = "id";
16     private static final String KEY_NAME = "name";
17     private static final String KEY_PH_NO = "phone_number";
18
19     public DatabaseHandler(Context context) {
20         super(context, DATABASE_NAME, null, DATABASE_VERSION);
21         //3rd argument to be passed is CursorFactory instance
22     }
23     // Creating Tables
24     @Override
25     public void onCreate(SQLiteDatabase db) {
26         String CREATE_CONTACTS_TABLE = "CREATE TABLE " + TABLE_CONTACTS + "("
27             + KEY_ID + " INTEGER PRIMARY KEY," + KEY_NAME + " TEXT,"
28             + KEY_PH_NO + " TEXT" + ")";
29         db.execSQL(CREATE_CONTACTS_TABLE);
30     }
31     // Upgrading database
32     @Override
33     public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
34         // Drop older table if existed
35         db.execSQL("DROP TABLE IF EXISTS " + TABLE_CONTACTS);
36
37         // Create tables again
38         onCreate(db);
39     }
40     // code to add the new contact
41     void addContact(Contact contact) {
42         SQLiteDatabase db = this.getWritableDatabase();
43
44         ContentValues values = new ContentValues();
45         values.put(KEY_NAME, contact.getName()); // Contact Name
46         values.put(KEY_PH_NO, contact.getPhoneNumber()); // Contact Phone
47         // Inserting Row
48         db.insert(TABLE_CONTACTS, null, values);
49         //2nd argument is String containing nullColumnHack
50         db.close(); // Closing database connection
51     }
52     // code to get the single contact
53     Contact getContact(int id) {
54         SQLiteDatabase db = this.getReadableDatabase();
55

```



```

56     Cursor cursor = db.query(TABLE_CONTACTS, new String[] { KEY_ID,
57         KEY_NAME, KEY_PH_NO }, KEY_ID + "=?",
58         new String[] { String.valueOf(id) }, null, null, null, null);
59     if (cursor != null)
60         cursor.moveToFirst();
61
62     Contact contact = new Contact(Integer.parseInt(cursor.getString(0)),
63         cursor.getString(1), cursor.getString(2));
64     // return contact
65     return contact;
66 }
67 // code to get all contacts in a list view
68 public List<Contact> getAllContacts() {
69     List<Contact> contactList = new ArrayList<Contact>();
70     // Select All Query
71     String selectQuery = "SELECT * FROM " + TABLE_CONTACTS;
72
73     SQLiteDatabase db = this.getWritableDatabase();
74     Cursor cursor = db.rawQuery(selectQuery, null);
75
76     // looping through all rows and adding to list
77     if (cursor.moveToFirst()) {
78         do {
79             Contact contact = new Contact();
80             contact.setID(Integer.parseInt(cursor.getString(0)));
81             contact.setName(cursor.getString(1));
82             contact.setPhoneNumber(cursor.getString(2));
83             // Adding contact to list
84             contactList.add(contact);
85         } while (cursor.moveToNext());
86     }
87     // return contact list
88     return contactList;
89 }
90 // code to update the single contact
91 public int updateContact(Contact contact) {
92     SQLiteDatabase db = this.getWritableDatabase();
93
94     ContentValues values = new ContentValues();
95     values.put(KEY_NAME, contact.getName());
96     values.put(KEY_PH_NO, contact.getPhoneNumber());
97
98     // updating row
99     return db.update(TABLE_CONTACTS, values, KEY_ID + " = ?",
100         new String[] { String.valueOf(contact.getID()) });
101 }
102 // Deleting single contact
103 public void deleteContact(Contact contact) {
104     SQLiteDatabase db = this.getWritableDatabase();
105     db.delete(TABLE_CONTACTS, KEY_ID + " = ?",
106         new String[] { String.valueOf(contact.getID()) });
107     db.close();
108 }
109 // Getting contacts Count
110 public int getContactsCount() {
111     String countQuery = "SELECT * FROM " + TABLE_CONTACTS;
112     SQLiteDatabase db = this.getReadableDatabase();
113     Cursor cursor = db.rawQuery(countQuery, null);
114     cursor.close();
115     // return count
116     return cursor.getCount();
117 }
118 }
119 }

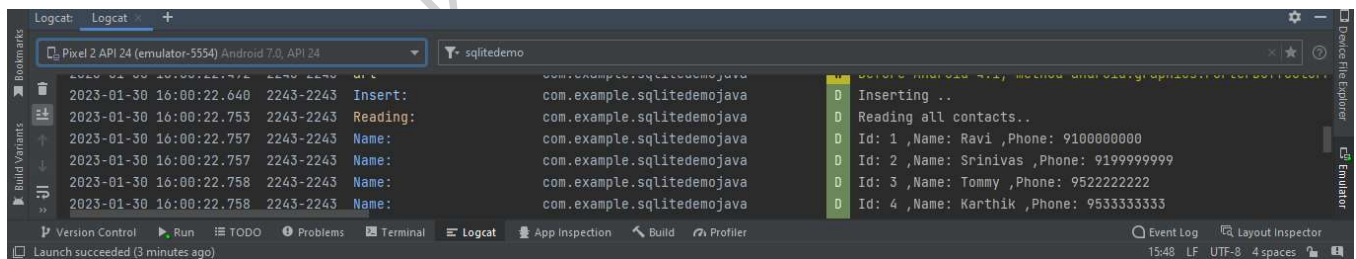
```

Contact.java

```

1 package com.example.sqlitedemojava;
2
3 public class Contact {
4     int _id;
5     String _name;
6     String _phone_number;
7     public Contact(){ }
8     public Contact(int id, String name, String _phone_number){
9         this._id = id;
10        this._name = name;
11        this._phone_number = _phone_number;
12    }
13    public Contact(String name, String _phone_number){
14        this._name = name;
15        this._phone_number = _phone_number;
16    }
17    public int getID(){
18        return this._id;
19    }
20    public void setID(int id){
21        this._id = id;
22    }
23    public String getName(){
24        return this._name;
25    }
26    public void setName(String name){
27        this._name = name;
28    }
29    public String getPhoneNumber(){
30        return this._phone_number;
31    }
32    public void setPhoneNumber(String phone_number){
33        this._phone_number = phone_number;
34    }
35 }

```



## **Unit – 5**

# **Location Based Services (LBS), Common Android API, Notifications, Services, Deployment of applications**

**34. Android device vibrate programmatically**

activity\_main.xml

```

1  <?xml version="1.0" encoding="utf-8"?>
2  <androidx.constraintlayout.widget.ConstraintLayout
3  xmlns:android="http://schemas.android.com/apk/res/android"
4      xmlns:app="http://schemas.android.com/apk/res-auto"
5      xmlns:tools="http://schemas.android.com/tools"
6      android:layout_width="match_parent"
7      android:layout_height="match_parent"
8      tools:context=".MainActivity">
9
10     <RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
11         xmlns:tools="http://schemas.android.com/tools"
12         android:layout_width="match_parent"
13         android:layout_height="match_parent"
14         tools:context=".MainActivity">
15         <TextView
16             android:layout_width="wrap_content"
17             android:layout_height="wrap_content"
18             android:layout_centerHorizontal="true"
19             android:layout_marginTop="70dp"
20             android:background="#008080"
21             android:padding="5dp"
22             android:text="Vibrate Device"
23             android:textColor="#fff"
24             android:textSize="24sp"
25             android:textStyle="bold" />
26         <TextView
27             android:id="@+id/textView"
28             android:layout_width="wrap_content"
29             android:layout_height="wrap_content"
30             android:layout_centerInParent="true"
31             android:textColor="@android:color/holo_blue_dark"
32             android:textSize="24sp"
33             android:textStyle="bold" />
34     </RelativeLayout>
35
36 </androidx.constraintlayout.widget.ConstraintLayout>

```

MainActivity.kt

```

1  package com.example.vibratedevicekotlin
2
3  import android.content.Context
4  import android.os.Build
5  import androidx.appcompat.app.AppCompatActivity
6  import android.os.Bundle
7  import android.os.VibrationEffect
8  import android.os.Vibrator
9
10  @Suppress("DEPRECATION")
11  class MainActivity : AppCompatActivity() {
12      override fun onCreate(savedInstanceState: Bundle?) {
13          super.onCreate(savedInstanceState)
14          setContentView(R.layout.activity_main)
15
16          title = "KotlinApp"
17          val v = (getSystemService(Context.VIBRATOR_SERVICE) as Vibrator)
18          // Vibrate for 500 milliseconds
19          if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.O) {
20
21          v.vibrate(VibrationEffect.createOneShot(500,VibrationEffect.DEFAULT_AMPLITUDE))

```

```

22     }
23     else {
24         v.vibrate(500)
25     }
26 }
27 }

```

---

AndroidManifest.xml

---

```

1 <?xml version="1.0" encoding="utf-8"?>
2 <manifest xmlns:android="http://schemas.android.com/apk/res/android"
3     xmlns:tools="http://schemas.android.com/tools">
4
5     <uses-permission android:name="android.permission.VIBRATE" />
6     <application
7         android:allowBackup="true"
8         android:dataExtractionRules="@xml/data_extraction_rules"
9         android:fullBackupContent="@xml/backup_rules"
10        android:icon="@mipmap/ic_launcher"
11        android:label="@string/app_name"
12        android:roundIcon="@mipmap/ic_launcher_round"
13        android:supportsRtl="true"
14        android:theme="@style/Theme.VibrateDeviceKotlin"
15        tools:targetApi="31">
16        <activity
17            android:name=".MainActivity"
18            android:exported="true">
19            <intent-filter>
20                <action android:name="android.intent.action.MAIN" />
21                <category android:name="android.intent.category.LAUNCHER" />
22            </intent-filter>
23            <meta-data
24                android:name="android.app.lib_name"
25                android:value="" />
26            </activity>
27        </application>
28    </manifest>

```



Vibrate Device

**35. Android telephony api**

activity\_main.xml

```

1 <RelativeLayout xmlns:androclass="http://schemas.android.com/apk/res/android"
2   xmlns:tools="http://schemas.android.com/tools"
3   android:layout_width="match_parent"
4   android:layout_height="match_parent"
5   android:paddingBottom="@dimen/activity_vertical_margin"
6   android:paddingLeft="@dimen/activity_horizontal_margin"
7   android:paddingRight="@dimen/activity_horizontal_margin"
8   android:paddingTop="@dimen/activity_vertical_margin"
9   tools:context=".MainActivity" >
10
11   <TextView
12       android:id="@+id/textView1"
13       android:layout_width="wrap_content"
14       android:layout_height="wrap_content"
15       android:layout_alignParentLeft="true"
16       android:layout_alignParentTop="true"
17       android:layout_marginLeft="38dp"
18       android:layout_marginTop="30dp"
19       android:text="Phone Details:" />
20
21 </RelativeLayout>

```

MainActivity.kt

```

1 package com.example.telephonyapi
2
3 import android.os.Bundle;
4 import android.app.Activity;
5 import android.content.Context;
6 import android.telephony.TelephonyManager;
7 import android.view.Menu;
8 import android.widget.TextView;
9
10 public class MainActivity extends Activity {
11     TextView textView1;
12     @Override
13     protected void onCreate(Bundle savedInstanceState) {
14         super.onCreate(savedInstanceState);
15         setContentView(R.layout.activity_main);
16
17         textView1=(TextView)findViewById(R.id.textView1);
18
19         //Get the instance of TelephonyManager
20         TelephonyManager
tm=(TelephonyManager) getSystemService(Context.TELEPHONY_SERVICE);
21
22         //Calling the methods of TelephonyManager the returns the information
23         String IMEINumber=tm.getDeviceId();
24         String subscriberID=tm.getDeviceId();
25         String SIMSerialNumber=tm.getSimSerialNumber();
26         String networkCountryISO=tm.getNetworkCountryIso();
27         String SIMCountryISO=tm.getSimCountryIso();
28         String softwareVersion=tm.getDeviceSoftwareVersion();
29         String voiceMailNumber=tm.getVoiceMailNumber();
30
31         //Get the phone type
32         String strphoneType="";
33
34         int phoneType=tm.getPhoneType();
35

```

```

36         switch (phoneType)
37         {
38             case (TelephonyManager.PHONE_TYPE_CDMA):
39                 strphoneType="CDMA";
40                 break;
41             case (TelephonyManager.PHONE_TYPE_GSM):
42                 strphoneType="GSM";
43                 break;
44             case (TelephonyManager.PHONE_TYPE_NONE):
45                 strphoneType="NONE";
46                 break;
47         }
48
49         //getting information if phone is in roaming
50         boolean isRoaming=tm.isNetworkRoaming();
51
52         String info="Phone Details:\n";
53         info+="\n IMEI Number:"+IMEINumber;
54         info+="\n SubscriberID:"+subscriberID;
55         info+="\n Sim Serial Number:"+SIMSerialNumber;
56         info+="\n Network Country ISO:"+networkCountryISO;
57         info+="\n SIM Country ISO:"+SIMCountryISO;
58         info+="\n Software Version:"+softwareVersion;
59         info+="\n Voice Mail Number:"+voiceMailNumber;
60         info+="\n Phone Network Type:"+strphoneType;
61         info+="\n In Roaming? :"+isRoaming;
62
63         textView1.setText(info);//displaying the information in the textView
64     }
65 }

```

---

#### AndroidManifest.xml

---

```

1  <?xml version="1.0" encoding="utf-8"?>
2  <manifest xmlns:android="http://schemas.android.com/apk/res/android"
3      package="com.javatpoint.telephonymanager"
4      android:versionCode="1"
5      android:versionName="1.0" >
6
7      <uses-sdk
8          android:minSdkVersion="8"
9          android:targetSdkVersion="17" />
10
11     <uses-permission android:name="android.permission.READ_PHONE_STATE"/>
12
13     <application
14         android:allowBackup="true"
15         android:icon="@drawable/ic_launcher"
16         android:label="@string/app_name"
17         android:theme="@style/AppTheme" >
18         <activity
19             android:name="com.javatpoint.telephonymanager.MainActivity"
20             android:label="@string/app_name" >
21             <intent-filter>
22                 <action android:name="android.intent.action.MAIN" />
23
24                 <category android:name="android.intent.category.LAUNCHER" />
25             </intent-filter>
26         </activity>
27     </application>
28 </manifest>

```

Phone Details:

IMEI Number:0000000000000000  
SubscriberID:0000000000000000  
Sim Serial  
Number:89014103211118510720  
Network Country ISO:us  
SIM Country ISO:us  
Software Version:null  
Voice Mail Number:+15552175049  
Phone Network Type:GSM  
In Roaming? :false

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