

Practical No. 1: Compare various operating systems with Android OS.

IX. Practical Related Questions:

1) List different Android O.S. versions?

Ans. Different versions of Android O.S. are as follows:

Android 1.5: Android Cupcake
Android 1.6: Android Donut
Android 2.0: Android Eclair
Android 2.2: Android Froyo
Android 2.3: Android Gingerbread
Android 3.0: Android Honeycomb
Android 4.0: Android Ice Cream Sandwich
Android 4.1 to 4.3.1: Android Jellybean
Android 4.4 to 4.4.4: Android KitKat
Android 5.0 to 5.1.1: Android Lollipop
Android 6.0 to 6.0.1: Android Marshmallow
Android 7.0 to 7.1: Android Nougat
Android 8.0 to Android 8.1: Android Oreo
Android 9.0: Android Pie

2) State characteristics of android operating system?

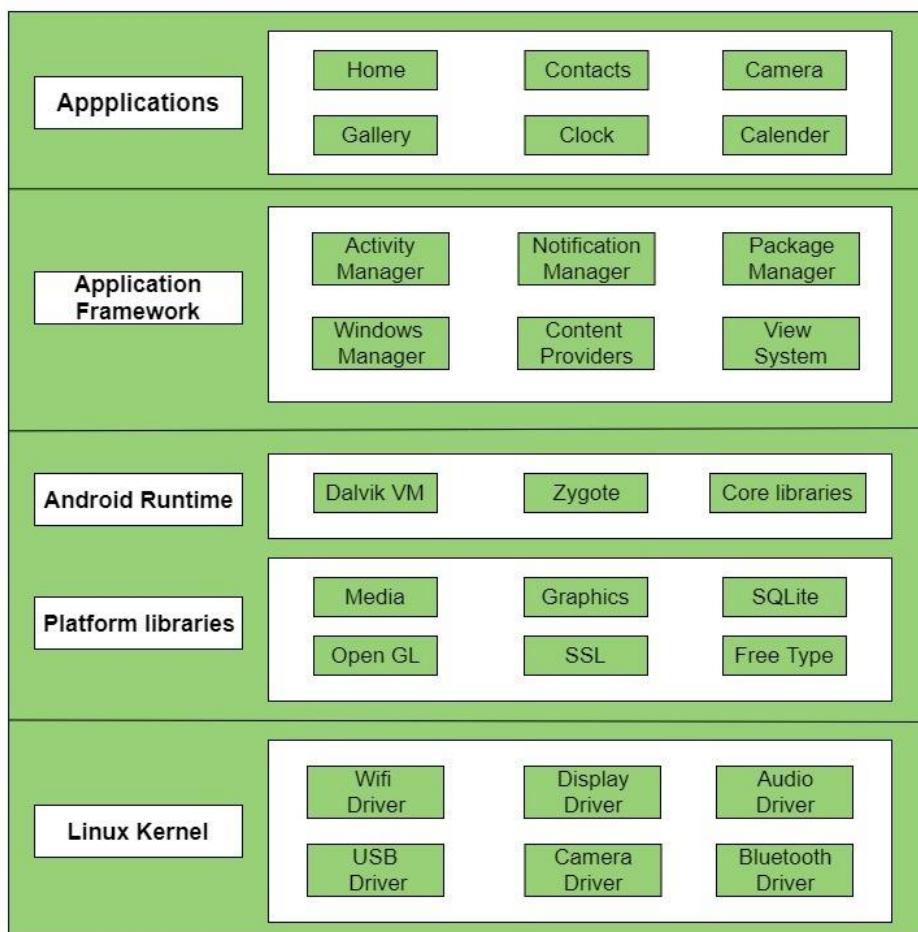
Ans. Following are the characteristics of Android O.S.:

- 1) Beautiful UI:** Android OS basic screen provides a beautiful and intuitive user interface.
- 2) Connectivity:** GSM/EDGE, IDEN, CDMA, EV-DO, UMTS, Bluetooth, Wi-Fi, LTE, NFC and WiMAX.
- 3) Storage:** SQLite, a lightweight relational database, is used for data storage purposes.
- 4) Media support:** H.263, H.264, MPEG-4 SP, AMR, AMR-WB, AAC, HE-AAC, AAC 5.1, MP3, MIDI, Ogg Vorbis, WAV, JPEG, PNG, GIF, and BMP.
- 5) Messaging:** SMS and MMS
- 6) Web browser:** Based on the open-source WebKit layout engine, coupled with Chrome's V8 JavaScript engine supporting HTML5 and CSS3.
- 7) Multi-touch:** Android has native support for multi-touch which was initially made available in handsets such as the HTC Hero.
- 8) Multi-tasking:** User can jump from one task to another, and same time various application can run simultaneously.
- 9) Resizable widgets:** Widgets are resizable, so users can expand them to show more content or shrink them to save space.
- 10) Multi-Language:** Supports single direction and bi-directional text.
- 11) GCM:** Google Cloud Messaging (GCM) is a service that lets developers send short message data to their users on Android devices, without needing a proprietary sync solution.

X. Exercise:

1) Draw the architectural diagram of Android operating system.

Ans.



2) Differentiate between Windows operating system and Android operating system.

Ans.

WINDOWS	ANDROID
It was developed and is owned by Microsoft Incorporation.	It was developed and is owned by Google LLC.
It was launched in 1985.	It was launched in 2008.
It is designed for PC of all companies.	It is specifically designed for mobile devices.
Current stable version is Windows 10.	Current stable version is Android 10.
Kernel type is Hybrid with modules here.	Kernel type is Linux-based.
Preferred license is Proprietary and Source-available.	Preferred license is Apache 2.0 and GNU GPLv2.
It charges for the original version.	It is free of cost as it is inbuilt in smartphones.
It is the most used operating system in personal computers.	It is the most used operating system overall.
It is for workstation, personal computers, media center, tablets and embedded systems.	Its target system type is smartphones and tablet computers.

Practical No. 2: Install and configure java development kit (JDK), Android studio and android SDK.

IX. Practical Related Questions:

1) List all the steps to install android operating system.

Ans. Following are the steps to install android operating system:

- Step 1:** Unlock the Bootloader
- Step 2:** Run a Custom Recovery
- Step 3:** Backup the existing Operating system
- Step 4:** Flash the Custom ROM
- Step 5:** Flashing GApps (Google apps)

2) List various IDEs that can be used to execute android operating system.

Ans. Following are the IDEs used to execute android operating system.

- Visual Studio, Xamarin
- Flutter
- DroidScript
- CppDroid
- Android Web Developer (AWD)
- Python Suite
- Java Suite
- Android Studio
- Arduino

X. Exercise:

1) Differentiate between JVM and DVM.

Ans.

JVM (Java Virtual Machine)	DVM (Dalvik Virtual Machine)
Stack-based VM that performs arithmetic and logic operations through push and pop operands. The result of operations is stored in stack memory	Register-based VM that uses registers located in the CPU to perform arithmetic and logic operations.
Java source code is compiled into Java bytecode format (.class file) that further translates into machine code.	Source code files are first compiled into Java bytecode format like JVM. Further, the DEX compiler (dx tool) converts the Java bytecode into Dalvik bytecode(classes.dex) file that will be used to create the .apk file.
More information is required to the VM for data loading and manipulation as well as method loading in the stack data structure.	Instruction size is larger as it needs to encode the source and destination register of the VM.
Compiled bytecode size is compact because the location of the operand is implicitly on the operand stack.	Compiled bytecode size is larger as each instruction needs all implicit operands.
The executable file for the device is .jar file.	The executable file for the device is .apk file.

2) What is IDE? Why Java development toolkit is essential to install an android operating system?

Ans. An IDE allows developers to start programming new applications quickly because multiple utilities don't need to be manually configured and integrated as part of the setup process. The JDK provides tools, such as the Java compiler, used by IDEs and SDKs for developing Java programs.

Practical No. 3: Configure android development tools (ADT) plug-in and create android virtual device.

IX. Practical Related Questions:

1. List basic requirements for configuring android operating system?

Ans.

Hardware requirements:

Your development workstation should meet or exceed these hardware requirements:

- A 64-bit environment is required for Android 2.3.x (Gingerbread) and higher versions, including the master branch. You can compile older versions on 32-bit systems.
- At least 250GB of free disk space to check out the code and an extra 150 GB to build it. If you conduct multiple builds, you need additional space.
- At least 16 GB of available RAM is required, but Google recommends 64 GB.

Software requirements:

- OS
- JDK
- Key packages
- Device binaries
- Build toolchain

2. Why bytecode cannot run in android?

Ans. We cannot run Java Bytecode on Android because:

- Android uses Dalvik VM (virtual machine) instead of Java VM.
- To run a Java Bytecode, you need JVM (Java Virtual Machine).
- Java in computers and Android uses a separate environment to run their code. Android has been modified to run on smaller devices with the exhaustion of less computing power.
- In Android, we have to convert Java class file into Dalvik executable files using an android tool called *dx*.

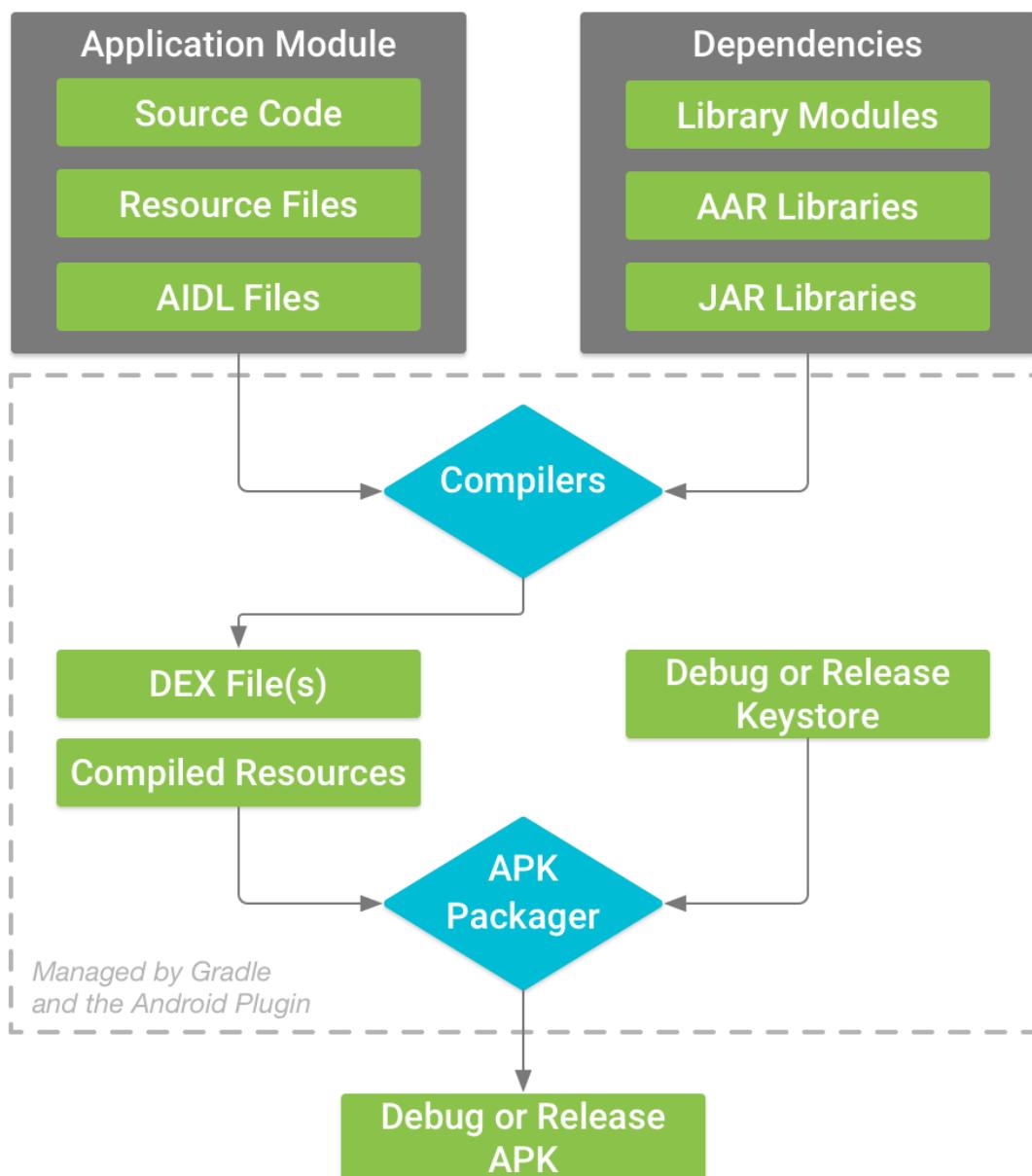
X. Exercise:

1. What is a Build Type in Gradle?

Ans. A build type determines how an app is packaged. By default, the Android plug-in for Gradle supports two different types of builds: debug and release. Both can be configured inside the buildTypes block inside of the module build file.

2. Explain the build process in Android?

Ans. The build process involves many tools and processes that convert your project into an Android Application Package (APK) or Android App Bundle (AAB). The build process is very flexible, so it's useful to understand some of what is happening under the hood.



Practical No. 4: Develop a program to display Hello World on screen.

X. Exercise

1. Write a program to display HelloWorld.

Ans.

The screenshot shows the Android Studio interface with two tabs open: `activity_main.xml` and `MainActivity.java`. The `activity_main.xml` tab displays the XML layout code for a ConstraintLayout containing a single TextView. The `MainActivity.java` tab is visible but contains no code. To the right, the Emulator tab shows a Pixel 2 API 29 device running with the title "sujaywindow" and the text "Hello World!" displayed on the screen. A status bar at the top of the emulator screen shows the time as 11:05 and battery level.

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

2. Write a program to display student name and marks.

Ans.

XML:

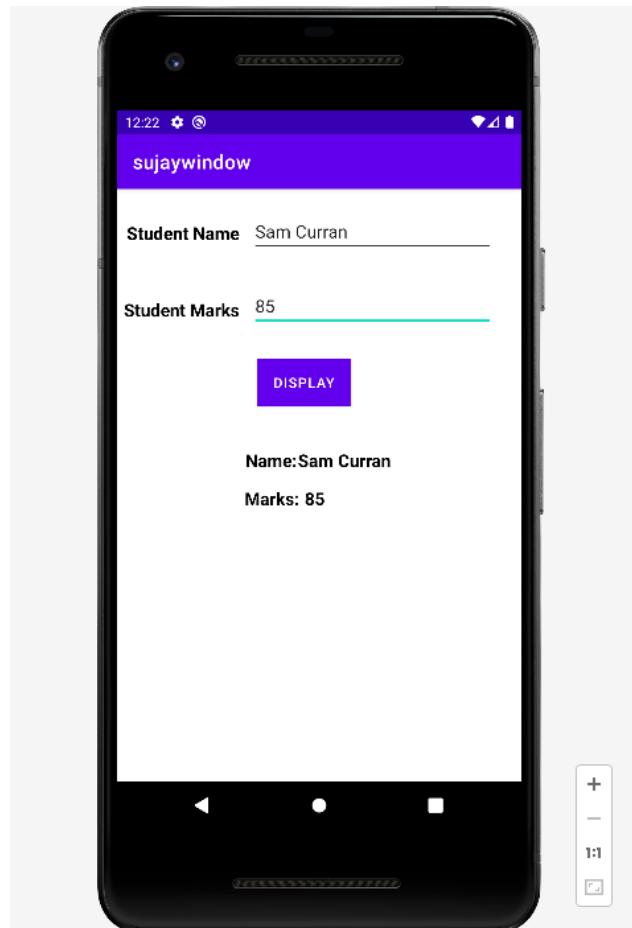
```
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
        android:layout_width="fill_parent"
        android:layout_height="fill_parent"
        tools:context=".MainActivity">
<AbsoluteLayout
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    tools:context=".MainActivity">
<EditText
    android:id="@+id/e2"
    android:layout_width="246dp"
    android:layout_height="wrap_content"
    android:layout_x="137dp"
    android:layout_y="97dp" />
<Button
    android:id="@+id/button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_x="143dp"
    android:layout_y="173dp"
    android:text="Display"
    android:background="@color/cardview_light_background"/>
</AbsoluteLayout>
<TextView
    android:id="@+id/t3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
        android:layout_x="131dp"
        android:layout_y="264dp"
        android:textColor="@color/black"
        android:textSize="18dp"
        android:textStyle="bold" />
<TextView
    android:id="@+id/t4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
        android:layout_x="130dp"
        android:layout_y="303dp"
        android:textColor="@color/black"
        android:textSize="18dp"
        android:textStyle="bold" />
<EditText
    android:id="@+id/e"
    android:layout_width="246dp"
    android:layout_height="wrap_content"
    android:layout_x="137dp"
    android:layout_y="21dp" />
<TextView
    android:id="@+id/t1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
        android:layout_x="10dp"
        android:layout_y="33dp"
        android:text="Student Name"
        android:textColor="@color/black"
        android:textSize="18dp"
        android:textStyle="bold" />
<EditText
    android:id="@+id/e1"
    android:layout_width="246dp"
    android:layout_height="wrap_content"
    android:layout_x="137dp"
    android:layout_y="21dp" />
</AbsoluteLayout>
```

Java:

```
package myalarm.example.sujaywindow;
import
androidx.appcompat.app.AppCompatActivity;
import android.widget.EditText;
import android.widget.Button;
import android.widget.TextView;
import android.view.View;
import android.os.Bundle;
public class MainActivity extends
AppCompatActivity {
    EditText editName, editMarks;
    TextView result, result1;
    Button display;
    @Override
    protected void onCreate(Bundle
 savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        editName = (EditText)
        findViewById(R.id.e1);
```

```
editMarks = (EditText)
findViewById(R.id.e2);
    result = (TextView)
    findViewById(R.id.t3);
    result1 = (TextView)
    findViewById(R.id.t4);
    display = (Button)
    findViewById(R.id.button);
    display.setOnClickListener(new
View.OnClickListener() {
        @Override
        public void onClick(View v) {
            String name =
editName.getText().toString();
            String marks =
editMarks.getText().toString();
            result.setText("Name:\t" +
name);
            result1.setText("Marks:\t" +
marks);
        }
    });
}
```

OUTPUT:



Practical No. 5: Develop a program to implement linear layout and absolute layout.

X. Exercise

1. Write a program to place Name, Age and mobile number linearly (vertical) on the display screen using Linear layout.

Ans.

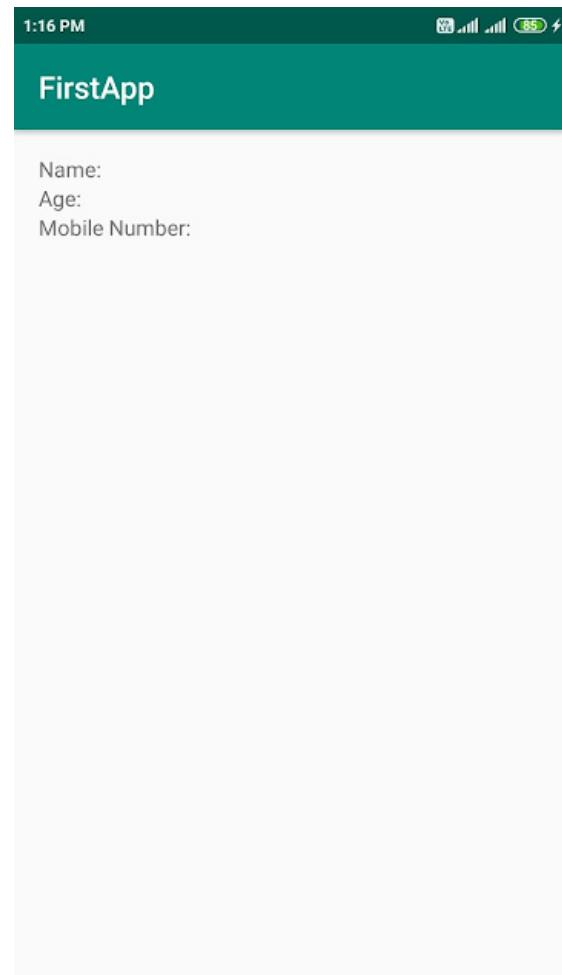
activity_main.xml:

```
<?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:paddingLeft="16dp"
        android:paddingRight="16dp"
        android:paddingTop="16dp"
        android:orientation="vertical"
        tools:context=".MainActivity">
    <TextView
        android:id="@+id/student_name"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Name:" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Age:" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Mobile Number:" />
</LinearLayout>
```

MainActivity.java:

```
package myalarm.example.firstapp;
import
    androidx.appcompat.app.AppCompatActivity;
    import android.os.Bundle;
    public class MainActivity extends AppCompatActivity {
        @Override
        protected void onCreate(Bundle savedInstanceState) {
            super.onCreate(savedInstanceState);
            setContentView(R.layout.activity_main);
        }
    }
```

Output:



2. Write a program to place Name, Age and mobile number centrally on the display screen using Absolute layout.

Ans.

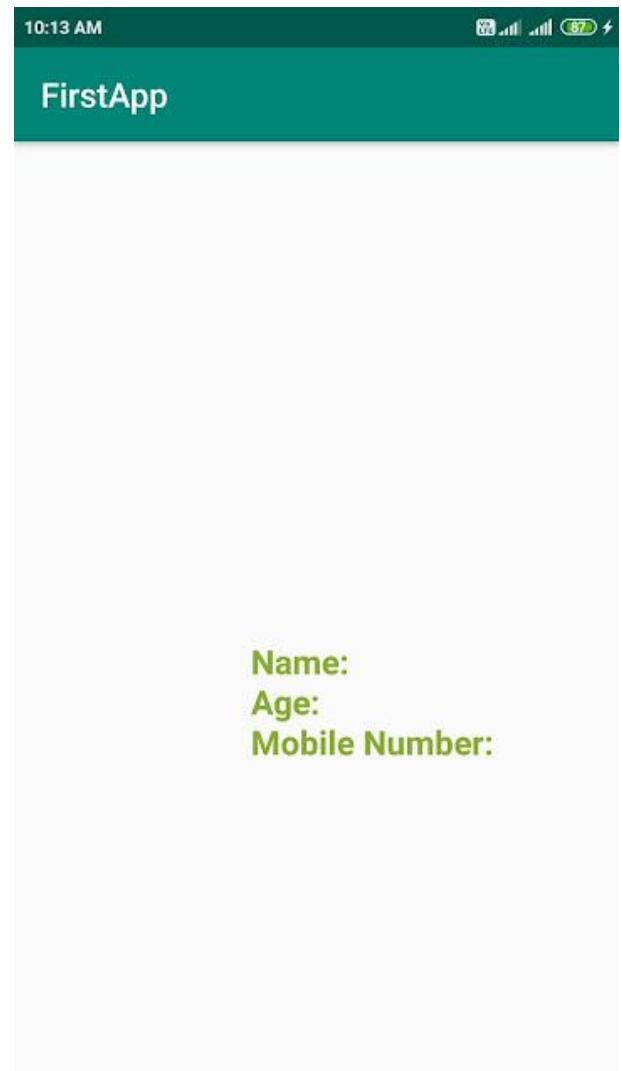
activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout
    xmlns:android="http://schemas.android.com/
    apk/res/android"
    xmlns:app="http://schemas.android.com/apk/
    /res-auto"
    xmlns:tools="http://schemas.android.com/to
    ols"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:paddingLeft="16dp"
        android:paddingTop="16dp"
        android:paddingRight="16dp"
        tools:context=".MainActivity">
    <TextView
        android:id="@+id/student_name"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="125dp"
        android:layout_y="280dp"
        android:text="Name:"
        android:textColor="#86AD33"
        android:textSize="20dp"
        android:textStyle="bold" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="125dp"
        android:layout_y="304dp"
        android:text="Age:"
        android:textColor="#86AD33"
        android:textSize="20dp"
        android:textStyle="bold" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="125dp"
        android:layout_y="328dp"
        android:text="Mobile Number:"
        android:textColor="#86AD33"
        android:textSize="20dp"
        android:textStyle="bold" />
</AbsoluteLayout>
```

MainActivity.java:

```
package myalarm.example.firstapp;
import
    androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
public class MainActivity extends
    AppCompatActivity {
    @Override
    protected void onCreate(Bundle
    savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```

Output:



Practical No. 6: Develop a program to implement frame layout, table layout and relative layout.

X. Exercise

1) Write a program to display 10 students basic information in a table form using Table layout.

Ans.

activity_main.xml

```
?xml version="1.0" encoding="utf-8"?>
<TableLayout
    xmlns:android="http://schemas.android.com/a
    pk/res/android"
    xmlns:tools="http://schemas.android.com/tool
    s"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:collapseColumns="*"
    android:shrinkColumns="*"
    tools:context=".MainActivity">
    <TableRow>
        <TextView
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:gravity="center_horizontal">
            <Text>
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:text="Students Basic
Information"
                android:textColor="#86AD33"
                android:textSize="20dp"
                android:textStyle="bold" />
        </Text>
    </TableRow>
    <TableRow>
        <Text>
            android:layout_width="match_parent"
            android:layout_height="wrap_content">
            <Text>
                android:layout_width="0dp"
                android:layout_weight="1"
                android:text="Student Numbers"
                android:textColor="#000"
                android:textStyle="bold" />
            <Text>
                android:layout_width="0dp"
                android:layout_weight="1"
                android:text="Name"
                android:textColor="#000"
                android:textStyle="bold" />
            <Text>
                android:layout_width="0dp"
                android:layout_weight="1"
                android:text="RollNo"
                android:textColor="#000"
                android:textStyle="bold" />
            <Text>
                android:layout_width="0dp"
                android:layout_weight="1"
                android:text="Age"
                android:textColor="#000"
                android:textStyle="bold" />
        </Text>
    </TableRow>
    <TableRow>
        <Text>
            android:layout_width="match_parent"
            android:layout_height="wrap_content">
            <Text>
                android:layout_width="0dp"
                android:layout_weight="1"
                android:text="Student 1:"
                android:textColor="#86AD33"
                android:textStyle="bold" />
            <EditText
                android:layout_width="0dp"
                android:layout_weight="1"
                android:layout_height="wrap_content" />
            <EditText
                android:layout_width="0dp"
                android:layout_weight="1"
                android:layout_height="wrap_content" />
            <EditText
                android:layout_width="0dp"
                android:layout_weight="1"
                android:layout_height="wrap_content" />
        </Text>
    </TableRow>
    <TableRow>
        <Text>
            android:layout_width="match_parent"
            android:layout_height="wrap_content">
            <Text>
                android:layout_width="0dp"
                android:layout_weight="1"
                android:text="Student 2:"
                android:textColor="#86AD33"
                android:textStyle="bold" />
            <EditText
                android:layout_width="0dp"
                android:layout_weight="1"
                android:layout_height="wrap_content" />
        </Text>
    </TableRow>

```

```
        android:textColor="#86AD33"
        android:textStyle="bold" />
<EditText
    android:layout_width="0dp"
    android:layout_weight="1"
    android:layout_height="wrap_content"
/>
<EditText
    android:layout_width="0dp"
    android:layout_weight="1"
    android:layout_height="wrap_content"
/>
<EditText
    android:layout_width="0dp"
    android:layout_weight="1"
    android:layout_height="wrap_content"
/>
</TableRow>
<TableRow
    android:layout_width="match_parent"
    android:layout_height="wrap_content">
<TextView
    android:layout_width="0dp"
    android:layout_weight="1"
    android:text="Student 3:"
    android:textColor="#86AD33"
    android:textStyle="bold" />
<EditText
    android:layout_width="0dp"
    android:layout_weight="1"
    android:layout_height="wrap_content"
/>
<EditText
    android:layout_width="0dp"
    android:layout_weight="1"
    android:layout_height="wrap_content"
/>
</TableRow>
<TableRow
    android:layout_width="match_parent"
    android:layout_height="wrap_content">
<TextView
    android:layout_width="0dp"
    android:layout_weight="1"
    android:text="Student 5:"
    android:textColor="#86AD33"
    android:textStyle="bold" />
<EditText
    android:layout_width="0dp"
    android:layout_weight="1"
    android:layout_height="wrap_content" />
<EditText
    android:layout_width="0dp"
    android:layout_weight="1"
    android:layout_height="wrap_content" />
</TableRow>
<TableRow
    android:layout_width="match_parent"
    android:layout_height="wrap_content">
<TextView
    android:layout_width="0dp"
    android:layout_weight="1"
    android:text="Student 6:"
    android:textColor="#86AD33"
    android:textStyle="bold" />
<EditText
    android:layout_width="0dp"
    android:layout_weight="1"
    android:layout_height="wrap_content" />
<EditText
    android:layout_width="0dp"
    android:layout_weight="1"
    android:layout_height="wrap_content" />
/>
```

```
<EditText
    android:layout_width="0dp"
    android:layout_weight="1"
    android:layout_height="wrap_content"
/>
</TableRow>
<TableRow
    android:layout_width="match_parent"
    android:layout_height="wrap_content">
<TextView
    android:layout_width="0dp"
    android:layout_weight="1"
    android:text="Student 7:"
    android:textColor="#86AD33"
    android:textStyle="bold" />
<EditText
    android:layout_width="0dp"
    android:layout_weight="1"
    android:layout_height="wrap_content"
/>
</TableRow>
<TableRow
    android:layout_width="match_parent"
    android:layout_height="wrap_content">
<TextView
    android:layout_width="0dp"
    android:layout_weight="1"
    android:text="Student 9:"
    android:textColor="#86AD33"
    android:textStyle="bold" />
<EditText
    android:layout_width="0dp"
    android:layout_weight="1"
    android:layout_height="wrap_content" />
<EditText
    android:layout_width="0dp"
    android:layout_weight="1"
    android:layout_height="wrap_content" />
<EditText
    android:layout_width="0dp"
    android:layout_weight="1"
    android:layout_height="wrap_content" />
</TableRow>
<TableRow
    android:layout_width="match_parent"
    android:layout_height="wrap_content">
<TextView
    android:layout_width="0dp"
    android:layout_weight="1"
    android:text="Student 10:"
    android:textColor="#86AD33"
    android:textStyle="bold" />
<EditText
    android:layout_width="0dp"
    android:layout_weight="1"
    android:layout_height="wrap_content" />
<EditText
    android:layout_width="0dp"
    android:layout_weight="1"
    android:layout_height="wrap_content" />
<EditText
    android:layout_width="0dp"
    android:layout_weight="1"
    android:layout_height="wrap_content" />
</TableRow>
</TableLayout>
```

OUTPUT:

The screenshot shows a mobile application interface titled "My Application". The main title bar is purple, and the content area has a white background. A header section titled "Students Basic Information" is displayed in green. Below this, there is a table with four columns: "Student Numbers" (labeled "Name" in the first row), "Name", "RollNo", and "Age". The table contains ten rows, each representing a student from "Student 1" to "Student 10". The "Age" column for Student 10 is currently being edited, as indicated by the blue underline.

Student Numbers	Name	RollNo	Age
Student 1:	Yash	2315	18
Student 2:	Sujay	2319	17
Student 3:	Peter	2322	16
Student 4:	Joe	2351	17
Student 5:	John	2314	18
Student 6:	David	2311	18
Student 7:	Haley	2313	19
Student 8:	Ganesh	2339	18
Student 9:	Jonathon	2348	17
Student 10:	Kim	2305	19

2) Write a program to display all the data types in object-oriented programming using Frame layout.

Ans.

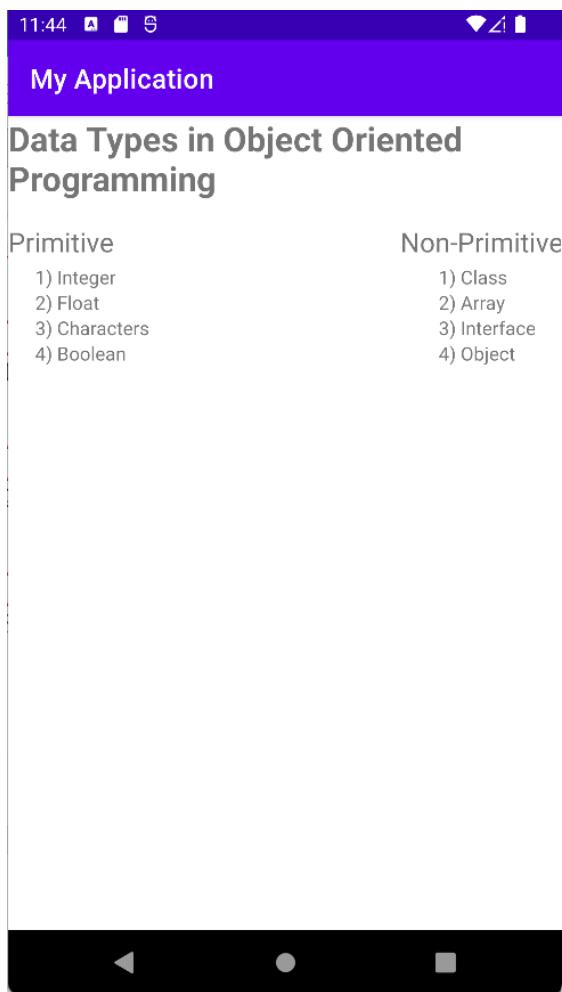
activity_main.xml

```
<?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="wrap_content"
        android:layout_height="match_parent"
        tools:context=".MainActivity">
    <TextView
        android:layout_width="match_parent"
        android:layout_height="66dp"
        android:text="Data Types in Object
Oriented Programming"
        android:textSize="25dp"
        android:textStyle="bold" />
    <TextView
        android:id="@+id/pd"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="top|left|fill_vertical"
        android:layout_marginTop="80dp"
        android:text="Primitive"
        android:textSize="20dp" />
    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="20dp"
        android:layout_marginTop="110dp"
        android:foregroundGravity="fill_horizontal|top"
        android:orientation="vertical">
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="1) Integer" />
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="2) Float" />
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="3) Characters" />
    
```

```
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="4) Boolean" />
    </LinearLayout>
    <TextView
        android:layout_toRightOf="@+id/pd"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="right|fill_vertical"
        android:layout_marginTop="80dp"
        android:text="Non-Primitive"
        android:textSize="20dp" />
    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="right"
        android:layout_marginTop="110dp"
        android:layout_marginRight="20dp"
        android:orientation="vertical">
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="1) Class" />
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="2) Array" />
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="3) Interface" />
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="4) Object" />
    
```

```
    </LinearLayout>
</FrameLayout>
```

OUTPUT:



Practical No. 7: Develop a program to implement Text View and Edit Text.

X. Exercise

1) Write a program to accept username and password from the end user using Text View and Edit Text.

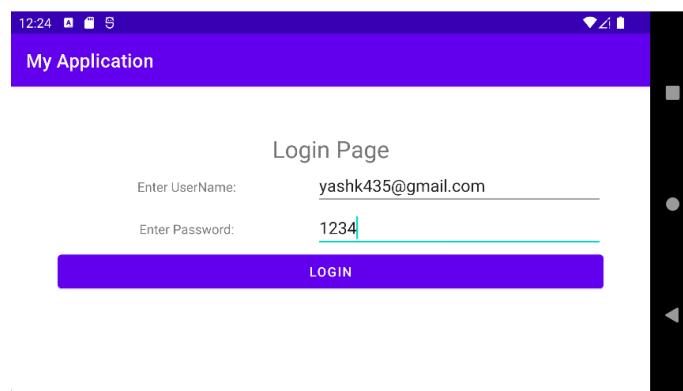
Ans.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<TableLayout
    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:padding="50dp"
        tools:context=".MainActivity">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:gravity="center"
        android:textSize="25dp"
        android:text="Login Page" />
    <TableRow
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:gravity="center_horizontal">
        <TextView
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:gravity="center"
            android:text="Enter UserName:" />
    
```

```
    <EditText
        android:id="@+id/user"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:hint="abc@gmail.com" />
    </TableRow>
    <TableRow
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:gravity="center_horizontal">
        <TextView
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:gravity="center"
            android:text="Enter Password:" />
        <EditText
            android:id="@+id/pass"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:hint="1234" />
    </TableRow>
    <Button
        android:id="@+id/btn1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="172dp"
        android:text="Login" />
</TableLayout>
```

OUTPUT:



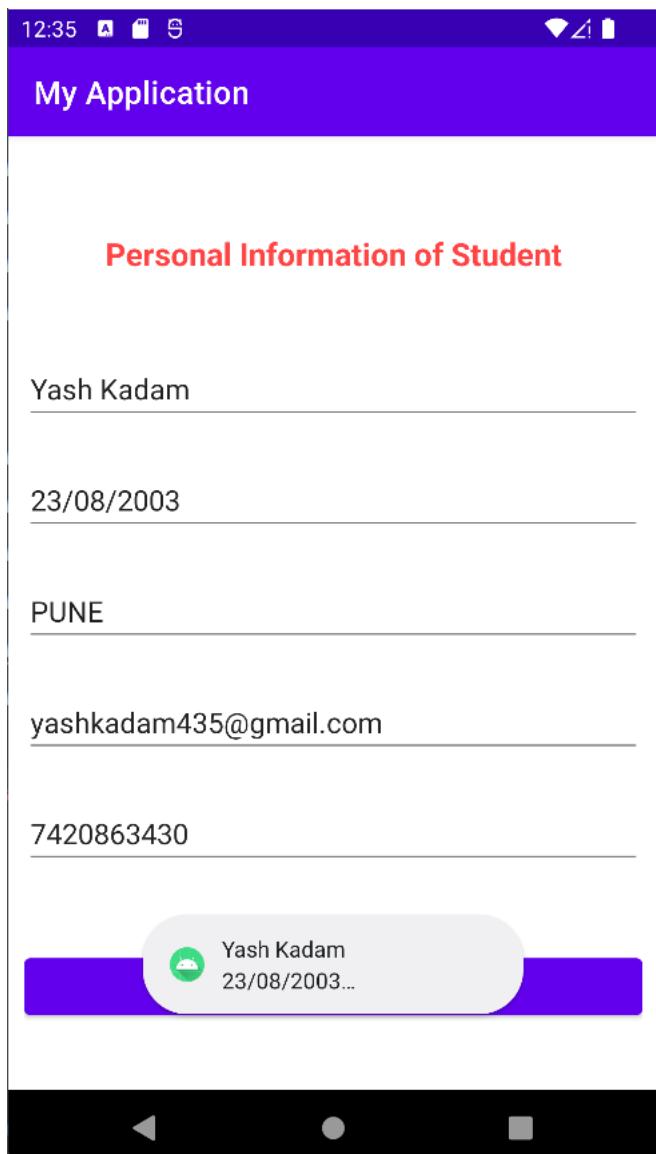
2) Write a program to accept and display personal information of the student.

Ans.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    android:padding="10dp"
    android:gravity="center">
    <TextView android:id="@+id/tvInfo"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Personal Information of
        Student"
        android:textSize="20sp"
        android:gravity="center_horizontal"
        android:textStyle="bold"
        android:layout_marginTop="20dp"
        android:textColor="@android:color/holo_red
        _light"/>
    <EditText android:id="@+id/name"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter you name"
        android:ems="10"
        android:inputType="textPersonName"
        android:textSize="18sp"
        android:layout_marginTop="50dp"
        android:layout_below="@+id/tvInfo"/>
    <EditText android:id="@+id/dob"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter Date of Birth"
        android:ems="10"
        android:inputType="date"
        android:textSize="18sp"
        android:layout_below="@+id/name"
        android:layout_marginTop="25dp"/>
    <EditText android:id="@+id/city"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter your City"
        android:ems="10"
        android:inputType="textCapCharacters"
        android:textSize="18sp"
        android:layout_below="@+id/dob"
        android:layout_marginTop="25dp"/>
    <EditText android:id="@+id/email"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter Email ID"
        android:ems="10"
        android:inputType="textEmailAddress"
        android:textSize="18sp"
        android:layout_below="@+id/city"
        android:layout_marginTop="25dp"/>
    <EditText android:id="@+id/contact"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter Contact number"
        android:ems="10"
        android:inputType="date"
        android:textSize="18sp"
        android:layout_below="@+id/email"
        android:layout_marginTop="25dp"/>
    <Button android:id="@+id/btnSubmit"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/contact"
        android:layout_marginTop="50dp"
        android:text="Submit"
        android:textSize="18sp"
        />
</RelativeLayout>
```

OUTPUT:



Practical No. 8: Develop a program to implement Auto Complete Text View.

X. Exercise

1) Write a program to create a first display screen of any search engine using Auto Complete Text View.

Ans.

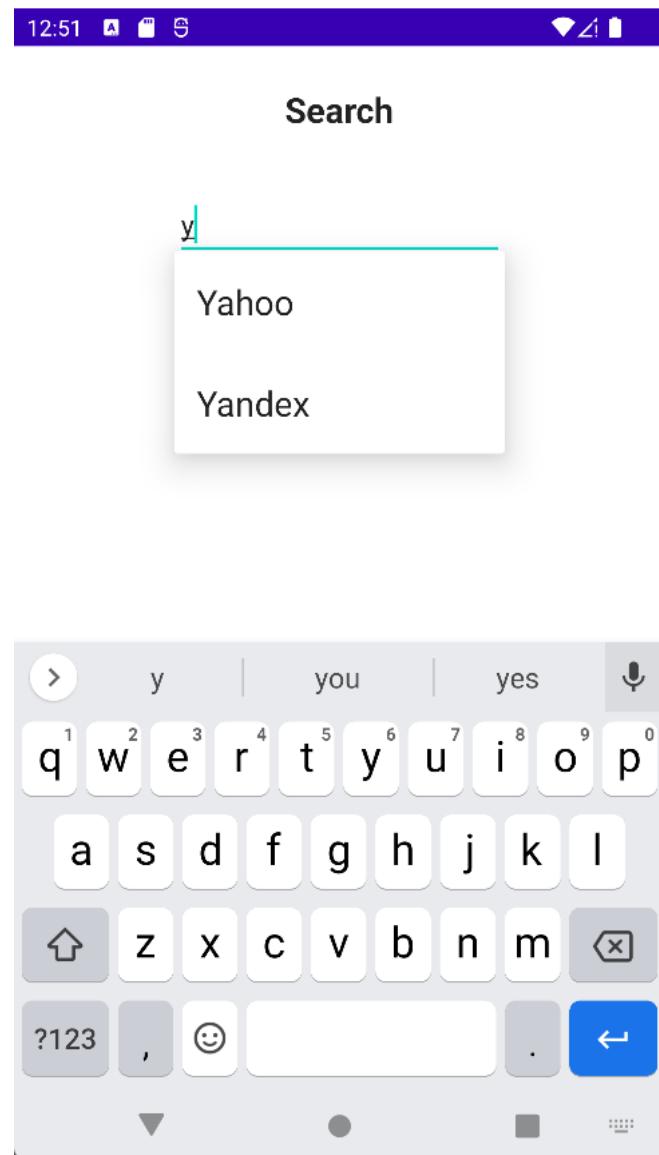
activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity" >
    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="25dp"
        android:text="Search"
        android:textStyle="bold" />
    android:textAppearance="@style/TextAppearance.AppCompat.Large" />
    <AutoCompleteTextView
        android:id="@+id/autoCompleteTextView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/textView2"
        android:layout_marginTop="36dp"
        android:layout_centerHorizontal="true"
        android:ems="10" />
</RelativeLayout>
```

MainActivity.java

```
package com.example.myapplication;
import android.os.Bundle;
import android.app.Activity;
import android.view.Menu;
import android.widget.ArrayAdapter;
import android.widget.AutoCompleteTextView;
public class MainActivity extends Activity {
    AutoCompleteTextView autocomplete;
    String[] arr = { "Google", "Yahoo", "Bing",
        "DuckDuckGo", "Yandex" };
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        autocomplete =
            (AutoCompleteTextView)
            findViewById(R.id.autoCompleteTextView1);
        ArrayAdapter<String> adapter = new
            ArrayAdapter<String>
            (this, android.R.layout.select_dialog_item,
            arr);
        autocomplete.setThreshold(1);
        autocomplete.setAdapter(adapter);
    }
}
```

OUTPUT:



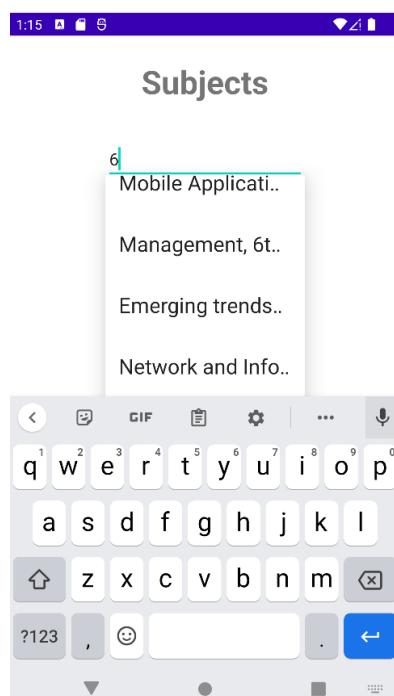
2) Write a program to display all the subjects of sixth semester using Auto Complete Text View.

Ans.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        tools:context=".MainActivity" >
    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="25dp"
        android:text="Subjects"
        android:textAppearance="@style/TextAppearence.AppCompat.Display1"
        android:textStyle="bold" />
    <AutoCompleteTextView
        android:id="@+id/autoCompleteTextView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/textView2"
        android:layout_marginTop="36dp"
        android:layout_centerHorizontal="true"
        android:ems="10" />
</RelativeLayout>
```

OUTPUT:



MainActivity.java

```
package com.example.myapplication;
import android.os.Bundle;
import android.app.Activity;
import android.view.Menu;
import android.widget.ArrayAdapter;
import android.widget.AutoCompleteTextView;
public class MainActivity extends Activity {
    AutoCompleteTextView autocomplete;
    String[] arr = { "Mobile Application Development, 6th sem", "Management, 6th sem", "Emerging trends in IT, 6th sem", "Network and Information Security, 6th sem" };
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        autocomplete = (AutoCompleteTextView) findViewById(R.id.autoCompleteTextView1);
        ArrayAdapter<String> adapter = new ArrayAdapter<String>
            (this, android.R.layout.select_dialog_item, arr);
        autocomplete.setThreshold(1);
        autocomplete.setAdapter(adapter);
    }
}
```

Practical No. 9: Develop a program to implement Button, Image Button and Toggle Button.

X. Exercise

1) Write a program to create a toggle button to display ON / OFF Bluetooth on the display screen.

Ans.

activity_main.xml

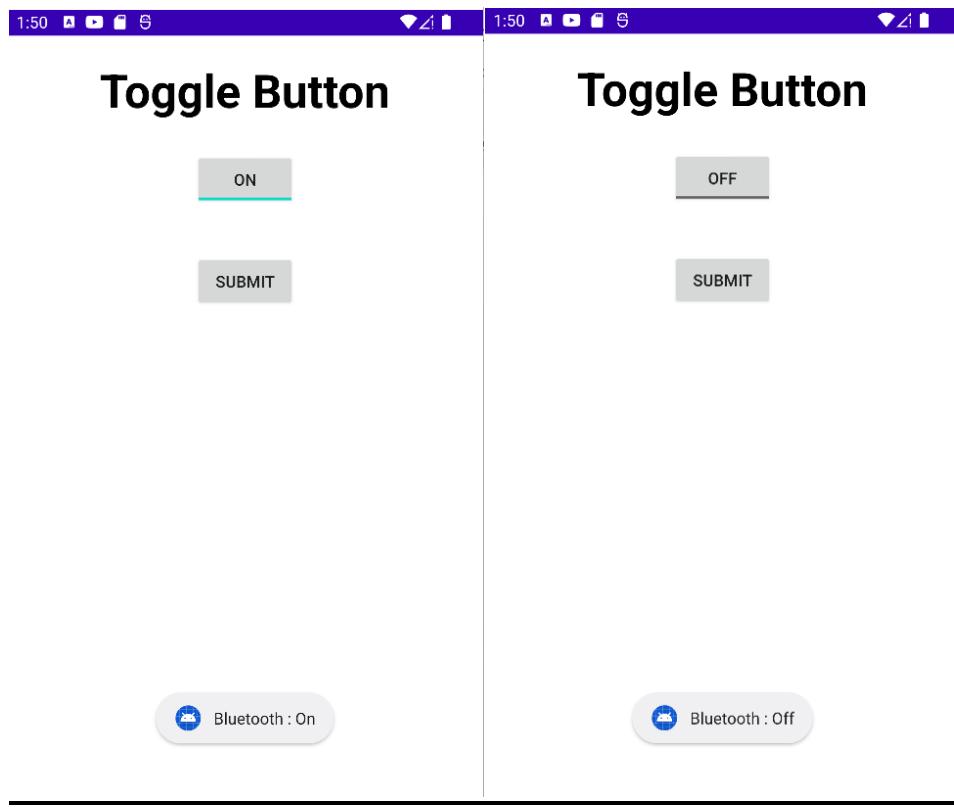
```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"

        android:layout_width="match_parent"
        android:layout_height="match_parent">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Toggle Button"
        android:textSize="40dp"
        android:textColor="@color/black"
        android:textStyle="bold"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="20dp" />
    <ToggleButton
        android:id="@+id/toggleButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="100dp"
        android:text="ToggleButton"
        android:textOff="Off"
        android:textOn="On" />
    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/toggleButton"
        android:text="Submit"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="40dp"/>
</RelativeLayout>
```

MainActivity.java

```
package com.example.togglebutton;
import android.app.Activity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;
import android.widget.ToggleButton;
public class MainActivity extends Activity {
    private ToggleButton toggleButton1;
    private Button buttonSubmit;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        addListenerOnButtonClick();
    }
    public void addListenerOnButtonClick(){
        toggleButton1=(ToggleButton)findViewById(R.id.toggleButton);
        buttonSubmit=(Button)findViewById(R.id.button);
        buttonSubmit.setOnClickListener(new View.OnClickListener(){
            @Override
            public void onClick(View view) {
                StringBuilder result = new
                StringBuilder();
                result.append("Bluetooth :");
                result.append(toggleButton1.getText());
                Toast.makeText(getApplicationContext(),
                result.toString(),Toast.LENGTH_LONG).show();
            }
        });
    }
}
```

OUTPUT:



2) Write a program to create a simple calculator.

Ans.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#8BC34A"
    android:backgroundTint="@android:color/darker_gray"
    tools:context=".MainActivity">
    <TextView
        android:layout_width="194dp"
        android:layout_height="43dp"
        android:layout_marginStart="114dp"
        android:layout_marginLeft="114dp"
        android:layout_marginTop="58dp"
        android:layout_marginEnd="103dp"
```

```
        android:layout_marginRight="103dp"
        android:layout_marginBottom="502dp"
        android:scrollbarSize="30dp"
        android:text=" Calculator"
        android:textAppearance="@style/TextAppearance.AppCompat.Body1"
        android:textSize="30dp"
    <EditText
        android:id="@+id/num1"
        android:layout_width="364dp"
        android:layout_height="28dp"
        android:layout_marginStart="72dp"
        android:layout_marginTop="70dp"
        android:layout_marginEnd="71dp"
        android:layout_marginBottom="416dp"
        android:background="@android:color/white"
```

```
        android:ems="10"
        android:hint="Number1(0)"
        android:inputType="number"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
/>
<EditText
    android:id="@+id/num2"
    android:layout_width="363dp"
    android:layout_height="30dp"
    android:layout_marginStart="72dp"
    android:layout_marginTop="112dp"
    android:layout_marginEnd="71dp"
    android:layout_marginBottom="374dp"
    android:background="@android:color/white"
    android:ems="10"
    android:hint="number2(0)"
    android:inputType="number"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
/>
<TextView
    android:id="@+id/result"
    android:layout_width="356dp"
    android:layout_height="71dp"
    android:layout_marginStart="41dp"
    android:layout_marginTop="151dp"
    android:layout_marginEnd="48dp"
    android:layout_marginBottom="287dp"
    android:background="@android:color/white"
    android:text="result"
    android:textColorLink="#673AB7"
    android:textSize="25sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
/>
<Button
    android:id="@+id/sum"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="16dp"
    android:layout_marginTop="292dp"
    android:layout_marginEnd="307dp"
    android:layout_marginBottom="263dp"
    android:backgroundTint="@android:color/holo_red_light"
    android:onClick="doSum"
    android:text="+"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
/>
<Button
    android:id="@+id/sub"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="210dp"
    android:layout_marginTop="292dp"
    android:layout_marginEnd="113dp"
    android:layout_marginBottom="263dp"
    android:backgroundTint="@android:color/holo_red_light"
    android:onClick="doSub"
    android:text="-"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
/>
<Button
    android:id="@+id/div"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="307dp"
    android:layout_marginTop="292dp"
    android:layout_marginEnd="16dp"
    android:layout_marginBottom="263dp"
    android:backgroundTint="@android:color/holo_red_light"
    android:onClick="doDiv"
    android:text="/"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.0"
    app:layout_constraintStart_toStartOf="parent"
/> 
```

```

    app:layout_constraintTop_toTopOf="parent"
/>
<Button
    android:id="@+id/mul"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="16dp"
    android:layout_marginTop="356dp"
    android:layout_marginEnd="307dp"
    android:layout_marginBottom="199dp"
    android:backgroundTint="@android:color/holo_red_light"
    android:onClick="doMul"
    android:text="x"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
/>
<Button
    android:id="@+id/button"
    android:layout_width="92dp"
    android:layout_height="48dp"
    android:layout_marginStart="113dp"
    android:layout_marginTop="356dp"
    android:layout_marginEnd="206dp"
    android:layout_marginBottom="199dp"
    android:backgroundTint="@android:color/holo_red_light"
    android:onClick="doMod"
    android:text="%(mod)"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
/>
<Button
    android:id="@+id/pow"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="113dp"
    android:layout_marginTop="292dp"
    android:layout_marginEnd="210dp"
    android:layout_marginBottom="263dp"
    android:backgroundTint="@android:color/holo_red_light"
    android:onClick="doPow"
}

```

```

        android:text="n1^n2"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
    />
</androidx.constraintlayout.widget.ConstraintLayout>

```

MainActivity.java

```

package com.example.togglebutton;
import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
    EditText e1, e2;
    TextView t1;
    int num1, num2;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    public boolean getNumbers() {
        e1 = (EditText)
        findViewById(R.id.num1);
        e2 = (EditText)
        findViewById(R.id.num2);
        t1 = (TextView)
        findViewById(R.id.result);
        String s1 = e1.getText().toString();
        String s2 = e2.getText().toString();
        if ((s1.equals(null)) && s2.equals(null))
            || (s1.equals("")) && s2.equals("")) {
            String result = "Please enter a value";
            t1.setText(result);
            return false;
        } else {
            num1 = Integer.parseInt(s1);
            num2 = Integer.parseInt(s2);
        }
        return true;
    }
}

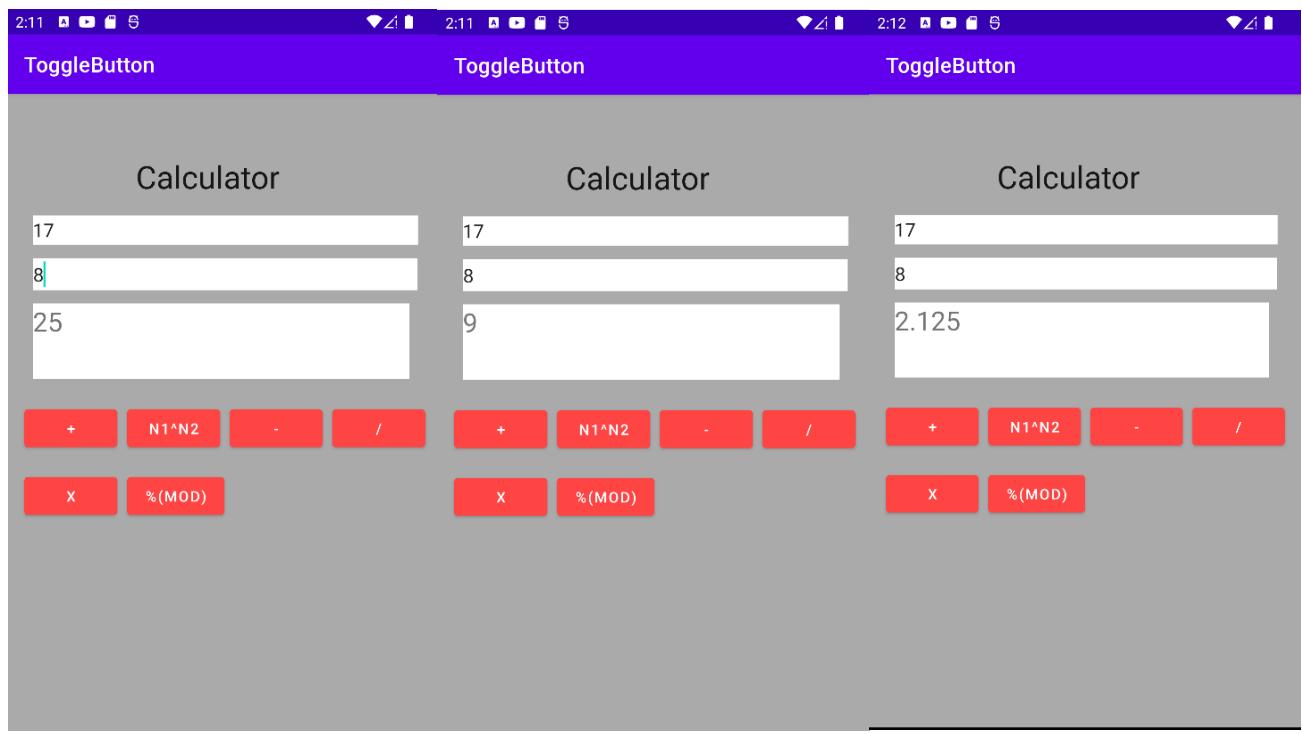
```

```

public void doSum(View v) {
    if (getNumbers()) {
        int sum = num1 + num2;
        t1.setText(Integer.toString(sum));
    }
}
public void doPow(View v) {
    if (getNumbers()) {
        double sum = Math.pow(num1, num2);
        t1.setText(Double.toString(sum));
    }
}
public void doSub(View v) {
    if (getNumbers()) {
        int sum = num1 - num2;
        t1.setText(Integer.toString(sum));
    }
}
public void doMul(View v) {
    if (getNumbers()) {
        int sum = num1 * num2;
        t1.setText(Integer.toString(sum));
    }
}
public void doDiv(View v) {
    if (getNumbers()) {
        double sum = num1 / (num2 * 1.0);
        t1.setText(Double.toString(sum));
    }
}
public void doMod(View v) {
    if (getNumbers()) {
        double sum = num1 % num2;
        t1.setText(Double.toString(sum));
    }
}

```

OUTPUT:



Practical No. 10: Develop a program to implement login window using above UI controls.

X. Exercise:

1) Write a program to create a login window for a social networking site.

Ans.

activity_main.xml

```
<?xml version = "1.0" encoding = "utf-8"?>
<RelativeLayout xmlns:android =
"http://schemas.android.com/apk/res/android"
    xmlns:tools =
"http://schemas.android.com/tools"
    android:layout_width="match_parent"
        android:layout_height = "match_parent"
        tools:context = ".MainActivity">
    <TextView android:text = "Login"
        android:layout_width="wrap_content"
            android:layout_height = "wrap_content"
            android:id = "@+id/textview"
            android:textSize = "35dp"
            android:layout_alignParentTop = "true"
            android:layout_centerHorizontal = "true" />
    <TextView
        android:layout_width = "wrap_content"
        android:layout_height = "wrap_content"
        android:text = "AISSMS Polytechnic"
        android:id = "@+id/textView"
        android:layout_below = "@+id/textview"
        android:layout_centerHorizontal = "true"
        android:textColor = "#FF0000"
        android:textSize = "35dp" />
    <EditText
        android:layout_width = "wrap_content"
        android:layout_height = "wrap_content"
        android:id = "@+id/editText"
        android:hint = "Enter Name"
        android:focusable = "true"
        android:textColorHighlight = "#ff7eff15"
        android:textColorHint = "#ffff25e6"
        android:layout_marginTop = "46dp"
        android:layout_below = "@+id/imageView"
        android:layout_alignParentLeft = "true"
        android:layout_alignParentStart = "true"
        android:layout_alignParentRight = "true"
        android:layout_alignParentEnd = "true" />
    <ImageView
        android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:src="@drawable/poly"
            android:layout_below="@+id/textView"
            android:layout_centerHorizontal="true" />
    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:inputType="textPassword"
        android:ems="10"
        android:id="@+id/editText2"
        android:layout_below="@+id/editText"
        android:layout_alignParentLeft="true"
        android:layout_alignParentStart="true"
        android:layout_alignRight="@+id/editText"
        android:layout_alignEnd="@+id/editText"
        android:textColorHint="#ffff299f"
        android:hint="Password" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Attempts Left:"
        android:id="@+id/textView2"
        android:layout_below="@+id/editText2"
        android:layout_alignParentLeft="true"
        android:layout_alignParentStart="true"
        android:textSize="25dp" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="New Text"
        android:id="@+id/textView3"
        android:layout_alignTop="@+id/textView2"
        android:layout_alignParentRight="true"
        android:layout_alignParentEnd="true"
        android:layout_alignBottom="@+id/textView2"
        android:layout_toEndOf="@+id/textview"
        android:textSize="25dp"
        android:layout_toRightOf="@+id/textview" />
    <Button
        android:layout_width="wrap_content"
```

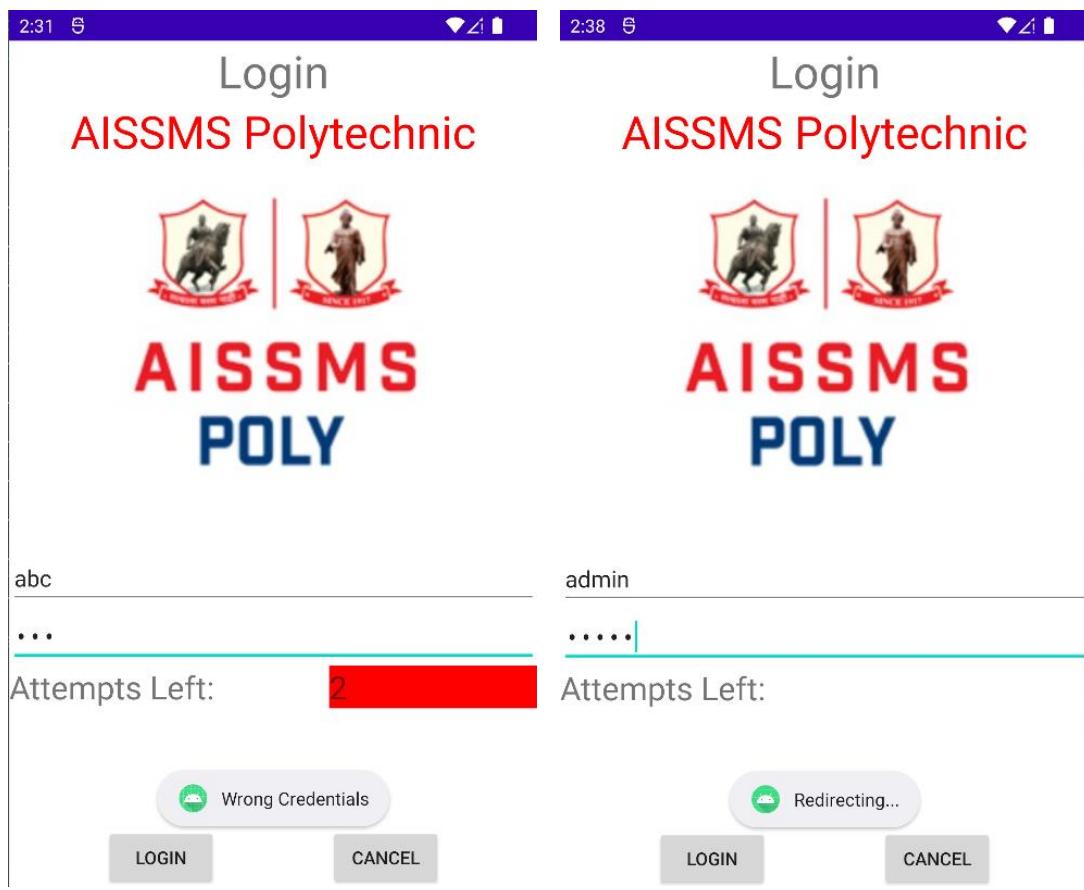
```
        android:layout_height="wrap_content"
        android:text="login"
        android:id="@+id/button"
        android:layout_alignParentBottom="true"
        android:layout_toLeftOf="@+id/textview"
        android:layout_toStartOf="@+id/textview" />
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Cancel"
        android:id="@+id/button2"
        android:layout_alignParentBottom="true"
        android:layout_toRightOf="@+id/textview"
        android:layout_toEndOf="@+id/textview" />
</RelativeLayout>
```

MainActivity.java

```
package com.example.loginapp;
import android.app.Activity;
import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
public class MainActivity extends Activity {
    Button b1,b2;
    EditText ed1,ed2;
    TextView tx1;
    int counter = 3;
    @Override
    protected void onCreate(Bundle
    savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        b1 = (Button)findViewById(R.id.button);
        ed1 =
        (EditText)findViewById(R.id.editText);
        ed2 =
        (EditText)findViewById(R.id.editText2);
        b2 = (Button)findViewById(R.id.button2);
```

```
tx1 =  
(TextView)findViewById(R.id.textView3);  
tx1.setVisibility(View.GONE);  
b1.setOnClickListener(new  
View.OnClickListener() {  
    @Override  
    public void onClick(View v) {  
  
if(ed1.getText().toString().equals("admin") &&  
ed2.getText().toString().equals("admin")) {  
  
Toast.makeText(getApplicationContext(),  
"Redirecting...",Toast.LENGTH_SHORT).show()  
();  
}  
  
Toast.makeText(getApplicationContext(),  
"Wrong  
Credentials",Toast.LENGTH_SHORT).show();  
  
tx1.setVisibility(View.VISIBLE);  
  
tx1.setBackgroundColor(Color.RED);  
counter--;  
  
tx1.setText(Integer.toString(counter));  
if (counter == 0) {  
    b1.setEnabled(false);  
}  
}  
});  
b2.setOnClickListener(new  
View.OnClickListener() {  
    @Override  
    public void onClick(View v) {  
        finish();  
    }  
});  
}  
}
```

OUTPUT:



2) Write a program to create a login form for student registration system.

Ans.

activity_main.xml

```
<?xml version = "1.0" encoding = "utf-8"?>
<RelativeLayout xmlns:android =
"http://schemas.android.com/apk/res/android"
    xmlns:tools =
"http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height = "match_parent"
    tools:context = ".MainActivity">
    <EditText
        android:layout_width = "wrap_content"
        android:layout_height = "wrap_content"
        android:id = "@+id/editText"
        android:hint = "Student ID"
        android:focusable = "true"
        android:textColorHighlight = "#ff7eff15"
        android:textColorHint = "#ffff25e6"
        android:layout_marginTop = "46dp"
        android:layout_below = "@+id/imageView"
        android:layout_alignParentLeft = "true"
        android:layout_alignParentStart = "true"
```

```
        android:layout_alignParentRight = "true"
        android:layout_alignParentEnd = "true" />
    <ImageView
        android:id="@+id/imageView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:src="@drawable/login" />
    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:inputType="textPassword"
        android:ems="10"
        android:id="@+id/editText2"
        android:layout_below="@+id/editText"
        android:layout_alignParentLeft="true"
        android:layout_alignParentStart="true"
        android:layout_alignRight="@+id/editText"
        android:layout_alignEnd="@+id/editText"
        android:textColorHint="#ffff299f"
```

```

        android:hint="Password" />
<TextView
    android:id="@+id/textView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/editText2"
    android:layout_alignParentStart="true"
    android:layout_alignParentLeft="true"
    android:text="Attempts Left:"
    android:textSize="25dp" />
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="New Text"
    android:id="@+id/textView3"
    android:layout_alignTop="@+id/textView2"
    android:layout_alignParentRight="true"
    android:layout_alignParentEnd="true"
    android:layout_alignBottom="@+id/textView2"
    android:textSize="25dp" />
<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="login"
    android:id="@+id/button"
    android:layout_marginTop="340dp" />
</RelativeLayout>

```

MainActivity.java

```

package com.example.loginapp;
import android.app.Activity;
import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
public class MainActivity extends Activity {
    Button b1,b2;
    EditText ed1,ed2;
    TextView tx1;
    int counter = 3;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        b1 = (Button)findViewById(R.id.button);

```

```

        ed1 = (EditText)findViewById(R.id.editText);
        ed2 = (EditText)findViewById(R.id.editText2);
        tx1 =
        (TextView)findViewById(R.id.textView3);
        tx1.setVisibility(View.GONE);
        b1.setOnClickListener(new
        View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if(ed1.getText().toString().equals("1901410119"))
                    &&
                ed2.getText().toString().equals("admin")) {
                    Toast.makeText(getApplicationContext(),
                    "Redirecting...",Toast.LENGTH_SHORT).show();
                }else{
                    Toast.makeText(getApplicationContext(), "Wrong
                    Credentials",Toast.LENGTH_SHORT).show();
                    tx1.setVisibility(View.VISIBLE);
                    tx1.setBackgroundColor(Color.RED);
                    counter--;
                    tx1.setText(Integer.toString(counter));
                    if(counter == 0) {
                        b1.setEnabled(false);
                    }
                }
            }
        });
    }
}

```

OUTPUT:



1901410119

.....|

Attempts Left:

LOGIN

Redirecting...

Practical No. 11: Develop a program to implement Checkbox.

X. Exercise:

1) Write a program to show five checkboxes and toast selected checkboxes.

Ans.

activity_main.xml

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

    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context="MainActivity">
    <TextView
        android:id="@+id/t1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="20dp"
        android:text="Select your companies"
        android:textSize="30dp"
        android:textStyle="bold"
        android:textColor="@color/black"/>
    <CheckBox
        android:id="@+id/c1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Microsoft"
        android:layout_below="@+id/t1"
        android:layout_marginLeft="40dp"
        android:layout_marginTop="20dp"
        android:textStyle="bold"
        android:textSize="20dp"/>
    <CheckBox
        android:id="@+id/c2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Google"
        android:layout_below="@+id/c1"
        android:layout_marginLeft="40dp"
        android:layout_marginTop="20dp"
        android:textStyle="bold"
        android:textSize="20dp"/>
    <CheckBox
        android:id="@+id/c3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="IBM"
        android:layout_below="@+id/c2"
        android:layout_marginLeft="40dp"
        android:layout_marginTop="20dp"
        android:textStyle="bold"
        android:textSize="20dp"/>
    <CheckBox
        android:id="@+id/c4"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Amazon"
        android:layout_below="@+id/c3"
        android:layout_marginLeft="40dp"
        android:layout_marginTop="20dp"
        android:textStyle="bold"
        android:textSize="20dp"/>
    <CheckBox
        android:id="@+id/c5"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Apple"
        android:layout_below="@+id/c4"
        android:layout_marginLeft="40dp"
        android:layout_marginTop="20dp"
        android:textStyle="bold"
        android:textSize="20dp"/>
</RelativeLayout>
```

MainActivity.java

```
package myalarm.example.prac91;
import android.app.Activity;
import android.graphics.Color;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.Button;
import android.widget.CheckBox;
import android.widget.Toast;
public class MainActivity extends Activity
implements View.OnClickListener {
    CheckBox cb1, cb2, cb3, cb4, cb5;
    @Override
    protected void onCreate(Bundle
savedInstanceState) {
        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);
        cb1 = (CheckBox)
findViewById(R.id.c1);
        cb1.setOnClickListener(this);
        cb2 = (CheckBox)
findViewById(R.id.c2);
        cb2.setOnClickListener(this);
        cb3= (CheckBox)
findViewById(R.id.c3);
        cb3.setOnClickListener(this);
        cb4 = (CheckBox)
findViewById(R.id.c4);
        cb4.setOnClickListener(this);
        cb5 = (CheckBox)
findViewById(R.id.c5);
        cb5.setOnClickListener(this);
    }
    @Override
    public void onClick(View view) {
```

```
        switch (view.getId()) {
            case R.id.c1:
                if (cb1.isChecked())
```

```
                    Toast.makeText(getApplicationContext(), "You
have selected Microsoft",
Toast.LENGTH_LONG).show();
                break;
```

```
            case R.id.c2:
                if (cb2.isChecked())
```

```
                    Toast.makeText(getApplicationContext(), "You
have selected Google",
Toast.LENGTH_LONG).show();
                break;
```

```
            case R.id.c3:
                if (cb3.isChecked())
```

```
                    Toast.makeText(getApplicationContext(), "You
have selected IBM",
Toast.LENGTH_LONG).show();
                break;
```

```
            case R.id.c4:
                if (cb4.isChecked())
```

```
                    Toast.makeText(getApplicationContext(), "You
have selected Amazon",
Toast.LENGTH_LONG).show();
                break;
```

```
            case R.id.c5:
                if (cb5.isChecked())
```

```
                    Toast.makeText(getApplicationContext(), "You
have selected Apple",
Toast.LENGTH_LONG).show();
                break;
```

```
        }
    }
```

OUTPUT:



Select your companies

Microsoft

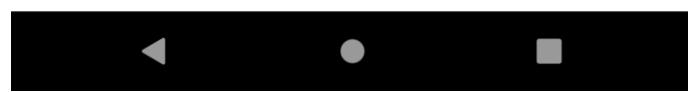
Google

IBM

Amazon

Apple

You have selected Google



Practical No. 12: Develop a program to implement Radio Button and Radio Group.

X. Exercise:

1) Write a program to show the following output. First two radio buttons are without using radio group and next two radio buttons are using radio group. Note the changes between these two. Also toast which radio button has been selected.

Ans.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical">
    <TextView
        android:id="@+id/textView1"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="30dp"
        android:gravity="center_horizontal"
        android:textSize="22dp"
        android:text="Single Radio Buttons" />
    <RadioButton
        android:id="@+id/radioButton1"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:layout_gravity="center_horizontal"
        android:text="Radio Button 1"
        android:layout_marginTop="20dp"
        android:textSize="20dp" />
    <RadioButton
        android:id="@+id/radioButton2"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="Radio Button 2"
        android:layout_marginTop="10dp"
        android:textSize="20dp" />
    <View
        android:layout_width="fill_parent"
        android:layout_height="1dp"
        android:layout_marginTop="20dp"
        android:background="#B8B894" />
    <TextView
        android:id="@+id/textView2"
```

```
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="30dp"
        android:gravity="center_horizontal"
        android:textSize="22dp"
        android:text="Radio button inside
        RadioGroup" />
    <RadioGroup
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/radioGroup">
        <RadioButton
            android:id="@+id/radioMale"
            android:layout_width="fill_parent"
            android:layout_height="wrap_content"
            android:text=" Male"
            android:layout_marginTop="10dp"
            android:checked="false"
            android:textSize="20dp" />
        <RadioButton
            android:id="@+id/radioFemale"
            android:layout_width="fill_parent"
            android:layout_height="wrap_content"
            android:text=" Female"
            android:layout_marginTop="20dp"
            android:checked="false"
            android:textSize="20dp" />
    </RadioGroup>
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Show Selected"
        android:id="@+id/button"
        android:onClick="onlickbuttonMethod"
        android:layout_gravity="center_horizontal" />
</LinearLayout>
```

MainActivity.java

```
package com.example.radiogroup;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.Toast;
import
androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends
AppCompatActivity {
    Button button;
    RadioButton genderRadioButton;
    RadioGroup radioGroup;
    @Override
    protected void onCreate(Bundle
savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```

```
radioGroup=(RadioGroup)findViewById(R.id.
radioGroup);
}
public void onclickbuttonMethod(View v){
    int selectedId =
radioGroup.getCheckedRadioButtonId();
    genderRadioButton = (RadioButton)
findViewById(selectedId);
    if(selectedId== -1){
        Toast.makeText(MainActivity.this,"Nothing
selected", Toast.LENGTH_SHORT).show();
    } else{
        Toast.makeText(MainActivity.this,genderadioButton.getText(),
Toast.LENGTH_SHORT).show();
    }
}
}
```

OUTPUT:



Single Radio Buttons

- Radio Button 1
- Radio Button 2

Radio button inside RadioGroup

- Male
- Female

SHOW SELECTED



Practical No. 13: Develop a program to implement Progress Bar.

X. Exercise:

1) Write a program to display circular progress bar.

Ans.

activity_main.xml

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

    <RelativeLayout
        android:id="@+id/progress_layout"
        android:layout_width="200dp"
        android:layout_height="200dp"
        android:layout_margin="100dp">

        <!--progress bar implementation-->
        <ProgressBar
            android:id="@+id/progress_bar"
            style="?android:attr/progressBarStyleHorizontal"
            android:layout_width="match_parent"
            android:layout_height="match_parent"

            android:background="@drawable/circular_shape"
            android:indeterminate="false"

            android:progressDrawable="@drawable/circular_progress_bar"
            android:textAlignment="center" />

        <!--Text implementation in center of the
            progress bar-->
        <TextView
            android:id="@+id/progress_text"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_alignParentLeft="true"
```

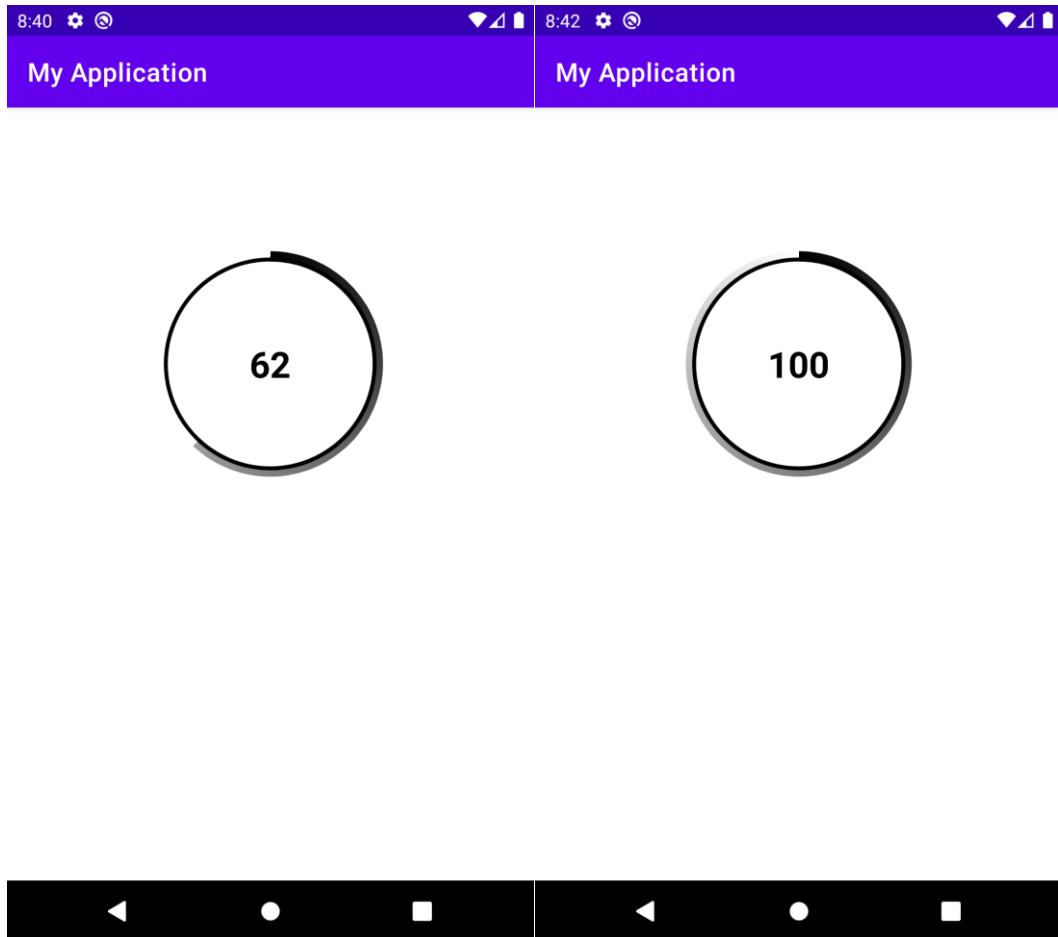
```
        android:layout_alignParentRight="true"
        android:layout_centerVertical="true"
        android:gravity="center"
        android:text="---"
        android:textColor="@color/black"
        android:textSize="28sp"
        android:textStyle="bold" />
    </RelativeLayout>
</LinearLayout>
```

MainActivity.java

```
package myalarm.example.myapplication;
import android.os.Bundle;
import android.os.Handler;
import android.widget.ProgressBar;
import android.widget.TextView;
import
androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends
AppCompatActivity {
    private ProgressBar progressBar;
    private TextView progressText;
    int i = 0;
    @Override
    protected void onCreate(Bundle
 savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        // set the id for the progressbar and
        progress text
        progressBar =
        findViewById(R.id.progress_bar);
        progressText =
        findViewById(R.id.progress_text);
        final Handler handler = new Handler();
        handler.postDelayed(new Runnable() {
            @Override
            public void run() {
                // set the limitations for the numeric
                // text under the progress bar
```

```
if (i <= 100) { handler.removeCallbacks(this);  
    progressText.setText("'" + i); }  
    progressBar.setProgress(i); }  
    i++; }, 200);  
    handler.postDelayed(this, 200); }  
} else { }
```

OUTPUT:



2) Write a program to show the following output.

Ans.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8" ?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity" >
    <Button
        android:id="@+id/button1"
```

```
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentTop="true"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="116dp"
    android:text="download file" />
</RelativeLayout>
```

MainActivity.java

```
package myalarm.example.progressbar;
```

```

import android.app.AlertDialog;
import android.os.Handler;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import
androidx.appcompat.app.AppCompatActivity;

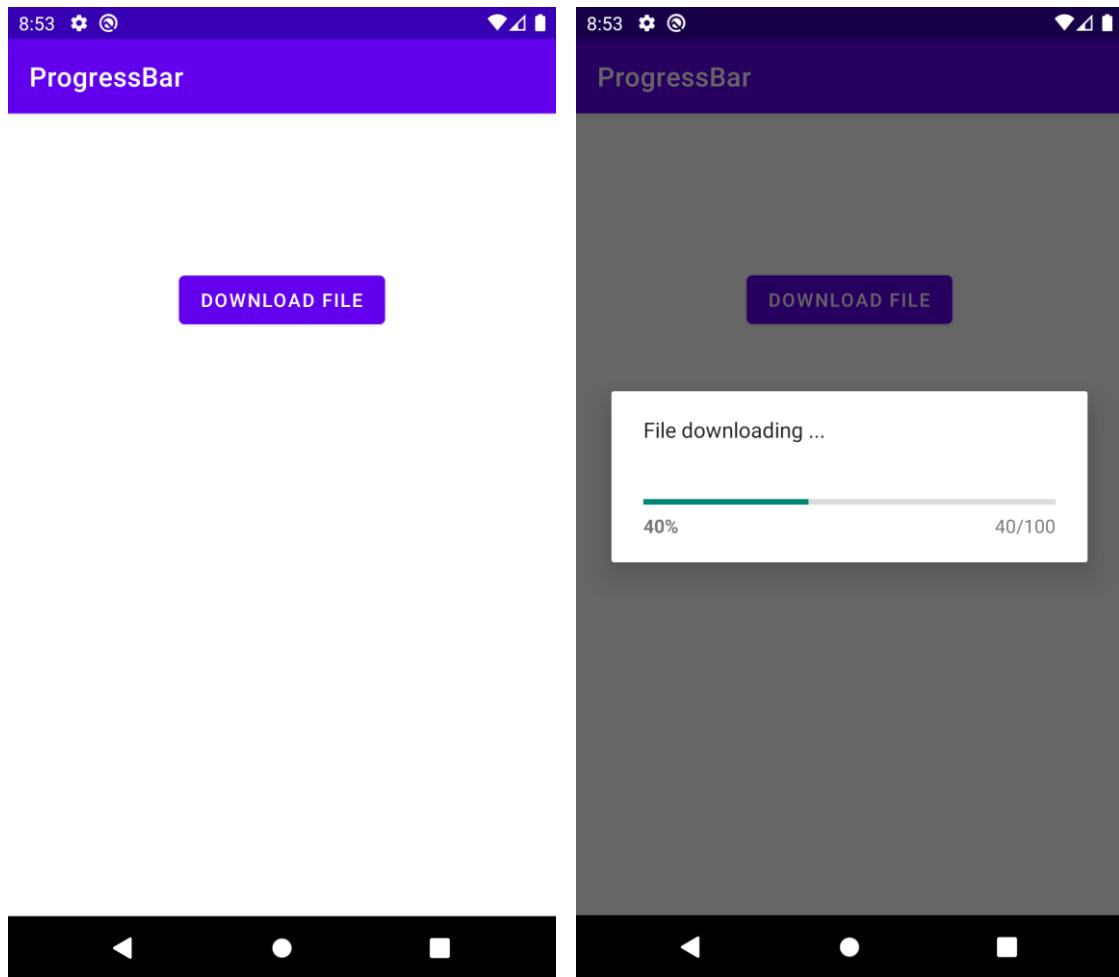
public class MainActivity extends
AppCompatActivity {
    Button btnStartProgress;
    AlertDialog progressBar;
    private int progressBarStatus = 0;
    private Handler progressBarHandler = new
Handler();
    private long fileSize = 0;
    @Override
    protected void onCreate(Bundle
savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        addListenerOnButtonClick();
    }
    public void addListenerOnButtonClick() {
        btnStartProgress =
findViewById(R.id.button1);
        btnStartProgress.setOnClickListener(new
View.OnClickListener(){
            @Override
            public void onClick(View v) {
                // creating progress bar dialog
                progressBar = new
AlertDialog(v.getContext());
                progressBar.setCancelable(true);
                progressBar.setMessage("File
downloading ...");
                progressBar.setProgressStyle(ProgressDialog.STY
LE_HORIZONTAL);
                progressBar.setProgress(0);
                progressBar.setMax(100);
                progressBar.show();
                //reset progress bar and filesize status
                progressBarStatus = 0;
                fileSize = 0;
                new Thread(new Runnable() {
                    public void run() {
                        while (progressBarStatus <
100) {
                            // performing operation
                            progressBarStatus =
doOperation();
                            try {
                                Thread.sleep(1000);
                            } catch
(InterruptedException e) {
                                e.printStackTrace();
                            }
                            // Updating the progress bar
                            progressBarHandler.post(new Runnable() {
                                public void run() {
                                    progressBar.setProgress(progressBarStatus);
                                }
                            });
                        }
                        // performing operation if file is
downloaded,
                        if (progressBarStatus >= 100) {
                            // sleeping for 1 second after
                            operation completed
                            try {
                                Thread.sleep(1000);
                            } catch
(InterruptedException e) {
                                e.printStackTrace();
                            }
                            // close the progress bar
                            dialog
                            progressBar.dismiss();
                        }
                    }
                }).start();
            }//end of onClick method
        });
    }
    // checking how much file is downloaded
    and updating the filesize
    public int doOperation() {
        //The range of ProgressDialog starts from
        0 to 10000
        while (fileSize <= 10000) {
            fileSize++;
            if (fileSize == 1000) {
                return 10;
            }
        }
    }
}

```

```
    } else if (fileSize == 2000) {  
        return 20;  
    } else if (fileSize == 3000) {  
        return 30;  
    } else if (fileSize == 4000) {  
        return 40; // you can add more else if  
    }  
/* else {
```

```
                return 100;  
            }*/  
        }//end of while  
        return 100;  
    }//end of doOperation  
}
```

OUTPUT:



Practical No. 14: Develop a program to implement List View, Grid View, Image View and Scroll View

X. Exercise:

1) Write a program to show the following output. Use appropriate view for the same.

Ans.

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">
    <ListView
        android:id="@+id/listView"
        android:layout_width="match_parent"
        android:layout_height="fill_parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

mylist.xml

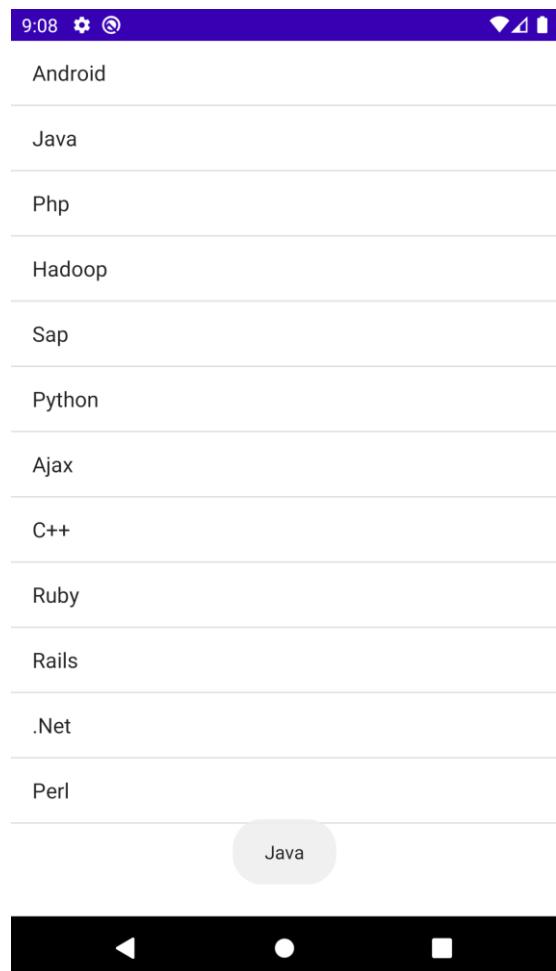
```
<?xml version="1.0" encoding="utf-8"?>
<TextView
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/textView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Medium Text"
    android:textStyle="bold"
    android:textAppearance="?android:attr/textAppearanceMedium"
    android:layout_marginLeft="10dp"
    android:layout_marginTop="5dp"
    android:padding="2dp"
    android:textColor="#4d4d4d" />
```

MainActivity.java

```
package myalarm.example.progressbar;
import android.app.Activity;
import android.os.Bundle;
import android.view.View;
```

```
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import android.widget.TextView;
import android.widget.Toast;
public class MainActivity extends Activity {
    ListView listView;
    TextView textView;
    String[] listItem = {"Android", "Java", "Php", "Hadoop", "Sap", "Python", "Ajax", "C++", "Ruby", "Rails", ".Net", "Perl" };
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        listView=(ListView)findViewById(R.id.listView);
        textView=(TextView)findViewById(R.id.textView);
        final ArrayAdapter<String> adapter =
        new ArrayAdapter<String>(this,
            android.R.layout.simple_list_item_1,
            android.R.id.text1, listItem);
        listView.setAdapter(adapter);
        listView.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            @Override
            public void onItemClick(AdapterView<?> adapterView, View view, int position, long l) {
                // TODO Auto-generated method stub
                //String
                value=adapter.getItem(position);
                Toast.makeText(getApplicationContext(),listItem[position],Toast.LENGTH_SHORT).show();
            }
        });
    }
}
```

OUTPUT:



2) Write a program to display an image using Image View and a button named as "Change Image". Once you click on button another image should get displayed.

Ans.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/activity_main"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <ImageView
        android:layout_width="200dp"
        android:layout_height="200dp"
        android:layout_centerHorizontal="true"
        android:id="@+id/img1"/>
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

```
        android:layout_below="@+id/img1"
        android:layout_centerHorizontal="true"
        android:text="Change Image"
        android:id="@+id/button"/>
</RelativeLayout>
```

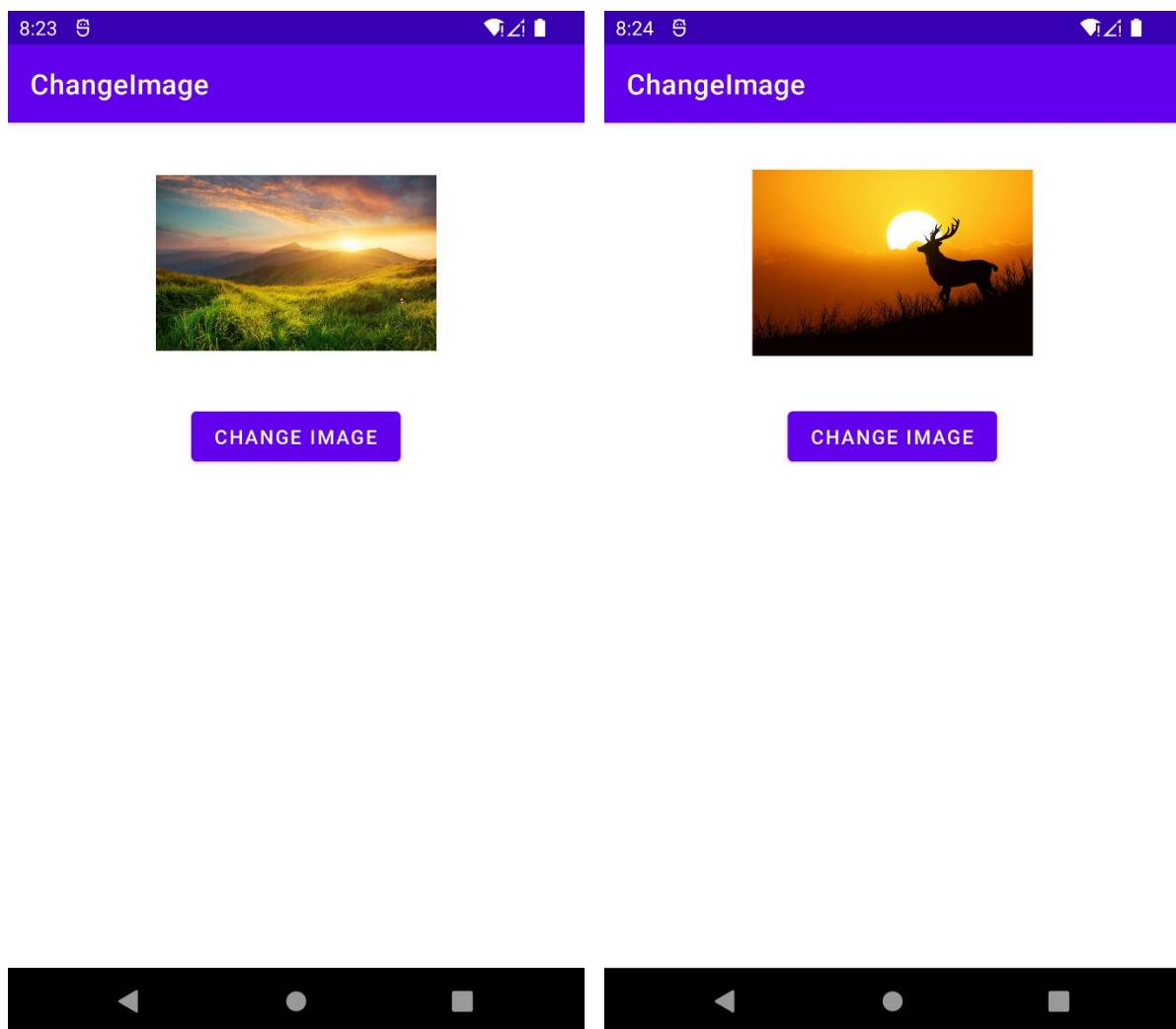
MainActivity.java

```
package com.example.changeimage;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;
import androidx.appcompat.app.AppCompatActivity;
```

```
public class MainActivity extends  
AppCompatActivity {  
Button b1;  
ImageView iv;  
boolean flag;  
int  
images[]={R.drawable.ic1,R.drawable.ic2,R.draw  
able.ic3};  
int i=0;  
@Override  
protected void onCreate(Bundle  
savedInstanceState) {  
super.onCreate(savedInstanceState);  
setContentView(R.layout.activity_main);  
iv=(ImageView) findViewById(R.id.img1);
```

```
b1=(Button) findViewById(R.id.button);  
flag=true;  
b1.setOnClickListener(new  
View.OnClickListener() {  
@Override  
public void onClick(View v) {  
iv.setImageResource(images[i]);  
i++;  
if(i==3)  
i=0;  
}  
});  
}
```

OUTPUT:



3) Write a program to display 15 buttons using grid view.

Ans.

activity_main.xml

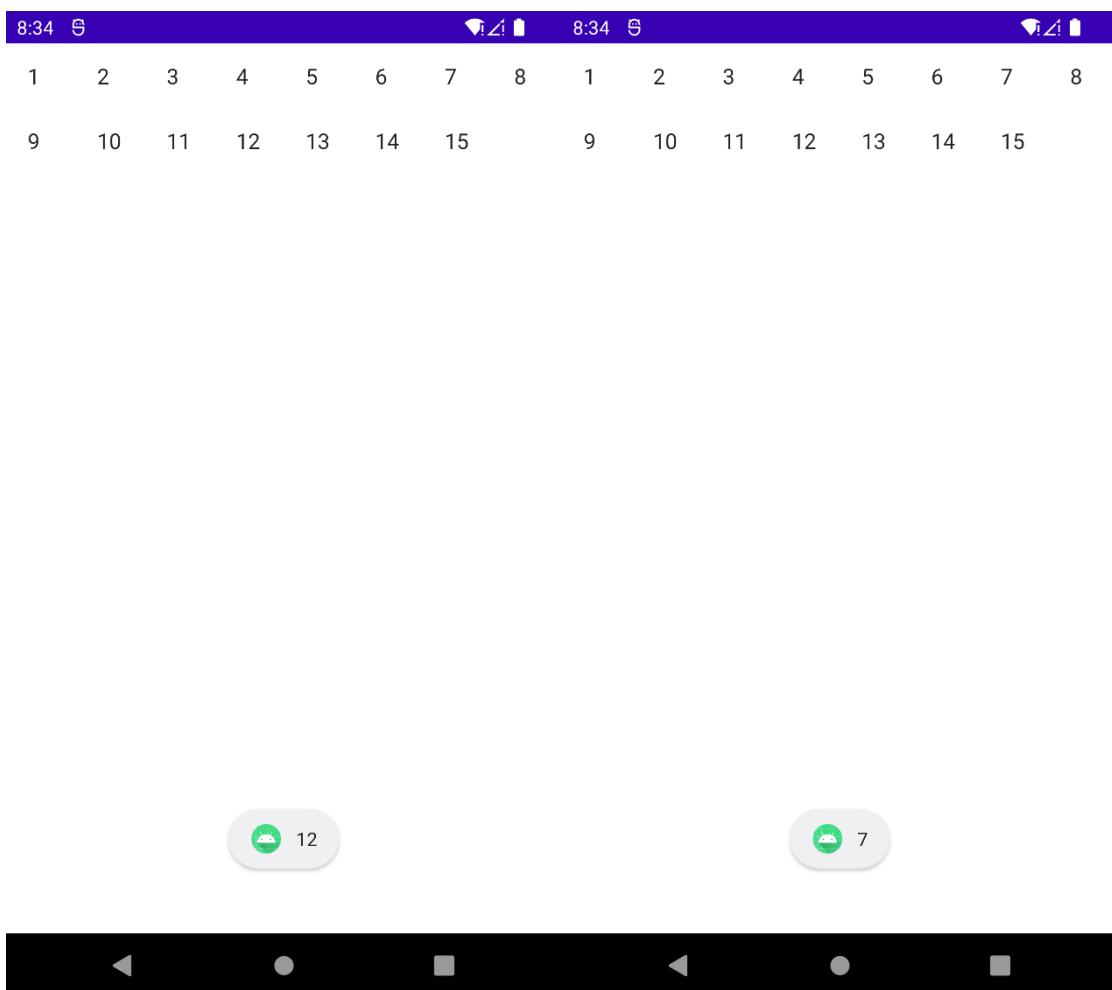
```
<?xml version="1.0" encoding="utf-8"?>
<GridView
    xmlns:android="http://schemas.android.com/apk/
es/android"
    android:id="@+id/gridView1"
    android:numColumns="auto_fit"
    android:gravity="center"
    android:columnWidth="50dp"
    android:stretchMode="columnWidth"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent" >
</GridView>
```

MainActivity.java

```
package com.example.gridview;
import android.os.Bundle;
import android.app.Activity;
import android.view.Menu;
import android.view.View;
import android.widget.AdapterView;
import
android.widget.AdapterView.OnItemClickListener;
;
import android.widget.ArrayAdapter;
import android.widget.GridView;
import android.widget.TextView;
import android.widget.Toast;
public class MainActivity extends Activity {
    GridView gridView;
    static final String[] numbers = new String[] {
        "1", "2", "3", "4", "5",
        "6", "7", "8", "9",
        "10", "11", "12", "13", "14", "15"};
    @Override
    protected void onCreate(Bundle
savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        gridView = (GridView)
        findViewById(R.id.gridView1);
        ArrayAdapter<String> adapter = new
        ArrayAdapter<String>(this,
            android.R.layout.simple_list_item_1,
        numbers);
        gridView.setAdapter(adapter);
```

```
        gridView.setOnItemClickListener(new
        OnItemClickListener() {
            @Override
            public void
onItemClick(AdapterView<?> parent, View
view, int position, long id) {
                Toast.makeText(getApplicationContext(),((Te
xtView) view).getText(),
                Toast.LENGTH_SHORT).show();
            }
        });
    }
    @Override
    public boolean
onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the
        action bar if it is present.
        getMenuInflater().inflate(R.menu.activity_mai
n, menu);
        return true;
    }
}
```

OUTPUT:



4) Write a program to display a text view using vertical scroll view.

Ans.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textAppearance="?android:attr/textAppearanceMedium"
        android:text="Vertical ScrollView example"
        android:id="@+id/textView"
        android:layout_gravity="center_horizontal"
        android:layout_centerHorizontal="true"
        android:layout_alignParentTop="true" />
```

```
<ScrollView
    android:layout_marginTop="30dp"
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:id="@+id/scrollView">
    <LinearLayout
        android:layout_width="fill_parent"
        android:layout_height="fill_parent"
        android:orientation="vertical" >
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Sam Curran"
            android:layout_gravity="center"
            android:textColor="@color/black"
            android:textStyle="bold" />
```

```
    android:textSize="50dp"/>
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="David Miller"
    android:layout_gravity="center"
    android:textColor="@color/black"
    android:textStyle="bold"
    android:textSize="50dp"
    android:layout_marginTop="20dp"/>
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="David Warner"
    android:layout_gravity="center"
    android:textColor="@color/black"
    android:textStyle="bold"
    android:textSize="50dp"
    android:layout_marginTop="20dp"/>
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Mitchell Starc"
    android:layout_gravity="center"
    android:textColor="@color/black"
    android:textStyle="bold"
    android:textSize="50dp"
    android:layout_marginTop="20dp"/>
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Shane Warne"
    android:layout_gravity="center"
    android:textColor="@color/black"
    android:textStyle="bold"
    android:textSize="50dp"
    android:layout_marginTop="20dp"/>
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Tom Curran"
    android:layout_gravity="center"
    android:textColor="@color/black"
    android:textStyle="bold"
    android:textSize="50dp"
    android:layout_marginTop="20dp"/>
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Joseph"
    android:layout_gravity="center"
    android:textColor="@color/black"
    android:textStyle="bold"
    android:textSize="50dp"
    android:layout_marginTop="20dp"/>
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Kane Williamson"
    android:layout_gravity="center"
    android:textColor="@color/black"
    android:textStyle="bold"
    android:textSize="50dp"
    android:layout_marginTop="20dp"/>
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Russell"
    android:layout_gravity="center"
    android:textColor="@color/black"
    android:textStyle="bold"
    android:textSize="50dp"
    android:layout_marginTop="20dp"/>
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Chris Gayle"
    android:layout_gravity="center"
    android:textColor="@color/black"
    android:textStyle="bold"
    android:textSize="50dp"
    android:layout_marginTop="20dp"/>
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Robin Joseph"
    android:layout_gravity="center"
    android:textColor="@color/black"
    android:textStyle="bold"
    android:textSize="50dp"
    android:layout_marginTop="20dp"/>
```

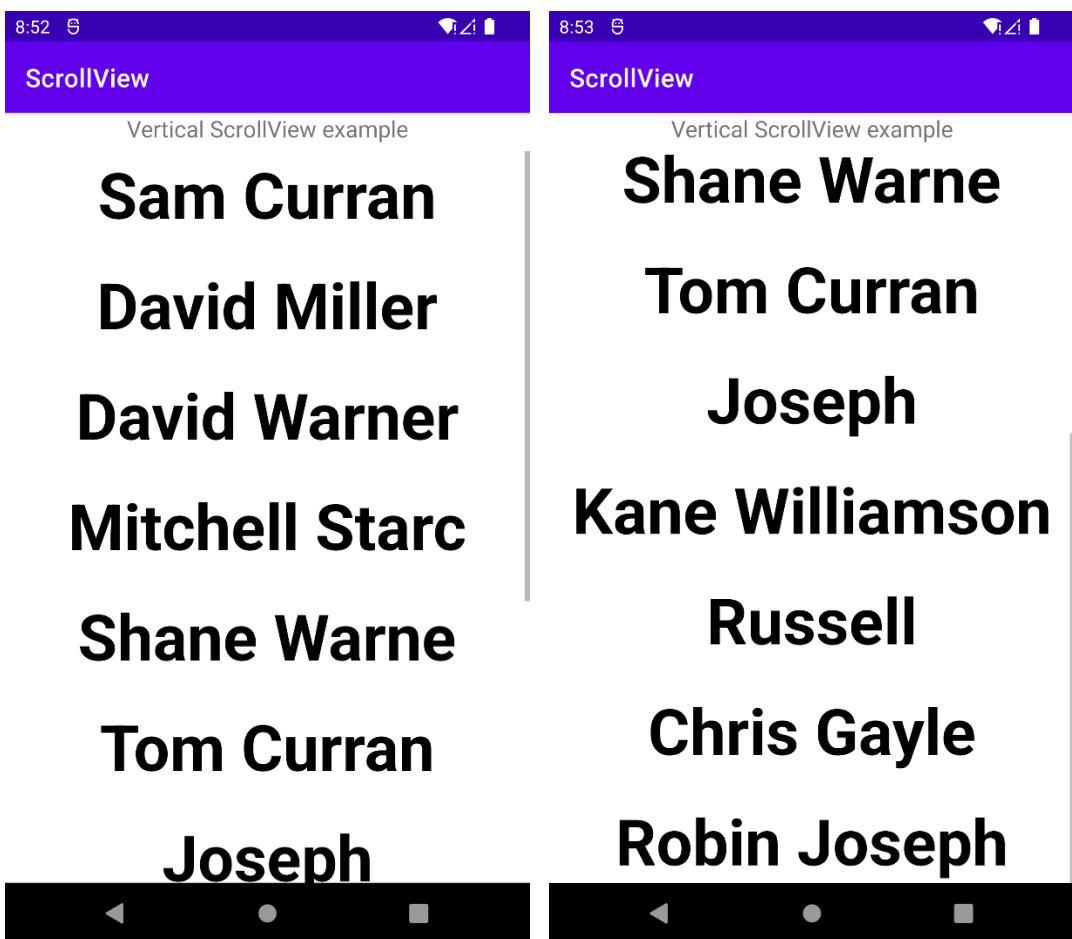
```
        android:layout_gravity="center"
        android:textColor="@color/black"
        android:textStyle="bold"
        android:textSize="50dp"
        android:layout_marginTop="20dp"/>
    </LinearLayout>
</ScrollView>
</RelativeLayout>
```

MainActivity.java

```
package com.example.scrollview;
```

```
import
androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
public class MainActivity extends
AppCompatActivity {
    @Override
    protected void onCreate(Bundle
 savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```

OUTPUT:



Practical No. 15: Develop a program to implement Custom Toast Alert.

X. Exercise:

1) Write a program to display following toast message.

Ans.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
        android:layout_width="match_parent"
        android:layout_height="match_parent">
    <TextView
        android:id="@+id/t1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text = "Hello World, Toast Example"
        android:layout_marginTop="20dp"
        android:layout_marginLeft="20dp"/>
    <Button
        android:id="@+id/b1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Show Toast"
        android:layout_below="@+id/t1"
        android:layout_marginLeft="20dp"/>
</RelativeLayout>
```

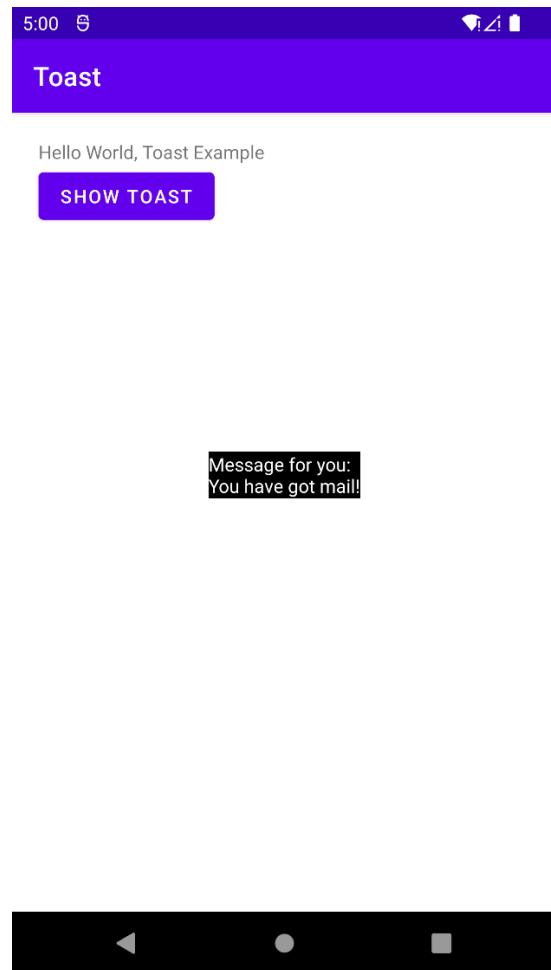
customtoast.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:id="@+id/custom_toast_layout"
        android:orientation="vertical">
    <TextView
        android:id="@+id/custom_toast_message"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Message for you:\nYou have
got mail!"
        android:background="@color/black"
        android:textColor="@color/white"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.toast;
import android.os.Bundle;
import android.view.Gravity;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.Button;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
    Button btn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        btn = (Button)findViewById(R.id.b1);
        btn.setOnClickListener(new
View.OnClickListener() {
            @Override
            public void onClick(View v)
            {
                LayoutInflater li =
getLayoutInflater();
                View layout =
li.inflate(R.layout.customtoast,(ViewGroup)
findViewById(R.id.custom_toast_layout));
                Toast toast = new
Toast(getApplicationContext());
                toast.setDuration(Toast.LENGTH_SHORT);
                toast.setGravity(Gravity.CENTER_VERTICAL,
0, 0);
                toast.setView(layout);
                toast.show();
            }
        });
    }
}
```

OUTPUT:



2) Write a program to display three checkboxes and one button named "Order" as shown below. Once you click on button it should toast different selected checkboxes along with items individual and total price.

Ans.

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"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <CheckBox
        android:id="@+id/checkBox"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />
```

```
        android:layout_height="wrap_content"
        android:layout_marginLeft="144dp"
        android:layout_marginTop="68dp"
        android:text="Pizza"
```

```
        app:layout_constraintStart_toStartOf="parent"
```

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

```
    <CheckBox
        android:id="@+id/checkBox2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="144dp"
```

```

        android:layout_marginTop="28dp"
        android:text="Coffee"

    app:layout_constraintStart_toStartOf="parent"

    app:layout_constraintTop_toBottomOf="@+id/checkBox" />
    <CheckBox
        android:id="@+id/checkBox3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="144dp"
        android:layout_marginTop="28dp"
        android:text="Burger"

    app:layout_constraintStart_toStartOf="parent"

    app:layout_constraintTop_toBottomOf="@+id/checkBox2" />
    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="144dp"
        android:layout_marginTop="184dp"
        android:text="Order"

    app:layout_constraintStart_toStartOf="parent"

    app:layout_constraintTop_toBottomOf="@+id/checkBox3" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

MainActivity.java

```

package com.example.order;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.CheckBox;
import android.widget.Toast;
import
androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends
AppCompatActivity {
    CheckBox pizza,coffe,burger;
    Button buttonOrder;
    @Override

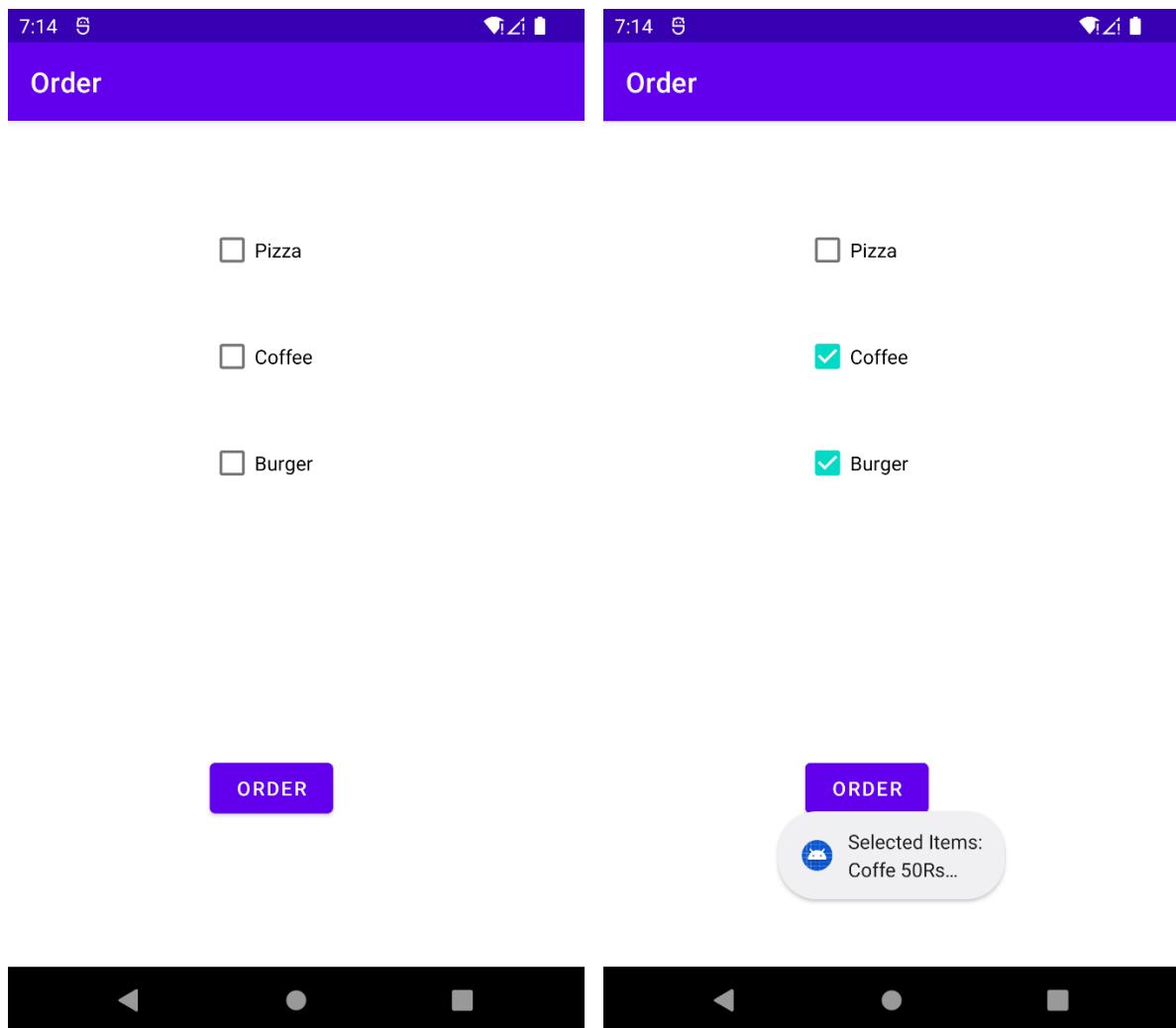
```

```

    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        addListenerOnButtonClick();
    }
    public void addListenerOnButtonClick(){
        pizza=(CheckBox)findViewById(R.id.checkBox);
        coffe=(CheckBox)findViewById(R.id.checkBox2);
        burger=(CheckBox)findViewById(R.id.checkBox3);
        buttonOrder=(Button)findViewById(R.id.button);
        buttonOrder.setOnClickListener(new View.OnClickListener(){
            @Override
            public void onClick(View view) {
                int totalamount=0;
                StringBuilder result=new
StringBuilder();
                result.append("Selected Items:");
                if(pizza.isChecked()){
                    result.append("\nPizza 100Rs");
                    totalamount+=100;
                }
                if(coffe.isChecked()){
                    result.append("\nCoffe 50Rs");
                    totalamount+=50;
                }
                if(burger.isChecked()){
                    result.append("\nBurger 120Rs");
                    totalamount+=120;
                }
                result.append("\nTotal:
"+totalamount+"Rs");
                Toast.makeText(getApplicationContext(),
result.toString(),
Toast.LENGTH_LONG).show();
            }
        });
    }
}

```

OUTPUT:



Practical No. 16: Develop a program to implement Date and Time Picker.

X. Exercise:

1) Write a program to display following output. Use TimePicker with Spinnermode.

Ans.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
        android:layout_width="match_parent"
        android:layout_height="match_parent">
    <ScrollView
        android:layout_marginTop="30dp"
        android:layout_width="match_parent"
        android:layout_height="match_parent">
        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:orientation="vertical">
            <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="AM/PM"
                android:textStyle="bold"
                android:textColor="@color/black"
                android:layout_marginLeft="100dp"/>
            <TimePicker
                android:id="@+id/tm1"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:timePickerMode="spinner" />
            <TextView
                android:id="@+id/t1"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="24 Hours"
                android:textStyle="bold"
                android:textColor="@color/black"
                android:layout_marginLeft="100dp"
                android:layout_below="@+id/tm1"/>
            <TimePicker
                android:id="@+id/tm2"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_below="@+id/t1"
                android:timePickerMode="spinner" />
        
    

```

```
<TimePicker
    android:id="@+id/timePicker1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="20dp"
    android:layout_below="@+id/tm2"/>
<Button
    android:id="@+id/button1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/timePicker1"
    android:layout_marginTop="10dp"
    android:layout_marginLeft="160dp"
    android:text="Get Date" />
<TextView
    android:id="@+id/textView1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/button1"
    android:layout_marginLeft="120dp"
    android:layout_marginTop="10dp"
    android:textStyle="bold"
    android:textSize="18dp"/>
</LinearLayout>
</ScrollView>
</RelativeLayout>
```

MainActivity.java

```
package myalarm.example.imageview;
import android.os.Build;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
import android.widget.TimePicker;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {

```

```

TimePicker picker, picker1;
Button btnGet;
TextView tvw;
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    tvw=(TextView)findViewById(R.id.textView1);
};

picker=(TimePicker)findViewById(R.id.timePicker1);
picker.setIs24HourView(true);

picker1=(TimePicker)findViewById(R.id.tm2)
;
picker1.setIs24HourView(true);

btnGet=(Button)findViewById(R.id.button1);
btnGet.setOnClickListener(new
View.OnClickListener() {
    @Override
    public void onClick(View v) {
        int hour, minute;

```

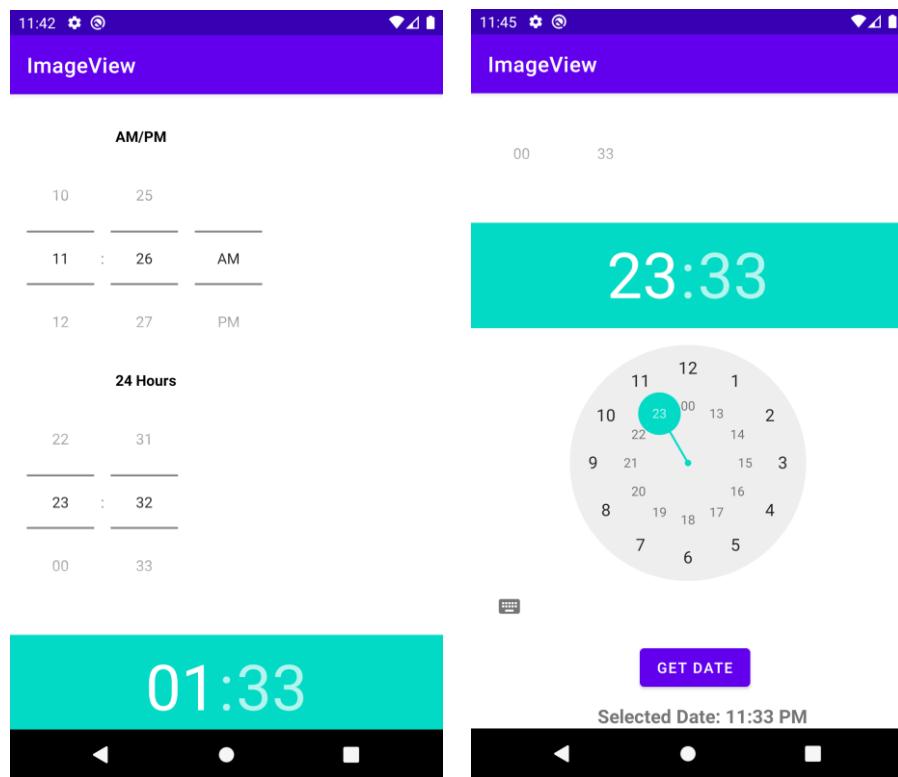
```

        String am_pm;
        if (Build.VERSION.SDK_INT >=
23 ){

            hour = picker.getHour();
            minute = picker.getMinute();
        }
        else{
            hour = picker.getCurrentHour();
            minute =
picker.getCurrentMinute();
        }
        if(hour > 12) {
            am_pm = "PM";
            hour = hour - 12;
        }
        else
        {
            am_pm="AM";
        }
        tvw.setText("Selected Date: "+ hour
+":"+ minute+" "+am_pm);
    }
});
}
}

```

OUTPUT:



2) Write a program to display following output. Select any display date and time on click of “select date”, “select time” buttons respectively.

Ans.

activity_main.xml

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

    xmlns:android="http://schemas.android.com/ap
    k/res/android"

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

        android:layout_width="match_parent"
        android:layout_height="match_parent"
        tools:ignore="NamespaceTypo">
            <EditText
                android:layout_width="200dp"
                android:layout_height="wrap_content"
                android:id="@+id/in_date"
                android:layout_marginTop="82dp"
                android:layout_alignParentTop="true"
                android:layout_alignParentLeft="true"
                android:layout_alignParentStart="true" />
            <Button
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="SELECT DATE"
                android:id="@+id/btn_date"
                android:layout_alignBottom="@+id/in_date"
                android:layout_toRightOf="@+id/in_date"
                android:layout_toEndOf="@+id/in_date"
            />
            <EditText
                android:layout_width="200dp"
                android:layout_height="wrap_content"
                android:id="@+id/in_time"
                android:layout_below="@+id/in_date"
                android:layout_alignParentLeft="true"
                android:layout_alignParentStart="true" />
            <Button
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="SELECT TIME"
                android:id="@+id/btn_time"
                android:layout_below="@+id/btn_date"
                android:layout_alignLeft="@+id/btn_date"
            />
```

```
        android:layout_alignStart="@+id/btn_date" />
    </RelativeLayout>
```

MainActivity.java

```
package myalarm.example.imageview;
import android.app.DatePickerDialog;
import android.app.TimePickerDialog;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.DatePicker;
import android.widget.EditText;
import android.widget.TimePicker;
import
androidx.appcompat.app.AppCompatActivity;
import java.util.Calendar;
public class MainActivity extends
AppCompatActivity implements
View.OnClickListener {
    Button btnDatePicker, btnTimePicker;
    EditText txtDate, txtTime;
    private int mYear, mMonth, mDay, mHour,
mMinute;
    @Override
    protected void onCreate(Bundle
 savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        btnDatePicker=(Button)findViewById(R.id.bt
n_date);
        btnTimePicker=(Button)findViewById(R.id.bt
n_time);
        txtDate=(EditText)findViewById(R.id.in_date
);
        txtTime=(EditText)findViewById(R.id.in_tim
e);
        btnDatePicker.setOnClickListener(this);
        btnTimePicker.setOnClickListener(this);
    }
    @Override
    public void onClick(View v) {
        if (v == btnDatePicker) {
```

```

final Calendar c =
Calendar.getInstance();
mYear = c.get(Calendar.YEAR);
mMonth = c.get(Calendar.MONTH);
mDay =
c.get(Calendar.DAY_OF_MONTH);
DatePickerDialog datePickerDialog =
new DatePickerDialog(this,
        new
DatePickerDialog.OnDateSetListener() {
    @Override
    public void
onDateSet(DatePicker view, int year,
          int monthOfYear,
int dayOfMonth) {

    txtDate.setText(dayOfMonth
+ " - " + (monthOfYear + 1) + " - " + year);

}
}, mYear, mMonth, mDay);
datePickerDialog.show();
}
}

```

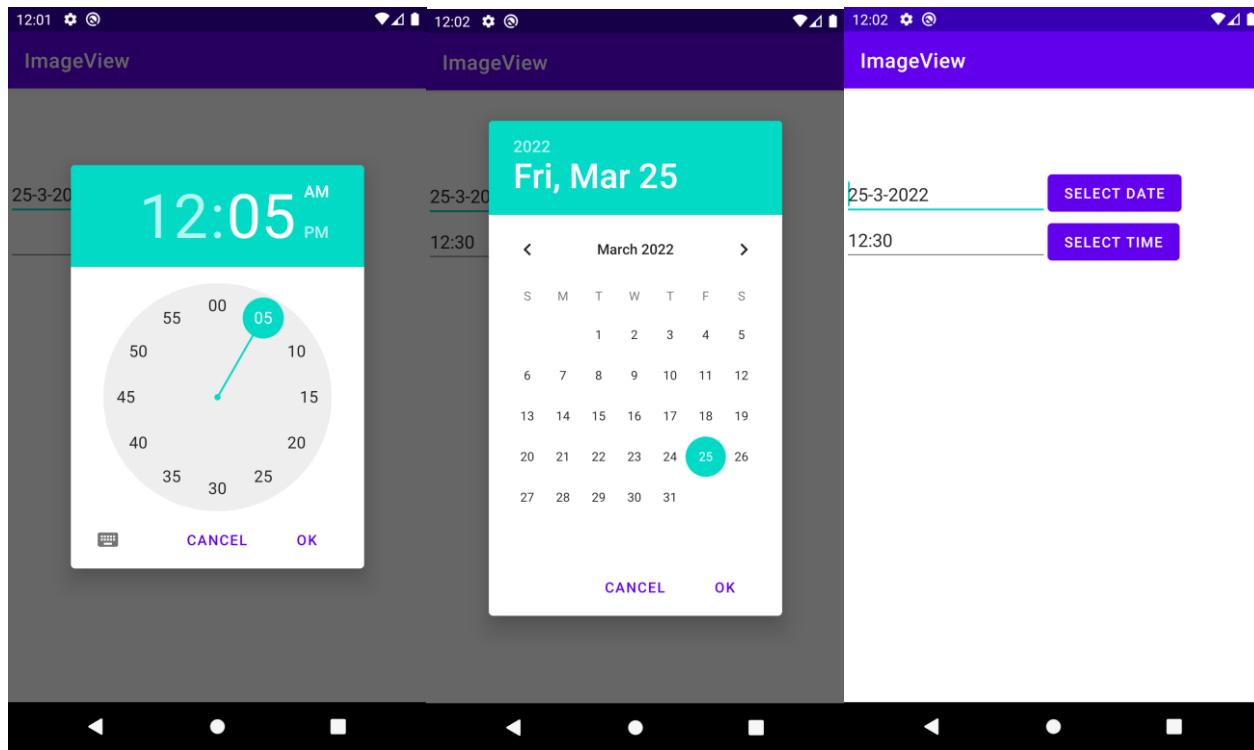
```

if (v == btnTimePicker) {
final Calendar c =
Calendar.getInstance();
mHour =
c.get(Calendar.HOUR_OF_DAY);
mMinute = c.get(Calendar.MINUTE);
TimePickerDialog timePickerDialog =
new TimePickerDialog(this,
        new
TimePickerDialog.OnTimeSetListener() {
    @Override
    public void
onTimeSet(TimePicker view, int hourOfDay,
          int minute) {

txtTime.setText(hourOfDay
+ ":" + minute);
}
}, mHour, mMinute, false);
timePickerDialog.show();
}
}
}

```

OUTPUT:



Practical No. 17: Develop a program to create an activity.

X. Exercise:

- 1) Write a program to create a Hello World Activity using all lifecycles methods to display messages using Log.d.**

Ans.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
        android:layout_width="match_parent"
        android:layout_height="match_parent">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        android:textColor="@color/black"
        android:textSize="40dp"
        android:layout_centerVertical="true"
        android:layout_centerHorizontal="true"/>
</RelativeLayout>
```

MainActivity.java

```
package com.example.activity;
import android.app.Activity;
import android.os.Bundle;
import android.util.Log;
public class MainActivity extends Activity {
    @Override
    protected void onCreate(Bundle
    savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Log.d("lifecycle","onCreate invoked");
    }
}
```

```
@Override
protected void onStart() {
    super.onStart();
    Log.d("lifecycle","onStart invoked");
}
@Override
protected void onResume() {
    super.onResume();
    Log.d("lifecycle","onResume invoked");
}
@Override
protected void onPause() {
    super.onPause();
    Log.d("lifecycle","onPause invoked");
}
@Override
protected void onStop() {
    super.onStop();
    Log.d("lifecycle","onStop invoked");
}
@Override
protected void onRestart() {
    super.onRestart();
    Log.d("lifecycle","onRestart invoked");
}
@Override
protected void onDestroy() {
    super.onDestroy();
    Log.d("lifecycle","onDestroy invoked");
}
}
```

OUTPUT:



Hello World!



Now see on the logcat: onCreate, onStart and onResume methods are invoked.

```
Logcat
Emulator Yash.Phone Android 1 ▾ com.example.activity (26372) ▾ Verbose ▾
2022-02-26 23:46:53.548 26372-26422/com.example.activity D/libEGL: loaded /vendor/lib64/egl/libGLESv1_CM_emulation.so
2022-02-26 23:46:53.568 26372-26422/com.example.activity D/libEGL: loaded /vendor/lib64/egl/libGLESv2_emulation.so
↑ 2022-02-26 23:46:53.637 26372-26372/com.example.activity D/lifecycle: onCreate invoked
↓ 2022-02-26 23:46:53.641 26372-26372/com.example.activity D/lifecycle: onStart invoked
≡ 2022-02-26 23:46:53.644 26372-26372/com.example.activity D/lifecycle: onResume invoked
⌚ 2022-02-26 23:46:53.688 26372-26420/com.example.activity D/HostConnection: createUnique: call
⌚ 2022-02-26 23:46:53.690 26372-26420/com.example.activity D/HostConnection: HostConnection::get() New Host Connection established 0x7ddc10d39550, tid 26420
⌚ 2022-02-26 23:46:53.696 26372-26420/com.example.activity D/HostConnection: HostComposition ext ANDROID_EMU_CHECKSUM_HELPER_v1 ANDROID_EMU_native_sync_v2 ANDROID_E
```

Now click on the HOME Button. You will see onPause method is invoked. After a while, you will see onStop method is invoked.

```
2022-02-26 23:46:53.748 26372-26420/com.example.activity D/goldfish-address-space: allocate: Ask for block of size 0x100
2022-02-26 23:46:53.748 26372-26420/com.example.activity D/goldfish-address-space: allocate: ioctl allocate returned offset 0x3e5ffc000 size 0x2000
① 2022-02-26 23:46:53.755 26372-26420/com.example.activity W/Gralloc4: allocator 4.x is not supported
② 2022-02-26 23:46:53.765 26372-26420/com.example.activity D/HostConnection: HostComposition ext ANDROID_EMU_CHECKSUM_HELPER_v1 ANDROID_EMU_native_sync_v2 ANDROID_E
2022-02-26 23:51:53.953 26372-26372/com.example.activity D/lifecycle: onPause invoked
2022-02-26 23:51:54.513 26372-26372/com.example.activity D/lifecycle: onStop invoked
```

Practical No. 18: Develop a program to implement new activity using explicit intent and implicit intent.

X. Exercise:

1) Write a program to create a text field and a button "Navigate". When you enter "www.google.com" and press navigate button it should open google page.

Ans.

activity_main.xml

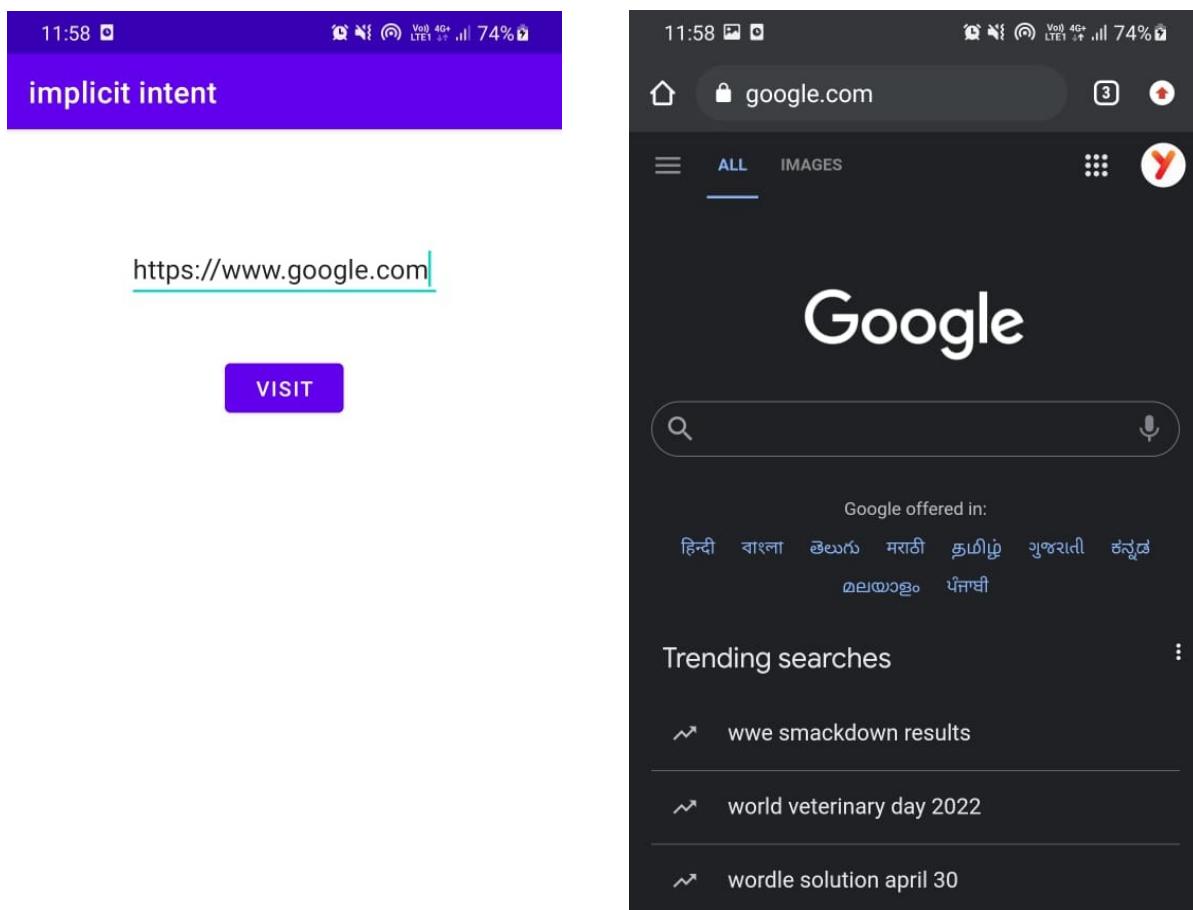
```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/ap
    k/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <EditText
        android:id="@+id/e1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="80dp"
        android:ems="10" />
    <Button
        android:id="@+id/b1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Visit"
        android:layout_below="@+id/e1"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="40dp"/>
</RelativeLayout>
```

MainActivity.java

```
package com.example.implicitintent;
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import
androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends
AppCompatActivity {
    Button button;
    EditText editText;
    @Override
```

```
protected void onCreate(Bundle
    savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    button = findViewById(R.id.b1);
    editText = findViewById(R.id.e1);
    button.setOnClickListener(new
View.OnClickListener() {
    @Override
    public void onClick(View view) {
        String
url=editText.getText().toString();
        Intent intent=new
Intent(Intent.ACTION_VIEW, Uri.parse(url));
        startActivity(intent);
    }
});
```

OUTPUT:



2) Write a program to create button "Start Dialer". When you click on this button it should open the phone dialer.

Ans.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android =
    "http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <Button
        android:id="@+id/b1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Start Dialer"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true"/>
</RelativeLayout>
```

MainActivity.java

```
package com.example.dialer;
import
    androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
```

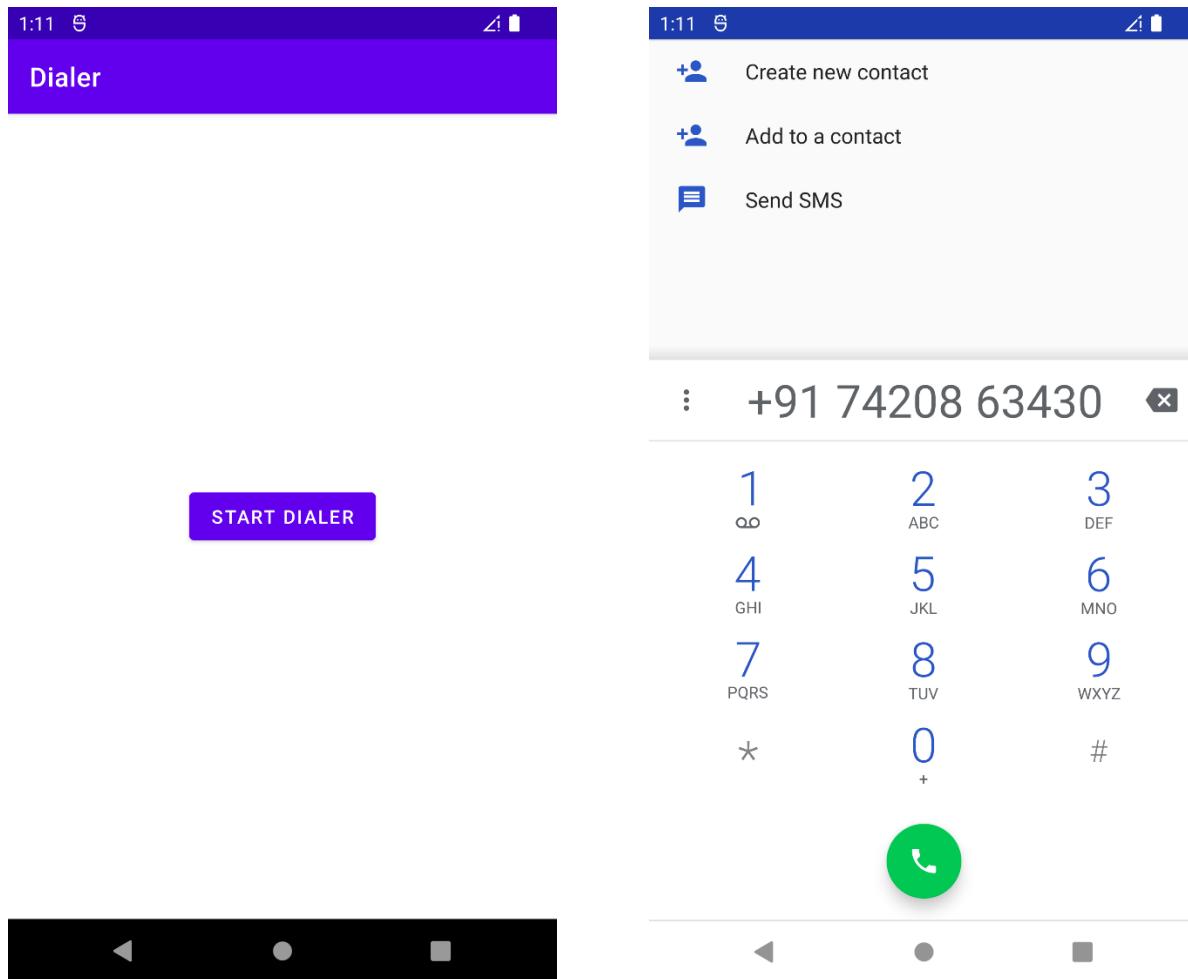
```
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
public class MainActivity extends
AppCompatActivity {
    Button b1;
    @Override
    protected void onCreate(Bundle
 savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        b1=(Button)findViewById(R.id.b1);
        b1.setOnClickListener(new
 View.OnClickListener() {
        @Override
        public void onClick(View v) {
            Intent intent = new
Intent(Intent.ACTION_DIAL);
```

```

        intent.setData(Uri.parse("tel:" +
" +917420863430"));
        startActivity(intent);
    }
}

```

OUTPUT:



3) Write a program to create two screens. First screen will take one number input from user. After click on Factorial button, second screen will open and it should display factorial of the same number. Also specify which type of intent you will use in this case.

Ans.

activity_main.xml

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/ap
    k/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical">
    <EditText
        android:id="@+id/input_num"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginStart="100dp"

```

```

        android:layout_marginEnd="120dp"
        android:layout_marginTop="180dp" />
    <Button
        android:id="@+id/b1"
        android:text="Factorial"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginStart="100dp"
        android:layout_marginTop="20dp"
        android:layout_marginEnd="120dp"/>
</LinearLayout>

```

secondactivity.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <TextView
        android:id="@+id/answer"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_gravity="center_horizontal"
        android:textStyle="bold"
        android:textColor="@color/black"
        android:textSize="40dp"/>
</LinearLayout>
```

MainActivity.java

```
package myalarm.example.intent;
import android.app.Activity;
import android.content.Intent;
import android.os.Bundle;
import android.widget.EditText;
import android.widget.Button;
import android.view.View;
public class MainActivity extends Activity{
    private EditText n;
    private Bundle bundle;
    @Override
    protected void onCreate(Bundle b) {
        super.onCreate(b);
        setContentView(R.layout.activity_main);
        n = (EditText) findViewById(R.id.input_num);
        Button b2 = (Button) findViewById(R.id.b1);
        Bundle bundle = new Bundle();
        b2.setOnClickListener(new
View.OnClickListener(){
    @Override
    public void onClick(View view) {
        int val = Integer.parseInt(n.getText().toString());
        bundle.putInt("naval",val);
        Intent intent = new
Intent(getApplicationContext(), Answer.class);
        intent.putExtras(bundle);
        startActivity(intent);
    }
});
```

Answer.java

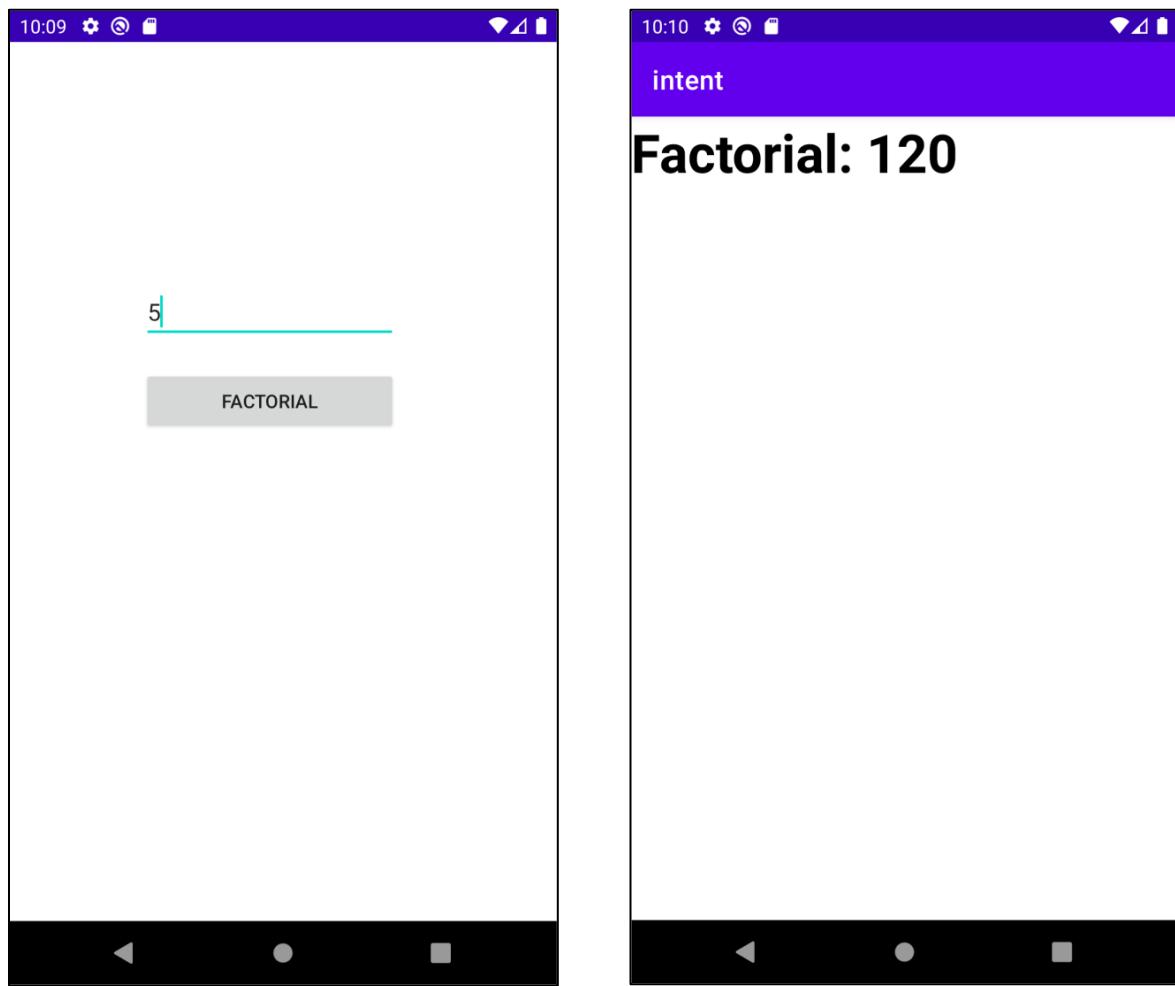
```
package myalarm.example.intent;
import android.content.Intent;
import android.os.Bundle;
import android.widget.TextView;
import
androidx.appcompat.app.AppCompatActivity;
public class Answer extends
AppCompatActivity {
    @Override
    protected void onCreate(Bundle
 savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.secondactivity);
        Intent intent = getIntent();
        Bundle bundle = intent.getExtras();
        TextView textView = (TextView)
        findViewById(R.id.answer);
        int val = bundle.getInt("naval");
        int i,x=1;
        for(i=1;i<=val;i++){
            x=x*i;
        }
        String txt = Integer.toString(x);
        textView.setText("Factorial: "+txt);
    }
}
```

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest
    xmlns:android="http://schemas.android.com/apk/res/android"
    package="myalarm.example.intent">
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_rou
nd"
        android:supportsRtl="true"
        android:theme="@style/Theme.Intent">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action
                    android:name="android.intent.action.MAIN" />
                <category
                    android:name="android.intent.category.LA
U
NCHER" />
```

```
</intent-filter>
</activity>
<activity
    android:name=".Answer"
    android:exported="true">
    <intent-filter>
        <action android:name="android.intent.action.MAIN" />
        <category android:name="android.intent.category.LAUNCHER" />
    </intent-filter>
</activity>
</application>
</manifest>
```

OUTPUT:



Practical No. 19: Develop a program to implement content provider.

X. Exercise:

1) Write a program to create your own content provider to insert and access data in android application.

Ans.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
        android:layout_width="match_parent"
        android:layout_height="match_parent">
    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Content provider"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:textSize="30dp" />
    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/textView1"
        android:layout_centerHorizontal="true"
        android:text="AISSMS
POLYTECHNIC"
        android:textColor="#ff87ff09"
        android:textSize="30dp" />
    <ImageButton
        android:id="@+id/imageButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/textView2"
        android:layout_marginTop="30dp"
        android:src="@drawable/img" />
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/button2"
        android:text="Add Name"
        android:layout_below="@+id/editText3"
        android:layout_alignRight="@+id/textView2"
        android:layout_alignEnd="@+id/textView2"
        android:layout_alignLeft="@+id/textView2"
        android:layout_alignStart="@+id/textView2"
        android:onClick="onClickAddName"/>
    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/editText"
        android:layout_below="@+id/imageButton"
        android:layout_alignRight="@+id/imageButton"
        android:layout_alignEnd="@+id/imageButton"
        android:layout_alignTop="@+id/editText"
        android:layout_alignLeft="@+id/textView1"
        android:layout_alignStart="@+id/textView1"
        android:layout_alignRight="@+id/textView1"
        android:layout_alignEnd="@+id/textView1"
        android:hint="Name"
        android:textColorHint="@android:color/holo_blue_light" />
    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/editText2"
        android:layout_alignLeft="@+id/editText2"
        android:layout_alignStart="@+id/editText2"
        android:layout_alignRight="@+id/editText2"
        android:layout_alignEnd="@+id/editText2"
        android:hint="Grade"
        android:textColorHint="@android:color/holo_blue_bright" />
    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>
```

```

        android:layout_below="@+id/button2"
        android:layout_alignStart="@+id/button2"
        android:layout_alignLeft="@+id/button2"
        android:layout_alignEnd="@+id/editText3"
        android:layout_alignRight="@+id/editText3"
        android:layout_marginStart="24dp"
        android:layout_marginLeft="24dp"
        android:layout_marginTop="3dp"
        android:layout_marginEnd="-25dp"
        android:layout_marginRight="-25dp"

        android:onClick="onClickRetrieveStudent
s"
        android:text="Retrive student" />
</RelativeLayout>

```

AndroidManifest.xml

```

<?xml version="1.0" encoding="utf-8"?>
<manifest
    xmlns:android="http://schemas.android.com/a
pk/res/android"
    package="com.example.myapplication">
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_ro
und"
        android:supportsRtl="true"

        android:theme="@style/Theme.MyApplicatio
n">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action
                    android:name="android.intent.action.MAIN"
                />
                <category
                    android:name="android.intent.category.LAUN
CHER" />
            </intent-filter>
        </activity>
        <provider android:name="StudentsProvider"
            android:authorities="com.example.MyApplication.
            StudentsProvider"/>
    </application>
</manifest>

```

strings.xml

```

<resources>
    <string
        name="app_name">MyApplication</string>
</resources>

```

MainActivity.java

```

package com.example.myapplication;
import android.net.Uri;
import android.os.Bundle;
import android.app.Activity;
import android.content.ContentValues;
import android.content.CursorLoader;
import android.database.Cursor;
import android.view.Menu;
import android.view.View;
import android.widget.EditText;
import android.widget.Toast;
public class MainActivity extends Activity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    public void onClickAddName(View view) {
        // Add a new student record
        ContentValues values = new ContentValues();
        values.put(StudentsProvider.NAME,
        ((EditText)findViewById(R.id.editText2)).getText().t
oString());
        values.put(StudentsProvider.GRADE,
        ((EditText)findViewById(R.id.editText3)).getText().t
oString());
        Uri uri = getContentResolver().insert(
            StudentsProvider.CONTENT_URI, values);
        Toast.makeText(getApplicationContext(),
            uri.toString(),
            Toast.LENGTH_LONG).show();
    }
    public void onClickRetrieveStudents(View view) {
        // Retrieve student records
        String URL =
        "content://com.example.MyApplication.Stu
dentsProvider";
        Uri students = Uri.parse(URL);
        Cursor c = managedQuery(students,
        null, null, null, "name");
        if (c.moveToFirst()) {

```

```

        do{
            Toast.makeText(this,
c.getString(c.getColumnIndex(StudentsPro
vider._ID)) +
                ", " +
c.getString(c.getColumnIndex(
StudentsProvider.NAME)) +
                ", " +
c.getString(c.getColumnIndex(
StudentsProvider.GRADE)),
Toast.LENGTH_SHORT).show();
        } while (c.moveToNext());
    }
}

```

StudentsProvider.java

```

package com.example.myapplication;
import java.util.HashMap;
import android.content.ContentProvider;
import android.content.ContentUris;
import android.content.ContentValues;
import android.content.Context;
import android.content.UriMatcher;
import android.database.Cursor;
import android.database.SQLException;
import
android.database.sqlite.SQLiteDatabase;
import
android.database.sqlite.SQLiteOpenHelper;
import
android.database.sqlite.SQLiteQueryBuilder;
import android.net.Uri;
import android.text.TextUtils;
public class StudentsProvider extends
ContentProvider {
    static final String PROVIDER_NAME =
"com.example.MyApplication.StudentsProv
ider";
    static final String URL = "content://" +
PROVIDER_NAME + "/students";
static final Uri CONTENT_URI = Uri.parse
(URL);
    static final String _ID = "_id";
    static final String NAME = "name";
    static final String GRADE = "grade";
    private static HashMap<String, String>
STUDENTS_PROJECTION_MAP;

```

```

static final int STUDENTS = 1;
static final int STUDENT_ID = 2;
static final UriMatcher uriMatcher;
static{
    uriMatcher = new
UriMatcher(UriMatcher.NO_MATCH);
    uriMatcher.addURI(PROVIDER_NAME,
"students", STUDENTS);
    uriMatcher.addURI(PROVIDER_NAME,
"students/#", STUDENT_ID);
}
/***
 * Database specific constant declarations
 */
private SQLiteDatabase db;
static final String DATABASE_NAME =
"College";
static final String STUDENTS_TABLE_NAME =
"students";
static final int DATABASE_VERSION = 1;
static final String CREATE_DB_TABLE =
" CREATE TABLE " +
STUDENTS_TABLE_NAME +
" (_id INTEGER PRIMARY KEY
AUTOINCREMENT, " +
" name TEXT NOT NULL, " +
" grade TEXT NOT NULL);";
/**
 * Helper class that actually creates and manages
 * the provider's underlying data repository.
 */
private static class DatabaseHelper extends
SQLiteOpenHelper {
    DatabaseHelper(Context context){
        super(context, DATABASE_NAME, null,
DATABASE_VERSION);
    }
    @Override
    public void onCreate(SQLiteDatabase db) {
        db.execSQL(CREATE_DB_TABLE);
    }
    @Override
    public void onUpgrade(SQLiteDatabase db, int
oldVersion, int newVersion) {
        db.execSQL("DROP TABLE IF EXISTS " +
STUDENTS_TABLE_NAME);
        onCreate(db);
    }
}
@Override
public boolean onCreate() {
    Context context = getContext();

```

```

DatabaseHelper dbHelper = new
DatabaseHelper(context);
/**
 * Create a write able database which
will trigger its
 * creation if it doesn't already exist.
 */
db = dbHelper.getWritableDatabase();
return (db == null)? false:true;
}

@Override
public Uri insert(Uri uri, ContentValues
values) {
/**
 * Add a new student record
 */
long rowID = db.insert(
STUDENTS_TABLE_NAME, "", values);
/**
 * If record is added successfully
 */
if (rowID > 0) {
Uri _uri =
ContentUris.withAppendedId(CONTENT_
URI, rowID);

getContext().getContentResolver().notifyCh
ange(_uri, null);
return _uri;
}
throw new SQLException("Failed to
add a record into " + uri);
}

@Override
public Cursor query(Uri uri, String[]
projection,
String selection, String[]
selectionArgs, String sortOrder) {
SQLiteQueryBuilder qb = new
SQLiteQueryBuilder();

qb.setTables(STUDENTS_TABLE_NAME
);
switch (uriMatcher.match(uri)) {
case STUDENTS:
qb.setProjectionMap(STUDENTS_PROJE
CTION_MAP);
break;
case STUDENT_ID:
qb.appendWhere( _ID + "=" +
uri.getPathSegments().get(1));
break;

default:
}
if (sortOrder == null || sortOrder == ""){
/**
 * By default sort on student names
 */
sortOrder = NAME;
}
Cursor c = qb.query(db, projection,
selection,
selectionArgs,null, null, sortOrder);
/**
 * register to watch a content URI for changes
 */

c.setNotificationUri(getContext().getContentResolve
r(), uri);
return c;
}

@Override
public int delete(Uri uri, String selection, String[]
selectionArgs) {
int count = 0;
switch (uriMatcher.match(uri)){
case STUDENTS:
count =
db.delete(STUDENTS_TABLE_NAME, selection,
selectionArgs);
break;

case STUDENT_ID:
String id = uri.getPathSegments().get(1);
count = db.delete(
STUDENTS_TABLE_NAME, _ID + " = " + id +
(!TextUtils.isEmpty(selection) ?
" AND (" + selection + ')' : ""), selectionArgs);
break;
default:
throw new
IllegalArgumentException("Unknown URI " + uri);
}

getContext().getContentResolver().notifyChan
ge(uri, null);
return count;
}

@Override

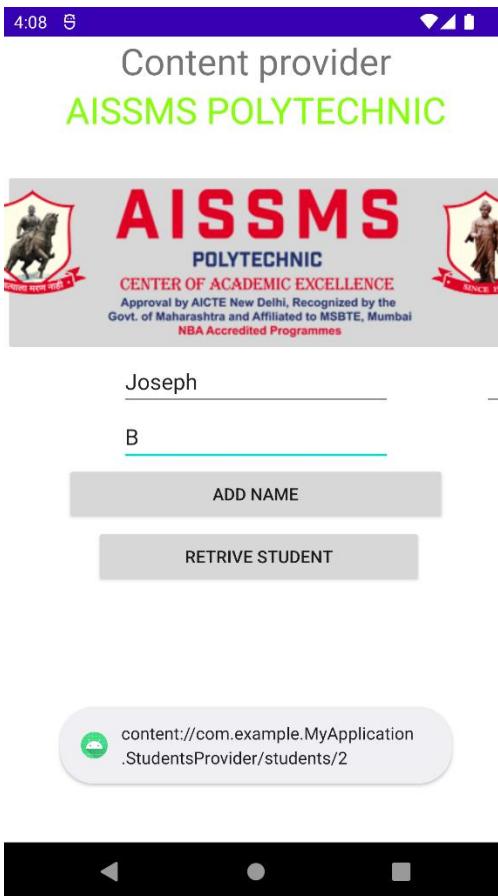
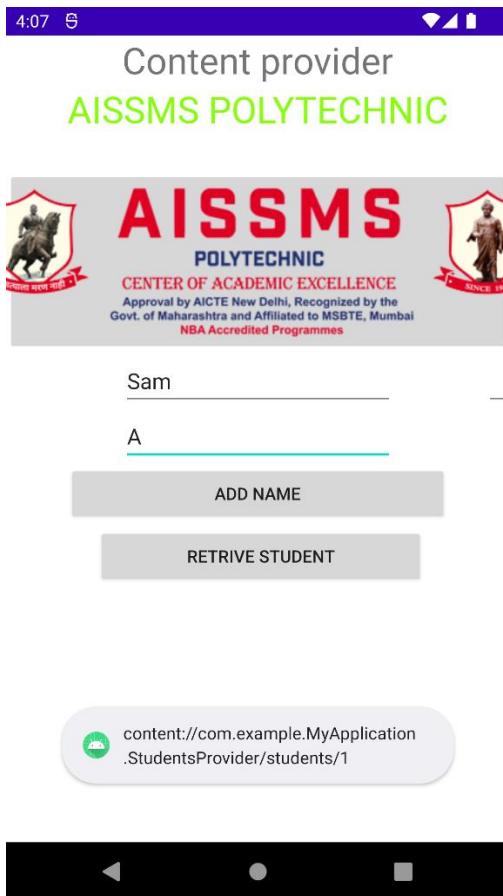
```

```

public int update(Uri uri, ContentValues
values,
        String selection, String[]
selectionArgs) {
    int count = 0;
    switch (uriMatcher.match(uri)) {
        case STUDENTS:
            count =
db.update(STUDENTS_TABLE_NAME,
values, selection, selectionArgs);
            break;
        case STUDENT_ID:
            count =
db.update(STUDENTS_TABLE_NAME,
values,
        _ID + " = " +
uri.getPathSegments().get(1) +
(!TextUtils.isEmpty(selection) ? " AND (" +
+selection + ')' : ""), selectionArgs);
            break;
        default:
            throw new
IllegalArgumentException("Unknown URI " +
uri );
    }
    getContext().getContentResolver().notifyChange(uri,
null);
    return count;
}
@Override
public String getType(Uri uri) {
    switch (uriMatcher.match(uri)){
        /**
         * Get all student records
         */
        case STUDENTS:
            return
"vnd.android.cursor.dir/vnd.example.students";
        /**
         * Get a particular student
         */
        case STUDENT_ID:
            return
"vnd.android.cursor.item/vnd.example.students";
        default:
            throw new
IllegalArgumentException("Unsupported URI: " + uri);
    }
}

```

Output:



4:08 5



Content provider
AISSMS POLYTECHNIC



Name

Grade

ADD NAME

RETRIEVE STUDENT



1, Sam, A

4:08 5



Content provider
AISSMS POLYTECHNIC



Name

Grade

ADD NAME

RETRIEVE STUDENT



2, Joseph, B



Practical No. 20: Develop a program to implement service.

X. Exercise:

1) Write a program to start a Wi-Fi using service.

Ans.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
        android:layout_width="match_parent"
        android:layout_height="match_parent">
    <ImageView
        android:id="@+id/imageView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_marginTop="10dp"
        android:src="@drawable/wifiicon"
        android:layout_centerHorizontal="true"/>
    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Enable Wifi"
        android:layout_below="@+id/imageView"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="40dp"/>
    <Button
        android:id="@+id/button2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Disable Wifi"
        android:layout_below="@+id/button1"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="40dp"/>
</RelativeLayout>
```

MainActivity.java

```
package com.example.wifi;
import android.net.wifi.WifiManager;
import android.os.Bundle;
import android.app.Activity;
import android.content.Context;
import android.view.View;
```

```
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.Toast;
public class MainActivity extends Activity {
    Button enableButton, disableButton;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        enableButton = (Button) findViewById(R.id.button1);
        disableButton = (Button) findViewById(R.id.button2);
        enableButton.setOnClickListener(new OnClickListener() {
            public void onClick(View v) {
                WifiManager wifi = (WifiManager)
                getApplicationContext().getSystemService(Context.WIFI_SERVICE);
                wifi.setWifiEnabled(true);

                Toast.makeText(getApplicationContext(), "Wifi turned ON",
                        Toast.LENGTH_SHORT).show();
            }
        });
        disableButton.setOnClickListener(new OnClickListener() {
            public void onClick(View v) {
                WifiManager wifi = (WifiManager)
                getApplicationContext().getSystemService(Context.WIFI_SERVICE);
                wifi.setWifiEnabled(false);

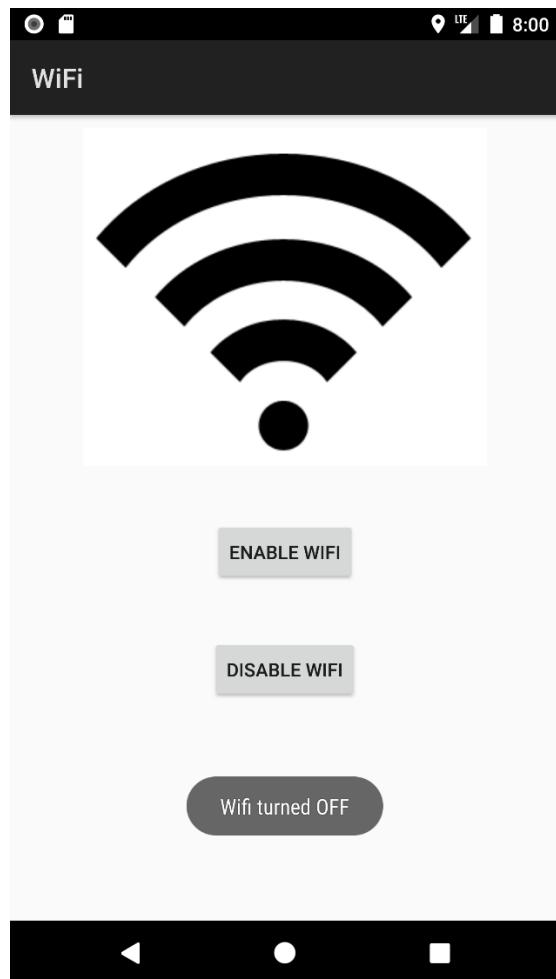
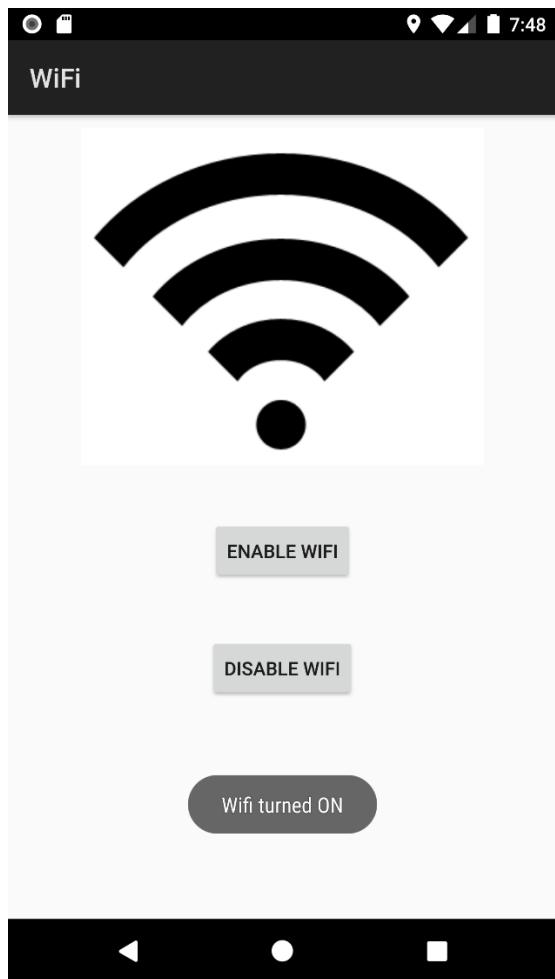
                Toast.makeText(getApplicationContext(), "Wifi turned OFF",
                        Toast.LENGTH_SHORT).show();
            }
        });
    }
}
```

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest
    xmlns:android="http://schemas.android.com/apk/res/android"
        package="com.example.wifi">
    <uses-permission
        android:name="android.permission.ACCESS_WIFI_STATE" />
    <uses-permission
        android:name="android.permission.CHANGE_WIFI_STATE" />
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name">
```

```
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true">
        <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>
```

OUTPUT:



2) Write a program to display the following output.

Ans.

activity_main.xml

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

    xmlns:tools="http://schemas.android.com/tools"
        android:layout_width="match_parent"
        android:layout_height="match_parent">
    <Button
        android:id="@+id/startService"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentLeft="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentTop="true"
        android:text="Start Service" />
    <Button
        android:id="@+id/stopservice"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignLeft="@+id/startService"
        android:layout_alignParentRight="true"
        android:layout_below="@+id/startService"
        android:text="Stop Service" />
</RelativeLayout>
```

MainActivity.java

```
package com.example.service;
import android.os.Bundle;
import android.app.Activity;
import android.content.Intent;
import android.view.Menu;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;
public class MainActivity extends Activity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Button start = (Button)
        findViewById(R.id.startService);
        Button stop = (Button)
        findViewById(R.id.stopservice);
```

```
        start.setOnClickListener(new
View.OnClickListener() {
            @Override
            public void onClick(View v) {
                // TODO Auto-generated method stub
                startService(new
Intent(MainActivity.this, MyService.class));

                Toast.makeText(getApplicationContext(),"Service Started",Toast.LENGTH_SHORT).show();
            }
        });
        stop.setOnClickListener(new
View.OnClickListener() {

            @Override
            public void onClick(View v) {
                // TODO Auto-generated method stub
                stopService(new
Intent(MainActivity.this, MyService.class));

                Toast.makeText(getApplicationContext(),"Service Stopped",Toast.LENGTH_SHORT).show();
            }
        });
    }
    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the action bar if it is present.
        getMenuInflater().inflate(R.menu.main,
menu);
        return true;
    }
}
```

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest
    xmlns:android="http://schemas.android.com/apk/res/android"
        package="com.example.service">
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
```

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

OUTPUT:



Service Started



Practical No. 21: Develop a program to implement broadcast receiver.

X. Exercise:

1) Write a program to demonstrate all the system broadcast messages.

Ans.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    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=".MainActivity">
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

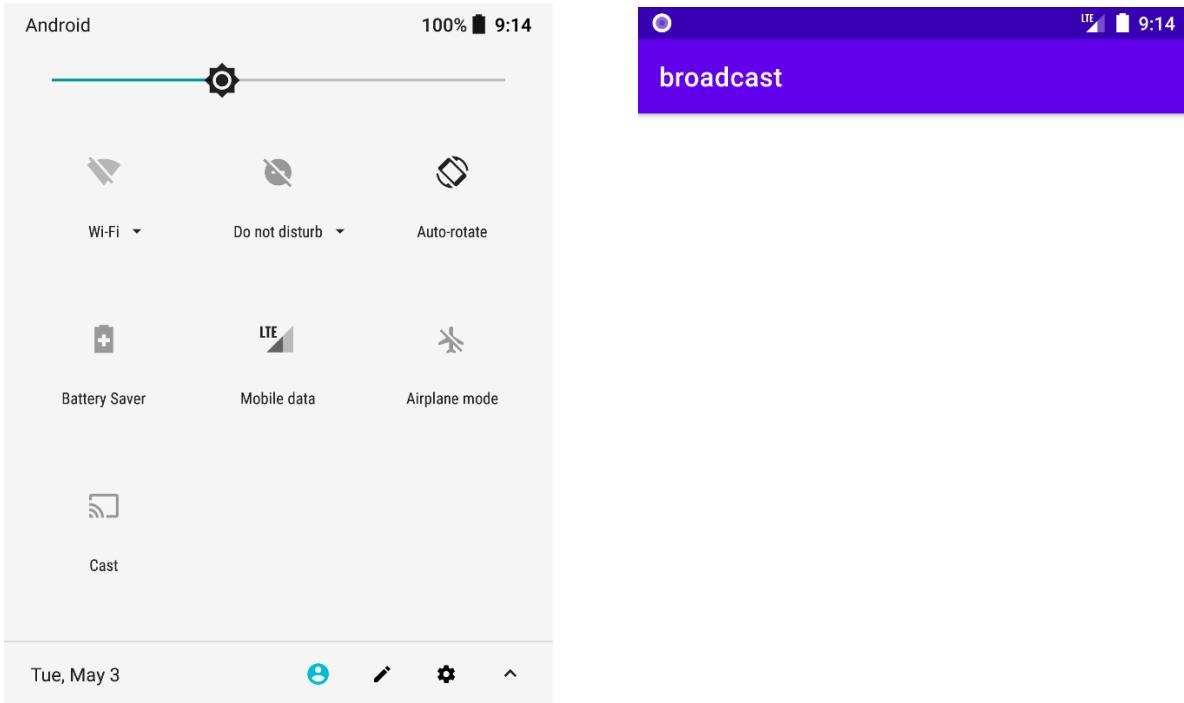
```
package com.example.broadcast;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.content.IntentFilter;
import android.os.Bundle;
public class MainActivity extends AppCompatActivity {
    AirplaneModeChangeReceiver
    airplaneModeChangeReceiver = new
    AirplaneModeChangeReceiver();
    @Override
    protected void onCreate(Bundle
    savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    @Override
    protected void onStart() {
        super.onStart();
        IntentFilter filter = new
        IntentFilter(Intent.ACTION_AIRPLANE_MODE_CHANGED);
```

```
registerReceiver(airplaneModeChangeReceiver,
filter);
}
@Override
protected void onStop() {
    super.onStop();
    unregisterReceiver(airplaneModeChangeReceiver
);
}
}
```

AirplaneModeChangeReceiver.java

```
package com.example.broadcast;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.provider.Settings;
import android.widget.Toast;
public class AirplaneModeChangeReceiver
extends BroadcastReceiver {
    @Override
    public void onReceive(Context context, Intent
    intent) {
        if
        (isAirplaneModeOn(context.getApplicationConte
        xt())) {
            Toast.makeText(context, "AirPlane mode
        is on", Toast.LENGTH_SHORT).show();
        } else {
            Toast.makeText(context, "AirPlane mode
        is off", Toast.LENGTH_SHORT).show();
        }
    }
    private static boolean
    isAirplaneModeOn(Context context) {
        return
        Settings.System.getInt(context.getContentResolv
        er(), Settings.Global.AIRPLANE_MODE_ON, 0)
        != 0;
    }
}
```

OUTPUT:



AirPlane mode is on



Practical No. 22: Develop a program to implement sensors.

X. Exercise:

1) Write a program to change the background color when device is shuffled.

Ans.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <TextView
        android:id="@+id/textView"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:text="Shake to switch color" />
</RelativeLayout>
```

MainActivity.java

```
package com.example.sensor;
import android.app.Activity;
import android.graphics.Color;
import android.hardware.Sensor;
import android.hardware.SensorEvent;
import android.hardware.SensorEventListener;
import android.hardware.SensorManager;
import android.os.Bundle;
import android.view.View;
import android.widget.Toast;
public class MainActivity extends Activity
implements SensorEventListener{
    private SensorManager sensorManager;
    private boolean isColor = false;
    private View view;
    private long lastUpdate;
    @Override
    public void onCreate(Bundle
    savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        view = findViewById(R.id.textView);
        view.setBackgroundColor(Color.GREEN);
```

```
        sensorManager = (SensorManager)
getSystemService(SENSOR_SERVICE);
        lastUpdate = System.currentTimeMillis();
    }
    //overriding two methods of
    SensorEventListener
    @Override
    public void onAccuracyChanged(Sensor
sensor, int accuracy) {}
    @Override
    public void onSensorChanged(SensorEvent
event) {
        if (event.sensor.getType() ==
Sensor.TYPE_ACCELEROMETER) {
            getAccelerometer(event);
        }
    }
    private void getAccelerometer(SensorEvent
event) {
        float[] values = event.values;
        // Movement
        float x = values[0];
        float y = values[1];
        float z = values[2];
        float accelerationSquareRoot =
(x * x + y * y
+ z * z)
        / (SensorManager.GRAVITY_EARTH
* SensorManager.GRAVITY_EARTH);
        long actualTime =
System.currentTimeMillis();
        Toast.makeText(getApplicationContext(),String.v
alueOf(accelerationSquareRoot)+" "+
SensorManager.GRAVITY_EARTH,Toast.LEN
GTH_SHORT).show();
        if (accelerationSquareRoot >= 2) //it will be
executed if you shuffle
    {
        if (actualTime - lastUpdate < 200) {
            return;
```

```

        }
        lastUpdate = actualTime;//updating
lastUpdate for next shuffle
        if (isColor) {

view.setBackgroundColor(Color.GREEN);

        } else {

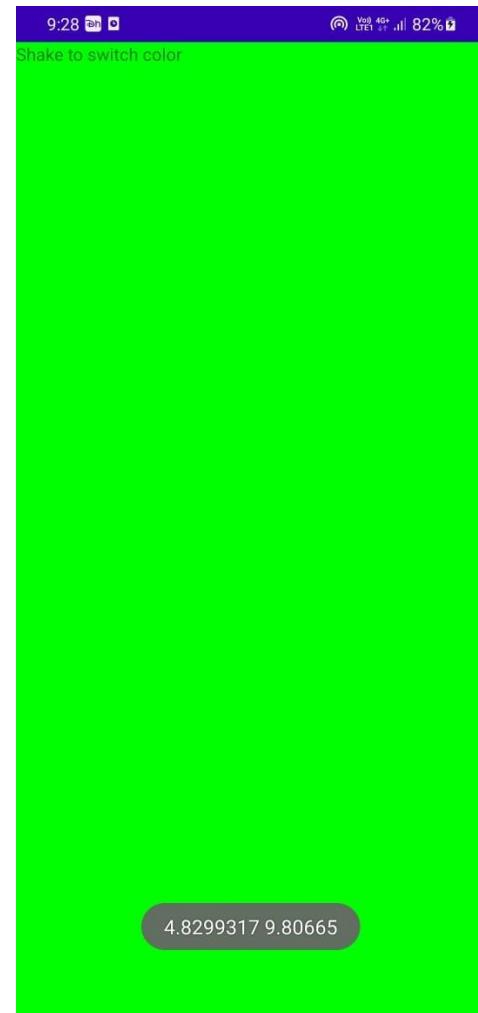
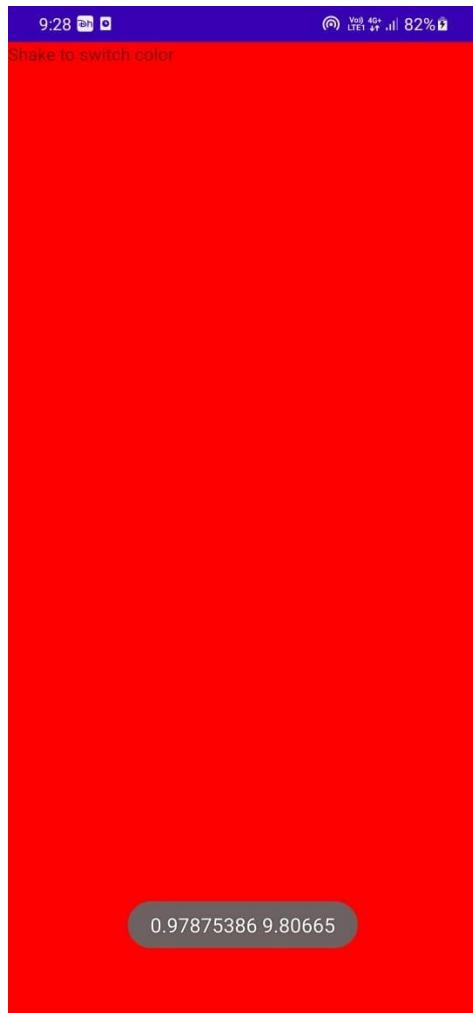
view.setBackgroundColor(Color.RED);
        }
        isColor = !isColor;
    }
}
@Override
protected void onResume() {
    super.onResume();
}

// register this class as a listener for the
orientation and
// accelerometer sensors
sensorManager.registerListener(this,sensorManager.getDefaultSensor(Sensor.TYPE_ACCELEROMETER),
SensorManager.SENSOR_DELAY_NORMAL);
}

@Override
protected void onPause() {
    // unregister listener
    super.onPause();
    sensorManager.unregisterListener(this);
}
}

```

OUTPUT:



2) Write a program to display the list of sensors supported by the mobile device.

Ans.

activity_main.xml

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

    xmlns:android="http://schemas.android.com/ap
    k/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <TextView
        android:text="Sensor"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/textview"
        android:textSize="35dp"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="AISSMS"
        android:id="@+id/textView"
        android:layout_below="@+id/textview"
        android:layout_centerHorizontal="true"
        android:textColor="#ff7aff24"
        android:textSize="35dp" />
    <ImageView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/imageView"
        android:src="@drawable/poly"
        android:layout_below="@+id/textView"
        android:layout_centerHorizontal="true"
        android:theme="@style/Base.TextAppearance.
        AppCompat" />
    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/imageView"
        android:layout_alignParentStart="true"
        android:layout_alignParentLeft="true"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:text="New Text" />
</RelativeLayout>
```

MainActivity.java

```
package com.example.sensorlist;
import android.app.Activity;
import android.hardware.SensorManager;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.TextView;
import java.util.List;
import android.hardware.Sensor;
public class MainActivity extends Activity {
    TextView tv1=null;
    private SensorManager mSensorManager;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        tv1 = (TextView)
        findViewById(R.id.textView2);
        tv1.setVisibility(View.GONE);
        mSensorManager = (SensorManager)
        getSystemService(SENSOR_SERVICE);
        List<Sensor> mList=
        mSensorManager.getSensorList(Sensor.TYPE_A
        LL);
        for (int i = 1; i < mList.size(); i++) {
            tv1.setVisibility(View.VISIBLE);
            tv1.append("\n" + mList.get(i).getName()
            + "\n" + mList.get(i).getVendor() + "\n" +
            mList.get(i).getVersion());
        }
    }
    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the
        action bar if it is present.
        getMenuInflater().inflate(R.menu.menu_main,
        menu);
        return true;
    }
    @Override
    public boolean
    onOptionsItemSelected(MenuItem item) {
```

```

// Handle action bar item clicks here. The
action bar will
    // automatically handle clicks on the
Home/Up button, so long
    // as you specify a parent activity in
AndroidManifest.xml.
    int id = item.getItemId();
    //noinspection SimplifiableIfStatement
    if (id == R.id.action_settings) {
        return true;
    }
    return super.onOptionsItemSelected(item);
}

```

AndroidManifest.xml

```

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

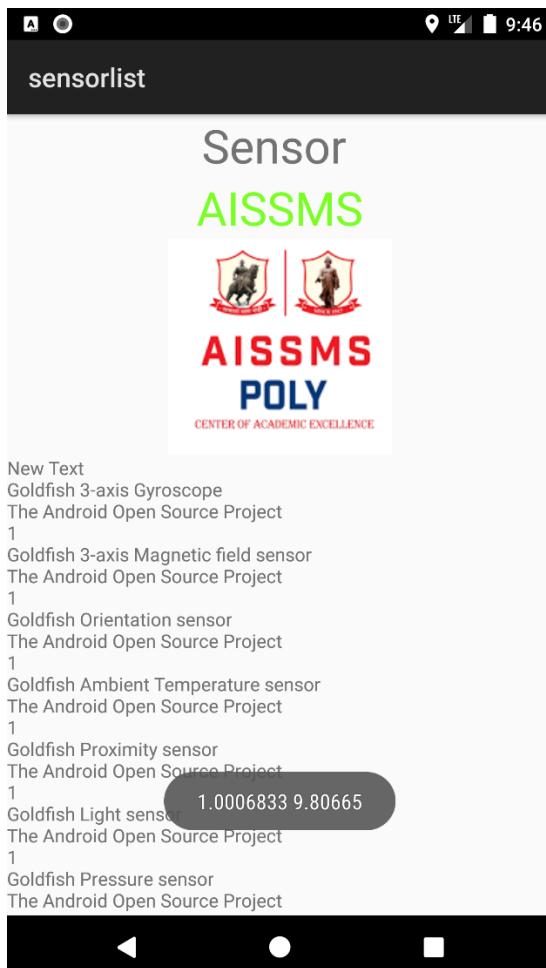
```

```

    package="com.example.sensorlist" >
<application
    android:allowBackup="true"
    android:icon="@mipmap/ic_launcher"
    android:label="@string/app_name">
    <activity
        android:name=".MainActivity"
        android:label="@string/app_name"
        android:exported="true">
        <intent-filter>
            <action
                android:name="android.intent.action.MAIN" />
            <category
                android:name="android.intent.category.LAUNC
HER" />
        </intent-filter>
    </activity>
</application>
</manifest>

```

OUTPUT:



Practical No. 23: Develop a program to build Camera.

X. Exercise:

1) Write a program to capture an image and display it using image view.

Ans.

activity_main.xml

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

    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="140dp"
        android:id="@+id/camera_button"
        android:text="Camera" />
    <ImageView
        android:layout_marginTop="70dp"
        android:layout_width="350dp"
        android:layout_marginLeft="15dp"
        android:layout_height="450dp"
        android:id="@+id/click_image"
        android:layout_marginBottom="10dp"/>
</RelativeLayout>
```

MainActivity.java

```
package com.example.camera;
import android.content.Intent;
import android.graphics.Bitmap;
import android.provider.MediaStore;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;
import
androidx.appcompat.app.AppCompatActivity;
```

```
public class MainActivity extends AppCompatActivity {
    // Define the pic id
    private static final int pic_id = 123;
    // Define the button and imageview type
    // variable
    Button camera_open_id;
    ImageView click_image_id;
    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        // By ID we can get each component
        // which id is assigned in XML file
        // get Buttons and imageview.
        camera_open_id =
        (Button)findViewById(R.id.camera_button);
        click_image_id =
        (ImageView)findViewById(R.id.click_image);
        // Camera_open button is for open the
        // camera
        // and add the setOnClickListener in this
        // button
        camera_open_id.setOnClickListener(new
        View.OnClickListener() {
            @Override
            public void onClick(View v)
            {
                // Create the camera_intent
                Intent camera_intent
                = new Intent(MediaStore
                    .ACTION_IMAGE_CAPTURE);
                // it will open the camera for capture the
                // image
                Intent camera_intent
                = new Intent(MediaStore
                    .ACTION_IMAGE_CAPTURE);
                // Start the activity with camera_intent,
                // and request pic id
                startActivityForResult(camera_intent,
                pic_id);
            }
        });
    }
}
```

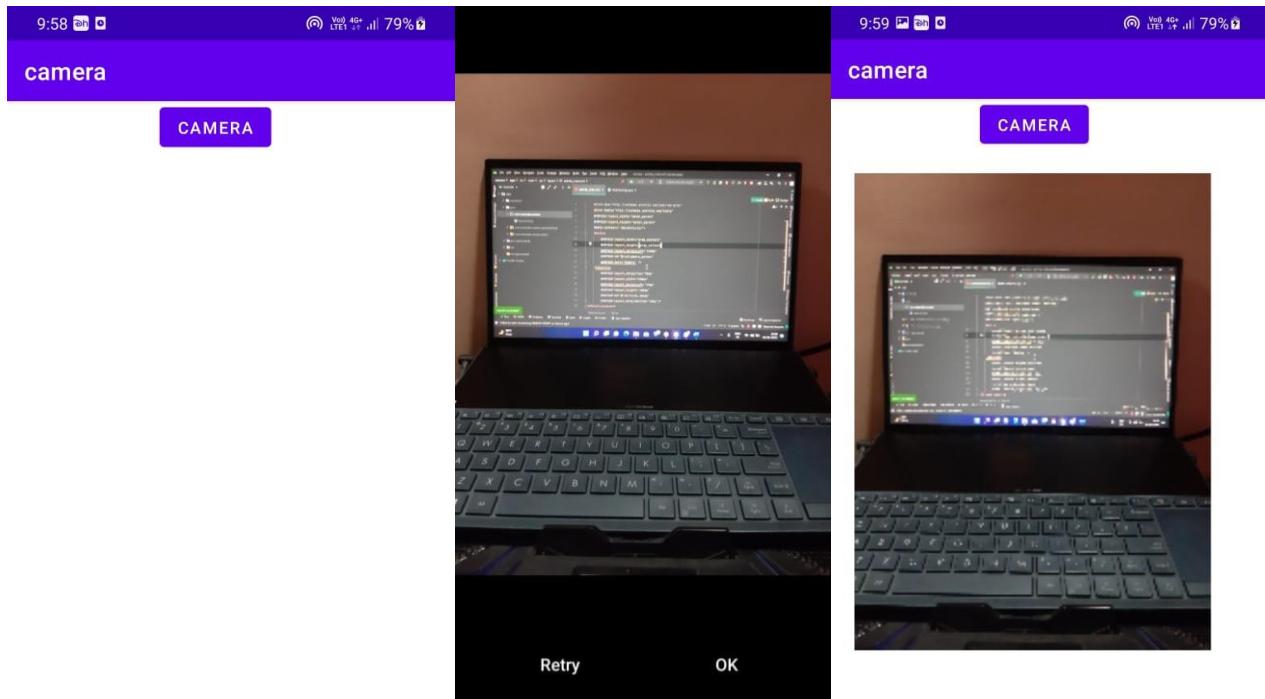
```
    });
}

// This method will help to retrieve the
image

protected void onActivityResult(int
requestCode,
                                int resultCode,
                                Intent data) {
    // Match the request 'pic id with
requestCode
    super.onActivityResult(requestCode,
resultCode, data);
```

```
if (requestCode == pic_id) {  
    // BitMap is data structure of image file  
    // which store the image in memory  
    Bitmap photo = (Bitmap) data.getExtras()  
        .get("data");  
    // Set the image in imageview for display  
    click_image_id.setImageBitmap(photo);  
}  
}
```

OUTPUT:



2) Write a program to record a video using various camera methods.

Ans.

activity_main.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
        android:layout_width="match_parent"
        android:layout_height="match_parent">
    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerInParent="true"
        android:text="Record Video" />
</RelativeLayout>
```

MainActivity.java

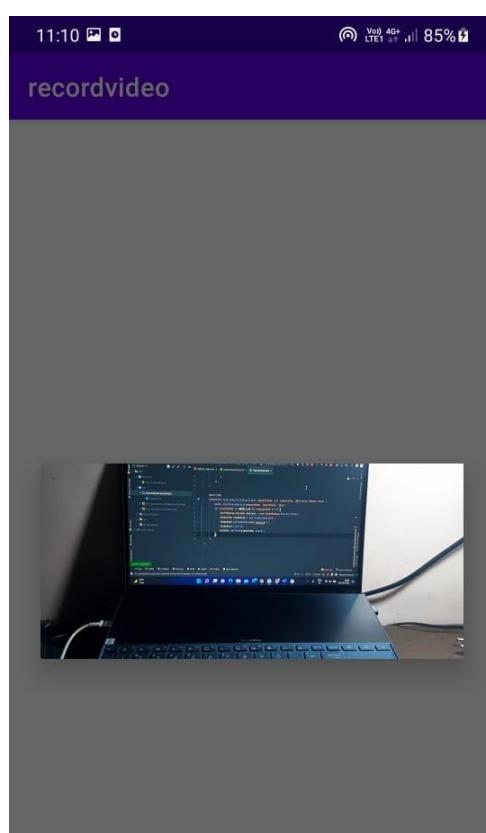
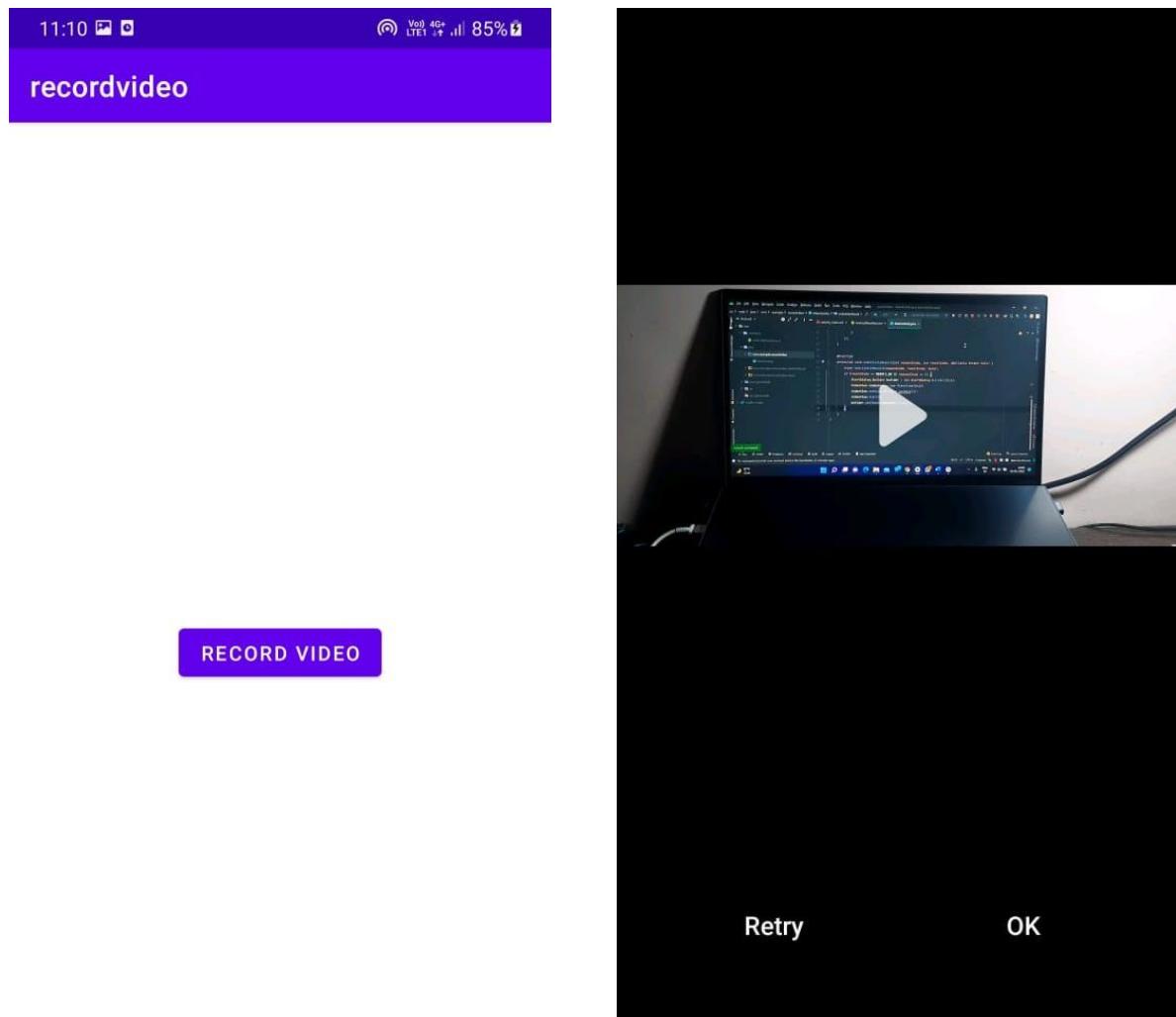
```
package com.example.recordvideo;
import androidx.annotation.Nullable;
import androidx.appcompat.app.AlertDialog;
import
androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.provider.MediaStore;
import android.view.View;
import android.widget.Button;
import android.widget.VideoView;
public class MainActivity extends
AppCompatActivity {
    Button b;
    @Override
    protected void onCreate(Bundle
 savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        b = findViewById(R.id.button1);
        b.setOnClickListener(new
View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent intent = new
Intent(MediaStore.ACTION_VIDEO_CAPTURE);
                intent.putExtra(MediaStore.EXTRA_DURATION_LIMIT, 10);
                startActivityForResult(intent, 1);
            }
        });
    }
}
```

```
    }
    @Override
    protected void onActivityResult(int
requestCode, int resultCode, @Nullable Intent
data) {
    super.onActivityResult(requestCode,
resultCode, data);
    if (resultCode == RESULT_OK &&
requestCode == 1) {
        AlertDialog.Builder builder = new
AlertDialog.Builder(this);
        VideoView videoView = new
VideoView(this);
        videoView.setVideoURI(data.getData());
        videoView.start();
        builder.setView(videoView).show();
    }
}
```

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest
    xmlns:android="http://schemas.android.com/apk/res/android"
        package="com.example.recordvideo">
    <uses-feature
        android:name="android.hardware.camera"
        android:required="true" />
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Recordvideo">
        <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>
```

OUTPUT:



Practical No. 24: Develop a program for providing Bluetooth connectivity.

X. Exercise:

1) Write a program to turn on, get visible, list devices and turnoff Bluetooth with the help of following GUI.

Ans.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    android:orientation="vertical"
    android:layout_margin="20dp">
    <TextView
        android:id="@+id/textView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Bluetooth"
        android:textColor="@color/black"
        android:textSize="30dp" />
    <Button
        android:id="@+id/turnon"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Turn On"
        android:clickable="true"
        android:onClick="on"/>
    <Button
        android:id="@+id/getvisible"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Get Visible"
        android:onClick="visible"/>
    <Button
        android:id="@+id/listdevice"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="List Devices"
```

```
        android:onClick="list"/>
    <Button
        android:id="@+id/turnoff"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Turn Off"
        android:onClick="off" />
    <ListView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:id="@+id/list"
        android:layout_marginTop="20dp" />
</LinearLayout>
```

MainActivity.java

```
package com.example.bluetooth;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import android.Manifest;
import android.bluetooth.BluetoothAdapter;
import android.bluetooth.BluetoothDevice;
import android.content.Intent;
import android.content.pm.PackageManager;
import android.os.Bundle;
import android.view.View;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.ListView;
import android.widget.Toast;
import java.util.Set;
import java.util.ArrayList;
public class MainActivity extends AppCompatActivity {
    Button turnon, getvisible, turnoff, listdevice;
    BluetoothAdapter BA;
    ListView lv;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
```

```
    setContentView(R.layout.activity_main);
    turnon = (Button)
findViewById(R.id.turnon);
    turnoff = (Button)
findViewById(R.id.turnoff);
    getvisible = (Button)
findViewById(R.id.getvisible);
    listdevice = (Button)
findViewById(R.id.listdevice);
    lv = (ListView) findViewById(R.id.list);
    BA =
BluetoothAdapter.getDefaultAdapter();
}
public void on(View v) {
    if (!BA.isEnabled()) {
        Intent turnOn = new
Intent(BluetoothAdapter.ACTION_REQUEST
_ENABLE);
        if
(ActivityCompat.checkSelfPermission(this,
Manifest.permission.BLUETOOTH_CONNEC
T) !=

PackageManager.PERMISSION_GRANTED)
            startActivityForResult(turnOn, 1);

Toast.makeText(getApplicationContext(),
"Turned On", Toast.LENGTH_LONG).show();
    } else {

Toast.makeText(getApplicationContext(),
"Already On",
Toast.LENGTH_LONG).show();
    }
}
public void off(View v) {
    if (!BA.isEnabled()) {
        if
(ActivityCompat.checkSelfPermission(this,
Manifest.permission.BLUETOOTH_CONNEC
T) !=

PackageManager.PERMISSION_GRANTED)

Toast.makeText(getApplicationContext(),
"Turned On", Toast.LENGTH_LONG).show();
    } else {
        BA.disable();
        Toast.makeText(getApplicationContext(),
"Turned Off",
Toast.LENGTH_LONG).show();
    }
}
```

```
        }
    }

    public void visible(View v) {
        Intent getVisible = new
Intent(BluetoothAdapter.ACTION_REQUEST_DISCOVERABLE);
        if
(ActivityCompat.checkSelfPermission(this,
Manifest.permission.BLUETOOTH_ADVERTISE) !=

PackageManager.PERMISSION_GRANTED) {
            startActivityForResult(getVisible, 0);
        }
    }

    public void list(View v) {
        ArrayList list = new ArrayList();
        if
(ActivityCompat.checkSelfPermission(this,
Manifest.permission.BLUETOOTH_CONNECT) != PackageManager.PERMISSION_GRANTED)
{
            Set<BluetoothDevice> pairedDevices =
BA.getBondedDevices();
            for(BluetoothDevice bt : pairedDevices){
                list.add(bt.getName());
            }
        }

        Toast.makeText(getApplicationContext(),"Showing Paired
Devices",Toast.LENGTH_SHORT).show();
        final ArrayAdapter adapter = new
ArrayAdapter(this,android.R.layout.simple_list_it
em_1,list);
        lv.setAdapter(adapter);
    }
}
```

AndroidManifest.xml

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

```

<uses-permission
    android:name="android.permission.BLUETOOTH_CONNECT" />
    <uses-permission
        android:name="android.permission.BLUETOOTH" />
    <uses-permission
        android:name="android.permission.BLUETOOTH_ADMIN" />
    <uses-permission
        android:name="android.permission.ACCESS_COARSE_LOCATION" />
<application
    android:allowBackup="true"
    android:icon="@mipmap/ic_launcher"
    android:label="@string/app_name"

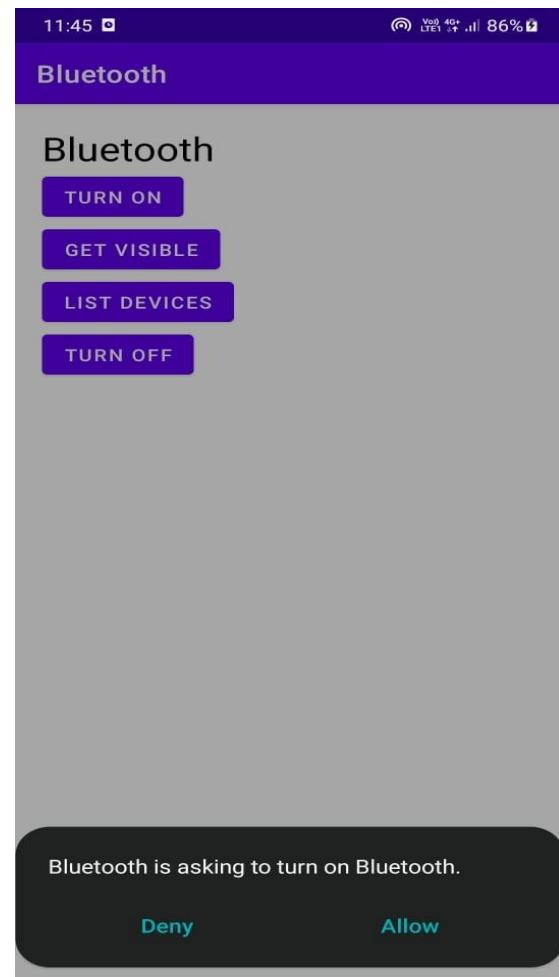
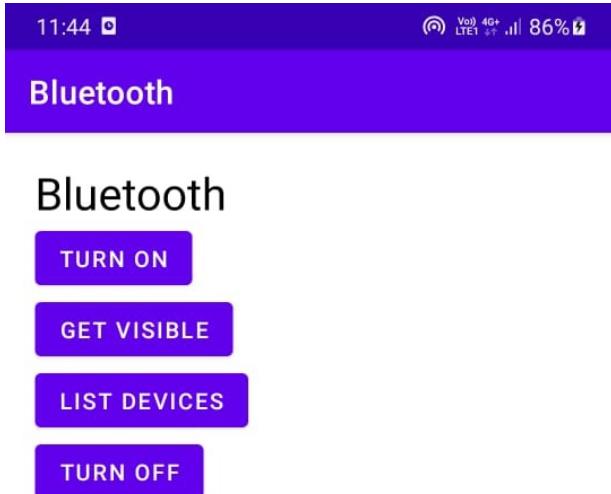
```

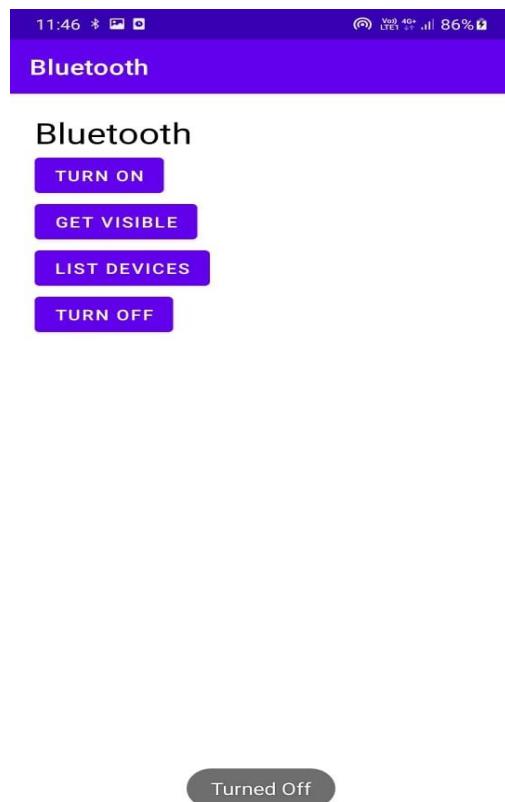
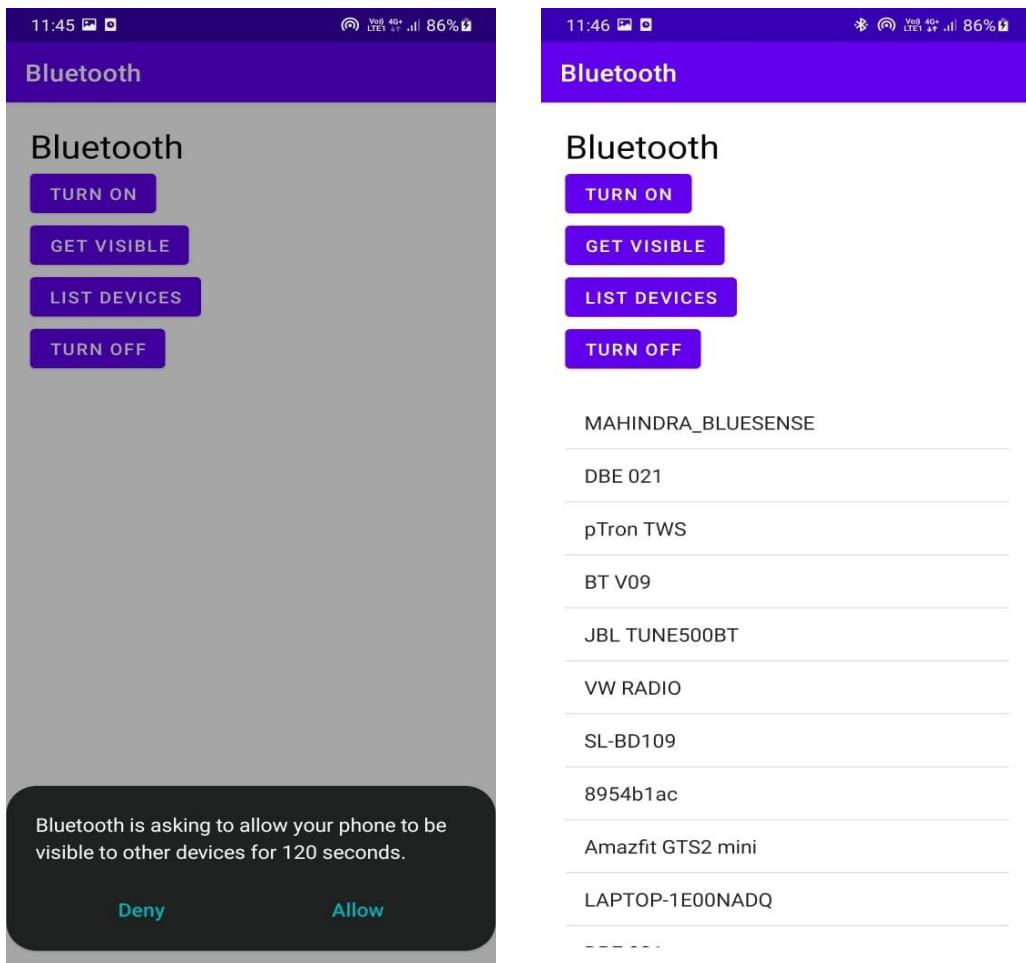
```

        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Bluetooth">
    <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>

```

OUTPUT:





Practical No. 25: Develop a program for animation.

X. Exercise:

1) Write a program to rotate the image in clockwise/anticlockwise, Zoom IN/Zoom OUT, Fade IN/Fade OUT by using the following GUI.

Ans.

activity_main.xml

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

    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"

    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <ImageView
        android:id="@+id/imageview"
        android:layout_width="200dp"
        android:layout_height="200dp"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="40dp"

        android:contentDescription="@string/app_name"
        android:src="@drawable/img"

    app:srcCompat="@mipmap/ic_launcher_round" />
    <LinearLayout
        android:id="@+id/linear1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/imageview"
        android:layout_marginTop="30dp"
        android:orientation="horizontal"
        android:weightSum="3">
        <Button
            android:id="@+id/BTNblink"
            style="@style/TextAppearance.AppCompat.Widget.Button" />
        <Button
            android:id="@+id/BTNrotate"
            style="@style/TextAppearance.AppCompat.Widget.Button" />
        <Button
            android:id="@+id/BTNfade"
            style="@style/TextAppearance.AppCompat.Widget.Button" />
    </LinearLayout>
    <LinearLayout
        android:id="@+id/linear2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/linear1"
        android:layout_marginTop="30dp"
        android:orientation="horizontal"
        android:weightSum="3">
        <Button
            android:id="@+id/BTNmove"
            style="@style/TextAppearance.AppCompat.Widget.Button" />
    </LinearLayout>

```

```
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:layout_weight="1"
        android:padding="3dp"
        android:text="@string/blink"
        android:textColor="@color/white" />
    <Button
        android:id="@+id/BTNrotate"
        style="@style/TextAppearance.AppCompat.Widget.Button" />
    <Button
        android:id="@+id/BTNfade"
        style="@style/TextAppearance.AppCompat.Widget.Button" />
    <Button
        android:id="@+id/BTNmove"
        style="@style/TextAppearance.AppCompat.Widget.Button" />

```

```

style="@style/TextAppearance.AppCompat.Widget.Button"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_margin="10dp"
    android:layout_weight="1"
    android:padding="3dp"
    android:text="@string/move"
    android:textColor="@color/white" />
<Button
    android:id="@+id/BTNslide"

style="@style/TextAppearance.AppCompat.Widget.Button"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_margin="10dp"
    android:layout_weight="1"
    android:padding="3dp"
    android:text="@string/slide"
    android:textColor="@color/white" />
<Button
    android:id="@+id/BTNzoom"

style="@style/TextAppearance.AppCompat.Widget.Button"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_margin="10dp"
    android:layout_weight="1"
    android:padding="3dp"
    android:text="@string/zoom"
    android:textColor="@color/white" />
</LinearLayout>
<Button
    android:id="@+id/BTNstop"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_below="@id/linear2"
    android:layout_marginLeft="30dp"
    android:layout_marginTop="30dp"
    android:layout_marginRight="30dp"
    android:text="@string/stop_animation" />
</RelativeLayout>

```

blink.xml

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

```

<set
    xmlns:android="http://schemas.android.com/apk/res/
    android">
    <alpha android:fromAlpha="0.0"
        android:toAlpha="1.0"

    android:interpolator="@android:anim/accelerate_int
    erpolator"
        android:duration="500"
        android:repeatMode="reverse"
        android:repeatCount="infinite"/>
</set>

```

fade.xml

```

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

    android:interpolator="@android:anim/accelerate_int
    erpolator"
        <alpha
            android:duration="1000"
            android:fromAlpha="0"
            android:toAlpha="1" />
        <alpha
            android:duration="1000"
            android:fromAlpha="1"
            android:startOffset="2000"
            android:toAlpha="0" />
</set>

```

move.xml

```

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

    android:interpolator="@android:anim/linear_interpo
    lator"
        android:fillAfter="true">
    <translate
        android:fromXDelta="0%p"
        android:toXDelta="75%p"
        android:duration="700" />
</set>

```

rotate.xml

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

xmlns:android="http://schemas.android.com/ap
k/res/android">

<rotate
    android:duration="6000"
    android:fromDegrees="0"
    android:pivotX="50%"
    android:pivotY="50%"
    android:toDegrees="360" />

<rotate
    android:duration="6000"
    android:fromDegrees="360"
    android:pivotX="50%"
    android:pivotY="50%"
    android:startOffset="5000"
    android:toDegrees="0" />

</set>
```

slide.xml

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

    android:fillAfter="true" >

    <scale
        android:duration="500"
        android:fromXScale="1.0"
        android:fromYScale="1.0"

        android:interpolator="@android:anim/linear_in
        terpolator"
        android:toXScale="1.0"
        android:toYScale="0.0" />

</set>
```

zoom.xml

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

    android:fillAfter="true" >

    <scale
        android:duration="500"
        android:fromXScale="1.0"
```

android:fromYScale="1.0"

```
        android:interpolator="@android:anim/linear_interpo
        lator"
            android:toXScale="1.0"
            android:toYScale="0.0" />
</set>
```

strings.xml

```
<resources>
    <string name="app_name">GFG App</string>
    <string name="blink">BLINK</string>
    <string name="clockwise">ROTATE</string>
    <string name="fade">FADE</string>
    <string name="move">MOVE</string>
    <string name="slide">SLIDE</string>
    <string name="zoom">ZOOM</string>
    <string name="stop_animation">STOP
ANIMATION</string>
    <string name="course_rating">Course
Rating</string>
    <string name="course_name">Course
Name</string>
</resources>
```

MainActivity.java

```
package com.example.animation;
import
    androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.view.animation.Animation;
import android.view.animation.AnimationUtils;
import android.widget.Button;
import android.widget.ImageView;
public class MainActivity extends
    AppCompatActivity {
    ImageView imageView;
    Button blinkBTN, rotateBTN, fadeBTN,
    moveBTN, slideBTN, zoomBTN, stopBTN;
    @Override
    protected void onCreate(Bundle
        savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        imageView = findViewById(R.id.imageview);
        blinkBTN = findViewById(R.id.BTNblink);
```

```

rotateBTN =
findViewById(R.id.BTNrotate);
fadeBTN =
findViewById(R.id.BTNfade);
moveBTN =
findViewById(R.id.BTNmove);
slideBTN =
findViewById(R.id.BTNslide);
zoomBTN =
findViewById(R.id.BTNzoom);
stopBTN = findViewById(R.id.BTNstop);
blinkBTN.setOnClickListener(new
View.OnClickListener() {
    @Override
    public void onClick(View v) {
        // To add blink animation
        Animation animation =
        AnimationUtils.loadAnimation(getApplicationContext(),
R.anim.blink);

imageView.startAnimation(animation);
    }
});
rotateBTN.setOnClickListener(new
View.OnClickListener() {
    @Override
    public void onClick(View v) {
        // To add rotate animation
        Animation animation =
        AnimationUtils.loadAnimation(getApplicationContext(),
R.anim.rotate);

imageView.startAnimation(animation);
    }
});
fadeBTN.setOnClickListener(new
View.OnClickListener() {
    @Override
    public void onClick(View v) {
        // To add fade animation
        Animation animation =
        AnimationUtils.loadAnimation(getApplicationContext(),
R.anim.fade);

imageView.startAnimation(animation);
    }
});
moveBTN.setClickListener(new
View.OnClickListener() {
    @Override
    public void onClick(View v) {
        moveBTN.setClickListener(new
View.OnClickListener() {
            @Override
            public void onClick(View v) {
                // To add move animation
                Animation animation =
                AnimationUtils.loadAnimation(getApplicationContext(),
R.anim.move);

                imageView.startAnimation(animation);
            }
        });
        slideBTN.setOnClickListener(new
View.OnClickListener() {
            @Override
            public void onClick(View v) {
                // To add slide animation
                Animation animation =
                AnimationUtils.loadAnimation(getApplicationContext(),
R.anim.slide);

                imageView.startAnimation(animation);
            }
        });
        zoomBTN.setOnClickListener(new
View.OnClickListener() {
            @Override
            public void onClick(View v) {
                // To add zoom animation
                Animation animation =
                AnimationUtils.loadAnimation(getApplicationContext(),
R.anim.zoom);

                imageView.startAnimation(animation);
            }
        });
        stopBTN.setOnClickListener(new
View.OnClickListener() {
            @Override
            public void onClick(View v) {
                // To stop the animation going on
                imageView =
                imageView.clearAnimation();
            }
        });
    }
});

```

OUTPUT:



BLINK ROTATE FADE

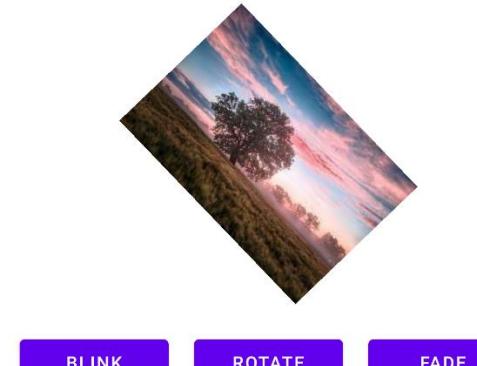
BLINK ROTATE FADE

MOVE SLIDE ZOOM

MOVE SLIDE ZOOM

STOP ANIMATION

STOP ANIMATION



BLINK ROTATE FADE

BLINK ROTATE FADE

MOVE SLIDE ZOOM

MOVE SLIDE ZOOM

STOP ANIMATION

STOP ANIMATION



Practical No. 26: Perform Async task using SQLite.

X. Exercise:

1) Write a program to insert data in SQLite database using AsyncTask.

Ans.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <!--Edit text to enter course name-->
    <EditText
        android:id="@+id/idEdtCourseName"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:hint="Enter course Name" />
    <!--edit text to enter course duration-->
    <EditText
        android:id="@+id/idEdtCourseDuration"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:hint="Enter Course Duration" />
    <!--edit text to display course tracks-->
    <EditText
        android:id="@+id/idEdtCourseTracks"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:hint="Enter Course Tracks" />
    <!--edit text for course description-->
    <EditText
        android:id="@+id/idEdtCourseDescription"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:hint="Enter Course Description" />
</LinearLayout>
```

```
        android:hint="Enter Course Description"
    />
    <!--button for adding new course-->
    <Button
        android:id="@+id/idBtnAddCourse"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:text="Add Course"
        android:textAllCaps="false" />
</LinearLayout>
```

MainActivity.java

```
package com.example.practical231;
import
    androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import
    androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends
    AppCompatActivity {
    // creating variables for our edittext, button
    and dbhandler
    private EditText courseNameEdt,
    courseTracksEdt, courseDurationEdt,
    courseDescriptionEdt;
    private Button addCourseBtn;
    private DBHandler dbHandler;
    @Override
    protected void onCreate(Bundle
    savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        // initializing all our variables.
        courseNameEdt =
        findViewById(R.id.idEdtCourseName);
        courseTracksEdt =
        findViewById(R.id.idEdtCourseTracks);
```

```
courseDurationEdt =  
findViewById(R.id.idEdtCourseDuration);  
courseDescriptionEdt =  
findViewById(R.id.idEdtCourseDescription);  
addCourseBtn =  
findViewById(R.id.idBtnAddCourse);  
// creating a new dbhandler class  
// and passing our context to it.  
dbHandler = new  
DBHandler(MainActivity.this);  
// below line is to add on click listener for  
our add course button.  
addCourseBtn.setOnClickListener(new  
View.OnClickListener() {  
@Override  
public void onClick(View v) {  
// below line is to get data from all  
edit text fields.  
String courseName =  
courseNameEdt.getText().toString();  
String courseTracks =  
courseTracksEdt.getText().toString();  
String courseDuration =  
courseDurationEdt.getText().toString();  
String courseDescription =  
courseDescriptionEdt.getText().toString();  
// validating if the text fields are  
empty or not.  
if (courseName.isEmpty() &&  
courseTracks.isEmpty() &&  
courseDuration.isEmpty() &&  
courseDescription.isEmpty()) {  
Toast.makeText(MainActivity.this, "Please  
enter all the data..",  
Toast.LENGTH_SHORT).show();  
return;  
}  
// on below line we are calling a  
method to add new  
// course to sqlite data and pass all  
our values to it.  
  
dbHandler.addNewCourse(courseName,  
courseDuration, courseDescription,  
courseTracks);  
// after adding the data we are  
displaying a toast message.  
Toast.makeText(MainActivity.this,  
"Course has been added.",  
Toast.LENGTH_SHORT).show();  
courseNameEdt.setText("");
```

```
        courseDurationEdt.setText("");
        courseTracksEdt.setText("");
        courseDescriptionEdt.setText("");
    }
});
```

DBhandler.java

```
package com.example.practical231;
import android.content.ContentValues;
import android.content.Context;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
public class DBhandler extends
SQLiteOpenHelper{
    // creating a constant variables for our
database.
    // below variable is for our database name.
    private static final String DB_NAME =
"courseedb";
    // below int is our database version
    private static final int DB_VERSION = 1;
    // below variable is for our table name.
    private static final String TABLE_NAME =
"mycourses";
    // below variable is for our id column.
    private static final String ID_COL = "id";
    // below variable is for our course name
column
    private static final String NAME_COL =
"name";
    // below variable id for our course duration
column.
    private static final String DURATION_COL =
"duration";
    // below variable for our course description
column.
    private static final String
DESCRIPTION_COL = "description";
    // below variable is for our course tracks
column.
    private static final String TRACKS_COL =
"tracks";
    // creating a constructor for our database
handler.
    public DBhandler(Context context) {
        super(context, DB_NAME, null,
DB_VERSION);
    }
}
```

```

@Override
public void onCreate(SQLiteDatabase db) {
    String query = "CREATE TABLE " +
        TABLE_NAME + "("
        + ID_COL + " INTEGER "
        + PRIMARY_KEY AUTOINCREMENT, "
        + NAME_COL + " TEXT," "
        + DURATION_COL + " TEXT," "
        + DESCRIPTION_COL + " TEXT," "
        + TRACKS_COL + " TEXT)";
    db.execSQL(query);
}

public void addNewCourse(String
courseName, String courseDuration, String
courseDescription, String courseTracks) {
    SQLiteDatabase db =
this.getWritableDatabase();
    ContentValues values = new
ContentValues();
    values.put(NAME_COL, courseName);
    values.put(DURATION_COL,
courseDuration);
    values.put(DESCRIPTION_COL,
courseDescription);
    values.put(TRACKS_COL,
courseTracks);
    db.insert(TABLE_NAME, null, values);
    db.close();
}

@Override
public void onUpgrade(SQLiteDatabase db,
int oldVersion, int newVersion) {
    // this method is called to check if the
table exists already.
    db.execSQL("DROP TABLE IF EXISTS
" + TABLE_NAME);
    onCreate(db);
}

```

```

    }
}
```

AndroidManifest.xml

```

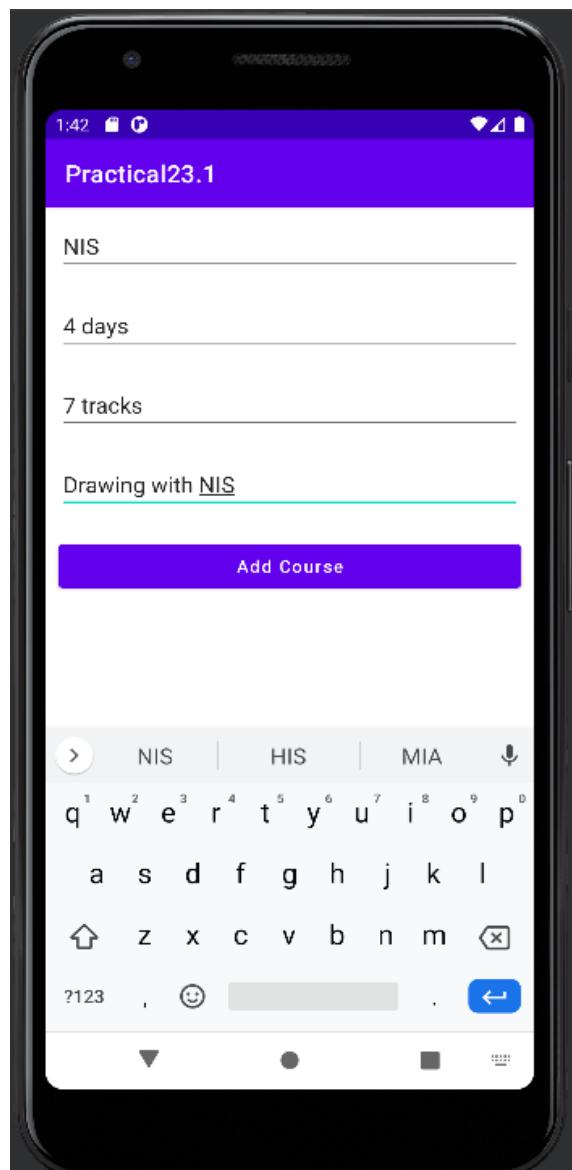
<?xml version="1.0" encoding="utf-8"?>
<manifest
    xmlns:android="http://schemas.android.com/apk/
res/android"
    package="com.example.practical231">
    <uses-permission
        android:name="android.permission.READ_EXT
        ERNAL_STORAGE"/>
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"

        android:roundIcon="@mipmap/ic_launcher_roun
        d"
        android:supportsRtl="true"

        android:theme="@style/Theme.Practical231">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action
                    android:name="android.intent.action.MAIN" />
                <category
                    android:name="android.intent.category.LAUNC
                    HER" />
            </intent-filter>
        </activity>
    </application>
</manifest>

```

OUTPUT:



The screenshot shows the DB Browser for SQLite application interface. The database file is C:\Users\Admin\Desktop\coursedb.sqlite. The main window displays a table named "mycourses" with the following data:

	id	name	duration	description	tracks
1	1	MAD	2 HOURS	Android Development	4 chapter
2	2	Java	20 days	Faltu	20 Tracks
3	3	NIS	2 DAYS	HELLO	3 TRACK
4	4	NIS	4 days	Drawing with NIS	7 tracks

On the right side of the interface, there are several toolbars and windows for managing the database, including "Edit Database Cell" and "Remote" connections.

Practical No. 27: Create sample application with login module. (Check username and password) On successful login, Change Text View “Login Successful” and on login fail, alert user using Toast “Login fail”.

X. Exercise:

1) Write a program to create the login form and display login successful / Unsuccessful toast message.

Ans.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <Button
        android:id="@+id/b1"
        android:layout_width="150dp"
        android:layout_height="wrap_content"
        android:layout_marginLeft="140dp"
        android:layout_marginTop="250dp"
        android:text="submit"
        android:textSize="20dp" />
    <TextView
        android:id="@+id/tv1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="10dp"
        android:layout_marginTop="81dp"
        android:inputType="text"
        android:text=" Enter Username: "
        android:textSize="20dp" />
    <EditText
        android:id="@+id/et2"
        android:layout_width="200dp"
        android:layout_height="wrap_content"
        android:layout_marginLeft="25dp"
        android:layout_marginTop="80dp"
        android:layout_toRightOf="@+id/tv2"
        android:inputType="textEmailAddress"/>
    <TextView
        android:id="@+id/tv2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/tv1"
        android:layout_marginLeft="10dp"
        android:layout_marginTop="63dp"
```

```
        android:text="Enter password: "
        android:textSize="20dp" />
    <EditText
        android:id="@+id/et3"
        android:layout_width="200dp"
        android:layout_height="wrap_content"
        android:layout_below="@+id/et2"
        android:layout_marginLeft="24dp"
        android:layout_marginTop="31dp"
        android:layout_toRightOf="@+id/tv2"
        android:inputType="textPassword" />
    <Button
        android:id="@+id/b2"
        android:layout_width="150dp"
        android:layout_height="wrap_content"
        android:layout_marginLeft="140dp"
        android:layout_marginTop="300dp"
        android:text="go to Login page"
        android:textSize="15dp" />
</RelativeLayout>
```

MainActivity.java

```
package com.example.practical27;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
    EditText Et2,Et3;
    Button btn, btn1;
    DBHandler dBHandler;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
```

```

super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
Et2 = (EditText)findViewById(R.id.et2);
Et3 = (EditText)findViewById(R.id.et3);
btn = (Button)findViewById(R.id.b1);
btn1 = (Button) findViewById(R.id.b2);
dBhandler=new
DBhandler(MainActivity.this);
btn.setOnClickListener(new
View.OnClickListener() {
    @Override
    public void onClick(View view) {
        String email =
Et2.getText().toString();
        String password =
Et3.getText().toString();
        if(email.isEmpty() &&
password.isEmpty()){
            Toast.makeText(MainActivity.this,"Enter
data",Toast.LENGTH_SHORT).show();
        }
        dBhandler.addNewCourse(email,
password);
        Toast.makeText(MainActivity.this,
"Submited", Toast.LENGTH_SHORT).show();
    }
});
btn1.setOnClickListener(new
View.OnClickListener() {
    @Override
    public void onClick(View view) {
        Intent i = new
Intent(MainActivity.this, loginpage.class);
        startActivity(i);
    }
});
}
}

DBhandler.java
package com.example.practical27;
import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import
android.database.sqlite.SQLiteDatabase;
import
android.database.sqlite.SQLiteOpenHelper;
public class DBhandler extends
SQLiteOpenHelper {
    // creating a constant variables for our
database.
    // below variable is for our database name.
    private static final String DB_NAME =
"course.db";
    // below int is our database version
    private static final int DB_VERSION = 1;
    // below variable is for our table name.
    private static final String TABLE_NAME =
"mycourses";
    // below variable is for our id column.
    private static final String ID_COL = "id";
    // below variable id for our course duration
column.
    private static final String Email_COL =
"email";
    // below variable for our course description
column.
    private static final String Password_COL =
"password";
    // creating a constructor for our database
handler.
    public DBhandler(Context context) {
        super(context, DB_NAME, null,
DB_VERSION);
    }
    // below method is for creating a database by
running a sqlite query
    @Override
    public void onCreate(SQLiteDatabase db) {
        // along with their data types.
        String query = "CREATE TABLE " +
TABLE_NAME + "("
            + ID_COL + " INTEGER PRIMARY
KEY AUTOINCREMENT, "
            + Email_COL + " TEXT,"
            + Password_COL + " TEXT)";
        db.execSQL(query);
    }
    public void addNewCourse(String email,
String password) {
        SQLiteDatabase db =
this.getWritableDatabase();
        ContentValues values = new
ContentValues();
        values.put(Email_COL, email);
        values.put(Password_COL, password);
        db.insert(TABLE_NAME, null, values);
        db.close();
    }
}

```

```

public Boolean checkuserpass(String email,
String password){
    SQLiteDatabase db =
this.getReadableDatabase();
    Cursor cursor = db.rawQuery("SELECT *
FROM "+TABLE_NAME+" where
"+Email_COL+" = ? and "+Password_COL+
= "?", new String[]{email, password});
    if(cursor.getCount()>0){
        return true;
    }
    else{
        return false;
    }
}
@Override
public void onUpgrade(SQLiteDatabase db,
int i, int i1) {
    db.execSQL("DROP TABLE IF EXISTS
" + TABLE_NAME);
}
}

```

Login_main.xml

```

<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical">
    <TextView
        android:id="@+id/t1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="100dp"
        android:layout_marginLeft="20dp"
        android:text="Username: "
        android:textSize="20sp" />
    <EditText
        android:id="@+id/e1"
        android:layout_width="230dp"
        android:layout_height="wrap_content"
        android:layout_marginLeft="36dp"
        android:layout_marginTop="90dp"
        android:layout_toRightOf="@+id/t1"
        android:hint="Username" />
    <TextView
        android:id="@+id/t2"
        android:layout_width="wrap_content"

```

```

        android:layout_height="wrap_content"
        android:layout_marginTop="150dp"
        android:layout_marginLeft="20dp"
        android:text="Password: "
        android:textSize="20sp" />
    <EditText
        android:id="@+id/e2"
        android:layout_width="234dp"
        android:layout_height="wrap_content"
        android:layout_marginLeft="37dp"
        android:layout_marginTop="140dp"
        android:layout_toRightOf="@+id/t2"
        android:hint="Password"
        android:inputType="textPassword" />
    <Button
        android:id="@+id/b"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="150dp"
        android:layout_marginTop="200dp"
        android:text="LOGIN" />
</RelativeLayout>

```

Loginpage.java

```

package com.example.practical27;
import android.content.Intent;
import android.database.Cursor;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
public class loginpage extends AppCompatActivity {
    Button b;
    EditText et1, et2;
    DBhandler dbhand;
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.login_main);
        et1 = (EditText) findViewById(R.id.e1);
        et2 = (EditText) findViewById(R.id.e2);
        b = (Button) findViewById(R.id.b);
        dbhand = new DBhandler(loginpage.this);
        b.setOnClickListener(new View.OnClickListener() {

```

```

@Override
public void onClick(View v) {
    String email =
et1.getText().toString();
    String password =
et2.getText().toString();
    if(email.equals("") &&
password.equals("")){

Toast.makeText(loginpage.this,"Enter
data",Toast.LENGTH_SHORT).show();
    }else {
        Boolean bd =
dbhand.checkuserpass(email, password);
        if(bd==true){
            Toast.makeText(loginpage.this,
"Login
Successful",Toast.LENGTH_LONG).show();
            Intent i = new
Intent(loginpage.this, success.class);
            startActivity(i);
        }
        else{
            Toast.makeText(loginpage.this,
"Login
Failed",Toast.LENGTH_LONG).show();
        }
    });
}
}

Success.java
package com.example.practical27;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import
androidx.appcompat.app.AppCompatActivity;
public class success extends
AppCompatActivity {
    Button btn;
    public void onCreate(Bundle b) {
        super.onCreate(b);
        setContentView(R.layout.login_s);
        btn = (Button) findViewById(R.id.l1);
        btn.setOnClickListener(new
View.OnClickListener() {

```

```

@Override
public void onClick(View v) {
    Intent i = new Intent(success.this,
loginpage.class);
    startActivity(i);
}
}
}


```

AndroidManifest.xml

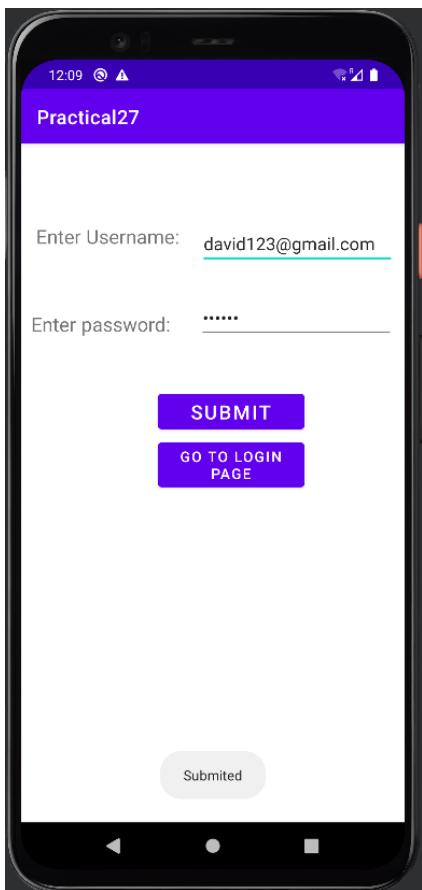
```

<?xml version="1.0" encoding="utf-8"?>
<manifest
xmlns:android="http://schemas.android.com/ap
k/res/android"
    package="com.example.practical27">
    <uses-permission
        android:name="android.permission.READ_EX
TERNAL_STORAGE"/>
    <uses-permission
        android:name="android.permission.WRITE_EX
TERNAL_STORAGE"/>
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_rou
nd"
        android:supportsRtl="true"
        android:theme="@style/Theme.Practical27">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action
                    android:name="android.intent.action.MAIN" />
                <category
                    android:name="android.intent.category.LAUNC
HER" />
            </intent-filter>
        </activity>
        <activity android:name=".loginpage"/>
        <activity android:name=".success"/>
    </application>
</manifest>

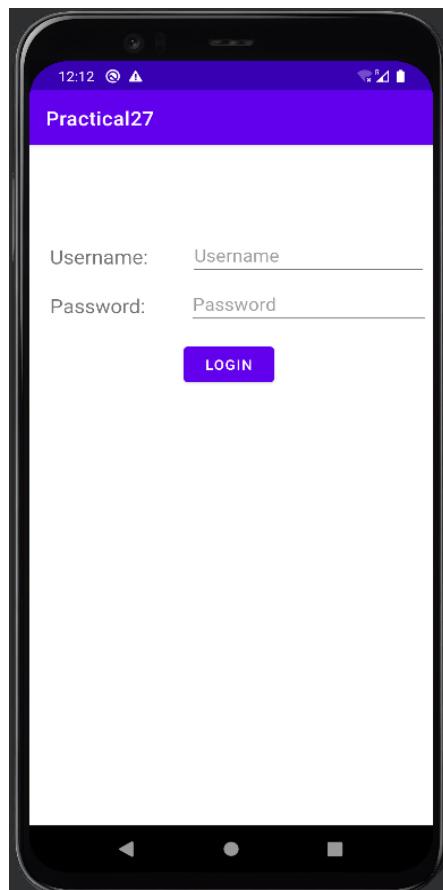
```

OUTPUT:

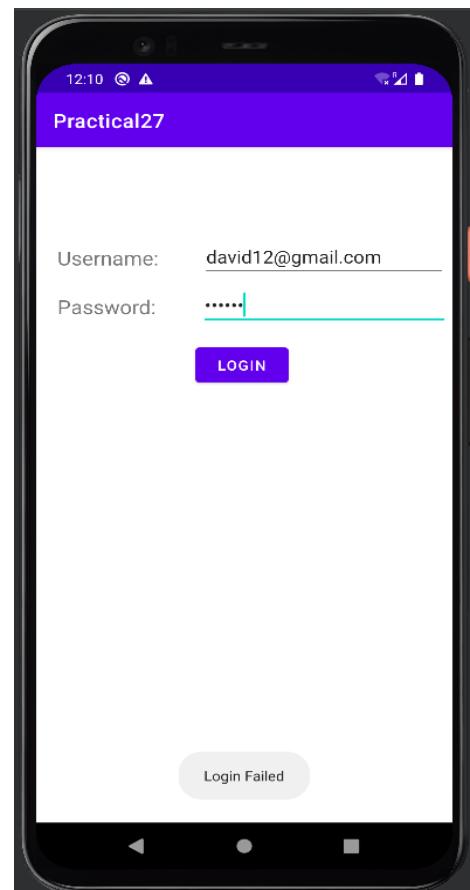
Adding Username and Password in Sqlite:



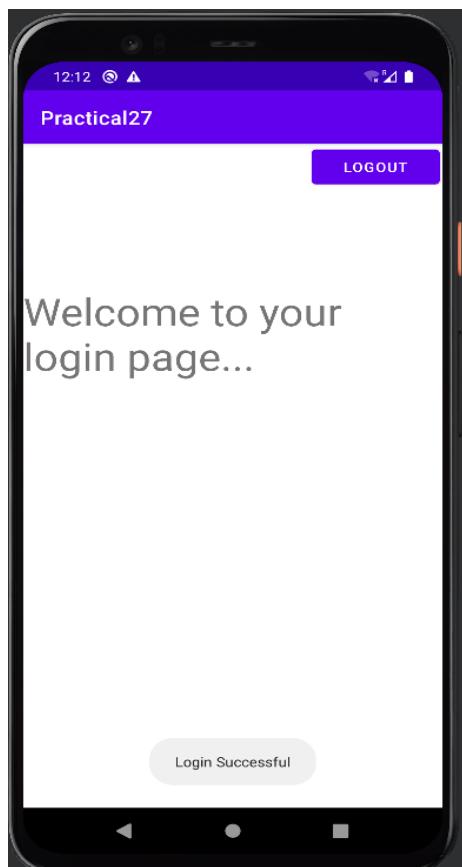
New window for Login:



Adding Wrong values:



Adding valid data:



Data inserted in Sqlite:

The screenshot shows the DB Browser for SQLite interface. The main window displays a table named "mycourses" with the following data:

	id	email	password
1	1	ck	1805
2	2	chetan	123
3	3	david@gmail.com	qwerty
4	4	david@gmail.com	qwerty
5	5	david123@gmail.com	qwerty

The "Edit Database Cell" panel on the right shows the value "david123@gmail.com" is being edited in the first row, column 2. The "Mode" dropdown is set to "Text". The status bar indicates "Type of data currently in cell: Text / Numeric" and "18 character(s)".

Practical No. 28: Create login application where you will have to validate username and password till the username and password is not validated, login button should remain disabled.

X. Exercise:

1) Write a program to create the login form with necessary validations like length of username and password, empty text fields, count of unsuccessful login attempts. Display the login successful/unsuccessful toast message.

Ans.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        tools:context=".MainActivity">
    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="LOGIN FORM"
        android:textSize="18dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintHorizontal_bias="0.182"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.057" />
    <EditText
        android:id="@+id/editText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:hint="username"
        android:inputType="textPersonName"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.282"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.306" />
    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="USERNAME"
        android:textSize="18dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.187"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.216" />
```

```
app:layout_constraintBottom_toBottomOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintHorizontal_bias="0.173"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintTop_toTopOf="parent"

app:layout_constraintVertical_bias="0.435" />
<EditText
    android:id="@+id/editText2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:inputType="textPassword"

app:layout_constraintBottom_toBottomOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintHorizontal_bias="0.297"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintTop_toTopOf="parent"

app:layout_constraintVertical_bias="0.542" />
<Button
    android:id="@+id/button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="SUBMIT"
    android:textSize="18dp"
    android:onClick="submit"

app:layout_constraintBottom_toBottomOf="parent"

app:layout_constraintEnd_toEndOf="parent"

app:layout_constraintHorizontal_bias="0.188"

app:layout_constraintStart_toStartOf="parent"

app:layout_constraintTop_toTopOf="parent"

app:layout_constraintVertical_bias="0.689" />
```

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

MainActivity.java

```
package com.example.loginattempt;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
    EditText uname,password;
    Button b1;
    String userin,passin;
    int count;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        uname=findViewById(R.id.editText);
        password=findViewById(R.id.editText2);
    }
    public void submit(View view) {
        userin=uname.getText().toString();
        passin=password.getText().toString();
        if(!userin.isEmpty()){
            if (userin.length()>=5){
                if (userin.equals("ankur")){
                    if (!passin.isEmpty()){
                        if (passin.length()>=8){
                            if
                            (passin.equals("ankur2000")){
                                count+=1;
                                Toast.makeText(getApplicationContext(),"Log
                                in successful\n after number of
                                attempts:"+count,Toast.LENGTH_SHORT).sho
                                w();
                            }
                        } else {
                            count+=1;
                            Toast.makeText(getApplicationContext(),"Log
                            in unsuccessful\ninvalid password\n number of
                            attempts:"+count,Toast.LENGTH_SHORT).sho
                            w();
                        }
                    }
                }
            }
        }
    }
}
```

```

        }
    else {
        count+=1;

Toast.makeText(getApplicationContext(),"Logi
n unsuccessful\npassword must be at least 8
length\n number of
attempts:"+count,Toast.LENGTH_SHORT).sho
w();
    }
}
else {
    count+=1;

Toast.makeText(getApplicationContext(),"Logi
n unsuccessful\nenter password\n number of
attempts:"+count,Toast.LENGTH_SHORT).sho
w();
}
else {
    count+=1;

Toast.makeText(getApplicationContext(),"Logi
n unsuccessful\nenter valid username\n number }

```

OUTPUT:



LOGIN FORM

USERNAME

username

PASSWORD

SUBMIT



LOGIN FORM

USERNAME

username

PASSWORD

SUBMIT

Login unsuccessful
enter username...





Practical No. 29: Develop a program to: a) Send SMS b) Receive SMS.

X. Exercise:

1) Write a program to send and receive SMS. Make use of following GUI.

Ans.

Program for sending SMS.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/ap
    k/res/android"
        android:layout_width="fill_parent"
        android:layout_height="fill_parent"
        android:orientation="vertical" >
    <TextView
        android:id="@+id/toPhoneNumberTV"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Phone Number" />
    <EditText
        android:id="@+id/toPhoneNumberEt"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:inputType="phone"/>
    <TextView
        android:id="@+id/smsMessageTV"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="SMS Message" />
    <EditText
        android:id="@+id/smsMessageET"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:inputType="textMultiLine"/>
    <Button android:id="@+id/sendSMSBtn"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="Send SMS"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.practical29;
import android.Manifest;
import android.content.pm.PackageManager;
import android.os.Bundle;
import android.telephony.SmsManager;
```

```
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
public class MainActivity extends
AppCompatActivity {
    Button sendSMSBtn;
    EditText toPhoneNumberET;
    EditText smsMessageET;
    @Override
    protected void onCreate(Bundle
 savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        toPhoneNumberET = (EditText)
        findViewById(R.id.toPhoneNumberEt);
        smsMessageET = (EditText)
        findViewById(R.id.smsMessageET);
        sendSMSBtn = (Button)
        findViewById(R.id.sendSMSBtn);
        ActivityCompat.requestPermissions(MainActivity,
        new
        String[]{Manifest.permission.SEND_SMS,
        Manifest.permission.RECEIVE_SMS}, PackageManager.PERMISSION_GRANTED);
        sendSMSBtn.setOnClickListener(new
        View.OnClickListener() {
            public void onClick(View view) {
                sendSMS(); } });
        protected void sendSMS() {
            String toPhoneNumber =
            toPhoneNumberET.getText().toString();
            String smsMessage =
            smsMessageET.getText().toString();
            try {
                SmsManager smsManager =
                SmsManager.getDefault();
```

```

        smsManager.sendTextMessage(toPhoneNumber,
        null, smsMessage, null, null);
        Toast.makeText(getApplicationContext(),
        "SMS sent.",Toast.LENGTH_LONG).show();
    } catch (Exception e) {
        Toast.makeText(getApplicationContext(),
        "Sending SMS failed.",
        Toast.LENGTH_LONG).show();
        e.printStackTrace();
    }
}

```

AndroidManifest.xml

```

<?xml version="1.0" encoding="utf-8"?>
<manifest
    xmlns:android="http://schemas.android.com/ap
    k/res/android"
    package="com.example.practical29">
    <uses-permission
        android:name="android.permission.SEND_SM
        S" />
    <uses-permission
        android:name="android.permission.READ_SM
        S"/>

```

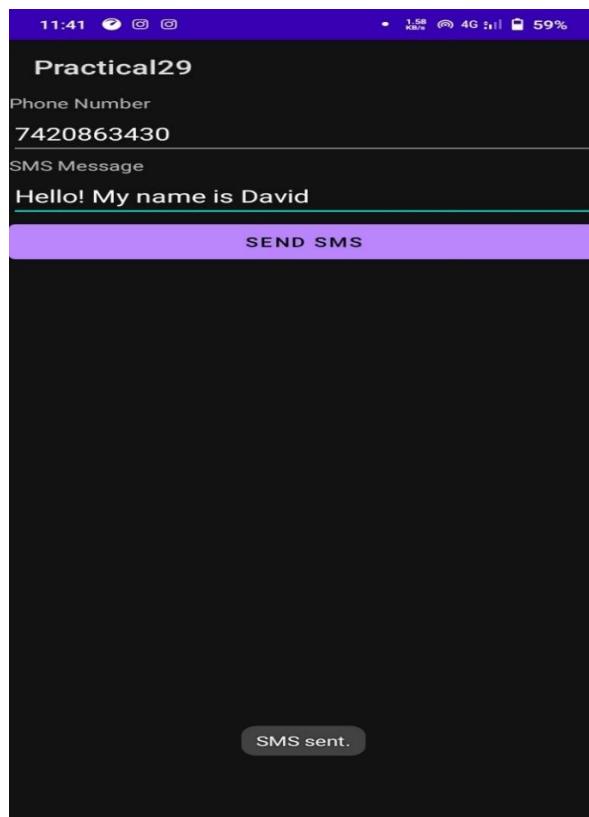
```

        <uses-permission
            android:name="android.permission.INTERNET
            "/>
        <application
            android:allowBackup="true"
            android:icon="@mipmap/ic_launcher"
            android:label="@string/app_name"
            android:roundIcon="@mipmap/ic_launcher_rou
            nd"
            android:supportsRtl="true"

            android:theme="@style/Theme.Practical29">
            <activity
                android:name=".MainActivity"
                android:exported="true">
                <intent-filter>
                    <action
                        android:name="android.intent.action.MAIN" />
                    <category
                        android:name="android.intent.category.LAUNC
                        HER" />
                </intent-filter>
            </activity>
        </application>
    </manifest>

```

OUTPUT:



Program for receiving SMS.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
        android:orientation="vertical"
        android:layout_width="fill_parent"
        android:layout_height="fill_parent"
        android:id="@+id/MainLayout">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textAppearance="?android:attr/textAppearanceMedium"
        android:text="SMS Inbox"
        android:id="@+id/textView"

        android:layout_gravity="center_horizontal" />
    <ListView android:id="@+id/SMSList"
        android:layout_height="wrap_content"
        android:layout_width="match_parent"
        android:layout_margin="5dp" />
</LinearLayout>
```

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest
    xmlns:android="http://schemas.android.com/apk/res/android"
        package="com.example.myapplication">
    <uses-permission
        android:name="android.permission.WRITE_SMS" />
    <uses-permission
        android:name="android.permission.READ_SMS" />
    <uses-permission
        android:name="android.permission.RECEIVE_SMS" />
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"

        android:roundIcon="@mipmap/ic_launcher_round"
```

```
        android:supportsRtl="true"

        android:theme="@style/Theme.MyApplication"
    >
        <receiver
            android:name=".SmsBroadcastReceiver"
            android:exported="true"

            android:permission="android.permission.BROADCAST_SMS">
            <intent-filter android:priority="999" >
                <action
                    android:name="android.provider.Telephony.SMS_RECEIVED" />
            </intent-filter>
        </receiver>
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action
                    android:name="android.intent.action.MAIN" />
                <category
                    android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>
</manifest>
```

MainActivity.java

```
package com.example.myapplication;
import android.app.Activity;
import android.content.ContentResolver;
import android.database.Cursor;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.AdapterView.OnItemClickListener;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import android.widget.Toast;
import java.util.ArrayList;
```

```

public class MainActivity extends Activity
implements OnItemClickListener {
    private static MainActivity inst;
    ArrayList<String> smsMessagesList = new
ArrayList<String>();
    ListView smsListView;
    ArrayAdapter arrayAdapter;
    public static MainActivity instance() {
        return inst;
    }
    @Override
    public void onStart() {
        super.onStart();
        inst = this;
    }
    @Override
    protected void onCreate(Bundle
savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        smsListView = (ListView)
findViewById(R.id.SMSList);
        arrayAdapter = new
ArrayAdapter<String>(this,
        android.R.layout.simple_list_item_1,
        smsMessagesList);
        smsListView.setAdapter(arrayAdapter);

        smsListView.setOnItemClickListener(this);
        refreshSmsInbox();
    }
    public void refreshSmsInbox() {
        ContentResolver contentResolver =
getContentResolver();
        Cursor smsInboxCursor =
contentResolver.query(Uri.parse("content://sm
s/inbox"), null, null, null, null);
        int indexBody =
smsInboxCursor.getColumnIndex("body");
        int indexAddress =
smsInboxCursor.getColumnIndex("address");
        if (indexBody < 0 ||
!smsInboxCursor.moveToFirst()) return;
        arrayAdapter.clear();
        do {
            String str = "SMS From: " +
smsInboxCursor.getString(indexAddress) +
"\n" +
smsInboxCursor.getString(indexBody) + "\n";
            arrayAdapter.add(str);
        } while (smsInboxCursor.moveToNext());
    }
    public void updateList(final String
smsMessage) {
        arrayAdapter.insert(smsMessage, 0);
        arrayAdapter.notifyDataSetChanged();
    }
    public void onItemClick(AdapterView<?>
parent, View view, int pos, long id) {
        try {
            String[] smsMessages =
smsMessagesList.get(pos).split("\n");
            String address = smsMessages[0];
            String smsMessage = "";
            for (int i = 1; i < smsMessages.length;
++i) {
                smsMessage += smsMessages[i];
            }
            String smsMessageStr = address + "\n";
            smsMessageStr += smsMessage;
            Toast.makeText(this, smsMessageStr,
Toast.LENGTH_SHORT).show();
        } catch (Exception e) {
            e.printStackTrace();
        }
    }
}

```

SmsBroadcastReceiver.java

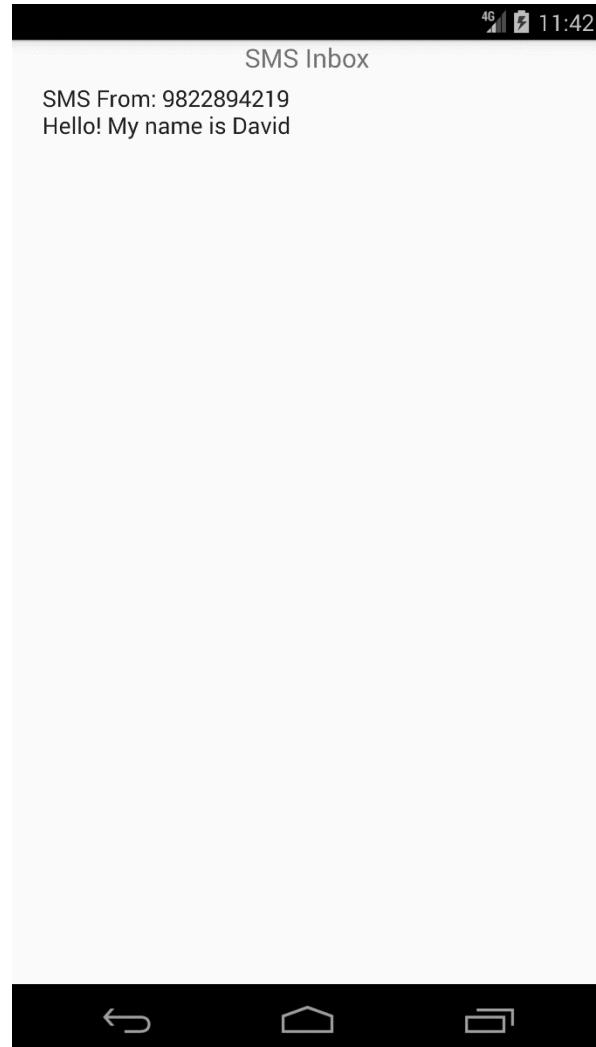
```

package com.example.myapplication;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.os.Bundle;
import android.telephony.SmsMessage;
import android.widget.Toast;
public class SmsBroadcastReceiver extends
BroadcastReceiver {
    public static final String SMS_BUNDLE =
"pdus";
    public void onReceive(Context context,
Intent intent) {
        Bundle intentExtras = intent.getExtras();
        if (intentExtras != null) {
            Object[] sms = (Object[])
intentExtras.get(SMS_BUNDLE);
            String smsMessageStr = "";

```

```
for (int i = 0; i < sms.length; ++i) {  
    SmsMessage smsMessage =  
    SmsMessage.createFromPdu((byte[]) sms[i]);  
    String smsBody =  
    smsMessage.getMessageBody().toString();  
    String address =  
    smsMessage.getOriginatingAddress();  
    smsMessageStr += "SMS From: " +  
address + "\n";  
    smsMessageStr += smsBody + "\n";    }  
}
```

OUTPUT:



Practical No. 30: Develop a program to send and receive e-mail.

X. Exercise:

1) Write a program to send email.

Ans.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity" >
    <EditText
        android:id="@+id/editText1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentRight="true"
        android:layout_alignParentTop="true"
        android:layout_marginRight="22dp"
        android:layout_marginTop="16dp"
        android:ems="10" />
    <EditText
        android:id="@+id/editText2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignLeft="@+id/editText1"
        android:layout_below="@+id/editText1"
        android:layout_marginTop="18dp"
        android:ems="10" >
        <requestFocus />
    </EditText>
    <EditText
        android:id="@+id/editText3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignLeft="@+id/editText2"
        android:layout_below="@+id/editText2" />
```

```
        android:layout_marginTop="28dp"
        android:ems="10"
        android:inputType="textMultiLine" />
    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignBaseline="@+id/editText1"
        android:layout_alignBottom="@+id/editText1"
        android:layout_alignParentLeft="true"
        android:text="To:" />
    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignBaseline="@+id/editText2"
        android:layout_alignBottom="@+id/editText2"
        android:layout_alignParentLeft="true"
        android:text="Subject:" />
    <TextView
        android:id="@+id/textView3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignBaseline="@+id/editText3"
        android:layout_alignBottom="@+id/editText3"
        android:layout_alignParentLeft="true"
        android:text="Message:" />
    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />
    <EditText
        android:id="@+id/editText3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignLeft="@+id/editText3"
        android:layout_below="@+id/editText3" />
```

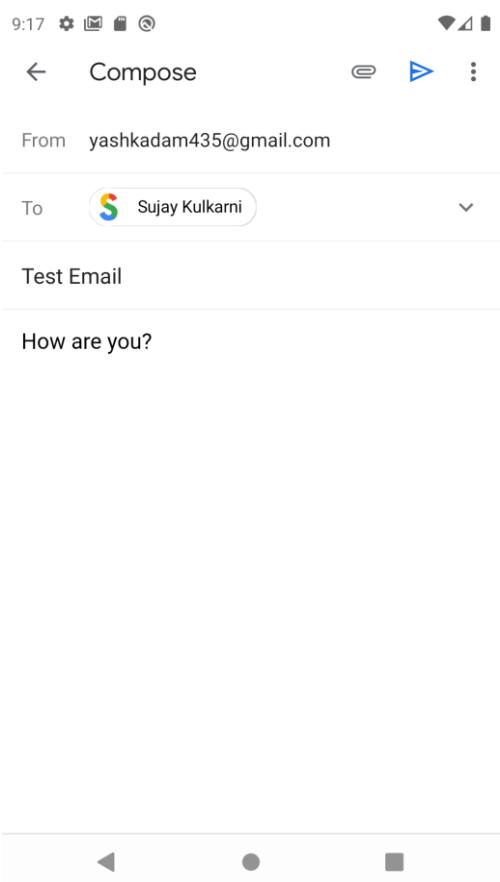
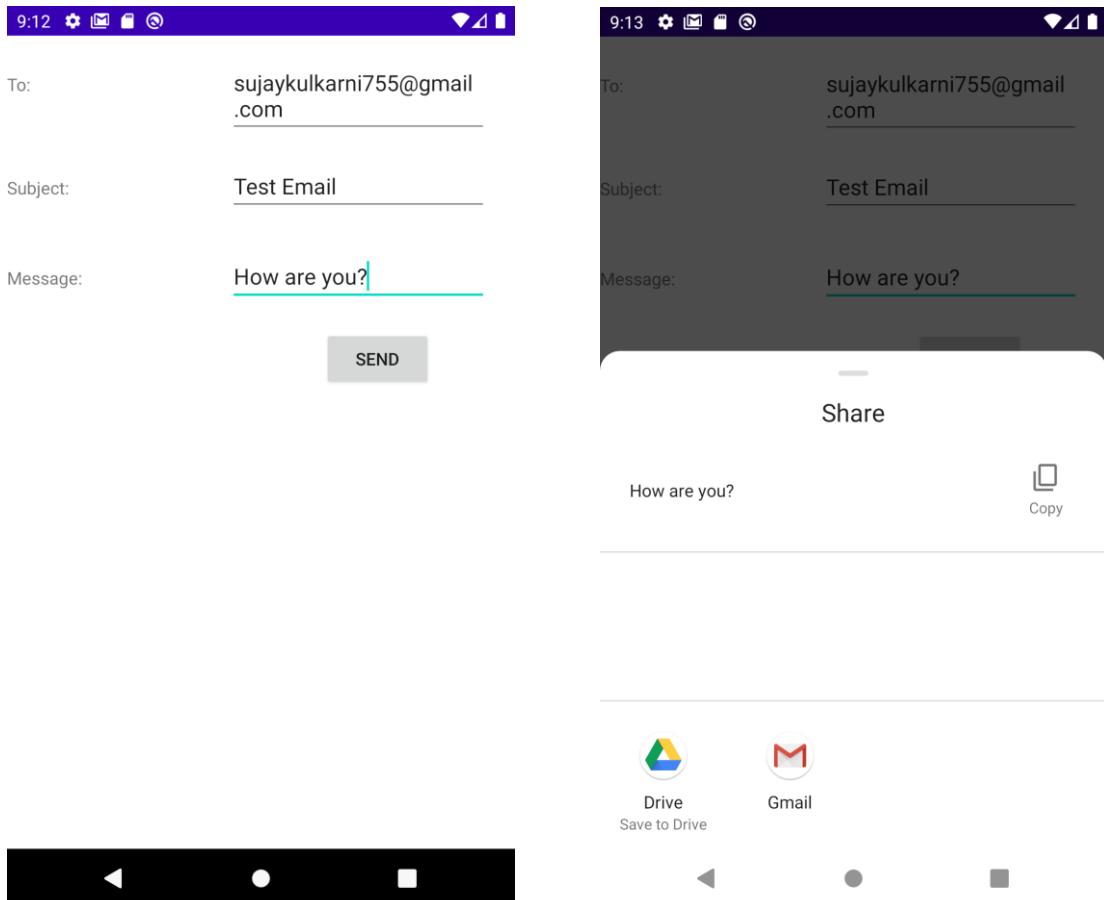
```
    android:layout_marginLeft="76dp"
    android:layout_marginTop="20dp"
    android:text="Send" />
</RelativeLayout>
```

MainActivity.java

```
package myalarm.example.sms;
import android.os.Bundle;
import android.app.Activity;
import android.content.Intent;
import android.view.Menu;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.EditText;
public class MainActivity extends Activity {
    EditText
    editTextTo,editTextSubject,editTextMessage;
    Button send;
    @Override
    protected void onCreate(Bundle
    savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        editTextTo=(EditText)findViewById(R.id.edi
        tText1);
        editTextSubject=(EditText)findViewById(R.i
        d.editText2);
        editTextMessage=(EditText)findViewById(R.
        id.editText3);
        send=(Button)findViewById(R.id.button1);
        send.setOnClickListener(new
        OnClickListener(){
```

```
        @Override
        public void onClick(View arg0) {
            String
            to=editTextTo.getText().toString();
            String
            subject=editTextSubject.getText().toString();
            String
            message=editTextMessage.getText().toString();
            Intent email = new
            Intent(Intent.ACTION_SEND);
            email.putExtra(Intent.EXTRA_EMAIL, new
            String[]{ to});
            email.putExtra(Intent.EXTRA_SUBJECT,
            subject);
            email.putExtra(Intent.EXTRA_TEXT,
            message);
            //need this to prompts email client
            only
            email.setType("message/rfc822");
            startActivity(Intent.createChooser(email,
            "Choose an Email client :"));
        }
    }
    @Override
    public boolean onCreateOptionsMenu(Menu
    menu) {
        // Inflate the menu; this adds items to the
        action bar if it is present.
        getMenuInflater().inflate(R.menu.activity_main,
        menu);
        return true;
    }
}
```

OUTPUT:



Practical No. 31: Deploy map-based application. Part I

X. Exercise:

1) Write a program to locate user's current location.

Ans.

activity_maps.xml

```
<?xml version="1.0" encoding="utf-8"?>
<fragment
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:map="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/map"
    android:name="com.google.android.gms.maps.SupportMapFragment"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context="com.example.mapslocation.MapsActivity" />
```

build.gradle

```
dependencies {
    implementation fileTree(dir: 'libs', include: ['*.jar'])
        //noinspection
GradleCompatible,GradleCompatible
    implementation
    'com.google.android.gms:play-services-maps:18.0.2'
        implementation
    'com.google.android.gms:play-services-location:19.0.1'
        testImplementation 'junit:junit:4.13.2'
        //noinspection
GradleCompatible,GradleCompatible
    androidTestImplementation
    'com.android.support.test:runner:1.0.2'
        androidTestImplementation
    'com.android.support.test.espresso:espresso-core:3.0.2'
        implementation
    'com.google.android.material:material:1.6.0'
```

MapsActivity.java

```
package com.example.mapslocation;
import androidx.core.content.ContextCompat;
import androidx.fragment.app.FragmentActivity;
import android.Manifest;
import android.content.pm.PackageManager;
import android.location.Location;
import android.os.Bundle;
import com.google.android.gms.common.ConnectionResult;
import com.google.android.gms.common.api.GoogleApiClient;
import com.google.android.gms.maps.CameraUpdateFactory;
import com.google.android.gms.maps.GoogleMap;
import com.google.android.gms.maps.OnMapReadyCallback;
import com.google.android.gms.maps.SupportMapFragment;
import com.google.android.gms.maps.model.LatLng;
import com.google.android.gms.maps.model.MarkerOptions;
import android.os.Build;
import com.google.android.gms.maps.model.BitmapDescriptorFactory;
import com.google.android.gms.maps.model.Marker;
import com.google.android.gms.location.LocationServices;
import com.google.android.gms.location.LocationListener;
```

```
import com.google.android.gms.location.LocationRequest;
public class MapsActivity extends FragmentActivity implements OnMapReadyCallback,
    LocationListener, GoogleApiClient.ConnectionCallbacks,
    GoogleApiClient.OnConnectionFailedListener {
    private GoogleMap mMap;
    Location mLastLocation;
    Marker mCurrLocationMarker;
    GoogleApiClient mGoogleApiClient;
    LocationRequest mLocationRequest;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_maps);
        // Obtain the SupportMapFragment and
        get notified when the map is ready to be used.
        SupportMapFragment mapFragment =
        (SupportMapFragment)
        getSupportFragmentManager().findFragmentBy
        id(R.id.map);
        mapFragment.getMapAsync(this);
    }
    @Override
    public void onMapReady(GoogleMap googleMap) {
        mMap = googleMap;
        if (android.os.Build.VERSION.SDK_INT
        >= Build.VERSION_CODES.M) {
            if
            (ContextCompat.checkSelfPermission(this,
                Manifest.permission.ACCESS_FINE_LOCAT
                ON)
                ==
                PackageManager.PERMISSION_GRANTED)
            {
                buildGoogleApiClient();
                mMap.setMyLocationEnabled(true);
            }
        } else {
            buildGoogleApiClient();
        }
        mMap.setMyLocationEnabled(true);
    }
}
protected synchronized void
buildGoogleApiClient() {
    mGoogleApiClient = new
    GoogleApiClient.Builder(this)
        .addConnectionCallbacks(this)
        .addOnConnectionFailedListener(this)
        .addApi(LocationServices.API).build();
    mGoogleApiClient.connect();
}
@Override
public void onConnected(Bundle bundle) {
    mLocationRequest = new
    LocationRequest();
    mLocationRequest.setInterval(1000);
    mLocationRequest.setFastestInterval(1000);
    mLocationRequest.setPriority(LocationRequest.
    PRIORITY_BALANCED_POWER_ACCURA
    CY);
    if
    (ContextCompat.checkSelfPermission(this,
        Manifest.permission.ACCESS_FINE_LOCAT
        ON)
        ==
        PackageManager.PERMISSION_GRANTED) {
        LocationServices.FusedLocationApi.requestLoc
        ationUpdates(mGoogleApiClient,
        mLocationRequest, this);
    }
}
@Override
public void onConnectionSuspended(int i) {
}
@Override
public void onLocationChanged(Location location) {
    mLastLocation = location;
    if (mCurrLocationMarker != null) {
        mCurrLocationMarker.remove();
    }
    //Place current location marker
```

```

    LatLng latLng = new
    LatLng(location.getLatitude(),
location.getLongitude());
    MarkerOptions markerOptions = new
MarkerOptions();
    markerOptions.position(latLng);
    markerOptions.title("Current Position");

markerOptions.icon(BitmapDescriptorFactory.
defaultMarker(BitmapDescriptorFactory.HUE_
GREEN));
    mCurrLocationMarker =
mMap.addMarker(markerOptions);
    //move map camera

mMap.moveCamera(CameraUpdateFactory.ne
wLatLng(latLng));

mMap.animateCamera(CameraUpdateFactory.
zoomTo(11));
    //stop location updates
    if (mGoogleApiClient != null) {

LocationServices.FusedLocationApi.removeLo
cationUpdates(mGoogleApiClient, this);
    }
}
@Override
public void
onConnectionFailed(ConnectionResult
connectionResult) {
}
}

```

AndroidManifest.xml

```

<?xml version="1.0" encoding="utf-8"?>
<manifest
    xmlns:android="http://schemas.android.com/ap
k/res/android"
    package="com.example.mapslocation">
    <uses-permission
        android:name="android.permission.ACCESS_-
FINE_LOCATION" />

```

```

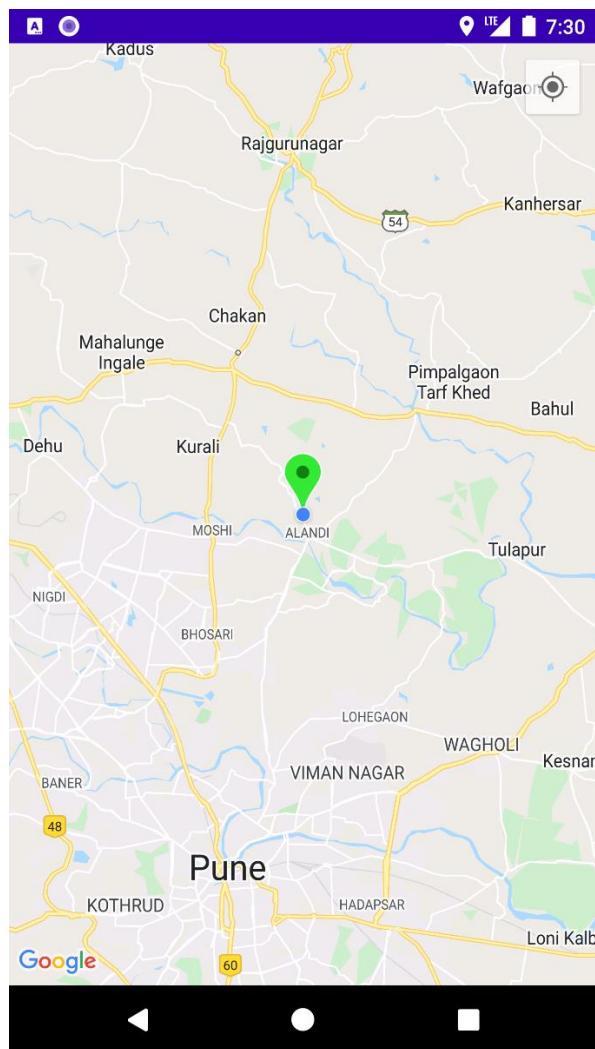
        <uses-permission
            android:name="android.permission.ACCESS_C
OARSE_LOCATION" />
        <uses-permission
            android:name="android.permission.INTERNET
" />
        <application
            android:allowBackup="true"
            android:icon="@mipmap/ic_launcher"
            android:label="@string/app_name"
            android:roundIcon="@mipmap/ic_launcher_rou
nd"
            android:supportsRtl="true"

            android:theme="@style/Theme.Mapslocation">
            <meta-data
                android:name="com.google.android.geo.API_K
EY"
                android:value="AIzaSyATXyRWaRIKZLfex-
a4Axq_UVMpZ4gu7RY" />
            <meta-data
                android:name="com.google.android.gms.versio
n"
                android:value="@integer/google_play_services
_version" />
            <activity
                android:name=".MapsActivity"
                android:exported="true"

                android:label="@string/title_activity_maps">
                <intent-filter>
                    <action
                        android:name="android.intent.action.MAIN" />
                    <category
                        android:name="android.intent.category.LAUNC
HER" />
                </intent-filter>
            </activity>
        </application>
    </manifest>

```

OUTPUT:



Practical No. 32: Deploy map-based application. Part II

X. Exercise:

1) Write a program to draw a route between two locations.

Ans.

activity_main.xml

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

    xmlns:app="http://schemas.android.com/apk/res-auto"

    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    android:orientation="vertical"
    android:layout_margin="20dp">
    <EditText
        android:layout_marginTop="40dp"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/et_source"
        android:hint="Enter Source Location"
        android:padding="13dp"/>
    <EditText
        android:layout_marginTop="40dp"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/et_destination"
        android:hint="Enter Destination Location"
        android:padding="13dp"/>
    <Button
        android:layout_marginTop="40dp"
        android:layout_gravity="center"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/track"
        android:text="Draw Route"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.practical32;
import
    androidx.appcompat.app.AppCompatActivity;
```

```
import
    android.content.ActivityNotFoundException;
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
public class MainActivity extends
    AppCompatActivity {
    EditText source, destination;
    Button track;
    @Override
    protected void onCreate(Bundle
        savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        source = findViewById(R.id.et_source);
        destination =
            findViewById(R.id.et_destination);
        track = findViewById(R.id.track);
        track.setOnClickListener(new
            View.OnClickListener() {
                @Override
                public void onClick(View v) {
                    String sSource =
                        source.getText().toString();
                    String sDestination =
                        destination.getText().toString();
                    if(sSource.equals("") &&
                        sDestination.equals("")){
                        Toast.makeText(MainActivity.this,"Enter Both
                            Location",Toast.LENGTH_SHORT).show();
                    }
                    else{
                        DisplayTrack(sSource,sDestination);
                    }
                }
            });
    }
}
```

```
private void DisplayTrack(String sSource,
String sDestination) {
    try {
        Uri uri =
Uri.parse("https://www.google.co.in/maps/dir/" +
+sSource+"/"+sDestination);
        Intent intent = new
Intent(Intent.ACTION_VIEW,uri);

        intent.setPackage("com.google.android.apps.m
aps");
        intent.setFlags(Intent.FLAG_ACTIVITY_NE
W_TASK);
        startActivity(intent);
    }
}
```

OUTPUT:

