CSA4024

Mobile Application Development

Lab Manual

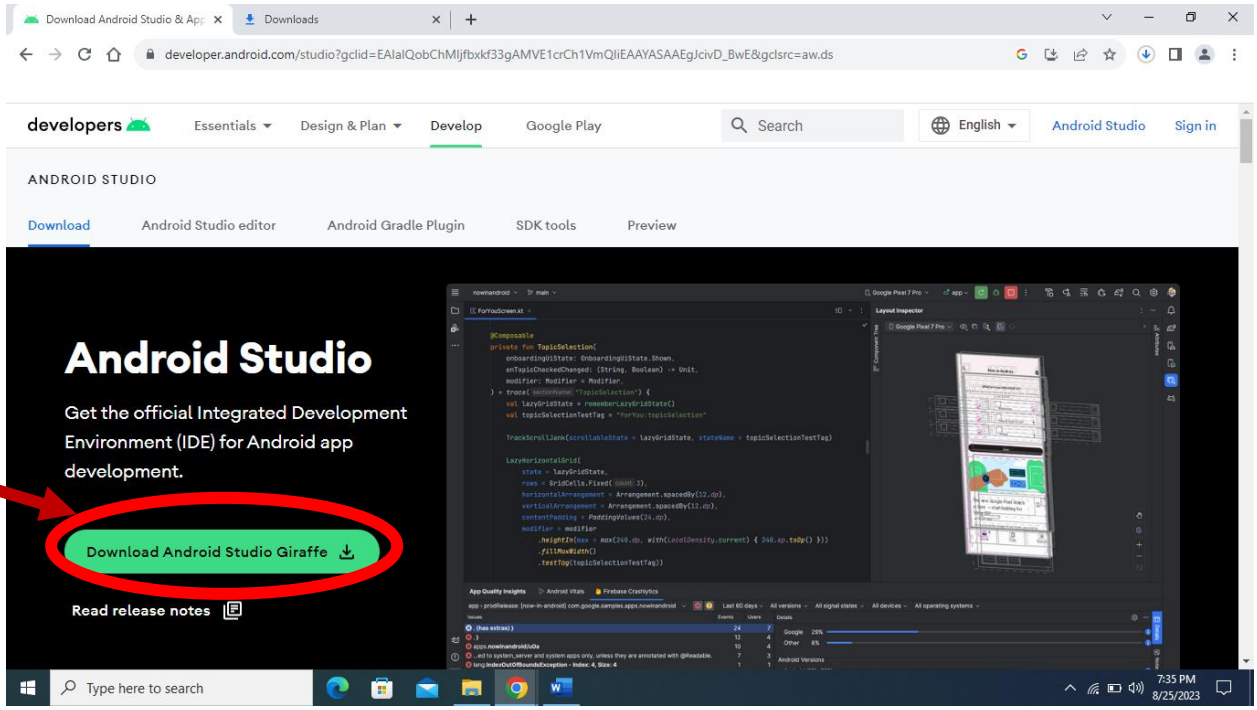
A.Y 2023-24 Even Sem

Introduction to Android Studio

Download and Install Instructions:

Step 1: Download android studio giraffe (latest version) using the below link:

https://developer.android.com/studio?gclid=EAIaIQobChMIjfbxkf33gAMVE1crCh1VmQIiEAAYASAAEgJcivD_BwE&gclsrc=aw.ds



Download the executable file by accepting the terms and conditions.

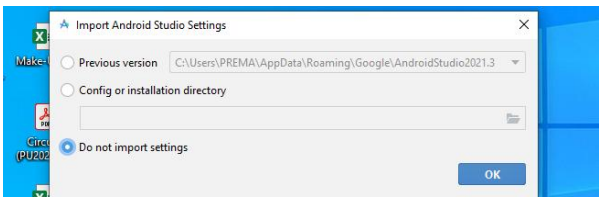
Step 2: Double Click on executable file

Continue by clicking next button until finished installation

Step 3: Import Android Studio Settings

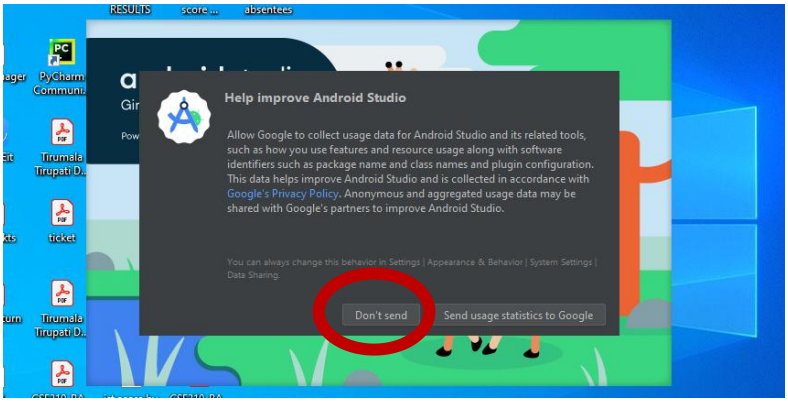
In this window, it will show two different options of config or installation directory and do not import settings

Select Do not import settings, means all your android projects will stored in C drive

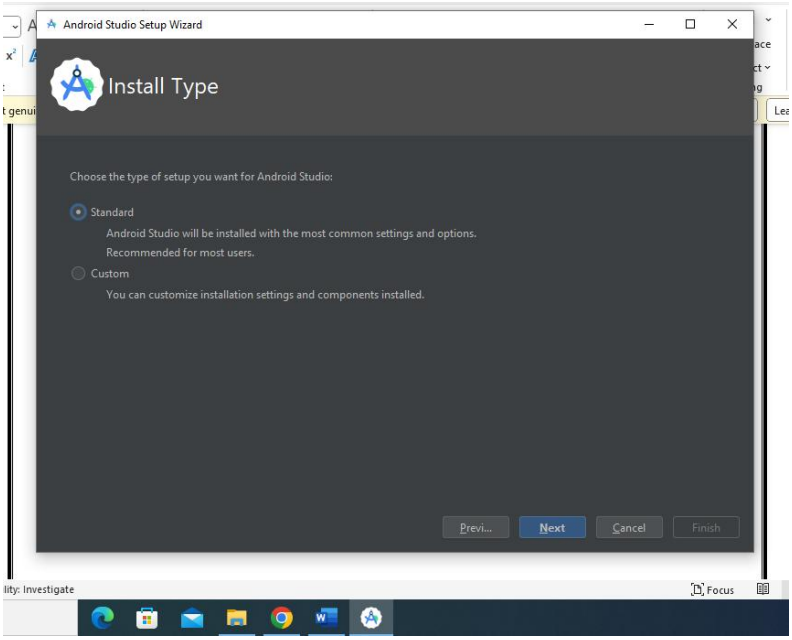


Step 4: Usage Statistics

Don't Send the statistics to google

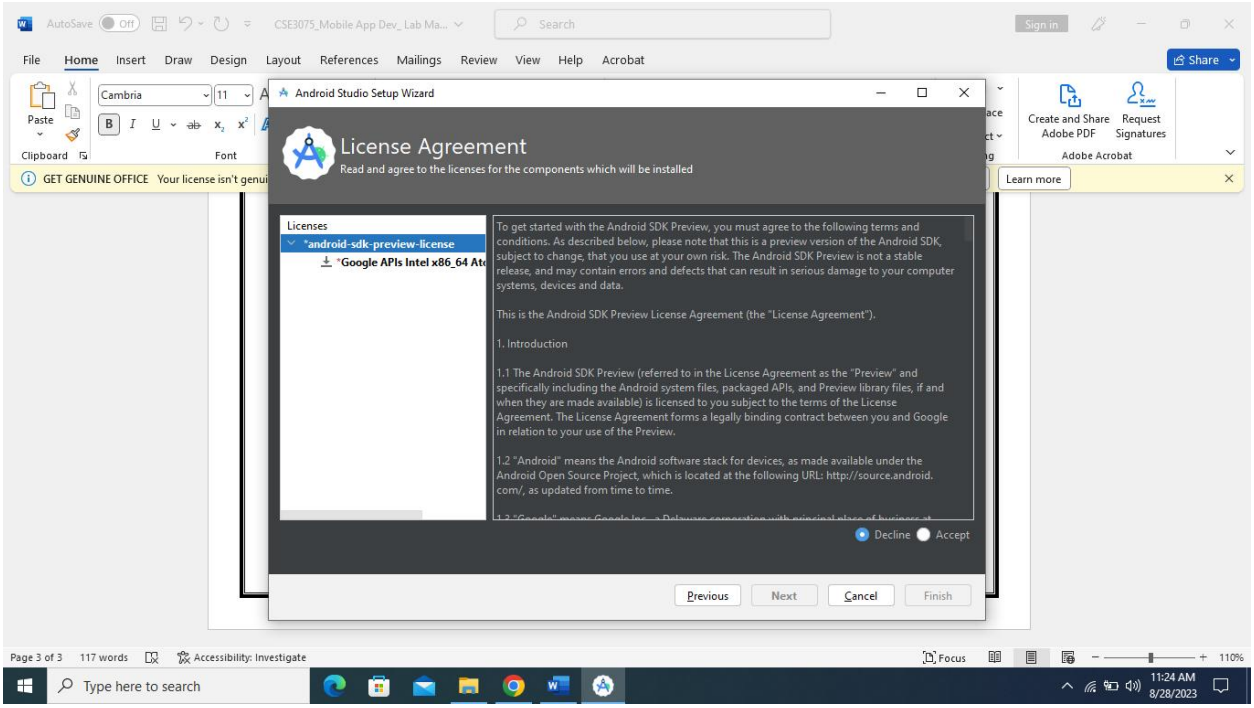


Step 5: Use Standard type of android studio



Step 6: Continue to click next button till license agreement

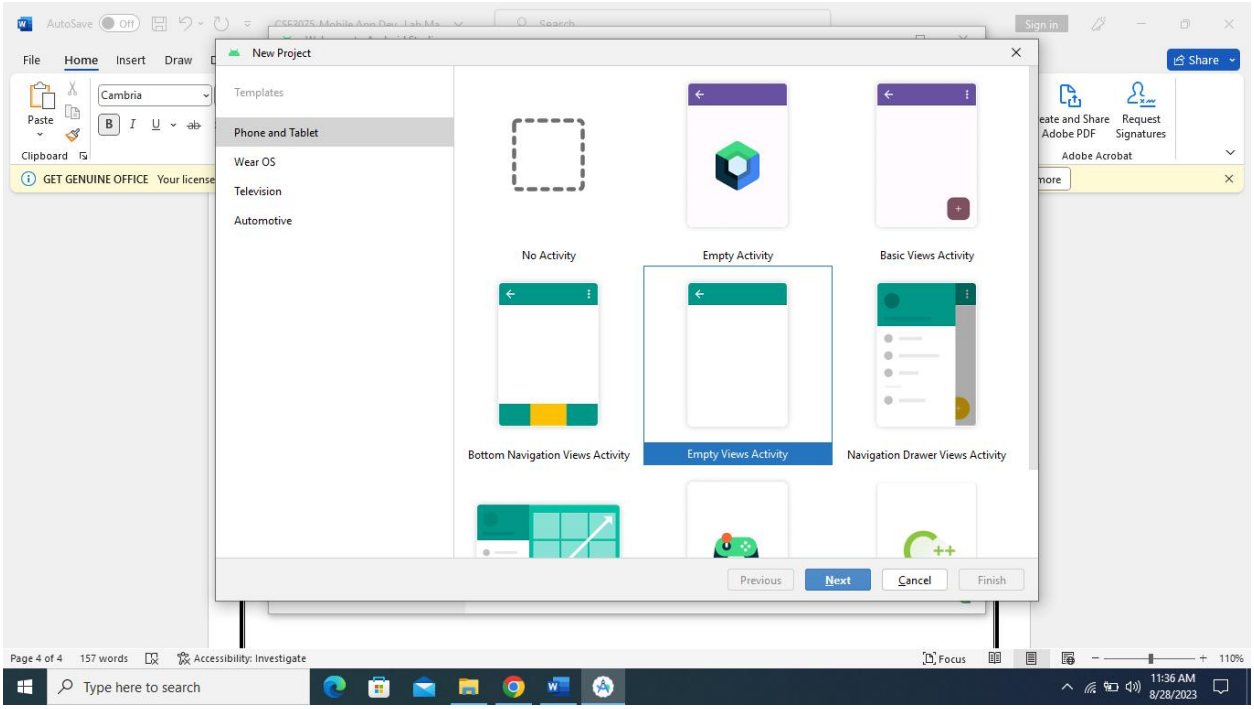
In this window there will be three licenses. Accept all licenses and click finish button



About Android Studio:

Step 1: Create a New Project

Step 2: Choose the Empty Views Activity template in Phone and Tablet category

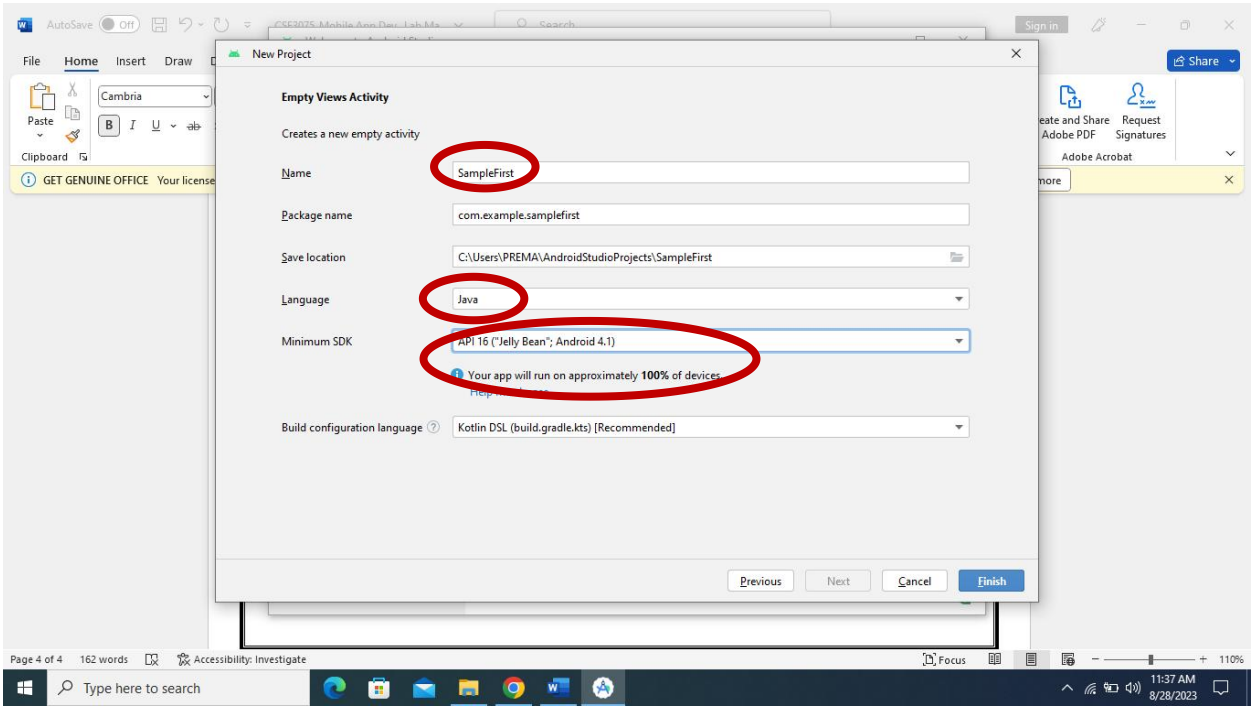


Step 3: Project Name and Language Selection

Give the project name without spaces

Choose the Language Java

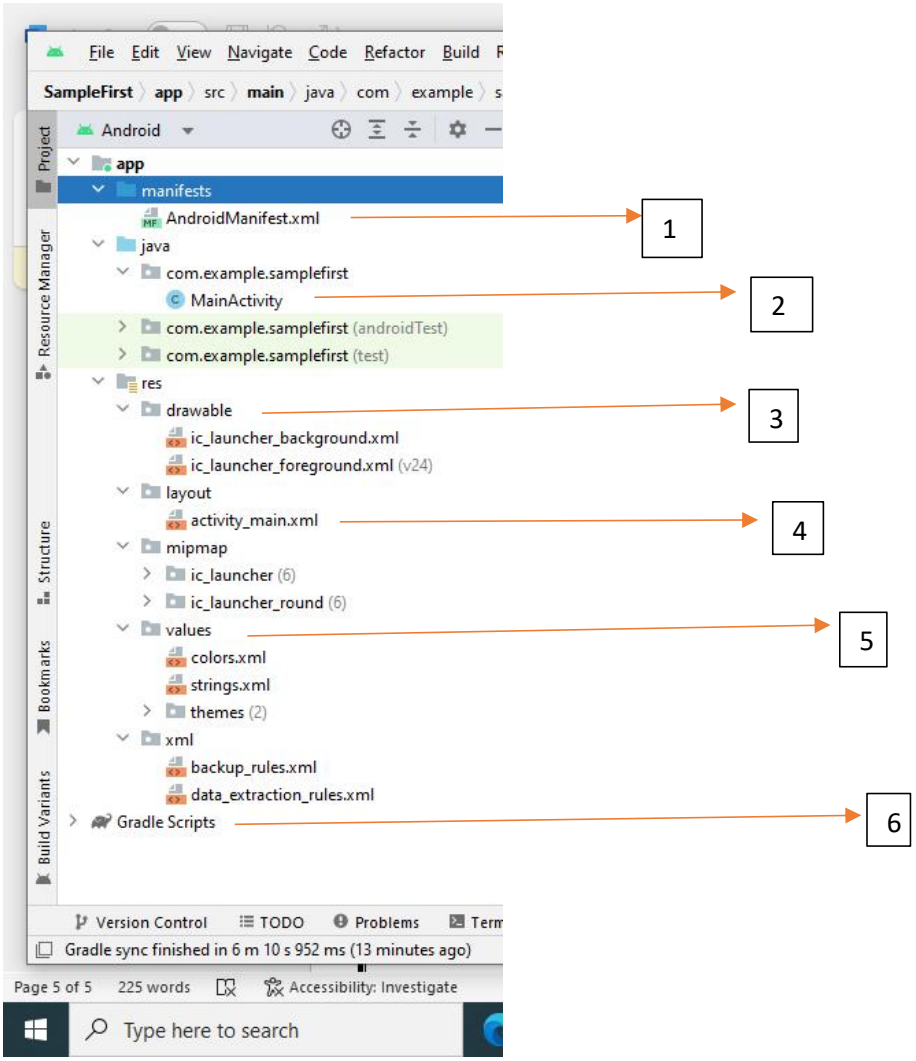
Better to choose Minimum SDK Version, so that your application will run in all devices



Step 4: Wait until Gradle is sync with project

Anatomy of Android Application

Before you run app, you should be aware of a few directories and files in the Android Project:



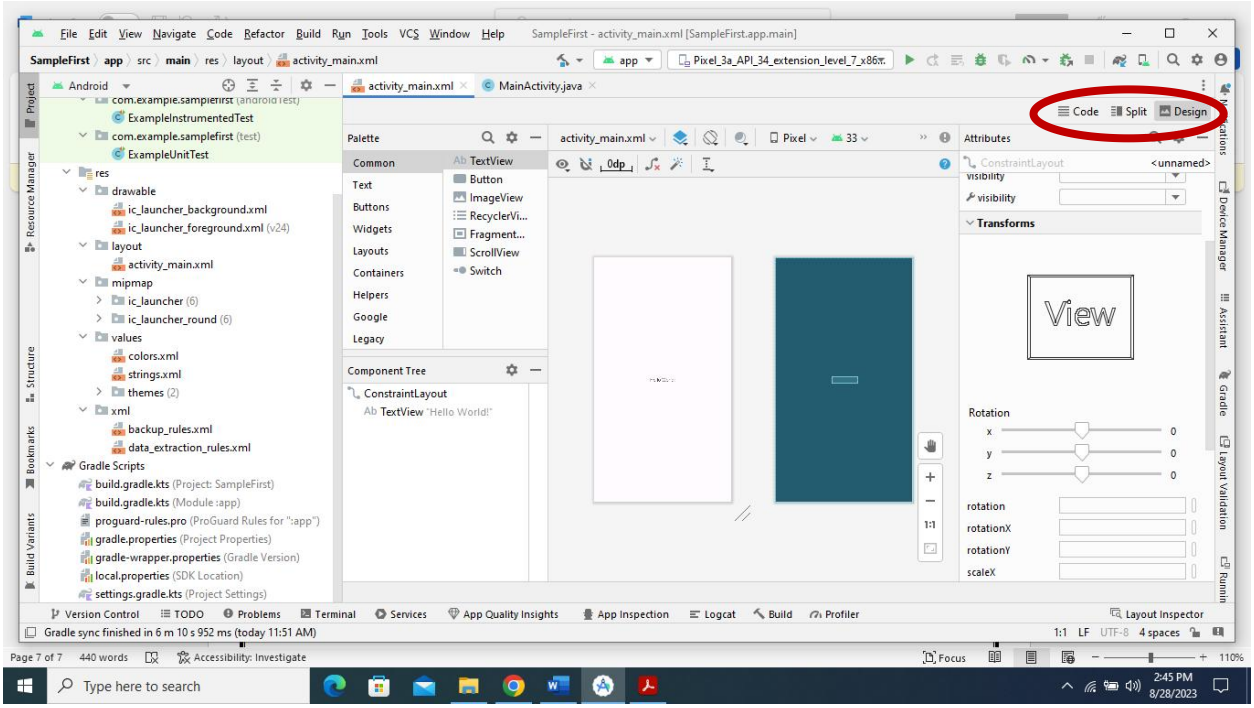
Sl. No	Folder, File & Description
1	Android Manifest.xml This is the manifest file which describes the fundamental characteristics of the app and defines each of its components
2	Java/com.example.samplefirst This contains the .java source files for your project. By default, it includes an MainActivity.java source file having an activity class that runs when your app is launched using the app icon.
3	res/drawable This is a directory for drawable objects that are designed for high- density screens.
4	res/layout This is a directory for files that define your app's user interface.
5	res/values This is a directory for other various XML files that contain a collection of

	resources, such as strings and colors definitions.
6	Gradle Scripts This directory includes all settings and properties to build your application into virtual emulator

Following section will give a brief overview few of the important application files.

The Layout File:

The activity_main.xml is a layout file available in res/layout directory, that is referenced by your application when building its interface. You will modify this file very frequently to change the layout of your application. You can modify the design either using code tab or design tab. For your "Hello World!" application, this file will have following content related to default layout:




```
<?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_constraintEnd_toEndOf="parent"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent" />
```

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

The Main Activity File

The main activity code is a Java file MainActivity.java. This is the actual application file which ultimately gets converted to a Dalvik executable and runs your application. Following is the default code generated by the application wizard for Hello World! application:

```
package com.example.samplefirst;

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);
   }
}
```

Here, R.layout.activity_main refers to the activity_main.xml file located in the res/layout folder. The onCreate() method is one of many methods that are fixed when an activity is loaded.

The Manifest File

Whatever component you develop as a part of your application, you must declare all its components in a manifest file called AndroidManifest.xml which ressides at the root of the application project directory. This file works as an interface between Android OS and your application, so if you do not declare your component in this file, then it will not be considered by the OS. For example, a default manifest file will look like as following file:

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

   <application
      android:allowBackup="true"
      android:dataExtractionRules="@xml/data_extraction_rules"
      android:fullBackupContent="@xml/backup_rules"
      android:icon="@mipmap/ic_launcher"
      android:label="@string/app_name"
      android:roundIcon="@mipmap/ic_launcher_round"
      android:supportsRtl="true"
      android:theme="@style/Theme.SampleFirst"
      tools:targetApi="31">
      <activity
         android:name=".MainActivity"
         android:exported="true">
         <intent-filter>
```

```
            <action android:name="android.intent.action.MAIN" />

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

</manifest>
```

Here <application>...</application> tags enclosed the components related to the application. Attributeandroid:icon will point to the application icon available under res/drawable-hdpi. The application uses the image named ic_launcher.png located in the drawable folders

The <activity> tag is used to specify an activity and android:name attribute specifies the fully qualified class name of the Activity subclass and the android:label attributes specifies a string to use as the label for the activity. You can specify multiple activities using <activity> tags.

The action for the intent filter is named android.intent.action.MAIN to indicate that this activity serves as the entry point for the application. The category for the intent-filter is namedandroid.intent.category.LAUNCHER to indicate that the application can be launched from the device's launcher icon.

The @string refers to the strings.xml file explained below. Hence, @string/app_name refers to theapp_name string defined in the strings.xml fi le, which is "HelloWorld". Similar way, other strings get populated in the application.

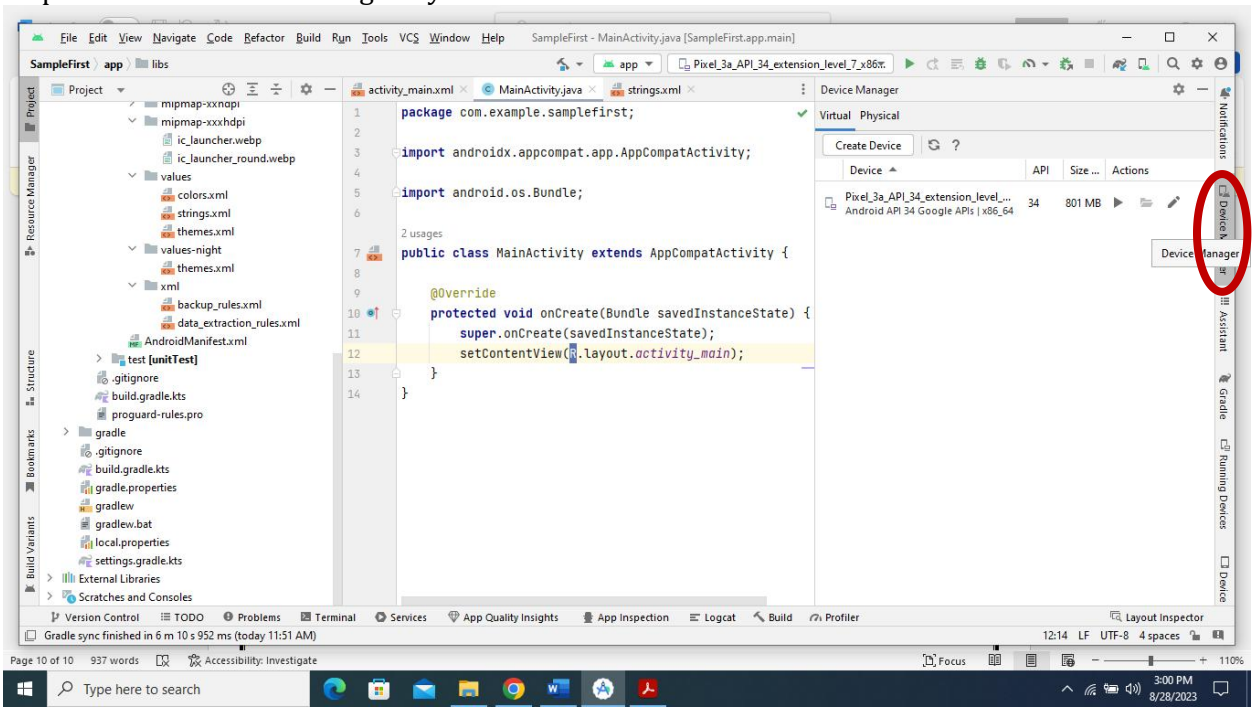
Following is the list of tags which you will use in your manifest file to specify different Android application components:
<activity>elements for activities
<service> elements for services
<receiver> elements for broadcast receivers
<provider> elements for content providers The Strings File

The strings.xml file is located in the res/values folder and it contains all the text that your application uses. For example, the names of buttons, labels, default text, and similar types of strings go into this file. This file is responsible for their textual content. For example, a default strings file will look like as following file:

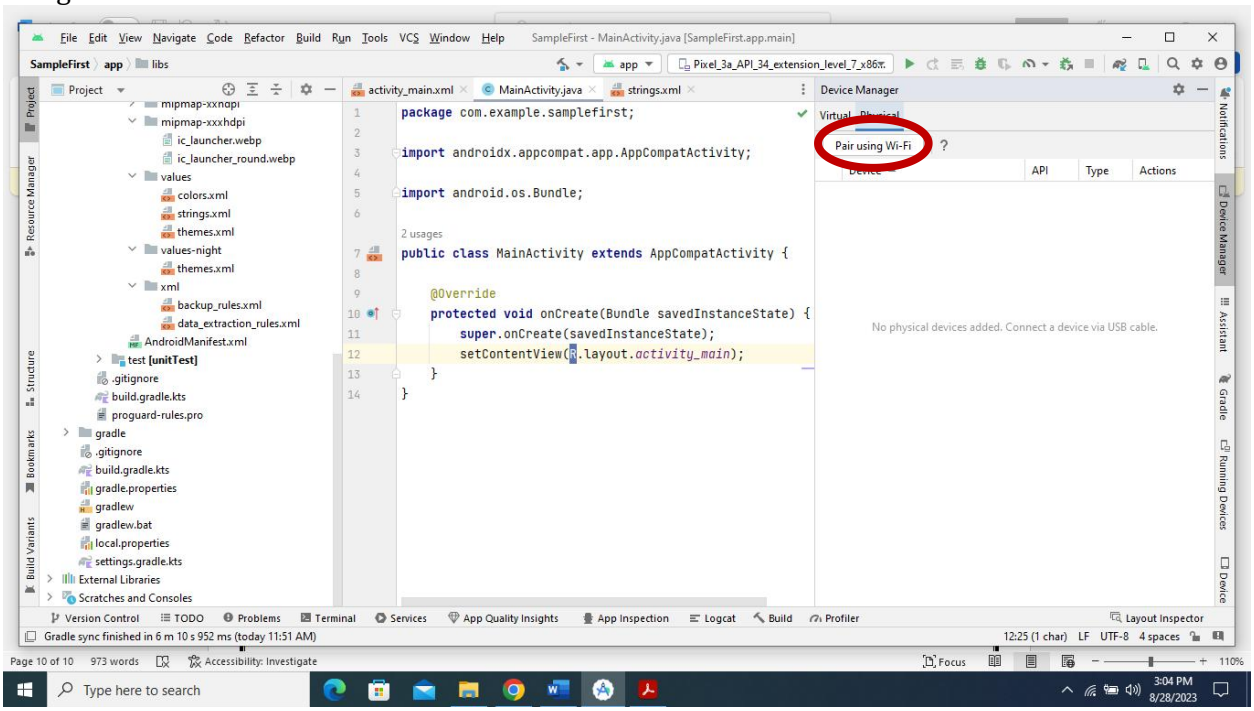
```
<resources>
   <string name="app_name">SampleFirst</string>
</resources>
```

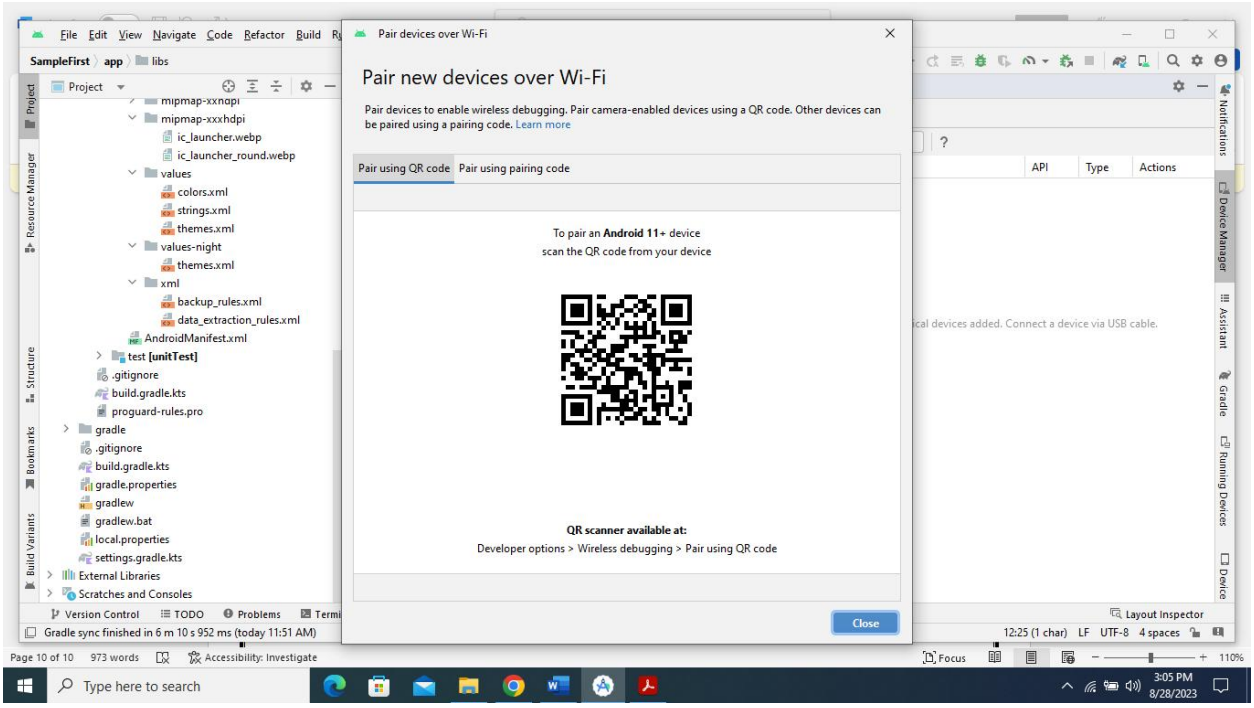
Creation of AVD:

Step 1: Click on Device Manager. By default it contains one virtual emulator with latest API.



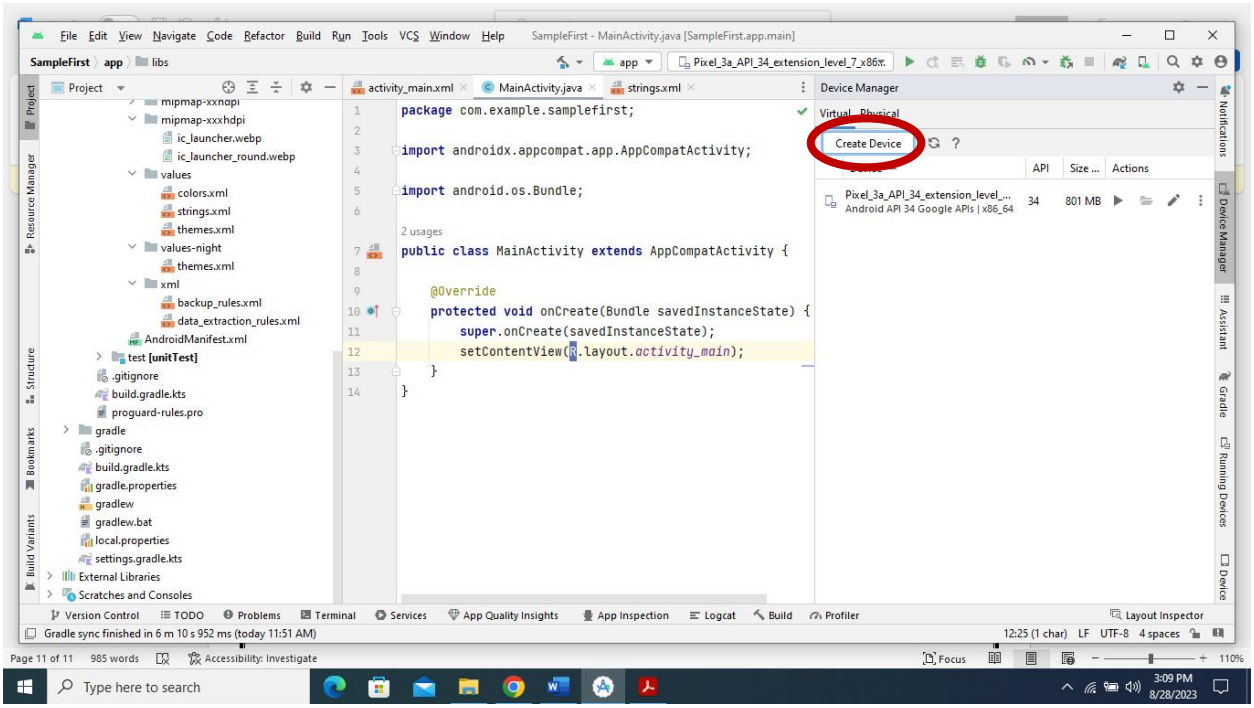
You can run the applications either in virtual device or physical device. If you run the applications using physical device, you need to pair the mobile device with android studio using QR code or using Wi-fi.



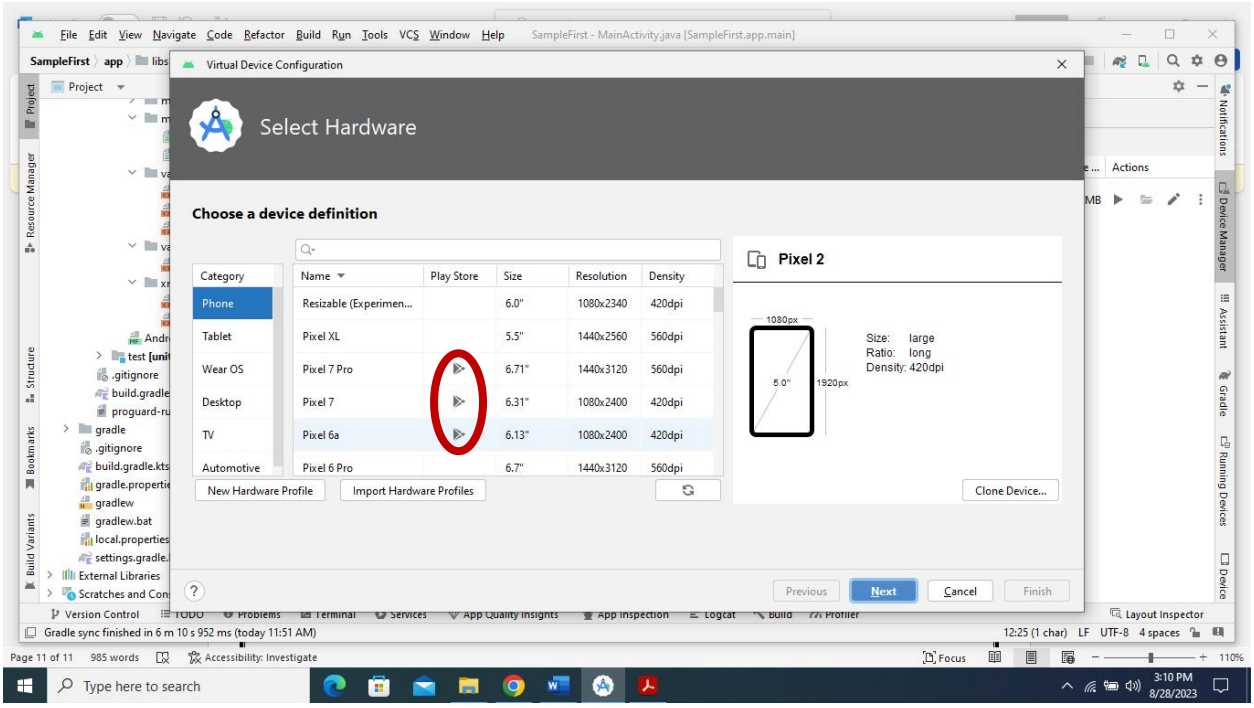


This option is available only android 11+ devices.

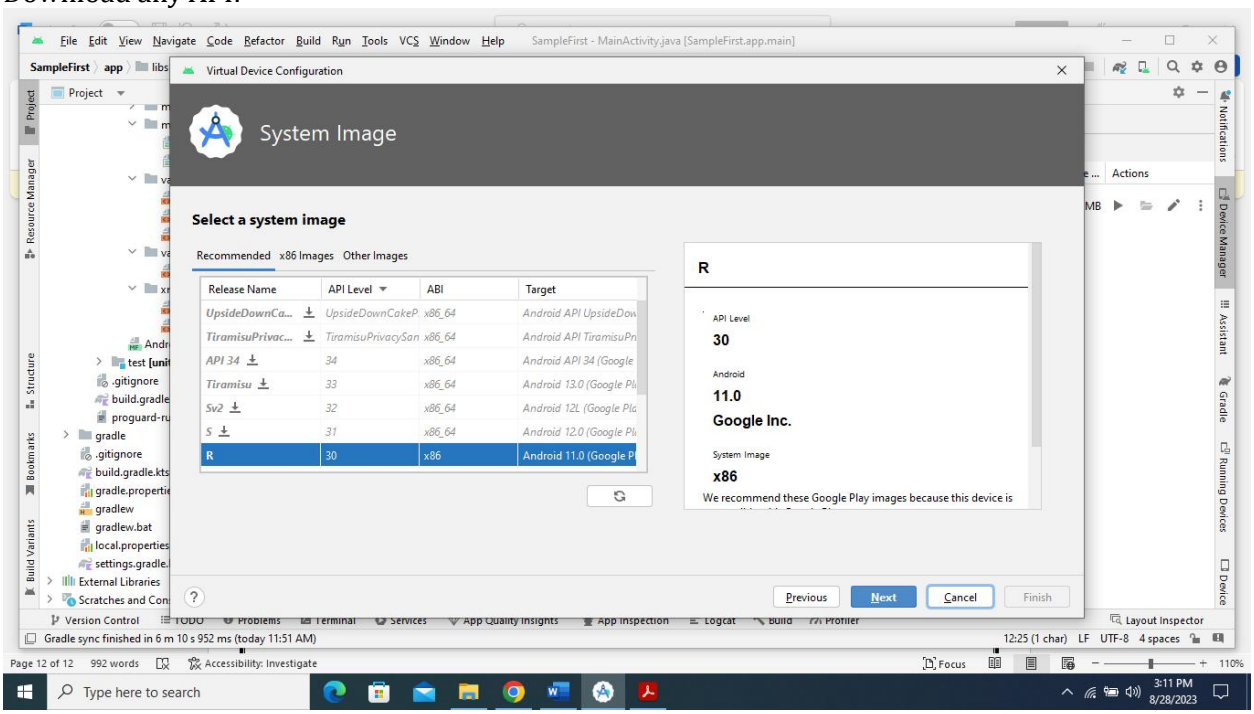
Creation of virtual device:



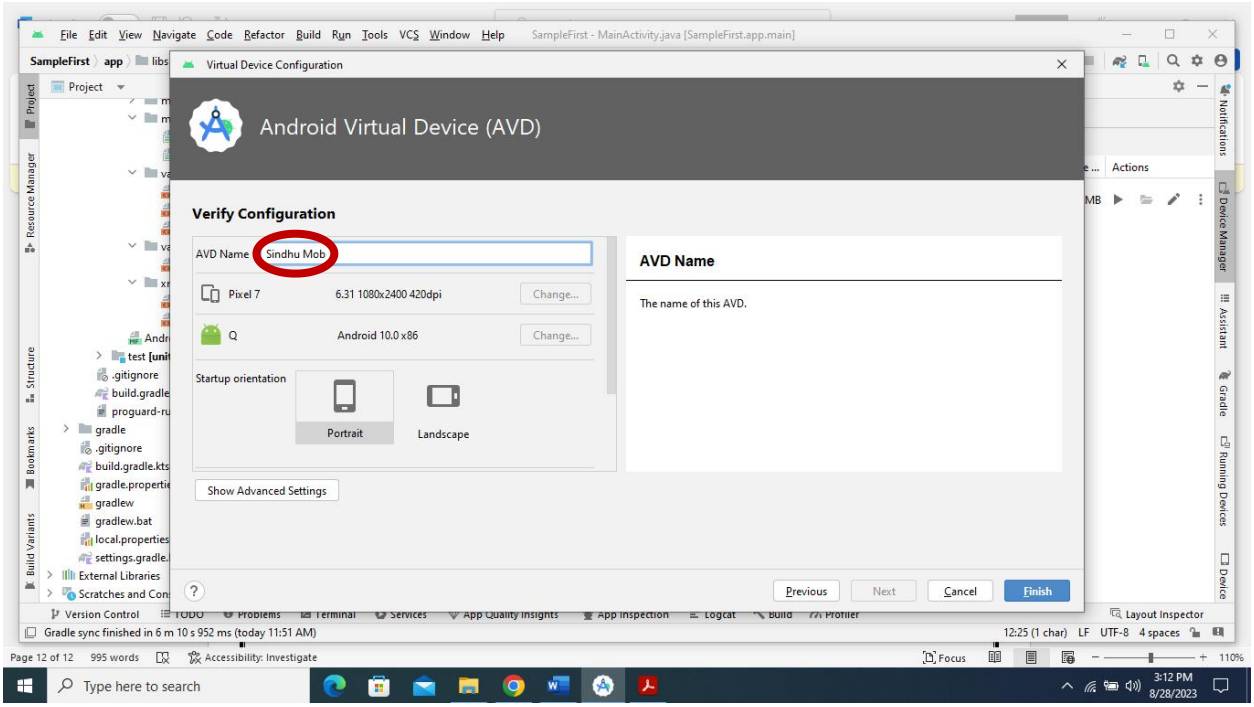
Select any phone, preferably playstore enabled devices



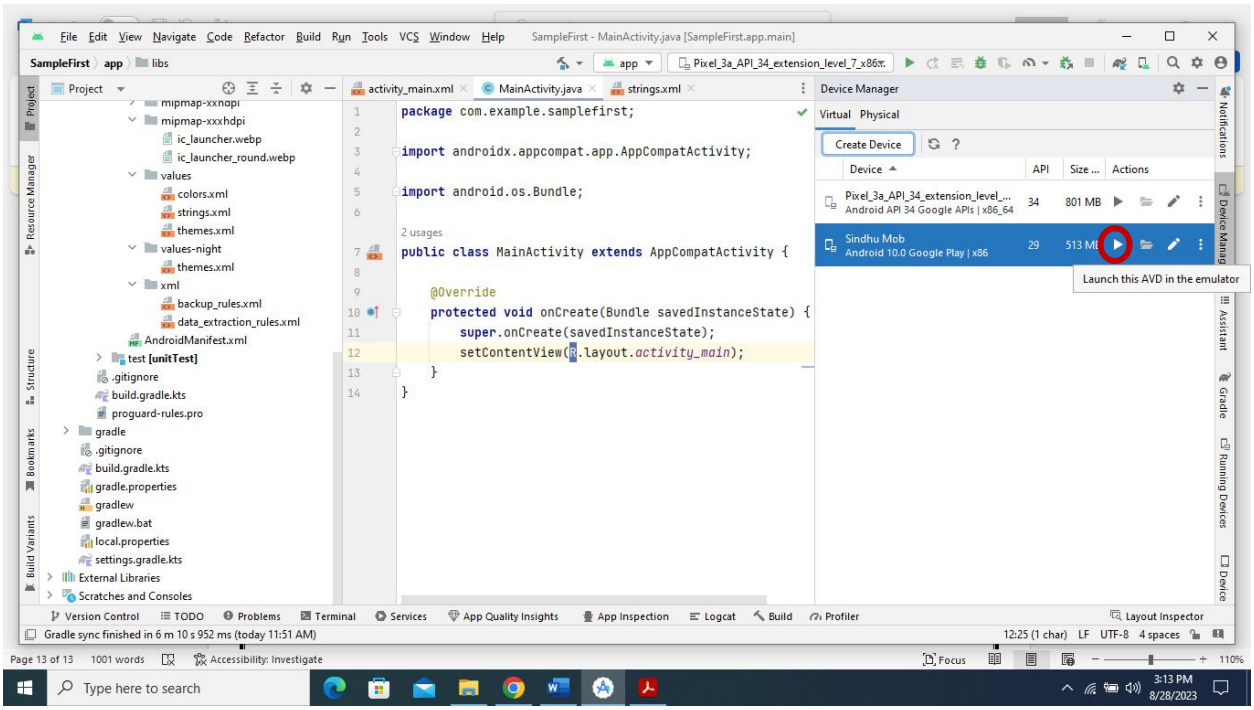
Download any API:



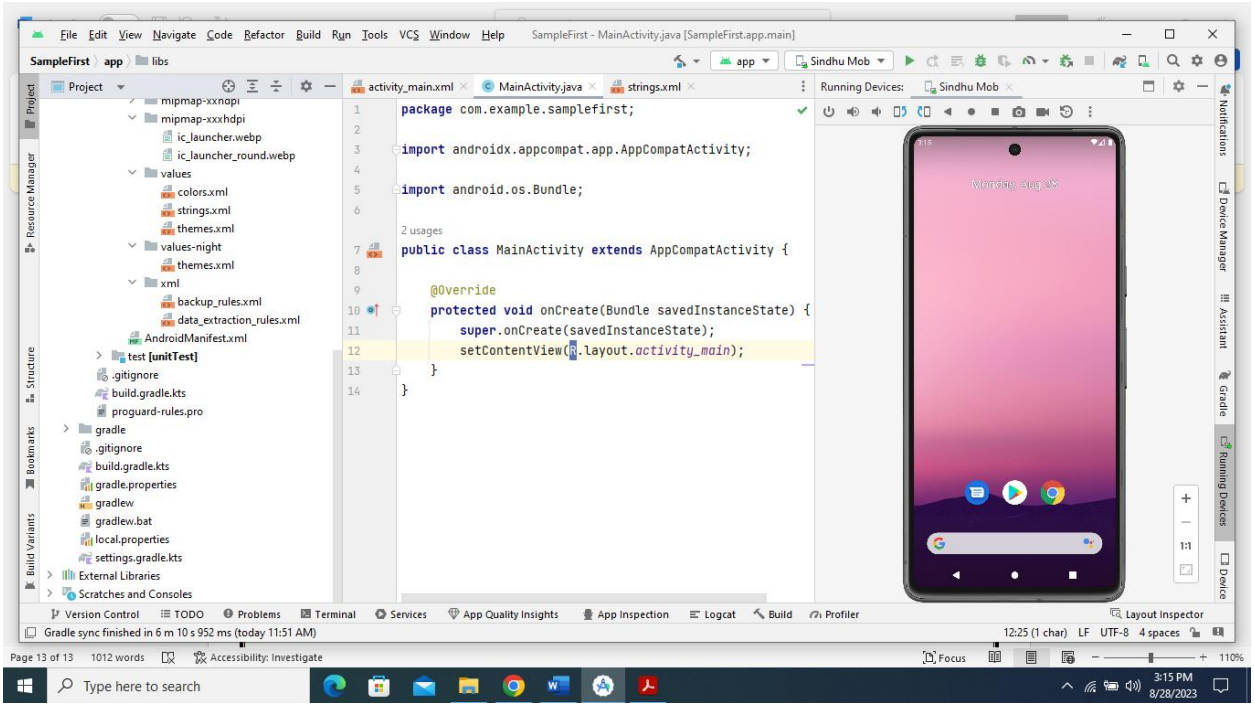
You can change name of AVD:



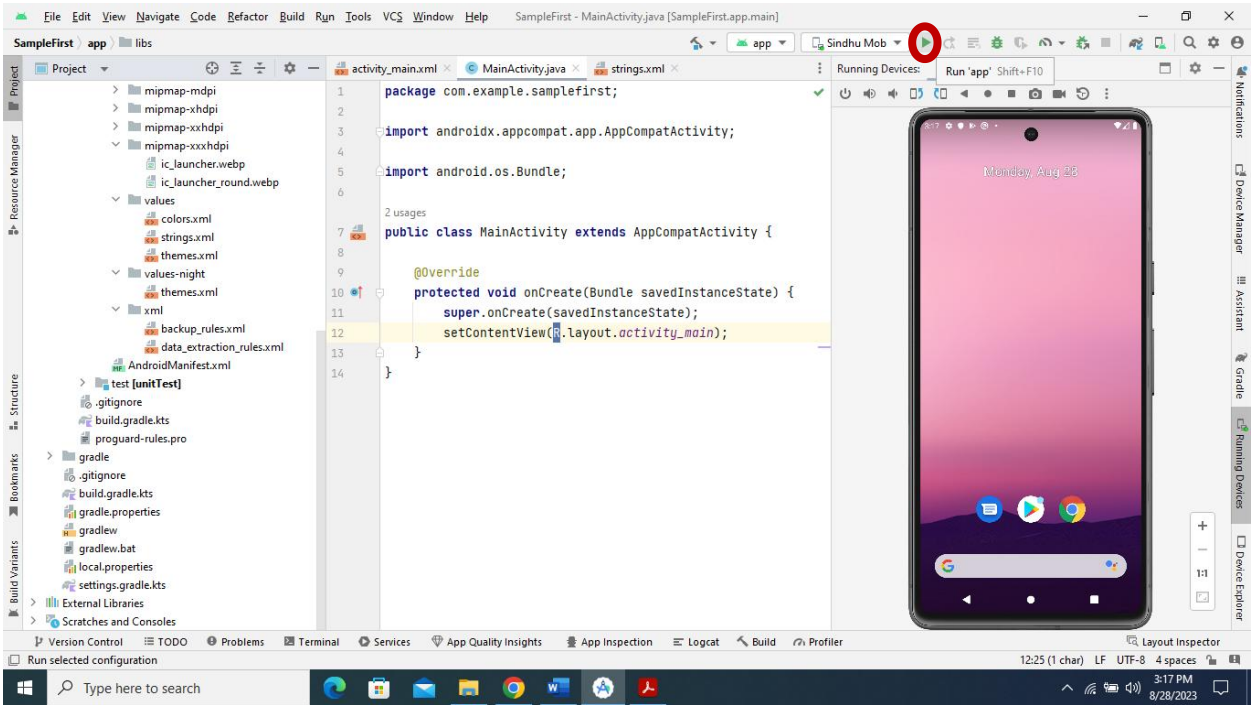
Launch the emulator:



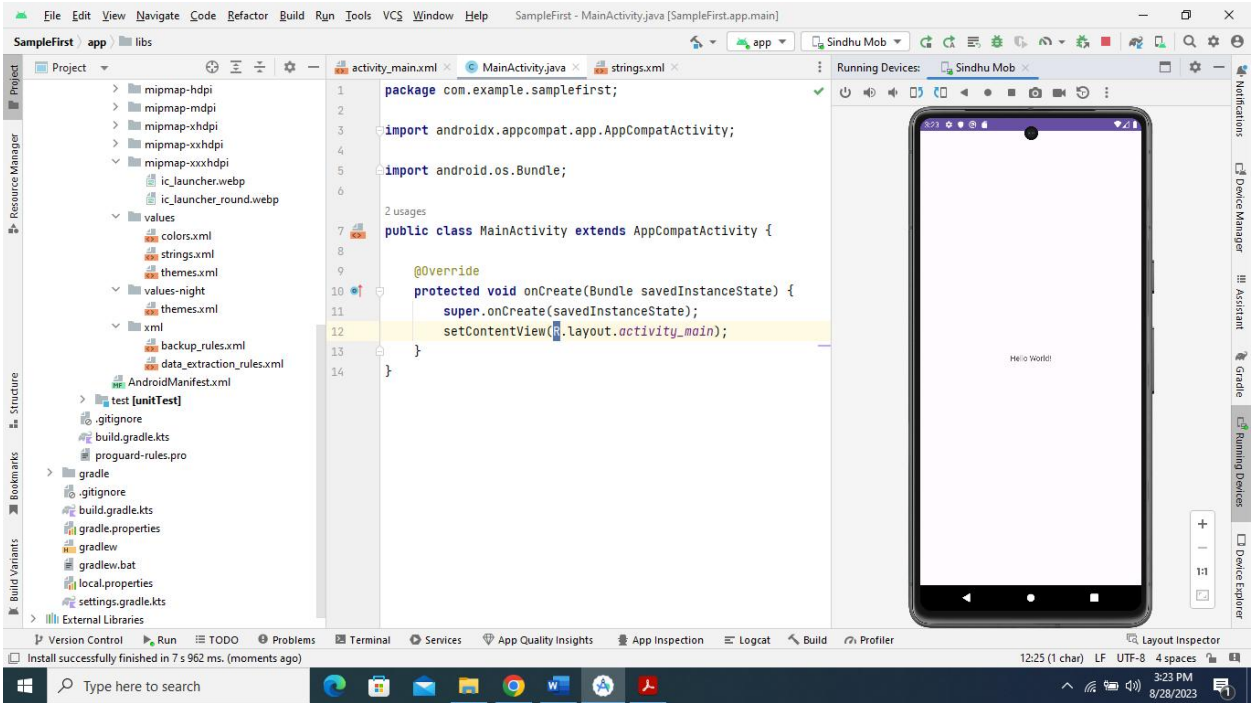
You can see the emulator under running devices:



Running the application:
Let's try to run our Hello World! application we just created. To run the app from android studio click run icon from tool bar



Android studio installs the app on your AVD and starts it and if everything is fine with your setup and application, it will display following Emulator window:


File Edit View Navigate Code Refactor Build Run Tools VCS Window Help
SampleFirst - MainActivity.java [SampleFirst.app.main]
SampleFirst app libs
app
Sindhu Mob
Project
activity_main.xml
MainActivity.java
strings.xml
mipmap-hdpi
mipmap-mdpi
mipmap-xhdpi
mipmap-xxhdpi
mipmap-xxxhdpi
ic_launcher.webp
ic_launcher_round.webp
values
colors.xml
strings.xml
themes.xml
values-night
themes.xml
xml
backup_rules.xml
data_extraction_rules.xml
AndroidManifest.xml
test [unitTest]
.gitignore
build.gradle.kts
proguard-rules.pro
gradle
.gitignore
build.gradle.kts
gradle.properties
gradlew
gradlew.bat
local.properties
settings.gradle.kts
External Libraries
1 package com.example.samplefirst;
2
3 import androidx.appcompat.app.AppCompatActivity;
4
5 import android.os.Bundle;
6
2 usages
7 public class MainActivity extends AppCompatActivity {
8
9 @Override
10 protected void onCreate(Bundle savedInstanceState) {
11 super.onCreate(savedInstanceState);
12 setContentView(R.layout.activity_main);
13 }
14 }
Running Devices:
Sindhu Mob
Hello World!
Version Control
Run
TODO
Problems
Terminal
Services
App Quality Insights
App Inspection
Logcat
Build
Profiler
Layout Inspector
Install successfully finished in 7 s 962 ms. (moments ago)
12:25 (1 char) LF UTF-8 4 spaces
Type here to search
3:23 PM
8/28/2023

Experiment – 1

Aim: Design an application to perform the arithmetic operations by reading the input from user

Solution:

activity_main.xml:

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

   <EditText
      android:id="@+id/aBox"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:ems="10"
      android:minHeight="48dp"
      android:minWidth="48dp"
      android:hint="Enter a Value"
      android:inputType="text"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent"
      app:layout_constraintBottom_toTopOf="@+id/bBox"/>

   <EditText
      android:id="@+id/bBox"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:ems="10"
      android:hint="Enter b Value"
      android:inputType="text"
      android:minWidth="48dp"
      android:minHeight="48dp"
      app:layout_constraintBottom_toTopOf="@+id/addBtn"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toBottomOf="@+id/aBox" />

   <Button
      android:id="@+id/addBtn"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="+"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintEnd_toStartOf="@+id/subBtn"
      app:layout_constraintBottom_toTopOf="@+id/mulBtn"
```

```
        app:layout_constraintTop_toBottomOf="@+id/bBox"/>

    <Button
        android:id="@+id/subBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="-"
        tools:layout_editor_absoluteX="230dp"
        tools:layout_editor_absoluteY="322dp"
        app:layout_constraintBottom_toTopOf="@+id/divBtn"
        app:layout_constraintStart_toEndOf="@+id/addBtn"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/bBox"/>

    <Button
        android:id="@+id/mulBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="*"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/addBtn"
        app:layout_constraintEnd_toStartOf="@+id/divBtn"
        app:layout_constraintBottom_toTopOf="@+id/result"/>

    <Button
        android:id="@+id/divBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="/"
        tools:layout_editor_absoluteX="230dp"
        tools:layout_editor_absoluteY="322dp"
        app:layout_constraintBottom_toTopOf="@+id/result"
        app:layout_constraintStart_toEndOf="@+id/mulBtn"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/subBtn" />

    <TextView
        android:id="@+id/result"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/divBtn" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java:

```
package com.example.arith;

import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivity extends AppCompatActivity {
   EditText aval, bval;
   Button add, sub, mul, div;
   TextView res;
   Double a, b;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      aval = findViewById(R.id.aBox);
      bval = findViewById(R.id.bBox);
      add = findViewById(R.id.addBtn);
      sub = findViewById(R.id.subBtn);
      mul = findViewById(R.id.mulBtn);
      div = findViewById(R.id.divBtn);
      res = findViewById(R.id.result);
      add.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View v) {
            a = Double.parseDouble(aval.getText().toString());
            b = Double.parseDouble(bval.getText().toString());
            res.setText("Result: "+(a+b));
         }
      });
      sub.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View v) {
            a = Double.parseDouble(aval.getText().toString());
            b = Double.parseDouble(bval.getText().toString());
            res.setText("Result: "+(a-b));
         }
      });
      mul.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View v) {
            a = Double.parseDouble(aval.getText().toString());
            b = Double.parseDouble(bval.getText().toString());
            res.setText("Result: "+(a*b));
```

```
        }
    });
    div.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            a = Double.parseDouble(aval.getText().toString());
            b = Double.parseDouble(bval.getText().toString());
            if(b!=0)
                res.setText("Result: "+(a/b));
            else
                res.setText("Division not possible");
        }
    });
  }
}
```

Output:

Experiment – 2

Aim: Design an application to calculate the body mass index by reading the input from user

Solution:

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/header"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="BMI Calculator"
      android:textSize="48dp"
      android:textStyle="bold"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent"
      app:layout_constraintBottom_toTopOf="@+id/wtLbl" />

   <TextView
      android:id="@+id/wtLbl"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Weight (in Kg)"
      android:textStyle="bold"
      tools:layout_editor_absoluteX="53dp"
      tools:layout_editor_absoluteY="178dp"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintEnd_toStartOf="@+id/wtBox"
      app:layout_constraintBottom_toTopOf="@+id/htLbl"
      app:layout_constraintTop_toBottomOf="@+id/header" />

   <EditText
      android:id="@+id/wtBox"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:ems="10"
      android:hint="Enter Weight"
      android:inputType="text"
      android:minHeight="48dp"
      tools:layout_editor_absoluteX="184dp"
      tools:layout_editor_absoluteY="164dp"
```

```
    app:layout_constraintBottom_toTopOf="@+id/htBox"
    app:layout_constraintStart_toEndOf="@+id/wtLbl"
    app:layout_constraintTop_toBottomOf="@+id/header"
    app:layout_constraintEnd_toEndOf="parent"/>

<TextView
    android:id="@+id/htLbl"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Height (in Cm)"
    android:textStyle="bold"
    tools:layout_editor_absoluteX="56dp"
    tools:layout_editor_absoluteY="295dp"
    app:layout_constraintTop_toBottomOf="@+id/wtLbl"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toStartOf="@+id/wtBox"
    app:layout_constraintBottom_toTopOf="@+id/calcBtn"/>

<EditText
    android:id="@+id/htBox"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:minHeight="48dp"
    android:hint="Enter Height"
    android:inputType="text"
    tools:layout_editor_absoluteX="184dp"
    tools:layout_editor_absoluteY="275dp"
    app:layout_constraintBottom_toTopOf="@+id/calcBtn"
    app:layout_constraintStart_toEndOf="@+id/htLbl"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/wtBox"/>

<Button
    android:id="@+id/calcBtn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Calculate"
    tools:layout_editor_absoluteX="157dp"
    tools:layout_editor_absoluteY="431dp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@id/htBox"
    app:layout_constraintBottom_toTopOf="@+id/result"/>

<TextView
    android:id="@+id/result"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:gravity="center_horizontal"
```

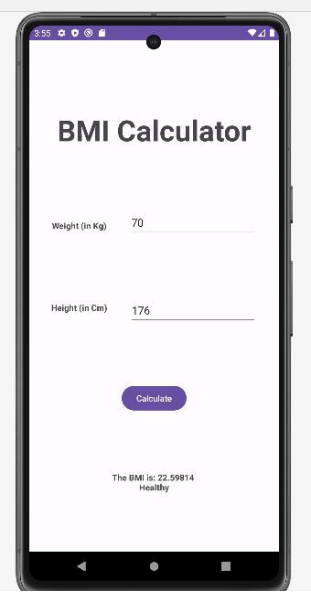
```
        android:textStyle="bold"
        tools:layout_editor_absoluteX="180dp"
        tools:layout_editor_absoluteY="571dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/calcBtn"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java:

```
package com.example.bmicalc;

import androidx.appcompat.app.AppCompatActivity;

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 AppCompatActivity {
    EditText wtval, htval;
    Button btn;
    TextView res;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        wtval = findViewById(R.id.wtBox);
        htval = findViewById(R.id.htBox);
        btn = findViewById(R.id.calcBtn);
        res = findViewById(R.id.result);
        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Float wt = Float.parseFloat(wtval.getText().toString());
                Float ht_m = Float.parseFloat(htval.getText().toString())/100;
                Float bmi = wt/ (ht_m*ht_m);
                if(bmi < 18.5)
                    res.setText("The BMI is: "+bmi+" \n Under Weight ");
                else if (bmi >= 18.5 && bmi < 24.9)
                    res.setText("The BMI is: "+bmi+" \n Healthy ");
                else if (bmi >= 24.9 && bmi < 30)
                    res.setText("The BMI is: "+bmi+" \n Over Weight ");
                else if (bmi>=30)
                    res.setText("The BMI is: "+bmi+" \n Suffering from obesity ");
            }
        });
```

```
    }
}
```

Output:


BMI Calculator
Weight (in Kg)
70
Height (in Cm)
176
Calculate
The BMI is: 22.59814
Healthy

Experiment – 3

Aim: Design an application to fill the registration form using AutoCompleteTextView and RadioButton by reading the input from user

Solution:

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/header"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Registration Form"
      android:textSize="34sp"
      android:textStyle="bold"
      app:layout_constraintBottom_toTopOf="@+id/nameLbl"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintHorizontal_bias="0.605"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent" />

   <TextView
      android:id="@+id/nameLbl"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Name"
      android:textStyle="bold"
      app:layout_constraintBottom_toTopOf="@+id/FNameLbl"
      app:layout_constraintEnd_toStartOf="@+id/NameBox"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toBottomOf="@+id/header" />

   <AutoCompleteTextView
      android:id="@+id/PlaceBox"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:hint="Enter Location"
      android:minHeight="48dp"
      app:layout_constraintBottom_toTopOf="@+id/SubmitBtn"
      app:layout_constraintStart_toEndOf="@+id/PlaceLbl"
      app:layout_constraintTop_toBottomOf="@+id/GenderGroup"
      app:layout_constraintEnd_toEndOf="parent"/>
```

```
<TextView
   android:id="@+id/PlaceLbl"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Place of Birth"
   android:textStyle="bold"
   app:layout_constraintStart_toStartOf="parent"
   app:layout_constraintTop_toBottomOf="@+id/GenderGroup"
   app:layout_constraintEnd_toStartOf="@+id/PlaceBox"
   app:layout_constraintBottom_toTopOf="@+id/SubmitBtn"/>

<TextView
   android:id="@+id/GenderLbl"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Gender"
   android:textStyle="bold"
   app:layout_constraintBottom_toTopOf="@+id/PlaceLbl"
   app:layout_constraintEnd_toStartOf="@+id/GenderGroup"
   app:layout_constraintStart_toStartOf="parent"
   app:layout_constraintTop_toBottomOf="@+id/FNameLbl" />

<TextView
   android:id="@+id/FNameLbl"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Father Name"
   android:textStyle="bold"
   app:layout_constraintBottom_toTopOf="@+id/GenderLbl"
   app:layout_constraintEnd_toStartOf="@+id/FNameBox"
   app:layout_constraintStart_toStartOf="parent"
   app:layout_constraintTop_toBottomOf="@+id/nameLbl" />

<RadioGroup
   android:id="@+id/GenderGroup"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   app:layout_constraintStart_toEndOf="@+id/GenderLbl"
   app:layout_constraintBottom_toTopOf="@+id/PlaceBox"
   app:layout_constraintTop_toBottomOf="@+id/FNameBox"
   app:layout_constraintEnd_toEndOf="parent">

   <RadioButton
      android:id="@+id/MaleBtn"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Male" />

   <RadioButton
```

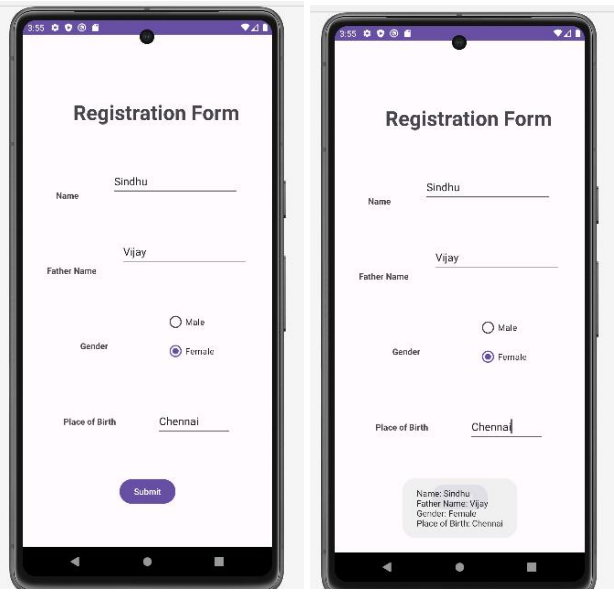
```
        android:id="@+id/FemaleBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Female" />

    </RadioGroup>

    <EditText
        android:id="@+id/NameBox"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:hint="Enter Name"
        android:inputType="text"
        android:minHeight="48dp"
        app:layout_constraintBottom_toTopOf="@+id/FNameBox"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/nameLbl"
        app:layout_constraintTop_toBottomOf="@+id/header" />

    <EditText
        android:id="@+id/FNameBox"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:hint="Enter Father Name"
        android:inputType="text"
        android:minHeight="48dp"
        app:layout_constraintBottom_toTopOf="@+id/GenderGroup"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/FNameLbl"
        app:layout_constraintTop_toBottomOf="@+id/NameBox" />

    <Button
        android:id="@+id/SubmitBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Submit"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/PlaceBox"
        app:layout_constraintBottom_toBottomOf="parent"/>


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

MainActivity.java:

```
package com.example.registrationformacrg;

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

```
import android.annotation.SuppressLint;
import android.os.Bundle;
import android.view.View;
import android.widget.ArrayAdapter;
import android.widget.AutoCompleteTextView;
import android.widget.Button;
import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
   EditText name,fname;
   AutoCompleteTextView places;
   RadioGroup rg;
   RadioButton rb;
   Button btn;
   String[] Locations = {"Bangalore","Delhi","Pune","Bombay","Chennai","Hyderabad","Calcutta"};
   @SuppressLint("MissingInflatedId")
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      name = findViewById(R.id.NameBox);
      fname = findViewById(R.id.FNameBox);
      places = findViewById(R.id.PlaceBox);
      btn = findViewById(R.id.SubmitBtn);
      ArrayAdapter adapter = new ArrayAdapter(this, android.R.layout.select_dialog_item,Locations);
      places.setThreshold(1);
      places.setAdapter(adapter);
      rg = findViewById(R.id.GenderGroup);
      rg.setOnCheckedChangeListener(new RadioGroup.OnCheckedChangeListener() {
         @Override
         public void onCheckedChanged(RadioGroup group, int checkedId) {
            rb = findViewById(checkedId);
         }
      });
      btn.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View v) {
            String res1 = "Name: "+name.getText().toString()+"\nFather Name:
"+fname.getText().toString()+"\nGender: "+rb.getText()+"\nPlace of Birth:
"+places.getText().toString();
            Toast.makeText(MainActivity.this,res1,Toast.LENGTH_SHORT).show();
         }
      });
   }
```

Output:


Registration Form
Name
Sindhu
Father Name
Vijay
Gender
Male
Female
Place of Birth
Chennai
Submit
Registration Form
Name
Sindhu
Father Name
Vijay
Gender
Male
Female
Place of Birth
Chennai
Name: Sindhu
Father Name: Vijay
Gender: Female
Place of Birth: Chennai

Experiment – 4

Aim: Design an application to fill the course selection of discipline electives for upcoming semester using Spinner by reading the input from user

Solution:

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/header"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Electives Selection"
      android:textSize="34sp"
      android:textStyle="bold"
      app:layout_constraintBottom_toTopOf="@+id/nameBox"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent" />

   <TextView
      android:id="@+id/nameLbl"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Student Name"
      android:textStyle="bold"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintEnd_toStartOf="@+id/nameBox"
      app:layout_constraintTop_toBottomOf="@+id/header"
      app:layout_constraintBottom_toTopOf="@+id/rollnoLbl"/>

   <EditText
      android:id="@+id/nameBox"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:ems="10"
      android:minHeight="48dp"
      android:hint="Enter Student Name"
      android:inputType="text"
      app:layout_constraintStart_toEndOf="@+id/nameLbl"
      app:layout_constraintTop_toBottomOf="@+id/header"
      app:layout_constraintBottom_toTopOf="@+id/rollnoBox"
```

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

<TextView
    android:id="@+id/rollnoLbl"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Roll No"
    android:textStyle="bold"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/nameLbl"
    app:layout_constraintEnd_toStartOf="@+id/rollnoBox"
    app:layout_constraintBottom_toTopOf="@+id/delbl"/>

<EditText
    android:id="@+id/rollnoBox"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:minHeight="48dp"
    android:hint="Enter Student RollNo"
    android:inputType="text"
    app:layout_constraintStart_toEndOf="@+id/rollnoLbl"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintBottom_toTopOf="@+id/delbl"
    app:layout_constraintTop_toBottomOf="@+id/nameBox"/>

<TextView
    android:id="@+id/delbl"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Discipline Elective"
    android:textStyle="bold"
    app:layout_constraintBottom_toTopOf="@+id/electivesBox"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.054"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/rollnoLbl" />

<Spinner
    android:id="@+id/electivesBox"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:minHeight="48dp"
    app:layout_constraintBottom_toTopOf="@+id/SubmitBtn"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@id/delbl"/>

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

```
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Submit"
    android:onClick="displayDetails"
    app:layout_constraintTop_toBottomOf="@+id/electivesBox"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintBottom_toTopOf="@+id/result"
    app:layout_constraintEnd_toStartOf="@+id/ResetBtn"/>

  <Button
    android:id="@+id/ResetBtn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Reset"
    android:onClick="resetDetails"
    app:layout_constraintStart_toEndOf="@+id/SubmitBtn"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/electivesBox"
    app:layout_constraintBottom_toTopOf="@+id/result"/>

  <TextView
    android:id="@+id/result"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:gravity="center_horizontal"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/SubmitBtn"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

strings.xml:

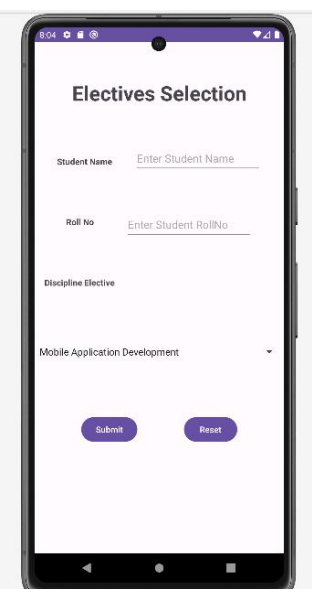
```
<resources>
  <string name="app_name">DESelectionSpinner</string>
  <string-array name="courses">
    <item>Mobile Application Development</item>
    <item>Java Full Stack</item>
    <item>.Net Full Stack</item>
  </string-array>
</resources>
```

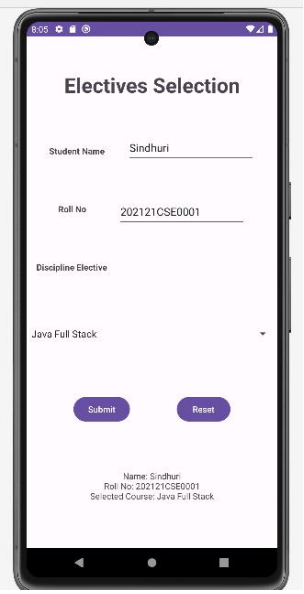
MainActivity.java:

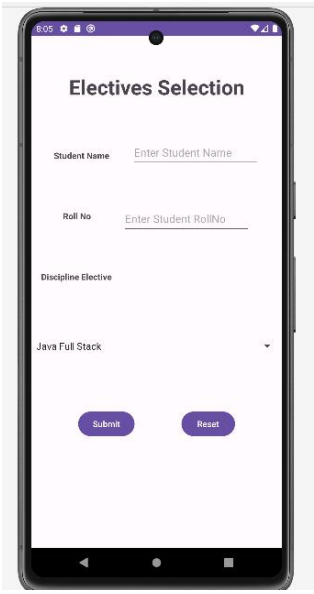
```
package com.example.deselectionspinner;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
```

```
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Spinner;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {
   EditText name,rollno;
   Spinner elec;
   TextView res;
   String selectedCourse;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      name = findViewById(R.id.nameBox);
      rollno = findViewById(R.id.rollnoBox);
      elec = findViewById(R.id.electivesBox);
      res = findViewById(R.id.result);
      ArrayAdapter adapter = new ArrayAdapter(this,
android.R.layout.simple_spinner_item,getResources().getStringArray(R.array.courses));
      adapter.setDropDownViewResource(android.R.layout.simple_spinner_dropdown_item);
      elec.setAdapter(adapter);
      elec.setOnItemSelectedListener(new AdapterView.OnItemSelectedListener() {
         @Override
         public void onItemSelected(AdapterView<?> parent, View view, int position, long id) {
            selectedCourse = parent.getItemAtPosition(position).toString();
         }

         @Override
         public void onNothingSelected(AdapterView<?> parent) {

         }
      });
   }
   public void displayDetails(View v) {
      res.setText("Name: "+name.getText().toString()+"\nRoll No:
"+rollno.getText().toString()+"\nSelected Course: "+selectedCourse);
   }
   public void resetDetails(View v){
      name.setText("");
      rollno.setText("");
      res.setText("");
   }
}
```

Output:


Electives Selection
Student Name
Enter Student Name
Roll No
Enter Student RollNo
Discipline Elective
Mobile Application Development
Submit
Reset


Electives Selection
Student Name
Sindhuri
Roll No
202121CSE0001
Discipline Elective
Java Full Stack
Submit
Reset
Name: Sindhuri
Roll No: 202121CSE0001
Selected Course: Java Full Stack


Electives Selection
Student Name
Enter Student Name
Roll No
Enter Student RollNo
Discipline Elective
Java Full Stack
Submit
Reset

Experiment – 5

Aim: Design an application to check the user is eligibility to vote or not by reading the data of birth and aadhar card number.

acitivity_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/header"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Vote Eligibility"
      android:textSize="24sp"
      android:textStyle="bold"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent"
      app:layout_constraintBottom_toTopOf="@+id/nameBox"/>

   <TextView
      android:id="@+id/nameLbl"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="User Name"
      android:textStyle="bold"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toBottomOf="@+id/header"
      app:layout_constraintBottom_toTopOf="@+id/aadharLbl"
      app:layout_constraintEnd_toStartOf="@+id/nameBox" />

   <EditText
      android:id="@+id/nameBox"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:ems="10"
      android:minHeight="48dp"
      android:hint="Enter Username"
      android:inputType="text"
      app:layout_constraintStart_toEndOf="@+id/nameLbl"
      app:layout_constraintBottom_toTopOf="@+id/aadharBox"
      app:layout_constraintTop_toBottomOf="@+id/header"
      app:layout_constraintEnd_toEndOf="parent"/>
```

```
<TextView
   android:id="@+id/aadharLbl"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Aadhar No."
   android:textStyle="bold"
   app:layout_constraintStart_toStartOf="parent"
   app:layout_constraintTop_toBottomOf="@+id/nameLbl"
   app:layout_constraintBottom_toTopOf="@+id/dobLbl"
   app:layout_constraintEnd_toStartOf="@+id/aadharBox"/>

<EditText
   android:id="@+id/aadharBox"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:ems="10"
   android:minHeight="48dp"
   android:hint="Enter Aadhar Number"
   android:inputType="number"
   app:layout_constraintStart_toEndOf="@+id/aadharLbl"
   app:layout_constraintEnd_toEndOf="parent"
   app:layout_constraintTop_toBottomOf="@+id/nameBox"
   app:layout_constraintBottom_toTopOf="@id/dateBox"/>

<TextView
   android:id="@+id/dobLbl"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Date of Birth"
   android:textStyle="bold"
   app:layout_constraintBottom_toTopOf="@+id/checkBtn"
   app:layout_constraintTop_toBottomOf="@+id/aadharLbl"
   app:layout_constraintEnd_toStartOf="@+id/dateBox"
   app:layout_constraintStart_toStartOf="parent"/>

<EditText
   android:id="@+id/dateBox"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:ems="10"
   android:minHeight="48dp"
   android:hint="Select Date"
   android:inputType="date"
   app:layout_constraintStart_toEndOf="@+id/dobLbl"
   app:layout_constraintEnd_toEndOf="parent"
   app:layout_constraintTop_toBottomOf="@+id/aadharBox"
   app:layout_constraintBottom_toTopOf="@+id/checkBtn"/>

<Button
```

```
        android:id="@+id/checkBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Check"
        android:onClick="checkEligibility"
        app:layout_constraintTop_toBottomOf="@+id/aadharBox"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintBottom_toBottomOf="parent"/>

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

MainActivity.java:

```
package com.example.agecalcdpd;

import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;
import android.app.DatePickerDialog;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.DatePicker;
import android.widget.EditText;

import java.util.Calendar;

public class MainActivity extends AppCompatActivity {
    EditText name, num, date;
    Button btn;
    int diff;

    @SuppressLint("MissingInflatedId")
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        name = findViewById(R.id.nameBox);
        num = findViewById(R.id.aadharBox);
        date = findViewById(R.id.dateBox);
        date.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Calendar c = Calendar.getInstance();
                int pYear = c.get(Calendar.YEAR);
                int pMonth = c.get(Calendar.MONTH);
                int pDate = c.get(Calendar.DATE);
```

```
            DatePickerDialog dialog = new DatePickerDialog(MainActivity.this,
android.R.style.Theme_DeviceDefault_DialogWhenLarge, new DatePickerDialog.OnDateSetListener()
{
                @Override
                public void onDateSet(DatePicker view, int year, int month, int dayOfMonth) {
                   date.setText(dayOfMonth+"/"+(month+1)+"/"+year);
                   diff = pYear - year;
                }
            },pYear, pMonth, pDate);
            dialog.show();
        }
      });
   }

   public void checkEligibility(View v) {
      String s_name = name.getText().toString();
      String s_num = num.getText().toString();
      Intent in = new Intent(getApplicationContext(), ResultActivity.class);
      in.putExtra("NAME",s_name);
      in.putExtra("AADHAR",s_num);
      in.putExtra("AGE",diff);
      startActivity(in);
   }
}
```

activity_result.xml:

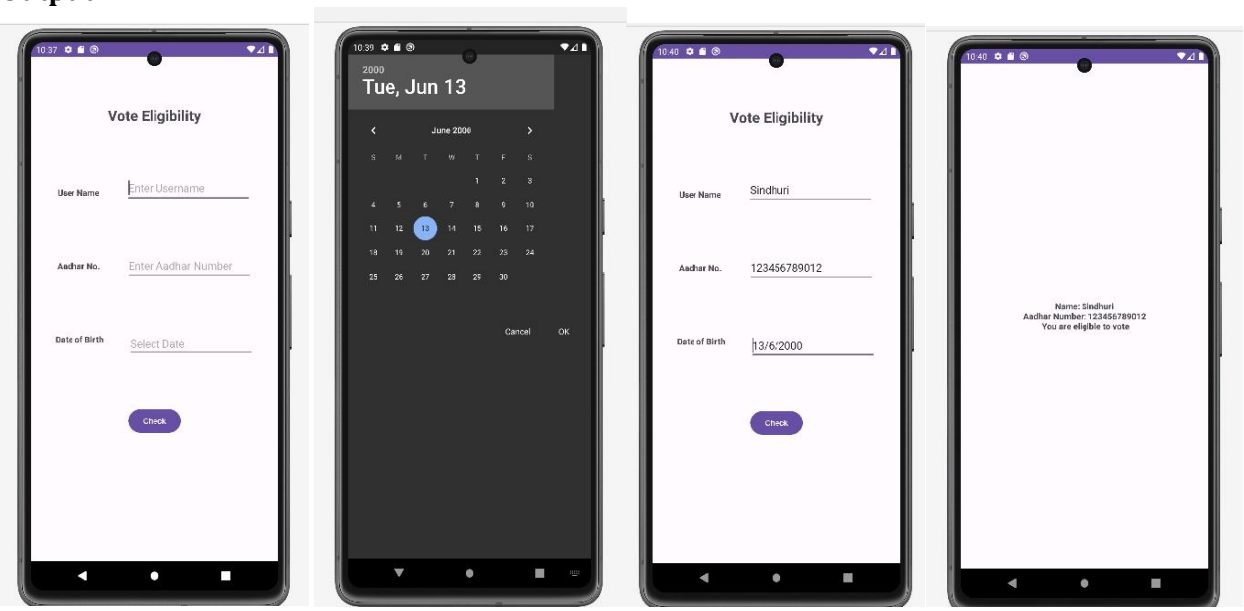
```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"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

   <TextView
      android:id="@+id/result"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:gravity="center_horizontal"
      android:textStyle="bold"
      app:layout_constraintBottom_toBottomOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

ResultActivity.java:

```
package com.example.agecalcdpd;
```

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

import android.content.Intent;
import android.os.Bundle;
import android.widget.TextView;

public class ResultActivity extends AppCompatActivity {
   TextView res;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_result);
      res = findViewById(R.id.result);
      Intent intt = getIntent();
      String r_name = intt.getStringExtra("NAME");
      String r_aadhar = intt.getStringExtra("AADHAR");
      int age = intt.getIntExtra("AGE",0);
      if(age>=18)
         res.setText("Name: "+r_name+"\nAadhar Number: "+r_aadhar+"\n You are eligible to vote");
      else
         res.setText("Name: "+r_name+"\nAadhar Number: "+r_aadhar+"\n You are not eligible to
vote");
   }
}
```

Output:



Experiment – 6

Aim: Design an application to order the cake by selecting the date and time and display the order details in another activity.

acitivity_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/header"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Cake Bakery"
      android:textSize="34sp"
      android:textStyle="bold"
      app:layout_constraintBottom_toTopOf="@+id/cakeBox"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent" />

   <TextView
      android:id="@+id/itemLbl"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_marginTop="76dp"
      android:text="Cake Flavour"
      android:textStyle="bold"
      app:layout_constraintEnd_toStartOf="@+id/cakeBox"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toBottomOf="@+id/header" />

   <Spinner
      android:id="@+id/cakeBox"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:minHeight="48dp"
      app:layout_constraintTop_toBottomOf="@+id/header"
      app:layout_constraintBottom_toTopOf="@+id/cakeImage"
      app:layout_constraintStart_toEndOf="@+id/itemLbl"
      app:layout_constraintEnd_toEndOf="parent" />

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

```
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Date of Delivery"
    android:textStyle="bold"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toStartOf="@+id/cakeImage"
    app:layout_constraintTop_toBottomOf="@+id/itemLbl"
    app:layout_constraintBottom_toTopOf="@+id/timeLbl" />

<ImageView
    android:id="@+id/cakeImage"
    android:layout_width="157dp"
    android:layout_height="152dp"
    app:srcCompat="@drawable/download"
    android:onClick="selectDate"
    app:layout_constraintBottom_toTopOf="@+id/timeImage"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toEndOf="@+id/dateLbl"
    app:layout_constraintTop_toBottomOf="@+id/cakeBox" />

<TextView
    android:id="@+id/timeLbl"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Time of Delivery"
    android:textStyle="bold"
    app:layout_constraintBottom_toTopOf="@+id/orderBtn"
    app:layout_constraintEnd_toStartOf="@id/timeImage"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/dateLbl"
    android:contentDescription="@null"/>

<ImageView
    android:id="@+id/timeImage"
    android:layout_width="192dp"
    android:layout_height="102dp"
    android:onClick="selectTime"
    app:layout_constraintBottom_toTopOf="@+id/orderBtn"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toEndOf="@+id/timeLbl"
    app:layout_constraintTop_toBottomOf="@+id/cakeImage"
    app:srcCompat="@drawable/_90436_time" />

<Button
    android:id="@+id/orderBtn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Place Order"
    android:onClick="placeOrder"
    app:layout_constraintStart_toStartOf="parent"
```

```
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/timeImage"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java:

```
package com.example.cakedelapptp;

import androidx.appcompat.app.AppCompatActivity;

import android.app.DatePickerDialog;
import android.app.TimePickerDialog;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.DatePicker;
import android.widget.Spinner;
import android.widget.TimePicker;

import java.util.Calendar;

public class MainActivity extends AppCompatActivity {
   Spinner cakeitem;
   String[] cakes = {"Vanilla","Red Velvet","Choclate","Strawberry","Butterscotch"};
   String c_flavour,datedel,timedel;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      cakeitem = findViewById(R.id.cakeBox);
      ArrayAdapter adapter = new ArrayAdapter(this, android.R.layout.simple_spinner_item,cakes);
      adapter.setDropDownViewResource(android.R.layout.simple_spinner_dropdown_item);
      cakeitem.setAdapter(adapter);
      cakeitem.setOnItemSelectedListener(new AdapterView.OnItemSelectedListener() {
         @Override
         public void onItemSelected(AdapterView<?> parent, View view, int position, long id) {
            c_flavour = parent.getItemAtPosition(position).toString();
         }

         @Override
         public void onNothingSelected(AdapterView<?> parent) {

         }
      });
   }
   public void selectDate(View v){
      Calendar c = Calendar.getInstance();
```

```
        int pYear = c.get(Calendar.YEAR);
        int pMonth = c.get(Calendar.MONTH);
        int pDate = c.get(Calendar.DATE);
        DatePickerDialog dialog = new DatePickerDialog(this,
android.R.style.Theme_DeviceDefault_DialogWhenLarge, new DatePickerDialog.OnDateSetListener()
{
            @Override
            public void onDateSet(DatePicker view, int year, int month, int dayOfMonth) {
               datedel = dayOfMonth+"/"+(month+1)+"/"+year;
            }
        },pYear,pMonth,pDate);
        dialog.show();
    }
    public void selectTime(View v){
        Calendar c1 = Calendar.getInstance();
        int pHour = c1.get(Calendar.HOUR);
        int pMinute = c1.get(Calendar.MINUTE);
        TimePickerDialog tdialog = new TimePickerDialog(this,
android.R.style.Theme_DeviceDefault_DialogWhenLarge, new
TimePickerDialog.OnTimeSetListener() {
            @Override
            public void onTimeSet(TimePicker view, int hourOfDay, int minute) {
               timedel = hourOfDay+":"+minute;
            }
        },pHour,pMinute,false);
        tdialog.show();
    }
    public void placeOrder(View v) {
        Intent in = new Intent(getApplicationContext(), OrderActivity.class);
        in.putExtra("ITEM",c_flavour);
        in.putExtra("DATE",datedel);
        in.putExtra("TIME",timedel);
        startActivity(in);
    }
}
```

Activity_order.xml:

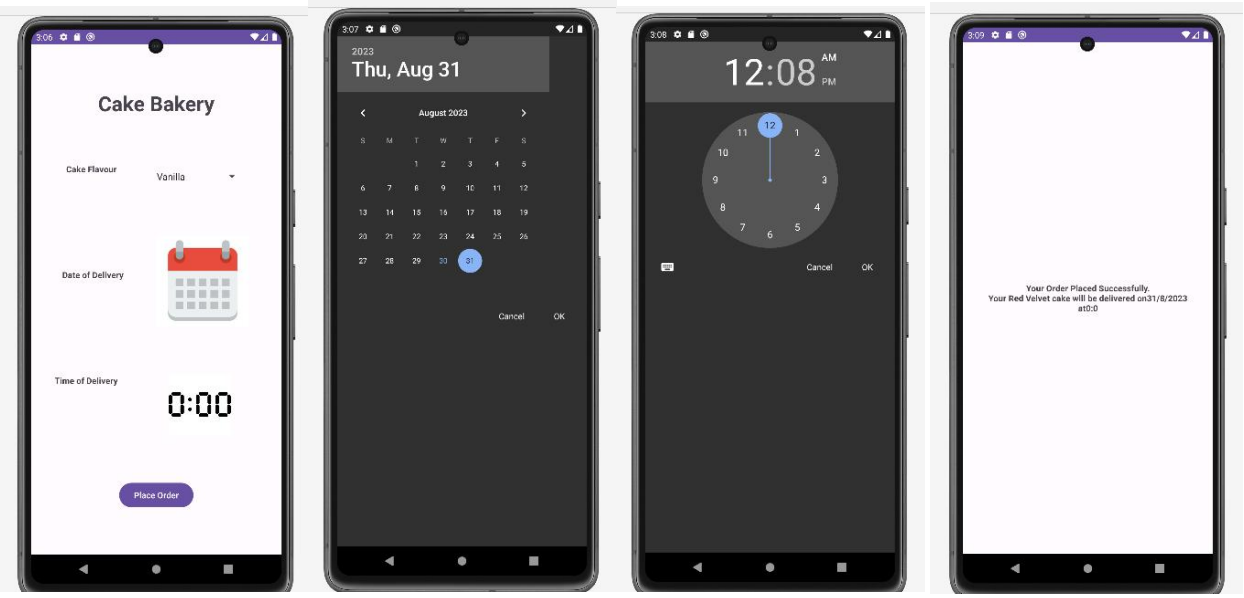
```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
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

    <TextView
        android:id="@+id/result"
        android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
        android:gravity="center_horizontal"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

OrderActivity.java:

```
package com.example.cakedelapptp;

import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;
import android.content.Intent;
import android.os.Bundle;
import android.widget.TextView;

public class OrderActivity extends AppCompatActivity {
    TextView res;
    @SuppressLint("MissingInflatedId")
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_order);
        res = findViewById(R.id.result);
        Intent intt = getIntent();
        String cakeFlavour = intt.getStringExtra("ITEM");
        String dated = intt.getStringExtra("DATE");
        String timed = intt.getStringExtra("TIME");
        res.setText("Your Order Placed Successfully."+"\nYour "+cakeFlavour+" cake will be delivered
on"+dated+"\nat"+timed);
    }
}
```

Output:


Cake Bakery
Cake Flavour
Vanilla
Date of Delivery
Time of Delivery
0:00
Place Order
2023
Thu, Aug 31
August 2023
Cancel
OK
12:08
AM
PM
Cancel
OK
Your Order Placed Successfully.
Your Red Velvet cake will be delivered on31/8/2023
at0:0

Experiment – 7

Aim: Design an application to provide the nutrition details of burger and pizza by using fragments.

acitivity_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">

   <ImageView
      android:id="@+id/burgerBtn"
      android:layout_width="180dp"
      android:layout_height="205dp"
      app:srcCompat="@drawable/photo_1571091718767_18b5b1457add"
      android:onClick="changeFragment"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent"
      app:layout_constraintEnd_toStartOf="@+id/pizzaBtn"
      app:layout_constraintBottom_toTopOf="@+id/fragmentPortion"/>

   <ImageView
      android:id="@+id/pizzaBtn"
      android:layout_width="179dp"
      android:layout_height="184dp"
      app:srcCompat="@drawable/pizza_recipe_1"
      android:onClick="changeFragment"
      app:layout_constraintStart_toEndOf="@+id/burgerBtn"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintTop_toTopOf="parent"
      app:layout_constraintBottom_toTopOf="@+id/fragmentPortion"/>

   <androidx.fragment.app.FragmentContainerView
      android:id="@+id/fragmentPortion"
      android:name="com.example.fragmentsexample.BlankFragment"
      android:layout_width="375dp"
      android:layout_height="375dp"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintBottom_toBottomOf="parent"
      app:layout_constraintTop_toBottomOf="@+id/burgerBtn"/>

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

MainActivity.java:

```
package com.example.fragmentsexample;

import androidx.appcompat.app.AppCompatActivity;
import androidx.fragment.app.Fragment;
import androidx.fragment.app.FragmentManager;
import androidx.fragment.app.FragmentTransaction;

import android.os.Bundle;
import android.view.View;

public class MainActivity extends AppCompatActivity {

   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
   }
   public void changeFragment(View v){
      Fragment frag;
      FragmentManager fm = getSupportFragmentManager();
      FragmentTransaction ft = fm.beginTransaction();
      if(v==findViewById(R.id.burgerBtn)){
         frag = new BlankFragment();
         ft.replace(R.id.fragmentPortion,frag);
         ft.commit();
      }
      if(v==findViewById(R.id.pizzaBtn)){
         frag = new BlankFragment2();
         ft.replace(R.id.fragmentPortion,frag);
         ft.commit();
      }
   }
}
```

fragment_blank.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:background="#BF9000"
   tools:context=".BlankFragment">

   <!-- TODO: Update blank fragment layout -->
   <TextView
      android:layout_width="match_parent"
      android:layout_height="match_parent"
```

```
        android:textSize="24dp"
        android:textStyle="bold"
        android:textAlignment="center"
        android:textColor="#990000"
        android:text = "Burger Details\nCalories:354\nFat:18g\nProtein:22g"
        android:gravity="center_vertical"
        tools:ignore="RtlCompat" />

</FrameLayout>
```

BlankFragment.java:

```
package com.example.fragmentsexample;

import android.os.Bundle;

import androidx.fragment.app.Fragment;

import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;

/**
 * A simple {@link Fragment} subclass.
 * Use the {@link BlankFragment#newInstance} factory method to
 * create an instance of this fragment.
 */
public class BlankFragment extends Fragment {

    // TODO: Rename parameter arguments, choose names that match
    // the fragment initialization parameters, e.g. ARG_ITEM_NUMBER
    private static final String ARG_PARAM1 = "param1";
    private static final String ARG_PARAM2 = "param2";

    // TODO: Rename and change types of parameters
    private String mParam1;
    private String mParam2;

    public BlankFragment() {
        // Required empty public constructor
    }

    /**
     * Use this factory method to create a new instance of
     * this fragment using the provided parameters.
     *
     * @param param1 Parameter 1.
     * @param param2 Parameter 2.
     * @return A new instance of fragment BlankFragment.
     */
```

```
    // TODO: Rename and change types and number of parameters
    public static BlankFragment newInstance(String param1, String param2) {
        BlankFragment fragment = new BlankFragment();
        Bundle args = new Bundle();
        args.putString(ARG_PARAM1, param1);
        args.putString(ARG_PARAM2, param2);
        fragment.setArguments(args);
        return fragment;
    }

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        if (getArguments() != null) {
            mParam1 = getArguments().getString(ARG_PARAM1);
            mParam2 = getArguments().getString(ARG_PARAM2);
        }
    }

    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container,
                             Bundle savedInstanceState) {
        // Inflate the layout for this fragment
        return inflater.inflate(R.layout.fragment_blank, container, false);
    }
}
```

fragment_blank2.xml:

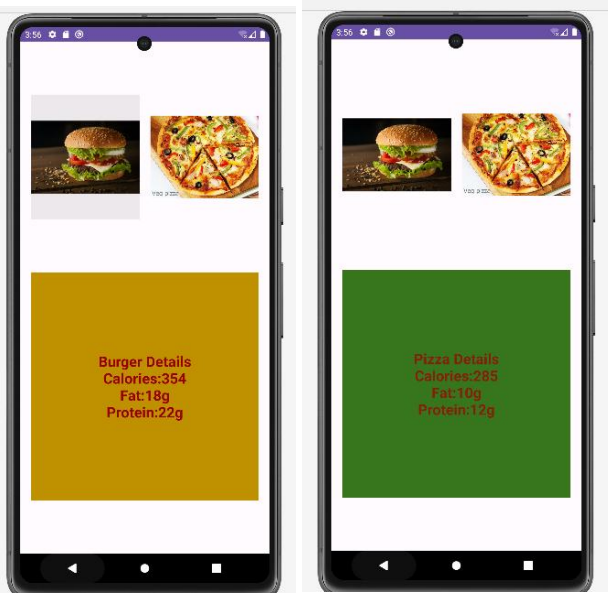
```
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#38761d"
    tools:context=".BlankFragment2">

    <!-- TODO: Update blank fragment layout -->
    <TextView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:textSize="24dp"
        android:textStyle="bold"
        android:textAlignment="center"
        android:textColor="#85200c"
        android:text = "Pizza Details\nCalories:285\nFat:10g\nProtein:12g"
        android:gravity="center_vertical"
        tools:ignore="RtlCompat" />

</FrameLayout>
```

BlankFragment2.xml:

```
package com.example.fragmentsexample;

import android.os.Bundle;

import androidx.fragment.app.Fragment;

import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;

/**
 * A simple {@link Fragment} subclass.
 * Use the {@link BlankFragment2#newInstance} factory method to
 * create an instance of this fragment.
 */
public class BlankFragment2 extends Fragment {

    // TODO: Rename parameter arguments, choose names that match
    // the fragment initialization parameters, e.g. ARG_ITEM_NUMBER
    private static final String ARG_PARAM1 = "param1";
    private static final String ARG_PARAM2 = "param2";

    // TODO: Rename and change types of parameters
    private String mParam1;
    private String mParam2;

    public BlankFragment2() {
        // Required empty public constructor
    }

    /**
     * Use this factory method to create a new instance of
     * this fragment using the provided parameters.
     *
     * @param param1 Parameter 1.
     * @param param2 Parameter 2.
     * @return A new instance of fragment BlankFragment2.
     */
    // TODO: Rename and change types and number of parameters
    public static BlankFragment2 newInstance(String param1, String param2) {
        BlankFragment2 fragment = new BlankFragment2();
        Bundle args = new Bundle();
        args.putString(ARG_PARAM1, param1);
        args.putString(ARG_PARAM2, param2);
        fragment.setArguments(args);
        return fragment;
    }
```

```
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        if (getArguments() != null) {
            mParam1 = getArguments().getString(ARG_PARAM1);
            mParam2 = getArguments().getString(ARG_PARAM2);
        }
    }

    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container,
                             Bundle savedInstanceState) {
        // Inflate the layout for this fragment
        return inflater.inflate(R.layout.fragment_blank2, container, false);
    }
}
```

Output:



Experiment – 8

Aim: Design an application to provide the student details with section number using fragments.

acitivity_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">

   <ListView
      android:id="@+id/studentList"
      android:layout_width="175dp"
      android:layout_height="match_parent"
      app:layout_constraintTop_toTopOf="parent"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintEnd_toStartOf="@+id/fragmentPortion"
      app:layout_constraintBottom_toBottomOf="parent"/>

   <androidx.fragment.app.FragmentContainerView
      android:id="@+id/fragmentPortion"
      android:name="com.example.studentdetailsfragments.DetailsFragment"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      app:layout_constraintBottom_toBottomOf="parent"
      app:layout_constraintStart_toEndOf="@+id/studentList"
      app:layout_constraintTop_toTopOf="parent"
      app:layout_constraintEnd_toEndOf="parent"/>

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

MainActivity.java:

```
package com.example.studentdetailsfragments;

import androidx.appcompat.app.AppCompatActivity;

import android.app.Fragment;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.ListView;

public class MainActivity extends AppCompatActivity {
```

```
    ListView list;
    String Stu[] = {"ABC","DEF","GHI","JKL"};

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        list = findViewById(R.id.studentList);
        ArrayAdapter adapter = new ArrayAdapter(this, android.R.layout.simple_list_item_1,Stu);
        list.setAdapter(adapter);
        list.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            @Override
            public void onItemClick(AdapterView<?> parent, View view, int position, long id) {
                DetailsFragment frag = (DetailsFragment)
getSupportFragmentManager().findFragmentById(R.id.fragmentPortion);
                frag.change(position);
            }
        });
    }
}
```

fragment_details.xml:

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

    <!-- TODO: Update blank fragment layout -->
    <TextView
        android:id="@+id/result"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:textAlignment="center"
        android:gravity="center_vertical"
        android:text="Name: \nSection Number:"
        android:textStyle="bold"
        android:textSize="18dp"
        tools:ignore="RtlCompat" />

</FrameLayout>
```

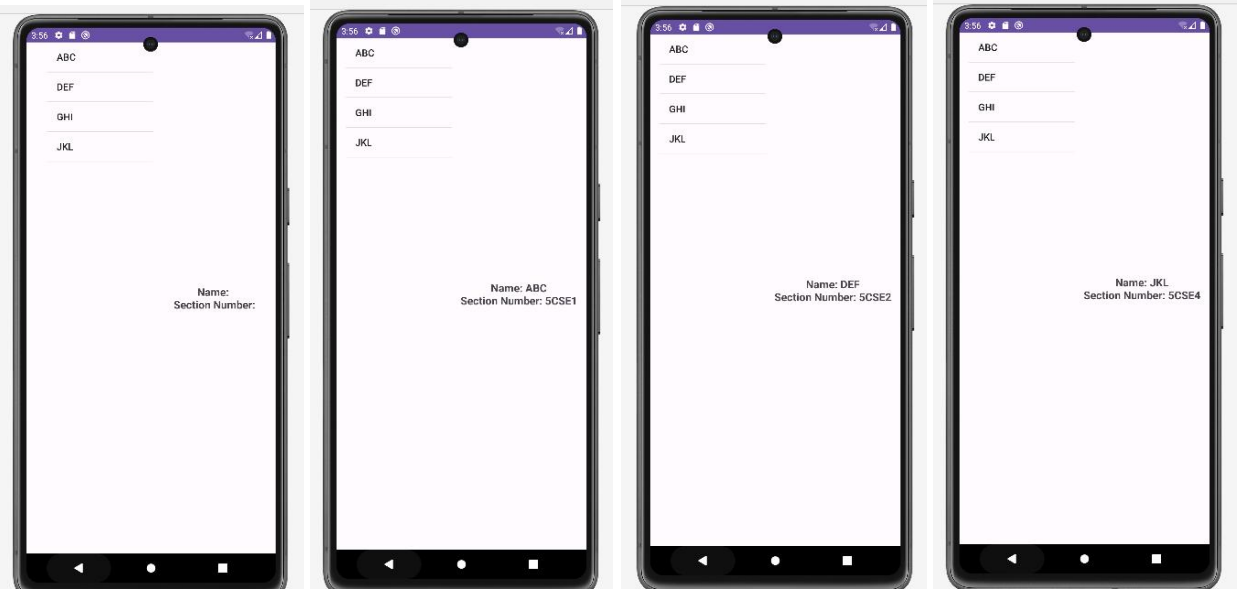
DetailsFragment.java:

```
package com.example.studentdetailsfragments;

import android.os.Bundle;
```

```
import androidx.fragment.app.Fragment;

import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.TextView;

/**
 * A simple {@link Fragment} subclass.
 * Use the {@link DetailsFragment#newInstance} factory method to
 * create an instance of this fragment.
 */
public class DetailsFragment extends Fragment {

    // TODO: Rename parameter arguments, choose names that match
    // the fragment initialization parameters, e.g. ARG_ITEM_NUMBER
    private static final String ARG_PARAM1 = "param1";
    private static final String ARG_PARAM2 = "param2";

    // TODO: Rename and change types of parameters
    private String mParam1;
    private String mParam2;
    String Users[] = {"ABC","DEF","GHI","JKL"};
    String Section[] = {"5CSE1","5CSE2","5CSE3","5CSE4"};
    TextView res;

    public DetailsFragment() {
        // Required empty public constructor
    }

    /**
     * Use this factory method to create a new instance of
     * this fragment using the provided parameters.
     *
     * @param param1 Parameter 1.
     * @param param2 Parameter 2.
     * @return A new instance of fragment DetailsFragment.
     */
    // TODO: Rename and change types and number of parameters
    public static DetailsFragment newInstance(String param1, String param2) {
        DetailsFragment fragment = new DetailsFragment();
        Bundle args = new Bundle();
        args.putString(ARG_PARAM1, param1);
        args.putString(ARG_PARAM2, param2);
        fragment.setArguments(args);
        return fragment;
    }

    @Override
    public void onCreate(Bundle savedInstanceState) {
```

```
        super.onCreate(savedInstanceState);
        if (getArguments() != null) {
            mParam1 = getArguments().getString(ARG_PARAM1);
            mParam2 = getArguments().getString(ARG_PARAM2);
        }

    }

    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container,
                             Bundle savedInstanceState) {
        // Inflate the layout for this fragment
        View view = inflater.inflate(R.layout.fragment_details, container, false);
        res = view.findViewById(R.id.result);
        return view;
    }
    public void change(int position){
        res.setText("Name: "+Users[position]+"\nSection Number: "+Section[position]);
    }
}
```

Output:



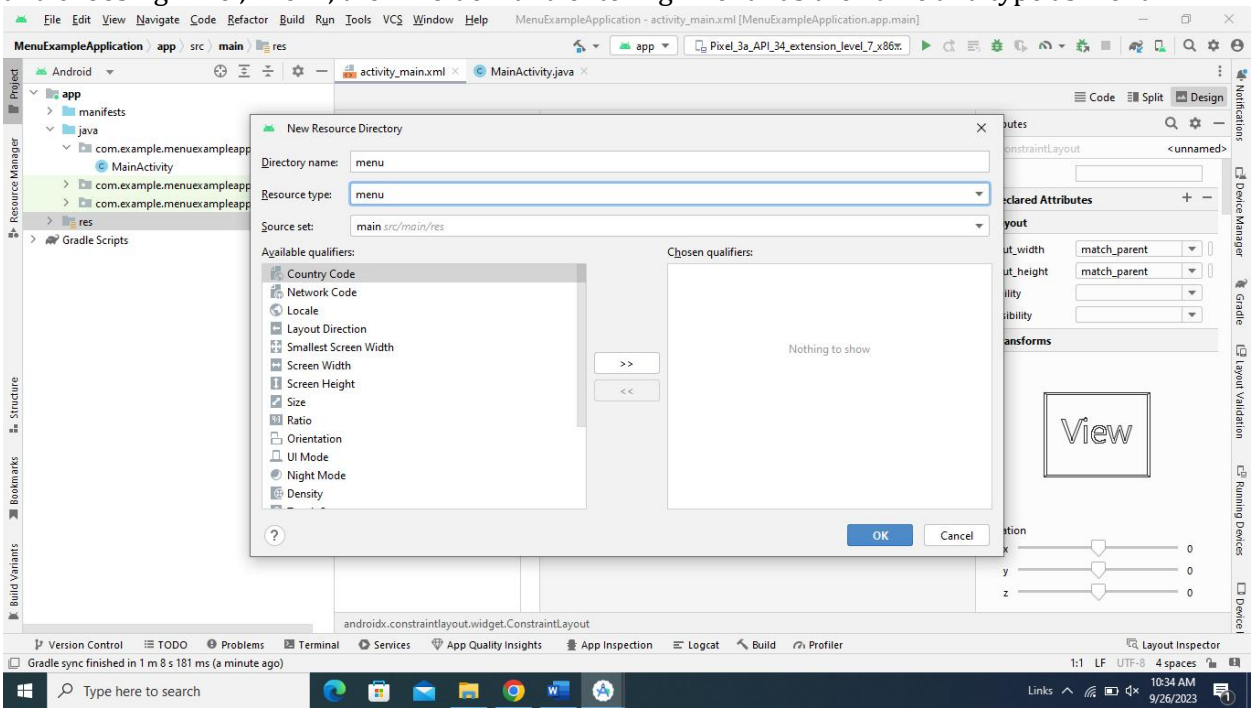
Experiment – 9

Aim: Design an application to create an options menu for the android activity.

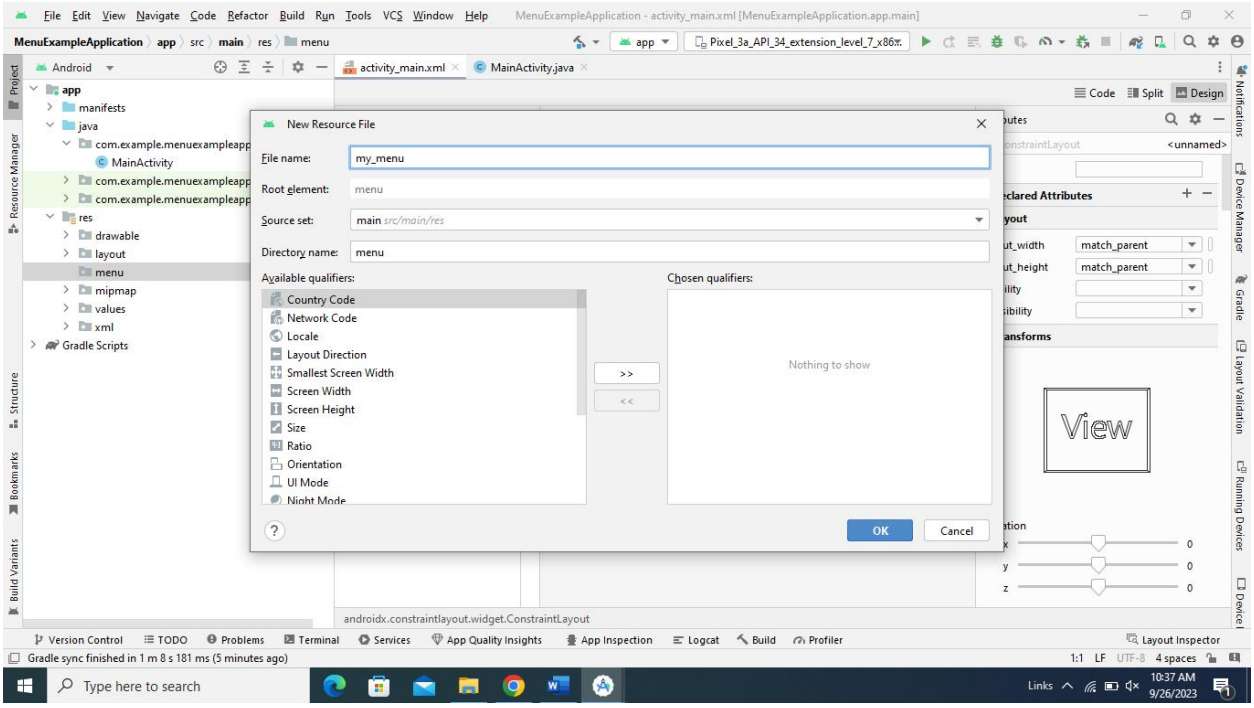
Solution:

Step 1: Change an element in <application> attribute in AndroidManifest.xml:
android:theme="@style/Theme.AppCompat.Light.NoActionBar"

Step 2: Create a resource directory
To create a menu, you need to create menu folder so create one inside the “res” folder by selecting it and choosing “File”, “New”, then “Folder” and entering “menu” as the name and type as menu.



Step 3: create a menu XML file:
Choose the “menu” folder and create a new file by selecting “Menu Resource File”, “New”, then “File” and entering a name. You can choose any filename you like, for example “my_menu.xml”.



Step 4: my_menu.xml:

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

   <item
      android:id="@+id/search"
      android:icon="@android:drawable/ic_menu_search"
      android:title="Search"
      app:showAsAction="always" />
   <item
      android:id="@+id/settings"
      android:title="Settings"
      app:showAsAction="never" />
   <item
      android:id="@+id/deleteid"
      android:title="Delete"
      app:showAsAction="never" />
</menu>
```

Step 5: 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">
```

```
    <androidx.appcompat.widget.Toolbar
        android:id="@+id/my_toolbar"
        android:layout_width="match_parent"
        android:layout_height="?attr/actionBarSize"
        android:background="?attr/colorPrimary"
        android:elevation="4dp"
        android:theme="@style/ThemeOverlay.AppCompat.ActionBar"
        app:layout_constraintBottom_toTopOf="@+id/textView"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="1.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.0"
        app:popupTheme="@style/ThemeOverlay.AppCompat.Light" />

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

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

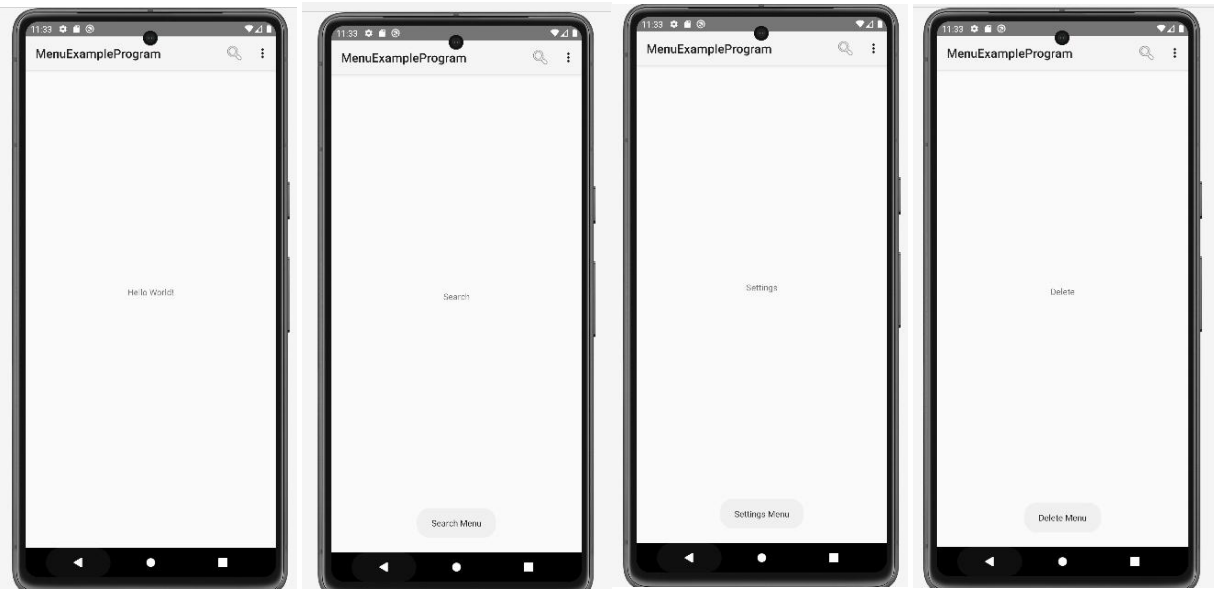
Step 6: MainActivity.java:

```
package com.example.menuexampleprogram;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuInflater;
import android.view.MenuItem;
import android.widget.TextView;
import android.widget.Toast;
import androidx.appcompat.widget.Toolbar;

public class MainActivity extends AppCompatActivity {
    TextView res;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        res = findViewById(R.id.textView);
        Toolbar myToolBar = findViewById(R.id.my_toolbar);
```

Make sure that androidx.appcompat.widget.Toolbar package imported to java code.

```
        setSupportActionBar(myToolBar);
    }
    @Override
    public boolean onCreateOptionsMenu(Menu menu){
        MenuInflater inflater = getMenuInflater();
        inflater.inflate(R.menu.my_menu,menu);
        return true;
    }
    @Override
    public boolean onOptionsItemSelected(MenuItem item){
        if(item.getItemId()==R.id.search){
            res.setText("Search");
            Toast.makeText(this, "Search Menu", Toast.LENGTH_SHORT).show();
            return true;
        } else if (item.getItemId()==R.id.settings) {
            res.setText("Settings");
            Toast.makeText(this, "Settings Menu", Toast.LENGTH_SHORT).show();
            return true;
        } else if (item.getItemId()==R.id.deleteid) {
            res.setText("Delete");
            Toast.makeText(this, "Delete Menu", Toast.LENGTH_SHORT).show();
            return true;
        }
        else
            return super.onOptionsItemSelected(item);
    }
}
```

Output:



Experiment – 10

Aim: Design an application to run music in the background while using other application.

Solution:

Step 1: Create a MyService java file:

Choose the "app" folder and create a new file by selecting "New", then "Service" and entering a name. You can choose any filename you like, for example "MyService.java".

Step 2: Create a resource directory

To create a menu, you need to create raw folder so create one inside the "raw" folder by selecting it and choosing "File", "New", then "Folder" and entering "raw" as the name and type as raw.

Step 3: Add an audio file:

Add the audio file under "raw" directory.

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">

   <ImageView
      android:id="@+id/playerImage"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      app:srcCompat="@drawable/download__1_"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintTop_toTopOf="parent"
      app:layout_constraintBottom_toTopOf="@+id/playBtn"/>

   <ImageView
      android:id="@+id/playBtn"
      android:layout_width="108dp"
      android:layout_height="95dp"
      app:srcCompat="@drawable/download_play"
      android:onClick="changePlay"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintEnd_toStartOf="@+id/stopBtn"
      app:layout_constraintBottom_toBottomOf="parent"
      app:layout_constraintTop_toBottomOf="@+id/playerImage"/>

   <ImageView
      android:id="@+id/stopBtn"
      android:layout_width="103dp"
      android:layout_height="99dp"
```

```
        app:srcCompat="@drawable/download_stop"
        android:onClick="changePlay"
        app:layout_constraintStart_toEndOf="@+id/playBtn"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/playerImage"
        app:layout_constraintBottom_toBottomOf="parent"/>

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

MainActivity.java:

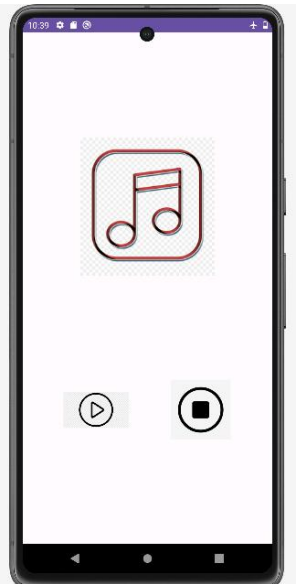
```
package com.example.musicplayerservices;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    public void changePlay(View view){
        if(view == findViewById(R.id.playBtn)){
            startService(new Intent(this,MyService.class));
        }
        else if(view==findViewById(R.id.stopBtn)){
            stopService(new Intent(this,MyService.class));
        }
    }
}
```

MyService.java:

```
package com.example.musicplayerservices;

import android.app.Service;
import android.content.Intent;
import android.media.MediaPlayer;
import android.os.IBinder;
import android.provider.Settings;

public class MyService extends Service {

    MediaPlayer mp;

    @Override
    public IBinder onBind(Intent intent) {
```

```
        return null;
    }
    public int onStartCommand(Intent intent, int flags, int startId) {
        mp = MediaPlayer.create(this,R.raw.ringtone);
        mp.setLooping(true);
        mp.start();
        return START_STICKY;
    }
    public void onDestroy(){
        super.onDestroy();
        mp.stop();
    }

}
```

Output:



Experiment – 11

Aim: Design an application to check the airplane mode is enabled or not using broadcast receivers.

Solution:

Create a AeroplaneModeChangedEx java file:

Choose the "app" folder and create a new java file by selecting "New", then "Java Class" and entering a name. You can choose any filename you like, for example "AeroplaneModeChangedEx.java".

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="Airplane Mode Disabled"
      android:textStyle="bold"
      android:textColor="#00FF00"
      android:textAlignment="center"
      android:textSize="50dp"
      app:layout_constraintBottom_toBottomOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent"
      android:gravity="center_horizontal" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java:

```
package com.example.airplanemodechangedbr;

import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;
import android.content.Intent;
import android.content.IntentFilter;
import android.os.Bundle;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {
   AeroplaneModeChangedEx receiver;
```

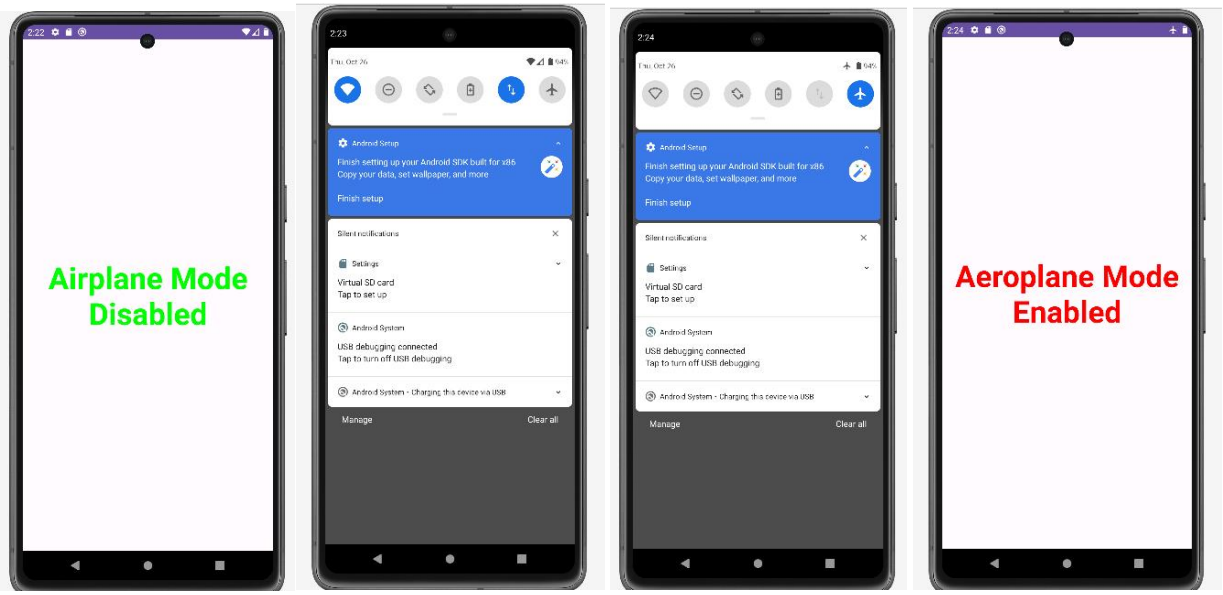
```
    TextView text;
    @SuppressLint("MissingInflatedId")
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        text = findViewById(R.id.textView);
    }

    @Override
    protected void onStart() {
        super.onStart();
        receiver = new AeroplaneModeChangedEx(text);
        registerReceiver(receiver,new IntentFilter(Intent.ACTION_AIRPLANE_MODE_CHANGED));
    }

    @Override
    protected void onStop() {
        super.onStop();
        unregisterReceiver(receiver);
    }
}
```

AeroplaneModeChangedEx.java:

```
package com.example.airplanemodechangedbr;

import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.graphics.Color;
import android.widget.TextView;

public class AeroplaneModeChangedEx extends BroadcastReceiver {
    TextView tview;
    AeroplaneModeChangedEx(TextView tv){
        tview = tv;
    }
    @Override
    public void onReceive(Context context, Intent intent) {
      Boolean isAirplaneModeEnabled = intent.getBooleanExtra("state",false);
      if(isAirplaneModeEnabled){
          tview.setText("Aeroplane Mode Enabled");
          tview.setTextColor(Color.parseColor("#FF0000"));
      }
      else {
          tview.setText("Aeroplane Mode Disabled");
          tview.setTextColor(Color.parseColor("#00FF00"));
      }
    }
```

}

Output:



Experiment – 12

Aim: Design an application to monitor the battery level using broadcast receivers.

Solution:

Create a BatteryReceiver java file:

Choose the "app" folder and create a new java file by selecting "New", then "Java Class" and entering a name. You can choose any filename you like, for example "BatteryReceiver.java".

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/batteryText"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:textSize="50dp"
      android:textStyle="bold"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintTop_toBottomOf="@+id/checkBtn"
      app:layout_constraintBottom_toTopOf="@+id/progressBar"/>

   <Button
      android:id="@+id/checkBtn"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Check Battery Percentage"
      android:onClick="checkBatteryPercentage"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintTop_toTopOf="parent"
      app:layout_constraintBottom_toTopOf="@+id/batteryText"/>

   <ProgressBar
      android:id="@+id/progressBar"
      style="?android:attr/progressBarStyleHorizontal"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:minHeight="100dp"
      android:minWidth="200dp"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintTop_toBottomOf="@+id/batteryText"
```

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

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

MainActivity.java:

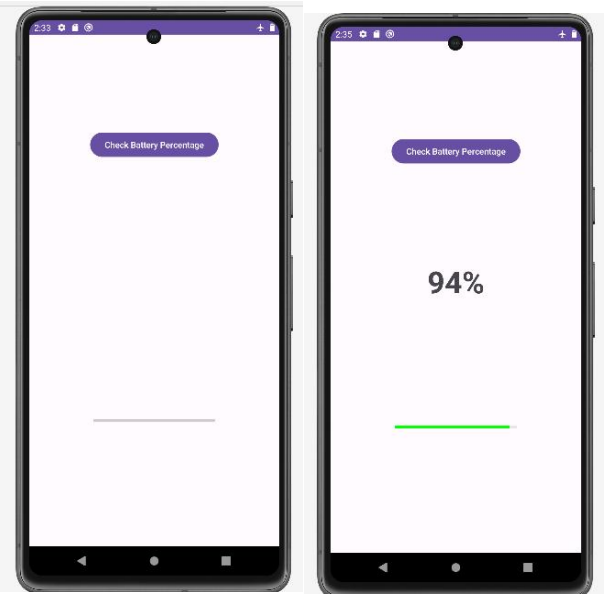
```
package com.example.broadcastrecieverex;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.content.IntentFilter;
import android.os.Bundle;
import android.view.View;
import android.widget.ProgressBar;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {
   TextView tv;
   ProgressBar progress;
   BatteryReceiver BR;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      tv = findViewById(R.id.batteryText);
      progress = findViewById(R.id.progressBar);

   }
   public void checkBatteryPercentage(View view){
      BR = new BatteryReceiver(tv,progress);
      registerReceiver(BR,new IntentFilter(Intent.ACTION_BATTERY_CHANGED));
   }

   @Override
   protected void onStop() {
      super.onStop();
      unregisterReceiver(BR);
   }
}
```

BatteryReceiver.java:

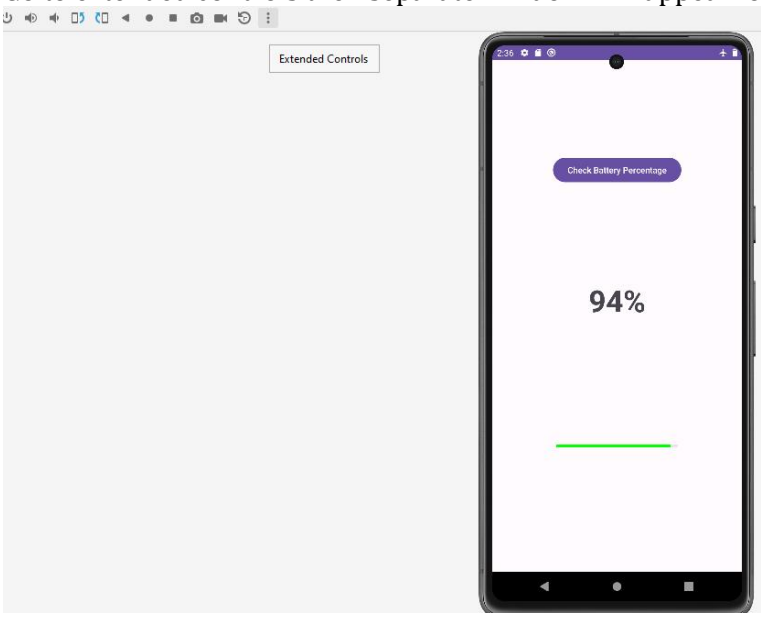
```
package com.example.broadcastrecieverex;

import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.content.res.ColorStateList;
import android.graphics.Color;
```

```
import android.os.Build;
import android.widget.ProgressBar;
import android.widget.TextView;

import androidx.annotation.RequiresApi;

public class BatteryReceiver extends BroadcastReceiver {
   TextView tview;
   ProgressBar prg;
   BatteryReceiver(TextView tv, ProgressBar progressBar){
      tview = tv;
      prg = progressBar;
   }
   @RequiresApi(api = Build.VERSION_CODES.LOLLIPOP)
   @Override
   public void onReceive(Context context, Intent intent) {
      int per = intent.getIntExtra("level",0);
      if(per>=50) {
         tview.setText(per + "%");
         prg.setProgress(per);
         prg.setProgressTintList(ColorStateList.valueOf(Color.GREEN));
      }
      else if(per<50 && per>=20){
         tview.setText(per + "%");
         prg.setProgress(per);
         prg.setProgressTintList(ColorStateList.valueOf(Color.YELLOW));
      } else if (per<20 && per>0) {
         tview.setText(per + "%");
         prg.setProgress(per);
         prg.setProgressTintList(ColorStateList.valueOf(Color.RED));
      }
   }
}
```

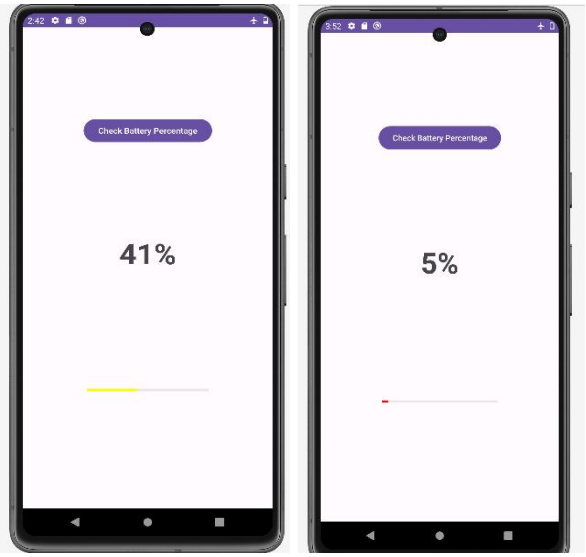
Output:



Go to extended controls then separate window will appear for the controls



Change the Battery level


2:42
Check Battery Percentage
41%
9:52
Check Battery Percentage
5%

Experiment – 13

Aim: Design an application to store the student details using SQLite Database

Solution:

Create a MyDBHandler java file:

Choose the "Java" folder and create a new java file by selecting "New", then "Java Class" and entering a name. You can choose any filename you like, for example "MyDBHandler.java".

activity_main.xml:

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

   <EditText
      android:id="@+id/nameBox"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:ems="10"
      android:hint="Enter Student Name"
      android:inputType="text"
      android:minHeight="48dp"
      app:layout_constraintStart_toEndOf="@+id/nameLbl"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintTop_toBottomOf="@+id/Header"
      app:layout_constraintBottom_toTopOf="@+id/idBox"/>

   <TextView
      android:id="@+id/Header"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Students Database"
      android:textSize="24sp"
      android:textStyle="bold"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintTop_toTopOf="parent"
      app:layout_constraintBottom_toTopOf="@+id/nameBox"/>

   <TextView
      android:id="@+id/nameLbl"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Student Name"
      android:textStyle="bold"
     app:layout_constraintStart_toStartOf="parent"
```

```
    app:layout_constraintEnd_toStartOf="@+id/nameBox"
    app:layout_constraintTop_toBottomOf="@+id/Header"
    app:layout_constraintBottom_toTopOf="@+id/idLbl"/>

  <TextView
    android:id="@+id/idLbl"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Student Id"
    android:textStyle="bold"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toStartOf="@+id/idBox"
    app:layout_constraintTop_toBottomOf="@+id/nameLbl"
    app:layout_constraintBottom_toTopOf="@+id/insertBtn"/>

  <EditText
    android:id="@+id/idBox"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:hint="Enter Student Id"
    android:inputType="text"
    android:minHeight="48dp"
    app:layout_constraintStart_toEndOf="@+id/idLbl"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/nameBox"
    app:layout_constraintBottom_toTopOf="@+id/deleteBtn"/>

  <Button
    android:id="@+id/insertBtn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="ADD"
    app:layout_constraintBottom_toTopOf="@+id/displayBtn"
    app:layout_constraintEnd_toStartOf="@+id/deleteBtn"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/idLbl" />

  <Button
    android:id="@+id/deleteBtn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginBottom="25dp"
    android:text="DELETE"
    app:layout_constraintBottom_toTopOf="@+id/displayBtn"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toEndOf="@+id/insertBtn"
    app:layout_constraintTop_toBottomOf="@+id/idBox" />

  <Button
```

```
        android:id="@+id/displayBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="DISPLAY ALL"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/deleteBtn"
        app:layout_constraintBottom_toTopOf="@+id/result"/>

    <TextView
        android:id="@+id/result"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/displayBtn"
        app:layout_constraintBottom_toBottomOf="parent"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java:

```
package com.example.dbproject;

import androidx.appcompat.app.AppCompatActivity;

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 AppCompatActivity {
    EditText eid,ename;
    Button ins,del,dis;
        TextView res;
    MyDBHandler db;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        eid = findViewById(R.id.idBox);
        ename = findViewById(R.id.nameBox);
        ins = findViewById(R.id.insertBtn);
        del = findViewById(R.id.deleteBtn);
        dis = findViewById(R.id.displayBtn);
        res = findViewById(R.id.result);
        db = new MyDBHandler(getApplicationContext(),"students",null,1);

        ins.setOnClickListener(new View.OnClickListener() {
            @Override
```

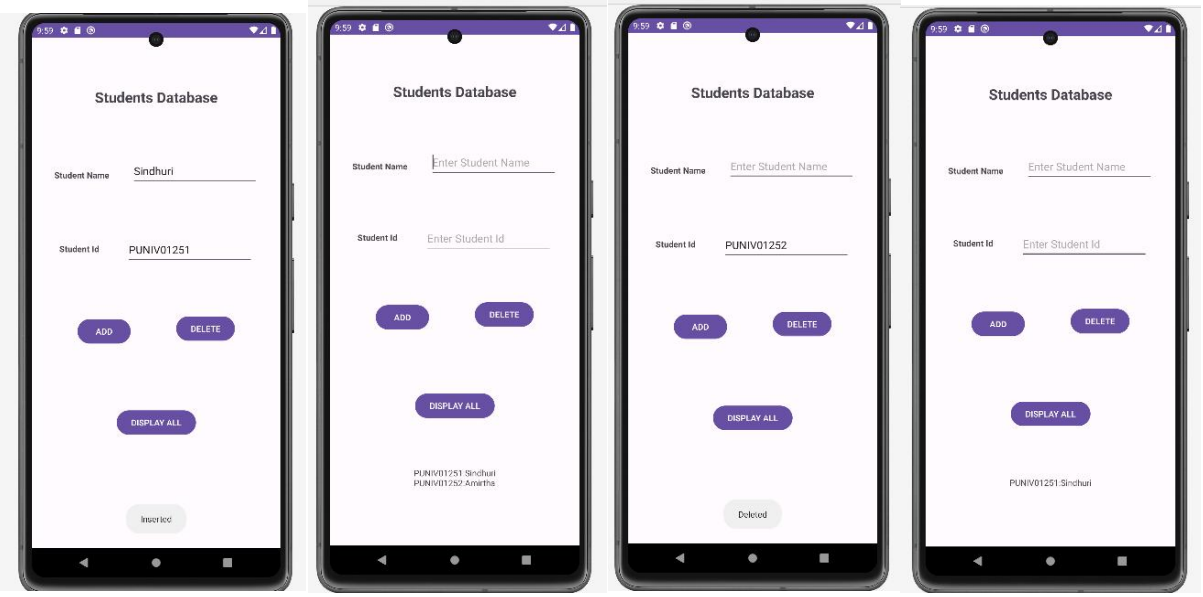
```
        public void onClick(View view) {
            String sid = eid.getText().toString();
            String sname = ename.getText().toString();
            db.insertRecord(sid,sname);
            Toast.makeText(getApplicationContext(),"Inserted",Toast.LENGTH_LONG).show();
        }
    });
    del.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            String sid = eid.getText().toString();
            db.deleteRecord(sid);
            Toast.makeText(getApplicationContext(),"Deleted",Toast.LENGTH_LONG).show();
        }
    });
    dis.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            String tabledata = db.displayRecord();
            res.setText(tabledata);
        }
    });

  }
}
```

MyDBHandler.java:

```
package com.example.dbproject;

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

public class MyDBHandler extends SQLiteOpenHelper {
  public MyDBHandler(@Nullable Context context, @Nullable String name, @Nullable
SQLiteDatabase.CursorFactory factory, int version) {
    super(context, name, factory, version);
  }
  @Override
  public void onCreate(SQLiteDatabase db) {
    db.execSQL("create table students (stuId varChar(10),stuname varChar(20))");
  }
  @Override
  public void onUpgrade(SQLiteDatabase sqLiteDatabase, int i, int i1) {

  }
 public void insertRecord(String sid,String sname){
```

```
        SQLiteDatabase db = this.getWritableDatabase();
        //One Way to insert the records using execSQL method
        db.execSQL("insert into students values (?,?)",new String[]{sid,sname});
        //Alternative Way to insert the records using insert() menthod and ContentValues Object
        /*ContentValues values = new ContentValues();
        values.put("stuId",sid);
        values.put("stuname",sname);
        db.insert("students",null,values);*/
        db.close();
    }
    public void deleteRecord(String sid){
        SQLiteDatabase db = this.getWritableDatabase();
        //One Way to delete the records using execSQL method
        //db.execSQL("delete from students where stuId=?",new String[]{sid});
        //Alternative Way to insert the records using delete() menthod
       db.delete("students","stuId=?",new String[]{sid});
    }
    public String displayRecord(){
        String tdata = "";
        SQLiteDatabase db = this.getReadableDatabase();
        Cursor cursor = db.rawQuery("select * from students",null);
        while (cursor.moveToNext()) {
            String i = cursor.getString(0);
            String n = cursor.getString(1);
            tdata += i+":"+n+"\n";
        }
        db.close();
        return tdata;
    }
}
```

Output:



Experiment – 14

Aim: Design an application to monitor the health conditions of a user and to notify the same.

Solution:

activity_main.xml:

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

   <EditText
      android:id="@+id/bpBox"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:ems="10"
      android:hint="Enter BP value"
      android:inputType="text"
      android:minHeight="48dp"
      app:layout_constraintStart_toEndOf="@+id/bpLbl"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintTop_toBottomOf="@+id/Header"
      app:layout_constraintBottom_toTopOf="@+id/tempBox"/>

   <TextView
      android:id="@+id/tempLbl"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="'Temperature"
      android:textStyle="bold"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintEnd_toStartOf="@+id/tempBox"
      app:layout_constraintTop_toBottomOf="@+id/bpLbl"
      app:layout_constraintBottom_toTopOf="@+id/submitBtn"/>

   <TextView
      android:id="@+id/bpLbl"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Blood Pressure"
      android:textStyle="bold"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintEnd_toStartOf="@+id/bpBox"
      app:layout_constraintTop_toBottomOf="@+id/Header"
      app:layout_constraintBottom_toTopOf="@+id/tempLbl"/>

   <EditText
```

```
    android:id="@+id/tempBox"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:hint="Enter Temperature Value"
    android:inputType="text"
    android:minHeight="48dp"
    app:layout_constraintStart_toEndOf="@+id/tempLbl"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/bpBox"
    app:layout_constraintBottom_toTopOf="@+id/submitBtn"/>

<Button
    android:id="@+id/submitBtn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Submit"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/tempBox"/>

<TextView
    android:id="@+id/Header"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Body Vital Details"
    android:textSize="24sp"
    android:textStyle="bold"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintBottom_toTopOf="@+id/bpBox"/>

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

MainActivity.java:

```
package com.example.healthmonitoringapp;

import androidx.annotation.RequiresApi;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.NotificationCompat;

import android.app.NotificationChannel;
import android.app.NotificationManager;
import android.app.PendingIntent;
import android.content.Intent;
import android.os.Build;
import android.os.Bundle;
import android.view.View;
```

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

public class MainActivity extends AppCompatActivity {
   EditText bp,temp;
   Button btn;
   Integer bp_int,temp_int;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      bp = findViewById(R.id.bpBox);
      temp = findViewById(R.id.tempBox);
      btn = findViewById(R.id.submitBtn);
      btn.setOnClickListener(new View.OnClickListener() {
         @RequiresApi(api = Build.VERSION_CODES.O)
         @Override
         public void onClick(View v) {
            bp_int = Integer.parseInt(bp.getText().toString());
            temp_int = Integer.parseInt(temp.getText().toString());
            String msg;
            int notificationId = 100;
            if((bp_int>=60&&bp_int<=100)||temp_int==98)
               msg = "Your Vitals are fine";
            else
               msg = "You need to consult doctor";
            String CHANNEL_ID = "my_ch";
            String CHANNEL_NAME = "my_channel";
            int importance = NotificationManager.IMPORTANCE_HIGH;
            NotificationChannel channel = new
NotificationChannel(CHANNEL_ID,CHANNEL_NAME,importance);
            NotificationManager manager = (NotificationManager)
getSystemService(NOTIFICATION_SERVICE);
            manager.createNotificationChannel(channel);
            Intent it = new Intent(MainActivity.this, NotificationResult.class);
            it.putExtra("Message",msg);
            it.addFlags(Intent.FLAG_ACTIVITY_SINGLE_TOP|Intent.FLAG_ACTIVITY_CLEAR_TOP);
            PendingIntent pintent =
PendingIntent.getActivity(MainActivity.this,0,it,PendingIntent.FLAG_UPDATE_CURRENT);
            NotificationCompat.Builder builder = new
NotificationCompat.Builder(MainActivity.this,CHANNEL_ID);
            builder.setSmallIcon(R.drawable.ic_launcher_background);
            builder.setContentIntent(pintent);
            builder.setContentTitle("Vital Conditions");
            builder.setContentText("BP: "+bp_int+" Temperature: "+temp_int);
            manager.notify(notificationId,builder.build());
         }
      });
   }
}
```

activity_notification_result.xml:

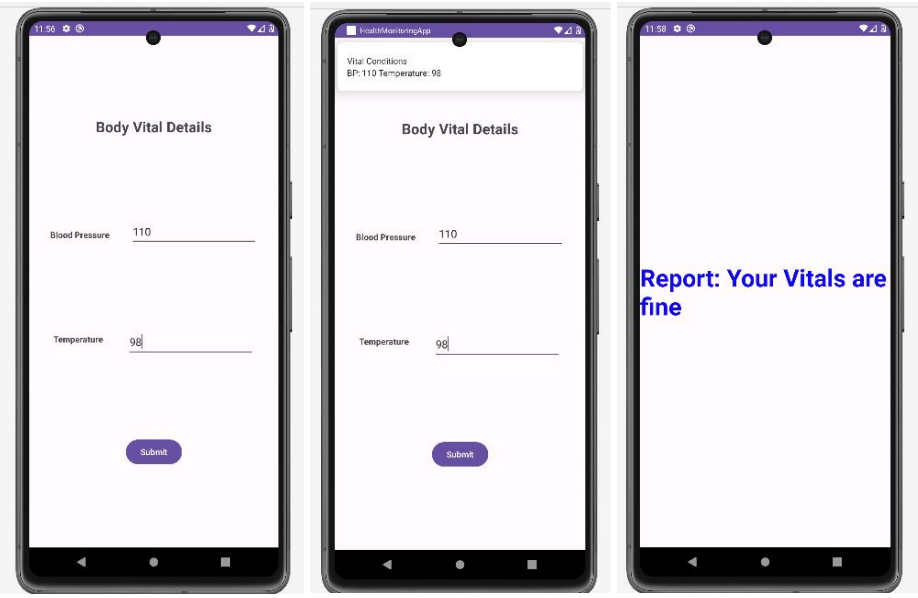
```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"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

   <TextView
      android:id="@+id/result"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:textStyle="bold"
      android:textSize="40dp"
      android:textColor="#0F08F0"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintTop_toTopOf="parent"
      app:layout_constraintBottom_toBottomOf="parent"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

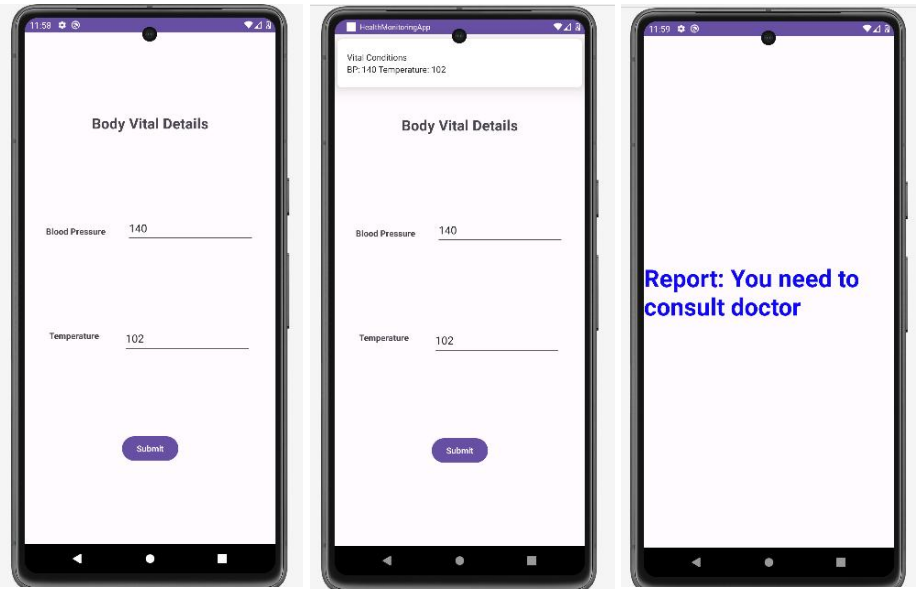
NotificationResult.java:

```
package com.example.healthmonitoringapp;

import androidx.appcompat.app.AppCompatActivity;

import android.app.NotificationManager;
import android.content.Intent;
import android.os.Bundle;
import android.widget.TextView;

public class NotificationResult extends AppCompatActivity {
   TextView res;

   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_notification_result);
      onNewIntent(getIntent());
      NotificationManager manager = (NotificationManager)
getSystemService(NOTIFICATION_SERVICE);
      manager.cancel(100);
   }

   @Override
   protected void onNewIntent(Intent intent) {
      Bundle extras = intent.getExtras();
```

```
        if(extras!=null) {
            if (extras.containsKey("Message")) {
                setContentView(R.layout.activity_notification_result);
                String msg = extras.getString("Message");
                res = findViewById(R.id.result);
                res.setText("Report: "+msg);
            }
            super.onNewIntent(intent);
        }
    }
}
```

Output:





Experiment – 15

Aim: Design an application to Book the movie tickets. Save the movie name and number of tickets using shared preferences.

Solution:

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/Header"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Ticket Booking App"
      android:textSize="24sp"
      android:textStyle="bold"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintTop_toTopOf="parent"
      app:layout_constraintBottom_toTopOf="@+id/movieslist"/>

   <TextView
      android:id="@+id/movieTitle"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Movies"
      android:textStyle="bold"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintEnd_toStartOf="@+id/movieslist"
      app:layout_constraintTop_toBottomOf="@+id/Header"
      app:layout_constraintBottom_toTopOf="@+id/ticketscountlbl"/>

   <Spinner
      android:id="@+id/movieslist"
      android:layout_width="200dp"
      android:layout_height="wrap_content"
      android:minHeight="48dp"
      app:layout_constraintStart_toEndOf="@+id/movieTitle"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintTop_toBottomOf="@+id/Header"
      app:layout_constraintBottom_toTopOf="@+id/ticketsctBox"/>

   <TextView
```

```
    android:id="@+id/ticketscountlbl"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="No. of Tickets"
    android:textStyle="bold"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toStartOf="@+id/ticketsctBox"
    app:layout_constraintTop_toBottomOf="@+id/movieTitle"
    app:layout_constraintBottom_toTopOf="@+id/submitBtn"/>

  <EditText
    android:id="@+id/ticketsctBox"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:hint=" Enter no. of tickets"
    android:inputType="text"
    android:minHeight="48dp"
    app:layout_constraintStart_toEndOf="@+id/ticketscountlbl"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/movieslist"
    app:layout_constraintBottom_toTopOf="@+id/submitBtn"/>

  <Button
    android:id="@+id/submitBtn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Submit"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/ticketsctBox"
    app:layout_constraintBottom_toBottomOf="parent"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

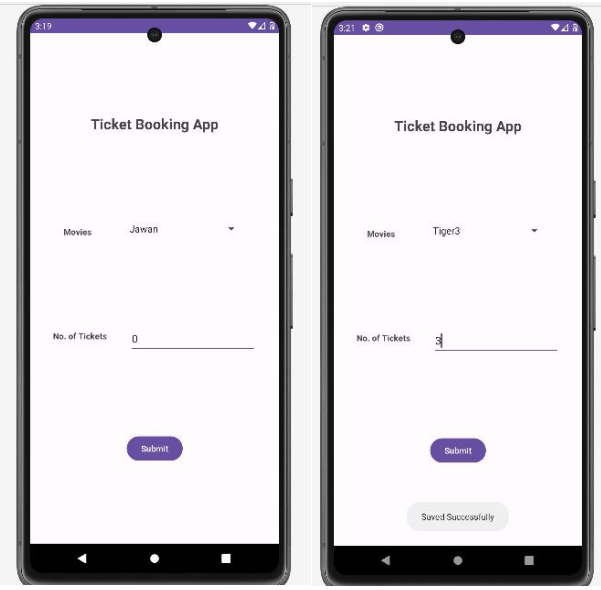
MainActivity.java:

```
package com.example.movieticketbookingsp;

import androidx.appcompat.app.AppCompatActivity;

import android.content.SharedPreferences;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Spinner;
import android.widget.Toast;
```

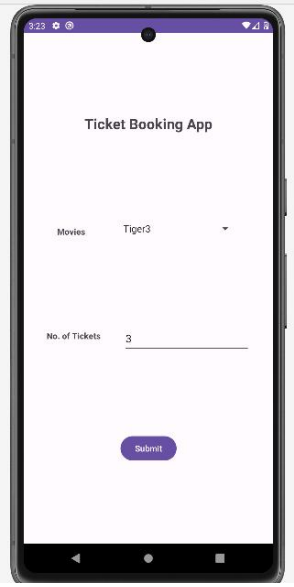
```
public class MainActivity extends AppCompatActivity {
    EditText count;
    Spinner list;
    Button sub;
    String movies[] = {"Jawan","Leo","Tiger3","Ghost"};
    int selectedPos;
    SharedPreferences sharedPreferences;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        count = findViewById(R.id.ticketsctBox);
        list = findViewById(R.id.movieslist);
        sub = findViewById(R.id.submitBtn);
        ArrayAdapter adapter = new ArrayAdapter(this,
android.R.layout.simple_spinner_dropdown_item,movies);
        list.setAdapter(adapter);
        list.setOnItemSelectedListener(new AdapterView.OnItemSelectedListener() {
            @Override
            public void onItemSelected(AdapterView<?> parent, View view, int position, long id) {
                selectedPos = position;
            }

            @Override
            public void onNothingSelected(AdapterView<?> parent) {

            }
        });
        sub.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                sharedPreferences = getSharedPreferences("MyPreferences",MODE_PRIVATE);
                SharedPreferences.Editor editor = sharedPreferences.edit();
                editor.putInt("MovieName",selectedPos);
                editor.putInt("TicketsCount",Integer.parseInt(count.getText().toString()));
                editor.apply();
                Toast.makeText(MainActivity.this, "Saved Successfully", Toast.LENGTH_SHORT).show();
            }
        });
    }

    @Override
    protected void onResume() {
        super.onResume();
        SharedPreferences sh = getSharedPreferences("MyPreferences",MODE_PRIVATE);
        int spos = sh.getInt("MovieName",0);
        int ct = sh.getInt("TicketsCount",0);
        list.setSelection(spos);
        count.setText(String.valueOf(ct));
    }
```

}

Output:



You can clear the app from running and open the same app again



Experiment – 16

Aim: Design an application to perform various animations on a particular image

Solution:

Step 1: Create an anim resource directory

To create a animation, you need to create anim folder by selecting it and choosing "New", then "android resource directory" and entering "anim" as the name and type as anim.

Step 2: Add all animations files:

Create all animation transistions under anim directory

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">

   <ImageView
      android:id="@+id/logoImage"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      app:srcCompat="@drawable/download"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintTop_toTopOf="parent"
      app:layout_constraintBottom_toTopOf="@+id/rotBtn"/>

   <Button
      android:id="@+id/blinkBtn"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Blink"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintEnd_toStartOf="@+id/rotBtn"
      app:layout_constraintTop_toBottomOf="@+id/logoImage"
      app:layout_constraintBottom_toTopOf="@+id/moveBtn"/>

   <Button
      android:id="@+id/rotBtn"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Rotate"
      app:layout_constraintStart_toEndOf="@+id/blinkBtn"
      app:layout_constraintEnd_toStartOf="@+id/fadeBtn"
      app:layout_constraintTop_toBottomOf="@+id/logoImage"
```

```
    app:layout_constraintBottom_toTopOf="@+id/slideBtn"/>

  <Button
    android:id="@+id/fadeBtn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Fade"
    app:layout_constraintStart_toEndOf="@+id/rotBtn"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/logoImage"
    app:layout_constraintBottom_toTopOf="@+id/zoomBtn"/>

  <Button
    android:id="@+id/moveBtn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Move"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toStartOf="@+id/slideBtn"
    app:layout_constraintTop_toBottomOf="@+id/blinkBtn"
    app:layout_constraintBottom_toBottomOf="parent"/>

  <Button
    android:id="@+id/slideBtn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Slide"
    app:layout_constraintStart_toEndOf="@+id/moveBtn"
    app:layout_constraintEnd_toStartOf="@+id/zoomBtn"
    app:layout_constraintTop_toBottomOf="@+id/rotBtn"
    app:layout_constraintBottom_toBottomOf="parent"/>


  <Button
    android:id="@+id/zoomBtn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Zoom"
    app:layout_constraintStart_toEndOf="@+id/slideBtn"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/fadeBtn"
    app:layout_constraintBottom_toBottomOf="parent"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

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:duration = "1000"
```

```
      android:repeatMode = "reverse"
      android:repeatCount = "infinite"
      android:interpolator = "@android:anim/accelerate_interpolator" />

</set>
```

rotate.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<set xmlns:android="http://schemas.android.com/apk/res/android">
   <rotate android:fromDegrees="0"
      android:toDegrees="360"
      android:pivotX="50%"
      android:pivotY="50%"
      android:duration = "5000" />
   <rotate android:fromDegrees="360"
      android:toDegrees="0"
      android:pivotX="50%"
      android:pivotY="50%"
      android:startOffset = "6000"
      android:duration = "5000" />
</set>
```

fade.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<set xmlns:android="http://schemas.android.com/apk/res/android">
   <alpha android:fromAlpha="0"
      android:toAlpha="1"
      android:duration = "2000"
      android:interpolator = "@android:anim/accelerate_interpolator" />
   <alpha android:fromAlpha="1"
      android:toAlpha="0"
      android:duration = "2000"
      android:interpolator = "@android:anim/accelerate_interpolator" />
</set>
```

move.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<set xmlns:android="http://schemas.android.com/apk/res/android">
   <translate android:fromXDelta="0%"
      android:toXDelta="75%"
      android:duration = "2000"
      android:interpolator ="@android:anim/linear_interpolator" />
</set>
```

slide.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<set xmlns:android="http://schemas.android.com/apk/res/android">
   <scale android:fromYScale="1.0"
      android:toYScale="0.0"
      android:fromXScale="1.0"
```

```
    android:toXScale="1.0"
    android:duration = "2000"
    android:interpolator = "@android:anim/linear_interpolator"/>
</set>
```

zoom.xml:

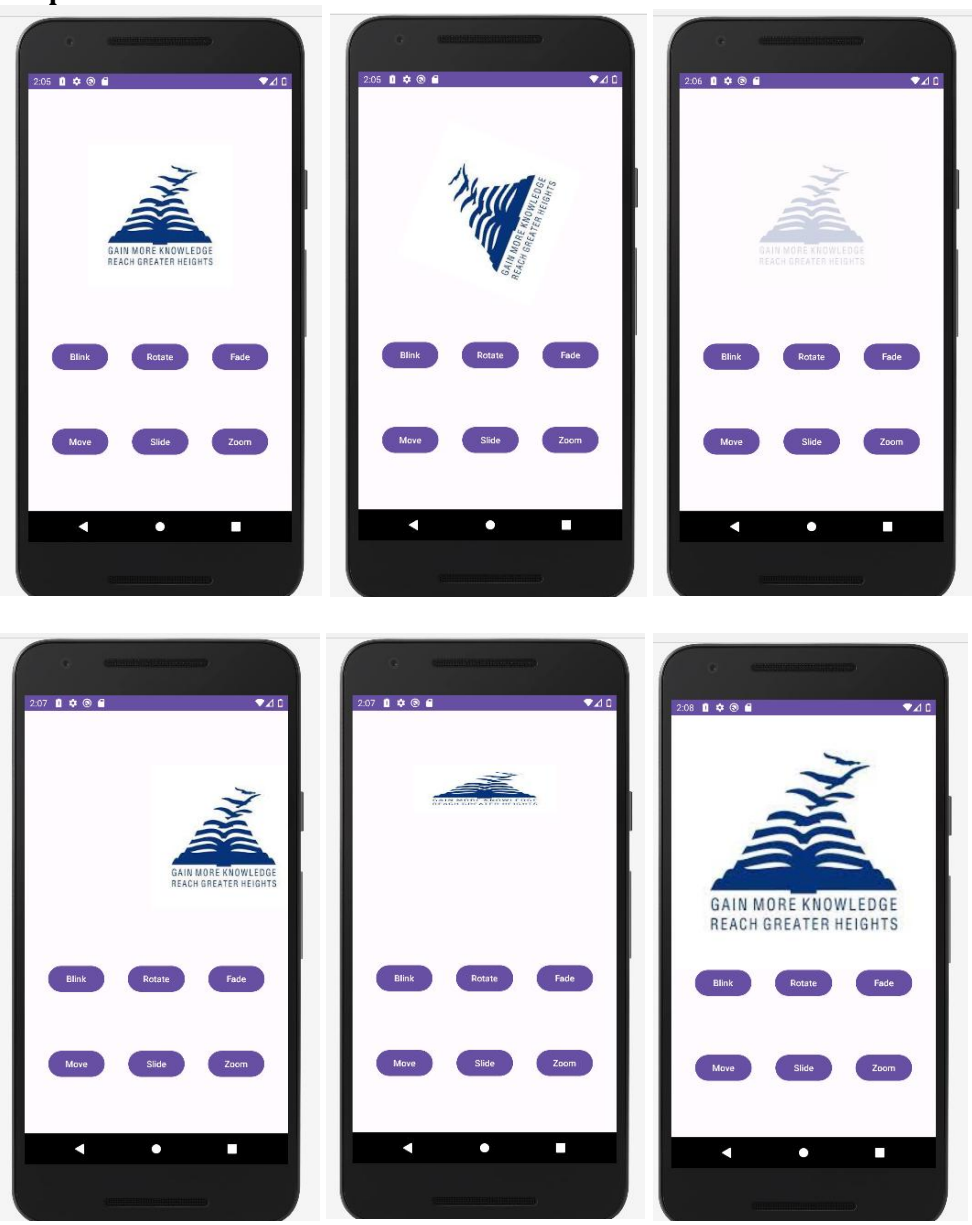
```
<?xml version="1.0" encoding="utf-8"?>
<set xmlns:android="http://schemas.android.com/apk/res/android">
  <scale android:fromXScale="1"
    android:toXScale="5"
    android:fromYScale="1"
    android:toYScale="5"
    android:pivotX="50%"
    android:pivotY="50%"
    android:duration = "5000" />
  <scale android:fromXScale="1"
    android:toXScale="0.2"
    android:fromYScale="1"
    android:toYScale="0.2"
    android:pivotX="50%"
    android:pivotY="50%"
    android:duration = "5000" />
</set>
```

MainActivity.java:

```
package com.example.animationsexample;

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 im;
  Button bli,fad,mov,rot,sli,zoom;
  @Override
  protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    im = findViewById(R.id.logoImage);
    bli = findViewById(R.id.blinkBtn);
    rot = findViewById(R.id.rotBtn);
    fad = findViewById(R.id.fadeBtn);
    mov = findViewById(R.id.moveBtn);
    sli = findViewById(R.id.slideBtn);
    zoom = findViewById(R.id.zoomBtn);
```

```
        bli.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Animation animation =
AnimationUtils.loadAnimation(getApplicationContext(),R.anim.blink);
                im.startAnimation(animation);
            }
        });
        rot.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Animation animation =
AnimationUtils.loadAnimation(getApplicationContext(),R.anim.rotate);
                im.startAnimation(animation);
            }
        });
        fad.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Animation animation =
AnimationUtils.loadAnimation(getApplicationContext(),R.anim.fade);
                im.startAnimation(animation);
            }
        });
        mov.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Animation animation =
AnimationUtils.loadAnimation(getApplicationContext(),R.anim.move);
                im.startAnimation(animation);
            }
        });
        sli.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Animation animation =
AnimationUtils.loadAnimation(getApplicationContext(),R.anim.slide);
                im.startAnimation(animation);
            }
        });
        zoom.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Animation animation =
AnimationUtils.loadAnimation(getApplicationContext(),R.anim.zoom);
                im.startAnimation(animation);
            }
        });
    }
}
```

Output:


GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS
Blink
Rotate
Fade
Move
Slide
Zoom

Experiment – 17

Aim: Design an application to find the current location of user.

Solution:

Step 1: Add Google play location service dependency

You need to go to your app-level Gradle file and add the google play service dependency. Paste the below code under your dependencies section.

implementation("com.google.android.gms:play-services-location:21.0.1")

Step 2: Provide permissions in Manifest

Go to your manifest file and add the permission for internet, fine and coarse location access. You can find the permissions in the below code.

```
<uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION" />
<uses-permission android:name="android.permission.INTERNET"/>
```

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/addressTxt"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="User Address"
      android:textSize="24sp"
      android:textStyle="bold"
      app:layout_constraintBottom_toTopOf="@+id/getBtn"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent" />

   <Button
      android:id="@+id/getBtn"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Get Current Location"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintTop_toBottomOf="@+id/addressTxt"
      app:layout_constraintBottom_toBottomOf="parent"/>
```

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

MainActivity.java:

```
package com.example.findmylocation;

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

import android.Manifest;
import android.content.pm.PackageManager;
import android.location.Location;
import android.os.Build;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;

import com.google.android.gms.location.FusedLocationProviderClient;
import com.google.android.gms.location.LocationServices;
import com.google.android.gms.tasks.OnSuccessListener;
import com.google.android.gms.tasks.Task;

public class MainActivity extends AppCompatActivity {
   TextView tv;
   Button locBtn;
   FusedLocationProviderClient locationProviderClient;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      tv = findViewById(R.id.addressTxt);
      locBtn = findViewById(R.id.getBtn);
      locationProviderClient = LocationServices.getFusedLocationProviderClient(this);
      locBtn.setOnClickListener(new View.OnClickListener() {
         @RequiresApi(api = Build.VERSION_CODES.M)
         @Override
         public void onClick(View view) {

if(ActivityCompat.checkSelfPermission(MainActivity.this,Manifest.permission.ACCESS_COARSE_LOC
ATION)!=PackageManager.PERMISSION_GRANTED){
               requestPermissions(new String[]{Manifest.permission.ACCESS_COARSE_LOCATION},1);
               return;
            }
            Task<Location> location = locationProviderClient.getLastLocation();
            location.addOnSuccessListener(new OnSuccessListener<Location>() {
               @Override
               public void onSuccess(Location location) {
                  double latitude = location.getLatitude();
                  double longitude = location.getLongitude();
```

```
                tv.setText("Latitude: "+latitude+"\n Longitude: "+longitude);
            }
        });
    }
});
  }
}
```

Output: