

# Centre for Distance and Online Education

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CERTIFICATE

This is to certify that **Ms. Omkar Balu Auti** of **Master in Computer Application** (MCA) Semester III has completed the specified term work in the subject of **Mobile Computing** satisfactorily within this institute as laid down by University of Mumbai during the academic year 2023 to 2024.

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| --- | --- | --- |
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**“VIDYALANKAR SCHOOL OF INFORMATION TECHNOLOGY, WADALA” AFFILIATED TO**

**UNIVERSITY OF MUMBAI**

**CENTRE FOR DISTANCE AND ONLINE EDUCATION (CDOE)**

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## Practical 1: INTRODUCTION TO ANDROID

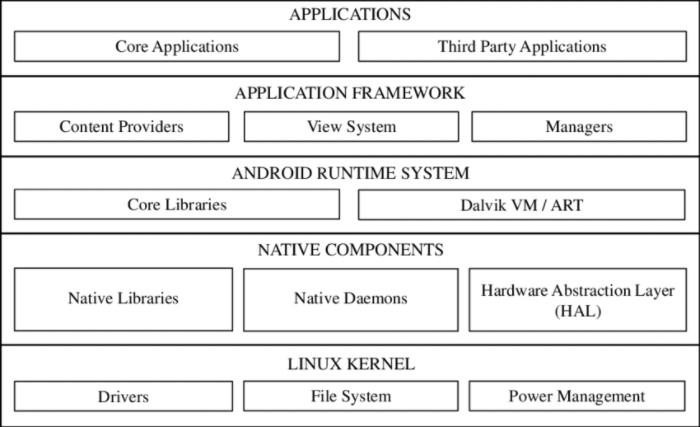
Study android platform, the layers of android and 4 kinds of android components, Understanding the manifest.xml file.

### Android Platform:

1. The Android platform is a platform for mobile devices that uses a modified Linux kernel.
2. The Android Platform was introduced by the Open Handset Alliance in November of 2007.
3. Most applications that run on the Android platform are written in the Java programming language.
4. Although most of the applications that run on the Android Platform are written in Java, there is no Java Virtual Machine. Instead, the Java classes are first compiled into what are known as Dalvik Executables and run on the Dalvik Virtual Machine.
5. Android is an open development platform.
6. To create an application for the platform, a developer requires the Android SDK, which includes tools and APIs.

### Layers Of Android:

The following are the layers that compose the Android architecture.



### Application:

* + 1. Android application is the top layer.
    2. All applications are installed on this layer only. Examples of such applications are Contacts Books, Browser, and Games etc.

### Application Framework:

* + 1. The Application Framework layer provides many higher-level services to applications in the form of Java classes.
    2. Application developers are allowed to make use of these services in their applications.
    3. The Android framework includes the following key services:
       1. Activity Manager − Controls all aspects of the application lifecycle and activity stack.
       2. Content Providers − Allows applications to publish and share data with other applications.
       3. Resource Manager − Provides access to non-code embedded resources such as strings, color settings and user interface layouts.
       4. Notifications Manager − Allows applications to display alerts and notifications to the user.
       5. View System − An extensible set of views used to create application user interfaces.

### Android Runtime and Core Libraries:

* + 1. Android currently uses Android Runtime (ART) to execute application code.
    2. ART is preceded by the Dalvik Runtime that compiled developer code to Dalvik Executable files (Dex files). These execution environments are optimized for the android platform taking into consideration the processor and memory constraints on mobile devices.
    3. Some of the core libraries that are present in the Android operating systems are:
       1. android.app − Provides access to the application model and is the cornerstone of all Android applications.
       2. android.content − Facilitates content access, publishing and messaging between applications and application components.
       3. android.database − Used to access data published by content providers and includes SQLite database management classes.
       4. android.opengl − A Java interface to the OpenGL ES 3D graphics rendering API.
       5. android.os − Provides applications with access to standard operating system services including messages, system services and inter-process communication.
       6. android.text − Used to render and manipulate text on a device display.
       7. android.view − The fundamental building blocks of application user interfaces.
       8. android.widget − A rich collection of pre-built user interface components such as buttons, labels, list views, layout managers, radio buttons etc.
       9. android.webkit − A set of classes intended to allow web-browsing capabilities to be built into applications.

### Linux Kernel:

* + 1. The root component of the Android System is the Linux Kernel. It is the foundational piece that enables all of Android’s functionality.
    2. The Linux Kernel is a battle-tested piece of software that has been used in developing operating systems for devices of wide range, from supercomputers to small gadgets. It has limited processing abilities like small networked gadgets for the Internet of Things (IoT).
    3. The Linux Kernel can be tweaked to meet the device specifications to make it possible for manufacturers to make Android devices with different capabilities to match user experience.

Four Kinds of Android Components:

Four Kinds Of Android Components are as follows:

### Service:

* + A service in Android is a background process.
  + Services are typically used for processes that are ongoing or that take a significant period of time.
  + A service doesn't have a user interface, so they are often combined with other components such as activities.
  + A typical example is an app in which an activity starts a service running on user interaction, with the service perhaps uploading data to a web resource.
  + The user can continue to interact with the activity while the service runs because it executes in the background.

### Content Providers:

* + A content provider component supplies data from one application to others on request. Such requests are handled by the methods of the ContentResolver class.
  + The data may be stored in the file system, the database or somewhere else entirely.
  + A content provider is implemented as a subclass of ContentProvider class and must implement a standard set of APIs that enable other applications to perform transactions.

### Broadcast Receivers:

* + The Android system makes various types of broadcasts an app can respond to.
  + Apps can be developed to make these broadcasts, but this is far less likely than to listen for existing broadcasts, at least for first apps.
  + System announcements include information about the device's hardware, such as the battery level, the screen shutting off, the charger being plugged into an outlet, etc.
  + To receive broadcast announcements on Android, apps can use a broadcast receiver.
  + A typical example of this is a battery level widget in which you want to update the display when the battery level changes. In this case, you could use a service class in conjunction with a broadcast receiver to let your app keep listening for announcements in the background.

### Activities:

* + An activity represents a single screen with a user interface,in-short Activity performs actions on the screen.
  + For example, an email application might have one activity that shows a list of new emails, another activity to compose an email, and another activity for reading emails. If an application has more than one activity, then one of them should be marked as the activity that is presented when the application is launched.

### Manifest.xml File:

1. Every app project must have an AndroidManifest.xml file (with precisely that name) at the root of the project source set.
2. The manifest file describes essential information about your app to the Android build tools, the Android operating system, and Google Play.
3. On Android Studio to build app, the manifest file is created for already, and most of the essential manifest elements are added to build the app.
4. Among many other things, the manifest file is required to declare the following:
   1. The app's package name, which usually matches your code's namespace. The Android build tools use this to determine the location of code entities when building your project. When packaging the app, the build tools replace this value with the application ID from the Gradle build files, which is used as the unique app identifier on the system and on Google Play.
   2. The components of the app, which include all activities, services, broadcast receivers, and content providers. Each component must define basic properties such as the name of its Kotlin or Java class. It can also declare capabilities such as which device configurations it can handle, and intent filters that describe how the component can be started.
   3. The permissions that the app needs in order to access protected parts of the system or other apps. It also declares any permissions that other apps must have if they want to access content from this app.

The hardware and software features the app requires, which affects which devices can install the app from Google Play.

## Practical 2: BASIC CONTROLS AND UI COMPONENT

1. Program to demonstrate use of different text control, RadioGroup, RadioButton, Checkbox and Button control by creating Registration form.

Create a new Android project called AppView. By default, it creates main.xml file located in the res/layout folder, which contains a <TextView> element.

<LinearLayout xmlns:android="[http://schemas.android.com/apk/res/an](http://schemas.android.com/apk/res/android) [droid"](http://schemas.android.com/apk/res/android) xmlns:tools="[http://schemas.android.com/tools"](http://schemas.android.com/tools). android:layout\_width="fill\_parent" android:layout\_height="match\_parent" android:orientation="vertical" tools:context=".MainActivity">

<TextView android:text="@string/hello\_world" android:layout\_width="fill\_content" android:layout\_height="wrap\_content" />

</LinearLayout >

<EditText android:layout\_width="fill\_parent" android:layout\_height="wrap\_content" android:id="@+id/txtUserName" />

<Button android:layout\_width="fill\_parent" android:layout\_height="wrap\_content" android:id="@+id/btnAdd" android:text="Add"/>

<ImageButton android:layout\_width="fill\_parent" android:layout\_height="wrap\_content" android:id="@+id/imgButton"

android:src="@drawable/abc\_ic\_menu\_copy\_mtrl\_am\_alph a"

/>

<CheckBox android:layout\_width="fill\_parent" android:layout\_height="wrap\_content"

android:id="@+id/chkIndia" android:text="India"

/>

<CheckBox android:layout\_width="fill\_parent" android:layout\_height="wrap\_content" android:id="@+id/chkUS" style="?android:attr/starStyle" android:text="US"

/>

<RadioGroup android:layout\_width="fill\_parent"

android:layout\_height="wrap\_content" android:orientation="vertical" android:id="@+id/rdoGroup">

<RadioButton android:id="@+id/rbMale" android:layout\_width="fill\_parent" android:layout\_height="wrap\_content” android:text="Male"/>

<RadioButton android:id="@+id/rbFemale" android:layout\_width="fill\_parent" android:layout\_height="wrap\_content" android:text="Female"/>

</RadioGroup>

<ToggleButton android:layout\_width="fill\_parent" android:layout\_height="wrap\_content" android:id="@+id/toggleButton"/>

Button buttonAdd = (Button) findViewById(R.id.btnAdd); buttonAdd.setOnClickListener(new View.OnClickListener()

{

@Override

public void onClick(View view)

{

DisplayMessage("You have clicked the Add button");

}

});

private void DisplayMessage(String textMessage) { Toast.makeText(getBaseContext(), textMessage, Toast.LENGTH\_SHORT).show();

}

CheckBox checkBox = (CheckBox) findViewById(R.id.chkIndia); checkBox.setOnClickListener(new View.OnClickListener()

{

#### Create an application to design simple calculator to perform addition, subtraction, multiplication and division. Show message for divide by zero error using Toast.

Activity\_main.xml:

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

<AbsoluteLayout xmlns:android="[http://schemas.android.com/apk/res/an](http://schemas.android.com/apk/res/android) [droid"](http://schemas.android.com/apk/res/android) xmlns:app="[http://schemas.android.com/apk/res-auto"](http://schemas.android.com/apk/res-auto) xmlns:tools="[http://schemas.android.com/tools"](http://schemas.android.com/tools) android:layout\_width="match\_parent" android:layout\_height="match\_parent" tools:context=".MainActivity">

<EditText android:id="@+id/editText4" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_x="73dp" android:layout\_y="119dp" android:ems="10"

android:hint="Enter first number" android:inputType="numberDecimal" tools:layout\_editor\_absoluteX="101dp" tools:layout\_editor\_absoluteY="87dp" />

<EditText android:id="@+id/editText5" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_x="76dp" android:layout\_y="198dp" android:ems="10"

android:hint="Enter second number" android:inputType="numberDecimal" tools:layout\_editor\_absoluteX="101dp" tools:layout\_editor\_absoluteY="207dp" />

<Button android:id="@+id/button"

android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_x="64dp" android:layout\_y="316dp" android:text="ADD" tools:layout\_editor\_absoluteX="164dp" tools:layout\_editor\_absoluteY="335dp" />

<TextView android:id="@+id/textView" android:layout\_width="81dp" android:layout\_height="38dp" android:layout\_x="135dp" android:layout\_y="520dp" android:text="Result" tools:layout\_editor\_absoluteX="173dp" tools:layout\_editor\_absoluteY="545dp" />

<Button android:id="@+id/button2"

android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_x="204dp" android:layout\_y="318dp" android:text="Sub" />

<Button android:id="@+id/button3"

android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_x="65dp" android:layout\_y="402dp" android:text="Mult" />

<Button android:id="@+id/button4"

android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_x="205dp" android:layout\_y="398dp" android:text="Div" />

</AbsoluteLayout>

MainActivity.java:

package com.example.practical\_1b;

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

{ Button ad,sb,mu,di;

EditText n1,n2; TextView tv; @Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_main); ad=findViewById(R.id.button); sb=findViewById(R.id.button2); mu=findViewById(R.id.button3); di=findViewById(R.id.button4); n1=findViewById(R.id.editText4); n2=findViewById(R.id.editText5); tv=findViewById(R.id.textView); ad.setOnClickListener(

new View.OnClickListener() { @Override public void onClick(View v) { int n3=0; String num1=n1.getText().toString(); String num2=n2.getText().toString();

n3=Integer.parseInt(num1)+Integer.parseInt(num2); tv.setText(" "+n3);

}

}

);

sb.setOnClickListener(

new View.OnClickListener() { @Override public void onClick(View v) { int n4=0; String num1=n1.getText().toString(); String num2=n2.getText().toString();

n4=Integer.parseInt(num1)-Integer.parseInt(num2); tv.setText(" "+n4);

}

}

);

mu.setOnClickListener(

new View.OnClickListener() { @Override public void onClick(View v) { int n4=0; String num1=n1.getText().toString(); String num2=n2.getText().toString();

n4=Integer.parseInt(num1)\*Integer.parseInt(num2); tv.setText(" "+n4);

}

}

);

di.setOnClickListener(

new View.OnClickListener() { @Override public void onClick(View v) { int n4=0; String num1=n1.getText().toString(); String num2=n2.getText().toString(); if(Integer.parseInt(num2)==0)

{

Toast.makeText(MainActivity.this,"Cant Divide By Zero",Toast.LENGTH\_LONG).show();

}

else {

n4 = Integer.parseInt(num1) / Integer.parseInt(num2); tv.setText(" " + n4);

}

}

}

);

}

}

1. Program to demonstrate use of Spinner, AutoCompleteTextView, multiline text and TextView control by creating Feedback form.

 **activity\_main.xml:**

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

<android.support.constraint.ConstraintLayout xmlns:android="[http://schemas.android.com/apk/res/an](http://schemas.android.com/apk/res/android) [droid"](http://schemas.android.com/apk/res/android) xmlns:app="[http://schemas.android.com/apk/res-auto"](http://schemas.android.com/apk/res-auto) xmlns:tools="[http://schemas.android.com/tools"](http://schemas.android.com/tools) android:layout\_width="match\_parent" android:layout\_height="match\_parent" tools:context=".MainActivity">

Basic Controls and UI Component

<LinearLayout android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:orientation="vertical" tools:ignore="MissingConstraints" android:layout\_marginLeft="20dp" android:layout\_marginRight="30dp">

<TextView android:id="@+id/textView" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:text="Thank You For Visiting Nexon Auto Shop" android:layout\_marginBottom="40dp" android:layout\_marginTop="30dp" android:textColor="@color/black" android:textSize="20sp" android:textStyle="bold"/>

<LinearLayout android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:orientation="horizontal" android:layout\_marginBottom="40dp">

<TextView android:id="@+id/textView2" android:layout\_width="90dp" android:layout\_height="wrap\_content" android:layout\_weight="1" android:text="Name" android:textSize="15sp"/>

<EditText android:id="@+id/editTextTextPersonName" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_weight="1" android:ems="10" android:inputType="textPersonName" />

</LinearLayout>

<LinearLayout android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:orientation="horizontal" android:layout\_marginBottom="40dp">

<TextView android:id="@+id/textView4" android:layout\_height="wrap\_content" android:layout\_width="150dp" android:layout\_weight="1" android:text="Country" android:textSize="15sp"/>

<Spinner android:id="@+id/spinner" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:layout\_weight="1" />

</LinearLayout>

<LinearLayout android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:orientation="horizontal" android:layout\_marginBottom="40dp">

<TextView android:id="@+id/textView5" android:layout\_width="100dp" android:layout\_height="wrap\_content" android:layout\_weight="1" android:text="This Feedback is :" android:textSize="15sp"/>

<AutoCompleteTextView android:id="@+id/autoCompleteTextView" android:layout\_width="wrap\_content"android:layout\_he

ight="wrap\_content" android:layout\_weight="1" />

</LinearLayout>

<LinearLayout android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:orientation="horizontal" android:layout\_marginBottom="40dp">

<TextView android:id="@+id/textView6" android:layout\_width="200dp" android:layout\_height="wrap\_content" android:layout\_weight="1" android:text="Additional Comment" android:textSize="15sp"/>

<EditText android:id="@+id/editTextTextMultiLine" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_weight="1" android:ems="10" android:gravity="start|top" android:inputType="textMultiLine" />

</LinearLayout> Basic Controls and UI Component

<Button android:id="@+id/button" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:text="Submit" />

</LinearLayout>

</android.support.constraint.ConstraintLayout>

**MainActivity.java:**

package com.example.customerfeedbackform; import android.support.v7.app.AppCompatActivity; import android.os.Bundle;

import android.view.View;

import android.widget.AdapterView; import

android.widget.AdapterView.OnItemSelectedListener; import android.widget.ArrayAdapter;

import android.widget.Spinner; import android.widget.Toast;

import android.widget.AutoCompleteTextView;

public class MainActivity extends AppCompatActivity implements OnItemSelectedListener{

String[] Country={"India","Nepal","China","Srilanka","Austral ia"}; String[] feedback = { "suggestion", "compliment", "complaint", "other"};

@Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_main);

Spinner spin = (Spinner) findViewById(R.id.spinner); spin.setOnItemSelectedListener(this);

ArrayAdapter aa = new ArrayAdapter(this,android.R.layout.simple\_spinner\_it em,Country); ArrayAdapter<String> adapter = new ArrayAdapter<String>(this, android.R.layout.simple\_dropdown\_item\_1line, feedback); AutoCompleteTextView actv = (AutoCompleteTextView)findViewById(R.id.autoComplete TextView); actv.setThreshold(1); actv.setAdapter(adapter); Basic Controls and UI Component aa.setDropDownViewResource(android.R.layout.simple\_s pinner\_dropdo wn\_item);

//Setting the ArrayAdapter data on the Spinner spin.setAdapter(aa);

}

@Override

public void onItemSelected(AdapterView<?> adapterView, View view, int i, long l) {}

## Practical 3: DATA BASE CONNECTIVITY

1. Program to Create android program to demonstrate the use of Internal Storage.

Activity\_main.xml:

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

<android.support.constraint.ConstraintLayout xmlns:android="[http://schemas.android.com/apk/](http://schemas.android.com/apk/res/android) [res/android"](http://schemas.android.com/apk/res/android) xmlns:app="[http://schemas.android.com/apk/res-](http://schemas.android.com/apk/res-auto) [auto"](http://schemas.android.com/apk/res-auto) xmlns:tools="[http://schemas.android.com/tools"](http://schemas.android.com/tools) android:layout\_width="match\_parent" android:layout\_height="match\_parent" tools:context=".MainActivity">

<LinearLayout android:layout\_width="match\_parent" android:layout\_height="match\_parent" android:orientation="vertical" android:layout\_marginRight="20sp" android:layout\_marginLeft="20sp">

<TextView android:id="@+id/textView" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:text="Internal Storage" android:layout\_marginTop="20sp" android:layout\_marginBottom="20sp" android:textSize="40sp" android:textColor="@color/black" android:textStyle="bold"/>

<EditText android:id="@+id/editTextTextPersonName" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:ems="10" android:inputType="textPersonName" android:hint="Enter Text" android:layout\_marginTop="20sp" android:layout\_marginBottom="20sp" android:textSize="30sp"/>

<TextView android:id="@+id/textView2" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:hint="Read" android:layout\_marginTop="20sp" android:layout\_marginBottom="20sp" android:textSize="30sp"/>

<LinearLayout android:layout\_width="match\_parent" android:layout\_height="match\_parent" android:orientation="horizontal">

<Button android:id="@+id/button" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_weight="1" android:text="Save"/>

<Button android:id="@+id/button2" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_weight="1"

android:text="Load"/>

</LinearLayout>

</LinearLayout>

</android.support.constraint.ConstraintLayout> MainActivity.java:

package com.example.internalstorage; import android.support.v7.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; import java.io.FileInputStream; import java.io.FileOutputStream;

public class MainActivity extends AppCompatActivity { Button b1,b2; TextView tv; EditText ed1; String data; private String file = "mydata"; @Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_main); b1=(Button)findViewById(R.id.button); b2=(Button)findViewById(R.id.button2); ed1=(EditText)findViewById(R.id.editTextTextPe rsonName); tv=(TextView)findViewById(R.id.textView2); b1.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View v) { data=ed1.getText().toString(); try { FileOutputStream fOut = openFileOutput(file,MODE\_APPEND); fOut.write(data.getBytes()); fOut.close(); Toast.makeText(getBaseContext(),"file saved",Toast.LENGTH\_SHORT).show();

}

catch (Exception e) {

// TODO Auto-generated catch block e.printStackTrace();

}

}

});

b2.setOnClickListener(new View.OnClickListener() { @Override public void onClick(View v) { try {

FileInputStream fin = openFileInput(file); int c = 0;

String t="";

while( (c= fin.read()) != -1) t += Character.toString((char) c); tv.setText(t); Toast.makeText(getBaseContext(),"file read",Toast.LENGTH\_SHORT).show(); catch(Exception e){

}

}

}

}); }

}

To view the file in internal storage click on Device File Explorer->Data->Data-

>com.example.internalstorage->files-

>myData



1. Program to Create android program to demonstrate the use of external Storage.

AndroidManifest.xml:

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

<manifest xmlns:android="[http://schemas.android.com/apk/](http://schemas.android.com/apk/res/android) [res/android](http://schemas.android.com/apk/res/android)" package="com.example.externalstrorage">

<uses-permission android:name="android.permission.WRITE\_EXTERNA L\_STORAGE" />

<uses-permission android:name="android.permission.READ\_EXTERNAL

\_STORAGE" />

<application android:allowBackup="true" android:icon="@mipmap/ic\_launcher" android:label="@string/app\_name" android:roundIcon="@mipmap/ic\_launcher\_round" android:supportsRtl="true" android:theme="@style/Theme.ExternalStrorage">

<activity android:name=".ViewData" android:exported="false" />

<activity android:name=".MainActivity" android:exported="true">

<intent-filter>

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

<category android:name="android.intent.category.LAUNCHER " />

</intent-filter>

</activity>

</application>

</manifest>

Once we have added the permission open activity\_main.xml file from

\res\layout folder path and write the code as shown below. activity\_main.xml

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

<androidx.constraintlayout.widget.ConstraintLa yout xmlns:android="[http://schemas.android.com/apk/](http://schemas.android.com/apk/res/android) [res/android"](http://schemas.android.com/apk/res/android) xmlns:app="[http://schemas.android.com/apk/res-](http://schemas.android.com/apk/res-auto) [auto"](http://schemas.android.com/apk/res-auto) xmlns:tools="[http://schemas.android.com/tools"](http://schemas.android.com/tools) android:layout\_width="match\_parent" android:layout\_height="match\_parent" tools:context=".ViewData">

<LinearLayout android:layout\_width="match\_parent" android:layout\_height="match\_parent" android:orientation="vertical" android:layout\_marginLeft="20sp" android:layout\_marginRight="20sp">

<TextView android:id="@+id/textView3" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:text="Retreiving Saved Text Data" android:layout\_marginTop="30dp" android:layout\_marginBottom="30dp"/>

<TextView android:id="@+id/textView4" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:text="TextView" android:layout\_marginTop="30dp" android:layout\_marginBottom="30dp"/>

<Button android:id="@+id/button" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:text="Retreive Private data" android:layout\_marginTop="30dp" android:layout\_marginBottom="30dp" android:onClick="showPrivateData"/>

<Button android:id="@+id/button5" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:text="Retreive Public Data" android:layout\_marginTop="30dp" android:layout\_marginBottom="30dp" android:onClick="showPublicData"/>

<Button android:id="@+id/button6" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:text="Home" android:layout\_marginTop="30dp" android:layout\_marginBottom="30dp" android:onClick="back"/>

</LinearLayout>

</androidx.constraintlayout.widget.ConstraintL ayout>

Create new Empty Activity: Activity\_View\_Data.xml

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

<androidx.constraintlayout.widget.ConstraintLa yout xmlns:android="[http://schemas.android.com/apk/](http://schemas.android.com/apk/res/android) [res/android"](http://schemas.android.com/apk/res/android) xmlns:app="[http://schemas.android.com/apk/res-](http://schemas.android.com/apk/res-auto) [auto"](http://schemas.android.com/apk/res-auto) xmlns:tools="[http://schemas.android.com/tools"](http://schemas.android.com/tools) android:layout\_width="match\_parent" android:layout\_height="match\_parent" tools:context=".ViewData">

<LinearLayout android:layout\_width="match\_parent" android:layout\_height="match\_parent" android:orientation="vertical" android:layout\_marginLeft="20sp" android:layout\_marginRight="20sp">

<TextView android:id="@+id/textView3" android:layout\_width="match\_parent"

android:layout\_height="wrap\_content" android:text="Retreiving Saved Text Data" android:layout\_marginTop="30dp" android:layout\_marginBottom="30dp"/>

<TextView android:id="@+id/textView4" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:text="TextView" android:layout\_marginTop="30dp" android:layout\_marginBottom="30dp"/>

<Button android:id="@+id/button" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:text="Retreive Private data" android:layout\_marginTop="30dp" android:layout\_marginBottom="30dp" android:onClick="showPrivateData"/>

<Button android:id="@+id/button5" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:text="Retreive Public Data" android:layout\_marginTop="30dp" android:layout\_marginBottom="30dp" android:onClick="showPublicData"/> Data Base Connectivity

<Button android:id="@+id/button6" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:text="Home" android:layout\_marginTop="30dp" android:layout\_marginBottom="30dp" android:onClick="back"/>

</LinearLayout>

</androidx.constraintlayout.widget.ConstraintL ayout>

MainActivity.java:

package com.example.externalstrorage; import static android.os.Environment.DIRECTORY\_DOWNLOADS; import androidx.appcompat.app.AppCompatActivity; import android.Manifest; import android.content.Intent; import android.os.Bundle; import android.os.Environment; import android.view.View;

import android.widget.EditText; import android.widget.Toast;

import androidx.core.app.ActivityCompat; import java.io.File;

import java.io.FileOutputStream; import java.io.IOException;

public class MainActivity extends AppCompatActivity {private int EXTERNAL\_STORAGE\_PERMISSION\_CODE = 23;

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

setContentView(R.layout.activity\_main); editText = (EditText) findViewById(R.id.editTextTextMultiLine);

}

public void savePublicly(View view) {

// Requesting Permission to access External Storage ActivityCompat.requestPermissions(this, new String[]{Manifest.permission.READ\_EXTERNAL\_STO RAGE}, EXTERNAL\_STORAGE\_PERMISSION\_CODE);

String editTextData = editText.getText().toString();

// getExternalStoragePublicDirectory() represents root of external storage, we are using DOWNLOADS

// We can use following directories: MUSIC, PODCASTS, ALARMS, RINGTONES, NOTIFICATIONS, PICTURES, MOVIES

File folder = Environment.getExternalStoragePublicDirectory( DIRECTORY\_DOWNL OADS);

// Storing the data in file with name as sabaext.txt File file = new File(folder, "sabaext.txt"); writeTextData(file, editTextData); editText.setText("");

}

public void savePrivately(View view) { String editTextData = editText.getText().toString();

// Creating folder with name ExternalStorage File folder = getExternalFilesDir("ExternalStorage");

// Creating file with name xyz.txt File file = new File(folder, "xyz.txt"); writeTextData(file, editTextData); editText.setText("");

}

public void viewInformation(View view) {

// Creating an intent to start a new activity Intent intent = new Intent(MainActivity.this, ViewData.class); startActivity(intent);

}

private void writeTextData(File file, String data) { FileOutputStream fileOutputStream = null;

try {

fileOutputStream = new FileOutputStream(file); fileOutputStream.write(data.getBytes()); Toast.makeText(this, "Done" + file.getAbsolutePath(), Toast.LENGTH\_SHORT).show();

} catch (Exception e) { e.printStackTrace();

} finally {

if (fileOutputStream != null)

{

try { fileOutputStream.close();

} catch (IOException e) { e.printStackTrace();

}}}}}

ViewData.java:

package com.example.externalstrorage; import static android.os.Environment.DIRECTORY\_DOWNLOADS; import androidx.appcompat.app.AppCompatActivity; import android.content.Intent; import android.os.Bundle; import android.os.Environment; import

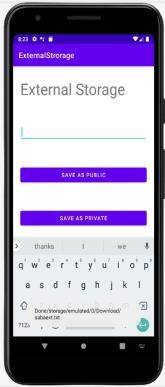
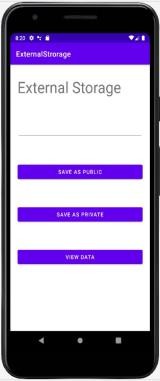
android.view.View;

import android.widget.TextView; import java.io.File;

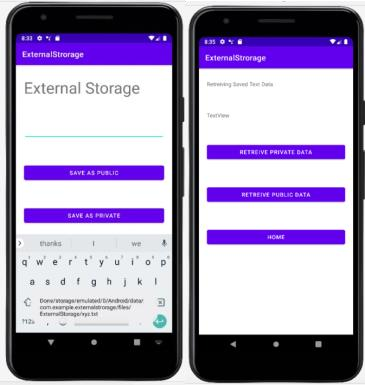
import java.io.FileInputStream; import java.io.IOException;

public class ViewData extends AppCompatActivity { TextView textView; @Override

protected void onCreate(Bundle



savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_view\_data); textView = (TextView) findViewById(R.id.textView4);

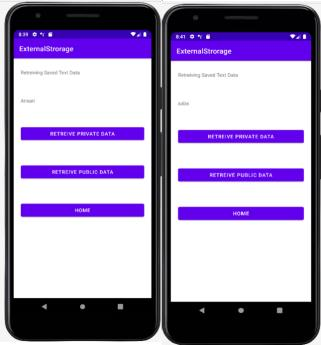


Data Base Connectivity

}

public void showPublicData(View view) {

// Accessing the saved data from the downloads folder File folder = Environment.getExternalStoragePublicDirectory(



DIRECTORY\_DOWNL OADS);

// sabaext represent the file data that is saved publicly File file = new File(folder, "sabaext.txt");

String data = getdata(file); if (data != null)

{ textView.setText(data);

} else {

textView.setText("No Data Found");

}

}

public void showPrivateData(View view) {

// ExternalStorage represent the folder name to access privately saved data

File folder = getExternalFilesDir("ExternalStorage");

// xyz.txt is the file that is saved privately File file = new File(folder, "xyz.txt"); String data = getdata(file);

if (data != null) { textView.setText(data);

} else {

textView.setText("No Data Found");

}

}

public void back(View view) {

Intent intent = new Intent(ViewData.this, MainActivity.class); startActivity(intent);

}

// getdata() is the method which reads the data

// the data that is saved in byte format in the file private String getdata(File myfile) { FileInputStream fileInputStream = null;

try {

fileInputStream = new FileInputStream(myfile); int i = -1;

StringBuffer buffer = new StringBuffer(); while ((i = fileInputStream.read()) != -1) { buffer.append((char) i);

}

return buffer.toString();

} catch (Exception e) { e.printStackTrace();

} finally {

if (fileInputStream != null) { try { fileInputStream.close();

} catch (IOException e) { e.printStackTrace();

}

}

}

return null;

}

}

### Output:

when Clicked on Save as Public button: When Clicked on Save As Private Button: When clicked on View Data button is

clicked another activity that view activity is

started.

When clicked on retrieve Private data Button:

When we clicked on Retrieve public data button:

To View data saved as publicly click on Device File Explorer->SD Card-

>Downloads and youwill see sabaext.txt file.

To View data saved as privately click on Device File Explorer->Storage->Android-

>Data-

>com.examples.externalstorage(yo ur Application folder)->Files. In files folder you can seefolder is created



1. Create an activity with all possible UI Components (Edit Text, Text view, Radio Button, Check Box, and Rating Bar). Get the values from the components and display it on the nextactivity.

activity\_main.xml:

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

<ScrollView xmlns:android="[http://schemas.android.com/apk/](http://schemas.android.com/apk/res/android) [res/android](http://schemas.android.com/apk/res/android)" xmlns:app="[http://schemas.android.com/apk/res-](http://schemas.android.com/apk/res-auto) [auto"](http://schemas.android.com/apk/res-auto) xmlns:tools="[http://schemas.android.com/tools"](http://schemas.android.com/tools) android:layout\_width="match\_parent" android:layout\_height="match\_parent" android:background="#2596BE" tools:context=".MainActivity">

<LinearLayout android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:orientation="vertical">

<Space android:layout\_width="match\_parent" android:layout\_height="32dp" />

<TextView android:id="@+id/textView" android:layout\_width="match\_parent" android:layout\_height="53dp" android:text="REGISTRATION" android:textAlignment="center" android:textColor="@android:color/white" android:textSize="30sp" android:textStyle="bold" />

<Space android:layout\_width="match\_parent" android:layout\_height="38dp" />

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

android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:backgroundTint="@android:color/white" android:ems="10"

android:hint="Enter Name" android:inputType="textPersonName" android:minHeight="48dp" android:textColor="@color/white" />

<Space android:layout\_width="match\_parent" android:layout\_height="22dp" />

<EditText android:id="@+id/roll" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:backgroundTint="@color/white" android:ems="10"

android:hint="Enter Roll No" android:inputType="number" android:minHeight="48dp" android:textColor="@android:color/white" />

<Space android:layout\_width="match\_parent" android:layout\_height="22dp" />

<EditText android:id="@+id/dept" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:backgroundTint="@android:color/white" android:ems="10"

android:hint="Enter Department" android:inputType="textPersonName" android:minHeight="48dp" android:textColor="@android:color/white" />

<Space android:layout\_width="match\_parent" android:layout\_height="22dp" />

<TextView android:id="@+id/textView2" android:layout\_width="match\_parent" android:layout\_height="29dp" android:minHeight="48dp" android:text="Select Shift:" android:textColor="@android:color/white" android:textSize="18sp" />

<RadioGroup android:layout\_width="155dp" android:layout\_height="wrap\_content" android:id="@+id/radiogrp">

<RadioButton android:id="@+id/ra1" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:text="Morning" android:textColor="@android:color/white" android:textSize="16sp" />

<RadioButton android:id="@+id/ra2" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:text="Afternoon" android:textColor="@android:color/white" android:textSize="16sp" />

</RadioGroup>

<Space android:layout\_width="match\_parent" android:layout\_height="22dp" />

<TextView android:id="@+id/textView3" android:layout\_width="match\_parent"

android:layout\_height="27dp" android:minHeight="48dp" android:text="Select Hobbies:" android:textColor="@android:color/white" android:textSize="18sp" />

<CheckBox android:id="@+id/dan" android:layout\_width="128dp" android:layout\_height="wrap\_content" android:text="Dance" android:textColor="@android:color/white" />

<CheckBox android:id="@+id/sin" android:layout\_width="128dp" android:layout\_height="wrap\_content" android:text="Sing" android:textColor="@android:color/white" />

<CheckBox android:id="@+id/pla" android:layout\_width="128dp" android:layout\_height="wrap\_content" android:text="Play" android:textColor="@android:color/white" />

<Space android:layout\_width="match\_parent" android:layout\_height="22dp" />

<TextView android:id="@+id/textView4" android:layout\_width="match\_parent" android:layout\_height="29dp" android:minHeight="48dp" android:text="Rate Me:"

android:textColor="@android:color/white" android:textSize="18sp" />

<RatingBar android:id="@+id/ratingBar" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" />

<Space android:layout\_width="match\_parent" android:layout\_height="35dp" />

<Button android:id="@+id/reg" android:layout\_width="355dp" android:layout\_height="59dp"

android:backgroundTint="@android:color/white" android:insetLeft="60dp" android:onClick="onClick" android:text="Register" android:textColor="#2596BE" android:textSize="18sp" android:textStyle="bold" tools:ignore="OnClick" />

<Space android:layout\_width="match\_parent" android:layout\_height="35dp" />

</LinearLayout>

</ScrollView>

activity\_display\_data.xml:

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

<ScrollView xmlns:android="[http://schemas.android.com/apk/](http://schemas.android.com/apk/res/android) [res/android](http://schemas.android.com/apk/res/android)" xmlns:tools="[http://schemas.android.com/tools"](http://schemas.android.com/tools) android:layout\_width="match\_parent" android:layout\_height="match\_parent" android:background="#2596BE" tools:ignore="SpeakableTextPresentCheck">

<LinearLayout android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:orientation="vertical">

<Space android:layout\_width="match\_parent" android:layout\_height="37dp" />

<TextView android:id="@+id/textView5" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:text="REGISTRATION SUCCESS" android:textAlignment="center" android:textColor="@android:color/white" android:textSize="30sp" android:textStyle="bold" />

<Space android:layout\_width="match\_parent" android:layout\_height="58dp" />

<TextView android:id="@+id/t1" android:layout\_width="match\_parent" android:layout\_height="31dp" android:minHeight="48dp" android:textAlignment="center" android:textColor="@android:color/white" android:textSize="25sp" android:textStyle="bold" />

<Space android:layout\_width="match\_parent" android:layout\_height="37dp" />

<TextView android:id="@+id/t2" android:layout\_width="match\_parent" android:layout\_height="31dp" ndroid:minHeight="48dp" android:textAlignment="center" android:textColor="@android:color/white" android:textSize="25sp" android:textStyle="bold" />

<Space android:layout\_width="match\_parent" android:layout\_height="37dp" />

<TextView android:id="@+id/t3" android:layout\_width="match\_parent" android:layout\_height="31dp" android:minHeight="48dp" android:textAlignment="center" android:textColor="@android:color/white" android:textSize="25sp" android:textStyle="bold" />

<Space android:layout\_width="match\_parent" android:layout\_height="37dp" />

<TextView android:id="@+id/t4" android:layout\_width="match\_parent" android:layout\_height="31dp" android:minHeight="48dp" android:textAlignment="center" android:textColor="@android:color/white" android:textSize="25sp" android:textStyle="bold" />

<Space android:layout\_width="match\_parent" android:layout\_height="37dp" />

<TextView android:id="@+id/t9"android:layout\_width="matc

h\_parent" android:layout\_height="31dp" android:minHeight="48dp" android:text="Hobbies:" android:scrollbars = "vertical" android:textAlignment="center" android:textColor="@android:color/white" android:textSize="25sp" android:textStyle="bold" />

<TextView android:id="@+id/t5" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:minHeight="48dp" android:scrollbarAlwaysDrawVerticalTrack="true " android:textAlignment="center" android:textColor="@android:color/white" android:textSize="25sp" android:textStyle="bold" />

<Space android:layout\_width="match\_parent" android:layout\_height="37dp" />

<TextView android:id="@+id/t6" android:layout\_width="match\_parent" android:layout\_height="31dp" android:minHeight="48dp" android:textAlignment="center" android:textColor="@android:color/white" android:textSize="25sp" android:textStyle="bold" />

</LinearLayout>

</ScrollView>

MainActivity.java:

package com.example.practical3\_a; import

androidx.appcompat.app.AppCompatActivity; import android.content.Intent;

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

import android.widget.Button; import android.widget.CheckBox; import android.widget.EditText; import android.widget.RadioButton; import android.widget.RadioGroup; import android.widget.RatingBar; import android.widget.TextView; import java.util.ArrayList;

public class MainActivity extends AppCompatActivity { Button send\_button; RatingBar ratingBar; RadioGroup rg1; RadioButton rb1,rb2; CheckBox c1,c2,c3; EditText object1,object2,object3; String shift;

ArrayList<String> hobby = new ArrayList<>(); @Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_main); send\_button = findViewById(R.id.reg); object1 = findViewById(R.id.name); object2 = findViewById(R.id.roll); object3 = findViewById(R.id.dept);

ratingBar = findViewById(R.id.ratingBar); rg1

= findViewById(R.id.radiogrp);

c1 = findViewById(R.id.dan); c2 =

findViewById(R.id.sin); c3 = findViewById(R.id.pla); send\_button.setOnClickListener(new View.OnClickListener() { public void onClick(View v) {

String name = object1.getText().toString(); String roll = object2.getText().toString(); String dept = object3.getText().toString(); String rate = String.valueOf(ratingBar.getRating()); rb1 = findViewById(R.id.ra1);

rb2 = findViewById(R.id.ra2); if (rb1.isChecked()) {

shift = "Morning";

}

if (rb2.isChecked()) { shift = "Afternoon";

}

if (c1.isChecked()) { hobby.add(c1.getText().toString());

}

if (c2.isChecked()) { hobby.add((String) c2.getText());

}

if (c3.isChecked()) { hobby.add((String) c3.getText());

}

Intent intent = new Intent(getApplicationContext(), DisplayData.class); intent.putExtra("nam", name);

intent.putExtra("roll", roll); intent.putExtra("dept", dept); intent.putExtra("rat", rate); intent.putExtra("shi", shift); intent.putExtra("hob", hobby); startActivity(intent);

}

} ); }}

DisplayData.java:

package com.example.practical3\_a; import

androidx.appcompat.app.AppCompatActivity; import android.content.Intent;

import android.os.Bundle; import

android.text.method.ScrollingMovementMethod; import android.widget.ArrayAdapter;

import android.widget.ListView; import android.widget.TextView; import java.util.ArrayList;

public class DisplayData extends AppCompatActivity { TextView tv1,tv2,tv3,tv4,tv6,tv5; @Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_display\_data)

;

tv1=findViewById(R.id.t1); tv2=findViewById(R.id.t2); tv3=findViewById(R.id.t3); tv4=findViewById(R.id.t4);

tv5=findViewById(R.id.t5); tv6=findViewById(R.id.t6); Intent intent = getIntent();

String str1 = intent.getStringExtra("nam"); tv1.setText("Name: "+str1);

String str2 = intent.getStringExtra("roll"); tv2.setText("Roll No: "+str2);

String str3 = intent.getStringExtra("dept"); tv3.setText("Department: "+str3);

String str4 = intent.getStringExtra("shi"); tv4.setText("Shift: "+str4);

ArrayList<String> myList = (ArrayList<String>)

### Output:

getIntent().getSerializableExtra("hob"); tv5.setText("");

for (int j = 0; j < myList.size(); j++){ tv5.append( myList.get(j) + "\n");

}

tv5.setMovementMethod(new ScrollingMovementMethod()); String str5 = intent.getStringExtra("rat"); tv6.setText("Rating: "+str5);

}

}

### F:\ANDROID OP\Screenshot_1632752021.pngF:\ANDROID OP\Screenshot_1632752165.pngF:\ANDROID OP\Screenshot_1632752169.pngGUI After Filling Data Display Data

1. Create a login form. For successful login, display welcome page and in case of failure display alert box indicating error message and attempts made. Disable submit button after 3wrong attempts and display the alert message indicating the same.

activity\_main.xml:

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

<androidx.constraintlayout.widget.ConstraintLa yout xmlns:android="[http://schemas.android.com/apk/](http://schemas.android.com/apk/res/android) [res/android"](http://schemas.android.com/apk/res/android) xmlns:app="[http://schemas.android.com/apk/res-](http://schemas.android.com/apk/res-auto) [auto"](http://schemas.android.com/apk/res-auto) xmlns:tools="[http://schemas.android.com/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="182dp" android:layout\_height="49dp" android:text="LOGIN" android:textAlignment="center" android:textSize="30sp" android:textStyle="bold" app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.497" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.043" />

<EditText android:id="@+id/user" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:ems="10"

android:hint="Enter Username" android:inputType="textPersonName" app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.497" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.243" tools:ignore="MissingConstraints" />

<EditText android:id="@+id/pass" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:ems="10"

android:hint="Enter Password" android:inputType="textPassword" app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.497" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.392" tools:ignore="MissingConstraints" />

<Button android:id="@+id/log" android:layout\_width="106dp" android:layout\_height="52dp"

ndroid:onClick="onClick" android:text="LOGIN" app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.498" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.555" tools:ignore="MissingConstraints,OnClick" />

</androidx.constraintlayout.widget.ConstraintL ayout>

activity\_welcome\_page.xml:

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

<androidx.constraintlayout.widget.ConstraintLa yout xmlns:android="[http://schemas.android.com/apk/](http://schemas.android.com/apk/res/android) [res/android"](http://schemas.android.com/apk/res/android) xmlns:app="[http://schemas.android.com/apk/res-](http://schemas.android.com/apk/res-auto) [auto"](http://schemas.android.com/apk/res-auto) xmlns:tools="[http://schemas.android.com/tools"](http://schemas.android.com/tools) android:layout\_width="match\_parent" android:layout\_height="match\_parent" tools:context=".WelcomePage">

<TextView android:id="@+id/textView2" android:layout\_width="359dp" android:layout\_height="96dp" android:textAlignment="center" android:textSize="30sp" android:textStyle="bold" tools:layout\_editor\_absoluteX="40dp"

tools:layout\_editor\_absoluteY="347dp" tools:ignore="MissingConstraints" />

</androidx.constraintlayout.widget.ConstraintL ayout>

MainActivity.java:

package com.example.practical3\_b; import

androidx.appcompat.app.AppCompatActivity; import android.content.Intent;

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

public class MainActivity extends AppCompatActivity { int count=0;

EditText u,p; Button b; View bu; @Override protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_main); u=findViewById(R.id.user); p=findViewById(R.id.pass); b=findViewById(R.id.log);

bu = findViewById(R.id.log);}

public void onClick(View view) { String us = u.getText().toString(); String pa =

p.getText().toString(); if (count<2)

{

if(us.equals("Atharva") && pa.equals("Kale")){ Toast.makeText(MainActivity.this, "LOGIN SUCCESS",

Toast.LENGTH\_SHORT).show(); Intent intent = new Intent(getApplicationContext(),

WelcomePage.class); intent.putExtra("nam", u.getText().toString()); startActivity(intent);

}

else

{

count+=1; Toast.makeText(MainActivity.this, "LOGIN FAILED!!", Toast.LENGTH\_SHORT).show();

Toast.makeText(MainActivity.this, "Remaining Attempts: "+(3-count), Toast.LENGTH\_SHORT).show();

}

}

else

{

b.setClickable(false); bu.setVisibility(View.GONE); Toast.makeText(MainActivity.this, "LOGIN FAILED!! TRY AGAIN AFTER SOME TIME!!",

Toast.LENGTH\_SHORT).show();

} } }

WelcomePage.java:

package com.example.practical3\_b; import

androidx.appcompat.app.AppCompatActivity; import android.content.Intent;

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

public class WelcomePage extends AppCompatActivity { @Override protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_welcome\_page)

; TextView t1 = (TextView) findViewById(R.id.textView2); Intent intent = getIntent();

String str1 = intent.getStringExtra("nam"); t1.setText("Welcome "+str1);

} }

## Practical 4: DATA BASE CONNECTIVITY

A. Program to create a file in a directory and perform following file operations.

1. Write into a file
2. Read from a file
3. Delete a file

activity\_main.xml:

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

<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="[http://schemas.android.com/apk/res/android"](http://schemas.android.com/apk/res/android) xmlns:app="[http://schemas.android.com/apk/res-auto"](http://schemas.android.com/apk/res-auto) xmlns:tools="[http://schemas.android.com/tools"](http://schemas.android.com/tools) android:layout\_width="match\_parent" android:layout\_height="match\_parent" tools:context=".MainActivity">

<EditText android:id="@+id/to\_file" android:layout\_width="405dp" android:layout\_height="146dp" android:ems="10"

android:inputType="textMultiLine" android:hint="Enter Text To Add To File" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.427" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.023" />

<Button

android:id="@+id/insert" android:layout\_width="121dp" android:layout\_height="60dp" android:onClick="write" android:text="INSERT" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.302" />

<Button

android:id="@+id/del" android:layout\_width="121dp" android:layout\_height="60dp" android:text="DELETE" android:onClick="delete" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.931" />

<Button

android:id="@+id/read" android:layout\_width="121dp" android:layout\_height="60dp" android:text="READ" android:onClick="read" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.701" />

<TextView android:id="@+id/fro\_file" android:layout\_width="405dp" android:layout\_height="124dp" android:text="TextView"

app:layout\_constraintBottom\_toBottomOf="parent" android:singleLine="false" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>

MainActivity.java:

package com.example.practical4\_a;

import androidx.appcompat.app.AppCompatActivity; import android.content.Context; import android.os.Bundle;

import android.view.View; import android.widget.Button; import android.widget.EditText; import android.widget.TextView; import android.widget.Toast; import java.io.BufferedReader; import java.io.File;

import java.io.FileInputStream;

import java.io.FileNotFoundException; import java.io.FileOutputStream; import java.io.IOException; import java.io.InputStream; import java.io.InputStreamReader;

import java.io.OutputStreamWriter;

public class MainActivity extends AppCompatActivity { Button ins,red,del;

TextView t1; EditText e1; @Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_main);

t1=findViewById(R.id.fro\_file); e1=findViewById(R.id.to\_file); ins=findViewById(R.id.insert);

red=findViewById(R.id.read); del=findViewById(R.id.del);

}

public void write(View v) { String filename="myfile.txt"; String data=e1.getText().toString(); FileOutputStream fos; try {

fos = openFileOutput(filename, Context.MODE\_APPEND);

//default mode is PRIVATE, can be APPEND etc. fos.write(data.getBytes()); fos.close(); Toast.makeText(getApplicationContext(),filename + " saved", Toast.LENGTH\_LONG).show();

} catch (FileNotFoundException e) {Toast.makeText(getApplicationContext(),"FILE NOT FOUND", Toast.LENGTH\_LONG).show();;} catch (IOException e) {e.printStackTrace();}

}

public void delete(View v) { deleteFile("myfile.txt"); Toast.makeText(getApplicationContext(),"FILE DELETED!!!", Toast.LENGTH\_LONG).show();

}

public void read(View view) {

StringBuffer stringBuffer = new StringBuffer(); try {

//Attaching BufferedReader to the FileInputStream by the help of InputStreamReader BufferedReader inputReader = new BufferedReader(new

InputStreamReader(openFileInput("myfile.txt"))); String inputString;

//Reading data line by line and storing it into the stringbuffer while ((inputString = inputReader.readLine()) != null) {

stringBuffer.append(inputString + "\n");

}

t1.setText(stringBuffer.toString());

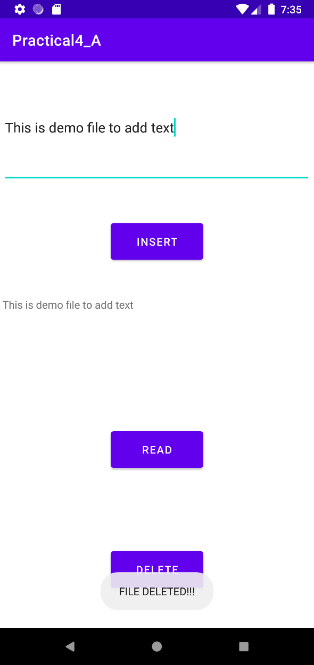
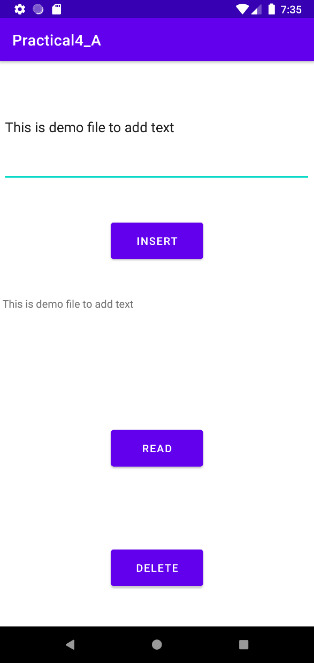
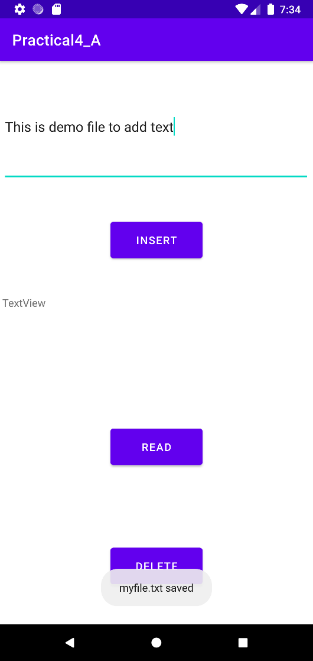
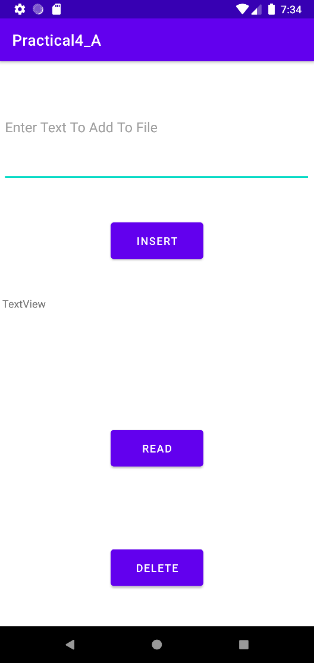
} catch (FileNotFoundException e)

{Toast.makeText(getApplicationContext(),"FILE NOT FOUND", Toast.LENGTH\_LONG).show();} catch (IOException e) { e.printStackTrace();

}

}

}



B. Create a new project and create a login Activity. In this create a login UI asking user email and password with an option of remember me checkbox. Also a button displaying Sign In orRegister using shared preferences

activity\_main.xml:

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

<androidx.constraintlayout.widget.ConstraintLa yout xmlns:android="[http://schemas.android.com/apk/](http://schemas.android.com/apk/res/android) [res/android"](http://schemas.android.com/apk/res/android) xmlns:app="[http://schemas.android.com/apk/res-](http://schemas.android.com/apk/res-auto) [auto"](http://schemas.android.com/apk/res-auto) xmlns:tools="[http://schemas.android.com/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="182dp" android:layout\_height="49dp" android:text="LOGIN" android:textAlignment="center" android:textSize="30sp" android:textStyle="bold" app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.497" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.043" />

<EditText android:id="@+id/pass" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:ems="10"

android:hint="Enter Password" android:inputType="textPassword" android:minHeight="48dp" app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.497" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.341" tools:ignore="MissingConstraints" />

<Button android:id="@+id/log" android:layout\_width="106dp" android:layout\_height="52dp"

android:onClick="onClick" android:text="LOGIN" app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.498" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.586" tools:ignore="MissingConstraints,OnClick" />

<CheckBox android:id="@+id/share" android:layout\_width="145dp"

android:layout\_height="48dp" android:text="Remember Me" app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.375" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.459" /

<EditText android:id="@+id/user" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:ems="10"

android:hint="Enter E-Mail" android:inputType="textEmailAddress" android:minHeight="48dp" app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.497" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.239" tools:ignore="MissingConstraints" />

</androidx.constraintlayout.widget.ConstraintL ayout>

activity\_display.xml:

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

<androidx.constraintlayout.widget.ConstraintLa yout xmlns:android="[http://schemas.android.com/apk/](http://schemas.android.com/apk/res/android) [res/android"](http://schemas.android.com/apk/res/android) xmlns:app="[http://schemas.android.com/apk/res-](http://schemas.android.com/apk/res-auto) [auto"](http://schemas.android.com/apk/res-auto) xmlns:tools="[http://schemas.android.com/tools"](http://schemas.android.com/tools) android:layout\_width="match\_parent" android:layout\_height="match\_parent" tools:context=".Display">

<TextView android:id="@+id/textView2" android:layout\_width="355dp" android:layout\_height="113dp" android:textAlignment="center" android:textSize="30sp" android:textStyle="bold" app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" />

<Button android:id="@+id/button"

android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="Clear Data" android:onClick="onClick" app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.498" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.865" />

</androidx.constraintlayout.widget.ConstraintL ayout>

MainActivity.java: package com.example.practical4\_b; import

androidx.appcompat.app.AppCompatActivity; import android.content.Intent;

import android.content.SharedPreferences; import android.os.Bundle;

import android.view.View; import android.widget.CheckBox; import android.widget.EditText; import android.widget.Toast;

public class MainActivity extends AppCompatActivity { EditText user,pass; CheckBox cb;

SharedPreferences sharedPreferences; boolean isRemembered;

@Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_main); user = findViewById(R.id.user); pass = findViewById(R.id.pass); cb = findViewById(R.id.share); sharedPreferences = getSharedPreferences("SHARED\_PREF", MODE\_PRIVATE); isRemembered = sharedPreferences.getBoolean("Checkbox", false); if(isRemembered){

Intent intent = new Intent(MainActivity.this,Display.class); startActivity(intent);

finish();

}

}

public void onClick(View view) {

String name = user.getText().toString(); boolean checked = cb.isChecked(); SharedPreferences.Editor editor = sharedPreferences.edit(); Toast.makeText(MainActivity.this,"Login credentials saved!",Toast.LENGTH\_SHORT).show(); editor.putString("Name",name); editor.putBoolean("Checkbox",checked); editor.apply();

Intent intent = new Intent(MainActivity.this,Display.class); startActivity(intent);

finish();

}

}

Display.java:

package com.example.practical4\_b; import

androidx.appcompat.app.AppCompatActivity; import android.content.Intent;

import android.content.SharedPreferences; import android.os.Bundle;

import android.view.View; import android.widget.TextView; import android.widget.Toast;

public class Display extends AppCompatActivity

{ SharedPreferences preferences; @Override

protected void onCreate(Bundle

savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_display); TextView tv;

tv = findViewById(R.id.textView2); preferences=getSharedPreferences("SHARED\_PREF"

,MODE\_PRIVATE); String

name=preferences.getString("Name",""); tv.setText("Hello "+name+" !");

}

public void onClick(View view) { SharedPreferences.Editor editor = preferences.edit(); editor.clear(); editor.apply();

Intent intent = new Intent(Display.this, MainActivity.class); Toast.makeText(Display.this,"Login credentials removed!",Toast.LENGTH\_SHORT).show(); startActivity(intent); finish();

}

## PRACTICAL 5: Study

**Audio, Video And Location on Android.**

A. Write a program to:

1. Record an audio and play it.
2. Play a video in a video view

AndroidManifest.xml:

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

<manifest xmlns:android="[http://schemas.android.com/apk/](http://schemas.android.com/apk/res/android) [res/android](http://schemas.android.com/apk/res/android)" package="com.example.practical6\_a">

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

<uses-permission android:name="android.permission.RECORD\_AUDIO"

/>

<uses-permission android:name="android.permission.WRITE\_EXTERNA L\_STORAGE"/>

<uses-permission android:name="android.permission.STORAGE" />

<application android:allowBackup="true" android:icon="@mipmap/ic\_launcher" android:label="@string/app\_name" android:roundIcon="@mipmap/ic\_launcher\_round" android:supportsRtl="true" android:theme="@style/Theme.Practical6\_A">

<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>

activity\_main.xml:

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

<androidx.constraintlayout.widget.ConstraintLa yout xmlns:android="[http://schemas.android.com/apk/](http://schemas.android.com/apk/res/android) [res/android"](http://schemas.android.com/apk/res/android) xmlns:app="[http://schemas.android.com/apk/res-](http://schemas.android.com/apk/res-auto) [auto"](http://schemas.android.com/apk/res-auto) xmlns:tools="[http://schemas.android.com/tools"](http://schemas.android.com/tools) android:layout\_width="match\_parent" android:layout\_height="match\_parent" tools:context=".MainActivity">

<Button android:id="@+id/button5" android:layout\_width="96dp" android:layout\_height="55dp" android:text="PLAY"

app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintHorizontal\_bias="0.295" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.318" />

<Button android:id="@+id/button4" android:layout\_width="96dp" android:layout\_height="55dp" android:text="STOP PLAY"

app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.717" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.318" />

<Button android:id="@+id/button3" android:layout\_width="96dp" android:layout\_height="55dp" android:text="PLAY VIDEO"

app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.498" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.458" />

<Button android:id="@+id/button2" android:layout\_width="96dp" android:layout\_height="55dp" android:text="STOP RECORD"

app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.717" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.176" />

<TextView android:id="@+id/textView" android:layout\_width="294dp" android:layout\_height="37dp" android:text="AUDIO AND VIDEO" android:textAlignment="center" android:textSize="30sp" android:textStyle="bold" app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.495" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.023" />

<VideoView android:id="@+id/videoView" android:layout\_width="365dp" android:layout\_height="293dp" app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.549" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.904" />

<Button android:id="@+id/button" android:layout\_width="96dp" android:layout\_height="55dp" android:text="RECORD"

app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.295" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.176" />

</androidx.constraintlayout.widget.ConstraintL ayout>

MainActivity.java: package com.example.practical6\_a; import static

android.Manifest.permission.RECORD\_AUDIO; import static android.Manifest.permission.WRITE\_EXTERNAL\_STO RAGE; import androidx.appcompat.app.AppCompatActivity; import androidx.core.app.ActivityCompat; import androidx.core.content.ContextCompat; import android.annotation.SuppressLint; import android.content.pm.PackageManager; import android.media.MediaPlayer;

import android.media.MediaRecorder; import android.net.Uri;

import android.os.Bundle;

import android.os.Environment; import android.util.Log;

import android.view.View; import android.widget.Button;

import android.widget.MediaController; import android.widget.Toast;

import android.widget.VideoView; import java.io.IOException; import java.util.Random; public class MainActivity extends AppCompatActivity { Button buttonStart, buttonStop, buttonPlayLastRecordAudio, playvideo,buttonStopPlayingRecording ; String AudioSavePathInDevice = null; MediaRecorder mediaRecorder ; Random random ;

VideoView vw;

String RandomAudioFileName = "ABCDEFGHIJKLMNOP"; public static final int RequestPermissionCode = 1; MediaPlayer mediaPlayer ;

@Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_main); vw = findViewById(R.id.videoView); buttonStart = (Button) findViewById(R.id.button); buttonStop = (Button) findViewById(R.id.button2); buttonPlayLastRecordAudio = (Button) findViewById(R.id.button5); buttonStopPlayingRecording = (Button)findViewById(R.id.button4); playvideo=findViewById(R.id.button3); buttonStop.setEnabled(false);

buttonPlayLastRecordAudio.setEnabled(false); buttonStopPlayingRecording.setEnabled(false); random = new Random(); playvideo.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View view) {

Toast.makeText(MainActivity.this, "STARTING VIDEO",

Toast.LENGTH\_LONG).show(); Uri vidUri = Uri.parse("https://ia800201.us.archive.org/22/ items/ksnn\_compilation\_master\_the\_internet/ksn n

\_compilation\_master\_the\_internet\_512kb.mp4"); vw = findViewById(R.id.videoView); vw.setVideoURI(vidUri); vw.setMediaController(new MediaController(MainActivity.this)); vw.requestFocus();

vw.start();

}

});

buttonStart.setOnClickListener(new View.OnClickListener() { @Override public void onClick(View view) { if(checkPermission()) { AudioSavePathInDevice =

Environment.getExternalStorageDirectory().getA bsolutePath() + "/" + CreateRandomAudioFileName(5) + "AudioRecording.3gp"; MediaRecorderReady(); try {

mediaRecorder.prepare(); mediaRecorder.start(); Toast.makeText(MainActivity.this, "Recording started", Toast.LENGTH\_LONG).show();

} catch (IllegalStateException e) {

// TODO Auto-generated catch block e.printStackTrace();

} catch (IOException e) {

// TODO Auto-generated catch block e.printStackTrace();

}

buttonStart.setEnabled(false); buttonStop.setEnabled(true);

} else { requestPermission();

}

}

});

buttonStop.setOnClickListener(new View.OnClickListener() { @Override public void onClick(View view) { mediaRecorder.stop(); buttonStop.setEnabled(false);

buttonPlayLastRecordAudio.setEnabled(true); buttonStart.setEnabled(true); buttonStopPlayingRecording.setEnabled(false); Toast.makeText(MainActivity.this, "Recording Completed", Toast.LENGTH\_LONG).show();

}

});

buttonPlayLastRecordAudio.setOnClickListener(n ew View.OnClickListener() { @Override

public void onClick(View view) throws IllegalArgumentException, SecurityException, IllegalStateException { buttonStop.setEnabled(false); buttonStart.setEnabled(false); buttonStopPlayingRecording.setEnabled(true); mediaPlayer = new MediaPlayer();

try { mediaPlayer.setDataSource(AudioSavePathInDevic e); mediaPlayer.prepare();

} catch (IOException e) { e.printStackTrace();

}});}

mediaPlayer.start(); Toast.makeText(MainActivity.this, "Recording Playing", Toast.LENGTH\_LONG).show(); buttonStopPlayingRecording.setOnClickListener( new View.OnClickListener() { @Override

public void onClick(View view) { buttonStop.setEnabled(false); buttonStart.setEnabled(true); buttonStopPlayingRecording.setEnabled(false); buttonPlayLastRecordAudio.setEnabled(true); if(mediaPlayer != null){ mediaPlayer.stop(); mediaPlayer.release(); MediaRecorderReady();

}}});}

public void MediaRecorderReady(){ mediaRecorder=new MediaRecorder(); mediaRecorder.setAudioSource(MediaRecorder.Aud ioSource.MIC); mediaRecorder.setOutputFormat(MediaRecorder.Ou tputFormat.THREE\_GPP); mediaRecorder.setAudioEncoder(MediaRecorder.Au dioEncoder.AMR\_NB); mediaRecorder.setOutputFile(AudioSavePathInDev ice);

}

public String CreateRandomAudioFileName(int string){ StringBuilder stringBuilder = new StringBuilder( string ); int i = 0 ; while(i < string ) { stringBuilder.append(RandomAudioFileName.

charAt(random.nextInt(RandomAudioFileName.leng th())));

i++ ;

}

return stringBuilder.toString();} private void requestPermission() {

ActivityCompat.requestPermissions(MainActivity

.this, new String[]{WRITE\_EXTERNAL\_STORAGE, RECORD\_AUDIO},

RequestPermissionCode);

}

public void onRequestPermissionsResult(int requestCode, String permissions[], int[] grantResults) { super.onRequestPermissionsResult(requestCode, permissions, grantResults); switch (requestCode) {

case RequestPermissionCode: if (grantResults.length > 0) {

boolean StoragePermission = grantResults[0] == PackageManager.PERMISSION\_GRANTED;

boolean RecordPermission = grantResults[1] == PackageManager.PERMISSION\_GRANTED;

if (StoragePermission && RecordPermission) { Toast.makeText(MainActivity.this, "Permission Granted",

Toast.LENGTH\_LONG).show();

} else {

Toast.makeText(MainActivity.this, "Permission Denied", Toast.LENGTH\_LONG).show();

}

}

break;

}

}

public boolean checkPermission() { int result =

ContextCompat.checkSelfPermission(getApplicati onContext(),

WRITE\_EXTERNAL\_STORAGE);

int result1 = ContextCompat.checkSelfPermission(getApplicati onContext(),

RECORD\_AUDIO);

return result == PackageManager.PERMISSION\_GRANTED && result1

== PackageManager.PERMISSION\_GRANTED;

}}

Create an application to display the current location of your device. (Latitude & Longitude value).

AndroidManifest.xml:

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

<manifest xmlns:android="[http://schemas.android.com/apk/](http://schemas.android.com/apk/res/android) [res/android](http://schemas.android.com/apk/res/android)" package="com.example.practical6b">

<uses-permission android:name="android.permission.ACCESS\_FINE\_L OCATION"/>

<uses-permission android:name="android.permission.ACCESS\_COARSE

\_LOCATION" />

<application android:allowBackup="true" android:icon="@mipmap/ic\_launcher" android:label="@string/app\_name" android:roundIcon="@mipmap/ic\_launcher\_round" android:supportsRtl="true" android:theme="@style/Theme.Practical6B">

<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>

activity\_main.xml:

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

<LinearLayout xmlns:android="[http://schemas.android.com/apk/](http://schemas.android.com/apk/res/android) [res/android"](http://schemas.android.com/apk/res/android) xmlns:tools="[http://schemas.android.com/tools"](http://schemas.android.com/tools) android:layout\_width="match\_parent" android:layout\_height="match\_parent"

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

<TextView android:id="@+id/showLocation" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:hint="Location" android:textSize="24sp" />

<Button android:id="@+id/btnGetLocation" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:text="Get Location" />

</LinearLayout> MainActivity.java:

package com.example.practical6b; import android.Manifest;

import android.app.AlertDialog; import android.content.Context;

import android.content.DialogInterface; import android.content.Intent;

import android.content.pm.PackageManager; import android.location.Location;

import android.location.LocationManager; import android.provider.Settings;

import android.support.v4.app.\*; import android.support.\*;

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

import android.widget.TextView; import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity; import androidx.core.app.ActivityCompat; public class MainActivity extends AppCompatActivity { private static final int REQUEST\_LOCATION = 1; Button btnGetLocation; TextView showLocation; LocationManager locationManager;

String latitude, longitude; @Override protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_main); ActivityCompat.requestPermissions( this, new String[]

{Manifest.permission.ACCESS\_FINE\_LOCATION}, REQUEST\_LOCATION);

showLocation = findViewById(R.id.showLocation); btnGetLocation = findViewById(R.id.btnGetLocation); btnGetLocation.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) { locationManager

= (LocationManager) getSystemService(Context.LOCATION\_SERVICE); if (!locationManager.isProviderEnabled(LocationMa ager.GPS\_PROVIDER)) {

OnGPS();

} else {

getLocation();}}});} private void OnGPS() {

final AlertDialog.Builder builder = new AlertDialog.Builder(this); builder.setMessage("Enable GPS").setCancelable(false).setPositiveButton(" Yes", new

DialogInterface.OnClickListener() { @Override public void onClick(DialogInterface dialog, int which) {

startActivity(new Intent(Settings.ACTION\_LOCATION\_SOURCE\_SETTING S));}}).setNegativeButton("No", new DialogInterface.OnClickListener() { @Override public void onClick(DialogInterface dialog, int which) { dialog.cancel();

}});

final AlertDialog alertDialog = builder.create(); alertDialog.show();

}

private void getLocation() {

if (ActivityCompat.checkSelfPermission( MainActivity.this,Manifest.permission.ACCESS\_F INE\_LOCATION) !=

PackageManager.PERMISSION\_GRANTED && ActivityCompat.checkSelfPermission( MainActivity.this, Manifest.permission.ACCESS\_COARSE\_LOCATION) != PackageManager.PERMISSION\_GRANTED) { ActivityCompat.requestPermissions(this, new String[]{Manifest.permission.ACCESS\_FINE\_LOCAT ION}, REQUEST\_LOCATION);

} else {

Location locationGPS = locationManager.getLastKnownLocation(LocationM anager.GPS\_PROVIDER);

if (locationGPS != null) {

double lat = locationGPS.getLatitude(); double longi = locationGPS.getLongitude(); latitude = String.valueOf(lat);

longitude = String.valueOf(longi); showLocation.setText("Your Location: " + "\n"

+ "Latitude: " + latitude + "\n" + "Longitude: " + longitude);

} else {

Toast.makeText(this, "Unable to find location.", Toast.LENGTH\_SHORT).show();

}}}}

## PRACTICAL 6: Android Programs Based On REST API

A. Create a basic application that allows you to download HTML from a given web page using HttpURLConnection.

activity\_main.xml:

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

<androidx.constraintlayout.widget.ConstraintLa yout xmlns:android="[http://schemas.android.com/apk/](http://schemas.android.com/apk/res/android) [res/android"](http://schemas.android.com/apk/res/android) xmlns:app="[http://schemas.android.com/apk/res-](http://schemas.android.com/apk/res-auto) [auto"](http://schemas.android.com/apk/res-auto) xmlns:tools="[http://schemas.android.com/tools"](http://schemas.android.com/tools) android:layout\_width="match\_parent" android:layout\_height="match\_parent" tools:context=".MainActivity">

<Button android:id="@+id/button"

android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="SUBMIT" android:onClick="onClick" app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.498" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.174" />

<EditText android:id="@+id/get\_url" android:layout\_width="358dp" android:layout\_height="41dp" android:ems="10" android:hint="Enter URL" android:inputType="textPersonName" android:textAlignment="center" android:textStyle="bold" app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.497" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.051" />

<TextView android:id="@+id/textView" android:layout\_width="359dp" android:layout\_height="482dp" android:text="" android:scrollbars = "vertical" app:layout\_constraintBottom\_toBottomOf="parent

" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.497" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.816" />

</androidx.constraintlayout.widget.ConstraintL ayout>

MainActivity.java:

@Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_main); e1=findViewById(R.id.get\_url); b=findViewById(R.id.button);

t1 = findViewById(R.id.textView);

}

public void onClick(View view) throws IOException { Thread thread = new Thread(new Runnable() {

@Override

public void run() { try {

String link = e1.getText().toString();

//String link ="[http://www.google.com"](http://www.google.com/); URL url = new URL(link);

HttpURLConnection conn = (HttpURLConnection) url.openConnection(); conn.connect(); InputStream is = conn.getInputStream(); BufferedReader reader = new BufferedReader(new InputStreamReader(is, "UTF-8"));

String webPage = "",data="";

while ((data = reader.readLine()) != null){ webPage += data + "\n";

}

String filename="download.txt"; FileOutputStream fos;

try {

fos = openFileOutput(filename, Context.MODE\_APPEND);

//default mode is PRIVATE, can be APPEND etc. fos.write(webPage.getBytes());

fos.close(); t1.setText("SAVED TO FILE");

} catch (FileNotFoundException e)

{Toast.makeText(getApplicationContext(),"FILE NOT FOUND", Toast.LENGTH\_LONG).show();;}

catch (IOException e) {e.printStackTrace();}

} catch (Exception e)

{

e.printStackTrace();

} }});

thread.start();

}}

B. Create an application to parse the data using JSONObject methods and set it in the Text View’s. (Employee name and salary stored in JSON format).

activity\_main.xml:

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

<androidx.constraintlayout.widget.ConstraintLa yout xmlns:android="[http://schemas.android.com/apk/](http://schemas.android.com/apk/res/android) [res/android"](http://schemas.android.com/apk/res/android) xmlns:app="[http://schemas.android.com/apk/res-](http://schemas.android.com/apk/res-auto) [auto"](http://schemas.android.com/apk/res-auto) xmlns:tools="[http://schemas.android.com/tools"](http://schemas.android.com/tools) android:layout\_width="match\_parent" android:layout\_height="match\_parent" tools:context=".MainActivity">

<TextView android:id="@+id/name" android:layout\_width="248dp" android:layout\_height="59dp" android:layout\_centerHorizontal="true" android:text="Name" android:textColor="#000" android:textSize="20sp" app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.395" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.208" />

<TextView android:id="@+id/salary" android:layout\_width="259dp" android:layout\_height="61dp" android:layout\_centerHorizontal="true" android:text="Salary" android:textColor="#000" android:textSize="20sp" app:layout\_constraintBottom\_toBottomOf="parent " app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.377" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.381" />

</androidx.constraintlayout.widget.ConstraintL

ayout> MainActivity.java:

package com.example.practical8\_b; import

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

import android.widget.TextView; import org.json.JSONException; import org.json.JSONObject;

public class MainActivity extends AppCompatActivity {

String JSON\_STRING = "{\"employee\":{\"name\":\"ATHARVA KALE\",\"salary\":650000}}"; String name, salary;

TextView employeeName, employeeSalary; @Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_main); employeeName = (TextView) findViewById(R.id.name); employeeSalary = (TextView) findViewById(R.id.salary); try { JSONObject obj = new JSONObject(JSON\_STRING); JSONObject employee = obj.getJSONObject("employee"); name = employee.getString("name");

salary = employee.getString("salary"); employeeName.setText("Name: "+name); employeeSalary.setText("Salary: "+salary);

} catch (JSONException e) { e.printStackTrace();

}

}

}

C. Write a basic application to (use volley library), create a button and on click of the button a HTTP request will be send to server. The response from the server is then displayed using Toast on the screen

activity\_main.xml:

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

<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="[http://schemas.android.com/apk/res/android"](http://schemas.android.com/apk/res/android) xmlns:app="[http://schemas.android.com/apk/res-auto"](http://schemas.android.com/apk/res-auto) xmlns:tools="[http://schemas.android.com/tools"](http://schemas.android.com/tools) android:layout\_width="match\_parent" android:layout\_height="match\_parent" tools:context=".MainActivity">

<Button

android:id="@+id/buttonRequest" android:layout\_width="210dp" android:layout\_height="49dp" android:layout\_alignParentTop="true" android:background="#414af4" android:text="SUBMIT" android:textColor="#ffffff" app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.494" app:layout\_constraintStart\_toStartOf="parent" app:layout\_constraintTop\_toTopOf="parent" app:layout\_constraintVertical\_bias="0.735" />

</androidx.constraintlayout.widget.ConstraintLayout> MainActivity.java:

package com.example.practical8\_c;

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

import android.util.Log; import android.view.View; import android.widget.Button; import android.widget.Toast;

import com.android.volley.Request; import com.android.volley.RequestQueue; import com.android.volley.Response; import com.android.volley.VolleyError;

import com.android.volley.toolbox.StringRequest; import com.android.volley.toolbox.Volley; public class MainActivity extends AppCompatActivity {

private static final String TAG = MainActivity.class.getName(); private Button btnRequest; private RequestQueue mRequestQueue; private StringRequest mStringRequest;

private String url = "https://run.mocky.io/v3/b0f7696f-ac67-4152-9f23-1a4c3dc68b37"; @Override protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_main);

btnRequest = (Button) findViewById(R.id.buttonRequest); btnRequest.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v){ sendAndRequestResponse();

}

}

);

}

private void sendAndRequestResponse() {

//RequestQueue initialized

mRequestQueue = Volley.newRequestQueue(this);

//String Request initialized

mStringRequest = new StringRequest(Request.Method.GET, url, new Response.Listener<String>() { @Override

public void onResponse(String response) { Toast.makeText(getApplicationContext(),"Response :" + response.toString(),

Toast.LENGTH\_LONG).show();//display the response on screen

}

}, new Response.ErrorListener() { @Override

public void onErrorResponse(VolleyError error) { Log.i(TAG,"Error :" + error.toString());

}

});

mRequestQueue.add(mStringRequest);

}

}

# PRACTICAL 7:

**Introduction to Dart and Flutter**

A. Create a widget ProductBox that contains the details of the product, such as image, name,price, and description. In the ProductBox widget, we use the following child widgets: Container, Row, Column, Expanded, Card, Text, Image, etc. This widget contains the following layout

main.dart:

import 'package:flutter/material.dart'; void main() {

runApp(MyApp());

}

class MyApp extends StatelessWidget {

// This widget is the root of your application. @override

Widget build(BuildContext context) { return MaterialApp(

title: 'Flutter Demo', theme: ThemeData( primarySwatch: Colors.blue,

),

home: MyHomePage(title: 'Product layout demo home page'),

);

}

}

class MyHomePage extends StatelessWidget { MyHomePage({Key? key, required this.title}) : super(key: key); final String title; @override

Widget build(BuildContext context) { return Scaffold(

appBar: AppBar(title: Text("Product Listing")), body: ListView( shrinkWrap: true,

padding: const EdgeInsets.fromLTRB(2.0, 10.0, 2.0, 10.0), children: <Widget>[

ProductBox( name: "iPhone",

description: "If you have a kidney you have a iPhone", price: 99999,

image: "iPhone.png"

),

ProductBox( name: "Pixel",

description: "Pixel, garbage thing!!", price: 50000,

image: "Pixel.png"

),

ProductBox( name: "Laptop",

description: "Alienware feel the POWER OF ALIEN!!!", price: 200000,

image: "Laptop.png"

),

ProductBox( name: "Tablet", description: "Ipad the one to eat your money!!!!", price: 60000,

image: "Tablet.png"

),

ProductBox(

name: "Pendrive",

description: "Pendrive FAST SMOOTH AND IT SAVES YOUR DATA!!!", price: 200,

image: "Pendrive.png"

),

ProductBox(

name: "Floppy Drive",

description: "Floppy drive???!!! Go visit a DOCTOR!!!", price: 0,

image: "Floppy.png"

),],));}}

class ProductBox extends StatelessWidget { ProductBox({Key? key, required this.name, required this.description, required this.price, required this.image}) : super(key: key); final String name;

final String description; final int price; final String image;

Widget build(BuildContext context) { return Container(

padding: EdgeInsets.all(2), height: 120, child: Card( child: Row( mainAxisAlignment: MainAxisAlignment.spaceEvenly, children:

<Widget>[

Image.asset("assets/" + image), Expanded( child: Container(

padding: EdgeInsets.all(5), child: Column( mainAxisAlignment: MainAxisAlignment.spaceEvenly, children:

<Widget>[ Text(

this.name, style: TextStyle( fontWeight: FontWeight.bold

)

),

Text(this.description), Text( "Price: " + this.price.toString()

),],)))]) )); }}

pubspec.yaml: assets: assets/iPhone.png assets/Laptop.png assets/Pendrive.png assets/Pixel.png assets/Tablet.png assets/Floppy.png

## PRACTICAL 8: Introduction to Dart and Flutter:

A. Create a registration form using Flutter.

