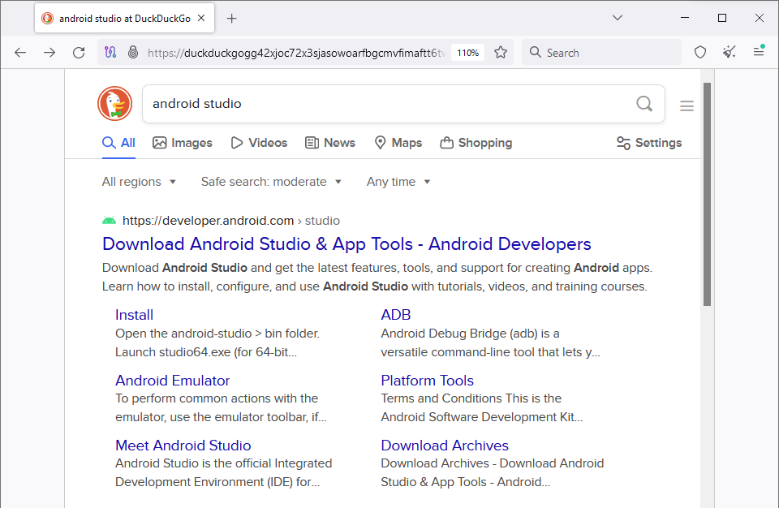
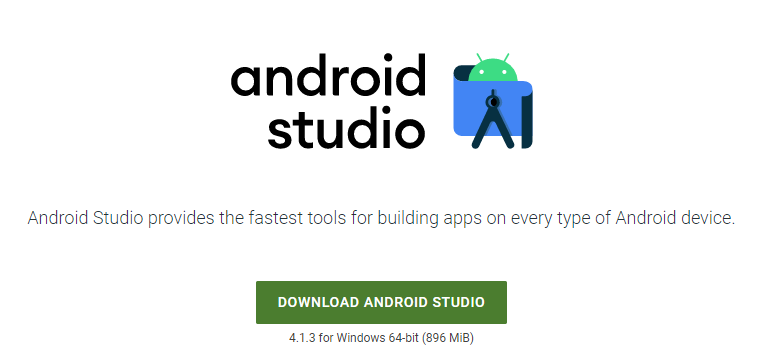
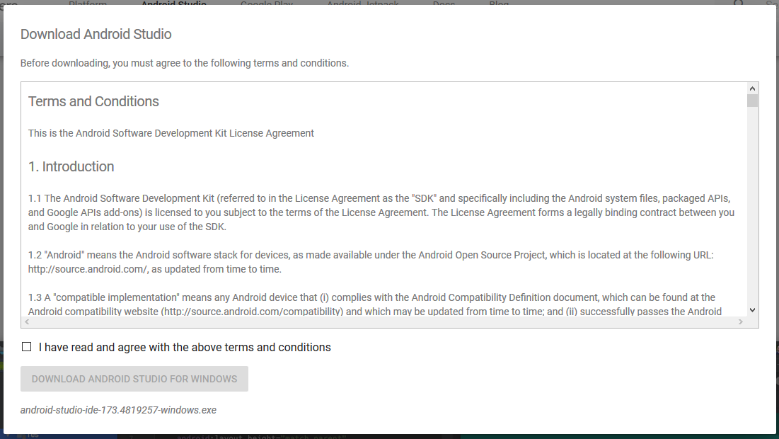
# **Practical no. 1**

**Aim:** Installation of android studio

**Step 1:** Head over to this link to get the Android Studio executable or zip file.

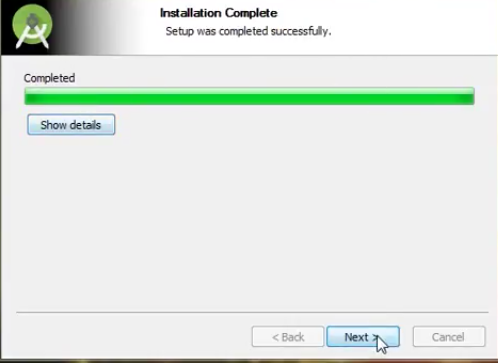
**Step 2:** Click on the Download Android Studio Button.

Click on the “I have read and agree with the above terms and conditions” checkbox followed by the download button.

Click on the Save file button in the appeared prompt box and the file will start downloading.

**Step 3:** After the downloading has finished, open the file from downloads and run it. It will prompt the following dialog box.

Click on next. In the next prompt, it’ll ask for a path for installation. Choose a path and hit next.

**Step 4:** It will start the installation, and once it is completed, it will be like the image shown below.

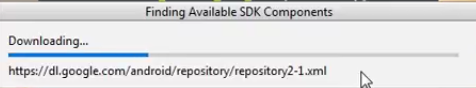
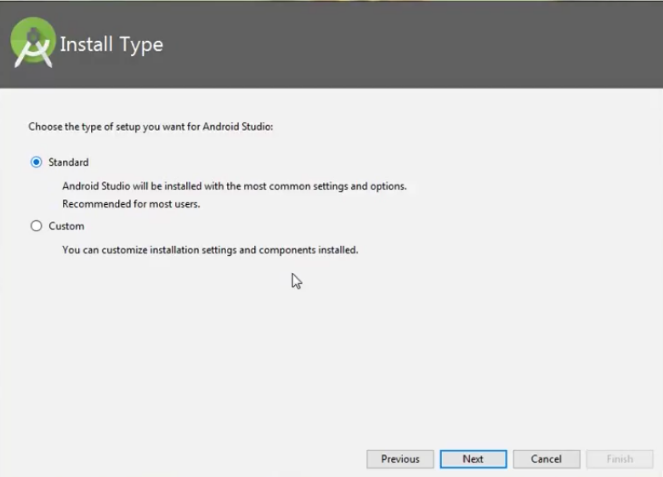
Click on next.

**Step 5:** Once “Finish” is clicked, it will ask whether the previous settings need to be imported [if the android studio had been installed earlier], or not. It is better to choose the ‘Don’t import Settings option’.

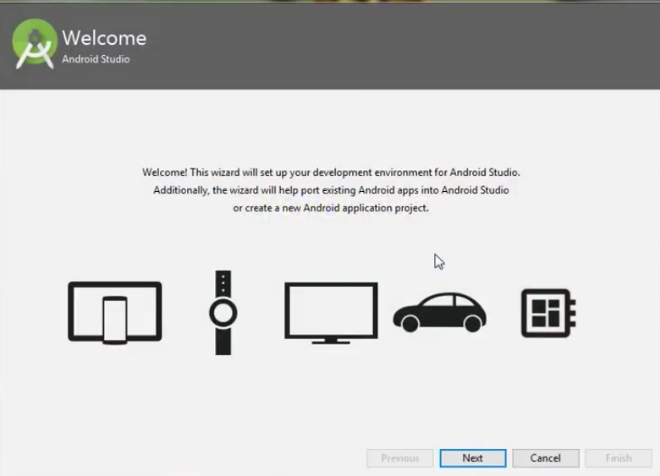
Click the OK button.

**Step 6:** This will start the Android Studio.

Meanwhile, it will be finding the available SDK components.

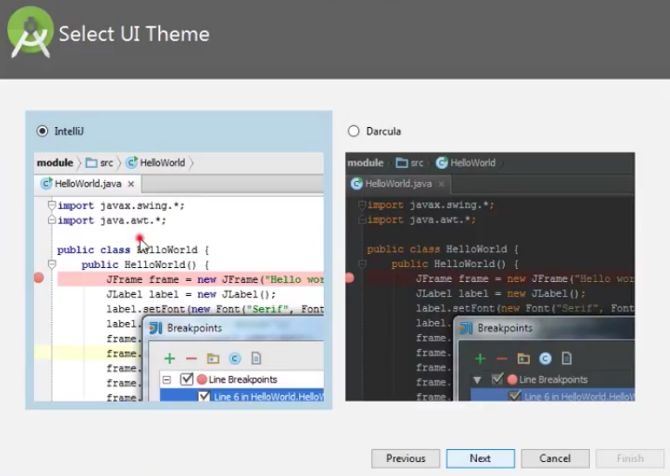


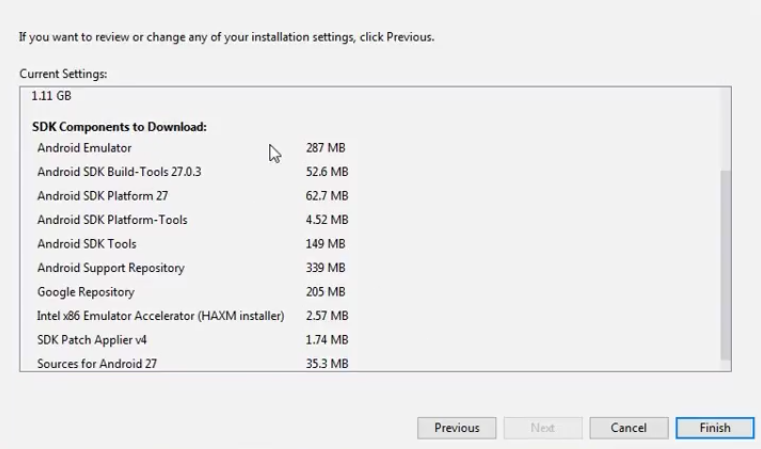
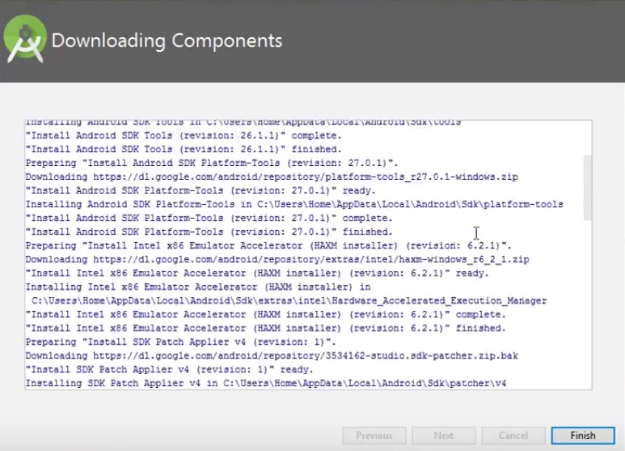
**Step 7:** After it has found the SDK components, it will redirect to the Welcome dialog box.



Click on Next.

Choose Standard and click on Next. Now choose the theme, whether the Light theme or the Dark one. The light one is called the IntelliJ theme whereas the dark theme is called Dracula. Choose as required.

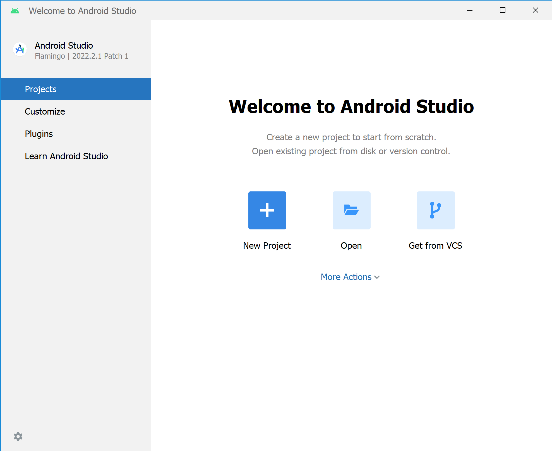
Click on the Next button.

**Step 8:** Now it is time to download the SDK components.

Click on Finish. Components begin to download let it complete.

The Android Studio has been successfully configured. Now it’s time to launch and build apps. Click on the Finish button to launch it.

**Step 9:** Click on Start a new Android Studio project to build a new app.



# **Practical no. 2**

**Aim:** Create an Android app which shows a simple text “Hello World”.

**Codes:**

**activity\_main.xml:**

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

<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"

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

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

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

tools:context=".MainActivity">

<TextView

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Hello World!"

android:textSize="50dp"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>

**MainActivity.java:**

package com.example.helloworld;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

}

}

**Output:**



# **Practical no. 3**

**Aim:** Create an Android app with Interactive User Interface using layouts.

**Codes:**

**activity\_main.xml:**

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

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent">

<TextView

android:id="@+id/tv1"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:text="Linear layout (Horizontal)"

android:textAlignment="center"

android:layout\_marginTop="50dp"

android:textSize="30sp" />

<LinearLayout

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_below="@+id/tv1"

android:orientation="horizontal">

<TextView

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="TextView" />

<Button

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Button" />

</LinearLayout>

<TextView

android:id="@+id/tv2"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_marginTop="300dp"

android:text="Linear layout (Vertical)"

android:textAlignment="center"

android:textSize="30sp" />

<LinearLayout

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_below="@+id/tv2"

android:orientation="vertical">

<TextView

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:text="TextView" />

<Button

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:text="Button" />

</LinearLayout>

</RelativeLayout>

**MainActivity.java:**

package com.example.prac3;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

@Override

protected void onCreate(Bundle savedInstanceState) {

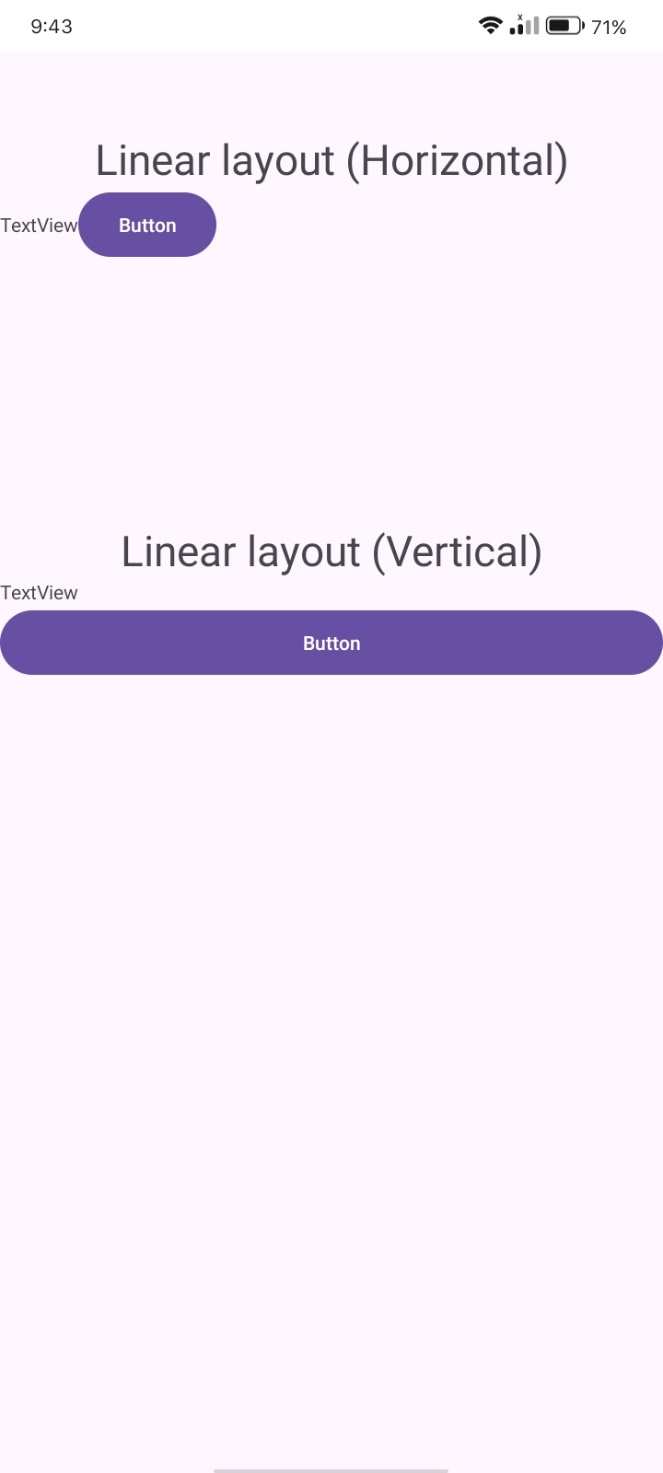
super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

}

}

**Output:**



# **Practical no. 4**

**Aim:** Create an Android app that demonstrates working with TextVeiw elements.

**Codes:**

**activity\_main.xml:**

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

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent">

<TextView

android:id="@+id/textView"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_centerHorizontal="true"

android:layout\_marginTop="250dp"

android:text="@string/login\_page"

android:textSize="50sp"

android:textStyle="bold" />

<EditText

android:id="@+id/editText"

android:layout\_width="250dp"

android:layout\_height="50dp"

android:layout\_below="@id/textView"

android:layout\_centerHorizontal="true"

android:layout\_marginTop="30dp"

android:hint="@string/enter\_name"

android:inputType="text" />

<EditText

android:id="@+id/editTextPassword"

android:layout\_width="250dp"

android:layout\_height="50dp"

android:layout\_below="@id/editText"

android:layout\_centerHorizontal="true"

android:layout\_marginTop="10dp"

android:hint="@string/enter\_password"

android:inputType="textPassword" />

<Button

android:id="@+id/button"

android:layout\_width="150dp"

android:layout\_height="50dp"

android:layout\_below="@id/editTextPassword"

android:layout\_centerHorizontal="true"

android:layout\_marginTop="30dp"

android:text="@string/login"

android:textStyle="bold" />

</RelativeLayout>

**MainActivity.java:**

package com.example.loginpage;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

EditText editText, editTextPassword;

Button button;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

editText = (EditText) findViewById(R.id.editText);

button = (Button) findViewById(R.id.button);

editTextPassword = (EditText) findViewById(R.id.editTextPassword);

button.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

String str = "Username: "+editText.getText().toString()+"\nPassword: "+editTextPassword.getText().toString();

Toast msg = Toast.makeText(getBaseContext(),str,Toast.LENGTH\_LONG);

msg.show();

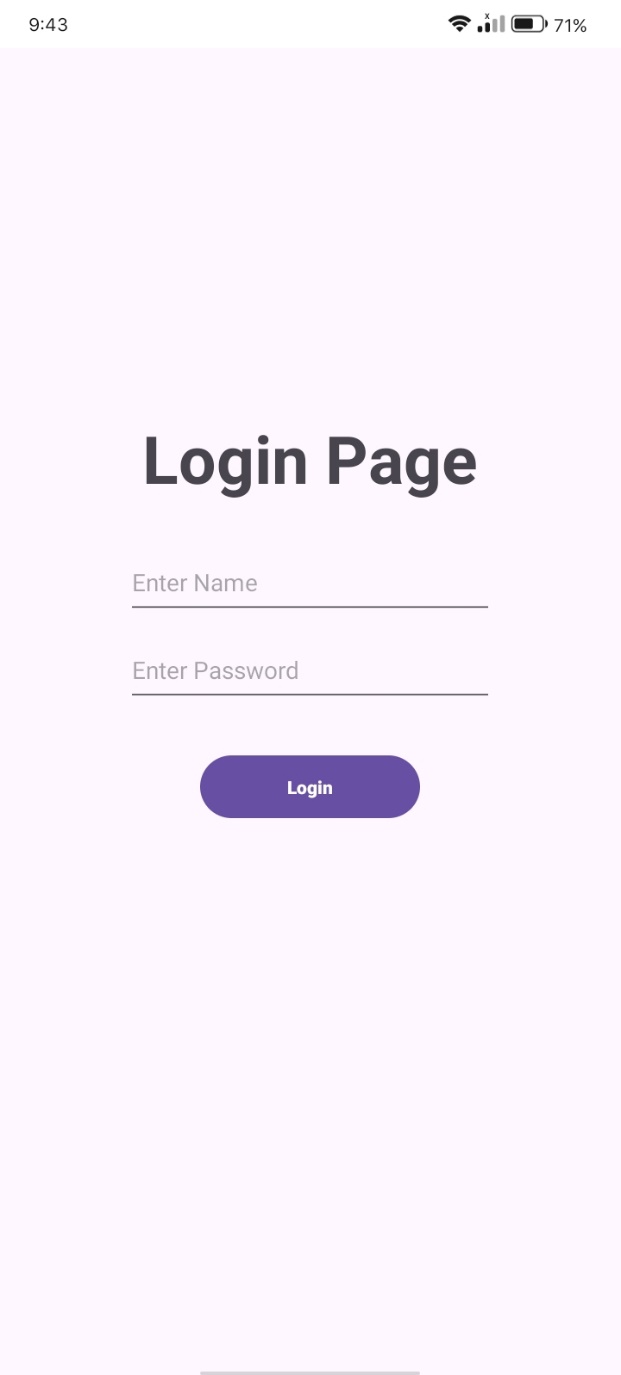
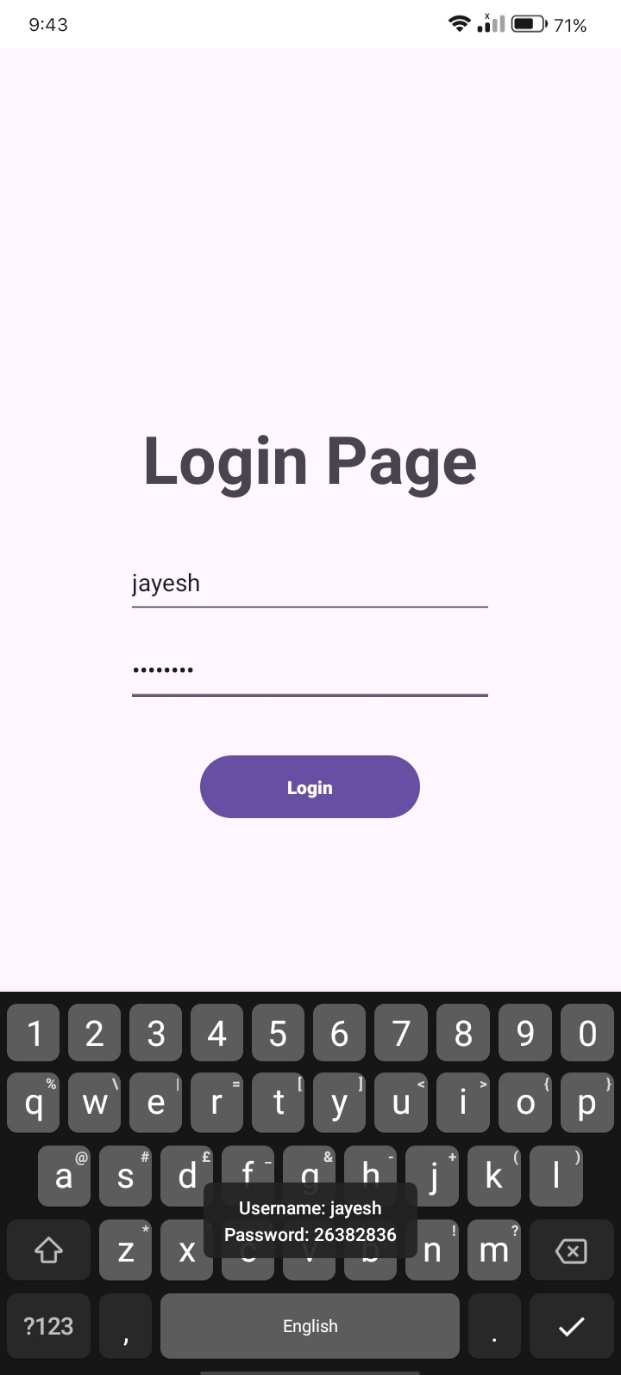
}

});

}

}

**Output:**

****

# **Practical no. 5**

**Aim:** Create an Android app that demonstrates working with Button elements.

**Codes:**

**activity\_main.xml:**

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

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"

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

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

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

tools:context=".MainActivity">

<TextView

android:id="@+id/textView"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:text="Example of checkbox"

android:textAlignment="center"

android:textSize="35sp" />

<CheckBox

android:id="@+id/checkBox"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginStart="47dp"

android:layout\_marginTop="142dp"

android:text="Do you like yourself" />

<CheckBox

android:id="@+id/checkBox2"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginStart="231dp"

android:layout\_marginTop="145dp"

android:text="Do you like android" />

<Button

android:id="@+id/button"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_alignParentBottom="true"

android:layout\_marginStart="62dp"

android:layout\_marginBottom="33dp"

android:text="Ok" />

<Button

android:id="@+id/button2"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_alignParentEnd="true"

android:layout\_alignParentBottom="true"

android:layout\_marginEnd="76dp"

android:layout\_marginBottom="34dp"

android:text="Cancel" />

<Switch

android:id="@+id/switch1"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginStart="164dp"

android:layout\_marginTop="222dp"

android:text="Switch" />

<ToggleButton

android:id="@+id/toggleButton"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginStart="160dp"

android:layout\_marginTop="252dp"

android:text="ToggleButton" />

<RadioButton

android:id="@+id/radioButton"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginStart="48dp"

android:layout\_marginTop="93dp"

android:text="RadioButton" />

<RadioButton

android:id="@+id/radioButton2"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_alignParentEnd="true"

android:layout\_marginTop="91dp"

android:layout\_marginEnd="81dp"

android:text="RadioButton" />

<ImageButton

android:id="@+id/imageButton"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_alignParentBottom="true"

android:layout\_centerHorizontal="true"

android:layout\_marginBottom="241dp"

android:src="@drawable/img" />

</RelativeLayout>

**MainActivity.java:**

package com.example.buttons;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.CheckBox;

import android.widget.ImageButton;

import android.widget.RadioButton;

import android.widget.Switch;

import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

private Button okButton;

private Button cancelButton;

private CheckBox checkBox;

private CheckBox checkBox2;

private ImageButton imageButton;

private Switch switch1;

private RadioButton radioButton;

private RadioButton radioButton2;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

okButton = findViewById(R.id.button);

cancelButton = findViewById(R.id.button2);

checkBox = findViewById(R.id.checkBox);

checkBox2 = findViewById(R.id.checkBox2);

imageButton = findViewById(R.id.imageButton);

switch1 = findViewById(R.id.switch1);

radioButton = findViewById(R.id.radioButton);

radioButton2 = findViewById(R.id.radioButton2);

cancelButton.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

finish();

}

});

okButton.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

StringBuffer result = new StringBuffer();

result.append("First checkbox: ").append(checkBox.isChecked());

result.append("\nSecond checkbox: ").append(checkBox2.isChecked());

Toast.makeText(MainActivity.this, result.toString(), Toast.LENGTH\_SHORT).show();

}

});

}

}

**Output:**



# **Practical no. 6**

**Aim:** Create an Android app that demonstrates Activity Lifecycle and Instance state.

**Codes:**

**activity\_main.xml:**

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

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"

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

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

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

tools:context=".MainActivity">

<TextView

android:id="@+id/textView"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_centerInParent="true"

android:textSize="30sp" />

<TextView

android:id="@+id/textView2"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_centerHorizontal="true"

android:layout\_marginTop="180dp"

android:text="View in Logcat"

android:textSize="40dp" />

</RelativeLayout>

**MainActivity.java:**

package com.example.lifecycle;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.util.Log;

import android.widget.TextView;

import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

String msg = "";

TextView tv;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

tv = findViewById(R.id.textView); // Initialize TextView here

msg = "onCreate() event called";

Log.d(msg, msg);

tv.setText(msg);

Toast.makeText(this, msg, Toast.LENGTH\_SHORT).show();

}

@Override

protected void onStart() {

super.onStart();

msg = "onStart() event called";

Log.d(msg, msg);

tv.setText(msg);

Toast.makeText(this, msg, Toast.LENGTH\_SHORT).show();

}

@Override

protected void onResume() {

super.onResume();

msg = "onResume() event called";

Log.d(msg, msg);

tv.setText(msg);

Toast.makeText(this, msg, Toast.LENGTH\_SHORT).show();

}

@Override

protected void onStop() {

super.onStop();

msg = "onStop() event called";

Log.d(msg, msg);

tv.setText(msg);

Toast.makeText(this, msg, Toast.LENGTH\_SHORT).show();

}

@Override

protected void onDestroy() {

super.onDestroy();

msg = "onDestroy() event called";

Log.d(msg, msg);

tv.setText(msg);

Toast.makeText(this, msg, Toast.LENGTH\_SHORT).show();

}

@Override

protected void onPause() {

super.onPause();

msg = "onPause() event called";

Log.d(msg, "The onPause() event");

tv.setText(msg);

Toast.makeText(this, msg, Toast.LENGTH\_SHORT).show();

}

@Override

protected void onRestart() {

super.onRestart();

msg = "onRestart() event called";

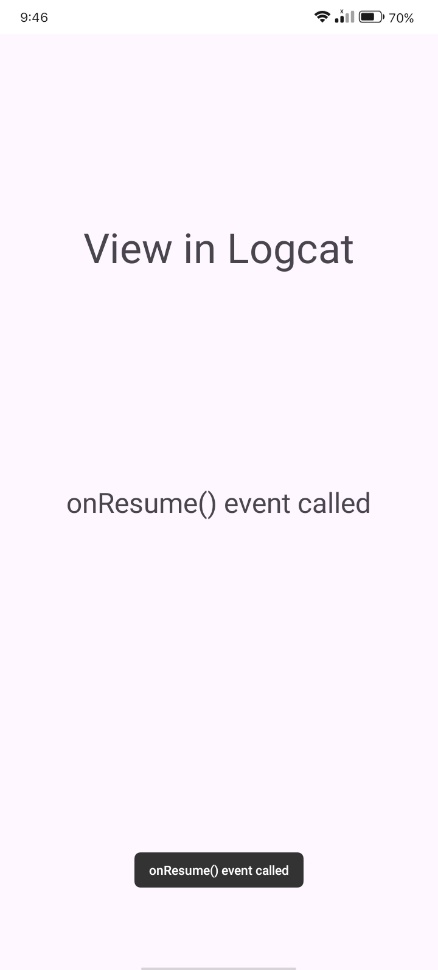
tv.setText(msg);

Log.d(msg, "The onRestart() event");

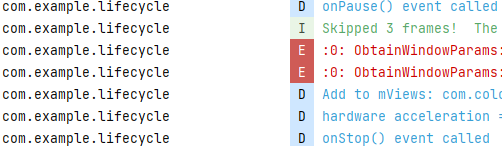
Toast.makeText(this, msg, Toast.LENGTH\_SHORT).show();

}

}

**Output:**









# **Practical no. 7**

**Aim:** Create an Android app that demonstrates the use of Keyboards and input controls.

**Codes:**

**activity\_main.xml:**

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

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:layout\_margin="50dp">

<EditText

android:id="@+id/name"

android:layout\_width="match\_parent"

android:layout\_height="50dp"

android:hint="Enter Name"

android:inputType="text" />

<EditText

android:id="@+id/email"

android:layout\_width="match\_parent"

android:layout\_height="50dp"

android:layout\_below="@+id/name"

android:hint="Enter email address"

android:inputType="textEmailAddress" />

<EditText

android:id="@+id/phone"

android:layout\_width="match\_parent"

android:layout\_height="50dp"

android:layout\_below="@+id/email"

android:hint="Enter phone number"

android:inputType="phone" />

<EditText

android:id="@+id/password"

android:layout\_width="match\_parent"

android:layout\_height="50dp"

android:layout\_below="@+id/phone"

android:hint="Enter Password"

android:inputType="textPassword" />

<Button

android:id="@+id/button"

android:layout\_width="match\_parent"

android:layout\_height="50dp"

android:layout\_below="@+id/spinner"

android:layout\_centerInParent="true"

android:layout\_marginTop="20dp"

android:text="@string/submit" />

<Spinner

android:id="@+id/spinner"

android:layout\_width="match\_parent"

android:layout\_height="50dp"

android:layout\_below="@+id/password" />

<TextView

android:id="@+id/textView"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_below="@+id/button"

android:layout\_marginTop="30dp"

android:text=""

android:textSize="20dp" />

</RelativeLayout>

**MainActivity.java:**

package com.example.keyboard;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.util.Patterns;

import android.view.View;

import android.widget.ArrayAdapter;

import android.widget.Button;

import android.widget.EditText;

import android.widget.Spinner;

import android.widget.TextView;

import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

EditText emailEditText, phoneEditText, passwordEditText, nameEditText;

TextView textView;

Button btn;

Spinner spinner;

String[] cources = {"Computer Science", "Information Technology", "Zoology", "Bio Technology"};

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

nameEditText= findViewById(R.id.name);

emailEditText = findViewById(R.id.email);

phoneEditText = findViewById(R.id.phone);

passwordEditText = findViewById(R.id.password);

btn = findViewById(R.id.button);

textView = findViewById(R.id.textView);

spinner = findViewById(R.id.spinner);

ArrayAdapter<String> adapter = new ArrayAdapter<String>(MainActivity.this, android.R.layout.simple\_spinner\_item,cources);

adapter.setDropDownViewResource(android.R.layout.simple\_dropdown\_item\_1line);

spinner.setAdapter(adapter);

btn.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

String name = nameEditText.getText().toString().trim();

String email = emailEditText.getText().toString().trim();

String phoneNo = phoneEditText.getText().toString().trim();

String password = passwordEditText.getText().toString().trim();

String course = spinner.getSelectedItem().toString().trim();

if(name.isEmpty()) {

Toast.makeText(MainActivity.this, "Please enter your name", Toast.LENGTH\_LONG).show();

}else if(email.isEmpty() || !Patterns.EMAIL\_ADDRESS.matcher(email).matches()){

Toast.makeText(MainActivity.this, getString(R.string.validEmail),Toast.LENGTH\_LONG).show();

} else if(phoneNo.isEmpty() || !Patterns.PHONE.matcher(phoneNo).matches()){

Toast.makeText(MainActivity.this, getString(R.string.validPhone), Toast.LENGTH\_LONG).show();

} else if(password.isEmpty() || password.length() < 6) {

Toast.makeText(MainActivity.this, getString(R.string.validPassword), Toast.LENGTH\_LONG).show();

} else{

Toast.makeText(MainActivity.this, "Name: "+name+"\nEmail: "+email+"\nPhone Number: "+phoneNo+"\nPassword: "+password+"\nCourse: "+course, Toast.LENGTH\_LONG).show();

textView.setText("Name: "+name+"\nEmail: "+email+"\nPhone Number: "+phoneNo+"\nPassword: "+password+"\nCourse: "+course);

}

}

});

}

}

**String.xml:**

<resources>

<string name="app\_name">Practical No 7</string>

<string name="validEmail">Please enter valid email address</string>

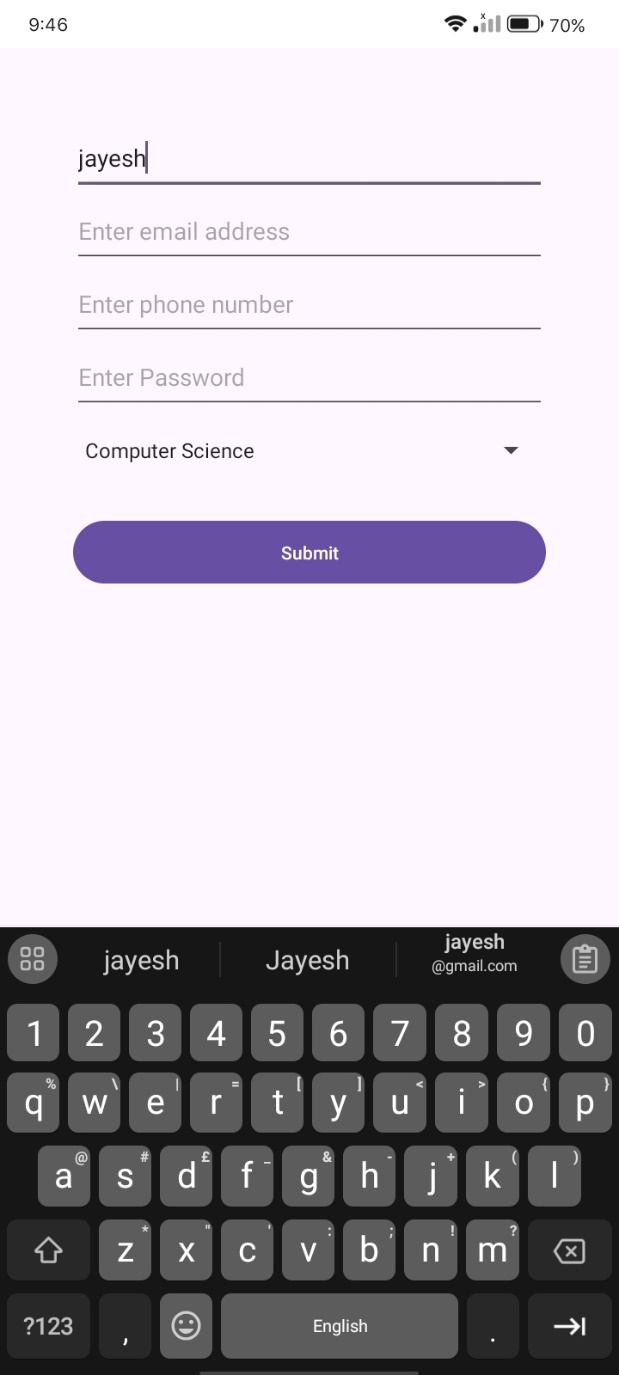
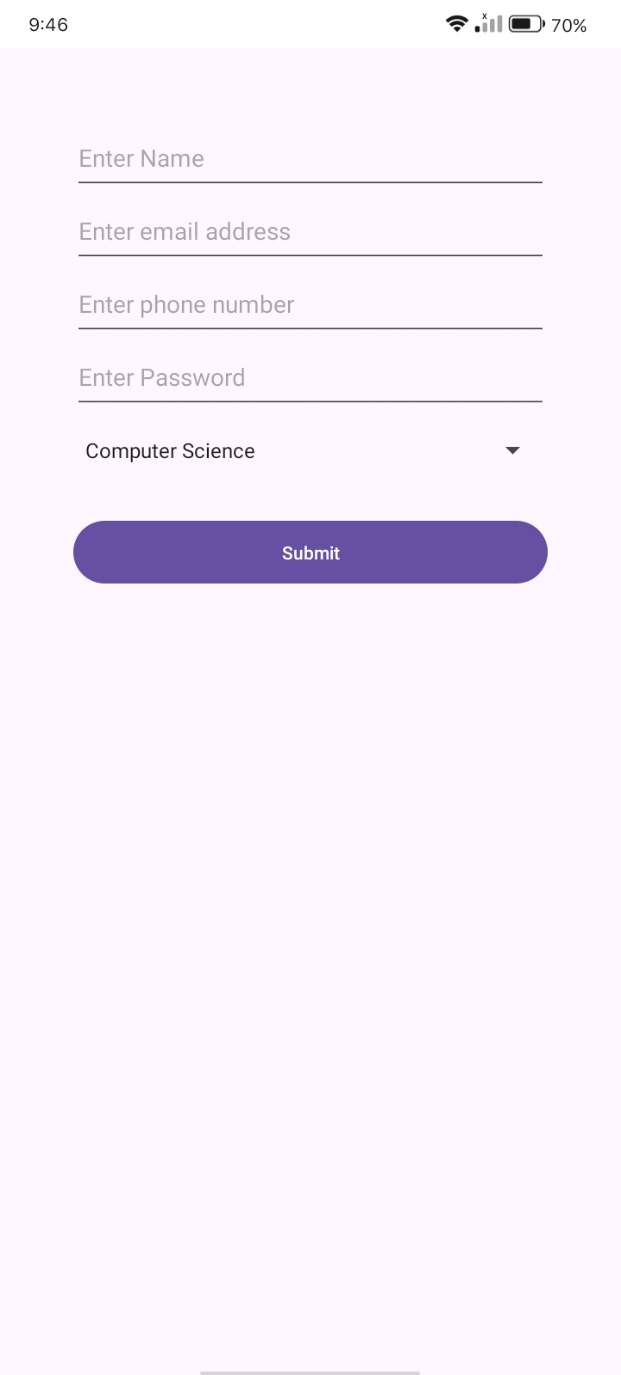
<string name="validPhone">Enter valid phone number.</string>

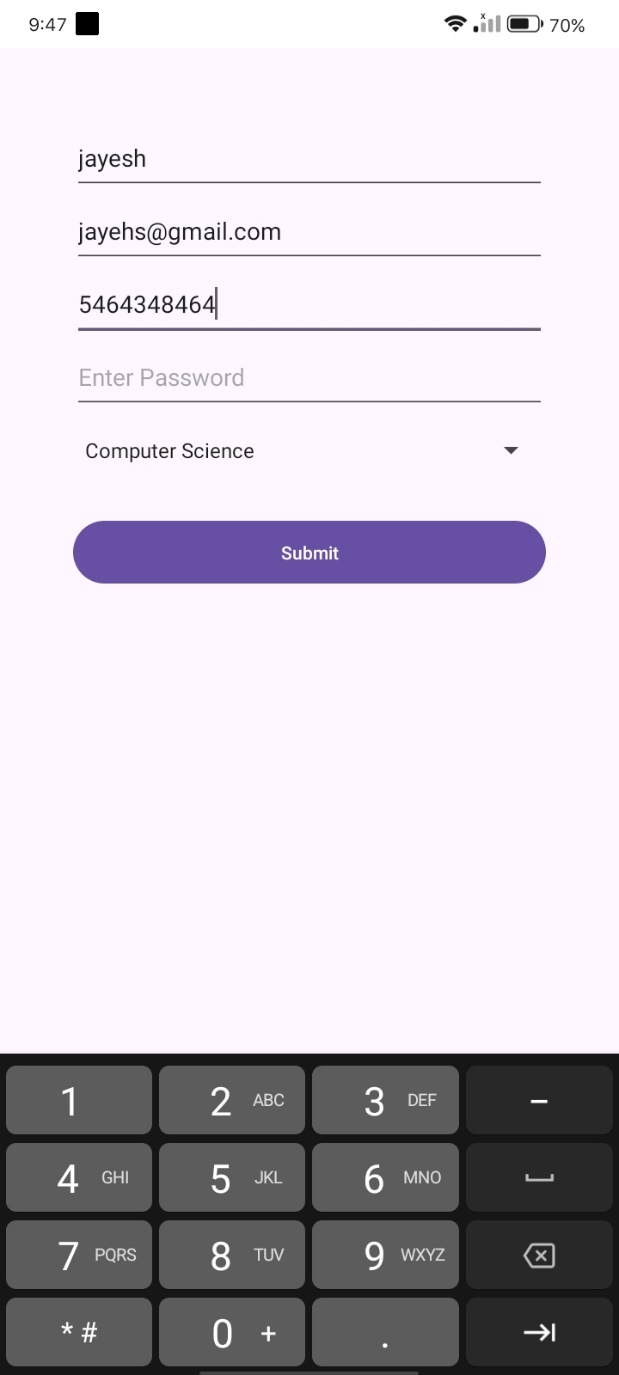
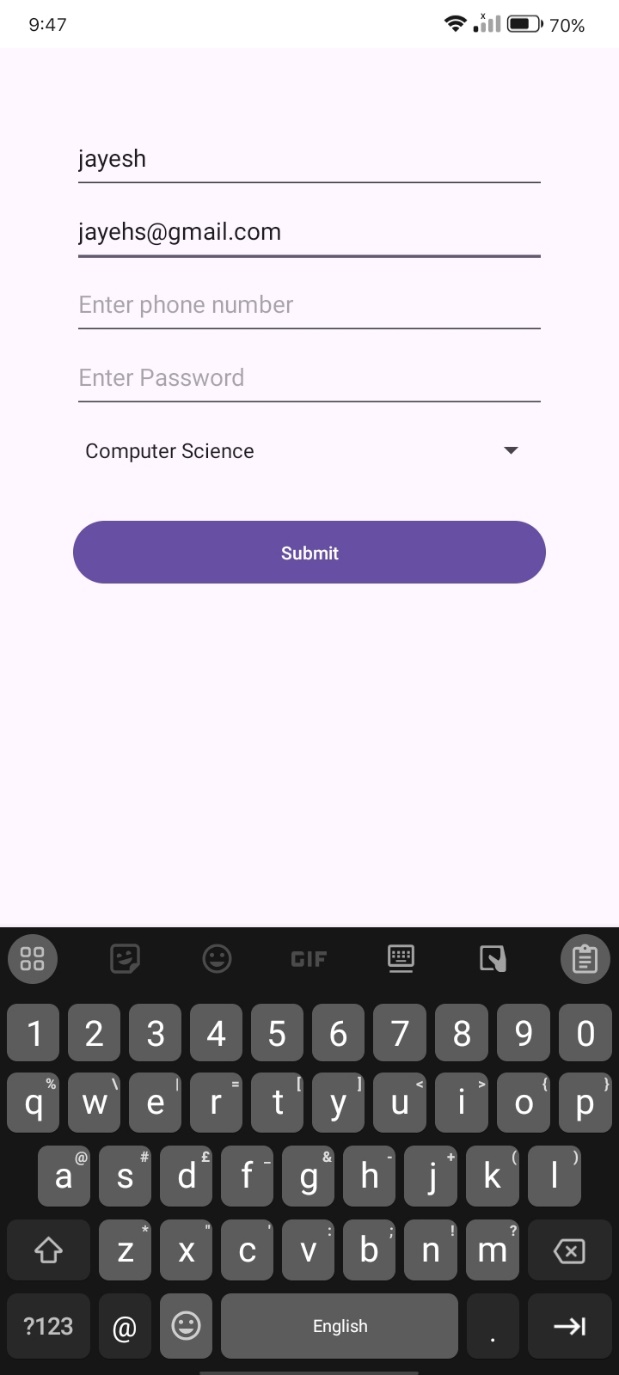
<string name="validPassword">Enter atleast 6 characters.</string>

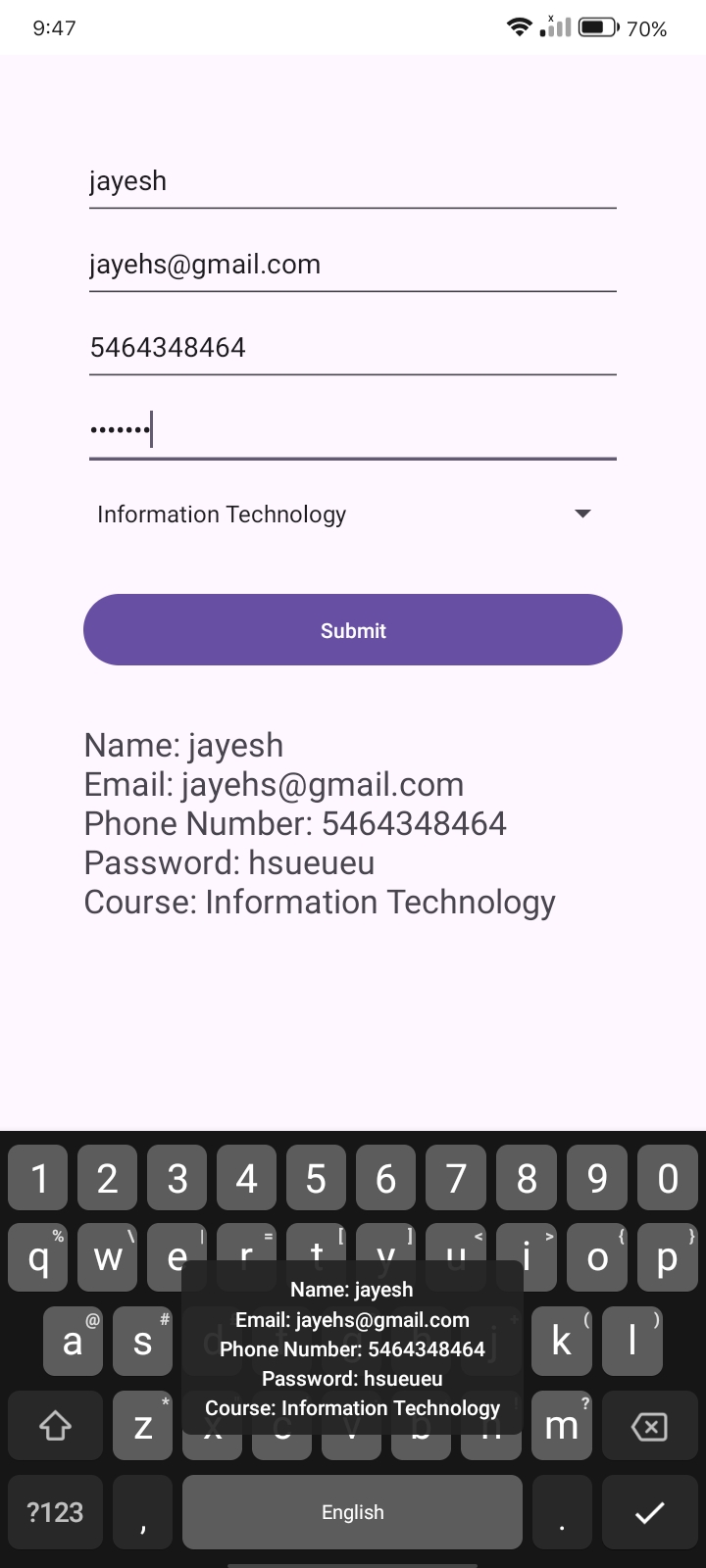
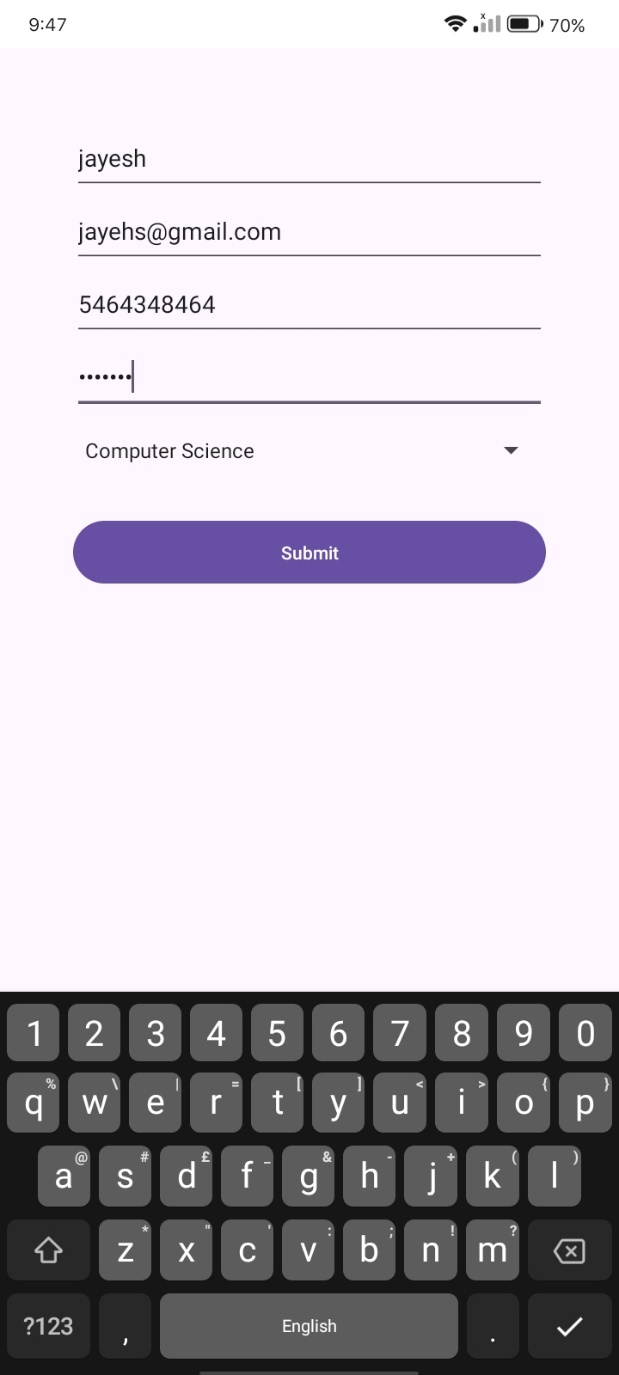
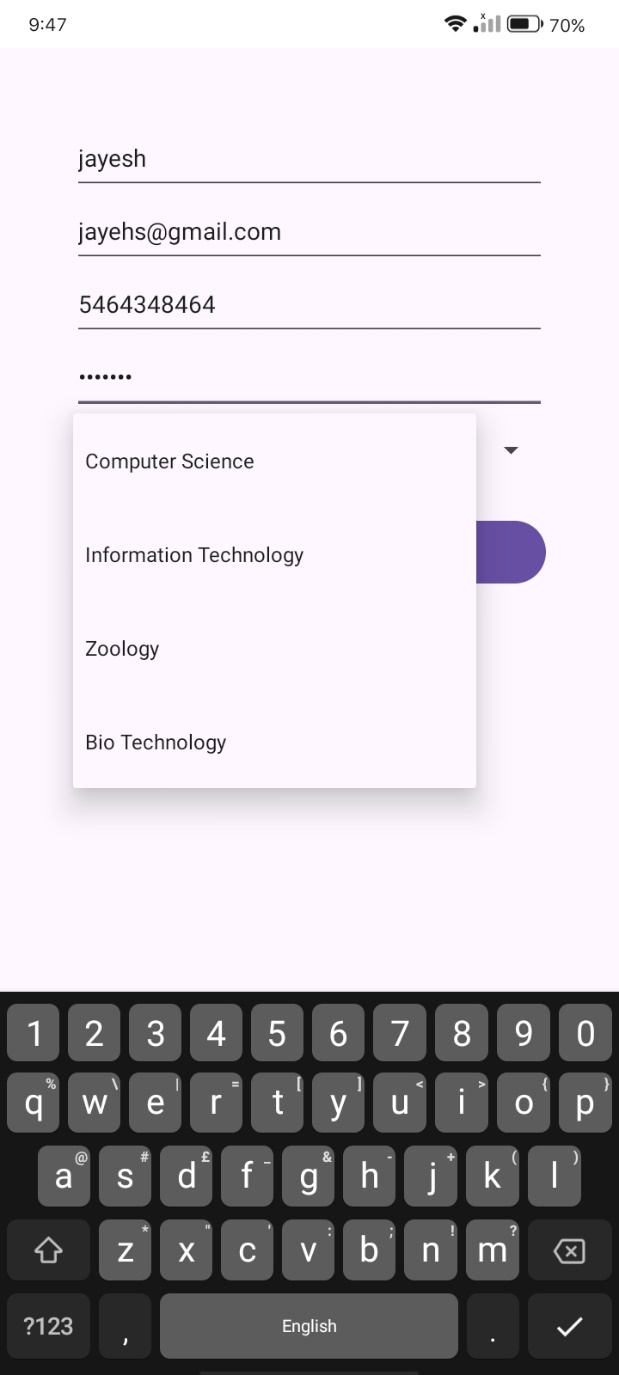
<string name="submit">Submit</string>

</resources>

**Output:**







# **Practical no. 8(A)**

**Aim:** Create an Android app that demonstrates the use of Alerts.

**Codes:**

**activity\_main.xml:**

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

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"

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

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

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

>

<TextView

android:id="@+id/textView"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_alignParentEnd="true"

android:layout\_centerHorizontal="true"

android:layout\_marginTop="201dp"

android:layout\_marginEnd="81dp"

android:text="@string/tap"

android:textSize="30dp" />

<Button

android:id="@+id/button"

android:layout\_width="209dp"

android:layout\_height="wrap\_content"

android:layout\_alignParentEnd="true"

android:layout\_alignParentBottom="true"

android:layout\_centerHorizontal="true"

android:layout\_marginEnd="103dp"

android:layout\_marginBottom="383dp"

android:onClick="onClickShowAlert"

android:textSize="20dp"

android:text="@string/alert" />

</RelativeLayout>

**MainActivity.java:**

package com.example.alert;

import androidx.appcompat.app.AlertDialog;

import androidx.appcompat.app.AppCompatActivity;

import android.content.DialogInterface;

import android.os.Bundle;

import android.view.View;

import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

}

public void onClickShowAlert(View view){

AlertDialog.Builder alertBuilder = new AlertDialog.Builder(MainActivity.this);

alertBuilder.setTitle(R.string.alertTitle);

alertBuilder.setMessage(R.string.alertMsg);

alertBuilder.setPositiveButton(R.string.ok, new DialogInterface.OnClickListener() {

@Override

public void onClick(DialogInterface dialog, int which) {

Toast.makeText(getApplicationContext(), R.string.okPressed, Toast.LENGTH\_LONG).show();

}

});

alertBuilder.setNegativeButton(R.string.cancel, new DialogInterface.OnClickListener() {

@Override

public void onClick(DialogInterface dialog, int which) {

Toast.makeText(getApplicationContext(), R.string.cancelPressed, Toast.LENGTH\_LONG).show();

}

});

alertBuilder.show();

}

}

**String.xml:**

<resources>

<string name="app\_name">Alert</string>

<string name="alert">Alert</string>

<string name="tap">Tap to test the alert</string>

<string name="alertTitle">Alert!!</string>

<string name="alertMsg">Press OK or CANCEL</string>

<string name="ok">OK\n</string>

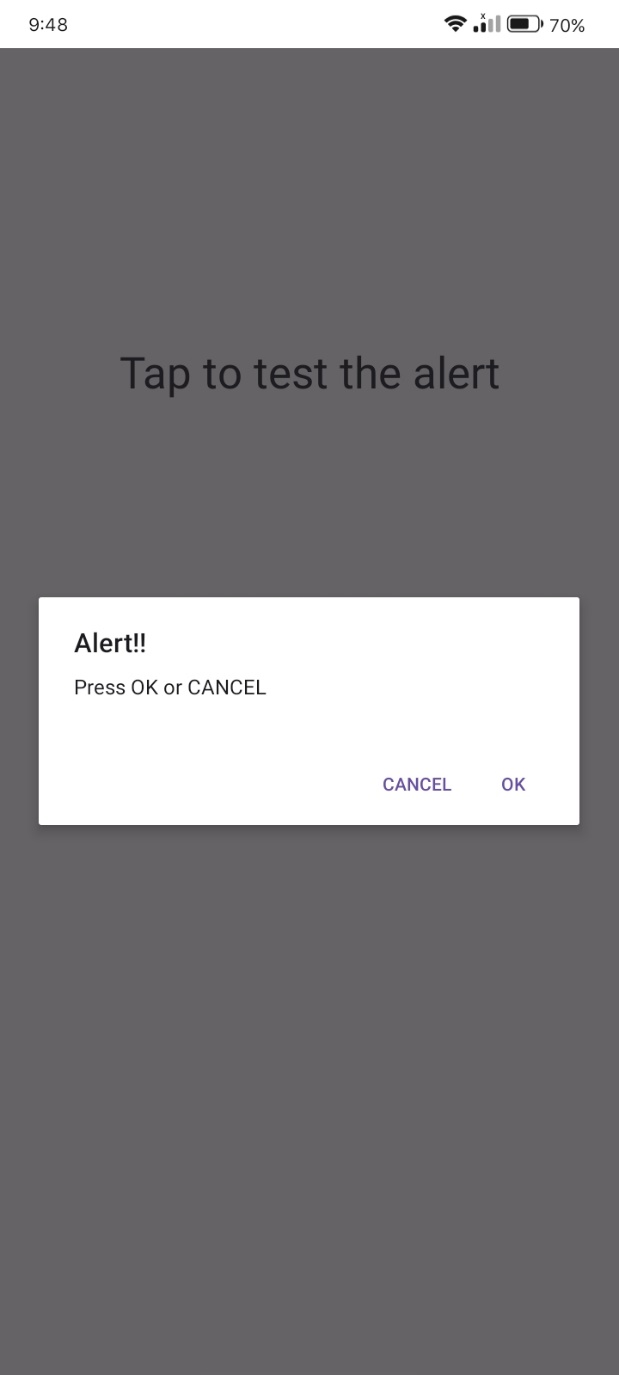
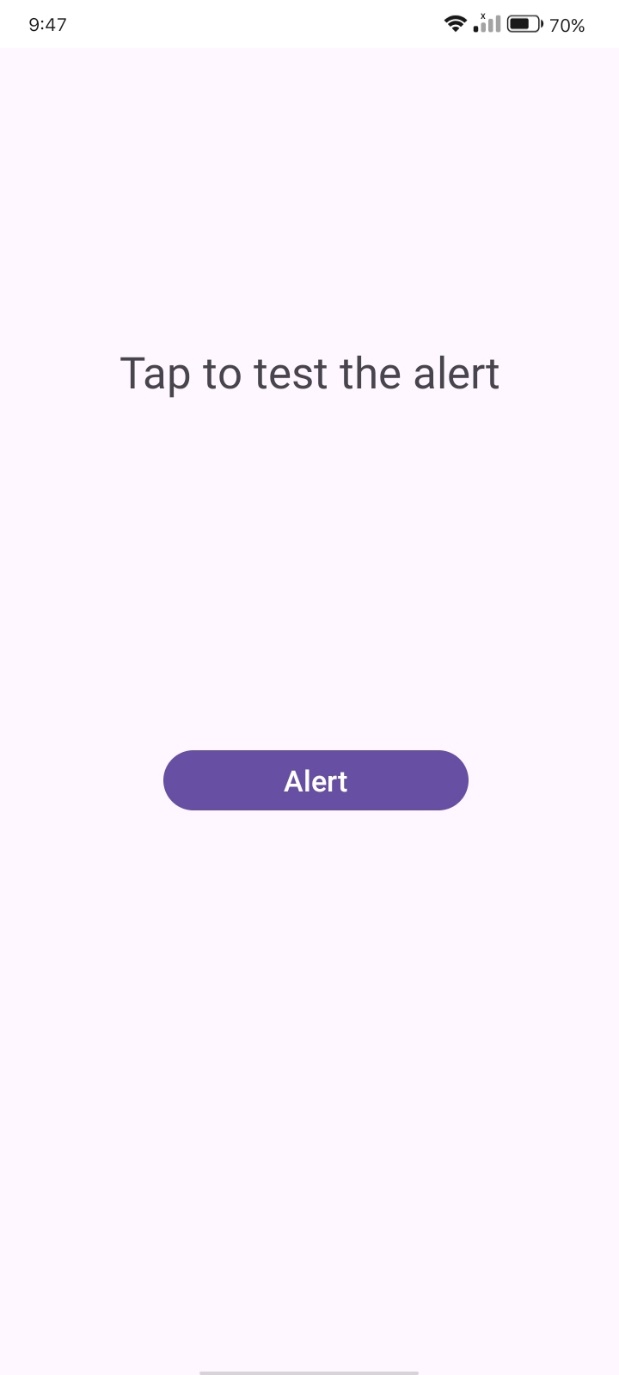
<string name="okPressed">OK button pressed!!</string>

<string name="cancel">CANCEL</string>

<string name="cancelPressed">Cancel button pressed</string>

</resources>

**Output:**



# **Practical no. 8(B)**

**Aim:** Create an Android app that demonstrates the use of Time-picker.

**Codes:**

**activity\_main.xml:**

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

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"

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

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

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

tools:context=".MainActivity">

<TextView

android:id="@+id/textView1"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_alignParentTop="true"

android:layout\_centerHorizontal="true"

android:layout\_marginTop="53dp"

android:text="@string/pick\_the\_time\_and\_press\_save\_button"

android:textSize="20sp" />

<Button

android:id="@+id/button"

android:layout\_width="258dp"

android:layout\_height="wrap\_content"

android:layout\_alignParentEnd="true"

android:layout\_alignParentBottom="true"

android:layout\_centerHorizontal="true"

android:layout\_marginEnd="75dp"

android:layout\_marginBottom="205dp"

android:onClick="setTime"

android:text="@string/save"

tools:layout\_editor\_absoluteX="38dp"

tools:layout\_editor\_absoluteY="242dp" />

<TimePicker

android:id="@+id/timePicker1"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_alignParentTop="true"

android:layout\_marginTop="139dp" />

<TextView

android:id="@+id/textView2"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_alignParentStart="true"

android:layout\_alignParentBottom="true"

android:layout\_marginStart="96dp"

android:layout\_marginBottom="78dp"

android:text="@string/the\_time\_is"

android:textSize="20sp"

tools:layout\_editor\_absoluteX="66dp"

tools:layout\_editor\_absoluteY="404dp" />

<TextView

android:id="@+id/textView"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_alignParentEnd="true"

android:layout\_alignParentBottom="true"

android:layout\_marginEnd="144dp"

android:layout\_marginBottom="78dp"

android:text="@string/time\_selected"

android:textSize="20sp"

tools:layout\_editor\_absoluteX="77dp"

tools:layout\_editor\_absoluteY="483dp" />

</RelativeLayout>

**MainActivity.java:**

package com.example.timepicker;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.TextView;

import android.widget.TimePicker;

import java.util.Calendar;

public class MainActivity extends AppCompatActivity {

private TimePicker timePicker;

private TextView timeDisplay;

private Calendar calendar;

private String format = "";

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

timePicker = findViewById(R.id.timePicker1);

timeDisplay = findViewById(R.id.textView);

calendar = Calendar.getInstance();

int hour = calendar.get(Calendar.HOUR\_OF\_DAY);

int minute = calendar.get(Calendar.MINUTE);

showTime(hour, minute);

}

public void setTime(View view){

int hour = timePicker.getCurrentHour();

int minute = timePicker.getCurrentMinute();

showTime(hour, minute);

}

public void showTime(int hour, int minute){

if(hour == 0){

hour += 12;

format = "AM";

} else if(hour == 12){

format = "PM";

} else if(hour > 12){

hour -= 12;

format = "PM";

} else {

format = "AM";

}

timeDisplay.setText(hour + ":" + minute + " " + format);

}

}

**Strings.xml:**

<resources>

<string name="app\_name">Time Picker </string>

<string name="time\_picker\_example">Time Picker Example</string>

<string name="pick\_the\_time\_and\_press\_save\_button">Pick the time and press save button</string>

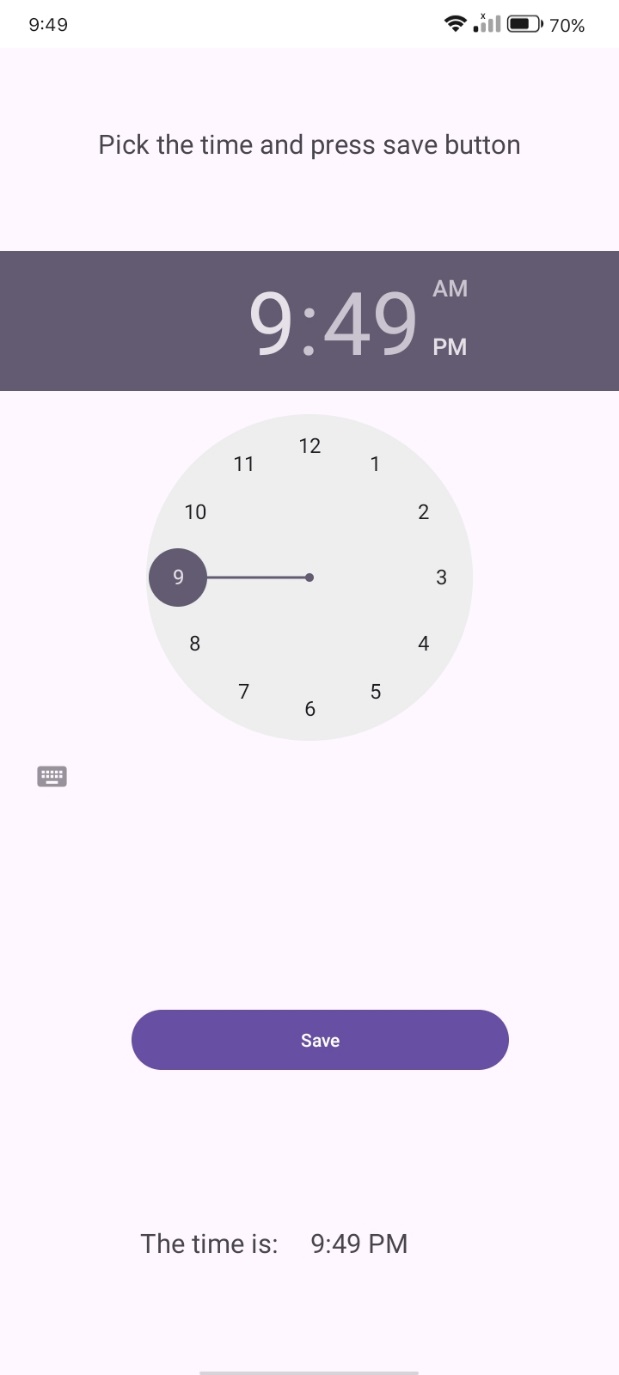
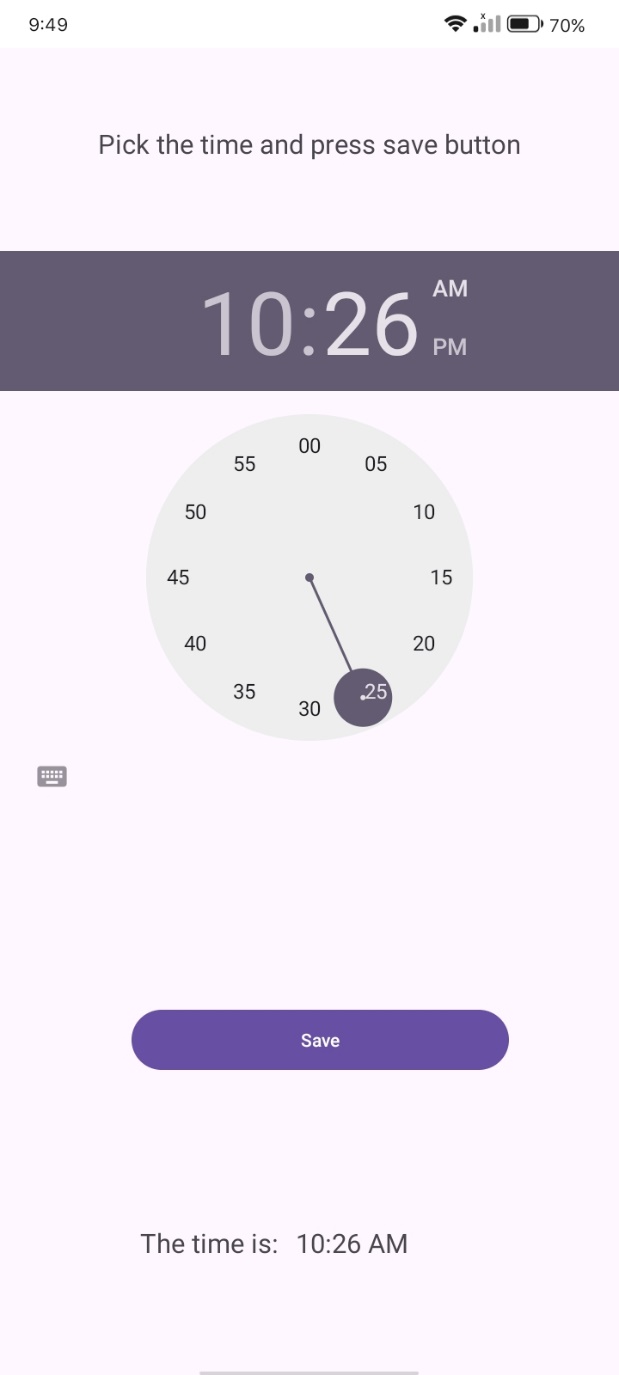
<string name="save">Save</string>

<string name="time\_selected">00:00</string>

<string name="the\_time\_is">The time is:</string>

</resources>

**Output:**



# **Practical no. 9**

**Aim:** Create an Android app that demonstrates the use of an Option Menu.

**Codes:**

**activity\_main.xml:**

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

<RelativeLayout

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

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

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

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

tools:context=".MainActivity">

<com.google.android.material.appbar.AppBarLayout

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content">

<androidx.appcompat.widget.Toolbar

android:id="@+id/toolbar"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:background="?attr/colorPrimary"></androidx.appcompat.widget.Toolbar>

</com.google.android.material.appbar.AppBarLayout>

<TextView

android:id="@+id/textView"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_centerInParent="true"

android:text="Selected Option: None"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

android:textSize="30sp"

app:layout\_constraintStart\_toStartOf="parent"

tools:ignore="NotSibling"

app:layout\_constraintTop\_toTopOf="parent" />

</RelativeLayout>

**MainActivity.java:**

package com.example.optionmenu;

import androidx.annotation.NonNull;

import androidx.appcompat.app.AppCompatActivity;

import androidx.appcompat.widget.Toolbar;

import android.os.Bundle;

import android.view.Menu;

import android.view.MenuItem;

import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

private TextView textView;

private Toolbar toolbar;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

toolbar = findViewById(R.id.toolbar);

textView = findViewById(R.id.textView);

setSupportActionBar(toolbar);

}

@Override

public boolean onCreateOptionsMenu(Menu menu) {

getMenuInflater().inflate(R.menu.menu\_file, menu);

return true;

}

@Override

public boolean onOptionsItemSelected(@NonNull MenuItem item) {

if(item.getItemId() == R.id.menu1){

textView.setText("Selected Option: "+item.getTitle());

return true;

} else if(item.getItemId() == R.id.menu2){

textView.setText("Selected Option: "+item.getTitle());

return true;

} else{

textView.setText("Selected Option: "+item.getTitle());

return true;

}

}

}

**menu\_file.xml:**

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

<menu xmlns:android="http://schemas.android.com/apk/res/android">

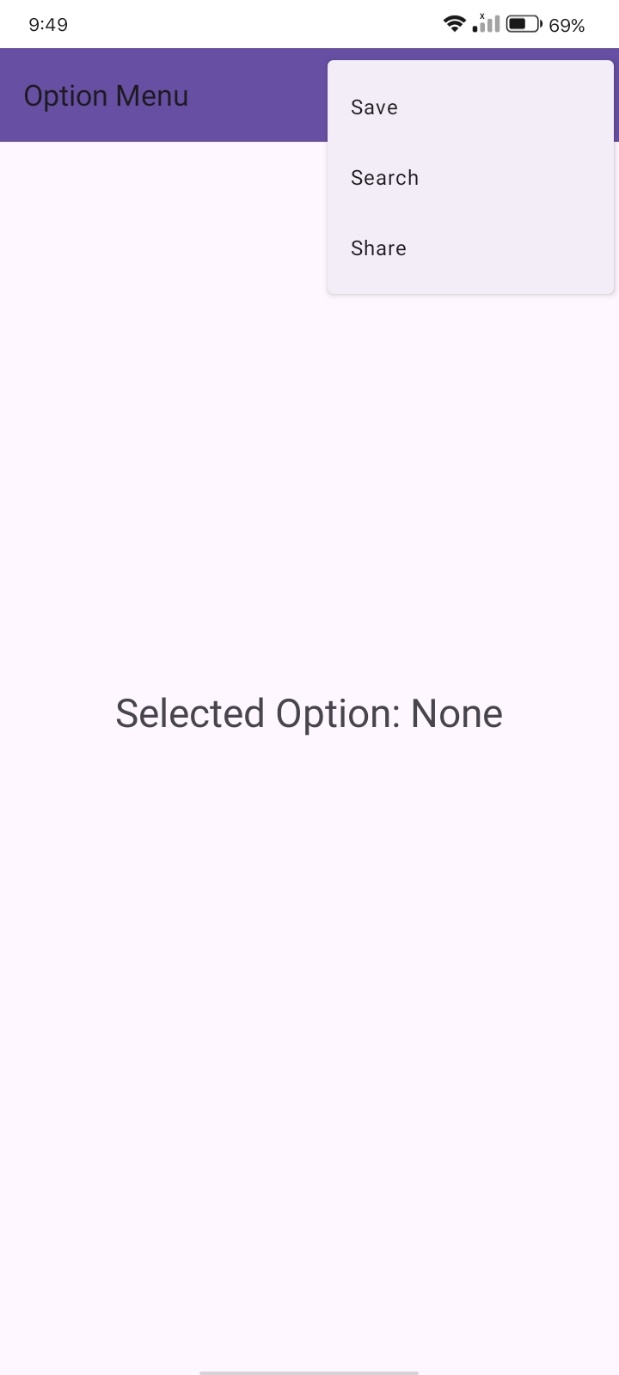
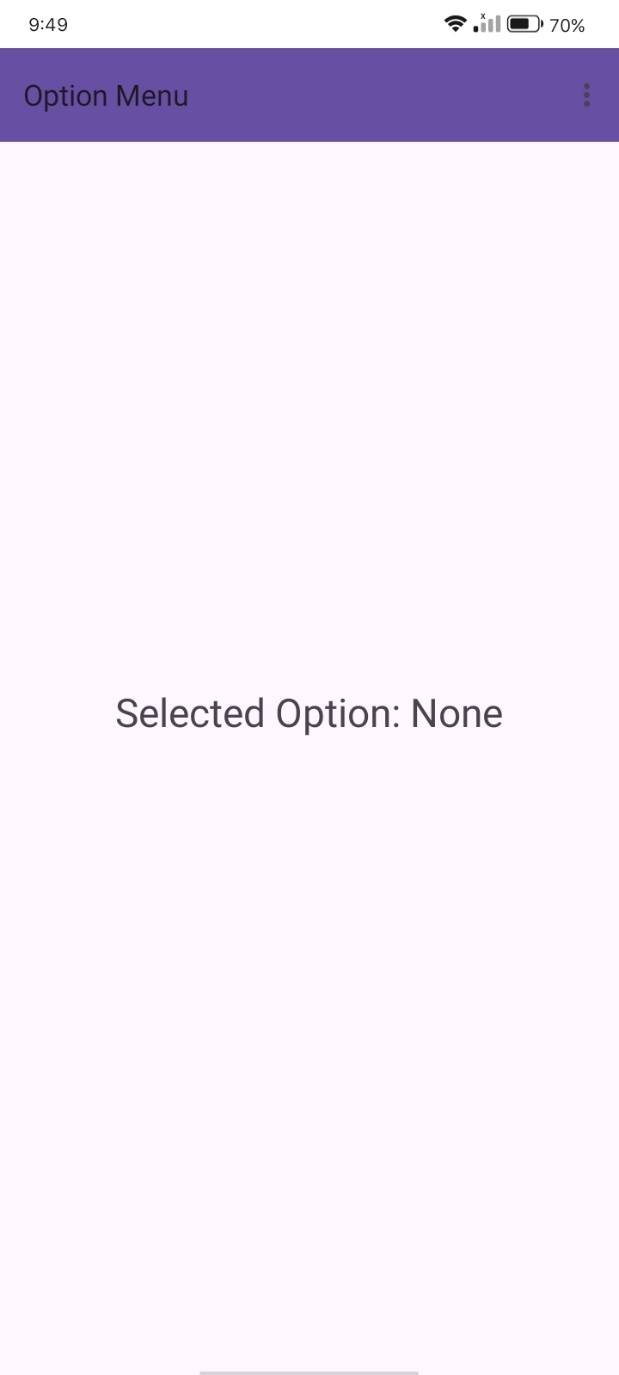
<item android:id="@+id/menu1" android:title="Save"/>

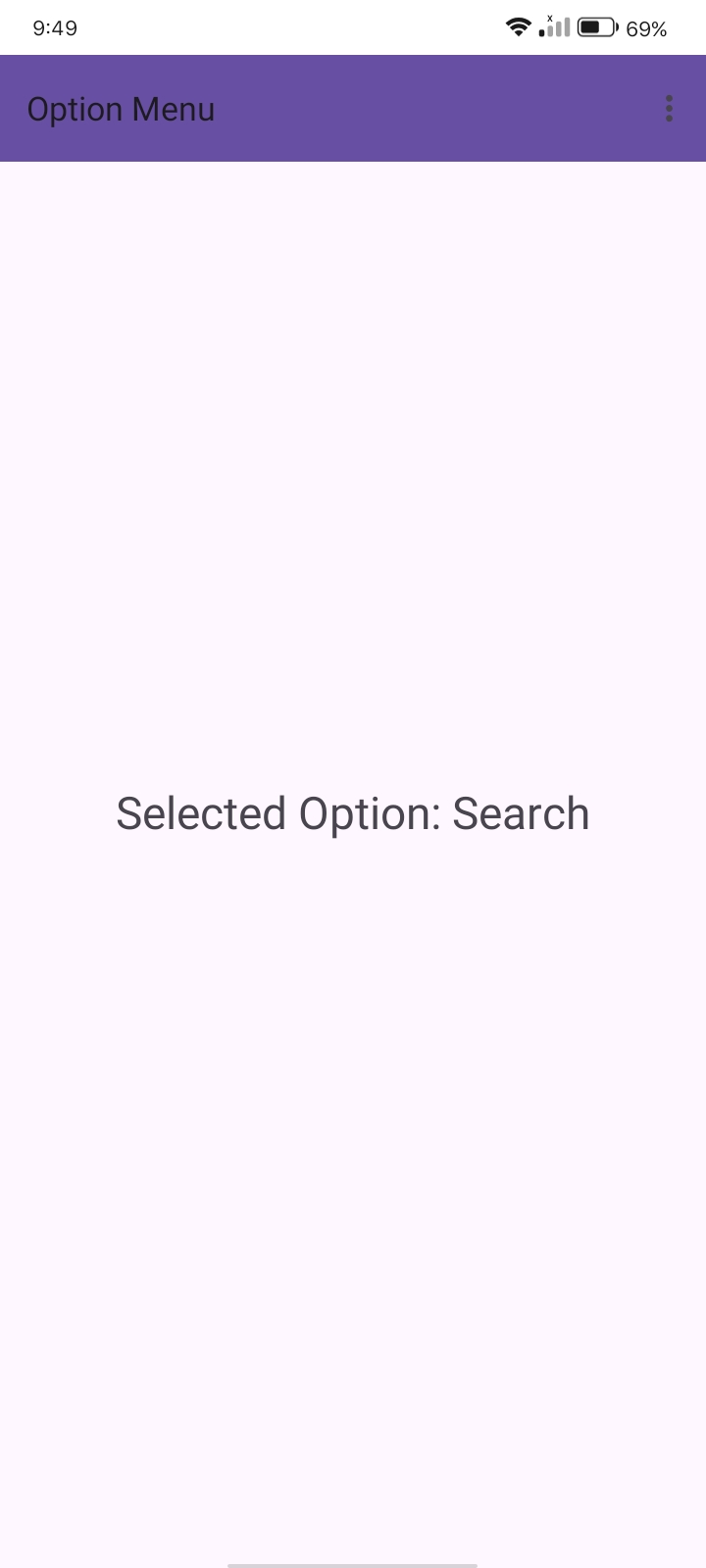
<item android:id="@+id/menu2" android:title="Search"/>

<item android:id="@+id/menu3" android:title="Share"/>

</menu>

**Output:**





# **Practical no. 10**

**Aim:** Create an Android app that demonstrates use of Screen Navigation using the Appbar and Tabs.

**Codes:**

**activity\_main.xml:**

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

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

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

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical">

<com.google.android.material.tabs.TabLayout

android:id="@+id/tabLayout"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

app:tabMode="fixed"

app:tabGravity="fill"

android:contentDescription="tabs"/>

<androidx.viewpager.widget.ViewPager

android:id="@+id/viewPager"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:contentDescription="View Pager" />

</LinearLayout>

**MainActivity.java:**

package com.example.screennavigation;

import androidx.appcompat.app.AppCompatActivity;

import androidx.fragment.app.Fragment;

//import androidx.viewpager.widget.PagerAdapter;

import androidx.viewpager.widget.ViewPager;

import android.os.Bundle;

import com.google.android.material.tabs.TabLayout;

import java.util.ArrayList;

import java.util.List;

public class MainActivity extends AppCompatActivity {

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

ViewPager viewPager = findViewById(R.id.viewPager);

TabLayout tabLayout = findViewById(R.id.tabLayout);

List<Fragment> fragmentList = new ArrayList<>();

fragmentList.add(new FragmentOne());

fragmentList.add(new FragmentTwo());

List<String> fragmentTitles = new ArrayList<>();

fragmentTitles.add("Tab One");

fragmentTitles.add("Tab Two");

PagerAdapter pagerAdapter = new PagerAdapter(getSupportFragmentManager(), fragmentList, fragmentTitles);

viewPager.setAdapter(pagerAdapter);

tabLayout.setupWithViewPager(viewPager);

}

}

**PagerAdapter.java:**

package com.example.screennavigation;

import androidx.appcompat.app.AppCompatActivity;

import androidx.fragment.app.Fragment;

//import androidx.viewpager.widget.PagerAdapter;

import androidx.viewpager.widget.ViewPager;

import android.os.Bundle;

import com.google.android.material.tabs.TabLayout;

import java.util.ArrayList;

import java.util.List;

public class MainActivity extends AppCompatActivity {

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

ViewPager viewPager = findViewById(R.id.viewPager);

TabLayout tabLayout = findViewById(R.id.tabLayout);

List<Fragment> fragmentList = new ArrayList<>();

fragmentList.add(new FragmentOne());

fragmentList.add(new FragmentTwo());

List<String> fragmentTitles = new ArrayList<>();

fragmentTitles.add("Tab One");

fragmentTitles.add("Tab Two");

PagerAdapter pagerAdapter = new PagerAdapter(getSupportFragmentManager(), fragmentList, fragmentTitles);

viewPager.setAdapter(pagerAdapter);

tabLayout.setupWithViewPager(viewPager);

}

}

**Fragment\_one.xml:**

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

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:gravity="center"

android:orientation="vertical">

<TextView

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Fragment One"

android:textSize="30sp" />

</LinearLayout>

**Fragment\_two.xml:**

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

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

android:gravity="center">

<TextView

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Fragment Two"

android:textSize="30sp" />

</LinearLayout>

**Output:**

****

# **Practical no. 11**

**Aim:** Create an Android app to connect to the internet and use Broadcast Receiver.

**Codes:**

**activity\_main.xml:**

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

<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"

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

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

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

tools:context=".MainActivity">

<TextView

android:id="@+id/textView"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Check on log cat"

android:textSize="30sp"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>

**AndroidManifest.xml:**

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

<manifest xmlns:android="http://schemas.android.com/apk/res/android"

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

<uses-permission android:name="android.permission.ACCESS\_NETWORK\_STATE" />

<application

android:allowBackup="true"

android:dataExtractionRules="@xml/data\_extraction\_rules"

android:fullBackupContent="@xml/backup\_rules"

android:icon="@mipmap/ic\_launcher"

android:label="@string/app\_name"

android:roundIcon="@mipmap/ic\_launcher\_round"

android:supportsRtl="true"

android:theme="@style/Theme.Internet"

tools:targetApi="31">

<activity

android:name=".MainActivity"

android:exported="true">

<intent-filter>

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

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

</intent-filter>

</activity>

</application>

</manifest>

**MainActivity.java:**

package com.example.internet;

import androidx.appcompat.app.AppCompatActivity;

import android.content.IntentFilter;

import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

private NetworkReceiver networkReceiver;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

networkReceiver = new NetworkReceiver();

registerReceiver(networkReceiver, new IntentFilter("android.net.conn.CONNECTIVITY\_CHANGE"));

}

@Override

protected void onDestroy() {

super.onDestroy();

unregisterReceiver(networkReceiver);

}

}

**NetworkReceiver.java**

package com.example.internet;

import android.content.BroadcastReceiver;

import android.content.Context;

import android.content.Intent;

import android.net.ConnectivityManager;

import android.net.NetworkInfo;

import android.util.Log;

import android.widget.TextView;

import android.widget.Toast;

public class NetworkReceiver extends BroadcastReceiver {

TextView textView;

@Override

public void onReceive(Context context, Intent intent) {

ConnectivityManager connectivityManager = (ConnectivityManager) context.getSystemService(Context.CONNECTIVITY\_SERVICE);

NetworkInfo networkInfo = connectivityManager.getActiveNetworkInfo();

if (networkInfo != null && networkInfo.isConnected()) {

Log.d("NetworkReceiver", "Connected to the internet");

Toast.makeText(context, "Connected to the internet", Toast.LENGTH\_LONG).show();

} else {

Log.d("NetworkReceiver", "Disconnected from the internet");

Toast.makeText(context, "Disconnected from the internet", Toast.LENGTH\_LONG).show();

}

}

}

**Output:**







# **Practical no. 12(A)**

**Aim:** Create an Android app that demonstrates the use of Notification.

**Codes:**

**activity\_main.xml:**

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

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"

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

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

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

tools:context=".MainActivity">

<Button

android:id="@+id/show\_notification\_button"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Get Notification"

android:onClick="sendNotification"

android:layout\_centerInParent="true"/>

</RelativeLayout>

**MainActivity.java:**

package com.example.notification;

import androidx.appcompat.app.AppCompatActivity;

import androidx.core.app.ActivityCompat;

import androidx.core.app.NotificationCompat;

import androidx.core.app.NotificationManagerCompat;

import android.Manifest;

import android.app.NotificationChannel;

import android.app.NotificationManager;

import android.content.pm.PackageManager;

import android.os.Build;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

public class MainActivity extends AppCompatActivity {

private static final String CHANNEL\_ID = "my\_channel";

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

createNotificationChannel();

}

private void createNotificationChannel() {

if (Build.VERSION.SDK\_INT >= Build.VERSION\_CODES.O) {

CharSequence name = "My Channel";

String description = "My Channel Description";

int importance = NotificationManager.IMPORTANCE\_DEFAULT;

NotificationChannel channel = new NotificationChannel(CHANNEL\_ID, name, importance);

channel.setDescription(description);

NotificationManager notificationManager = getSystemService(NotificationManager.class);

notificationManager.createNotificationChannel(channel);

}

}

public void sendNotification(View view) {

NotificationCompat.Builder builder = new NotificationCompat.Builder(this, CHANNEL\_ID)

.setSmallIcon(R.drawable.ic\_notification)

.setContentTitle("Simple Notification")

.setContentText("This is a notification from my app.")

.setPriority(NotificationCompat.PRIORITY\_HIGH);

NotificationManagerCompat notificationManager = NotificationManagerCompat.from(this);

notificationManager.notify(1, builder.build());

}

}

**AndoridManifest.xml:**

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

<manifest xmlns:android="http://schemas.android.com/apk/res/android"

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

<uses-permission android:name="android.permission.POST\_NOTIFICATIONS" />

<application

android:allowBackup="true"

android:dataExtractionRules="@xml/data\_extraction\_rules"

android:fullBackupContent="@xml/backup\_rules"

android:icon="@mipmap/ic\_launcher"

android:label="@string/app\_name"

android:roundIcon="@mipmap/ic\_launcher\_round"

android:supportsRtl="true"

android:theme="@style/Theme.Notification"

tools:targetApi="31">

<activity

android:name=".MainActivity"

android:exported="true">

<intent-filter>

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

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

</intent-filter>

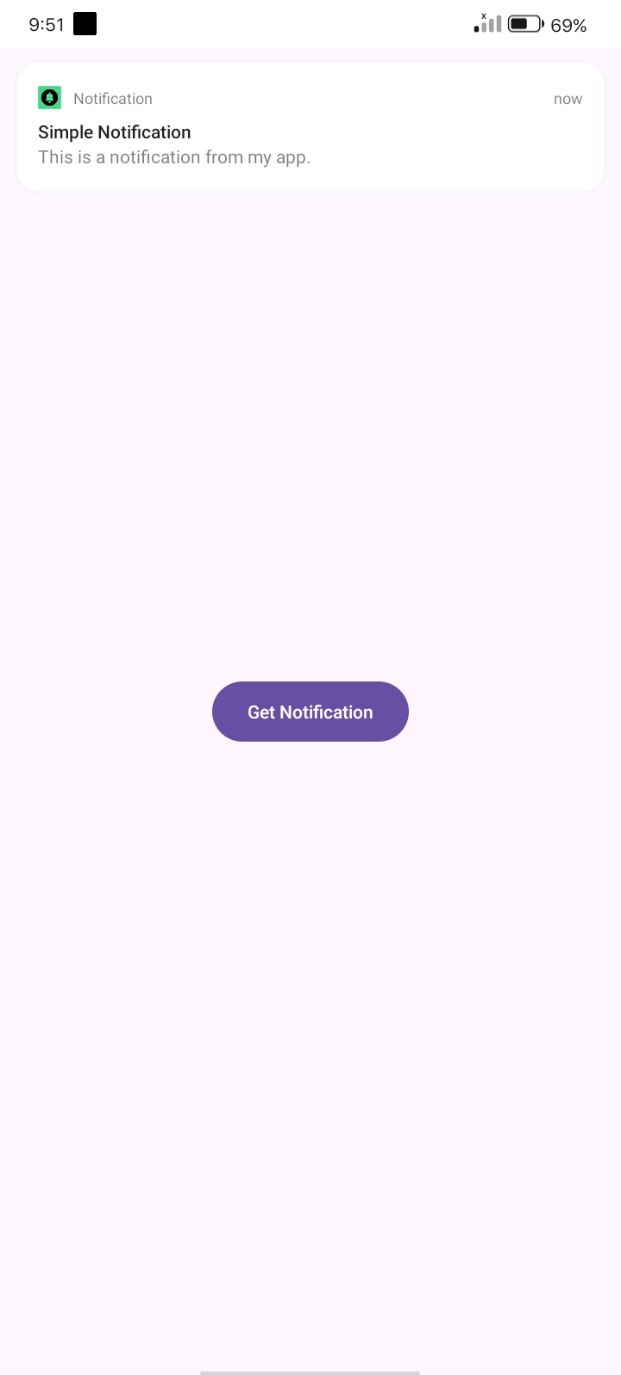
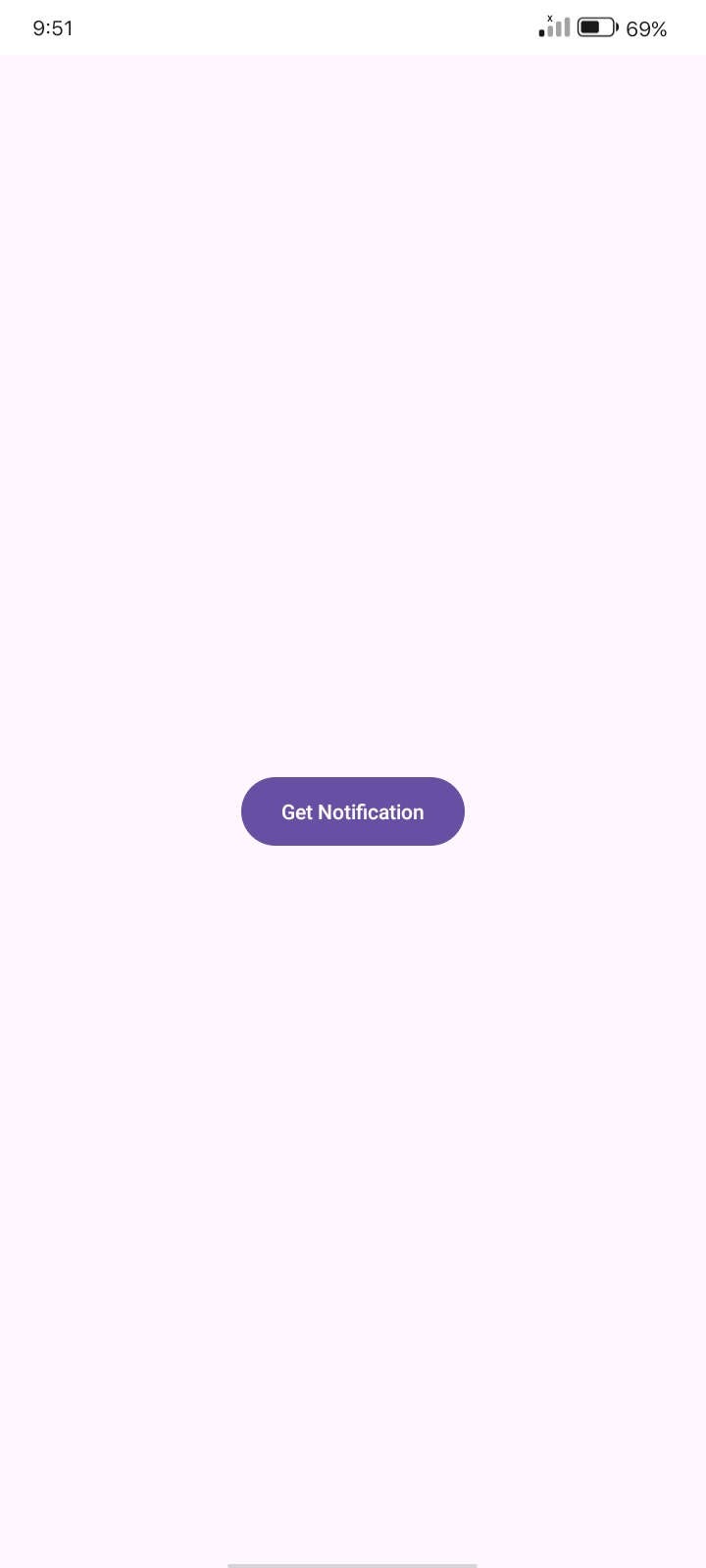
</activity>

</application>

</manifest>

**Output:**



****



# **Practical no. 12(B)**

**Aim:** Create an Android app that demonstrates the use of Alarm Manager.

**Codes:**

**activity\_main.xml:**

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

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"

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

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

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

tools:context=".MainActivity">

<TextView

android:id="@+id/textView"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_alignParentTop="true"

android:layout\_centerHorizontal="true"

android:layout\_marginTop="159dp"

android:text="Alarm Status"

android:textSize="30sp" />

<Button

android:id="@+id/alarmButton"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_centerHorizontal="true"

android:layout\_centerVertical="true"

android:textSize="20sp"

android:text="Set Alarm"

/>

</RelativeLayout>

**MainActivity.java:**

package com.example.alarmmanager;

import androidx.appcompat.app.AppCompatActivity;

import android.app.AlarmManager;

import android.app.PendingIntent;

import android.content.BroadcastReceiver;

import android.content.Context;

import android.content.Intent;

import android.content.IntentFilter;

import android.os.Bundle;

import android.os.SystemClock;

import android.view.View;

import android.widget.Button;

import android.widget.TextView;

import java.text.SimpleDateFormat;

import java.util.Date;

import java.util.Locale;

public class MainActivity extends AppCompatActivity {

private TextView textView;

private AlarmManager alarmManager;

private PendingIntent alarmIntent;

private static final long time=5000;

private BroadcastReceiver alarmReceiver = new AlarmReceiver(){

@Override

public void onReceive(Context context, Intent intent) {

SimpleDateFormat sdf = new SimpleDateFormat("HH:mm:ss", Locale.getDefault());

String currentTime = sdf.format(new Date());

textView.setText("Alarm Triggerd at: "+currentTime);

}

};

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

textView = findViewById(R.id.textView);

Button alarmButton = findViewById(R.id.alarmButton);

alarmManager = (AlarmManager) getSystemService(Context.ALARM\_SERVICE);

Intent alarmReceiverIntent = new Intent(this,AlarmReceiver.class);

alarmIntent = PendingIntent.getBroadcast(this,0,alarmReceiverIntent, PendingIntent.FLAG\_IMMUTABLE);

registerReceiver(alarmReceiver, new IntentFilter("ALARM\_TRIGGERED"));

alarmButton.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

setAlarm();

}

});

}

private void setAlarm(){

long triggerTime = SystemClock.elapsedRealtime() + time;

alarmManager.setExactAndAllowWhileIdle(AlarmManager.ELAPSED\_REALTIME\_WAKEUP, triggerTime, alarmIntent);

textView.setText("Alarm set to trigger after 5 seconds ");

}

@Override

protected void onDestroy() {

super.onDestroy();

unregisterReceiver(alarmReceiver);

}

}

**AlarmReceiver.java**

package com.example.alarmmanager;

import android.content.BroadcastReceiver;

import android.content.Context;

import android.content.Intent;

public class AlarmReceiver extends BroadcastReceiver {

@Override

public void onReceive(Context context, Intent intent) {

Intent broadcastIntent = new Intent("ALARM\_TRIGGERED");

context.sendBroadcast(broadcastIntent);

}

}

**AndrodManifest.xml**

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

<manifest xmlns:android="http://schemas.android.com/apk/res/android"

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

<uses-permission android:name="android.permission.RECEIVE\_BOOT\_COMPLETED"/>

<uses-permission android:name="android.permission.SCHEDULE\_EXACT\_ALARM"/>

<application

android:allowBackup="true"

android:dataExtractionRules="@xml/data\_extraction\_rules"

android:fullBackupContent="@xml/backup\_rules"

android:icon="@mipmap/ic\_launcher"

android:label="@string/app\_name"

android:roundIcon="@mipmap/ic\_launcher\_round"

android:supportsRtl="true"

android:theme="@style/Theme.AlarmManager"

tools:targetApi="31">

<activity

android:name=".MainActivity"

android:exported="true">

<intent-filter>

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

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

</intent-filter>

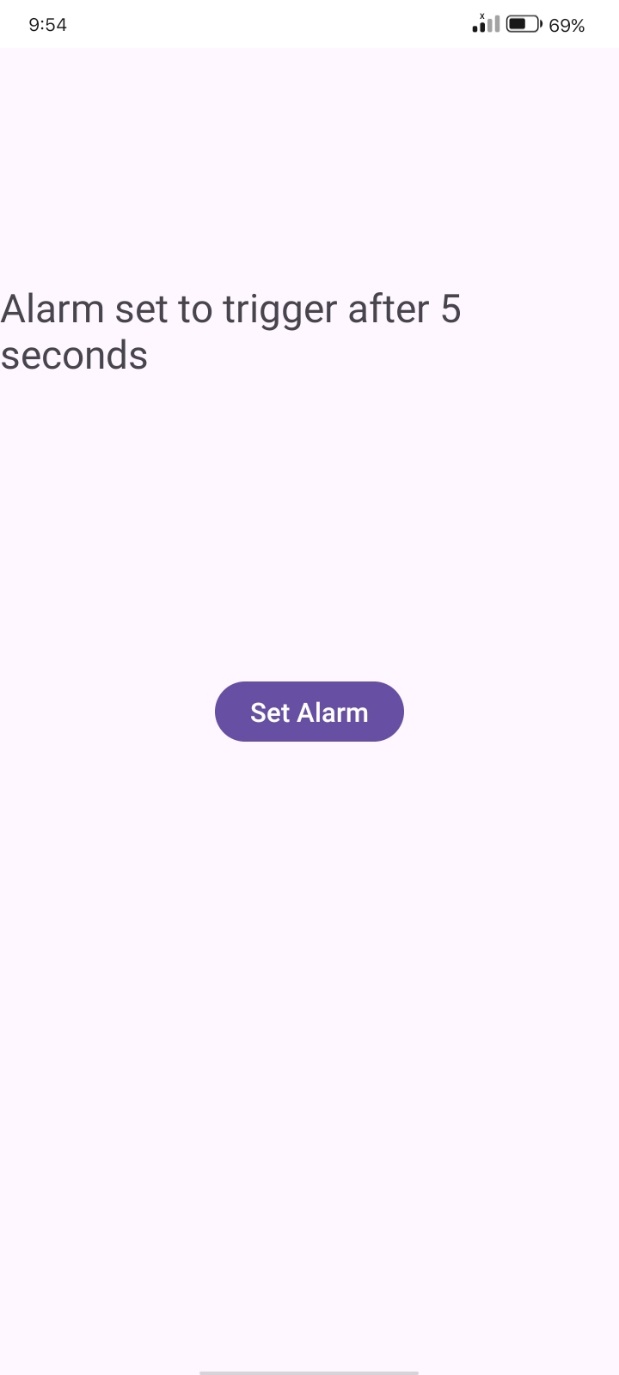
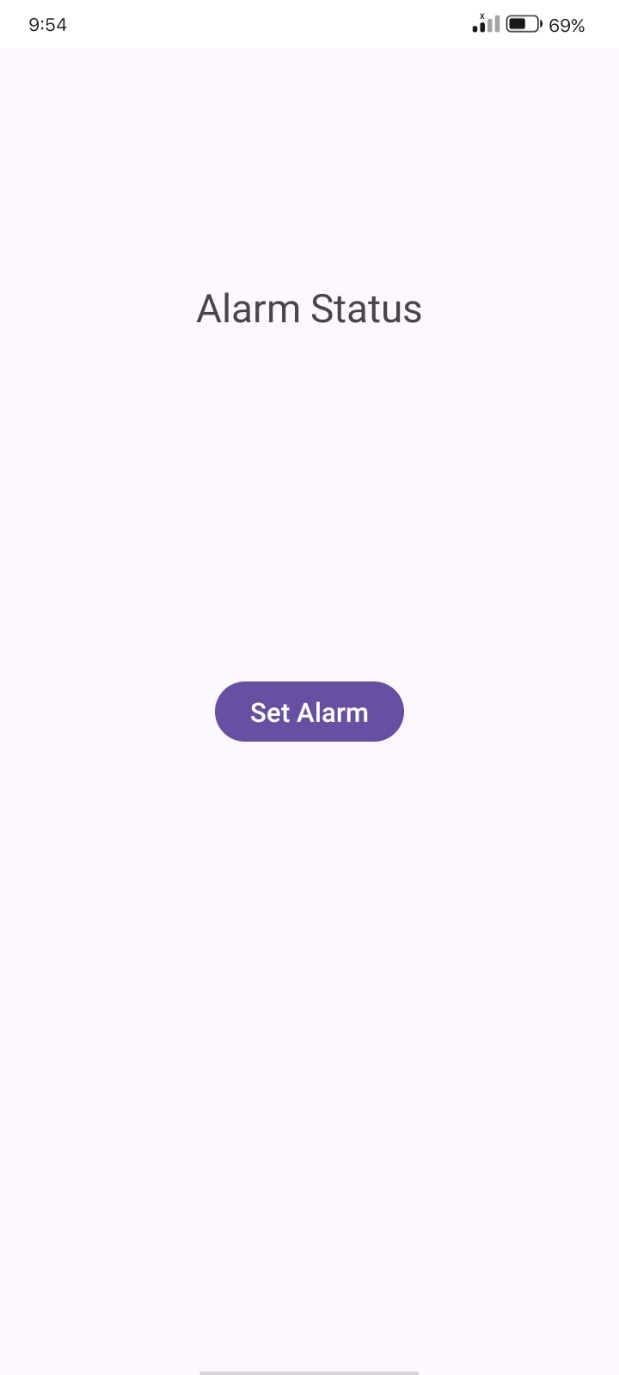
</activity>

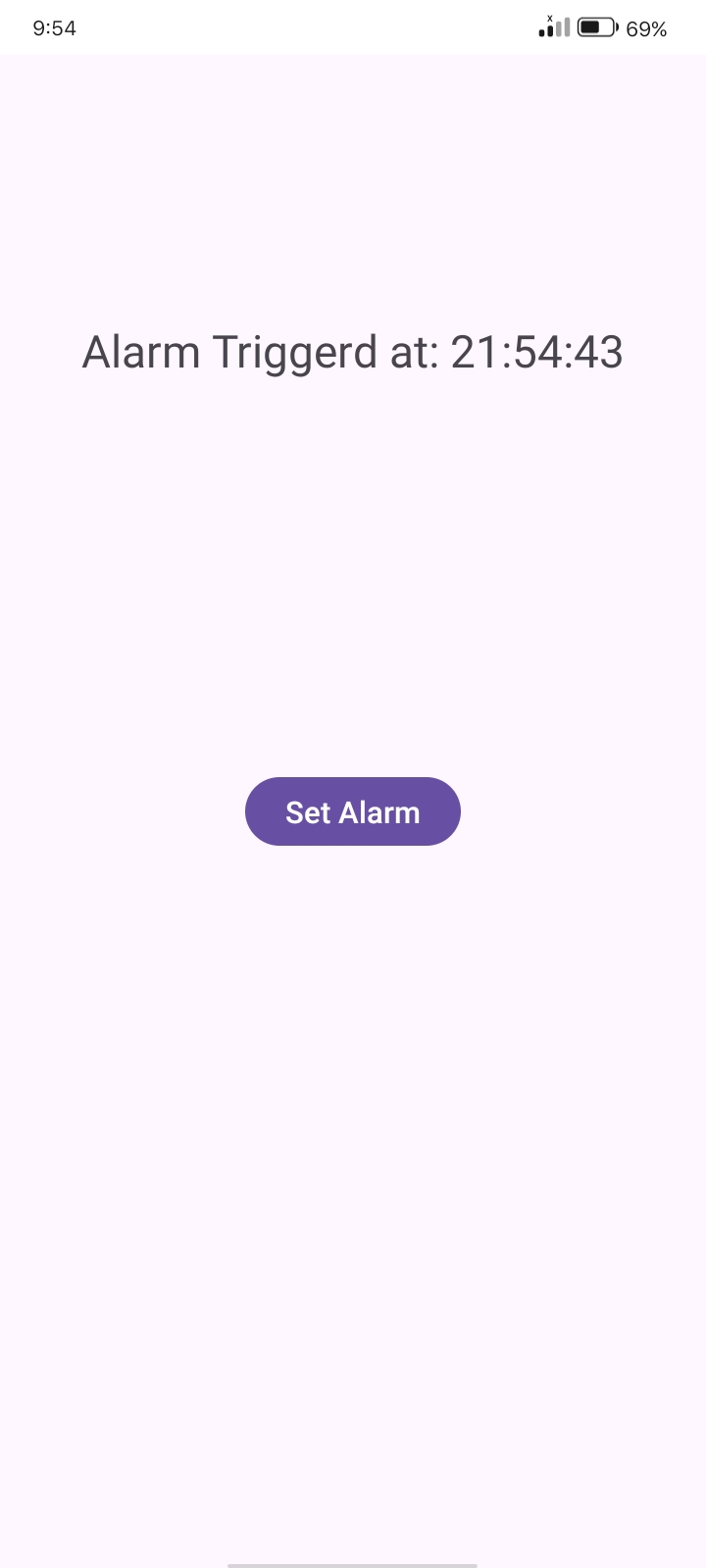
<receiver android:name=".AlarmReceiver"/>

</application>

</manifest>

**Output:**

****



# **Practical no. 13**

**Aim:** Create an Android app to save user’s data in a database and use of different queries.

**Codes:**

**activity\_main.xml:**

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

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

android:padding="50sp">

<EditText

android:id="@+id/editTextName"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_marginTop="10dp"

android:hint="@string/enter\_name"

android:textSize="20sp"

android:inputType="text"

android:autofillHints="" />

<EditText

android:id="@+id/editTextEmail"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_marginTop="10dp"

android:textSize="20sp"

android:inputType="textEmailAddress"

android:hint="@string/enter\_email" />

<Button

android:id="@+id/btnInsert"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_marginTop="10dp"

android:text="@string/insert\_data"

android:textSize="18sp" />

<EditText

android:id="@+id/editTextUserId"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_marginTop="50sp"

android:textSize="20sp"

android:inputType="number"

android:hint="@string/enter\_user\_id"

android:autofillHints="" />

<Button

android:id="@+id/btnRetrieveById"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_marginTop="10dp"

android:text="@string/retrieve\_user\_by\_id" />

<Button

android:id="@+id/btnRetrieveAll"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_marginTop="10dp"

android:text="@string/retrieve\_all\_users" />

<ScrollView

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:layout\_marginTop="10dp">

<LinearLayout

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:orientation="vertical">

<TextView

android:id="@+id/textViewData"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_marginTop="30dp"

android:text="@string/data\_will\_be\_displayed\_here"

android:textSize="20sp" />

</LinearLayout>

</ScrollView>

</LinearLayout>

**string.xml:**

<resources>

<string name="app\_name">Database</string>

<string name="insert\_data">Insert Data</string>

<string name="retrieve\_all\_users">Retrieve All Users</string>

<string name="retrieve\_user\_by\_id">Retrieve User by ID</string>

<string name="enter\_email">Enter Email</string>

<string name="enter\_name">Enter Name</string>

<string name="enter\_user\_id">Enter User ID</string>

<string name="data\_will\_be\_displayed\_here">Data will be displayed here.</string>

</resources>

**AndroidManifest.xml:**

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

<manifest xmlns:android="http://schemas.android.com/apk/res/android"

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

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

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

<application

android:allowBackup="true"

android:dataExtractionRules="@xml/data\_extraction\_rules"

android:fullBackupContent="@xml/backup\_rules"

android:icon="@mipmap/ic\_launcher"

android:label="@string/app\_name"

android:roundIcon="@mipmap/ic\_launcher\_round"

android:supportsRtl="true"

android:theme="@style/Theme.Database"

tools:targetApi="31">

<activity

android:name=".MainActivity"

android:exported="true">

<intent-filter>

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

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

</intent-filter>

</activity>

</application>

</manifest>

**MainActivity.java:**

package com.example.database;

import android.annotation.SuppressLint;

import android.os.Bundle;

import android.util.Log;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;

import java.util.List;

public class MainActivity extends AppCompatActivity {

private EditText editTextName, editTextEmail, editTextUserId;

private TextView textViewData;

private DatabaseHelper databaseHelper;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

editTextName = findViewById(R.id.editTextName);

editTextEmail = findViewById(R.id.editTextEmail);

editTextUserId = findViewById(R.id.editTextUserId);

Button btnInsert = findViewById(R.id.btnInsert);

Button btnRetrieveAll = findViewById(R.id.btnRetrieveAll);

Button btnRetrieveById = findViewById(R.id.btnRetrieveById);

textViewData = findViewById(R.id.textViewData);

databaseHelper = new DatabaseHelper(this);

btnInsert.setOnClickListener(v -> insertUserData());

btnRetrieveAll.setOnClickListener(v -> retrieveAllUsers());

btnRetrieveById.setOnClickListener(v -> retrieveUserById());

}

private void insertUserData() {

String name = editTextName.getText().toString().trim();

String email = editTextEmail.getText().toString().trim();

long userId = databaseHelper.insertUser(name, email);

Log.d("UserData", "User inserted with ID: " + userId);

String str = "Inserted\nUsername: "+editTextName.getText().toString()+"\nEmail: "+editTextEmail.getText().toString();

Toast msg = Toast.makeText(getBaseContext(),str,Toast.LENGTH\_LONG);

msg.show();

editTextName.setText("");

editTextEmail.setText("");

editTextUserId.setText("");

}

private void retrieveAllUsers() {

List<User> allUsers = databaseHelper.getAllUsers();

StringBuilder userData = new StringBuilder("All Users:\n");

for (User user : allUsers) {

userData.append("ID: ").append(user.getId()).append(", Name: ").append(user.getName()).append(", Email: ").append(user.getEmail()).append(".\n");

}

textViewData.setText(userData.toString());

editTextName.setText("");

editTextEmail.setText("");

editTextUserId.setText("");

}

@SuppressLint("SetTextI18n")

private void retrieveUserById() {

String userIdString = editTextUserId.getText().toString().trim();

if (!userIdString.isEmpty()) {

long userId = Long.parseLong(userIdString);

User user = databaseHelper.getUserById(userId);

if (user != null) {

textViewData.setText("User found by ID:\n" + "ID: " +

user.getId() + "\nName: " + user.getName() + "\nEmail: " +

user.getEmail());

} else {

textViewData.setText("User not found by ID: " + userId);

}

} else {

textViewData.setText("Please enter a user ID.");

}

editTextName.setText("");

editTextEmail.setText("");

editTextUserId.setText("");

}

}

**DatabaseHelper.java:**

package com.example.database;

import android.annotation.SuppressLint;

import android.content.ContentValues;

import android.content.Context;

import android.database.Cursor;

import android.database.sqlite.SQLiteDatabase;

import android.database.sqlite.SQLiteOpenHelper;

import java.util.ArrayList;

import java.util.List;

class DatabaseHelper extends SQLiteOpenHelper {

private static final String DATABASE\_NAME = "user\_data.db";

private static final int DATABASE\_VERSION = 1;

public static final String TABLE\_USERS = "users";

public static final String COLUMN\_ID = "id";

public static final String COLUMN\_NAME = "name";

public static final String COLUMN\_EMAIL = "email";

private static final String TABLE\_CREATE = "CREATE TABLE " + TABLE\_USERS + " (" + COLUMN\_ID + " INTEGER PRIMARY KEY AUTOINCREMENT, " + COLUMN\_NAME + " TEXT, " + COLUMN\_EMAIL + " TEXT);";

public DatabaseHelper(Context context) {

super(context, DATABASE\_NAME, null, DATABASE\_VERSION);

}

@Override

public void onCreate(SQLiteDatabase db) {

db.execSQL(TABLE\_CREATE);

}

@Override

public void onUpgrade(SQLiteDatabase db, int oldVersion, int

newVersion) {

db.execSQL("DROP TABLE IF EXISTS " + TABLE\_USERS);

onCreate(db);

}

public long insertUser(String name, String email) {

SQLiteDatabase db = this.getWritableDatabase();

ContentValues values = new ContentValues();

values.put(COLUMN\_NAME, name);

values.put(COLUMN\_EMAIL, email);

long userId = db.insert(TABLE\_USERS, null, values);

db.close();

return userId;

}

@SuppressLint("Range")

public List<User> getAllUsers() {

List<User> users = new ArrayList<>();

String selectQuery = "SELECT \* FROM " + TABLE\_USERS;

SQLiteDatabase db = this.getWritableDatabase();

Cursor cursor = db.rawQuery(selectQuery, null);

if (cursor != null && cursor.moveToFirst()) {

do {

User user = new User();

user.setId(cursor.getLong(cursor.getColumnIndex(COLUMN\_ID)));

user.setName(cursor.getString(cursor.getColumnIndex(COLUMN\_NAME)));

user.setEmail(cursor.getString(cursor.getColumnIndex(COLUMN\_EMAIL)));

users.add(user);

} while (cursor.moveToNext());

cursor.close();

}

db.close();

return users;

}

@SuppressLint("Range")

public User getUserById(long userId) {

SQLiteDatabase db = this.getReadableDatabase();

Cursor cursor = db.query(

TABLE\_USERS,

new String[]{COLUMN\_ID, COLUMN\_NAME, COLUMN\_EMAIL},

COLUMN\_ID + "=?",

new String[]{String.valueOf(userId)},

null,

null,

null,

null

);

User user = null;

if (cursor != null && cursor.moveToFirst()) {

user = new User();

user.setId(cursor.getLong(cursor.getColumnIndex(COLUMN\_ID)));

user.setName(cursor.getString(cursor.getColumnIndex(COLUMN\_NAME)));

user.setEmail(cursor.getString(cursor.getColumnIndex(COLUMN\_EMAIL)));

cursor.close();

}

db.close();

return user;

}

}

**User.java:**

package com.example.database;

public class User {

private long id;

private String name;

private String email;

public User() {

}

public User(String name, String email) {

this.name = name;

this.email = email;

}

public long getId() {

return id;

}

public void setId(long id) {

this.id = id;

}

public String getName() {

return name;

}

public void setName(String name) {

this.name = name;

}

public String getEmail() {

return email;

}

public void setEmail(String email) {

this.email = email;

}

}

**Output:**

