Practical No.1

**Title: Android program using various UI components**

# Aim: Create an application to demonstrate various UI components

**Introduction UI Elements**

### A **View** is an object that draws something on the screen that the user can interact with and a **ViewGroup** is an object that holds other View (and ViewGroup) objects in order to define the layout of the user interface.

You define your layout in an XML file which offers a human-readable structure for the layout, similar to HTML. For example, a simple vertical layout with a text view and a button looks like this −

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

<LinearLayout xmlns:android=["htt](http://schemas.android.com/apk/res/android)p[://schemas.android.com/apk/res/android"](http://schemas.android.com/apk/res/android) android:layout\_width="fill\_parent"

android:layout\_height="fill\_parent" android:orientation="vertical" >

<TextView android:id="@+id/text" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="I am a TextView" />

<Button android:id="@+id/button" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="I am a Button" />

</LinearLayout>

# Android UI Controls

### There are number of UI controls provided by Android that allow you to build the graphical user interface for your app.

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| **Sr.No.** | **UI Control & Description** |
| 1 | [TextView](https://www.tutorialspoint.com/android/android_textview_control.htm) |

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|  | This control is used to display text to the user. |
| 2 | [EditText](https://www.tutorialspoint.com/android/android_edittext_control.htm)  EditText is a predefined subclass of TextView that includes rich editing capabilities. |
| 3 | [AutoCompleteTextView](https://www.tutorialspoint.com/android/android_autocompletetextview_control.htm)  The AutoCompleteTextView is a view that is similar to EditText, except that it shows a list of completion suggestions automatically while the user is typing. |
| 4 | [Button](https://www.tutorialspoint.com/android/android_button_control.htm)  A push-button that can be pressed, or clicked, by the user to perform an action. |
| 5 | [ImageButton](https://www.tutorialspoint.com/android/android_imagebutton_control.htm)  An ImageButton is an AbsoluteLayout which enables you to specify the exact location of its children. This shows a button with an image (instead of text) that can be pressed or clicked by the user. |
| 6 | [CheckBox](https://www.tutorialspoint.com/android/android_checkbox_control.htm)  An on/off switch that can be toggled by the user. You should use check box when presenting users with a group of selectable options that are not mutually exclusive. |
| 7 | [ToggleButton](https://www.tutorialspoint.com/android/android_togglebutton_control.htm)  An on/off button with a light indicator. |
| 8 | [RadioButton](https://www.tutorialspoint.com/android/android_radiobutton_control.htm)  The RadioButton has two states: either checked or unchecked. |
| 9 | [RadioGroup](https://www.tutorialspoint.com/android/android_radiogroup_control.htm)  A RadioGroup is used to group together one or more RadioButtons. |
| 10 | [ProgressBar](https://www.tutorialspoint.com/android/android_progressbar.htm)  The ProgressBar view provides visual feedback about some ongoing tasks, such as when you are performing a task in the background. |
| 11 | [Spinner](https://www.tutorialspoint.com/android/android_spinner_control.htm) |

|  |  |
| --- | --- |
|  | A drop-down list that allows users to select one value from a set. |
| 12 | [TimePicker](https://www.tutorialspoint.com/android/android_timepicker_control.htm)  The TimePicker view enables users to select a time of the day, in either 24-hour mode or AM/PM mode. |
| 13 | [DatePicker](https://www.tutorialspoint.com/android/android_datepicker_control.htm)  The DatePicker view enables users to select a date of the day. |

**Exercise - Create android application to demonstrate various UI components**

**Implementation:**

**Program:**

## MainActivity.java

package com.example.converterpromax;

import androidx.appcompat.app.AppCompatActivity; import java.util.Calendar;

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.text.Format;

public class MainActivity extends AppCompatActivity { private Button button;

private EditText editText; private TextView textView; @Override

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

button = findViewById(R.id.button2);

editText = findViewById(R.id.editTextTextPersonName2); textView = findViewById(R.id.textView3);

button.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View view) {

Calendar c = Calendar.getInstance();

int timeOfDay = c.get(Calendar.HOUR\_OF\_DAY);

if(timeOfDay >= 0 && timeOfDay < 12){ Toast.makeText(MainActivity.this, "",

Toast.LENGTH\_SHORT).show();

Toast.makeText(MainActivity.this, "Good Morning", Toast.LENGTH\_SHORT).show();

}else if(timeOfDay >= 12 && timeOfDay < 16){ Toast.makeText(MainActivity.this, "Good Afternoon",

Toast.LENGTH\_SHORT).show();

}else if(timeOfDay >= 16 && timeOfDay < 21){ Toast.makeText(MainActivity.this, "Good Evening",

Toast.LENGTH\_SHORT).show();

}else if(timeOfDay >= 21 && timeOfDay < 24){ Toast.makeText(MainActivity.this, "Good Night",

Toast.LENGTH\_SHORT).show();

}

Toast.makeText(MainActivity.this, "Hi", Toast.LENGTH\_SHORT).show();

String s=editText.getText().toString(); Float cgpa=Float.parseFloat(s);

Double per=(7.1\*cgpa)+11;

textView.setText("Percentage is "+String.format("%.2f",per));

}

});

}

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

<ImageView

android:id="@+id/imageView2"

android:layout\_width="152dp" android:layout\_height="114dp" app:layout\_constraintBottom\_toTopOf="@+id/textView2" 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="0.807" app:srcCompat="@drawable/percent" />

<TextView

android:id="@+id/textView2" android:layout\_width="375dp" android:layout\_height="122dp" android:layout\_marginBottom="20dp" android:text="Mumbai University CGPA to % Converter" android:textAlignment="center" android:textColor="#FF5722"

android:textSize="38sp" android:textStyle="bold"

app:layout\_constraintBottom\_toTopOf="@+id/editTextTextPersonName2" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintStart\_toStartOf="parent" />

<EditText

android:id="@+id/editTextTextPersonName2" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_marginBottom="44dp" android:ems="10" android:inputType="textPersonName" android:text="CGPA" android:textSize="24sp"

app:layout\_constraintBottom\_toTopOf="@+id/button2" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintHorizontal\_bias="0.5" app:layout\_constraintStart\_toStartOf="parent" />

<Button

android:id="@+id/button2" android:layout\_width="167dp" android:layout\_height="65dp" android:layout\_marginBottom="40dp" android:onClick="convert" android:text="Convert" android:textSize="24sp"

app:layout\_constraintBottom\_toTopOf="@+id/textView3" app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintHorizontal\_bias="0.5" app:layout\_constraintStart\_toStartOf="parent" />

<TextView

android:id="@+id/textView3" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_marginBottom="88dp" android:inputType="number|text" android:text="Result" android:textSize="24sp"

app:layout\_constraintBottom\_toBottomOf="parent" app:layout\_constraintEnd\_toEndOf="parent" app:layout\_constraintStart\_toStartOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>

## Output:

