

**L. B. Hiray S.S. Trust's  
Institute of Computer Application**

**Mobile Computing Lab  
Practical Journal**

**Name:**

**Roll no:**

**Division:**

## Practical 1. Activity Overloading

XML code :

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" android:text="Your Name"
        />
    <EditText
        android:id="@+id/txt1"
        android:layout_width="214dp"
        android:layout_height="wrap_content" />
    <Button
        android:id="@+id/btn1"
        android:layout_width="106dp"
        android:layout_height="wrap_content"
        android:text="OK"/>
    <Button
        android:id="@+id/btn2"
        android:layout_width="106dp"
        android:layout_height="wrap_content"
        android:text="Cancel"/>
```

</LinearLayout>

Java Code

```
package com.tymca.www.actiover;  
import android.app.Activity;  
import android.support.v7.app.AppCompatActivity;
```

```
import android.os.Bundle;
import
android.view.KeyEvent;
import
android.widget.Toast;

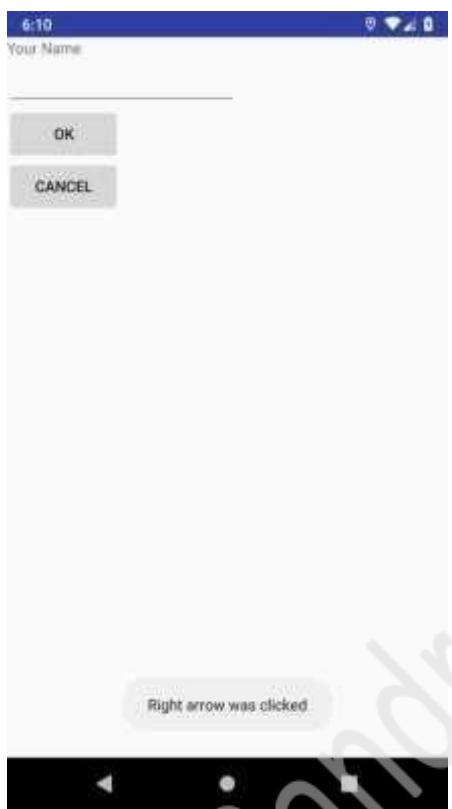
import org.w3c.dom.Text;

public class MainActivity extends Activity

{ @Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
}

public boolean onKeyDown(int keyCode, KeyEvent event) {
    switch (keyCode) {
        case KeyEvent.KEYCODE_DPAD_CENTER:
            Toast.makeText(getApplicationContext(), "Center Was Clicked",
Toast.LENGTH_LONG).show();
            break;
        case KeyEvent.KEYCODE_DPAD_LEFT:
            Toast.makeText(getApplicationContext(), "Left arrow was
clicked",
Toast.LENGTH_LONG).show();
            break;
        case KeyEvent.KEYCODE_DPAD_RIGHT:
            Toast.makeText(getApplicationContext(), "Right arrow was
clicked",
Toast.LENGTH_LONG).show();
            break;
        case KeyEvent.KEYCODE_DPAD_UP:
            Toast.makeText(getApplicationContext(), "Up arrow was
clicked",
Toast.LENGTH_LONG).show();
            break;
        case KeyEvent.KEYCODE_DPAD_DOWN:
```

```
        Toast.makeText(getApplicationContext(), "Down arrow was  
        clicked",  
        Toast.LENGTH_LONG).show();  
        break;  
    }  
    return true;  
}  
}
```



Hiray College Bandra(east)

## Practical 2. Activity Lifecycle

### Demo Design Code

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

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

</android.support.constraint.ConstraintLayout>
```

### Java File

```
package com.tymca.www.lifecycledemo;
```

```
import android.app.Activity;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.annotation.SuppressLint;
import android.widget.Toast;
```

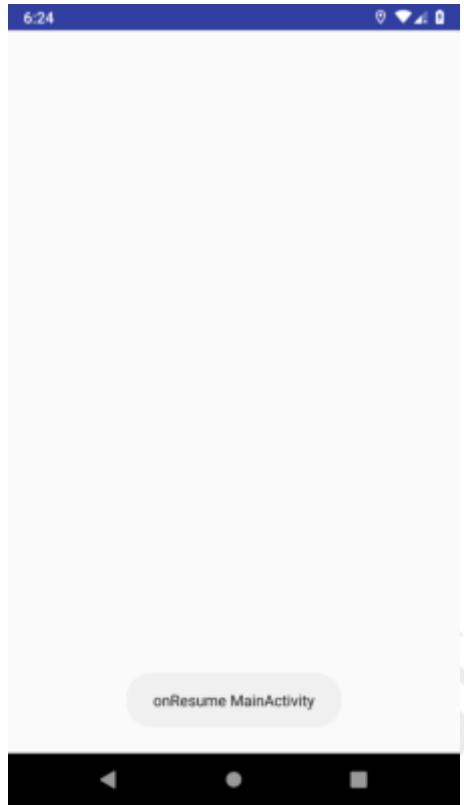
```
public class MainActivity extends Activity  
{ @Override  
protected void onCreate(Bundle  
 savedInstanceState) {  
super.onCreate(savedInstanceState);  
notify("onCreate");  
}
```

---

```
protected void onPause()
{
    super.onPause();
    notify("onPause");
}
protected void onResume()
{
    super.onResume(
    );
    notify("onResum
e");
}
protected void onStop()
{
    super.onStop();
    notify("onStop");
}
protected void onDestroy()
{
    super.onDestroy();
    notify("onDestroy");
}
protected void onRestoreInstanceState(Bundle
savedInstanceState)
{
    super.onRestoreInstanceState(savedInstanceState);
    notify("onRestoreInstanceState");
}
protected void onSaveInstanceState(Bundle outState)
{
    super.onSaveInstanceState(outState);
    notify("onSaveInstanceState");
}
private void notify(String methodName)
{
    String name =
    this.getClass().getName(); String []
    strings = name.split("\\\\.");
}
```

```
        Toast.makeText(getApplicationContext(),methodName+"
"+strings[strings.length - 1],Toast.LENGTH_LONG).show();
    }
}
```

Output:



liray College Bangalore/east)

## Practical 3. Hello World

Program XML code

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-
    auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <TextView android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Button"
        tools:layout_editor_absoluteX="16dp"
        tools:layout_editor_absoluteY="266dp" />
</android.support.constraint.ConstraintLayout>
```

Java Code

package

```
com.example.vikram.myapplication;
import
android.support.v7.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 4.

### Calculator XML

#### Code

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res
    /android"
    android:orientation="vertical"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    >
    <RelativeLayout
        android:layout_width="match_parent"
        android:id="@+id/relativeLayout1"
        android:layout_height="match_parent"
        android:background="@color/bbgcolor">
        <TextView android:id="@+id/textView1"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:textAppearance="?android:attr/textAppearanceLarge"
            android:layout_alignParentTop="true"
            android:layout_alignParentLeft="true"
            android:layout_marginTop="45dp" android:text="Enter
            User Name
            :"></TextView>
        <EditText android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:inputType="textPersonName"
            android:layout_below="@+id/textView1"
            android:layout_alignParentLeft="true"
            android:layout_alignParentRight="true"
            android:id="@+id/txtusername" android:hint="Enter
            UserName">
            <requestFocus></requestFocus>
        </EditText>
```

```
<TextView android:id="@+id/textView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textAppearance="?android:attr/textAppearanceLarge"
```

```
        android:layout_below="@+id/txtnusername"
        android:layout_alignParentLeft="true"
        android:layout_marginTop="20dp" android:text="Enter
        Password
    :"></TextView>
    <EditText android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:inputType="textPassword"
        android:layout_below="@+id/textView2"
        android:layout_alignParentLeft="true"
        android:layout_alignParentRight="true"
        android:id="@+id/txtpassword" android:hint="Enter
        Password"></EditText>
    <Button android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignTop="@+id	btnlogin"
        android:layout_toRightOf="@+id/textView1"
        android:text="Clear" android:id="@+id/btnclear"></Button>
    <Button android:id="@+id	btnlogin"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" android:text="Login"
        android:layout_below="@+id/txtpassword"
        android:layout_alignRight="@+id/textView2"
        android:layout_marginRight="33dp"
        android:layout_marginTop="21dp"></Button>
</RelativeLayout>
</LinearLayout>
```

## Java Code

```
package com.tymca.www.calculator;
import android.os.Bundle;
import
android.app.Activity;
import
android.view.Menu;
import android.view.View;
import
android.widget.Button;
import
android.widget.EditText;
import
android.widget.TextView;
public class MainActivity extends Activity
{ @Override
protected void onCreate(Bundle savedInstanceState)
{ super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
final EditText amt = (EditText) findViewById(R.id.bill_amt);
final EditText tip = (EditText) findViewById(R.id.bill_per);

final TextView result = (TextView)
findViewById(R.id.res); Button calc = (Button)
findViewById(R.id.button1);
calc.setOnClickListener(new
View.OnClickListener() {
    @Override
    public void onClick(View v) {
        // TODO Auto-generated method stub
        double amount = Double.parseDouble(amt.toString());
```

```

        double tip_per = Double.parseDouble(tip.toString());
        double tip_cal = (amount * tip_per) / 100;
        result.setText("Result : " + Double.toString(tip_cal));
    }
});
}
@Override
public boolean onCreateOptionsMenu(Menu menu) {
    // Inflate the menu; this adds items to the action bar if it is present.
    getMenuInflater().inflate(R.menu.main, menu);
    return true;
}
}
Output:

```



35354+451  
35805.0



## Practical 5. Temperature

### Converter XML Code

```
<?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">

    <EditText
        android:id="@+id/editTex
        t1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:inputType="number|numberDecimal"/
        >
    <RadioGroup
        android:id="@+id/radioGroup1"
        android:layout_width="wrap_ContentPane"
        android:layout_height="wrap_content"
        android:layout_below="@+id/editText1">

        <RadioButton
            android:id="@+id/radioo"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content" android:checked="true"
```

```
        android:text="celcious"/>
<RadioButton
    android:id="@+id/radio1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="farenhiet"/>
</RadioGroup>
<Button
    android:id="@+id/button1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentLeft="true"
    android:layout_below="@+id/radioGroup1" android:onClick="onClick"
    android:text="cal"/>
</RelativeLayout>
```

Java Code:

```
package com.tymca.www.temperature;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import
android.widget.EditText;
import android.widget.RadioButton;
import android.widget.Toast;

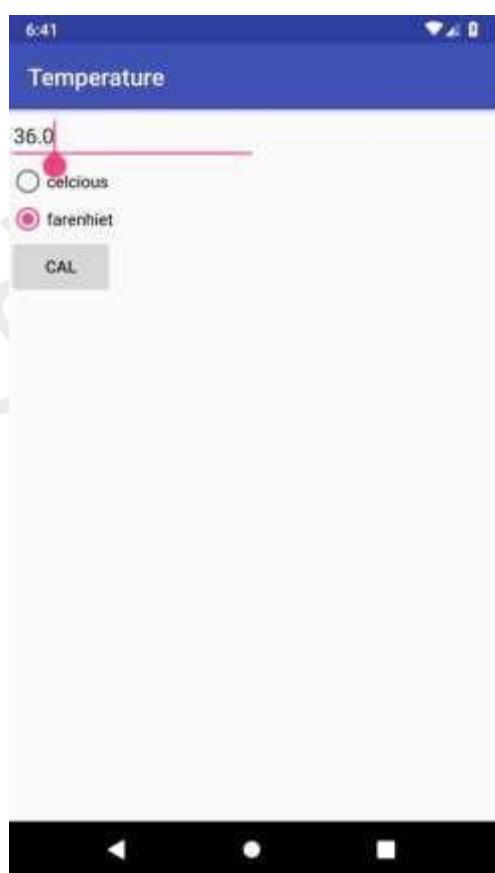
public class MainActivity extends
AppCompatActivity { EditText text;
@Override
protected void onCreate(Bundle savedInstanceState)
{ super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
```

```
    text = (EditText)findViewById(R.id.editText1);
}
public float onClick(View view)
{
    switch(view.getId()) {
        case R.id.button1:
            RadioButton cel      = (RadioButton)
                findViewById(R.id.radio0); RadioButton far =
                (RadioButton)   findViewById(R.id.radio1); if
                (text.getText().length() == 0) {
                    Toast.makeText(this, "Enter Valid
Number", Toast.LENGTH_LONG).show();
                    return;
                }
            }
        }
    }
}
```

```
        }
        float input = Float.parseFloat(text.getText().toString());
        if (cel.isChecked()) {
            text.setText(String.valueOf(convertFarToCel(input)));
            cel.setChecked(false);
            far.setChecked(true);
        } else {
            text.setText(String.valueOf(convertCelToFar(input)));
            cel.setChecked(true);
            far.setChecked(false);
        }
        break;
    }
    float convertFarToCel(float fahrenheit)
    {
        return((fahrenheit-32)*5/9);
    }
    float convertCelToFar(float celsius)
    {
        return ((celsius*9/5)+32);
    }
}
```



Output:



## Practical 6. TextDemo

XML code

```
<?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="com.tymca.www.textdemo.MainActivity">

    <TextView
        android:id="@+id/text"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" android:text="Hello World!"
        android:textcolor="#ffffff"
        android:layout_centerVertical="true"
        android:layout_centerHorizontal="true" android:textSize="20sp"

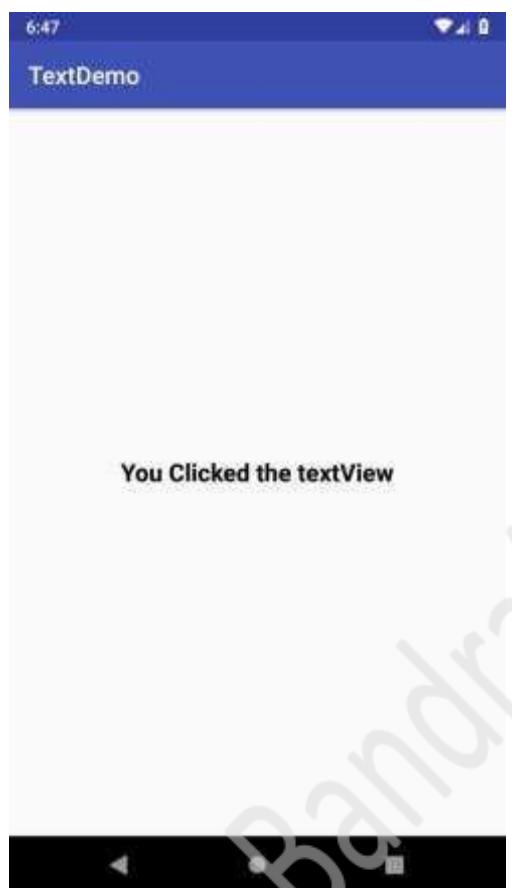
        android:textStyle="bold" />
</RelativeLayout>
```

Java Code

```
package com.tymca.www.textdemo;
import android.app.Activity;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import
android.widget.TextView;
import
android.widget.Toast;

public class MainActivity extends
```

```
AppCompatActivity { @Override
protected void onCreate(Bundle savedInstanceState)
{ super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
final TextView txtView = (TextView) findViewById(R.id.text);
txtView.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        txtView.setText("You Clicked the
textView");
    }
});
```



## Practical 7. Input Text Demo

XML Code

```
<?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/too
ls" android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="16dp"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/edit
        Text"
        android:layout_width="wrap_ con
        tent"
        android:layout_height="wrap_ co
        ntent"
        android:layout_centerHorizontal=
        "true" android:hint="Enter your
        Name"
        android:layout_marginTop="150d
        p" android:inputType="text"/>

    <TextView
        android:id="@+id/textVie
        w"
        android:layout_width="wrap_ conten
        t"
        android:layout_height="wrap_ conte
        nt"
        android:layout_marginTop="75dp"
        android:layout_centerVertical="true"
        android:layout_centerHorizontal="tr
        ue" android:textStyle="bold"
        android:textColor="#58ff55" />

</RelativeLayout>
```

## Java Code

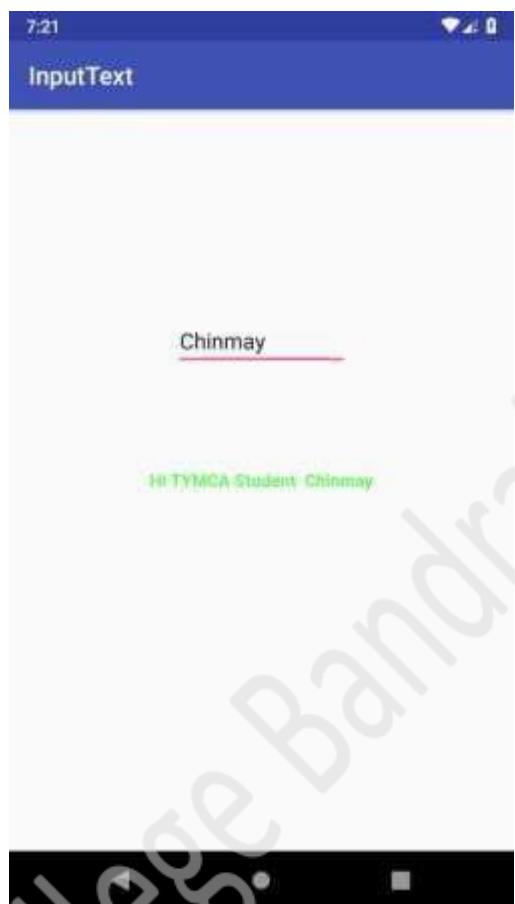
```
package com.tymca.www.inputtext;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import
android.text.Editable;
import
android.text.TextWatcher;
import
android.widget.EditText;

import android.widget.TextView;

public class MainActivity extends

AppCompatActivity { EditText editText;
TextView textView;
@Override
protected void onCreate(Bundle savedInstanceState)
{ super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
editText =
(EditText) findViewById(R.id.editText);
textView =
(TextView) findViewById(R.id.textView);
editText.addTextChangedListener(new
TextWatcher() {
    @Override
    public void beforeTextChanged(CharSequence
charSequence, int i, int
i1, int i2) {
    }
    @Override
    public void onTextChanged(CharSequence charSequence,
int i, int i1,
int i2) {
    }
    @Override
```

```
public void afterTextChanged(Editable  
    editable) { String name =  
        editText.getText().toString();  
        textView.setText("Hi Tymca Student  
        "+name);  
    }  
}  
}
```



Output:

## Practical 8. Text Autocorrect

Demo XML code

```
<?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/too
ls" android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="16dp"
    tools:context=".MainActivity">

    <AutoCompleteTextView
        android:id="@+id/acTextView"
        android:layout_width="match_paren
        t"
        android:layout_height="wrap_ conte
        nt"
        android:layout_centerHorizontal="tr
        ue"
        android:layout_marginTop="10dp"
        android:completionThreshold="1"/>

    <TextView
        android:id="@+id/textVie
        w"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="150dp"
        android:textColor="#f6f"
        />

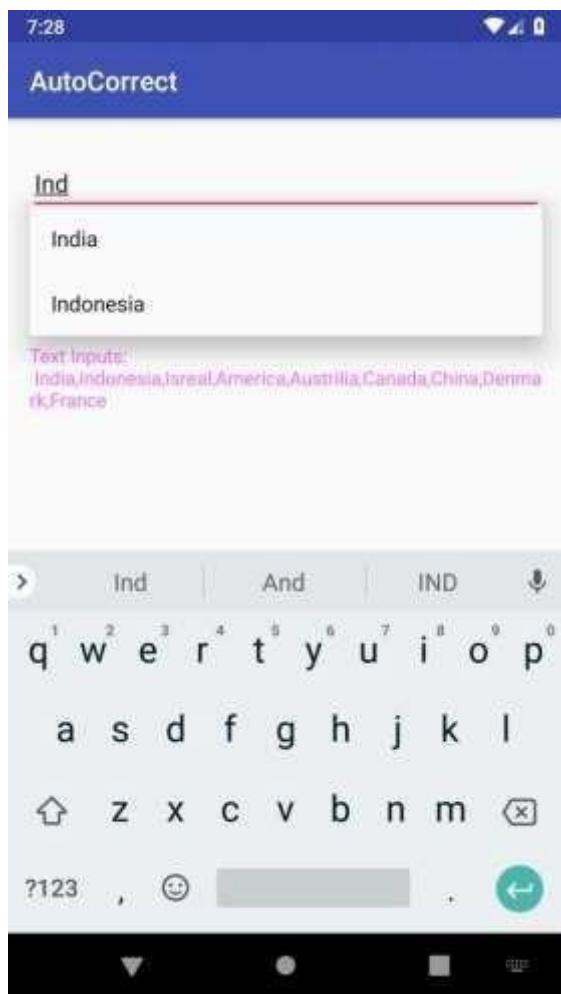
</RelativeLayout>
```

Java Code

```
package com.tymca.www.autocorrect;  
import android.support.v7.app.AppCompatActivity;  
import android.os.Bundle;  
import android.widget.ArrayAdapter;
```

```
import android.widget.AutoCompleteTextView;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity
{ AutoCompleteTextView acTextView;
TextView textView;
String [] inputs =
{"India","Indonesia","Isreal","America","Austrilia","Canada","Chin
a"
,"Denmark","France"};
@Override
protected void onCreate(Bundle
 savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
acTextView =
(AutoCompleteTextView)findViewById(R.id.acText
View); textView =
(TextView)findViewById(R.id.textView);
textView.setText("Text Inputs:\n
India,Indonesia,Isreal,America,Austrilia,Canada,China,Denmark,F
rance"
);
ArrayAdapter<String> adapter = new
ArrayAdapter<String>(this,android.R.layout.simple_list_item_1,i
nputs);
acTextView.setAdapter(adapter);
}
}
Output:
```



## Practical 9. Button Demo

```
<?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/too
    ls" android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="16dp"
    tools:context=".MainActivity">
    <Button
        android:id="@+id/button"
        android:layout_width="wrap_co
        ntent"
        android:layout_height="wrap_co
        ntent"
        android:layout_centerVertical="tr
        ue"
        android:layout_centerHorizontal="true"
        android:text="Click Me"/>

    <TextView
        android:id="@+id/textVie
        w"
        android:layout_width="wrap_ContentPane"
        android:layout_height="wrap_content"
        android:layout_marginBottom="100
        dp"
```

```
    android:layout_centerVertical="true"
    android:layout_centerHorizontal="true"
    android:layout_above="@+id/button"
    " android:textStyle="bold"
    android:textColor="#f6f"
/>
</RelativeLayout>
```

### Java Code

```
package com.tymca.www.butdemo;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import
android.widget.Button;
import
android.widget.TextView;

public class MainActivity extends
AppCompatActivity { Button button;
TextView textView;
@Override
protected void onCreate(Bundle savedInstanceState)
{ super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
button = (Button)findViewById(R.id.button);
textView = (TextView)findViewById(R.id.textView);
button.setOnClickListener(new
View.OnClickListener() { @Override
public void onClick(View view) {
    textView.setText("You click the Button");
}
});
}
}
```

}

Output:



## Practical 10. Radio Button Demo to change background color

```
<?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"
    android:padding="16dp"
    android:id="@+id/relativeLayout"
    tools:context=".MainActivity">
```

```
<RadioGroup
    android:id="@+id/radioGroup"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_centerHorizontal=
    "true"
    android:layout_centerVertical="tr
ue">

    <RadioButton
        android:id="@+id/radioButton1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" android:text="RED"/>
    <RadioButton
        android:id="@+id/radioButton2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" android:text="Green"/>
    <RadioButton
        android:id="@+id/radioButton3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" android:text="BLUE"/>
    <RadioButton
        android:id="@+id/radioButton4"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" android:text="Yellow"/>
```

```
</RadioGroup>

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

```
</RelativeLayout>
```

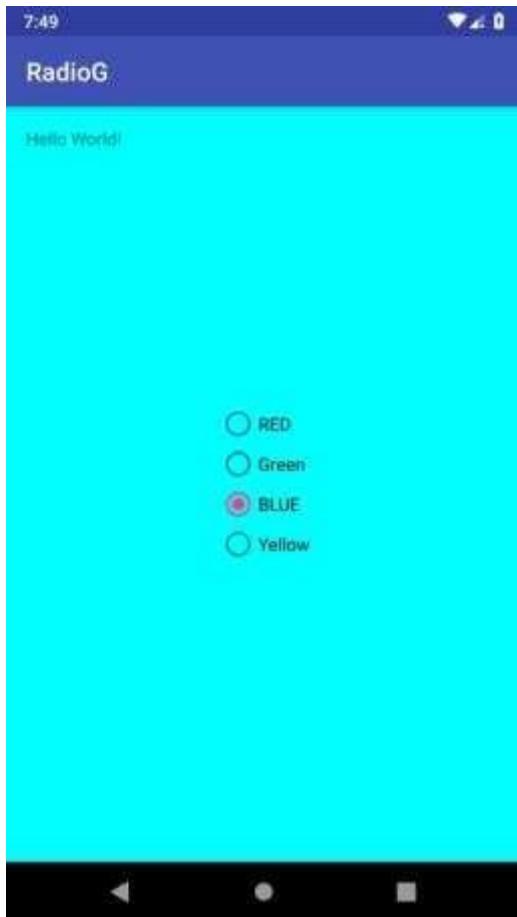
## Java Code

```
package com.tymca.www.radiog;
import android.graphics.Color;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import
android.widget.RadioGroup;
import
android.widget.RadioButton;
import
android.widget.RelativeLayout;

public class MainActivity extends AppCompatActivity
{
    RadioGroup radioGroup;
    RelativeLayout
relativeLayout; @Override
protected void onCreate(Bundle savedInstanceState)
{
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    radioGroup = (RadioGroup) findViewById(R.id.radioGroup);
    relativeLayout =
```

```
(RelativeLayout) findViewById(R.id.relativeLayout);
radioGroup.setOnCheckedChangeListener(new
RadioGroup.OnCheckedChangeListener(
) { @Override
public void onCheckedChanged(RadioGroup radioGroup, int
i) {
switch (i)
{
case R.id.radioButton1:
relativeLayout.setBackgroundColor(Color.parseColor(
"#ffoooo")); break;
case R.id.radioButton2:
relativeLayout.setBackgroundColor(Color.parseColor(
"#ooffoo")); break;
case R.id.radioButton3:
relativeLayout.setBackgroundColor(Color.parseColor(
"#ooooff")); case R.id.radioButton4:
relativeLayout.setBackgroundColor(Color.parseColor("#offfff"));
}
}
});
```

Output:



## 11. Switch Case Demo

XML code

```
<?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"
    android:padding="16dp">
```

```
tools:context=".MainActivity">

<Switch
    android:id="@+id/switchButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_centerVertical="true"
    android:layout_centerHorizontal="true"
    android:onClick="onSwitchClick"/>
<TextView
    android:id="@+id/textView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginBottom="100dp"
    android:layout_centerHorizontal="true"
    android:layout_centerVertical="true"
    android:layout_above="@+id/switchButton" android:textStyle="bold"
    android:textColor="#ff0000"
    />
</RelativeLayout>
```

## Java Code

```
package com.tymca.www.switdemo;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import
```

```
android.widget.Switch;
import
android.widget.TextView;

public class MainActivity extends
AppCompatActivity { Switch switchButton;
TextView textView;
@Override
protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
switchButton = (Switch)findViewById(R.id.switchButton);
textView = (TextView)findViewById(R.id.textView);

}
```

```
public void onSwitchClick(View view)
{
    if(switchButton.isChecked())
    {
        textView.setText("Switch is ON");
    }
    else {
        textView.setText("Switch is OFF");
    }
}
```

Output:



## 12. Rating Bar Demo

### XML Code

```
<?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/too
    ls" android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="16dp"
    tools:context=".MainActivity">

    <RatingBar
        android:id="@+id/ratingBar"
        android:layout_width="wrap_co
        ntent"
        android:layout_height="wrap_co
        ntent"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true"
        android:stepSize="0.2"
    />

    <TextView
        android:layout_above="@+id/textVi
        ew1" android:id="@+id/textView"
        android:layout_width="wrap_ContentPane"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
    />
```

```
    android:layout_marginBottom="20dp" android:textStyle="bold" android:textColor="#ff0000"

    />
<TextView
    android:id="@+id/textView1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_centerHorizontal="true"
    android:layout_marginBottom="80dp" android:textStyle="bold"
    android:text="Please Give us rating"
    android:textColor="#000000"

    />
<Button
    android:id="@+id/submitButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/ratingBar"
    android:layout_marginTop="20dp"
    android:layout_centerHorizontal="true" android:text="Submit"
    android:onClick="onSubmit"/>

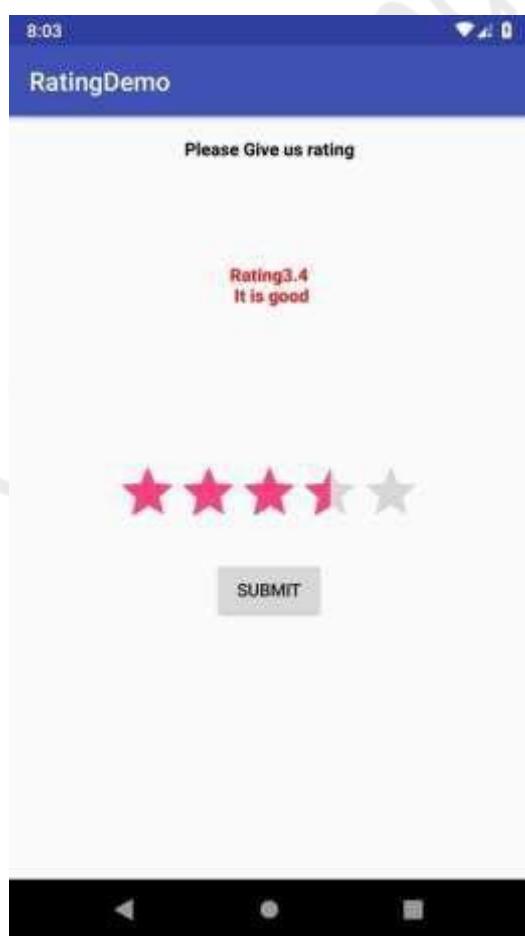
</RelativeLayout>
```

Java Code

```
package com.tymca.www.ratingdemo;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import
android.widget.RatingBar;
import
android.widget.Button;
import
android.widget.TextView;

public class MainActivity extends
AppCompatActivity { RatingBar ratingBar;
TextView
textView,textView1; Button
button;
@Override
protected void onCreate(Bundle savedInstanceState)
{ super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
ratingBar =
(RatingBar) findViewById(R.id.ratingBar);
textView
=(TextView) findViewById(R.id.textView);
button =
(Button) findViewById(R.id.submitButton);
}
public void onSubmit(View view)
{
float ratingValue =
ratingBar.getRating();
if(ratingValue<2)
{
    textView.setText("Rating"+ratingValue+"\n is worst");
}
else if(ratingValue<=3 && ratingValue>=2)
{
    textView.setText("Rating"+ratingValue+ " we will try
```

```
        better");
    }
    else if(ratingValue>3 && ratingValue<=4)
    {
        textView.setText("Rating"+ratingValue+"\n It is good");
    }
    else if(ratingValue>4)
    {
        textView.setText("Rating"+ratingValue+"\n Excellent");
    }
}
Output:
```



## 13. Interest Calculator

```
<?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/too
    ls" android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="16dp"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_co
        ntent"
        android:layout_height="wrap_content"
        android:layout_alignParentLeft="true"
        android:layout_marginTop="50dp"
        android:layout_alignParentRight="true"
        android:text="Enter the Bill Amount"
        android:textStyle="bold"
        />
    <TextView
        android:id="@+id/res
        "
        android:layout_width="wrap_ContentPane"
        android:layout_height="wrap_ContentPane"
        android:layout_alignParentBottom="true"
        android:layout_marginBottom="14d
        p"
```

```
    android:layout_alignParentRight="true"
    android:layout_alignRight="@+id/button1" android:text="Result:"
    android:textStyle="bold"
/>
<Button
    android:id="@+id/button1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_above="@+id/res"
    android:layout_alignParentLeft="true"
```

```
    android:layout_alignRight="@+id/textView2"
    android:text="Calculate"/>
<TextView
    android:id="@+id/textView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_above="@+id/button1"
    android:layout_alignParentLeft="true"
    android:layout_alignParentRight="true"
    android:layout_marginBottom="96dp"
    android:text="Enter Percentage"/>
<EditText
    android:id="@+id/bill_amount"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentLeft="true"
    android:layout_alignParentRight="true"
    android:layout_below="@+id/textView1"
    android:layout_marginTop="41dp"/>
<EditText
    android:id="@+id/bill_per"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_above="@+id/button1"
    android:layout_alignParentLeft="true"
    android:layout_alignParentRight="true"
    android:layout_marginBottom="22dp"/>
</RelativeLayout>
```

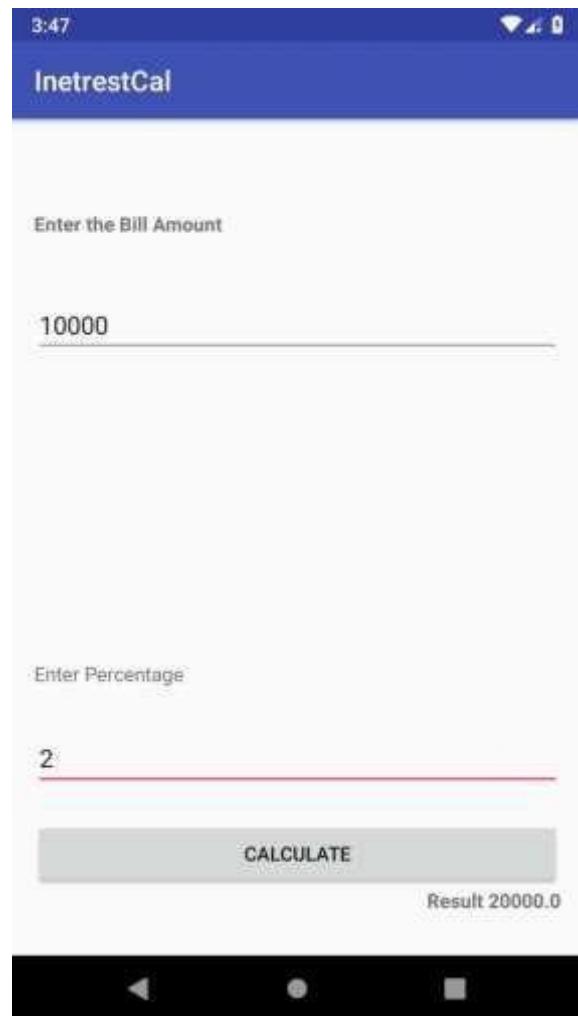
## Java Code

```
package com.tymca.www.inetrestcal;
```

```
import android.support.v7.app.AppCompatActivity;  
import android.os.Bundle;  
import  
    android.widget.TextView;  
import  
    android.widget.Button;  
import  
    android.widget.EditText;  
import android.view.View;
```

```
public class MainActivity extends AppCompatActivity
{
    @Override
    protected void onCreate(Bundle savedInstanceState)
    { super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        final EditText amt =
            (EditText)findViewById(R.id.bill_amt); final
        EditText per =
            (EditText)findViewById(R.id.bill_per); final
        TextView result =
            (TextView)findViewById(R.id.res); Button cal =
            (Button)findViewById(R.id.button1);
        cal.setOnClickListener(new
        View.OnClickListener() {
            @Override
            public void onClick(View view) {
                double amount =
                    Double.parseDouble(amt.toString()); double
                percentage =
                    Double.parseDouble(per.toString()); double
                res1 = amount*percentage;
                result.setText("Result"+Double.toString(res1)
                );
            }
        });
    }
}
```

Output:



#### 14. Seekbar Demo

##### XML Code

```
<?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"
    " android:padding="16dp"
    tools:context=".MainActivity">

<SeekBar
    android:id="@+id/seekBar"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_centerHorizontal="true"
    android:layout_centerVertical="true"/>
<TextView
    android:id="@+id/textView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginBottom="10dp"
    android:layout_centerVertical="true"
    android:layout_centerHorizontal="true"
    android:layout_above="@+id/seekBar" android:textStyle="bold"
    android:textColor="#40caff"
    />

</RelativeLayout>
```

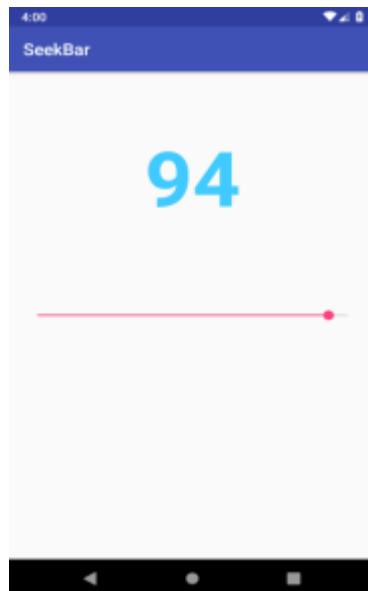
## Java Code

```
package com.tymca.www.seekbar;
import android.support.v7.app.AppCompatActivity;
```

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

public class MainActivity extends
    AppCompatActivity { SeekBar seekBar;
    TextView textView;
    @Override
    protected void onCreate(Bundle savedInstanceState)
        { super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
```

```
seekBar
=(SeekBar)findViewById(R.id.seekBar);
textView =
(TextView)findViewById(R.id.textView);
seekBar.setOnSeekBarChangeListener(new
SeekBar.OnSeekBarChangeListener(
) { @Override
public void onProgressChanged(SeekBar seekBar, int i,
boolean b) {
textView.setTextSize(i);
textView.setText(""+(i++));
}
@Override
public void onStartTrackingTouch(SeekBar seekBar) {
}
@Override
public void onStopTrackingTouch(SeekBar seekBar) {
}
});
}
}
Output:
```



## 15. Progress Bar

### Demo XML

### Code

```
<?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/too
    ls" android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="16dp"
    tools:context=".MainActivity">
    <ProgressBar
        android:id="@+id/progressBar"
        android:layout_width="match_ par
        ent"
        android:layout_height="match_ pa
        rent"
        android:layout_centerHorizontal=
        "true"
        android:layout_marginTop="10dp
        "/>
    <Button
        android:id="@+id/button1
        "
        android:layout_below="@+id/progre
        ssBar"
```

```
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" android:text="Click Me"
    android:layout_marginTop="40dp"
    android:onClick="progressBarClick"
    android:layout_centerHorizontal="true"/>
<ProgressBar
    android:id="@+id/progressBarHorizontal"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_centerHorizontal="true"
    android:layout_below="@+id/button1"
    android:layout_marginTop="50dp"
    android:max="100"
    android:progress="0"
    android:scrollbarStyle="insideInset"/>
<Button
    android:id="@+id/button2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_centerHorizontal="true"
    android:layout_below="@+id/progressBarHorizontal"
    android:text="Click Me"
    android:layout_marginTop="100dp"
    android:onClick="progressBarHorizontal"/>
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Hello World!"
    app:layout_constraintBottom_toBottomOf="pa
```

```
rent"
    app:layout_constraintLeft_toLeftOf="parent"
    app:layout_constraintRight_toRightOf="parent"
    " app:layout_constraintTop_toTopOf="parent"
/>
</RelativeLayout>
```

Java Code

```
package com.tymca.www.progressbar;
import android.support.v7.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:



Java Code

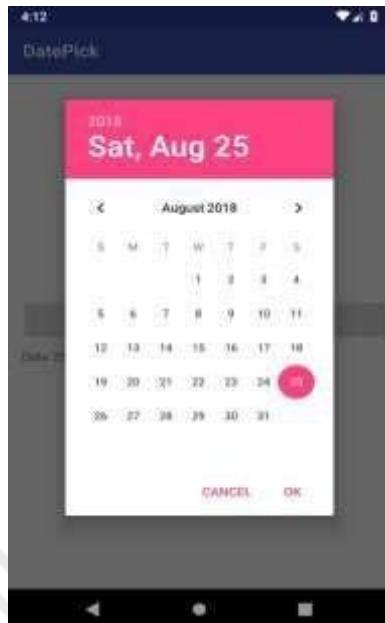
```
package com.tymca.www.datepick;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
```

```
import java.util.Calendar;
import
android.widget.TextView;
import
android.widget.Button;
import
android.widget.DatePicker;
import android.view.View;
import android.app.Dialog;
import android.app.DatePickerDialog;

public class MainActivity extends
AppCompatActivity { Button setDateBtn;
TextView
selectedDateTxt; int
day,month,year;
@Override
protected void onCreate(Bundle savedInstanceState)
{ super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
setDateBtn = (Button) findViewById(R.id.setDateBtn);
selectedDateTxt =
(TextView) findViewById(R.id.selectedDateTxt);
Calendar c = Calendar.getInstance();
day = c.get(Calendar.DAY_OF_MONTH);
month =
c.get(Calendar.MONTH); year
= c.get(Calendar.YEAR);
displayDate(day,month,year);
setDateBtn.setOnClickListener(new
View.OnClickListener() { @Override
public void onClick(View view) {
showDialog(111);
}
});
}
void displayDate(int day,int month,int year)
```

```
{  
    selectedDateTxt.setText("Date "+day+"/"+month+"/"+year);  
}  
protected Dialog onCreateDialog(int id)  
{  
    if(id==111)  
    {  
        return new  
DatePickerDialog(this,dateLPickerListener,year,month,day);  
    }  
}
```

```
        return null;
    }
private DatePickerDialog.OnDateSetListener dateLPickerListener
= new
DatePickerDialog.OnDateSetListener
() { @Override
public void onDateSet(DatePicker datePicker, int i, int i1, int i2)
{ displayDate(day,month+1,year);
}
};
}
Output:
```



L

WebURL

Demo

XML

Code

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res
    /android"
    xmlns:app="http://schemas.android.com/apk/res
    -auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    android:orientation="vertical">
    <EditText
        android:id="@+id/url
        "
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="@string/enter_the_url_to_open"/>
    <Button
        android:id="@+id/openBt
        n"
        android:layout_width="match_p
        arent"
```

```
    android:layout_height="wrap_content"
    android:text="@string/Open"/>
<WebView
    android:id="@+id/webView"
    android:layout_width="match_parent"
    android:layout_height="match_parent"></WebView>
</LinearLayout>
```

t> Manifest

XML File

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

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

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

## Java Code

```
package com.tymca.www.weburl;  
import android.app.Activity;  
import android.support.v7.app.AppCompatActivity;  
import android.os.Bundle;  
import android.view.View;  
import  
    android.widget.Button;  
import  
    android.widget.EditText;  
import  
    android.webkit.WebView;  
import android.webkit.WebViewClient;  
  
public class MainActivity extends  
Activity { Button openBtn;  
EditText url;  
WebView  
webView;  
@Override  
protected void onCreate(Bundle savedInstanceState)  
{ super.onCreate(savedInstanceState);  
setContentView(R.layout.activity_main);  
openBtn = (Button)findViewById(R.id.openBtn);  
url = (EditText)findViewById(R.id.url);  
webView = (WebView)findViewById(R.id.webView);  
webView.getSettings().setJavaScriptEnabled(true);  
openBtn.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View view) {  
        webView.setWebViewClient(new  
        CustomWebClient());
```

```

        webView.loadUrl(url.getText().toString());
    }
}
public class CustomWebClient extends WebViewClient
{
    public boolean shouldOverrideUrlLoading(WebView
view,String url)
    {
        view.loadUrl(url);
        return true;
    }
}

```

**Output:**



16. Po

pup

Demo

XML

Code

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res
    /android"
    xmlns:app="http://schemas.android.com/apk
    /res-auto"
    xmlns:tools="http://schemas.android.com/too
    ls" android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="10dp"
    android:gravity="center"
    android:background="#34e710"
    android:id="@+id/linearLayout1"
    tools:context=".MainActivity">
<TextView
    android:id="@+id/txt"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/this_is_popup_window"
    android:textColor="#efebeb"/>
<Button
    android:id="@+id/showPopupBtn
    "
    android:layout_width="wrap_ con
    tent"
    android:layout_height="wrap_ co
    ntent"
    android:text="@string/show"/>
```

```
</LinearLayout>
```

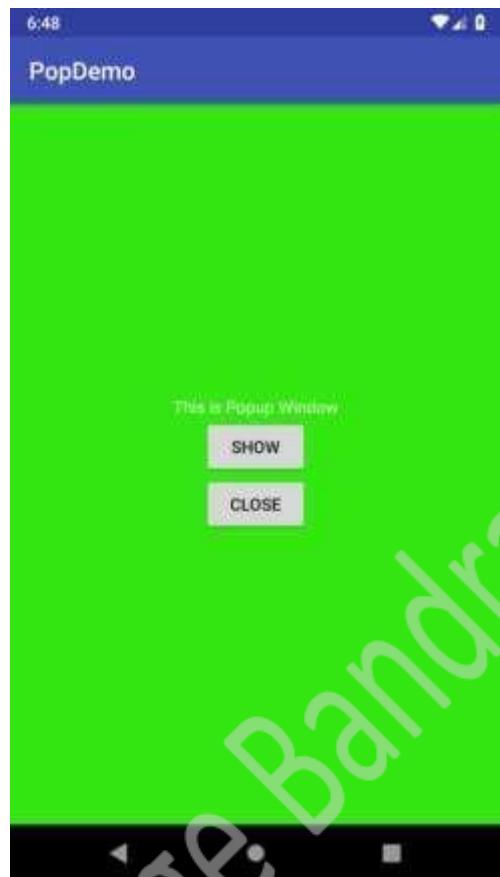
### Java Code

```
package com.tymca.www.popdemo;
import android.content.Context;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.Gravity;
import
android.view.LayoutInflater;
import
android.widget.Button;
import
android.widget.TextView;
import
android.widget.LinearLayout;

import android.view.View;
import android.view.ViewGroup.LayoutParams;
import android.widget.PopupWindow;

public class MainActivity extends
AppCompatActivity { Button showPopupBtn;
Button closePopupBtn;
PopupWindow
popupWindow;
LinearLayout linearLayout;
@Override
protected void onCreate(Bundle savedInstanceState)
{ super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
showPopupBtn =
(Button) findViewById(R.id.showPopupBtn);
closePopupBtn =
(Button) findViewById(R.id.closePopupBtn);
linearLayout =
(LinearLayout) findViewById(R.id.linearLayout1);
```

```
showPopupBtn.setOnClickListener(new
View.OnClickListener() {
    @Override
    public void onClick(View view) {
        LayoutInflater layoutInflater =
(MainActivity)this.getSystemService(Context.LAYO
UT_INFLATER_SERVICE);
        View customView =
layoutInflater.inflate(R.layout.activity_main,null);
        popupWindow = new
PopupWindow(customView,LayoutParams.WRAP_CONTENT,Lay
outParams.WRAP_CONTENT);
        popupWindow.showAtLocation(linear
Layout, Gravity.CENTER,o,o);
        closePopupBtn.setOnClickListener(new
View.OnClickListener() { @Override
        public void onClick(View view) {
            popupWindow.dismiss();
        }
    });
}
});
```



Output:

17. Check

Internet

Connection XML

Code

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

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Check Internet Connectivity"
        android:onClick="buttonAction"/>

</LinearLayout>
```

</Manifest>

XML File

```
<?xml version="1.0" encoding="utf-8"?>
<manifest
    xmlns:android="http://schemas.android.com/apk/res/android
    package="com.tymca.www.internetconnect">
    <uses-permission
        android:name="android.permission.ACCESS_NETWORK_STATE
    "/>
```

```
<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/AppTheme">
    <activity android:name=".MainActivity">
        <intent-filter>
            <action android:name="android.intent.action.MAIN" />

        <category
```

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

</manifest>
```

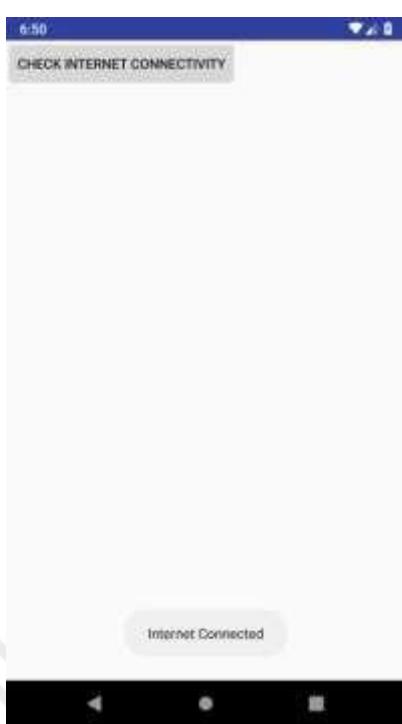
### Java File

```
import android.app.Activity;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import
    android.widget.Button;
import
    android.widget.Toast;
import android.view.View;
import
    android.content.Context;
import android.net.ConnectivityManager;
import android.net.NetworkInfo;

public class MainActivity extends
    Activity { Button button;
    @Override
    protected void onCreate(Bundle savedInstanceState)
        { super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        button = (Button)findViewById(R.id.button);
    }
    public void buttonAction(View view)
    {
        ConnectivityManager cm =
        (ConnectivityManager)getApplicationContext().getSystemService(
        Context.CONNECTIVITY_SERVICE);
        NetworkInfo networkInfo[] = cm.getAllNetworkInfo();
        int i;
        for(i=0;i<networkInfo.length;++i)
        {
```

```
if(networkInfo[i].getState()==NetworkInfo.State.CONNECTED)
{
    Toast.makeText(getApplicationContext(),"Internet Connected",Toast.LENGTH_LONG).show();
    break;
}
```

```
        }
        if (i==networkInfo.length)
        {
            Toast.makeText(getApplicationContext(),"Internet Not
Connected",Toast.LENGTH_LONG).show();
        }
    }
Output:
```



## 18. Database

### Connection Demo

#### XML Code

```
<?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">

    <EditText
        android:id="@+id/id"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter id to update or delete"
        android:onClick="buttonAction"/>
    <EditText
        android:id="@+id/name"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/id"
        android:layout_marginTop="10dp"
        android:hint="Enter Name to update and
        delete"/>
    <LinearLayout
        android:id="@+id/layout1"
        android:layout_width="match_p
        arent"
        android:layout_height="wrap_co
        ntent"
        android:layout_below="@+id/na
```

```
me"
    android:orientation="vertical">
    <Button
        android:id="@+id/inser
        t"
        android:layout_width="match_&gt;
        parent"
        android:layout_height="wrap_&gt;
        content" android:text="Insert"
        android:onClick="buttonAction"/>
    <Button
        android:id="@+id/view"
        android:layout_width="match_&gt;
        parent"

        android:layout_height="wrap_&gt;
        content" android:text="Retrive"
        android:onClick="buttonAction"
        />
    <Button
        android:id="@+id/upda
        te"
        android:layout_width="match_&gt;
        parent"
        android:layout_height="wrap_&gt;
        content"
        android:text="Update"
        android:onClick="buttonAction"/>
    <Button
        android:id="@+id/delet
        e"
        android:layout_width="match_&gt;
        parent"
        android:layout_height="wrap_&gt;
        content" android:text="Delete"
        android:onClick="buttonAction"/>

</LinearLayout>
<TextView
    android:id="@+id/text"
    android:layout_width="match_p
```

```
arent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10dp"/>
</RelativeLayout>
```

## MainActivity.java

```
package com.tymca.www.dbconnect;
import android.app.Activity;
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;

public class MainActivity extends Activity
{
    EditText id,name;
    Button insert,view,update,delete;

    TextView textView;
    DBHandler db;
    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        id = (EditText) findViewById(R.id.id);
        name =
        (EditText) findViewById(R.id.name);
        insert =
```

```
(Button)findViewById(R.id.insert);
view =
(Button)findViewById(R.id.view);
update =
(Button)findViewById(R.id.update);
delete
=(Button)findViewById(R.id.delete);
textView =
(TextView)findViewById(R.id.text); db
= new
DBHandler(getApplicationContext());
}
public void buttonAction(View view)
{
switch (view.getId())
{
case R.id.insert:
db.insertRecord(name.getText().toString());
Toast.makeText(getApplicationContext(),"record
inserted",Toast.LENGTH_LONG).show();
break;
case R.id.view:
textView.setText(db.getRecor
ds()); break;
case R.id.update:
db.updateRecord(id.getText().toString(),name.getText().to
String());
Toast.makeText(getApplicationContext(),"record
update",Toast.LENGTH_LONG).show();
break;
case R.id.delete:
db.deleteRecord(id.getText().toString());
Toast.makeText(getApplicationContext(),"record
deleted",Toast.LENGTH_LONG).show();
break;
}
}
```

## DBHandler.java

```
package com.tymca.www.dbconnect;
import android.content.ContentValues;
; import
android.content.Context;
import
android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;

public class DBHandler extends SQLiteOpenHelper
{
    private static final String DB_NAME =
"vikramdb"; private static final int
DB_VERSION = 1;
    private static final String TABLE_NAME =
"record"; private static final String ID_COL =
"id";
    private static final String NAME_COL="name";
    public DBHandler(Context context)
    {
        super(context,DB_NAME,null,DB_VERSION);
    }
    public void onCreate(SQLiteDatabase db)
    {
        String query = "Create TABLE
"+TABLE_NAME+"("+ID_COL+"INTEGER PRIMARY KEY
AUTOINCREMENT,"+NAME_COL+"TEXT)";
        db.execSQL(query);
    }
    public void onUpgrade(SQLiteDatabase db,int oldVersion,int
newVersion)
    {
        db.execSQL("DROP TABLE IF EXISTS "+TABLE_NAME);
        onCreate(db);
    }
}
```

```
}

public void insertRecord(String name)
{
    SQLiteDatabase db =
        this.getWritableDatabase();
    ContentValues values = new
    ContentValues();
    values.put(NAME_COL,name);
    db.insert(TABLE_NAME,null,values);
    db.close();
}

public String getRecords()
```

```

{
    String query = "SELECT * FROM
    "+TABLE_NAME; String results="";
    SQLiteDatabase db =
    this.getReadableDatabase(); Cursor cursor
    = db.rawQuery(query,null);
    cursor.moveToFirst();
    while (cursor.isAfterLast()==false)
    {
        results+=cursor.getString(0)+" "+cursor.getString(1)+"\n";
        cursor.moveToNext();
    }
    db.close();
    return results;
}

public void updateRecord(String id,String name)
{
    SQLiteDatabase db = this.getWritableDatabase();
    ContentValues values = new ContentValues();
    values.put(NAME_COL,name);
    db.update(TABLE_NAME,values,"id=?",new
    String[]{id}); db.close();
}

public void deleteRecord(String id)
{
    SQLiteDatabase db =
    this.getWritableDatabase();
    db.delete(TABLE_NAME,"id=?",new
    String[]{id}); db.close();
}
}

Output:

```



## 19. SharedPref

### ference Demo

#### XML Code

```
<?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	btnSav
        e"
        android:layout_width="wrap_ conten
        t"
        android:layout_height="wrap_ conte
        nt"
        android:layout_centerVertical="true"
        android:layout_alignParentLeft="tru
        e"
        android:layout_alignParentStart="tr
        ue" android:onClick="Save"
        android:text="Save"/>
    <Button
        android:id="@+id	btnRet
        r"
        android:layout_width="wrap_ conten
        t"
        android:layout_height="wrap_ conte
```

```
nt"
    android:layout_centerHorizontal="true"
    android:layout_centerVertical="true"
    android:onClick="Get"
    android:text="Retrive"/>
<Button
    android:id="@+id/btnClear"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignRight="@+id/etEmail"
    android:layout_centerVertical="true"
    android:layout_alignParentRight="true"
    android:layout_alignParentEnd="true"
    android:onClick="clear"

    android:text="Clear"/>
<EditText
    android:id="@+id/etEmail"
    android:layout_width="match_parent"
    android:layout_height="wrap_content" android:ems="10"
    android:hint="Email"
    android:inputType="textEmailAddress"
    android:layout_below="@+id/etName"
    android:layout_marginTop="20dp"

    android:layout_alignParentRight="true"
    android:layout_alignParentEnd="true"/>
<EditText
    android:id="@+id/etName"
```

```
e"
    android:layout_width="match_p
    arent"
    android:layout_height="wrap_ co
    ntent" android:ems="10"
    android:hint="Name"
    android:inputType="text"
    android:layout_alignParentTop="
    true"
    android:layout_alignLeft="@+id/etEmail"
    android:layout_alignStart="@+id/etEmail"/>

</RelativeLayout>
```

## MainActivity.java

```
package com.tymca.www.shpref;
import android.app.Activity;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.content.Context;
import android.content.SharedPreferences;
import android.view.View;
import
android.view.Menu;
import
android.widget.TextView;

public class MainActivity extends
Activity { SharedPreferences
sharedPreferences; TextView
name;
TextView email;

public static final String mypreference =
"mypref"; public static final String Name =
"nameKey"; public static final String Email
= "emailKey"; @Override
protected void onCreate(Bundle savedInstanceState)
```

```
{ super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
name = (TextView) findViewById(R.id.etName);
email = (TextView) findViewById(R.id.etEmail);
sharedPreferences = getSharedPreferences(mypreference,
    Context.MODE_PRIVATE);
if (sharedPreferences.contains(Name)) {
    name.setText(sharedPreferences.getString(Name, ""));
}
if (sharedPreferences.contains(Email)) {
    email.setText(sharedPreferences.getString(Email, ""));
}
}
public void Save(View view) {
    String n =
        name.getText().toString(); String
    e = email.getText().toString();
    SharedPreferences.Editor editor = sharedPreferences.edit();
    editor.putString(Name, n);
    editor.putString(Email, e);
    editor.commit();
}
public void clear(View view) {
    name          =      (TextView)
    findViewById(R.id.etName);   email  =
    (TextView)
    findViewById(R.id.etEmail);
    name.setText("");
    email.setText("");
}
public void Get(View view) {
    name = (TextView) findViewById(R.id.etName);
    email = (TextView) findViewById(R.id.etEmail);
    sharedPreferences = getSharedPreferences(mypreference,
        Context.MODE_PRIVATE);
    if (sharedPreferences.contains(Name)) {
        name.setText(sharedPreferences.getString(Name, ""));
    }
    if (sharedPreferences.contains(Email)) {
```

```
        email.setText(sharedPreferences.getString("Email", ""));  
    }  
}  
@Override  
public boolean onCreateOptionsMenu(Menu menu) {  
    // Inflate the menu; this adds items to the action bar if it is  
    // present.  
    getMenuInflater().inflate(R.menu.menu_main, menu);  
    return true;  
}  
}  
Output:
```



## 20. File Demo for Internal

### SD card

```
activity_main.xml
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:layout_gravity="center"
    tools:context=".MainActivity" >

    <TextView
        android:layout_width="fill_parent"
        android:layout_height="wrap_content" android:gravity="center"
        android:textAlignment="center"
        android:text="Android
        Read/Write File" />
    <EditText
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:id="@+id/fname"
        android:hint="File Name" />
    <EditText
        android:layout_width="fill_parent"
        android:layout_height="100px"
        android:id="@+id/ftext"
        android:hint="File Text" />
    <Button
        android:layout_width="fill_pa
```

```
rent"
    android:layout_height="wrap
    _content"
    android:id="@+id(btnwrite"
    android:text="Write File" />
<EditText
    android:layout_width="fill_pa
    rent"
    android:layout_height="wrap
    _content"
    android:id="@+id/fnameread"
    " android:hint="File Name"
    />
<Button
    android:layout_width="fill_pa
    rent"
    android:layout_height="wrap_
    content"
    android:id="@+id/btnread"
```

```
    android:text="Read File" />
    <TextView
        android:layout_width="fill_parent"
        "
        android:layout_height="wrap_content" android:id="@+id/filecon"
    />
</LinearLayout>
```

```
FileOperations.java
import
java.io.BufferedReader;
import
java.io.BufferedWriter;
import java.io.File;
import
java.io.FileReader;
import
java.io.FileWriter;
import
java.io.IOException;
import android.util.Log;
```

```
public class FileOperations {
    public FileOperations() {
    }
    public Boolean write(String fname, String
        fcontent){ try {
        String fpath =
        "/sdcard/"+fname+".txt"; File
        file = new File(fpath);
        // If file does not exists, then
        create it if (!file.exists()) {
            file.createNewFile();
        }
        FileWriter fw = new
        FileWriter(file.getAbsolutePath());
```

```
        BufferedWriter bw = new  
        BufferedWriter(fw); bw.write(fcontent);  
        bw.close();  
        Log.d("Suceess","Sucess")  
        ; return true;  
    } catch (IOException e) {  
        e.printStackTrace()  
        ; return  
        false;  
    }  
}  
public String read(String fname){  
    BufferedReader br = null;
```

```
String response = null;
try {
    StringBuffer output = new
    StringBuffer(); String fpath =
    "/sdcard/" + fname + ".txt"; br =
    new BufferedReader(new
FileReader(fpat
h));
    String line = "";
    while ((line = br.readLine()) != null) {
        output.append(line + "\n");
    }
    response = output.toString();
} catch (IOException e) {
    e.printStackTrace();
    return
    null;
}
return response;
}
```

### MainActivity.java

```
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
```

```
android.app.Activity;
import
learn2crack.androidfile.FileOperations;
public class MainActivity extends Activity
{
    EditText
    fname,fcontent,fnameread;
    Button write,read;
    TextView filecon;
    @Override
    protected void onCreate(Bundle
        savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_ma
        in); fname =
        (EditText)findViewById(R.id.fname)
        ;
        fcontent = (EditText)findViewById(R.id.ftext);
```

---

```
fnameread =  
    (EditText)findViewById(R.id.fnameread);  
write = (Button)findViewById(R.id.btnwrite);  
read =  
    (Button)findViewById(R.id.btnread);  
filecon =  
    (TextView)findViewById(R.id.filecon);  
write.setOnClickListener(new  
    View.OnClickListener() { @Override  
    public void onClick(View argo) {  
        // TODO Auto-generated method stub  
        String filename =  
            fname.getText().toString(); String  
        filecontent =  
            fcontent.getText().toString();  
        FileOperations fop = new  
        FileOperations(); fop.write(filename,  
        filecontent); if(fop.write(filename,  
        filecontent)){  
            Toast.makeText(getApplicationContext(),  
            filename+".txt created", Toast.LENGTH_SHORT).show();  
        }else{  
            Toast.makeText(getApplicationContext(), "I/O  
        error", Toast.LENGTH_SHORT).show();  
        }  
    }  
});  
read.setOnClickListener(new  
    View.OnClickListener() { @Override  
    public void onClick(View argo) {  
        // TODO Auto-generated method stub  
        String readfilename =
```

```
fnameread.getText().toString();
FileOperations fop = new FileOperations();
String text =
fop.read(readfilename);
if(text != null){
filecon.setText(text);
}
else {
    Toast.makeText(getApplicationContext(),
"File not Found", Toast.LENGTH_SHORT).show();
filecon.setText(null);
}
```

```
    }  
});  
}  
}  
}
```

Output:



## 21.Android External Storage Example Code

Manifest.xml file

```
<uses-permission  
    android:name="android.permission.WRITE_EXTERNAL_STORAGE"/>  
<uses-permission  
    android:name="android.permission.READ_EXTERNAL_STORAGE"/>
```

Main\_activity.xml

```
<?xml version="1.0" encoding="utf-8"?>  
<LinearLayout  
    xmlns:android="http://schemas.android.com/apk/res/android"  
    android:layout_width="fill_parent"  
    android:layout_height="fill_parent"  
    android:orientation="vertical">  
  
<TextView android:layout_width="fill_parent"  
        android:layout_height="wrap_content"  
        android:text="Reading and Writing to External  
        Storage" android:textSize="24sp"/>  
  
<EditText android:id="@+id/myInputText"  
        android:layout_width="match_parent"  
        android:layout_height="wrap_content"  
        android:ems="10" android:lines="5"  
        android:minLines="3"  
        android:gravity="top|left"  
        android:inputType="textMultiLine">  
    <requestFocus />  
</EditText>  
  
<LinearLayout  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:orientation="horizontal"
```

```
    android:weightSum="1.0"
    android:layout_marginTop="20dp">

<Button
    android:id="@+id/saveExternalStorage"
    android:layout_width="match_parent"
    android:layout_height="wrap_content" android:text="SAVE"
    android:layout_weight="0.5"/>
```

```
<Button  
    android:id="@+id/getExternalStora  
ge"  
    android:layout_width="match_paren  
t"  
    android:layout_height="wrap conte  
nt" android:layout_weight="0.5"  
    android:text="READ" />  
</LinearLayout>  
  
<TextView android:id="@+id/response"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:padding="5dp" android:text=""  
    android:textAppearance="?android:attr/textAppearan  
ceMedium" />  
  
</LinearLayout>
```

```
MainActivity.java  
import  
java.io.BufferedReader;  
import  
java.io.DataInputStream;  
import java.io.File;  
import  
java.io.FileInputStream;  
import  
java.io.FileOutputStream;  
import  
java.io.IOException;  
import  
java.io.InputStreamReader  
; import  
android.os.Bundle;  
import  
android.app.Activity;
```

```
import  
    android.os.Environment;  
import android.view.View;  
import  
    android.view.View.OnClickListener;  
import android.widget.Button;  
import  
    android.widget.EditText;  
import  
    android.widget.TextView;  
  
public class MainActivity extends  
    Activity { EditText inputText;  
    TextView response;  
    Button saveButton,readButton;  
    private String filename =  
        "SampleFile.txt"; private String  
        filepath = "MyFileStorage"; File  
        myExternalFile;  
    String myData = "";
```

```
@Override
protected void onCreate(Bundle savedInstanceState)
{ super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
inputText = (EditText)
findViewById(R.id.myInputText); response =
(TextView) findViewById(R.id.response);
saveButton =
(Button) findViewById(R.id.saveExternalStorage);
saveButton.setOnClickListener(new OnClickListener() {
@Override
public void onClick(View
v) { try {
FileOutputStream fos = new
FileOutputStream(myExternalFile);
fos.write(inputText.getText().toString().getBytes());
fos.close();
} catch (IOException e) {
e.printStackTrace();
}
inputText.setText("");
response.setText("SampleFile.txt saved to External
Storage...");
}
});
readButton = (Button)
findViewById(R.id.getExternalStorage);
readButton.setOnClickListener(new OnClickListener() {
@Override
public void onClick(View
v) { try {
FileInputStream fis = new
FileInputStream(myExternalFile);
DataInputStream in = new
DataInputStream(fis); BufferedReader br =
new BufferedReader(new
InputStreamReader(in)); String strLine;
```

```
while ((strLine = br.readLine()) !=  
       null) { myData = myData + strLine;  
}  
in.close();  
} catch (IOException e) {  
    e.printStackTrace();  
}  
inputText.setText(myData);
```

```

        response.setText("SampleFile.txt data retrieved
from Internal Storage...");
    }
});

if (!isExternalStorageAvailable() ||
    isExternalStorageReadOnly()) {
    saveButton.setEnabled(false);
}
else {
    myExternalFile = new File(getExternalFilesDir(filepath),
    filename);
}
}

private static boolean isExternalStorageReadOnly() {
    String extStorageState =
    Environment.getExternalStorageState(); if
(Environment.MEDIA_MOUNTED_READ_ONLY.equals(extStor
ageState)) { return true;
}
    return false;
}

private static boolean isExternalStorageAvailable() {
    String extStorageState =
    Environment.getExternalStorageState(); if
(Environment.MEDIA_MOUNTED.equals(extStora
geState)) {
    return true;
}
    return false;
}
}
}

```

Output:



## 22. Working with Content Provider

### a. Content Provider

Program No -1

```
import android.content.ContentProvider;
import android.content.ContentValues;
import android.content.UriMatcher;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.net.Uri;
import android.support.annotation.Nullable;

public class CouponsContentProvider extends ContentProvider {

    private CouponSQLiteOpenHelper sqLiteOpenHelper; private static final String COUPONS_DBNAME = "zoftino"; private static final String COUPON_TABLE = "coupon";
    private SQLiteDatabase cpnDB;
    private static final String SQL_CREATE_COUPON = "CREATE TABLE " + COUPON_TABLE +
        "(" + "_id INTEGER PRIMARY KEY, " +
        "STORE TEXT, " +
```

```
"COUPON TEXT, " +  
"EXPIRES TEXT);  
  
private static final UriMatcher uriMatcher = new  
UriMatcher(UriMatcher.NO_MATCH);  
static {  
    uriMatcher.addURI("com.zoftino.coupon.provider",  
    COUPON_TABLE,  
1);  
}  
@Override
```

```
public boolean onCreate() {
    //this way db create or open is delayed till
    getWritableDatabase() is called frist time
    sqLiteOpenHelper = new CouponsSQLiteOpenHelper(
        getContext(), COUPONS_DBNAME, SQL_CREATE_COUPON );
    return true;
}
@NoArgsConstructor
@Override
public Cursor query(Uri uri, String[] projection, String
selection, String[] selectionArgs,
                     String sortOrder)
{
    String tableName = "";
    switch(uriMatcher.match(uri))
    {
        case 1 :
            tableName =
                COUPON_TABLE; break;
        default:
            return null;
    }
    cpnDB = sqLiteOpenHelper.getWritableDatabase();

    Cursor cursor =
        (SQLiteCursor)cpnDB.query(tableName, projection,
        selection, selectionArgs,
        null, null,
        sortOrder); return
        cursor;
}
@NoArgsConstructor
@Override
```

```
public String getType(Uri
    uri) { return null;
}
@NoArgsConstructor
@override
public Uri insert(Uri uri, ContentValues
    contentValues) { String tableName = "";
```

```
switch(uriMatcher.match(
    uri)){ case 1 :
    tableName =
        COUPON_TABLE; break;
    default:
        return null;
}
cpnDB = sqLiteOpenHelper.getWritableDatabase();
long rowid = cpnDB.insert(tableName, null,
    contentValues); return getContentUriRow(rowid);
}

@Override
public int delete(Uri uri, String where, String[]
    selectionArgs) { String tableName = "";
    switch(uriMatcher.match(
        uri)){ case 1 :
        tableName =
            COUPON_TABLE; break;
        default:
            return 0;
}
cpnDB =
    sqLiteOpenHelper.getWritableDatabase();
return cpnDB.delete(tableName, where,
    selectionArgs);
}
@Override
public int update(Uri uri, ContentValues contentValues,
String where, String[] selectionArgs) {
    String tableName = "";
    switch(uriMatcher.match(uri)){


```

```
case 1 :  
    tableName =  
        COUPON_TABLE; break;  
default:  
    return o;  
}
```

```
cpnDB = sqLiteOpenHelper.getWritableDatabase();
return
cpnDB.update(tableName, contentValues, where, selectionArgs );
}
private Uri getContentUriRow(long rowid){
    return Uri.fromParts("com.zoftino.coupon.provider",
COUPON_TABLE, Long.toString(rowid));
}
}
```

## Program NO. 2

SQLiteOpenHelper

```
import android.content.Context;
```

```
import
```

```
android.database.sqlite.SQLiteDatabase;
```

```
import
```

```
android.database.sqlite.SQLiteOpenHelp
```

```
er;
```

```
public class CouponSQLiteOpenHelper extends
SQLiteOpenHelper { private String sql;
CouponSQLiteOpenHelper(Context context, String dbName,
String msql) { super(context, dbName, null, 1);
sql = msql;
}
public void
onCreate(SQLiteDatabase db) {
db.execSQL(sql);
}
@Override
public void onUpgrade(SQLiteDatabase sqLiteDatabase, int i,
int i1) {
}
```

}

*Contract Class*

```
import android.net.Uri;  
public class CouponsContract {  
    public static final String Table_COUPON =  
        "coupon"; public static final String Column_ID  
        = "_id";  
    public static final String Column_STORE = "STORE";
```

```
public static final String Column_COUPON =
"COUPON"; public static final String
Column_EXPIRY = "EXPIRES";
public static final String AUTHORITY =
"com.zoftino.coupon.provider";

public static final Uri AUTHORITY_URI =
Uri.parse("content://" + AUTHORITY);
public static final Uri CONTENT_URI =
Uri.withAppendedPath(AUTHORITY_URI,
Table_COUPON);
}
```

Prog No. 3

Manifest.xml

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

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
```

```
<category  
    android:name="android.intent.category.LAUNCHER" />  
</intent-filter>  
</activity>  
<activity  
    android:name=".CouponsContentResolverActivity"></activity>  
>  
<provider  
    android:authorities="com.zoftino.coupon.pr  
    ovider"  
    android:name=".CouponsContentProvider">  
    </provider>  
</application>  
  
</manifest>
```

## Prog No. 4

### Content Resolver Activity

```
import  
    android.content.ContentValue  
    s; import  
    android.database.Cursor;  
import android.os.Bundle;  
import  
    android.support.v4.widget.SimpleCursorAda  
pter; import  
    android.support.v7.app.AppCompatActivity;  
import android.view.View;  
import android.widget.ListView;  
  
public class CouponsContentResolverActivity extends  
    AppCompatActivity { ListView cpnLst;  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_resolver);  
        cpnLst = (ListView) findViewById(R.id.couponsList);  
    }  
    public void  
        viewCouponsFromCouponsContentProvider(View  
        view){ Cursor cursor = getCouponsFromProvider();  
        String[] cursorColumns =  
        {  
            CouponsContract.Column_STORE,  
            CouponsContract.Column_COUPON,  
            CouponsContract.Column_EXPIRY  
        };
```

```
int[] viewIds = {R.id.storeName, R.id.coupon,
R.id.expirationDt}; SimpleCursorAdapter
simpleCursorAdapter = new SimpleCursorAdapter(
    getApplicationConte
    xt(),
    R.layout.coupon_rou
    t,
    cursor,
    cursorColumns,
    viewIds,
    o);
```

```
        cpnLst.setAdapter(simpleCursorAdapter);
    }
private Cursor
getCouponsFromProvider(){ String[]
mProjection =
{
    CouponsContract.Column_ID,
    CouponsContract.Column_STORE,
    CouponsContract.Column_COUPON,
    CouponsContract.Column_EXPIRY
};

String mSelectionClause =
CouponsContract.Column_STORE+ " = ?";; String[]
mSelectionArgs = {"amazon"};
String orderBy =
CouponsContract.Column_EXPIRY+" ASC";
return
getContentResolver().query(CouponsContract.CONTENT_URI,m
Projection,m SelectionClause,mSelectionArgs,orderBy );
}
public void addCouponsToCouponsContentProvider(View
view){
    ContentValues contentValues = new ContentValues();
    contentValues.put(CouponsContract.Column_ID , 2);
    contentValues.put(CouponsContract.Column_STORE ,
"amazon");
    contentValues.put(CouponsContract.Column_COUPON ,
"Get Upto 40%
Off on Shoes");
    contentValues.put(CouponsContract.Column_EXPIRY ,
```

```
    "2017/02/21");
    getContentResolver().insert(CouponsContract.CONTENT_URI,
        I,
        contentValues);
    }
}
```

## Prog. No. 5

Content Resolver Activity Layout (activity\_resolver.xml)

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

```
xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/activity_main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin" android:orientation="vertical"
    tools:context="com.zoftino.content.MainActivity">
<Button
    android:id="@+id/button2"
    android:text="Add Coupon To Provider"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:onClick="addCouponsToCouponsContentProvider"></Button>

<Button
    android:id="@+id/button1"
    android:text="View Coupons From Provider"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
```

```
    android:onClick="viewCouponsFromCouponsContentProvider"
    "></Button>
<ListView android:id="@+id/couponsList"
    android:layout_width="match_parent"
    android:layout_height="match_parent"></ListView>
</LinearLayout>
```

Prog. No. 6

coupon\_row.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/coupon_row"
    android:orientation="horizontal"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
```

```
        android:paddingTop="@dimen/activity_vertical_margin">
        <TextView android:id="@+id/storeName"
            android:layout_width="100dp" android:textSize="20dp"
            android:textColor="@color/colorPrimary"
            android:textAlignment="center"
            android:layout_height="match_parent"
            android:text=""></TextView>

<LinearLayout
    android:orientation="vertical"
    android:layout_weight="1"
    android:layout_width="0dp"
    android:layout_marginLeft="@dimen/activity_horizontal_margin" android:layout_height="match_parent">
    <TextView android:id="@+id/coupon"
        android:layout_width="match_parent"
        android:textSize="15dp"
        android:layout_height="wrap_content"
        android:text=""></TextView>
    <TextView android:id="@+id/expirationDt"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text=""></TextView>
</LinearLayout>
</LinearLayout>
```

28.

## Android Animation Examples XML Code

### Fade In Animation

**fade\_in.xml**

```
<set
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:fillAfter="true" >

    <alpha
        android:duration="1000"
        android:fromAlpha="0.0"
        android:interpolator="@android:anim/accelerate_interpolator"
        android:toAlpha="1.0" />

</set>
```

### Fade Out Animation

**fade\_out.xml**

```
<set
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:fillAfter="true" >

    <alpha
        android:duration="1000"
        android:fromAlpha="1.0"
        android:interpolator="@android:anim/accelerate_interpolator"
        android:toAlpha="0.0" />

</set>
```

### Blink Animation

**blink.xml**

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

```
    android:toAlpha="1.0"
    android:interpolator="@android:anim/accelerate_interpolator"
    android:duration="600"
    android:repeatMode="reverse"
    android:repeatCount="infinite"/>
</set>
```

## **Zoom In Animation**

**zoom\_in.xml**

```
<set
    xmlns:android="http://schemas.android.com/apk/res/android
    " android:fillAfter="true" >

<scale
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:duration="1000"
    android:fromXScale="1"
    android:fromYScale="1"
    android:pivotX="50%"
    android:pivotY="50%"
    android:toXScale="3"
    android:toYScale="3" >
</scale>

</set>
```

## **Zoom Out Animation**

**zoom\_out.xml**

```
<set
    xmlns:android="http://schemas.android.com/apk/res/android
    " android:fillAfter="true" >

<scale
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:duration="1000"
    android:fromXScale="1.0"
    android:fromYScale="1.0"
    android:pivotX="50%"
    android:pivotY="50%"
    android:toXScale="0.5"
    android:toYScale="0.5" >
</scale>
```

</set>

.

Rotate Animation

**rotate.xml**

```
<set
    xmlns:android="http://schemas.android.com/apk/res/android">
    <rotate
        android:fromDegrees="0"
        android:toDegrees="360"
        android:pivotX="50%"
        android:pivotY="50%"
        android:duration="600"
        android:repeatMode="rest
        android:repeatCount="infi
        nite"
        android:interpolator="@android:anim/cycle_interpolator"/>

</set>
```

Move Animation

[move.xml](#)

```
<set
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:interpolator="@android:anim/linear_interpolator"
    android:fillAfter="true">

    <translate
        android:fromXDelta="0%p"
        android:toXDelta="75%p"
        android:duration="800" />
</set>
```

Slide Up Animation

[slide\\_up.xml](#)

```
<set
    xmlns:android="http://schemas.android.com/apk/res/android
    " android:fillAfter="true" >

    <scale
```

```
    android:duration="500"  
    android:fromXScale="1.0"  
    android:fromYScale="1.0"  
    android:interpolator="@android:anim/linear_interpolator"  
    android:toXScale="1.0"  
    android:toYScale="0.0" />
```

```
</set>
```

Slide Down Animation

**slide\_down.xml**

```
<set
    xmlns:android="http://schemas.android.com/apk/res/android
    " android:fillAfter="true">

    <scale
        android:duration="500"
        android:fromXScale="1.0"
        android:fromYScale="0.0"
        android:toXScale="1.0"
        android:toYScale="1.0" />

</set>
```

Bounce Animation

**bounce.xml**

```
<set
    xmlns:android="http://schemas.android.com/apk/res/android
    " android:fillAfter="true"
    android:interpolator="@android:anim/bounce_interpolator">

    <scale
        android:duration="500"
        android:fromXScale="1.0"
        android:fromYScale="0.0"
        android:toXScale="1.0"
        android:toYScale="1.0" />

</set>
```

Sequential Animation

**sequential.xml**

```
<set
    xmlns:android="http://schemas.android.com/apk/res/android
    " android:fillAfter="true"
    android:interpolator="@android:anim/linear_interpolator" >
```

```
<!-- Move -->
<translate
    android:duration="80
    o"
    android:fillAfter="true
    " 
```

```
        android:fromXDelta="0%p"
        android:startOffset="300"
        android:toXDelta="75%p"/>
<translate
        android:duration="800"
        android:fillAfter="true"
        android:fromYDelta="0%p"
        android:startOffset="1100"
        android:toYDelta="70%p"/>
<translate
        android:duration="800"
        android:fillAfter="true"
        android:fromXDelta="0%p"
        android:startOffset="1900"
        android:toXDelta="-75%p"/>
<translate
        android:duration="800"
        android:fillAfter="true"
        android:fromYDelta="0%p"
        android:startOffset="2700"
        android:toYDelta="-70%p"/>
```

```
<!-- Rotate 360 degrees -->
<rotate
    android:duration="1000"
    android:fromDegrees="0"
    android:interpolator="@android:anim/cycle_interpolator"
    android:pivotX="50%"
    android:pivotY="50%"
    android:startOffset="3800"
    android:repeatCount="infinite"
    android:repeatMode="restart"
    android:toDegrees="360" />

</set>
```

Together Animation

together.xml

```
<set
    xmlns:android="http://schemas.android.com/apk/res/android"
    " android:fillAfter="true"
    android:interpolator="@android:anim/linear_interpolator" >
```

```
<!-- Move -->
<scale
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:duration="4000"
    android:fromXScale="1"
    android:fromYScale="1"
    android:pivotX="50%"
    android:pivotY="50%"
    android:toXScale="4"
    android:toYScale="4" >
</scale>

<!-- Rotate 180 degrees -->
<rotate
    android:duration="500"
    android:fromDegrees="0"
    android:pivotX="50%"
    android:pivotY="50%"
    android:repeatCount="infinite"
    android:repeatMode="restart"
    android:toDegrees="360"
    />

</set>
activity_main.xml

<ScrollView
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent" >

    <RelativeLayout
        android:layout_width="match_paren
```

```
t"  
        android:layout_height="match_parent">  
  
<Button  
        android:id="@+id	btnFadeIn"  
        android:layout_width="wrap_content"  
        android:layout_height="wrap_content"  
        android:layout_margin="5dp"  
        android:text="Fade In" />
```

```
<TextView  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:textAppearance="?android:attr/textAppearanceMedium" android:text="Fade In"  
    android:id="@+id/txt_fade_in"  
    android:layout_alignBottom="@+id	btnFadeIn"  
    android:layout_alignLeft="@+id/txt_fade_out"  
    android:layout_alignStart="@+id/txt_fade_out"/>  
  
<Button  
    android:id="@+id	btnFadeOut"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_margin="5dp"  
    android:layout_below="@+id	btnFadeIn" android:text="Fade Out"  
    />  
  
<Button  
    android:id="@+id	btnCrossFade"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_margin="5dp"  
    android:layout_below="@+id	btnFadeOut"  
    android:text="Cross Fade" />  
  
<TextView  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:textAppearance="?android:attr/textAppearanceMedium" android:text="Cross Fade In"
```

```
    android:id="@+id/txt_out"
    android:visibility="gone"
    android:layout_gravity="center_horizontal"
    android:layout_alignTop="@+id/txt_in"
    android:layout_alignLeft="@+id/txt_in"
    android:layout_alignStart="@+id/txt_i
n" />
```

```
<Button
    android:id="@+id	btnBlink"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_margin="5dp"
    android:layout_below="@id	btnCrossFade"
    android:text="Blink" />

<Button
    android:id="@+id	btnZoomIn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_margin="5dp"
    android:layout_below="@id	btnBlink" android:text="Zoom In"
    />

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textAppearance="?android:attr/textAppearanceMedium" android:text="Blink"
    android:id="@+id	txt_blink"
    android:layout_gravity="center_horizontal"
    android:layout_alignBottom="@+id	btnBlink"
    android:layout_alignLeft="@+id	txt_zoom_in"
    android:layout_alignStart="@+id	txt_zoom_in" />

<Button
    android:id="@+id	btnZoomOut"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_margin="5dp"
    android:layout_below="@id	btnZoomIn"
    android:text="Zoom Out" />
```

```
<Button  
    android:id="@+id	btnRotate"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_margin="5dp"  
    android:layout_below="@id	btnZoomOut"
```

```
        android:text="Rotate" />

<Button
    android:id="@+id	btnMove"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_margin="5dp"
    android:layout_below="@+id	btnRotate"
    android:text="Move" />

<Button
    android:id="@+id	btnSlideUp"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_margin="5dp"
    android:layout_below="@+id	btnMove" android:text="Slide Up"
    />

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textAppearance="?android:attr/textAppearanceMedium" android:text="Fade Out"
    android:id="@+id	txt_fade_out"
    android:layout_gravity="center_horizontal"
    android:layout_alignBottom="@+id	btnFadeOut"
    android:layout_alignLeft="@+id	txt_in"
    android:layout_alignStart="@+id	txt_in" />

<Button
    android:id="@+id	btnSlideDown"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_margin="5dp"
```

```
    android:layout_below="@+id/btnSlideUp"
    android:text="Slide Down" />
```

```
<Button
    android:id="@+id/btnBounce"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
```

```
        android:layout_margin="5dp"
        android:layout_below="@+id/btnSlideDown"
        android:text="Bounce" />

<Button
    android:id="@+id/btnSequential"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_margin="5dp"
    android:layout_below="@+id/btnBounce"
    android:text="Sequential Animation" />

<Button
    android:id="@+id/btnTogether"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/btnSequential" android:layout_margin="5dp"
    android:text="Together Animation" />

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textAppearance="?android:attr/textAppearanceMedium" android:text="Cross Fade Out"
    android:id="@+id/txt_in"
    android:layout_gravity="center_horizontal"
    android:layout_alignBottom="@+id/btnCrossFade"
    android:layout_alignLeft="@+id/txt_blink"
    android:layout_alignStart="@+id/txt_blink" />

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textAppearance="?android:attr/textAppearanceMedium" android:text="Cross Fade In"
    android:id="@+id/txt_blink"
    android:layout_gravity="center_horizontal"
    android:layout_alignBottom="@+id/btnCrossFade"
    android:layout_alignLeft="@+id/txt_in"
    android:layout_alignStart="@+id/txt_in" />
```

```
dium" android:text="Zoom In"
    android:id="@+id/txt_zoom_in"
    android:layout_alignBottom="@+id	btnZoomIn"
    android:layout_alignLeft="@+id/txt_zoom_out"
    android:layout_alignStart="@+id/txt_zoom_out" />
```

```
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textAppearance="?android:attr/textAppearanceMedium" android:text="Zoom Out"
    android:id="@+id/txt_zoom_out"
    android:layout_alignBottom="@+id	btnZoomOut"
    android:layout_toRightOf="@+id	btnSequential"
    android:layout_toEndOf="@+id	btnSequential" />

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textAppearance="?android:attr/textAppearanceMedium" android:text="Rotate"
    android:id="@+id/txt_rotate"
    android:layout_above="@+id	btnMove"
    android:layout_toRightOf="@+id	btnSequential"
    android:layout_toEndOf="@+id	btnSequential" />

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textAppearance="?android:attr/textAppearanceMedium" android:text="Move"
    android:id="@+id/txt_move"
    android:layout_alignBottom="@+id	btnMove"
    android:layout_alignLeft="@+id/txt_slide_up"
    android:layout_alignStart="@+id/txt_slide_up" />
```

```
<TextView  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:textAppearance="?android:attr/textAppearanceMedium" android:text="Slide Up"  
    android:id="@+id/txt_slide_up"  
    android:layout_alignBottom="@+id	btnSlideUp"  
    android:layout_toRightOf="@+id	btnSequential"  
    android:layout_toEndOf="@+id	btnSequential" />  
  
<TextView
```

```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textAppearance="?android:attr/textAppearanceMedium" android:text="Slide Down"
        android:id="@+id/txt_slide_down"
        android:layout_alignBottom="@+id	btnSlideDown"
        android:layout_alignLeft="@+id/txt_slide_up"
        android:layout_alignStart="@+id/txt_slide_up" />
```

```
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textAppearance="?android:attr/textAppearanceMedium" android:text="Bounce"
    android:id="@+id/txt_bounce"
    android:layout_alignBottom="@+id	btnBounce"
    android:layout_alignLeft="@+id/txt_slide_down"
    android:layout_alignStart="@+id/txt_slide_down" />
```

```
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textAppearance="?android:attr/textAppearanceMedium" android:text="Sequential"
    android:id="@+id/txt_seq"
    android:layout_alignBottom="@+id	btnSequential"
    android:layout_alignLeft="@+id/txt_bounce"
    android:layout_alignStart="@+id/txt_bounce" />
```

```
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
```

```
ent"
    android:textAppearance="?android:attr/textAppearanceMedium" android:text="Together"
    android:id="@+id/txt_tog"
    android:layout_alignBottom="@+id	btnTogether"
    android:layout_toRightOf="@+id	btnSequential"
    android:layout_toEndOf="@+id	btnSequential" />
</RelativeLayout>
</ScrollView>
```

**MainActivity.java .**

```
import
android.app.Activity;
import
android.content.Intent;
import
android.os.Bundle;
import
android.view.View;
import
android.view.animation.Animation;
import
android.view.animation.AnimationUti
ls; import android.widget.Button;
import android.widget.TextView;

public class MainActivity extends Activity {
    Button btnFadeIn, btnFadeOut, btnCrossFade,
           btnBlink, btnZoomIn, btnZoomOut, btnRotate,
           btnMove, btnSlideUp, btnSlideDown, btnBounce,
           btnSequential, btnTogether;
    Animation
animFadeIn,animFadeOut,animBlink,animZoomIn,animZoom
Out,animRotate
           ,animMove,animSlideUp,animSlideDown,animBounce,animSeque
ntial,animTo gether,animCrossFadeIn,animCrossFadeOut;
    TextView
txtFadeIn,txtFadeOut,txtBlink,txtZoomIn,txtZoomOut,txtRotate,t
xtMove,txtSli deUp,
           txtSlideDown,txtBounce,txtSeq,txtTog,txtIn,txtOut;

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

```
setContentView(R.layout.activity_main);
btnFadeIn = (Button)
findViewById(R.id.btnFadeIn); btnFadeOut =
(Button) findViewById(R.id.btnFadeOut);
btnCrossFade = (Button)
findViewById(R.id.btnCrossFade); btnBlink =
(Button) findViewById(R.id.btnBlink);
btnZoomIn = (Button)
findViewById(R.id.btnZoomIn); btnZoomOut =
(Button) findViewById(R.id.btnZoomOut);
btnRotate = (Button)
findViewById(R.id.btnRotate); btnMove =
(Button) findViewById(R.id.btnMove);
btnSlideUp = (Button)
findViewById(R.id.btnSlideUp); btnSlideDown =
(Button) findViewById(R.id.btnSlideDown);
btnBounce = (Button)
findViewById(R.id.btnBounce);
```

```
btnSequential = (Button)
findViewById(R.id.btnSequential); btnTogether =
(Button) findViewById(R.id.btnTogether);
txtFadeIn=(TextView)findViewById(R.id.txt_fade_in);
txtFadeOut=(TextView)findViewById(R.id.txt_fade_out);
txtBlink=(TextView)findViewById(R.id.txt_blink);
txtZoomIn=(TextView)findViewById(R.id.txt_zoom_in);
txtZoomOut=(TextView)findViewById(R.id.txt_zoom_out);
txtRotate=(TextView)findViewById(R.id.txt_rotate);
txtMove=(TextView)findViewById(R.id.txt_move);
txtSlideUp=(TextView)findViewById(R.id.txt_slide_up);
txtSlideDown=(TextView)findViewById(R.id.txt_slide_down);
txtBounce=(TextView)findViewById(R.id.txt_bounce);
txtSeq=(TextView)findViewById(R.id.txt_seq);
txtTog=(TextView)findViewById(R.id.txt_tog);
txtIn=(TextView)findViewById(R.id.txt_in);
txtOut=(TextView)findViewById(R.id.txt_out);
animFadeIn =
    AnimationUtils.loadAnimation(getApplicationContext(),
    R.anim.fade_in);
animFadeIn =
    AnimationUtils.loadAnimation(getApplicationContext(),
    R.anim.fade_in);
// fade in
btnFadeIn.setOnClickListener(new
    View.OnClickListener() { @Override
    public void onClick(View v) {
        txtFadeIn.setVisibility(View.VISIBLE);
        txtFadeIn.startAnimation(animFadeIn);
```

```
        }
    });
animFadeOut =
    AnimationUtils.loadAnimation(getApplicationContext(),
R.anim.fade_out);

// fade out
btnFadeOut.setOnClickListener(new
    View.OnClickListener() { @Override
    public void onClick(View v) {
        txtFadeOut.setVisibility(View.VISIBLE);
        txtFadeOut.startAnimation(animFadeOut);
    }
});
animCrossFadeIn =
AnimationUtils.loadAnimation(getApplicationContext(),
),
```

```
    R.anim.fade_in);
animCrossFadeOut =
AnimationUtils.loadAnimation(getApplicationContext(),
    ), R.anim.fade_out);
// cross fade
btnCrossFade.setOnClickListener(new
    View.OnClickListener() { @Override
    public void onClick(View v) {
        txtOut.setVisibility(View.VISIBLE);
        // start fade in animation
        txtOut.startAnimation(animCros
        sFadeIn);

        // start fade out animation
        txtIn.startAnimation(animCross
        FadeOut);
    }
});
animBlink =
    AnimationUtils.loadAnimation(getApplicationContext(
    ), R.anim.blink);
// blink
btnBlink.setOnClickListener(new
    View.OnClickListener() { @Override
    public void onClick(View v) {
        txtBlink.setVisibility(View.VISIBLE);
        txtBlink.startAnimation(animBlink);
    }
});
animZoomIn =
    AnimationUtils.loadAnimation(getApplicationContext(),
    R.anim.zoom_in);
// Zoom In
btnZoomIn.setOnClickListener(new
    View.OnClickListener() { @Override
    public void onClick(View v) {
        txtZoomIn.setVisibility(View.VISIBLE);
        txtZoomIn.startAnimation(animZoomIn);
```

```
    }  
});  
animZoomOut =  
    AnimationUtils.loadAnimation(getApplicationContext(),  
        R.anim.zoom_out);  
// Zoom Out  
btnZoomOut.setOnClickListener(new  
    View.OnClickListener() { @Override
```

```
public void onClick(View v) {
    txtZoomOut.setVisibility(View.VISIBLE);
    txtZoomOut.startAnimation(animZoomOut);
}
});
animRotate =
    AnimationUtils.loadAnimation(getApplicationContext(),
    R.anim.rotate);

// Rotate
btnRotate.setOnClickListener(new
    View.OnClickListener() { @Override
    public void onClick(View v) {
        txtRotate.startAnimation(anim
        Rotate);
    }
});
animMove =
    AnimationUtils.loadAnimation(getApplicationContext(),
    R.anim.move);
// Move
btnMove.setOnClickListener(new
    View.OnClickListener() { @Override
    public void onClick(View v) {
        txtMove.startAnimation(anim
        Move);
    }
});
animSlideUp =
    AnimationUtils.loadAnimation(getApplicationContext(),
    R.anim.slide_up);
// Slide Up
btnSlideUp.setOnClickListener(new
    View.OnClickListener() { @Override
    public void onClick(View v) {
        txtSlideUp.startAnimation(animSlideUp);
    }
});
```

```
animSlideDown =  
AnimationUtils.loadAnimation(getApplicationContext()  
,  
        R.anim.slide_down);  
// Slide Down  
btnSlideDown.setOnClickListener(new  
        View.OnClickListener() { @Override  
    public void onClick(View v) {  
        txtSlideDown.startAnimation(animSlideDown);
```

```
        }
    });
animBounce =
    AnimationUtils.loadAnimation(getApplicationContext(),
    R.anim.bounce);
// Slide Down
btnBounce.setOnClickListener(new
    View.OnClickListener() { @Override
    public void onClick(View v) {
        txtBounce.startAnimation(animBounce);
    }
});
animSequential =
    AnimationUtils.loadAnimation(getApplicationContext(),
    R.anim.sequential);
// Sequential
btnSequential.setOnClickListener(new
    View.OnClickListener() { @Override
    public void onClick(View v) {

        txtSeq.startAnimation(animSequential);
    }
});
animTogether =
    AnimationUtils.loadAnimation(getApplicationContext(),
    R.anim.together);

// Together
btnTogether.setOnClickListener(new
    View.OnClickListener() { @Override
    public void onClick(View v) {
        txtTog.startAnimation(animTo
        gether);
    }
});
}
```

29.

## Android Capture Image Camera Gallery Using FileProvider

FileProvider is a special subclass of ContentProvider which allows sharing of files between application through content URI instead of file:// URI.

Using file:// URI is not the best idea. It gives all apps the permission to access the files once the Storage Permissions are granted.

We somehow need to restrict this such that the user knows the applications with which it would be sharing the files.

For this, we use FileProviders which allow temporary access permissions to the files. Otherwise, we were able to access files from other apps by simply getting their URI from Uri.parse(). By using FileProvider in your app, you do not need to ask user to grant

WRITE\_EXTERNAL\_STORAGE permission everytime.

- Defining FileProvider

To define a FileProvider in our android application, we need to do the following things:

- Define the FileProvider in your AndroidManifest file

- Create an XML file that contains all paths that the

- FileProvider will share with other applications

```
<provider
    android:name="android.support.v4.content.File
    Provider"
    android:authorities="${applicationId}.provider"
    android:exported="false"
    android:grantUriPermissions="true">
    <meta-data
        android:name="android.support.FILE_PROVIDE
        R_PATHS"
        android:resource="@xml/provider_paths"/>
```

```
</provider>
```

Create an xml folder inside the res  
directory. Add the  
**provider\_paths.xml** file in it:

```
<?xml version="1.0" encoding="utf-8"?>
<paths
xmlns:android="http://schemas.android.com/apk/res/android">
    <external-path name="external_files" path="." />
</paths>
```

Depending on the storage we need to access, we pass the value in the external- path.

Example of other values that can be passed – `sdcard`

Now let's write our Version 2.0 Application of Capturing Image from Camera And Gallery that works on Android Nougat and above.

## Project Structure



The `AndroidManifest.xml` with all the permissions looks like:

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

    <uses-feature android:name="android.hardware.camera" android:required="false" />
    <uses-feature android:name="android.hardware.camera.autofocus" android:required="false" />
    <uses-feature android:name="android.hardware.camera.flash" android:required="false" />
    <uses-permission android:name="android.permission.CAMERA"/>
    <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"/>
    <uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE"/>

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="ImagePickerMine"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">

        <provider
            android:name="android.support.v4.content.FileProvider"
            android:authorities="${applicationId}.provider"
            android:exported="false"
            android:grantUriPermissions="true">
            <meta-data
                android:name="android.support.FILE_PROVIDER_PATHS"
                android:resource="@xml/provider_paths"/>
        </provider>

        <activity
            android:name=".MainActivity"
            android:label="ImagePickerMine">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>

</manifest>
```

## Code

The code for the activity\_main.xml layout is:

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.design.widget.CoordinatorLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:fitsSystemWindows="true">
```

```
<RelativeLayout  
    android:id="@+id/content_main"  
    android:layout_width="match_parent"
```

```
        android:layout_height="match_parent"
        android:padding="16dp"
        app:layout_behavior="@string/appbar_scrolling_view_behavior">
```

```
<ImageView
    android:id="@+id/imageView"
    android:layout_width="250dp"
    android:layout_height="250dp"
    android:layout_centerInParent
    = "true"
    android:adjustViewBounds="true"
    android:scaleType="centerCrop" />
```

```
</RelativeLayout>
```

```
<android.support.design.widget.FloatingActionButton
    android:id="@+id/fab"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_gravity="bottom|end"
    android:layout_margin="16dp"
    app:srcCompat="@android:drawable/ic_menu_camera" />
```

```
</android.support.design.widget.CoordinatorLayout>
The code for the
MainActivity.java is given below:
```

```
package com.journaldev.androidfileprovidercameragallery;
```

```
import
android.annotation.TargetApi;
import android.app.Activity;
import
android.content.ComponentName
; import
android.content.DialogInterface;
import android.content.Intent;
import
android.content.pm.PackageManager;
import
android.content.pm.ResolveInfo;
import android.database.Cursor;
import android.graphics.Bitmap;
import
android.graphics.BitmapFactory;
import android.net.Uri;
```

```
import
android.os.Build;
import
android.os.Bundle;
import
android.os.Parcelable;
import android.provider.MediaStore;
import
android.support.design.widget.FloatingActionButton; import android.support.v7.app.AlertDialog;
import
android.support.v7.app.AppCompatActivity; import android.view.View;
import
android.widget.ImageView;
import java.io.File;
import
java.util.ArrayList;
import java.util.List;
import static android.Manifest.permission.CAMERA;
import static
android.Manifest.permission.READ_EXTERNAL_STORAGE;
import static
android.Manifest.permission.WRITE_EXTERNAL_STORAGE;

public class MainActivity extends

    AppCompatActivity { Uri picUri;

    private ArrayList<String> permissionsToRequest;
    private ArrayList<String> permissionsRejected = new
    ArrayList<>(); private ArrayList<String> permissions =
    new ArrayList<>();
    private final static int
    ALL_PERMISSIONS_RESULT = 107; private final
    static int IMAGE_RESULT = 200;
```

```
@Override  
protected void onCreate(Bundle  
 savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.activity_main);  
 FloatingActionButton fab =  
 findViewById(R.id.fab);  
 fab.setOnClickListener(new  
 View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 startActivityForResult(getPickImageChooserIntent(),  
 IMAGE_RESULT);  
 }  
});  
  
permissions.add(CAMERA);  
permissions.add(WRITE_EXTERNAL_STORAGE);
```

```
permissions.add(READ_EXTERNAL_STORAGE);
permissionsToRequest =
findUnAskedPermissions(permissions);

if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.M)
{

    if (permissionsToRequest.size() > 0)
        requestPermissions(permissionsToRequest.toArray(ne
        w
String[permissionsToRequest.size()]),
ALL_PERMISSIONS_RESULT);
}
}

public Intent getPickImageChooserIntent() {

    Uri outputFileUri =
    getCaptureImageOutputUri(); List<Intent>
    allIntents = new ArrayList<>();
    PackageManager packageManager =
    getPackageManager(); Intent captureIntent =
    new
    Intent(android.provider.MediaStore.ACTION_IMAGE_CAPTURE
    ); List<ResolveInfo> listCam =
    packageManager.queryIntentActivities(captur
    eIntent, 0); for (ResolveInfo res : listCam)
    {
        Intent intent = new Intent(captureIntent);
        intent.setComponent(new
        ComponentName(res.activityInfo.packageName,
        res.activityInfo.name));
        intent.setPackage(res.activityInfo.packageName);
        if (outputFileUri != null) {
            intent.putExtra(MediaStore.EXTRA_OUTPUT,
            outputFileUri);
        }
    }
}
```

```
        }  
        allIntents.add(intent);  
    }  
  
Intent galleryIntent = new  
Intent(Intent.ACTION_GET_CONTENT);  
galleryIntent.setType("image/*");  
List<ResolveInfo> listGallery =  
packageManager.queryIntentActivities(galleryIntent, 0);  
for (ResolveInfo res : listGallery) {  
    Intent intent = new Intent(galleryIntent);  
    intent.setComponent(new  
ComponentName(res.activityInfo.packageName,  
    res.activityInfo.name));  
    intent.setPackage(res.activityInfo.packageName);
```

```
        allIntents.add(intent);
    }
    Intent mainIntent =
    allIntents.get(allIntents.size() - 1); for
    (Intent intent : allIntents) {
        if
    (intent.getComponent().getClassName().equals("com.android.doc
umentsui.Doc umentsActivity")) {
            mainIntent =
            intent; break;
        }
    allIntents.remove(mainIntent);
    Intent chooserIntent = Intent.createChooser(mainIntent,
    "Select source");
    chooserIntent.putExtra(Intent.EXTRA_INITIAL_INTENTS,
allIntents.toArray(new
    Parcelable[allIntents.size()])); return
    chooserIntent;
}

private Uri
getCaptureImageOutputUri() {
    Uri outputFileUri = null;
    File getImage =
    getExternalFilesDir(""); if
    (getImage != null) {
        outputFileUri = Uri.fromFile(new
    File(getImage.getPath(), "profile.png"));
    }
    return outputFileUri;
}
@Override
protected void onActivityResult(int requestCode, int resultCode,
Intent data)
{
    if (resultCode == Activity.RESULT_OK){
        ImageView imageView =
```

```
findViewById(R.id.imageView); if (requestCode == IMAGE_RESULT) {  
  
    String filePath =  
    getImageFilePath(data); if  
(filePath != null) {  
        Bitmap selectedImage =  
        BitmapFactory.decodeFile(filePath);  
        imageView.setImageBitmap(selectedImage);  
    }  
}  
}
```

```
}

private String getImageFromFilePath(Intent data) {
    boolean isCamera = data == null || data.getData() == null;
    if (isCamera) return
        getCaptureImageOutputUri().getPath(); else
    return getPathFromURI(data.getData());
}

public String
getImageFilePath(Intent data) {
    return
        getImageFromFilePath(data);
}

private String getPathFromURI(Uri
contentUri) { String[] proj =
{MediaStore.Audio.Media.DATA};
    Cursor cursor = getContentResolver().query(contentUri,
proj, null, null, null);
    int column_index =
cursor.getColumnIndexOrThrow(MediaStore.Audio.Media.DATA)
;
    cursor.moveToFirst();
    return cursor.getString(column_index);
}

@Override
protected void onSaveInstanceState(Bundle
outState) { super.onSaveInstanceState(outState);
    outState.putParcelable("pic_uri", picUri);
}

@Override
protected void onRestoreInstanceState(Bundle
savedInstanceState) {
    super.onRestoreInstanceState(savedInstanceState);
    // get the file url
    picUri = savedInstanceState.getParcelable("pic_uri");
}

private ArrayList<String>
findUnAskedPermissions(ArrayList<String> wanted) {
```

```
ArrayList<String> result = new
ArrayList<String>(); for (String perm :
wanted) {
    if (!hasPermission(perm)) {
        result.add(perm);
    }
}
return result;
}
private boolean hasPermission(String permission) {
```

```
if (canMakeSmores()) {
    if (Build.VERSION.SDK_INT >=
        Build.VERSION_CODES.M) {
        return (checkSelfPermission(permission) ==
PackageManager.PERMISSION_GRANTED);
    }
}
return true;
}

private void showMessageOKCancel(String message,
DialogInterface.OnClickListener okListener) {
    new AlertDialog.Builder(this)
        .setMessage(message)
        .setPositiveButton("OK", okListener)
        .setNegativeButton("Cancel", null)
        .create()
        .show();
}

private boolean
canMakeSmores() { return
    (Build.VERSION.SDK_INT >
Build.VERSION_CODES.LOLLIPOP_MR1);
}

@Override
public void onRequestPermissionsResult(int
requestCode, String[] permissions, int[] grantResults) {
    switch (requestCode) {
        case ALL_PERMISSIONS_RESULT:
            for (String perms :
                permissionsToRequest) { if
                (!hasPermission(perms)) {
                    permissionsRejected.add(perms);
                }
            }
            if (permissionsRejected.size() > 0) {
                if (Build.VERSION.SDK_INT >=
                    Build.VERSION_CODES.M) {
                    if
```

```
(shouldShowRequestPermissionRationale(permissionsRejected.get(o))) {  
    showMessageOKCancel("These permissions are  
    mandatory for the application. Please allow access.",  
    new  
        DialogInterface.OnClickListener()  
    { @Override
```

```
public void onClick(DialogInterface dialog, int which) {  
    if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.M) {  
        requestPermissions(permissionsRejected.toArray(new String[permissionsRejected.size()]), ALL_PERMISSIONS_RESULT);  
    }  
}  
});  
return;  
}  
}  
}  
break;  
}  
}  
}
```

Following are the methods which get the content uri from the filepath provided that the FileProvider has granted the appropriate permissions:

26.

Android Capture Image from Camera and Gallery

Add the following permissions in the Android Manifest.xml file, above the application tag.

```
<uses-feature  
    android:name="android.hardware.camera"  
    android:required="false" />  
<uses-feature  
    android:name="android.hardware.camera.autofocus" android:required="false" />  
<uses-feature  
    android:name="android.hardware.camera.flash" android:required="false"  
    />  
<uses-permission  
    android:name="android.permission.CAMERA" />  
<uses-permission  
    android:name="ANDROID.PERMISSION.READ_EXTERNAL_STORAGE"/  
>
```

By adding android.hardware.camera, Play Store detects and prevents installing the application on devices with no camera.

Intent is the standard way to delegate actions to another application.

To start the native camera the Intent requires

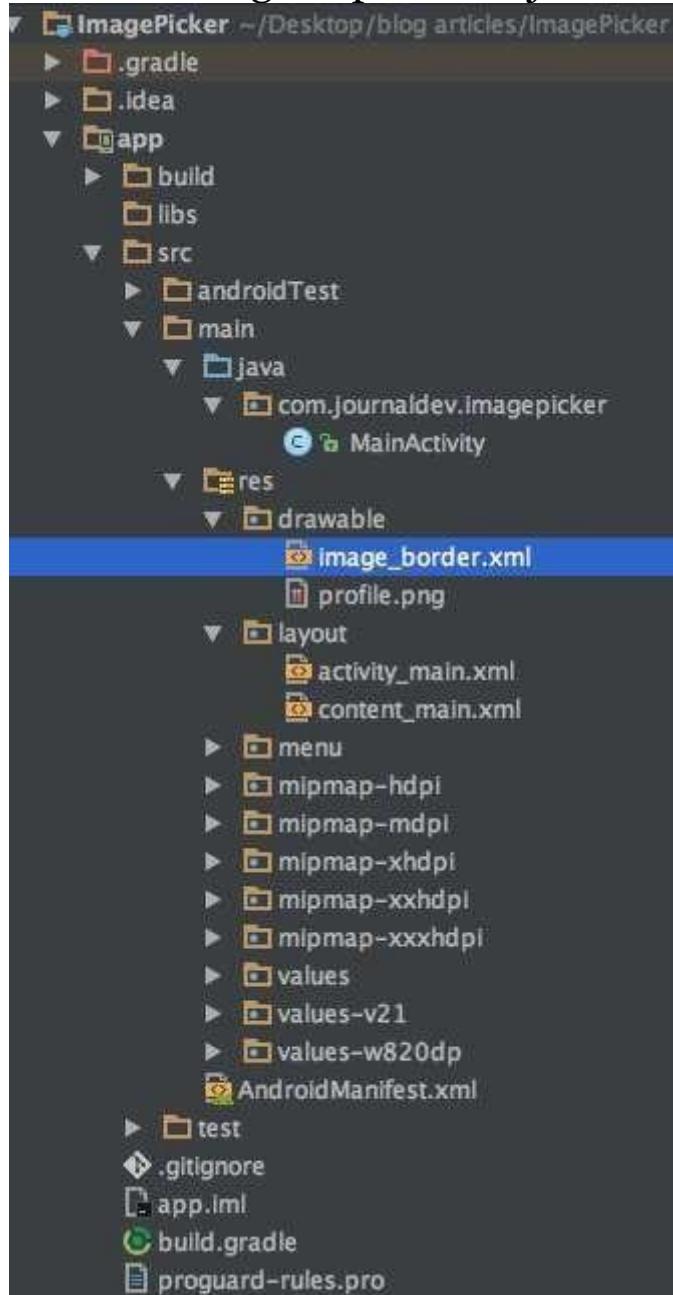
android.provider.MediaStore.ACTION\_IMAGE\_CAPTURE.

To choose an image from gallery, the Intent requires the following argument

: Intent.ACTION\_GET\_CONTENT.

In this tutorial we'll be invoking an image picker, that lets us select an image from camera or gallery and displays the image in a circular image view and a normal image view. Add the following dependency inside the build.gradle file. **compile 'de.hdodenhof:circleimageview:2.1.0'**

## Android Image Capture Project Structure



### Android Capture Image Code

The layout for the activity\_main.xml stays the same barring the icon change for the FAB button to  
{@android:drawable/ic\_menu\_camera}.

The content\_main.xml is given below:

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

```
<RelativeLayout  
    xmlns:android="http://schemas.android.com/apk/res/andr  
    oid" xmlns:app="http://schemas.android.com/apk/res-auto"
```

```
xmlns:tools="http://schemas.android.com/tools"
android:id="@+id/content_main"
android:layout_width="match_parent"
android:layout_height="match_parent"
android:paddingBottom="@dimen/activity_vertical_margin"
android:paddingLeft="@dimen/activity_horizontal_margin"
android:paddingRight="@dimen/activity_horizontal_margin"
android:paddingTop="@dimen/activity_vertical_margin" android:background="#oooooooo"
app:layout_behavior="@string/appbar_scrolling_view_behavior"
tools:context="com.journaldev.imagepicker.MainActivity" tools:showIn="@layout/activity_main">>
```

```
<RelativeLayout
    android:layout_width="250dp"
    android:layout_height="250dp"
    android:layout_centerHorizontal="true"
    android:layout_centerVertical="true"
    android:background="@drawable/image_border" android:clickable="true"
    android:orientation="vertical">
```

```
<ImageView
    android:id="@+id/imageView"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:adjustViewBounds="true"
    android:scaleType="centerCrop">
```

```
    p" />
</RelativeLayout>

<de.hdodenhof.circleimageview.CircleImageView
    android:id="@+id/img_profile"
    android:layout_width="100dp"
    android:layout_height="100dp"
    android:layout_gravity="center_horizontal"
    android:src="@drawable/profile"
    app:civ_border_width="5dp"
    app:civ_border_color="#FFFFFF"
    android:layout_alignParentBottom="true"
    android:layout_centerHorizontal="true" />
```

```
</RelativeLayout>
```

The code for the `MainActivity.java` is given below  
public class MainActivity extends AppCompatActivity {

```
    Bitmap  
    myBitmap; Uri  
    picUri;
```

```
    private ArrayList permissionsToRequest;  
    private ArrayList permissionsRejected = new  
    ArrayList(); private ArrayList permissions = new  
    ArrayList();  
    private final static int ALL_PERMISSIONS_RESULT = 107;
```

```
    @Override
```

```
    protected void onCreate(Bundle savedInstanceState)
```

```
        { super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main);  
        Toolbar toolbar = (Toolbar) findViewById(R.id.toolbar);  
        setSupportActionBar(toolbar);  
        FloatingActionButton fab =
```

```
(FloatingActionButton) findViewById(R.id.fab);
```

```
        fab.setOnClickListener(new
```

```
            View.OnClickListener() { @Override
```

```
                public void onClick(View view) {
```

```
                    startActivityForResult(getPickImageChooserIntent(),  
                    200);
```

```
                }
```

```
            });
```

```
        permissions.add(CAMERA);
```

```
        permissionsToRequest =
```

```
        findUnAskedPermissions(permissions);
```

```
        //get the permissions we have asked for before but are not  
        granted..
```

```
        //we will store this in a global list to access later.
```

```
        if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.M)
```

```
{  
    if (permissionsToRequest.size() > 0)  
        requestPermissions(permissionsToRequest.toArray(ne  
            w  
            String[permissionsToRequest.size()]),  
            ALL_PERMISSIONS_RESULT);  
    }  
}  
@Override  
public boolean onCreateOptionsMenu(Menu menu) {  
    // Inflate the menu; this adds items to the action bar if it is  
    present.  
}
```

```
        getMenuInflater().inflate(R.menu.menu_main, menu); return true;
    }
    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
        // Handle action bar item clicks here. The action bar will
        // automatically handle clicks on the Home/Up button, so
        // long
        // as you specify a parent activity in
        // AndroidManifest.xml. int id = item.getItemId();
        //noinspection
        SimplifiableIfStatement if (id
            == R.id.action_settings) {
            return true;
        }
        return super.onOptionsItemSelected(item);
    }
    /**
     * Create a chooser intent to select the source to get image
     * from.<br />
     * The source can be camera's
     * (ACTION_IMAGE_CAPTURE) or gallery's
     * (ACTION_GET_CONTENT).<br />
     * All possible sources are added to the intent chooser.
     */
    public Intent
    getPickImageChooserIntent(){
        // Determine Uri of camera image to
        // save.
        Uri outputFileUri = getCaptureImageOutputUri();

        List allIntents = new ArrayList();
        PackageManager packageManager = getPackageManager();
        // collect all camera
        intents Intent
        captureIntent = new
        Intent(android.provider.MediaStore.ACTION_IMAGE_CAPTURE
        );
        List listCam =
```

```
packageManager.queryIntentActivities(captureIntent,
o); for (ResolveInfo res : listCam) {
    Intent intent = new Intent(captureIntent);
    intent.setComponent(new
ComponentName(res.activityInfo.packageName,
    res.activityInfo.name));
    intent.setPackage(res.activityInfo.packageName);
    if (outputFileUri != null) {
        intent.putExtra(MediaStore.EXTRA_OUTPUT,
            outputFileUri);
    }
    allIntents.add(intent);
}
```

```
// collect all gallery intents
Intent galleryIntent = new
Intent(Intent.ACTION_GET_CONTENT);
galleryIntent.setType("image/*");
List listGallery =
packageManager.queryIntentActivities(galleryIntent, 0);
for (ResolveInfo res : listGallery) {
    Intent intent = new Intent(galleryIntent);
    intent.setComponent(new
ComponentName(res.activityInfo.packageName,
    res.activityInfo.name));
    intent.setPackage(res.activityInfo.packageName);
    allIntents.add(intent);
}
// the main intent is the last in the list (fucking
android) so pickup the useless one
Intent mainIntent =
allIntents.get(allIntents.size() - 1); for
(Intent intent : allIntents) {
    if
(intent.getComponent().getClassName().equals("com.android.doc
umentsui.Doc umentsActivity")) {
        mainIntent =
        intent; break;
    }
}
allIntents.remove(mainIntent);
// Create a chooser from the main intent
Intent chooserIntent = Intent.createChooser(mainIntent,
"Select source");
// Add all other intents
chooserIntent.putExtra(Intent.EXTRA_INITIAL_INTENTS,
allIntents.toArray(new
Parcelable[allIntents.size()])); return
chooserIntent;
}
/**
```

```
* Get URI to image received from capture by camera.  
*/  
private Uri  
    getCaptureImageOutputUri() {  
    Uri outputFileUri = null;  
    File getImage =  
        getExternalCacheDir(); if  
        (getImage != null) {  
            outputFileUri = Uri.fromFile(new  
                File(getImage.getPath(), "profile.png"));  
        }  
    return outputFileUri;
```

```
    }

    @Override
    protected void onActivityResult(int requestCode, int resultCode,
        Intent data)
    {
        Bitmap bitmap;
        if (resultCode ==
            Activity.RESULT_OK) {
            ImageView imageView =
                (ImageView)
            findViewById(R.id.imageView);

            if (getPickImageResultUri(data) !=
                null) { picUri =
                getPickImageResultUri(data);
                try {
                    myBitmap =
                        MediaStore.Images.Media.getBitmap(this.getContentResolver(),
                picUri);
                    myBitmap = rotateImageIfRequired(myBitmap,
                picUri); myBitmap =
                    getResizedBitmap(myBitmap, 500);
                    CircleImageView croppedImageView =
                        (CircleImageView)
                    findViewById(R.id.img_profile);
                    croppedImageView.setImageBitmap(myBitmap);
                    imageView.setImageBitmap(myBitmap);
                } catch (IOException e) {
                    e.printStackTrace();
                }
            } else {
                bitmap = (Bitmap)
                data.getExtras().get("data"); myBitmap =
                bitmap;
                CircleImageView croppedImageView = (CircleImageView)
                findViewById(R.id.img_profile);
                if (croppedImageView != null) {
                    croppedImageView.setImageBitmap(myBitmap);
                }
            }
        }
    }
}
```

```
        }
    }
}
private static Bitmap rotateImageIfRequired(Bitmap img, Uri
selectedImage) throws IOException {
    ExifInterface ei = new ExifInterface(selectedImage.getPath());
    int orientation =
ei.getAttributeInt(ExifInterface.TAG_ORIENTATION,
ExifInterface.ORIENTATION_NORMAL);
    switch (orientation) {
```

```
        case
            ExifInterface.ORIENTATION_ROTATE
            _90: return rotateImage(img, 90);
        case
            ExifInterface.ORIENTATION_ROTATE_1
            80: return rotateImage(img, 180);
        case
            ExifInterface.ORIENTATION_ROTATE_2
            70: return rotateImage(img, 270);
        default:
            return img;
    }
}

private static Bitmap rotateImage(Bitmap img,
    int degree) { Matrix matrix = new Matrix();
    matrix.postRotate(degree);
    Bitmap rotatedImg = Bitmap.createBitmap(img, 0, 0,
    img.getWidth(), img.getHeight(), matrix, true);
    img.recycle();
    return
    rotatedImg;
}

public Bitmap getResizedBitmap(Bitmap image, int
    maxSize) { int width = image.getWidth();
    int height = image.getHeight();
    float bitmapRatio = (float) width /
    (float) height; if (bitmapRatio > 0) {
        width = maxSize;
        height = (int) (width / bitmapRatio);
    } else {
        height = maxSize;
        width = (int) (height * bitmapRatio);
    }
    return Bitmap.createScaledBitmap(image, width, height,
    true);
}

/**
 * Get the URI of the selected image
```

```
from {@link  
#getPickImageChooserIntent()}.<br />  
 * Will return the correct URI for camera and gallery image.  
 *  
 * @param data the returned data of the activity result  
 */  
public Uri  
    getPickImageResultUri(Intent data) {  
    boolean isCamera = true;  
    if (data != null) {
```

```
String action =
    data.getAction(); isCamera =
        action != null &&
action.equals(MediaStore.ACTION_IMAGE_CAPTURE);
}
return isCamera ? getCaptureImageOutputUri() :
    data.getData();
}
@Override
protected void onSaveInstanceState(Bundle outState) {
    super.onSaveInstanceState(outState);

    // save file url in bundle as it will be null on screen orientation
    // changes
    outState.putParcelable("pic_uri",
        picUri);
}
@Override
protected void onRestoreInstanceState(Bundle
    savedInstanceState) {
    super.onRestoreInstanceState(savedInstanceState);
    // get the file url
    picUri = savedInstanceState.getParcelable("pic_uri");
}
private ArrayList findUnAskedPermissions(ArrayList
    wanted) { ArrayList result = new ArrayList();
for (String perm :
    wanted) { if
        (!hasPermission(per
            m)) {
            result.add(perm);
        }
    }
    return result;
}
private boolean hasPermission(String
    permission) { if (canMakeSmores()) {
        if (Build.VERSION.SDK_INT >=
```

```
        Build.VERSION_CODES.M) {
            return (checkSelfPermission(permission) ==
PackageManager.PERMISSION_GRANTED);
        }
    }
    return true;
}
private void showMessageOKCancel(String message,
DialogInterface.OnClickListener okListener) {
    new AlertDialog.Builder(this)
```

```
.setMessage(message)
.setPositiveButton("OK", okListener)
.setNegativeButton("Cancel", null)
.create()
.show();
}
private boolean
canMakeSmores() { return
(Build.VERSION.SDK_INT >
Build.VERSION_CODES.LOLLIPOP_MR1);
}
@TargetApi(Build.VERSION_CODES.
M) @Override
public void onRequestPermissionsResult(int
requestCode, String[] permissions, int[] grantResults) {
switch (requestCode) {
case ALL_PERMISSIONS_RESULT:
for (String perms :
permissionsToRequest) { if
(hasPermission(perms)) {
} else {
permissionsRejected.add(perms);
}
}
if (permissionsRejected.size() > 0) {
if (Build.VERSION.SDK_INT >=
Build.VERSION_CODES.M) {
if
(shouldShowRequestPermissionRationale(permissionsRejected.g
et(0))) {
showMessageOKCancel("These permissions are
mandatory for the application. Please allow access.",

new
DialogInterface.OnClickListener()
{ @Override
public void onClick(DialogInterface dialog, int
which)
{
if (Build.VERSION.SDK_INT >=
```

```
Build.VERSION_CODES.M) {  
    //Log.d("API123", "permisionrejected " +  
    permissionsRejected.size());  
    requestPermissions(permissionsRejected.toArray(new  
    String[permissionsRejected.size()]),  
    ALL_PERMISSIONS_RESULT);  
}  
}
```

```
    });
    return;
}
}
break;
}
}
```

27.

## Android Google Maps Example Code

The MainActivity.java is defined as below:

```
package com.journaldevMapsInAction;

import android.os.Bundle;
import android.support.design.widget.FloatingActionButton;
import android.support.v7.app.AppCompatActivity;
import android.support.v7.widget.Toolbar;
import android.view.View;
import android.view.Menu;
import android.view.MenuItem;
import com.google.android.gms.maps.CameraUpdateFactory;
import com.google.android.gms.maps.GoogleMap;
import com.google.android.gms.maps.OnMapReadyCallback;
import com.google.android.gms.maps.SupportMapFragment;
import com.google.android.gms.maps.model.BitmapDescriptorFactory;
import com.google.android.gms.maps.model.LatLng;
import com.google.android.gms.maps.model.MarkerOptions;

public class MainActivity extends AppCompatActivity implements
OnMapReadyCallback {
    SupportMapFragment
```

```
mapFragment; @Override
protected void onCreate(Bundle savedInstanceState)
{ super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
Toolbar toolbar = (Toolbar) findViewById(R.id.toolbar);
setSupportActionBar(toolbar);
mapFragment = (SupportMapFragment)
getSupportFragmentManager()
    .findFragmentById(R.id.map);
mapFragment.getMapAsync(this);
FloatingActionButton fab =
(FloatingActionButton)
findViewById(R.id.fab);
fab.setOnClickListener(new
View.OnClickListener() { @Override
public void onClick(View view) {
mapFragment.getMapAsync(new
OnMapReadyCallback() {
@Override
public void onMapReady(GoogleMap googleMap) {
```

```
        googleMap.setMapType(GoogleMap.MAP_TYPE_TERRAIN); googleMap.addMarker(new MarkerOptions()
            .position(new LatLng(37.4233438, -122.0728817))
            .title("LinkedIn"))

        .icon(BitmapDescriptorFactory.defaultMarker(BitmapDescriptorFactory.HUE_GREEN)));
        googleMap.addMarker(new MarkerOptions()
            .position(new LatLng(37.4629101, -122.2449094))
            .title("Facebook")
            .snippet("Facebook HQ: Menlo Park"));
        googleMap.addMarker(new MarkerOptions()
            .position(new LatLng(37.3092293, -122.1136845))
            .title("Apple"));

    googleMap.animateCamera(CameraUpdateFactory.newLatLngZoom(new LatLng(37.4233438, -122.0728817), 10));
    }
}
}

@Override
public boolean onCreateOptionsMenu(Menu menu) {
    // Inflate the menu; this adds items to the action bar if it is present.
    getMenuInflater().inflate(R.menu.menu_main, menu);
    return true;
}
@Override
public boolean onOptionsItemSelected(MenuItem item) {
    // Handle action bar item clicks here. The action bar will
    // automatically handle clicks on the Home/Up button, so long
    // as you specify a parent activity in
    // AndroidManifest.xml.
    int id = item.getItemId();
    //noinspection SimplifiableIfStatement
    if (id == R.id.action_settings) {
        return true;
    }
    return super.onOptionsItemSelected(item);
}
```

```
    == R.id.action_settings) {  
        return true;  
    }  
    return super.onOptionsItemSelected(item);  
}  
@Override  
public void onMapReady(GoogleMap googleMap) {
```

```
googleMap.addMarker(new MarkerOptions()
    .position(new LatLng(37.4233438, -122.0728817))
    .title("LinkedIn"))

.icon(BitmapDescriptorFactory.defaultMarker(BitmapDescriptorFactory.HUE_GREEN)));

googleMap.addMarker(new MarkerOptions()
    .position(new LatLng(37.4629101, -122.2449094))
    .title("Facebook")
    .snippet("Facebook HQ: Menlo Park"));

googleMap.addMarker(new MarkerOptions()
    .position(new LatLng(37.3092293, -122.1136845))
    .title("Apple"));

googleMap.animateCamera(CameraUpdateFactory.newLatLngZoom(new LatLng(37.4233438, -122.0728817), 10));
}
```

We call `getMapAsync()` on the `SupportMapFragment` object to register the

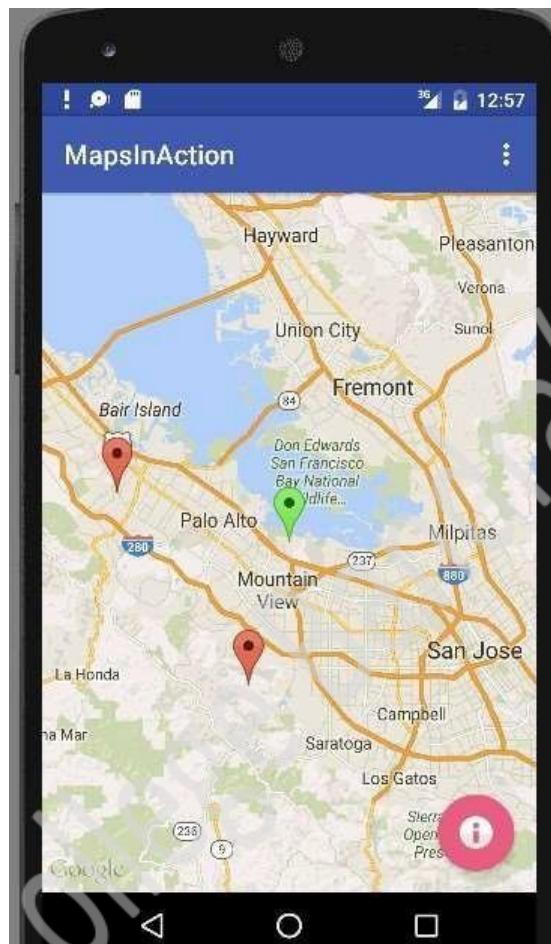
callback. The `FloatingActionButton` invokes a new `OnMapReadyCallBack` method with a different map type. The `content_main.xml` contains the `MapFragment` as shown below:

```
<?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"
    app:layout_behavior="@string/appbar_scrolling_view_behavior"
    tools:context="com.journaldevMapsInAction.MainActivity"
```

```
tools:showIn="@layout/activity_main">>

<fragment
    android:id="@+id/ma
    p"
    android:name="com.google.android.gms.maps.SupportMapFr
    agment" android:layout_width="match_parent"
```

```
    android:layout_gravity="center"
    android:layout_height="match_parent"
/>
</RelativeLayout>
```



## 23. Google Static Maps Android Code

```
compile 'com.pkmmte.view:circularimageview:1.1'
```

To send and receive the http url and response you need to add a few jar files in the project.

- a. httpclient-4.3.3.jar
- b. httpcore-4.3.3.jar
- c. httpmime-4.3.3.jar

Sync the gradle dependencies to add the libraries in the project. On running this project now a `DuplicateFileException` might arise in the `build.gradle`. It's due to conflicting package files of the libraries. A workaround is adding the following in the android tag of the build.gradle file.

```
|  
| packagingOptions {  
|     exclude 'META-  
|     INF/DEPENDENCIES.txt' exclude  
|     'META-INF/DEPENDENCIES'  
|     exclude 'META-  
|     INF/dependencies.txt' exclude  
|     'META-INF/LICENSE.txt'  
|     exclude 'META-  
|     INF/LICENSE' exclude  
|     'META-INF/license.txt'  
|     exclude 'META-INF/LGPL2.1'  
|     exclude 'META-  
|     INF/NOTICE.txt' exclude  
|     'META-INF/NOTICE' exclude  
|     'META-INF/notice.txt'  
| }  
| The content_main.xml is defined as below.
```

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

```
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:background="@android:color/black"
    app:layout_behavior="@string/appbar_scrolling_view_behavior"
    tools:context="com.journaldev.staticmaps.MainActivity"
```

```
tools:showIn="@layout/activity_main">

<com.pkmmte.view.CircularImageVi
ew android:layout_width="250dp"
android:layout_height="250dp"
android:clickable="true"
android:id="@+id/img_map_rout
e" android:layout_gravity="center"
android:layout_centerVertical="tr
ue"
android:layout_centerHorizontal=
"true" />
```

```
</RelativeLayout>
```

The **MainActivity.java** looks like below.

```
package
com.journaldev.staticmaps;
import
android.graphics.Bitmap;
import
android.graphics.BitmapFactory;
import android.os.AsyncTask;
import android.os.Bundle;
import
android.support.design.widget.FloatingActionButton; import android.support.design.widget.Snackbar;
import
android.support.v7.app.AppCompatActivity; import
android.support.v7.widget.Toolbar;
import
android.util.Log;
import
```

```
android.view.View;
import
android.view.Menu;
import android.view.MenuItem;
import
com.pkmmte.view.CircularImageView;
import org.apache.http.HttpResponse;
import
org.apache.http.client.HttpClient;
import
org.apache.http.client.methods.Http
Get;
import
org.apache.http.impl.client.DefaultHttpCli
ent; import java.io.InputStream;
import
java.io.UnsupportedEncodingException;
import java.net.URLEncoder;

public class MainActivity extends
AppCompatActivity { private String
STATIC_MAP_API_ENDPOINT =
"http://maps.googleapis.com/maps/api/staticmap?size=230x200
&path=";
```

```
String path;
CircularImageView iv;
@Override
protected void onCreate(Bundle savedInstanceState)
{ super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
Toolbar toolbar = (Toolbar) findViewById(R.id.toolbar);
setSupportActionBar(toolbar);
iv=(CircularImageView)findViewById(R.id.img_map_route);
FloatingActionButton fab = (FloatingActionButton)
findViewById(R.id.fab);
fab.setOnClickListener(new
View.OnClickListener() { @Override
public void onClick(View view) {
    Snackbar.make(view, "Replace with your own action",
Snackbar.LENGTH_LONG)
.setAction("Action", null).show();
}
});
try {
    String marker_me = "color:orange|label:1|Brisbane";
    String marker_dest = "color:orange|label:7|San
Francisco,USA"; marker_me =
URLEncoder.encode(marker_me, "UTF-8");
marker_dest = URLEncoder.encode(marker_dest,
"UTF-8");
path =
"weight:3|color:blue|geodesic:true|Brisbane,Australia|Hong
Kong|Moscow,Russia|London,UK|Reyjavik,Iceland|New
York,USA|San Francisco,USA";
path = URLEncoder.encode(path, "UTF-8");
STATIC_MAP_API_ENDPOINT =
STATIC_MAP_API_ENDPOINT
+ path + "&markers=" + marker_me + "&markers=" +
marker_dest; Log.d("STATICMAPS",
STATIC_MAP_API_ENDPOINT);
AsyncTask<Void, Void, Bitmap> setImageFromUrl = new
```

```
AsyncTask<Void, Void, Bitmap>(){  
    @Override  
    protected Bitmap doInBackground(Void...  
        params) { Bitmap bmp = null;  
        HttpClient httpclient = new  
        DefaultHttpClient(); HttpGet request =  
        new  
        HttpGet(STATIC_MAP_API_ENDPOINT);  
        InputStream in =  
        null; try {
```

```
    HttpResponse response =
        httpClient.execute(request); in =
        response.getEntity().getContent();
        bmp =
        BitmapFactory.decodeStream(in);
        in.close();
    } catch (Exception e) {
        e.printStackTrace();
    }
    return bmp;
}
protected void
    onPostExecute(Bitmap bmp) { if
        (bmp!=null) {
            iv.setImageBitmap(bmp);
        }
    }
};
setImageFromUrl.execute();
} catch (UnsupportedEncodingException e) {
    e.printStackTrace();
}
}
@Override
public boolean onCreateOptionsMenu(Menu menu) {
    // Inflate the menu; this adds items to the action bar if it is
    // present. getMenuInflater().inflate(R.menu.menu_main,
    menu);
    return true;
}
@Override
public boolean onOptionsItemSelected(MenuItem item) {
    // Handle action bar item clicks here. The action bar will
    // automatically handle clicks on the Home/Up button, so
    long
    // as you specify a parent activity in
    AndroidManifest.xml. int id = item.getItemId();
    //noinspection
    SimplifiableIfStatement if (id
```

```
    == R.id.action_settings) {  
        return true;  
    }  
    return super.onOptionsItemSelected(item);  
}  
}
```



30.

Android Google Maps Current Location, Night Mode

Features Android Google Maps Current Location

Before we start implementing some cool android google maps features in our application, add the Google Maps v2 API key value in the `meta-data` tag in the `AndroidManifest.xml` file.

Create a new project in Android Studio and select the template as Google Maps Activity.

Note: Google Play Services dependency will be added by default for this template.

Implement Google Play Location Services in your `MapsActivity.java` class as shown below.

```
public class MapsActivity extends FragmentActivity implements  
OnMapReadyCallback, GoogleApiClient.ConnectionCallbacks,  
        GoogleApiClient.OnConnectionFailedListener,  
        LocationListener { private GoogleMap mMap;  
        Location mLocation;  
        GoogleApiClient  
        mGoogleApiClient;  
        private static final int  
        PLAY_SERVICES_RESOLUTION_REQUEST = 9000;  
        private LocationRequest mLocationRequest;  
        private long UPDATE_INTERVAL = 15000; /*  
        15 secs */ private long FASTEST_INTERVAL =  
        5000; /* 5 secs */ private ArrayList  
        permissionsToRequest;  
        private ArrayList permissionsRejected = new  
        ArrayList(); private ArrayList permissions = new  
        ArrayList();  
        private final static int ALL_PERMISSIONS_RESULT = 101;
```

`@Override`

```
protected void onCreate(Bundle savedInstanceState)  
{ super.onCreate(savedInstanceState);  
    setContentView(R.layout.activity_maps);  
    // Obtain the SupportMapFragment and get notified when
```

the map is ready to be used.

```
SupportMapFragment mapFragment =  
(SupportMapFragment) getSupportFragmentManager()  
    .findFragmentById(R.id.map);  
mapFragment.getMapAsync(this);  
  
permissions.add(ACCESS_FINE_LOCATION);  
permissions.add(ACCESS_COARSE_LOCATION);
```

```
permissionsToRequest =
findUnAskedPermissions(permissions);
//get the permissions we have asked for before but are not
granted..
//we will store this in a global list to access later.

if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.M)
{
    if (permissionsToRequest.size() > 0)
        requestPermissions(permissionsToRequest.toArray(ne
        w
String[permissionsToRequest.size()]),
ALL_PERMISSIONS_RESULT);
}
mGoogleApiClient = new GoogleApiClient.Builder(this)
    .addApi(LocationServices.API)
    .addConnectionCallbacks(this)
    .addOnConnectionFailedListener(this)
    .build();
connectClient();
}

/**
 * Manipulates the map once available.
 * This callback is triggered when the map is ready to be used.
 * This is where we can add markers or lines, add
listeners or move the camera. In this case,
 * we just add a marker near Sydney, Australia.
 * If Google Play services is not installed on the device,
the user will be prompted to install
 * it inside the SupportMapFragment. This method will
only be triggered once the user has
 * installed Google Play services and returned to the app.
*/
@Override
public void onMapReady(GoogleMap
    googleMap) { mMap = googleMap;
if (ActivityCompat.checkSelfPermission(this,
```

```
        android.Manifest.permission.ACCESS_FINE_LOCATION) !=  
        PackageManager.PERMISSION_GRANTED &&  
        ActivityCompat.checkSelfPermission(this,  
        android.Manifest.permission.ACCESS_COARSE_LOCATION) !=  
        PackageManager.PERMISSION_GRANTED) {  
            // TODO: Consider calling  
            // ActivityCompat#requestPermissions  
            // here to request the missing permissions, and then  
            overriding
```

```
// public void onRequestPermissionsResult(int
requestCode, String[] permissions,
//                                int[] grantResults)
// to handle the case where the user grants the permission.
See the documentation
    // for ActivityCompat#requestPermissions for
    // more details. return;
}
mMap.setMyLocationEnabled(true);
}
public void connectClient()
{
    mGoogleApiClient = new GoogleApiClient.Builder(this)
        .addApi(LocationServices.API)
        .addConnectionCallbacks(this)
        .addOnConnectionFailedListener(this)
        .build();
}
private ArrayList findUnAskedPermissions(ArrayList
wanted) { ArrayList result = new ArrayList();

for (String perm :
    wanted) { if
        (!hasPermission(per
m)) {
            result.add(perm);
        }
    }
    return result;
}
@Override
protected void onStart() {
    super.onStart();
    if (mGoogleApiClient != null) {
        mGoogleApiClient.connect();
    }
}
@Override
protected void onResume() {
```

```
super.onResume();
if (!checkPlayServices()) {
    Toast.makeText(getApplicationContext(),"Please install
google play services",Toast.LENGTH_LONG).show();
```

```
        }
    }
    @Override
    public void onConnected(@Nullable Bundle bundle) {

        if (ActivityCompat.checkSelfPermission(this,
                android.Manifest.permission.ACCESS_FINE_LOCATION) != PackageManager.PERMISSION_GRANTED &&
            ActivityCompat.checkSelfPermission(this,
                android.Manifest.permission.ACCESS_COARSE_LOCATION) != PackageManager.PERMISSION_GRANTED) {
            // TODO: Consider calling
            // ActivityCompat#requestPermissions
            // here to request the missing permissions, and then
            // overriding
            // public void onRequestPermissionsResult(int
            requestCode, String[] permissions,
            // int[] grantResults)
            // to handle the case where the user grants the permission.
            See the documentation
            // for ActivityCompat#requestPermissions for
            // more details. return;
        }
        mLocation =
        LocationServices.FusedLocationApi.getLastLocation(mGoogleApiClient);
        startLocationUpdates();
    }
    @Override
    public void onConnectionSuspended(int i) {
    }
    @Override
    public void onConnectionFailed(@NonNull ConnectionResult connectionResult) {
    }
    @Override
    public void onLocationChanged(Location location)
    }
```

```
private boolean checkPlayServices() {  
    GoogleApiAvailability apiAvailability  
    =  
    GoogleApiAvailability.getInstance();  
    int resultCode =  
    apiAvailability.isGooglePlayServicesAvailable(this);
```

```
        if (resultCode != ConnectionResult.SUCCESS) {
            if (apiAvailability.isUserResolvableError(resultCode)) {
                apiAvailability.getErrorDialog(this, resultCode,
                    PLAY_SERVICES_RESOLUTION_REQUEST)
                    .show();
            } else
                finish();
        }
        return false;
    }
    return true;
}
protected void startLocationUpdates()
{
    mLocationRequest = new
    LocationRequest();

    mLocationRequest.setPriority(LocationRequest.PRIORITY_HI
    GH_ACCURA_CY);
    mLocationRequest.setInterval(UPDATE_INTERV
    AL);
    mLocationRequest.setFastestInterval(FASTEST_I
    NTERVAL);
    if
        (ActivityCompat.checkSelfPermission(this,
        android.Manifest.permission.ACCESS_FINE_LOCATION) !=
        PackageManager.PERMISSION_GRANTED &&
        ActivityCompat.checkSelfPermission(this,
        android.Manifest.permission.ACCESS_COARSE_LOCATION) !=
        PackageManager.PERMISSION_GRANTED) {
        Toast.makeText(getApplicationContext(), "Enable
        Permissions", Toast.LENGTH_LONG).show();
    }

    LocationServices.FusedLocationApi.requestLocationUpdates(
        mGoogleApiClient, mLocationRequest, this);
}
private boolean hasPermission(String
    permission) { if (canMakeSmores()) {
        if (Build.VERSION.SDK_INT >=
```

```
Build.VERSION_CODES.M) {  
    return (checkSelfPermission(permission) ==  
PackageManager.PERMISSION_GRANTED);  
}  
}  
return true;  
}
```

```
private boolean
    canMakeSmores() { return
        (Build.VERSION.SDK_INT >
        Build.VERSION_CODES.LOLLIPOP_MR1);
    }
    @TargetApi(Build.VERSION_CODES.
M) @Override
    public void onRequestPermissionsResult(int
requestCode, String[] permissions, int[] grantResults) {

    switch (requestCode) {
        case ALL_PERMISSIONS_RESULT:
            for (String perms :
                permissionsToRequest) { if
                    (!hasPermission(perms)) {
                        permissionsRejected.add(perms);
                    }
                }
            if (permissionsRejected.size() > 0) {
                if (Build.VERSION.SDK_INT >=
                    Build.VERSION_CODES.M) {
                    if
(shouldShowRequestPermissionRationale(permissionsRejected.g
et(0))) {
                        showMessageOKCancel("These permissions are
mandatory for the application. Please allow access.",
                        new
                            DialogInterface.OnClickListener()
                        { @Override
                            public void onClick(DialogInterface dialog, int
which)
{
                        if (Build.VERSION.SDK_INT >=
                    Build.VERSION_CODES.M) {

requestPermissions(permissionsRejected.toArray(new
String[permissionsRejected.size()]),
ALL_PERMISSIONS_RESULT);

```

```
        }  
    } );  
    return;  
}  
}  
break;  
}  
}
```

```
private void showMessageOKCancel(String message,
DialogInterface.OnClickListener okListener) {
    new AlertDialog.Builder(MapsActivity.this)
        .setMessage(message)
        .setPositiveButton("OK", okListener)
        .setNegativeButton("Cancel", null)
        .create()
        .show();
}

@Override
protected void onDestroy() {
    super.onDestroy();
    stopLocationUpdates();
}
public void stopLocationUpdates()
{
    if
        (mGoogleApiClient.isConnected(
    )) {
        LocationServices.FusedLocation
        Api
            .removeLocationUpdates(mGoogleApiClient, this);
        mGoogleApiClient.disconnect();
    }
}
}
```

In the above code mMap.setMyLocationEnabled(true); is used to show the user's current location.

The below image is the output of the application when the above code is run.



The blue dot is our current location. We need to focus the camera on the current location in the map to prevent zooming and scrolling manually.

Change the `onConnected()` method as;

```
@Override  
public void onConnected(@Nullable Bundle bundle) {  
  
    if (ActivityCompat.checkSelfPermission(this,  
            android.Manifest.permission.ACCESS_FINE_LOCATION) !=  
            PackageManager.PERMISSION_GRANTED &&  
            ActivityCompat.checkSelfPermission(this,  
            android.Manifest.permission.ACCESS_COARSE_LOCATION) !=  
            PackageManager.PERMISSION_GRANTED) {  
        // TODO: Consider calling  
        // ActivityCompat#requestPermissions  
        // here to request the missing permissions, and then  
        // overriding  
        // public void onRequestPermissionsResult(int
```

```
requestCode, String[] permissions,  
        // int[] grantResults)  
        // to handle the case where the user grants the permission.
```

See the documentation

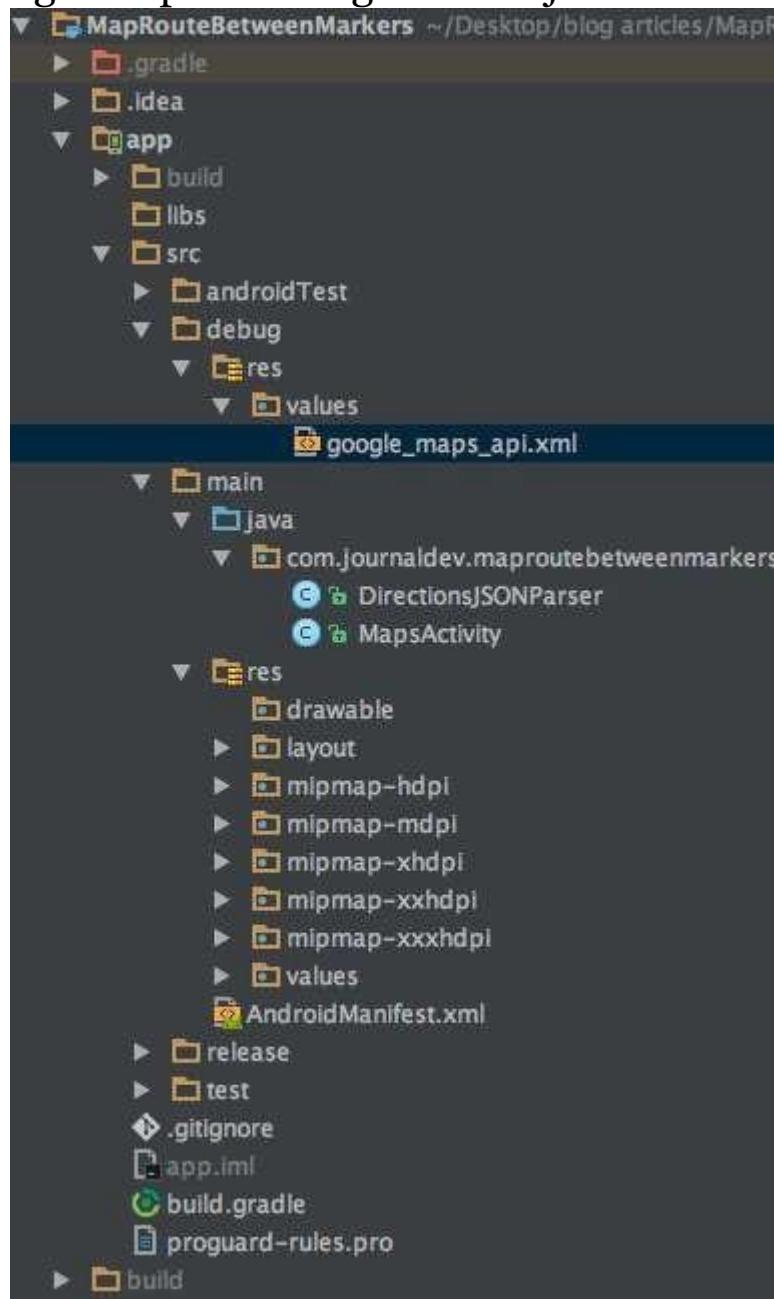
```
// for ActivityCompat#requestPermissions for  
more details. return;
```

```
    }  
    mLocation =  
    LocationServices.FusedLocationApi.getLastLocation(mGoogleApiClient);  
  
    LatLng latLng = new LatLng(mLocation.getLatitude(),  
        mLocation.getLongitude());  
    CameraUpdate cameraUpdate =  
    CameraUpdateFactory.newLatLngZoom(latLng, 12);  
    mMap.animateCamera(cameraUpdate);  
  
    startLocationUpdates();  
}
```

In the above code 12 is the zoom level set. We can set the minimum and maximum zoom level using `mMap.setMinZoomPreference(float v);` and `mMap.setMaxZoomPreference(float v);`.

32.

## Android Google Maps Drawing Path Project Structure



The **DirectionsJSONParser.java** file is the one that parses the locations and returns the route. **decodePoly()** method is then invoked to get the polyline data that's later drawn on the map.

Android Google Maps Drawing Route Code  
The **MainActivity.java** code is given below.

```
public class MapsActivity extends FragmentActivity implements  
OnMapReadyCallback {
```

```
private GoogleMap mMap;
ArrayList markerPoints= new ArrayList();

@Override
protected void onCreate(Bundle savedInstanceState)
{ super.onCreate(savedInstanceState);
setContentView(R.layout.activity_maps);
// Obtain the SupportMapFragment and get notified when
the map is ready to be used.
SupportMapFragment mapFragment =
(SupportMapFragment) getSupportFragmentManager()
.findFragmentById(R.id.map);
mapFragment.getMapAsync(this);
}

@Override
public void onMapReady(GoogleMap
googleMap) { mMap = googleMap;
LatLng sydney = new LatLng(-34, 151);
//mMap.addMarker(new
MarkerOptions().position(sydney).title("Marker in Sydney"));
mMap.moveCamera(CameraUpdateFactory.newLatLngZoom(
sydney,
16));
mMap.setOnMapClickListener(new
GoogleMap.OnMapClickListener() { @Override
public void onMapClick(LatLng latLng) {

if (markerPoints.size() >
1) {
markerPoints.clear();
mMap.clear();
}
// Adding new item to the ArrayList
markerPoints.add(latLng);
// Creating MarkerOptions
MarkerOptions options = new MarkerOptions();
```

```
// Setting the position of the marker
options.position(latLng);
if (markerPoints.size() == 1) {
```

```
options.icon(BitmapDescriptorFactory.defaultMarker(BitmapDescriptorFactory.HUE_GREEN));
} else if (markerPoints.size() == 2) {

options.icon(BitmapDescriptorFactory.defaultMarker(BitmapDescriptorFactory.HUE_RED));
}
// Add new marker to the Google Map Android API V2
mMap.addMarker(options);
// Checks, whether start and end locations
are captured if (markerPoints.size() >= 2) {
    LatLng origin = (LatLng)
markerPoints.get(0); LatLng dest =
(LatLng) markerPoints.get(1);
// Getting URL to the Google
Directions API String url =
getDirectionsUrl(origin, dest);
DownloadTask downloadTask = new DownloadTask();
// Start downloading json data from Google Directions
API downloadTask.execute(url);
}
}
});
}

private class DownloadTask extends AsyncTask {

@Override
protected String
doInBackground(String... url) {
String data = "";
try {
    data = downloadUrl(url[0]);
} catch (Exception e) {
    Log.d("Background Task",
e.toString());
}
}
}
```

```
        }
        return data;
    }
    @Override
    protected void onPostExecute(String result) {
        super.onPostExecute(result);
        ParserTask parserTask = new ParserTask();
        parserTask.execute(result);
    }
}
```

```
}

private class ParserTask extends AsyncTask<String, Integer,
List<List<HashMap>>> {
    // Parsing the data in non-ui
    thread @Override
    protected List<List<HashMap>> doInBackground(String...
        jsonData) { JSONObject jObject;
        List<List<HashMap>> routes
        = null; try {
        jObject = new JSONObject(jsonData[0]);
        DirectionsJSONParser parser = new
        DirectionsJSONParser(); routes =
        parser.parse(jObject);
    } catch (Exception e) {
        e.printStackTrace();
    }
    return routes;
}

@Override
protected void onPostExecute(List<List<HashMap>>
    result) { ArrayList points = null;
    PolylineOptions lineOptions = null;
    MarkerOptions markerOptions = new
    MarkerOptions(); for (int i = 0; i <
    result.size(); i++) {
    points = new ArrayList();
    lineOptions = new
    PolylineOptions();
    List<HashMap> path =
    result.get(i); for (int j = 0; j <
    path.size(); j++) {
        HashMap point = path.get(j);
        double lat =
        Double.parseDouble(point.get("lat"));
        double lng =
        Double.parseDouble(point.get("lng"));
```

```
LatLng position = new LatLng(lat, lng);
    points.add(position);
}
lineOptions.addAll(points);
lineOptions.width(12);
lineOptions.color(Color.RED);
lineOptions.geodesic(true);
}
// Drawing polyline in the Google Map for the i-th route
```

```
        mMap.addPolyline(lineOptions);
    }
}

private String getDirectionsUrl(LatLng origin, LatLng dest) {
    // Origin of route
    String str_origin = "origin=" + origin.latitude + "," +
        origin.longitude;
    // Destination of route
    String str_dest = "destination=" + dest.latitude + "," +
        dest.longitude;
    // Sensor enabled
    String sensor =
        "sensor=false"; String
    mode = "mode=driving";
    // Building the parameters to the web service
    String parameters = str_origin + "&" + str_dest + "&" +
        sensor + "&" + mode;
    // Output format
    String output =
        "json";
    // Building the url to the web service
    String url =
        "https://maps.googleapis.com/maps/api/directions/" + output
        + "?" + parameters;
    return url;
}
private String downloadUrl(String strUrl) throws
    IOException { String data = "";
    InputStream iStream = null;
    HttpURLConnection
    urlConnection = null; try {
        URL url = new URL(strUrl);
        urlConnection = (HttpURLConnection)
        url.openConnection(); urlConnection.connect();
        iStream = urlConnection.getInputStream();
        BufferedReader br = new
        BufferedReader(new
```

```
InputStreamReader(iStream));
    StringBuffer sb = new StringBuffer();

    String line = "";
    while ((line = br.readLine()) != null) { sb.append(line);
}
data = sb.toString();
```

```
        br.close();

    } catch (Exception e) {
        Log.d("Exception",
        e.toString());
    } finally {
        iStream.close()
        ;
        urlConnection.disconnect();
    }
    return data;
}
}
```

We've called an onMapClickListener on the google map object. It's used to set a marker on the clicked location and store that location in an ArrayList. The ArrayList is used to store the source and destination markers only.

The getDirectionsUrl() is called the Directions API URL with the output and parameters as shown below.

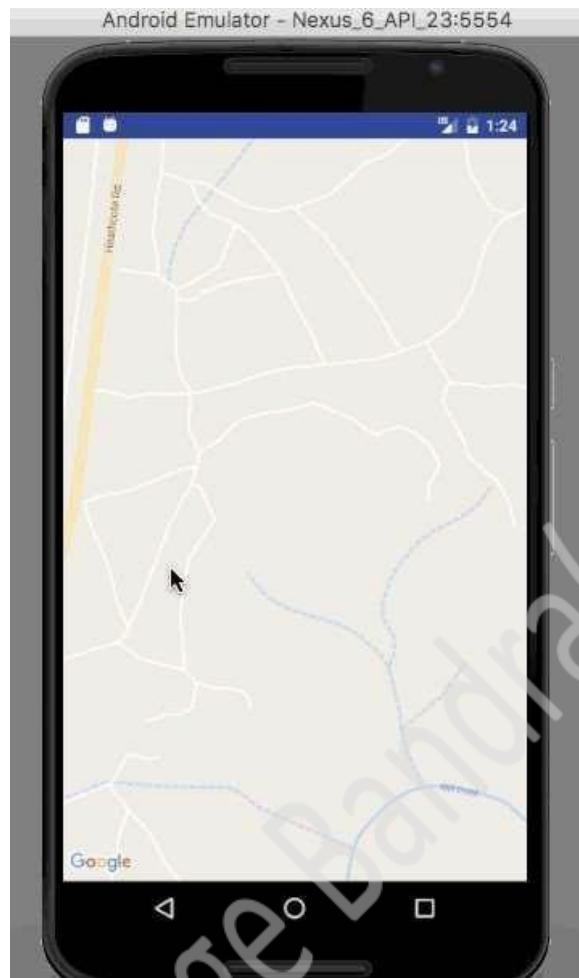
```
"https://maps.googleapis.com/maps/api/directions/" + output
+ "?" + parameters;
```

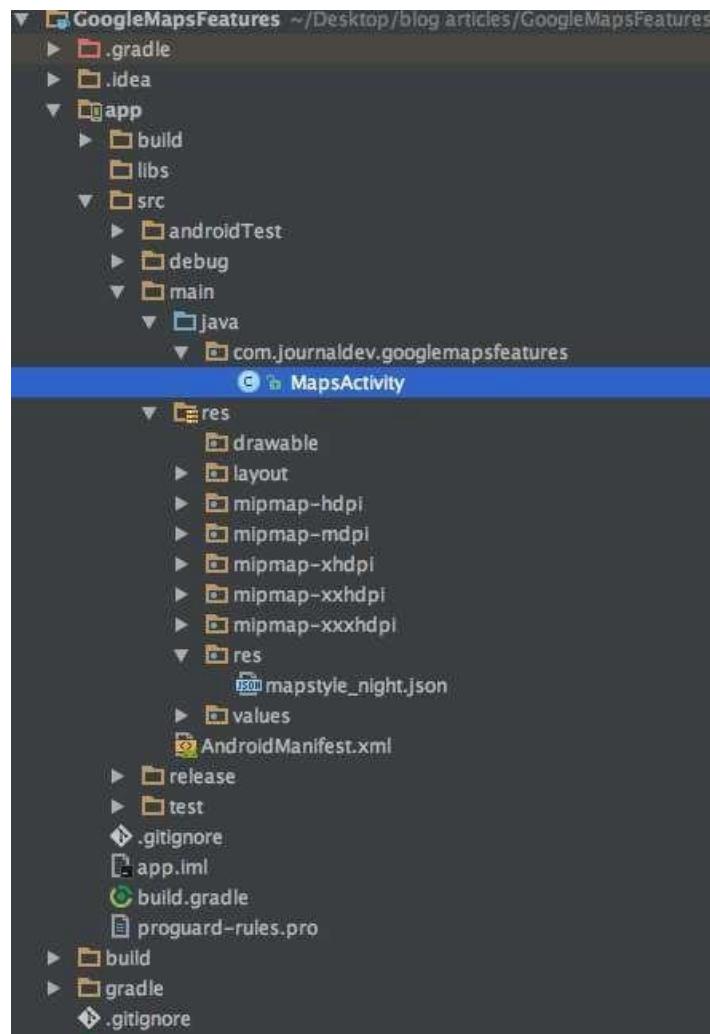
The output variable holds a "json" string and the parameter string is created as: String parameters = str\_origin + "&" + str\_dest + "&" + sensor + "&" + mode;

We've set the mode=driving in the current application. The other modes of transport are:

- driving (default)
- walking
- bicycling
- transit

The output of the application is given below:





To enable night mode in the apps. We need to set the map style in the onMapReady method as;

```
mMap.setMapStyle(MapStyleOptions.loadRawResourceStyle(this, R.raw.mapstyle_night));
```

The mapstyle\_night.json code is shown below.

```
[  
{  
  "featureType": "all",  
  "elementType":  
  "geometry", "stylers": [  
    {
```

```
        "color": "#242f3e"  
    },  
},
```

```
{  
  "featureType": "all",  
  "elementType":  
  "labels.text.stroke",  
  "stylers": [  
    {  
      "lightness": -80  
    }  
  ]  
},  
{  
  "featureType":  
  "administrative",  
  "elementType":  
  "labels.text.fill", "stylers":  
  [  
    {  
      "color": "#746855"  
    }  
  ]  
},  
{  
  "featureType":  
  "administrative.locality",  
  "elementType": "labels.text.fill",  
  "stylers": [  
    {  
      "color": "#d59563"  
    }  
  ]  
},  
{  
  "featureType": "poi",  
  "elementType":  
  "labels.text.fill", "stylers": [  
    {  
      "color": "#d59563"  
    }  
  ]  
}
```

```
},  
{  
  "featureType": "poi.park",  
  "elementType": "geometry",  
  "stylers": [  
    {
```

```
        "color": "#263c3f"
    }
]
},
{
  "featureType": "poi.park",
  "elementType":
  "labels.text.fill", "stylers": [
    {
      "color": "#6b9a76"
    }
  ]
},
{
  "featureType": "road",
  "elementType":
  "geometry.fill", "stylers": [
    {
      "color": "#2b3544"
    }
  ]
},
{
  "featureType": "road",
  "elementType":
  "labels.text.fill", "stylers": [
    {
      "color": "#9ca5b3"
    }
  ]
},
{
  "featureType":
  "road.arterial",
  "elementType":
  "geometry.fill", "stylers": [
    {
      "color": "#38414e"
    }
  ]
}
```

]  
},  
{

```
"featureType":  
"road.arterial",  
"elementType":  
"geometry.stroke", "stylers":  
[  
  {  
    "color": "#212a37"  
  }  
]  
},  
{  
  "featureType":  
  "road.highway",  
  "elementType":  
  "geometry.fill", "stylers":  
  [  
    {  
      "color": "#746855"  
    }  
  ]  
},  
{  
  "featureType":  
  "road.highway",  
  "elementType":  
  "geometry.stroke", "stylers":  
  [  
    {  
      "color": "#1f2835"  
    }  
  ]  
},  
{  
  "featureType":  
  "road.highway",  
  "elementType":  
  "labels.text.fill", "stylers": [  
    {
```

```
        "color": "#f3d19c"
    }
],
},
{
  "featureType": "road.local",
  "elementType":
  "geometry.fill", "stylers": [
  {
    "color": "#38414e"
```

```
        }
    ],
},
{
  "featureType": "road.local",
  "elementType": "geometry.stroke", "stylers": [
    [
      {
        "color": "#212a37"
      }
    ]
  ],
},
{
  "featureType": "transit",
  "elementType": "geometry",
  "stylers": [
    [
      {
        "color": "#2f3948"
      }
    ]
  ],
},
{
  "featureType": "transit.station",
  "elementType": "labels.text.fill", "stylers": [
    [
      {
        "color": "#d59563"
      }
    ]
  ],
},
{
  "featureType": "water",
  "elementType": "geometry",
  "stylers": [
    [
      {
        "color": "#17263c"
      }
    ]
  ]
}
```

```
],  
},  
{"featureType": "water",
```

```
"elementType":  
  "labels.text.fill", "stylers": [  
    {  
      "color": "#515c6d"  
    }  
  ]  
},  
{  
  "featureType": "water",  
  "elementType":  
  "labels.text.stroke",  
  "stylers": [  
    {  
      "lightness": -20  
    }  
  ]  
}  
]
```

Enable traffics in the map by the following code:

```
mMap.setTrafficEnabled(true);
```



`mMap.setLatLngBoundsForCameraTarget();` is used to

constrain the lat/lng center bounds of the focal point of the map (the camera target) so that users can only scroll and pan within these bounds.

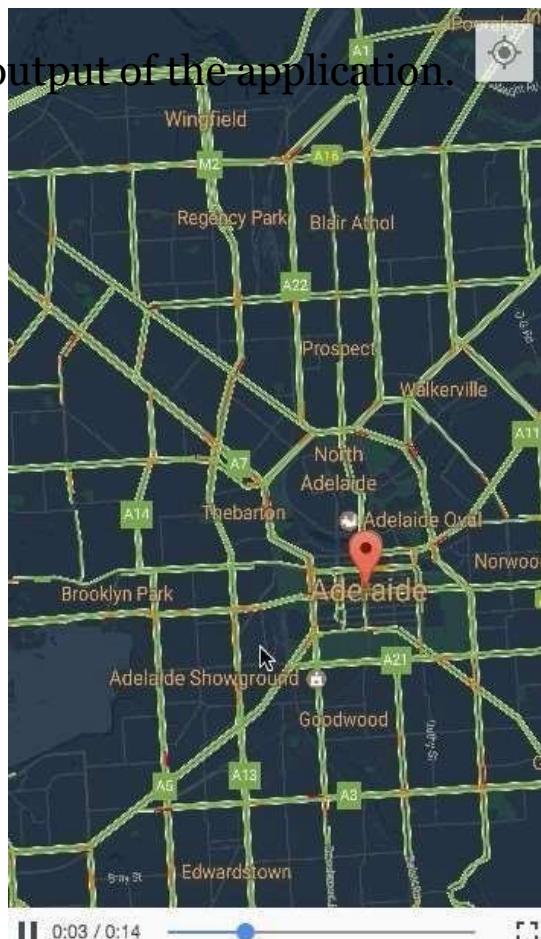
To implement the above. Let's take LatLngBounds for a part of city Adelaide for example.

Following is a snippet that's put inside onMapReady method

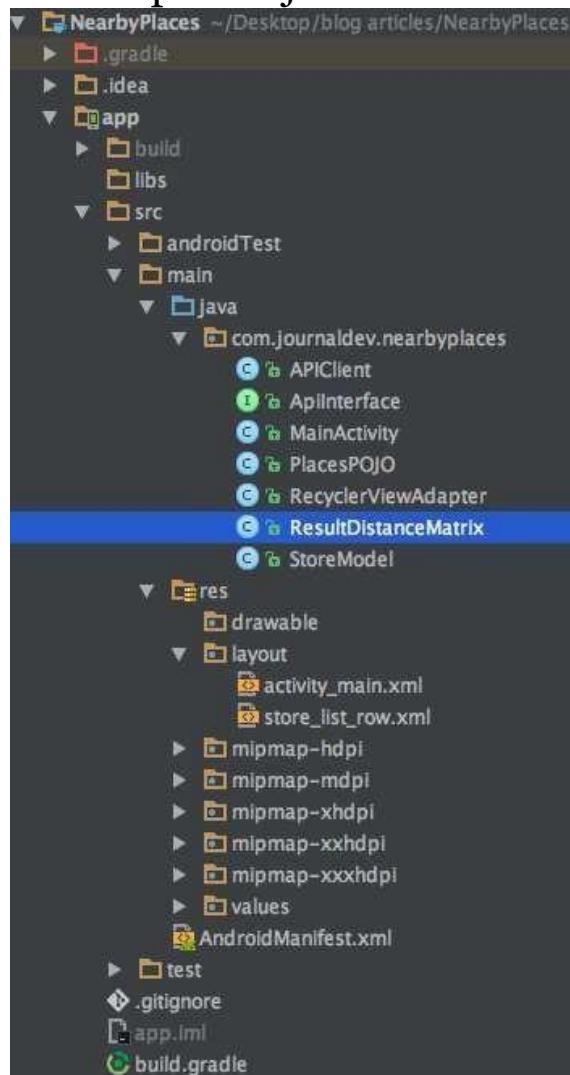
```
final LatLngBounds ADELAIDE = new LatLngBounds(  
    new LatLng(-35.0, 138.58), new LatLng(-34.9, 138.61));  
final CameraPosition ADELAIDE_CAMERA = new  
CameraPosition.Builder()  
    .target(new LatLng(-34.92873,  
138.59995)).zoom(20).bearing(0).tilt(0).build();  
mMap.setLatLngBoundsForCameraTarget(ADELAIDE);  
mMap.addMarker(new MarkerOptions()  
    .position(new LatLng(-34.92873, 138.59995))  
    .title("My Marker"));
```

```
mMap.animateCamera(CameraUpdateFactory.newCameraPosition  
    (ADELAIDE  
    _CAMERA));
```

Following is the output of the application.



## 34. Google Places API Example Project Structure



The Project consists of a single Activity. An adapter class for the RecyclerView. A Model class that holds the data for each RecyclerView row. Two POJO classes for converting the JSON responses to [Gson](#) from the Google places API and Distance Matrix API. APIClient and ApiInterface for using [Retrofit](#) and the endpoints.

### Google Places API Example Code

Add the following dependencies inside the `build.gradle` file

```
compile 'com.google.android.gms:play-services-location:10.2.1' compile
'com.google.android.gms:play-services-places:10.2.1' compile
'com.google.code.gson:gson:2.7' compile
```

```
'com.squareup.retrofit2:retrofit:2.1.0'  
compile  
'com.squareup.retrofit2:converter-  
gson:2.1.0'  
compile 'com.squareup.okhttp3:logging-interceptor:3.4.1'
```

```
compile  
'com.squareup.okhttp3:okhttp:3.4.1'  
compile  
'io.nlopez.smartlocation:library:3.3.1'  
compile  
'com.android.support:cardview-  
v7:25.3.0'  
compile 'com.android.support:recyclerview-v7:25.3.0'  
compile 'io.nlopez.smartlocation:library:3.3.1' is a  
LocationTracking third party library that reduces the  
boilerplate code.  
The APIClient.java code is given below:
```

```
package com.journaldev.nearbyplaces;  
  
import  
java.util.concurrent.TimeUnit;  
import okhttp3.OkHttpClient;  
import  
okhttp3.logging.HttpLoggingInterceptor;  
import retrofit2.Retrofit;  
import retrofit2.converter.gson.GsonConverterFactory;  
  
public class APIClient {  
    private static Retrofit retrofit = null;  
    public static final String GOOGLE_PLACE_API_KEY =  
"ADD_YOUR_API_KEY_HERE";  
    public static String base_url =  
"https://maps.googleapis.com/maps/api/"; public static  
Retrofit getClient() {  
    HttpLoggingInterceptor interceptor = new  
HttpLoggingInterceptor();  
interceptor.setLevel(HttpLoggingInterceptor.Level.BO  
DY); OkHttpClient client = new  
OkHttpClient.Builder().readTimeout(30,  
TimeUnit.SECONDS).writeTimeout(30,  
TimeUnit.SECONDS).addInterceptor(interceptor).build();
```

```
retrofit = null;
retrofit = new Retrofit.Builder()
    .baseUrl(base_url)
    .addConverterFactory(GsonConverterFactory.create())
    .client(client)
    .build()
; return
retrofit;
}
```

The ApiInterface.java code is given below package

```
com.journaldev.nearbyplaces;
import retrofit2.Call;
import
retrofit2.http.GET;
import
retrofit2.http.Query;
```

```

public interface ApiInterface {
    @GET("place/nearbysearch/json?")
    Call<PlacesPOJO.Root> doPlaces(@Query(value = "type",
        encoded = true) String type, @Query(value = "location",
        encoded = true) String location, @Query(value = "name",
        encoded = true) String name, @Query(value = "opennow",
        encoded = true) boolean opennow, @Query(value = "rankby",
        encoded = true) String rankby, @Query(value = "key", encoded
        = true) String key);
    @GET("distancematrix/json") // origins/destinations:
        LatLng as string Call<ResultDistanceMatrix>
        getDistance(@Query("key") String key,
        @Query("origins") String origins, @Query("destinations") String
        destinations);
}

```

PlacesPOJO.java is the file which holds the response from Places API. Its code is given below

```

package com.journaldev.nearbyplaces;
import
com.google.gson.annotations.SerializedName;
me; import java.io.Serializable;
import
java.util.ArrayList;
import java.util.List;

public class PlacesPOJO {

    public class Root implements Serializable {
        @SerializedName("results")
        public List<CustomA> customA = new ArrayList<>();
        @SerializedName("status")
        public String status;
    }

    public class CustomA implements Serializable {

```

```
@SerializedName("geometry")
public Geometry
geometry;
@SerializedName("vicin
ity") public String
vicinity;
@SerializedName("nam
e") public String name;

}
```

```
public class Geometry implements Serializable{
    @SerializedName("location")
    public LocationA locationA;
}

public class LocationA implements Serializable {
    @SerializedName("lat")
    public String lat;
    @SerializedName("lng")
    public String lng;
}
```

ResultDistanceMatrix.java class holds the response from Distance Matrix API. It's code is given below:

```
package com.journaldev.nearbyplaces;
import
com.google.gson.annotations.SerializedNa
me; import java.util.List;
public class
ResultDistanceMatrix {
    @SerializedName("status"
) public String status;
    @SerializedName("rows")
    public List rows;
    public           class
InfoDistanceMatrix {
        @SerializedName("elem
ents") public     List
elements;
    public class
DistanceElement {
        @SerializedName("statu
s") public String status;
        @SerializedName("durat
ion") public ValueItem
duration;
```

```
    @SerializedName("dista  
nce") public ValueItem  
distance;  
}  
public class ValueItem {  
    @SerializedName("value  
") public long value;  
    @SerializedName("text"  
 ) public String text;  
}  
}
```

}

The activity\_main.xml file is given below

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#212121"
    tools:context="com.journaldev.nearbyplaces.MainActivity">

    <EditText
        android:id="@+id/editText"
        android:layout_width="match_parent"
        android:textColor="@android:color/white"
        android:textColorHint="@android:color/white" android:text="restaurant
mcdonalds" android:hint="type
name"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_toLeftOf="@+id/button"
        android:layout_toStartOf="@+id/button" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />
```

```
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true" android:text="Search" />

<android.support.v7.widget.RecyclerView
    android:id="@+id/recyclerView"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_below="@+id/editText"
    android:scrollbars="vertical" />

</RelativeLayout>
```

The `MainActivity.java` class code is given below.

```
package  
com.journaldev.nearbyplaces;  
import  
android.annotation.TargetApi;  
import  
android.content.DialogInterface;  
import  
android.content.pm.PackageManager  
r; import android.location.Location;  
import android.os.Build;  
import android.support.v7.app.AlertDialog;  
import  
android.support.v7.app.AppCompatActivity; import android.os.Bundle;  
import  
android.support.v7.widget.LinearLayoutManager  
r; import  
android.support.v7.widget.RecyclerView;  
import  
android.view.View;  
import  
android.widget.Button;  
import  
android.widget.EditText;  
import  
android.widget.Toast;  
import  
com.google.android.gms.maps.model.LatLng; import java.util.ArrayList;  
import java.util.List;  
import  
io.nlopez.smartlocation.OnLocationUpdatedListener; import io.nlopez.smartlocation.SmartLocation;  
import retrofit2.Call;  
import  
retrofit2.Callback;
```

```
import
retrofit2.Response;
import static
android.Manifest.permission.ACCESS_COARSE_LOCATION;
import static
android.Manifest.permission.ACCESS_FINE_LOCATION;

public class MainActivity extends
AppCompatActivity { private
ArrayList<String> permissionsToRequest;
private ArrayList<String> permissionsRejected = new
ArrayList<>(); private ArrayList<String> permissions =
new ArrayList<>();
private final static int
ALL_PERMISSIONS_RESULT = 101;
List<StoreModel> storeModels;
ApiInterface
apiService; String
latLngString; LatLng
latLng;
RecyclerView recyclerView;
EditText editText;
Button button;
List<PlacesPOJO.CustomA>
results;
```

```
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    permissions.add(ACCESS_FINE_LOCATION);
    permissions.add(ACCESS_COARSE_LOCATION);
    permissionsToRequest =
        findUnAskedPermissions(permissions); if
        (Build.VERSION.SDK_INT >=
        Build.VERSION_CODES.M) {
            if (permissionsToRequest.size() > 0)
                requestPermissions(permissionsToRequest.toArray(ne
                w
String[permissionsToRequest.size()]),
        ALL_PERMISSIONS_RESULT); else {
            fetchLocation();
        }
    } else {
        fetchLocation();
    }
    apiService =
        APIClient.getClient().create(ApiInterface.class);
    recyclerView = (RecyclerView)
        findViewById(R.id.recycler_view);
    recyclerView.setNestedScrollingEnabled(false);
    recyclerView.setHasFixedSize(true);
    LinearLayoutManager layoutManager = new
    LinearLayoutManager(this);
    recyclerView.setLayoutManager(layoutManager);
    editText = (EditText)
        findViewById(R.id.edit_text); button =
        (Button) findViewById(R.id.button);
    button.setOnClickListener(new
    View.OnClickListener() {
        @Override
        public void onClick(View v) {
            String s =
```

```
editText.getText().toString().trim();
String[] split = s.split("\s+");
if (split.length != 2) {
    Toast.makeText(getApplicationContext(), "Please enter
text in the required format", Toast.LENGTH_SHORT).show();
} else
    fetchStores(split[0], split[1]);
}
});
}
private void fetchStores(String placeType, String businessName)
{
    /**
     * For Locations In India McDonalds stores aren't returned
     * accurately
}
```

```
/*
//Call<PlacesPOJO.Root> call =
apiService.doPlaces(placeType, latLngString, "\"" + businessName
+ "\", true, \"distance\", APIClient.GOOGLE_PLACE_API_KEY);
    Call<PlacesPOJO.Root> call =
apiService.doPlaces(placeType, latLngString,
businessName, true, "distance",
APIClient.GOOGLE_PLACE_API_KEY);
    call.enqueue(new
        Callback<PlacesPOJO.Root>() { @Override
            public void onResponse(Call<PlacesPOJO.Root> call,
Response<PlacesPOJO.Root> response) {
                PlacesPOJO.Root root =
response.body(); if
(response.isSuccessful()) {
                    if (root.status.equals("OK"))
                        { results = root.customA;
storeModels = new
ArrayList<>();
for (int i = 0; i < results.size();
i++) { if (i == 10)
                    break;
PlacesPOJO.CustomA info =
results.get(i); fetchDistance(info);
                }
} else {
                    Toast.makeText(getApplicationContext(), "No
matches found near you", Toast.LENGTH_SHORT).show();
                }
} else if (response.code() != 200) {
                    Toast.makeText(getApplicationContext(), "Error " +
response.code() + " found.", Toast.LENGTH_SHORT).show();
                }
}
@Override
public void onFailure(Call<PlacesPOJO.Root> call,
Throwable t) {
    // Log error here since request
```

```
        failed call.cancel();
    }
}
}

private ArrayList<String>
findUnAskedPermissions(ArrayList<String> wanted) {
    ArrayList<String> result = new ArrayList<>();
```

```
for (String perm :  
    wanted) { if  
    (!hasPermission(per  
        m)) {  
        result.add(perm);  
    }  
}  
return result;  
}  
private boolean hasPermission(String  
    permission) { if (canMakeSmores()) {  
        if (Build.VERSION.SDK_INT >=  
            Build.VERSION_CODES.M) {  
            return (checkSelfPermission(permission) ==  
PackageManager.PERMISSION_GRANTED);  
        }  
    }  
    return true;  
}  
private boolean  
    canMakeSmores() { return  
    (Build.VERSION.SDK_INT >  
    Build.VERSION_CODES.LOLLIPOP_MR1);  
}  
@TargetApi(Build.VERSION_CODES.  
M) @Override  
public void onRequestPermissionsResult(int  
requestCode, String[] permissions, int[] grantResults) {  
    switch (requestCode) {  
        case ALL_PERMISSIONS_RESULT:  
            for (String perms :  
                permissionsToRequest) { if  
                (!hasPermission(perms)) {  
                    permissionsRejected.add(perms);  
                }  
            }  
            if (permissionsRejected.size() > 0) {  
                if (Build.VERSION.SDK_INT >=
```

```
Build.VERSION_CODES.M) {  
    if  
(shouldShowRequestPermissionRationale(permissionsRejected.g  
et(o))) {  
        showMessageOKCancel("These permissions are  
mandatory for the application. Please allow access.",  
        new  
        DialogInterface.OnClickListener()  
        { @Override
```

```
public void onClick(DialogInterface dialog, int which) {
{
    if (Build.VERSION.SDK_INT >=
        Build.VERSION_CODES.M) {
        requestPermissions(permissionsRejected.toArray(new
String[permissionsRejected.size()]),
        ALL_PERMISSIONS_RESULT);
    }
}
);
return;
}
}
} else {
    fetchLocation();
}
break;
}
}
```

```
    private void showMessageOKCancel(String message,  
        DialogInterface.OnClickListener okListener) {
```

```
new AlertDialog.Builder(MainActivity.this)
    .setMessage(message)
    .setPositiveButton("OK", okListener)
    .setNegativeButton("Cancel", null)
    .create()
    .show();
```

}

```
private void fetchLocation() {
```

```
SmartLocation.with(this).location(
```

)

```
.oneFix()  
.start(new
```

```
OnLocationUpdatedListener() {  
    @Override
```

```
public void onLocationUpdated(Location  
    location) { latLngString =  
        location.getLatitude() + "," +  
        location.getLongitude();  
        latLng = new LatLng(location.getLatitude(),  
        location.getLongitude());  
    }
```





```
        call.cancel();
    }
}
}
```

In the above code, we start by asking for runtime permissions followed by fetching the current location using the SmartLocation Library.

Once we have that in place, we pass the first word from the EditText in the type `fetchStores()` and the second word in the name parameter of the method that eventually calls the Google Places API web service. We limit the search results to 10.

For each result, we calculate the distance and time from the store inside the method `fetchDistance()`

te the data inside the

RecyclerViewAdapter.java class using a StoreModel.java data class. StoreModel.java code is given below:

```
package
```

```
com.journaldev.nearbyplaces;
```

```
public class StoreModel {
```

```
    public String name, address, distance, duration;
    public StoreModel(String name, String address, String
distance, String duration) {
        this.name = name;
        this.address =
address; this.distance
= distance;
        this.duration =
duration;
    }
}
```

The layout for each row of the RecyclerView is given in the xml

below: store\_list\_row.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="wrap_content"
    android:layout_marginBottom="@dimen/activity_horizontal_margin"
    android:orientation="vertical">
```

```
<android.support.v7.widget.CardView  
    xmlns:card_view="http://schemas.android.com  
        /apk/res-auto"  
        android:id="@+id/card_view"  
        android:layout_width="match_parent"  
        android:layout_height="wrap_content"  
        card_view:cardCornerRadius="0dp"  
        card_view:cardElevation="5dp">
```

```
<LinearLayout  
    android:layout_width="match_p  
    arent"  
    android:layout_height="wrap_c  
    ontent"  
    android:orientation="vertical"  
    android:padding="5dp">
```

```
<TextView  
    android:id="@+id/txtStoreNa  
    me"  
    android:layout_width="wrap_  
    content"  
    android:layout_height="wrap_  
    content"  
    android:paddingBottom="5dp"  
    android:textColor="#212121"  
    />
```

```
<TextView  
    android:id="@+id/txtStoreAd  
    dr"  
    android:layout_width="wrap_  
    content"  
    android:layout_height="wrap_  
    content"  
    android:paddingBottom="5dp"
```

```
        android:textColor="#212121"
    />

    <TextView
        android:id="@+id/txtStoreDist
        "
        android:layout_width="wrap_
        content"
        android:layout_height="wrap_
        content"
        android:paddingBottom="5dp
        " />

    </LinearLayout>

</android.support.v7.widget.CardView>

</LinearLayout>
```

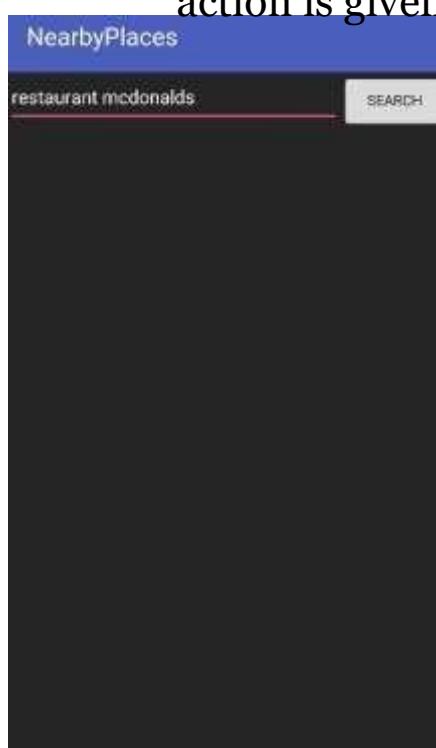
The RecyclerViewAdapter.java code is given below. public class RecyclerViewAdapter extends

```
RecyclerView.Adapter<RecyclerViewAdapter.MyView  
Holder> { private List<PlacesPOJO.CustomA>  
stLstStores;  
private List<StoreModel> models;  
public RecyclerViewAdapter(List<PlacesPOJO.CustomA>  
stores, List<StoreModel> storeModels) {  
    stLstStores = stores;  
    models =  
    storeModels;  
}  
  
@Override  
public MyViewHolder onCreateViewHolder(ViewGroup  
parent, int viewType) {  
    final View view = LayoutInflater.from(parent.getContext())  
        .inflate(R.layout.store_list_row, parent,  
        false); return new MyViewHolder(view);  
}  
@Override  
public void onBindViewHolder(MyViewHolder holder, int  
position) {  
    holder.setData(stLstStores.get(holder.getAdapterPosition()),  
    holder,  
    models.get(holder.getAdapterPosition()));  
}  
@Override  
public int getItemCount() {  
    return Math.min(5, stLstStores.size());  
}  
public class MyViewHolder extends  
RecyclerView.ViewHolder { TextView  
txtStoreName;  
TextView txtStoreAddr;  
TextView txtStoreDist;  
StoreModel model;
```

```
public MyViewHolder(View  
    itemView) { super(itemView);  
    this.txtStoreDist = (TextView)  
itemView.findViewById(R.id.txtStoreDist);  
    this.txtStoreName = (TextView)  
itemView.findViewById(R.id.txtStor  
eName); this.txtStoreAddr =  
    (TextView)  
itemView.findViewById(R.id.txtStor  
eAddr);  
}
```

```
public void setData(PlacesPOJO.CustomA info,  
MyViewHolder holder, StoreModel storeModel) {  
    this.model = storeModel;  
    holder.txtStoreDist.setText(model.distance + "\n" +  
        model.duration); holder.txtStoreName.setText(info.name);  
    holder.txtStoreAddr.setText(info.vicinity);  
}  
}  
}
```

The output of the google places api example application in action is given below:



### 37. Android Countdown Timer Code

#### activity\_main.xml

```
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:paddingBottom="@dimen/activity_vertical_margin"
    tools:context=".MainActivity">

    <ProgressBar
        android:id="@+id/progres
        sBar"
        style="?android:attr/progressBarStyleHorizontal"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:indeterminate="false"
        android:max="10"
        android:minHeight="50dp"
        android:minWidth="200dp"
        android:progress="0"
        android:layout_centerVertical="t
        rue"
        android:layout_alignParentRight
        ="true"
        android:layout_alignParentEnd=
        "true"
        android:layout_alignParentLeft=
        "true"
        android:layout_alignParentStart
        ="true" />

    <Button
```

```
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" android:text="Start Timer"
    android:id="@+id/button"
    android:layout_alignParentTop="true"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="61dp"
  />
```

```
<Button
  android:layout_width="wrap_content"
  android:layout_height="wrap_content"
```

```
        android:text="Stop Timer"
        android:id="@+id/button2"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="46dp"
        android:layout_below="@+id/progressBar" />
```

```
</RelativeLayout>
```

The MainActivity.java is given below :

```
package
```

```
com.journaldev.countdowntimer;
```

```
import
```

```
    android.os.CountDownTimer;
```

```
    import android.support.v7.app.AppCompatActivity;
```

```
    import
```

```
        android.os.Bundle;
```

```
    import
```

```
        android.view.Menu;
```

```
    import
```

```
        android.view.MenuItem;
```

```
    import
```

```
        android.view.View;
```

```
    import
```

```
        android.widget.Button;
```

```
    import
```

```
        android.widget.ProgressBar;
```

```
    import
```

```
        android.widget.TextView;
```

```
public class MainActivity extends
```

```
    AppCompatActivity { ProgressBar progressBar;
```

```
    Button start_timer,stop_timer;
```

```
    MyCountDownTimer
```

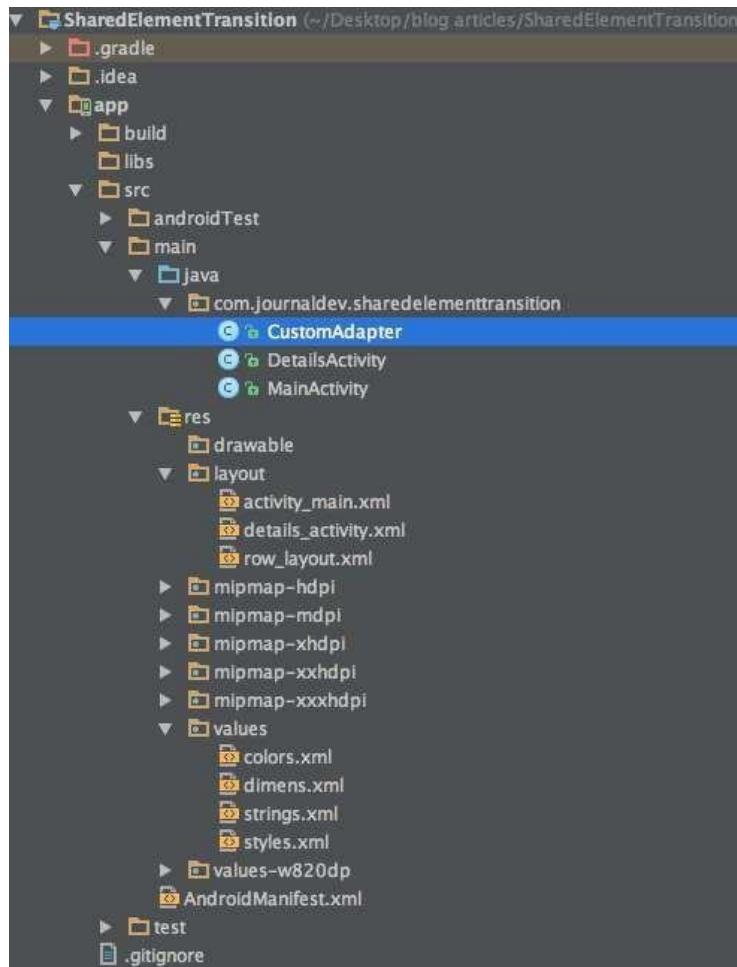
```
myCountDownTimer; @Override  
protected void onCreate(Bundle savedInstanceState)  
{ super.onCreate(savedInstanceState);  
setContentView(R.layout.activity_main);  
progressBar=(ProgressBar) findViewById(R.id.progressBar);  
start_timer=(Button) findViewById(R.id.button);  
stop_timer=(Button) findViewById(R.id.button2);  
start_timer.setOnClickListener(new  
View.OnClickListener() {  
    @Override  
    public void onClick(View v) {  
        myCountDownTimer = new MyCountDownTimer(10000,  
        1000); myCountDownTimer.start();  
    }  
});  
  
stop_timer.setOnClickListener(new View.OnClickListener() {
```

```
@Override
public void onClick(View v) {
    myCountDownTimer.cancel();
}

})
}

public class MyCountDownTimer extends CountDownTimer {
    public MyCountDownTimer(long millisInFuture, long countDownInterval)
    {
        super(millisInFuture, countDownInterval);
    }
    @Override
    public void onTick(long millisUntilFinished) {
        int progress = (int) (millisUntilFinished/1000);
        progressBar.setProgress(progressBar.getMax()-progress);
    }
    @Override
    public void onFinish() {
        finish();
    }
}
```

## 38. Android Shared Element Transition Animation Project Structure



This project consists of 2 activities and a CustomAdapter for the ListView.

### Android Transition Animation – Shared Element Transition Code

To enable this transitions add the following snippet inside the AppTheme tag in [styles.xml](#).

```
<item name="android:windowContentTransitions">true</item>
```

For both the layouts with this transition we need to assign a [android:transitionName](#) attribute.

The [activity\\_main.xml](#) populates a ListView and the [details\\_activity.xml](#) is for the the details screen. Both are shown below

```
<LinearLayout  
    xmlns:android="http://schemas.android.com/apk/res/android"  
        android:layout_width="match_parent"  
        android:layout_height="match_parent"
```

```
    android:transitionName="@string/transition"
    android:orientation="vertical">>
```

```
<ListView
    android:layout_width="wrap_content"
    android:id="@+id/list_view"
    android:layout_height="wrap_content"/>

</LinearLayout>

<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="@dimen/activity_horizontal_margin"
    android:id="@+id/layout"
    android:transitionName="@string/transition"
    tools:context="com.journaldev.sharedelementtransition.MainActivity">

    <TextView
        android:gravity="center"
        android:textColor="@android:color/white"
        android:id="@+id/heading"
        android:layout_width="match_parent"
        android:textAppearance="?android:attr/textAppearanceLarge"
        android:layout_height="wrap_content" />

    <TextView
        android:gravity="center"
        android:id="@+id/lan
```

```
guage"
    android:textColor="@android:color/white"
    android:layout_width="match_parent"
    android:textAppearance="?android:attr/textAppearanceMedium" android:layout_height="wrap_content"
    android:layout_below="@+id/heading"
    android:layout_alignParentLeft="true"
    android:layout_alignParentStart="true" />
```

```
<TextView
    android:gravity="center"
```

```
        android:id="@+id/desc"
        android:textColor="@android:color/white"
        android:layout_width="match_parent"
        android:textAppearance="?android:attr/textAppearanceMedium"
        android:layout_height="wrap_content"
        android:layout_centerInParent="true"
    />
```

```
</RelativeLayout>
```

As you can see a `android:transitionName` attribute is declared as a string in the root view of both the layouts.

[We've created a custom ListView which populates its layout from a ArrayList of String arrays. The layout and adapter of the ListView are given below.](#)

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="match_parent"
    android:padding="@dimen/activity_horizontal_margin"
    android:background="@color/md_black_1000"
    android:layout_margin="5dp"
    android:id="@+id/rl"
    android:layout_height="wrap_content"
    >

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textAppearance="?android:attr/textAppearanceLarge"
        android:id="@+id/primary_textview"
        android:gravity="center"
```

```
    android:textColor="@android:color/white"
    />

<TextView
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:textAppearance="?android:attr/textAppearanceMedium" android:id="@+id/textView"
    android:layout_below="@+id/primary_textview"
    android:textColor="@android:color/white"
    android:gravity="center"
    />
```

```
</RelativeLayout>

public class CustomAdapter extends BaseAdapter {
    ArrayList<String[]> arrayList;
    Context c;
    public CustomAdapter(Context c,
        ArrayList<String[]> list) { arrayList = list;
        this.c = c;
    }
    @Override
    public int getCount() {
        // TODO Auto-generated method
        stub return arrayList.size();
    }
    @Override
    public Object getItem(int position) {
        // TODO Auto-generated method
        stub return
            arrayList.get(position);
    }
    @Override
    public long getItemId(int position) {
        // TODO Auto-generated method
        stub return position;
    }
    @Override
    public View getView(int position, View convertView, ViewGroup
parent) {
        // TODO Auto-generated method
        stub View row = null;
        LayoutInflator inflater = (LayoutInflator)c
            .getSystemService(Context.LAYOUT_INFLATER_S
ERVICE); if (convertView == null) {
            row = inflater.inflate(R.layout.row_layout,
                parent, false);
        } else {
            row = convertView;
        }
    }
}
```

```
String[] detail = arrayList.get(position);
RelativeLayout rl=
(RelativeLayout)row.findViewById(R.id.rl);
rl.setBackgroundColor(Color.parseColor(detail[3]));
TextView name = (TextView)
row.findViewById(R.id.primary_textview);
```

```
        name.setText(detail[0]);
        TextView email = (TextView)
        row.findViewById(R.id.textView); email.setText(detail[1]);
        return row;
    }

}
```

The `MainActivity.java` and `DetailsActivity.java` are given below.

```
package com.journaldev.sharedelementtransition;

import android.content.Intent;
import android.support.v4.app.ActivityCompat;
import android.support.v4.app.ActivityOptionsCompat;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ListView;

import java.util.ArrayList;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        final ArrayList<String[]> values = new
        ArrayList<String[]>(); values.add(new String[]{"Android",
```

```
"Java", getString(R.string.android), '#' +  
Integer.toHexString(getResources().getColor(R.color.md_light_gr  
een_900))); values.add(new String[]{"iOS", "Swift",  
getString(R.string.ios), '#' +  
Integer.toHexString(getResources().getColor(R.color.md_amber_  
A700))); values.add(new String[]{"Xamarin",  
"C#", getString(R.string.xamarin), '#' +  
Integer.toHexString(getResources().getColor(R.color.md_pink_A7  
00))); values.add(new String[]{"PhoneGap", "HTML CSS  
and  
JScript", getString(R.string.phonegap), '#' +  
Integer.toHexString(getResources().getColor(R.color.md_brown_  
800))});
```

```

ListView listView = (ListView)
        findViewById(R.id.list_view); CustomAdapter
        adapter = new CustomAdapter(this, values);
        listView.setAdapter(adapter);
        listView.setOnItemClickListener(new
        AdapterView.OnItemClickListener()
        {
            @Override
            public void onItemClick(AdapterView<?> parent,
            View view, int position, long id) {

                Intent intent = new Intent(MainActivity.this,
                DetailsActivity.class);
                intent.putExtra("array",values.get(position));
                // Get the transition name from the string
                String transitionName = getString(R.string.transition);
                ActivityOptionsCompat options =

```

ActivityOptionsCompat.makeSceneTransitionAnimation(M  
ainActivity.this, view, // Starting view  
transitionName// The String  
);

ActivityCompat.startActivity(MainActivity.this, intent,  
options.toBundle());  
}  
});  
}

When an activity is finished, instead of finish() we  
invoke **ActivityCompat.finishAfterTransition(this);** as shown in the

code below.

```
public class DetailsActivity extends  

AppCompatActivity {
```

```
    @Override
```

```
protected void onCreate(@Nullable Bundle  
        savedInstanceState) {  
    super.onCreate(savedInstanceState);  
    setContentView(R.layout.details_activity);  
  
    String[] array=  
  
    getIntent().getStringArrayExtra("array");  
  
    RelativeLayout rl=  
    (RelativeLayout)findViewById(R.id.layout);
```

```
rl.setBackgroundColor(Color.parseColor(array[3]));

TextView textView= (TextView)findViewById(R.id.heading);
textView.setText(array[0]);
TextView type= (TextView)findViewById(R.id.language);
type.setText(array[1]);
TextView
desc=(TextView)findViewById(R.id.desc);
desc.setText(array[2]);

}

@Override
public void onBackPressed() {
    ActivityCompat.finishAfterTransiti
    on(this);
}
}
```

40.

## How To Publish Android App On PlayStore [Step By Step]

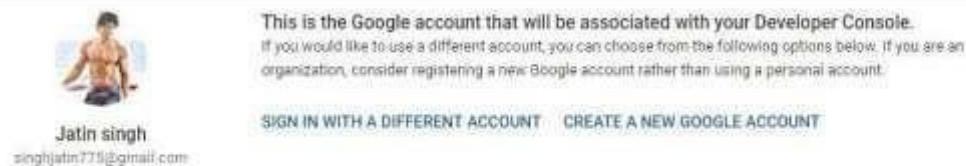
Haven't you publish any Android App on Play store? Don't worry if you haven't because it's very easy and this tutorial is going to teach step by step how to publish your first Android App on Play store.

### How To Publish Android App On PlayStore:

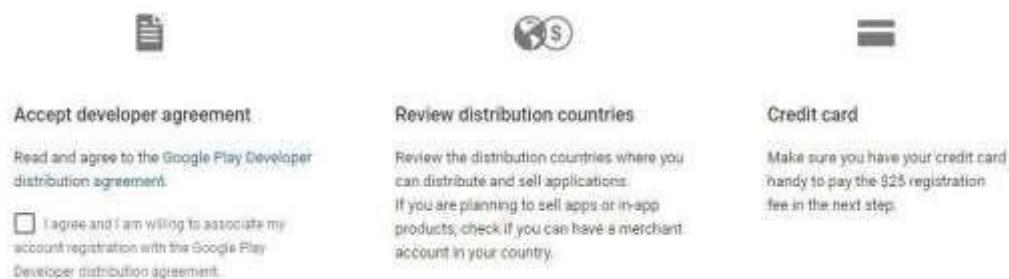
Follow the below steps:

**Step 1:** First [generate signed apk](#) of your Android App to publish it on Play Store.

**Step 2:** Now you will need to sign up for Google Play Console to publish and manage your Android App.

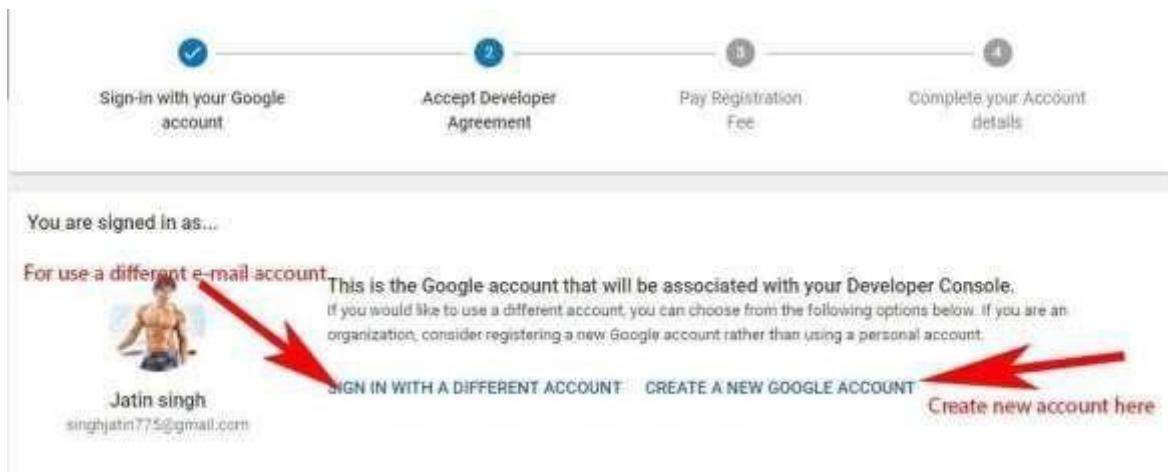


Before you continue...



**Important Note:** You can signup with this link <https://play.google.com/apps/publish/>

**Step 3:** Login with your Gmail account that you want to use for publishing App on Play Store.



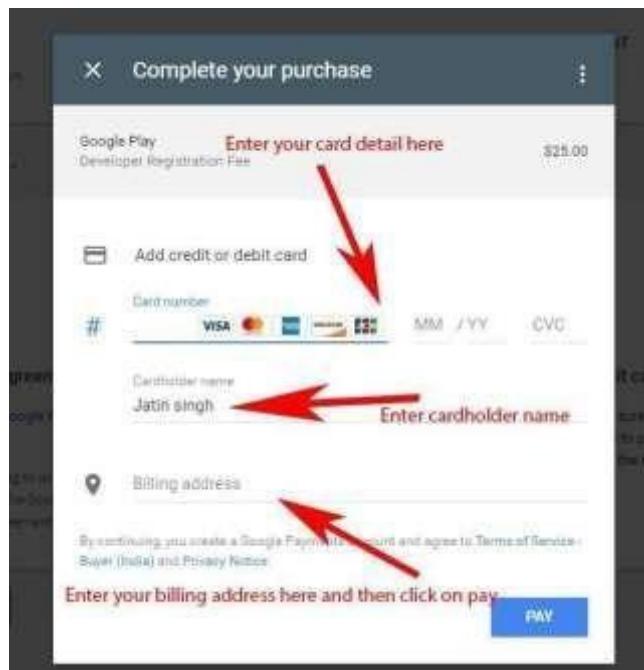
**Step 4:** Now there are 4 steps to complete the registration for Google play store console. You have already completed two.

**Step 5:** After reading the Google play store developer distribution agreement agree to their terms by clicking on check box



**Step 6:** Now you will need to pay one time ‘Developer Registration Fee’ of \$25 to Google. Please fill your credit card details to make the payment.

**Important Note:** You can upload unlimited number of Android App on Play store from single account with a limit of uploading 15 apk/day.



**Step 7:** Complete your account details for Google developer account. For example see the below image:

Sign-In with your Google account      Accept Developer Agreement      Pay Registration Fee      Complete your Account details

**YOU ARE ALMOST DONE...**  
Just complete the following details. You can change this information later in your account settings if you need to.

Developer name \*  Enter your name here  
0 of 50 characters  
The developer name will appear to users under the name of your application.

Email address \*  Enter your email address here

Website  Enter the name of your website here(OPTIONAL)

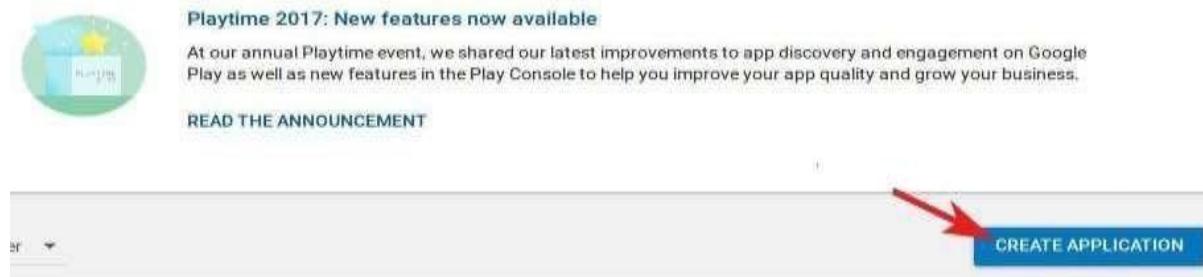
Phone Number \*  Enter your phone no. here  
Include plus sign, country code and area code. For example, +1-800-555-0123.  
Why do we ask for your phone number?

Email updates  I'd like to get occasional emails about development and Google Play opportunities.  
Check it for email updates

**Complete registration**

Click here for complete your registration

## Step 8: Now click on Create Application



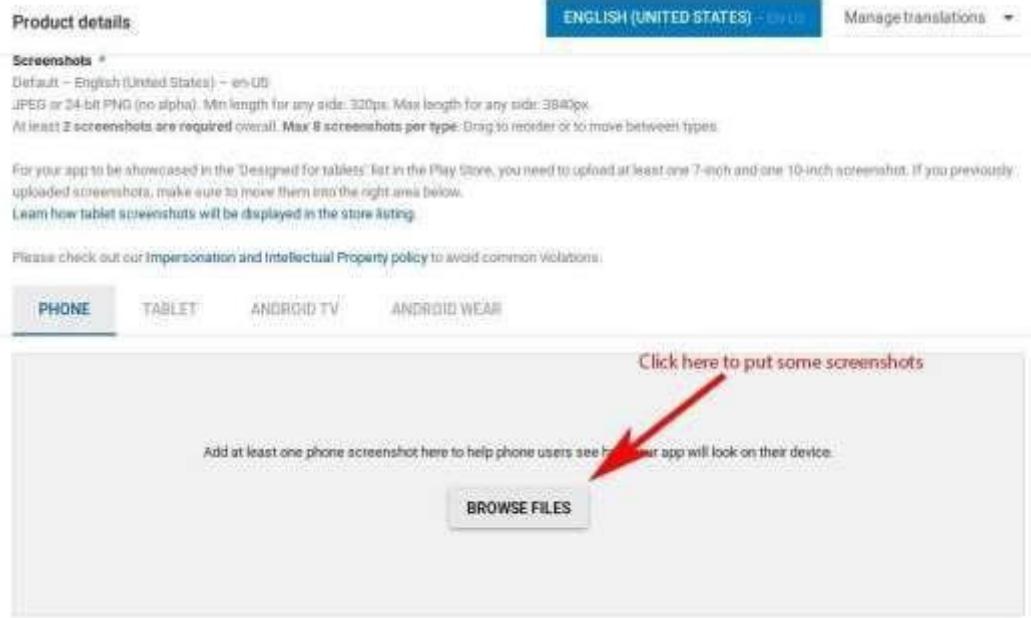
## Step 9: Enter the name of your App.

A screenshot of the 'Create application' form. It includes a dropdown menu for 'Default language \*' set to 'English (United States) - en-US'. Below it is a 'Title \*' field containing the placeholder text 'Enter the name of your app here'. To the right of the title field, there is a red arrow pointing to it. Further down, there is a 'Now Click on Create' note above a 'CREATE' button, which is highlighted with a red arrow. There is also a 'CANCEL' button.

## Step 10: Now fill store listing details of your App which include Title, Short description, and Full description.

A screenshot of the 'Product details' section. It shows a 'Title' field with 'App Demo' and a 'Short description about you app' field with 'Enter the name of your app'. Below these, there is a 'Short description \*' field with the placeholder 'This is a app publish Demo' and a 'Full description \*' field with the placeholder 'This is a demo of how To Publish Android app On Play Store. It is very easy to publish and teach you step by step'. Red arrows point from the text 'Enter the name of your app' to the 'Short description about you app' field, from the text 'Enter your full description about app' to the 'Full description \*' field, and from the text 'Enter the name of your app' to the 'Title' field.

Step 11: After this you need to put some App screenshots here. The minimum required are 2 screenshots and maximum limit is 8.



Step 12: After screenshot now you need to put a high Resolution icon or logo with a size of 512 \* 512 pixel. This will be displayed on Play Store.

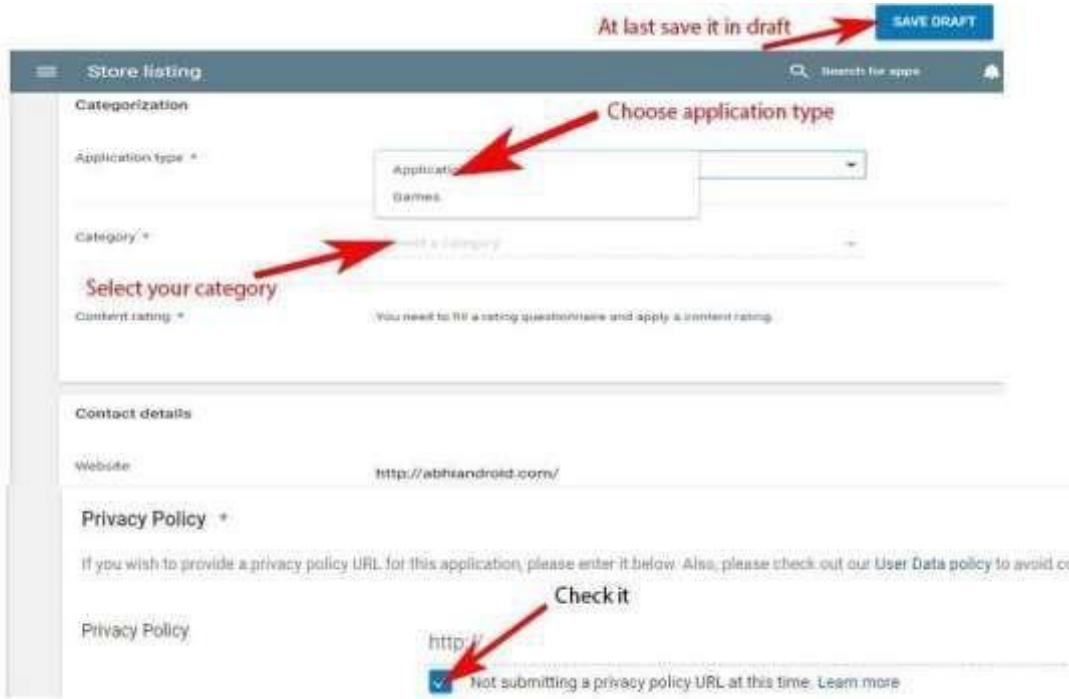
After that another mandatory thing is you need to put a feature graphic of 1024 \* 500 pixel dimension. See below image for more detail.



Step 13: Now scroll down and fill other details which include application type, category, website, email and phone no.

After this check privacy policy because now we are not submitting

and then click on save draft. If your App require user permission then it is mandatory to put privacy url.  
Click on Save Draft to save your work so far.



Step 14: After saving data on draft now go to app release and click on manage production PRODUCTION

#### Create release

You can prepare, review, and then publish the version of your app you want to make available to users of the Play Store.  
Step 15: Now you will see create release now click on it.

CREATE RELEASE

Click on create release

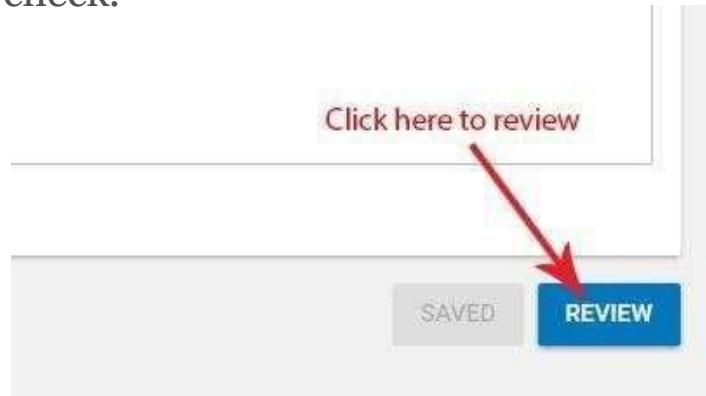
Step 16: After click on create release you will see browse files click on it and upload your signed APK.

BROWSE FILES

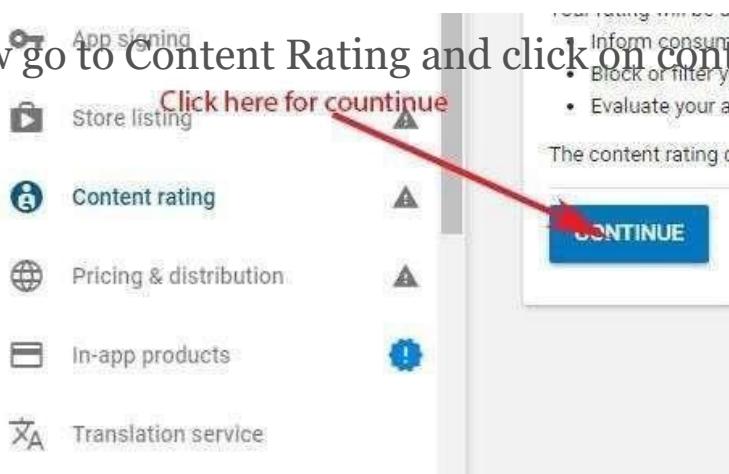
Click here to upload your apk

Upload APK file, or select a file.

Step 17: Once the upload is successful then scroll down and click on review to check.



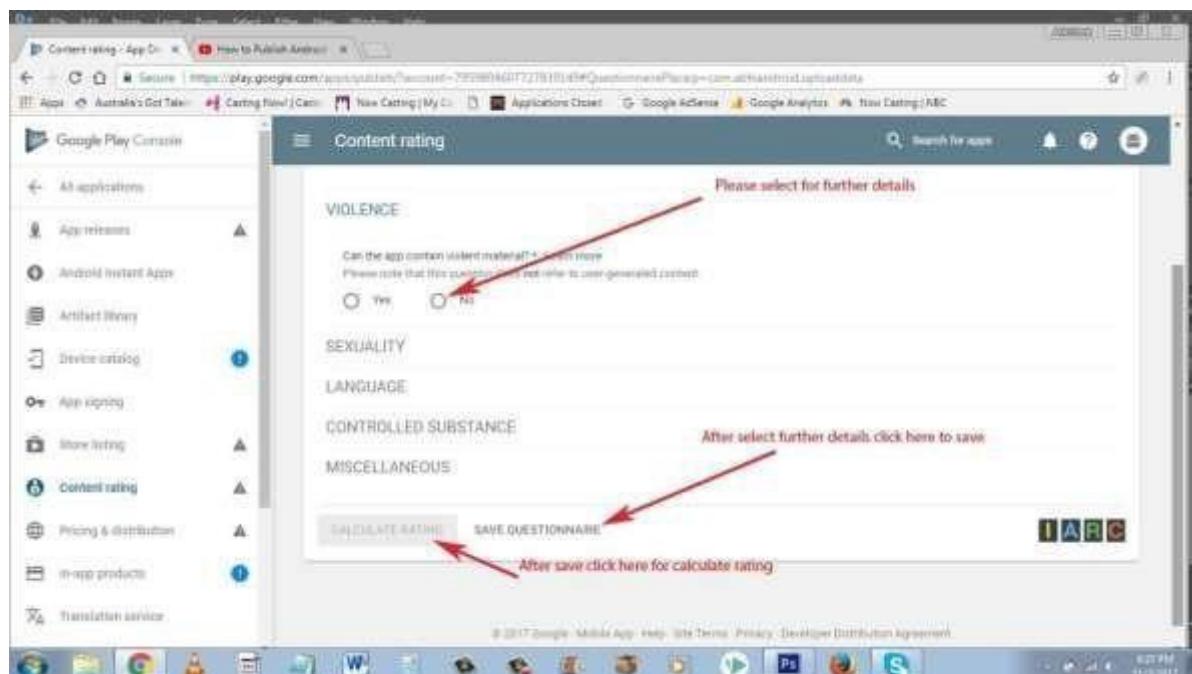
Step 18: Now go to Content Rating and click on continue.



Step 19: Fill details which include email address and select your categories.

A screenshot of the app category selection form. It includes fields for "Email address \*", "abc243@gmail.com", "Confirm your email address", and "abc243@gmail.com". There are also sections for "Select your category" and "Select your app category". Two red arrows point from the text "Select your category" and "Select your app category" to their respective sections. Below these sections are two categories with descriptions: "REFERENCE, NEWS, OR EDUCATIONAL" and "SOCIAL NETWORKING, FORUMS, BLOGS, AND UGC SHARING".

**Step 20:** Now select Violence, Sexuality, Language, Controlled Substance and Miscellaneous based on your App. First click on save questionnaire for save and then click on calculate rating.



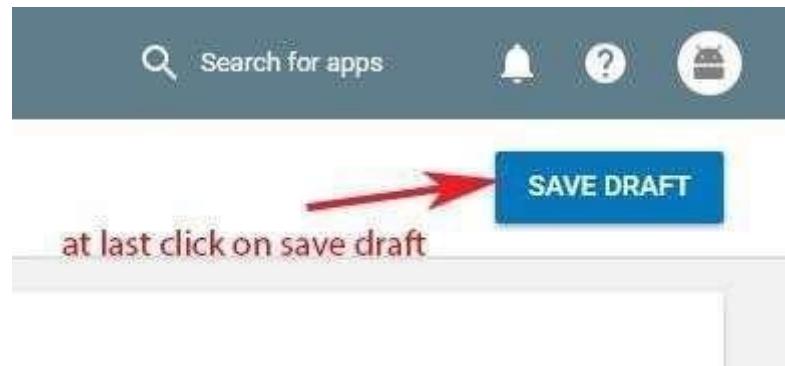
Step 21: Now click on apply rating.



Step 22: Click on pricing and distribution and select free/paid based on how you want user to access your App.



Step 23: Now scroll down and see mandatory things with \* you need to select After this click on save draft .



Step 24: Now Click on ready on publish along with save draft and click on Manage release.

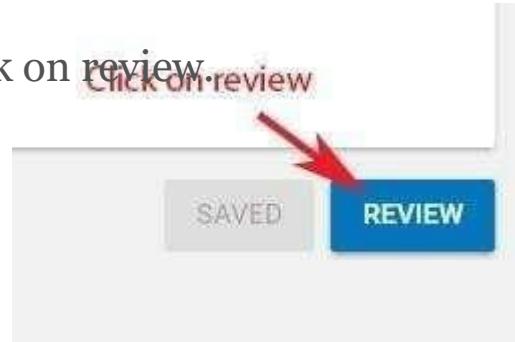
Step 25: Click on Manage Production.



Step 26: After Manage production click on edit release.



Step 27: Now click on review.



Step 28: After review click on Start Rollout to production. Now you need to confirm. After confirm you will need to wait for one or

six hour for approval.

Now click on it

**START ROLLOUT TO PRODUCTION**

## 35. Android Session Management Using SharedPreferences

MainActivity.java

```
import
android.app.Activity;
import
android.content.Intent;
import
android.content.SharedPreferences; import android.os.Bundle;
import
android.view.View;
import
android.widget.Button;
import
android.widget.EditText;
import
android.widget.Toast;

public class MainActivity extends
Activity { EditText
username,password;
Button button;
SharedPreferences sp;

@Override
protected void onCreate(Bundle
 savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
username=(EditText)findViewById(R.id.username);
password=(EditText)findViewById(R.id.password);
button=(Button)findViewById(R.id.button);
sp=getSharedPreferences("login",MODE_PRIVATE);
```

```
//if SharedPreferences contains username and password  
then directly redirect to Home activity  
if(sp.contains("username") &&  
    sp.contains("password")){ startActivity(new  
        Intent(MainActivity.this,Home.class));  
    finish(); //finish current activity  
}  
button.setOnClickListener(new  
    View.OnClickListener() { @Override  
        public void onClick(View v)  
            { loginCheck();  
        }  
    }
```

```
        });
    }
    void loginCheck(){
        //check username and password are correct and then
add them to SharedPreferences
        if(username.getText().toString().equals("programmer") &&
password.getText().toString().equals("programmer")){
            SharedPreferences.Editor e=sp.edit();
            e.putString("username","programmer"
);
            e.putString("password","programmer"
); e.commit();
            Toast.makeText(MainActivity.this,"Lo
gin
Successful",Toast.LENGTH_LONG).show();
            startActivity(new
Intent(MainActivity.this,Home.class)); finish();
        }
        else{
            Toast.makeText(MainActivity.this,"Incorrect Login
Details",Toast.LENGTH_LONG).show();
        }
    }
}
```

activity\_main.xml

```
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android
    " xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingLeft="15dp"
    android:paddingRight="15dp"
    android:paddingTop="15dp"
```

```
    android:paddingBottom="15dp" tools:context=".MainActivity"
    android:orientation="vertical">

<TextView
    android:layout_width="match_p
    arent"
    android:layout_height="wrap_co
    ntent" android:gravity="center"
    android:text="Login"
```

```
        android:textSize="40dp"/>

<EditText
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="20dp"
    android:hint="Enter Username"
    android:id="@+id/username"/>

<EditText
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10dp"
    android:hint="Enter Password"
    android:id="@+id/password"/>

<Button
    android:layout_width="match_parent"
    android:layout_height="wrap_content" android:text="Login"
    android:textSize="20dp"
    android:layout_marginTop="10d
p" android:id="@+id/button"/>

</LinearLayout>
```

Home.java

```
package com.sessionmanagement;
```

```
import  
    android.app.Activity;  
import  
    android.content.Intent;  
import  
    android.content.SharedPreferences;  
import android.os.Bundle;  
import  
    android.view.View;  
import  
    android.widget.Button;
```

```
public class Home extends
Activity { Button logout;

@Override
protected void onCreate(Bundle savedInstanceState)
{ super.onCreate(savedInstanceState);
setContentView(R.layout.activity_home);

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

logout.setOnClickListener(new
View.OnClickListener() {
@Override
public void onClick(View v) {
SharedPreferences
sp=getSharedPreferences("login",MODE_PRIVATE);
SharedPreferences.Editor
e=sp.edit(); e.clear();
e.commit();

startActivity(new
Intent(Home.this,MainActivity.class));
} finish(); //finish current activity
});
}
}
```

activity\_home.xml

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

```
" xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingLeft="15dp"
    android:paddingRight="15dp"
    android:paddingTop="15dp"
    android:paddingBottom="15dp"
    tools:context=".MainActivity" android:orientation="vertical">>
```

```
<TextView  
    android:layout_width="match_p  
arent"  
    android:layout_height="wrap_ co  
ntent" android:gravity="center"  
    android:text="Home"  
    android:textSize="40dp"/>
```

```
<TextView  
    android:layout_width="match  
_parent"  
    android:layout_height="wrap_  
content"  
    android:gravity="center"  
    android:text="-- Welcome --"  
    android:textSize="30dp"  
    android:layout_marginTop="1  
0dp"/>
```

```
<Button  
    android:layout_width="match_p  
arent"  
    android:layout_height="wrap_ co  
ntent" android:textSize="20dp"  
    android:text="Logout"  
    android:layout_marginTop="20d  
p" android:id="@+id/logout"/>  
</LinearLayout>
```



## 41. Volley Repository

Acitivity\_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/buttonReques
        t"
        android:layout_width="wrap_ co
        ntent"
        android:layout_height="wrap_ co
        ntent"
        android:background="#414af4"
        android:text="Click Here To Send HTTP Request To Server
        And See Response Displayed As Toast"
        android:textColor="#ffffff"
        android:layout_alignParentTop="true"
        android:layout_marginTop="50dp" />

</RelativeLayout>
```

Build.gradle:

```
apply plugin: 'com.android.application'

android {
    compileSdkVersion
```

```
28 defaultConfig {  
    applicationId "com.ameyashinde.volleyrepository"  
    minSdkVersion 25  
    targetSdkVersion 28  
    versionCode 1  
    versionName "1.0"  
    testInstrumentationRunner  
    "android.support.test.runner.AndroidJUnitRunner"
```

```
}

buildTypes {
    release {
        minifyEnabled false
        proguardFiles getDefaultProguardFile('proguard-
            android.txt'),
        'proguard-rules.pro'
    }
}

dependencies {
    implementation fileTree(dir: 'libs', include: ['*.jar'])
    implementation 'com.android.support:appcompat-
        v7:28.0.0'
    implementation 'com.android.support.constraint:constraint-
        layout:1.1.3'
    testImplementation 'junit:junit:4.12'
    androidTestImplementation
        'com.android.support.test:runner:1.0.2'
    androidTestImplementation
        'com.android.support.test.espresso:espresso- core:3.0.2'
        implementation 'com.android.volley:volley:1.1.1'
}
```

## MainActivity.java

```
package com.ameyashinde.volleyrepository;

import android.support.v7.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 =
"http://www.mocky.io/v2/5bdo18723100006300afcbce";

@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 view) {
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) {

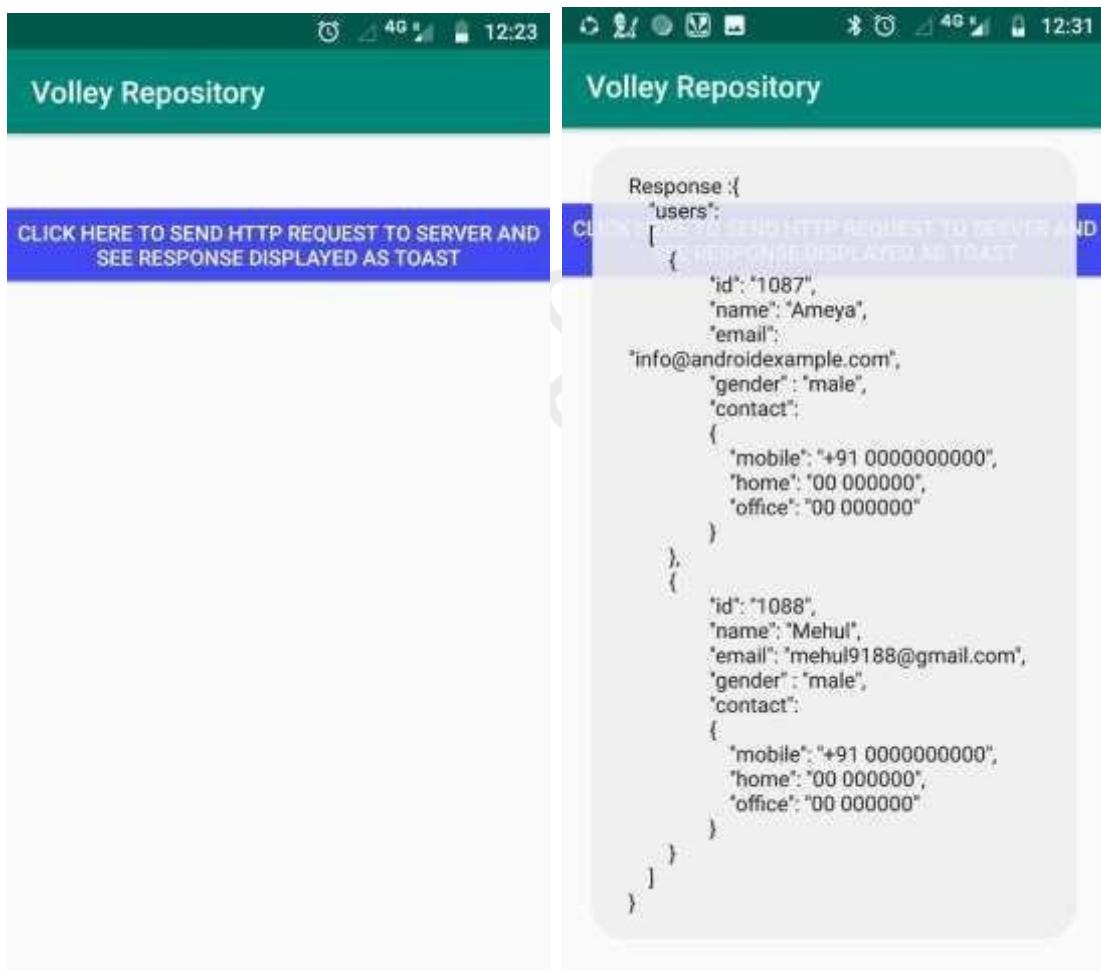
Toast.makeText(getApplicationContext(),"Response :" +
response.toString(), Toast.LENGTH_LONG).show(); //display the
}});
```

*response on screen*

```
    }  
}, new Response.ErrorListener()  
{ @Override
```

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

Output:



mRequestQueue.add(mStringRequest);

## 42. Retrofit Example

Activity.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">

    <android.support.v7.widget.RecyclerView
        android:id="@+id/customRecyclerView"
        android:layout_width="match_parent"
        android:layout_height="match_parent" />

</RelativeLayout>
```

Custom\_row.xml

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.v7.widget.CardView
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:id="@+id/card_view_friend"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    app:cardUseCompatPadding="true">

    <RelativeLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content">
```

```
<ImageView  
    android:id="@+id/coverImage"  
    android:layout_width="100dp"  
    android:layout_height="100dp"  
    android:layout_alignParentStart="  
        true"  
    android:layout_alignParentTop="t  
        rue"
```

```
        android:scaleType="centerCrop" />

    <TextView
        android:id="@+id/title"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="16dp"
        android:layout_toRightOf="@+id/cover
Image" android:lines="2"
        android:paddingTop="20dp"
        android:text="Title"

        android:textAppearance="@style/TextAppearance.AppCompat.M
edium"
    />

    </RelativeLayout>

</android.support.v7.widget.CardView>
```

```
MainActivity.java
package com.ameyashinde.retrofitexample;

import android.app.AlertDialog;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.support.v7.widget.LinearLayoutManager;
import android.support.v7.widget.RecyclerView;
import android.widget.Toast;

import
com.ameyashinde.retrofitexample.network.RetrofitClientInstance;

import java.util.List;

import retrofit2.Call;
import
retrofit2.Callback;
```

```
import
retrofit2.Response;

public class MainActivity extends AppCompatActivity {

    private CustomAdapter adapter;
    private RecyclerView
recyclerView;
```

# ProgressDialog

```
        findViewById(R.id.customRecyclerView); adapter  
        = new CustomAdapter(this,photoList);  
        RecyclerView.LayoutManager layoutManager =  
        new  
        LinearLayoutManager(MainActivity.this);  
        recyclerView.setLayoutManager(layoutManager);  
        recyclerView.setAdapter(adapter);  
    }  
}
```

```
RetrofitClientInstance.java
package com.ameyashinde.retrofitexample.network;

import retrofit2.Retrofit;
import retrofit2.converter.gson.GsonConverterFactory;

public class RetrofitClientInstance {

    private static Retrofit retrofit;
    private static final String BASE_URL =
"https://jsonplaceholder.typicode.com";

    public static Retrofit getRetrofitInstance() {
        if (retrofit == null) {
            retrofit = new retrofit2.Retrofit.Builder()
                .baseUrl(BASE_URL)
                .addConverterFactory(GsonConverterFactory.create())
                .build();
        }
        return retrofit;
    }

}
```

```
GetDataService.java
package com.ameyashinde.retrofitexample.network;

import retrofit2.Retrofit;
import retrofit2.converter.gson.GsonConverterFactory;

public class RetrofitClientInstance
{ package
com.ameyashinde.retrofitexample;

import java.util.List;

import retrofit2.Call;
import
```

```
retrofit2.http.GET;
```

```
public interface
```

```
    GetDataService {
```

```
        @GET("/photos")
```

```
        Call<List<RetroPhoto>> getAllPhotos();  
    }  
    private static Retrofit retrofit;  
    private static final String BASE_URL =  
"https://jsonplaceholder.typicode.com";  
  
    public static Retrofit getRetrofitInstance() {  
        if (retrofit == null) {  
            retrofit = new retrofit2.Retrofit.Builder()  
                .baseUrl(BASE_URL)  
                .addConverterFactory(GsonConverterFactory.create())  
                .build();  
        }  
        return retrofit;  
    }  
}
```

## CustomAdapter.java

```
package com.ameyashinde.retrofitexample;  
  
import android.content.Context;  
import android.support.v7.widget.RecyclerView;  
import android.view.LayoutInflater;  
import android.view.View;  
import  
android.view.ViewGroup;  
import  
android.widget.ImageView;  
import  
android.widget.TextView;  
  
import com.jakewharton.picasso.OkHttp3Downloader;  
import com.squareup.picasso.Picasso;  
  
import java.util.List;  
  
public class CustomAdapter extends
```

```
RecyclerView.Adapter<CustomAdapter.CustomViewHolder> {  
  
    private List<RetroPhoto>  
    dataList; private Context  
    context;  
  
    public CustomAdapter(Context context, List<RetroPhoto>  
    dataList){
```

```
this.context = context;
this.dataList = dataList;
}

class CustomViewHolder extends RecyclerView.ViewHolder {

    public final View mView;

    TextView txtTitle;
    private ImageView coverImage;

    CustomViewHolder(View itemView) {
        super(itemView);
        mView =
            itemView;

        txtTitle = mView.findViewById(R.id.title);
        coverImage =
            mView.findViewById(R.id.coverImage);
    }
}

@Override
public CustomViewHolder onCreateViewHolder(ViewGroup
    parent, int
    viewType) {
    LayoutInflator layoutInflater =
        LayoutInflator.from(parent.getContext()); View view =
        layoutInflater.inflate(R.layout.custom_row, parent, false);
    return new CustomViewHolder(view);
}

@Override
public void onBindViewHolder(CustomViewHolder holder, int
    position) {
    holder.txtTitle.setText(dataList.get(position).getTitle());

    Picasso.Builder builder = new Picasso.Builder(context);
}
```

```
builder.downloader(new OkHttp3Downloader(context));
builder.build().load(dataList.get(position).getThumbnailUrl())
    .placeholder((R.drawable.ic_launcher_background))
    .error(R.drawable.ic_launcher_background)
    .into(holder.coverImage);

}
```

```
@Override
public int getItemCount() {
    return dataList.size();
}

}

build.gradle
package com.ameyashinde.retrofitexample;

import android.content.Context;
import android.support.v7.widget.RecyclerView;
import android.view.LayoutInflater;
import android.view.View;
import
android.view.ViewGroup;
import
android.widget.ImageView;
import
android.widget.TextView;

import com.jakewharton.picasso.OkHttp3Downloader;
import com.squareup.picasso.Picasso;

import java.util.List;

public class CustomAdapter extends
RecyclerView.Adapter<CustomAdapter.CustomViewHolder> {

    private List<RetroPhoto>
    dataList; private Context
    context;

    public CustomAdapter(Context context, List<RetroPhoto>
    dataList){
        this.context = context;
        this.dataList = dataList;
    }
}
```

```
class CustomViewHolder extends RecyclerView.ViewHolder {  
    public final View mView;  
    TextView txtTitle;  
    private ImageView coverImage;
```

```
CustomViewHolder(View itemView) {
    super(itemView);
    mView =
    itemView;

    txtTitle = mView.findViewById(R.id.title);
    coverImage =
    mView.findViewById(R.id.coverImage);
}

@Override
public CustomViewHolder onCreateViewHolder(ViewGroup parent, int viewType) {
    LayoutInflater layoutInflater =
    LayoutInflater.from(parent.getContext()); View view =
    layoutInflater.inflate(R.layout.custom_row, parent, false);
    return new CustomViewHolder(view);
}

@Override
public void onBindViewHolder(CustomViewHolder holder, int position) {
    holder.txtTitle.setText(dataList.get(position).getTitle());

    Picasso.Builder builder = new Picasso.Builder(context);
    builder.downloader(new OkHttp3Downloader(context));
    builder.build().load(dataList.get(position).getThumbnailUrl())
        .placeholder((R.drawable.ic_launcher_background))
        .error(R.drawable.ic_launcher_background)
        .into(holder.coverImage);

}

@Override
public int getItemCount() {
    return dataList.size();
```

}

}



Output:

### 43.Android program based on Rest API.

#### HttpURLConnection:

A URLConnection with support for HTTP-specific features. See the spec for details. Uses of this class follow a pattern:

1. Obtain a new HttpURLConnection by calling URL.openConnection() and casting the result to HttpURLConnection.
2. Prepare the request. The primary property of a request is its URI. Request headers may also include metadata such as credentials, preferred content types, and session cookies.
3. Optionally upload a request body. Instances must be configured with setDoOutput(true) if they include a request body. Transmit data by writing to the stream returned by URLConnection.getOutputStream().
4. Read the response. Response headers typically include metadata such as the response body's content type and length, modified dates and session cookies. The response body may be read from the stream returned by URLConnection.getInputStream(). If the response has no body, that method returns an empty stream.
5. Disconnect. Once the response body has been read, the HttpURLConnection should be closed by calling disconnect(). Disconnecting releases the resources held by a connection so they may be closed or reused

```
URL url = new URL("http://www.android.com/");
HttpURLConnection urlConnection = (HttpURLConnection) url.openConnection();
try {
    InputStream in = new BufferedInputStream(urlConnection.getInputStream());
    readStream(in);
} finally {
    urlConnection.disconnect();
}
```

## JsonObject:

JsonObject class represents an immutable JSON object value (an unordered collection of zero or more name/value pairs). It also provides unmodifiable map view to the JSON object name/value mappings. A JsonObject instance can be created from an input source using JsonReader.readObject().

For example:

```
JsonReader jsonReader = Json.createReader(...);
JsonObject object = jsonReader.readObject();
jsonReader.close();
```

It can also be built from scratch using a JsonObjectBuilder.

For example 1: An empty JSON object can be built as follows:

```
JsonObject object = Json.createObjectBuilder().build();
JsonObject values can be JsonObject, JSONArray, JsonString,
JsonNumber, JsonValue.TRUE,
JsonValue.FALSE, JsonValue.NULL. These values can be accessed
using various accessor
methods.
```

In the above example 2, "John" can be got using  
String firstName = object.getString("firstName");

This map object provides read-only access to the JSON object data, and attempts to modify the

map, whether direct or via its collection views, result in an  
UnsupportedOperationException.

The map object's iteration ordering is based on the order in which name/value pairs are added to  
the corresponding builder or the order in which name/value pairs appear in the corresponding

stream.

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

Code:-

```
//activity_main.xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:layout_margin="15dp"
    tools:context=".MainActivity">
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:orientation="vertical"
        android:layout_margin="10dp">
        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:orientation="vertical">
            <EditText
                android:id="@+id/http_url_editor"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:hint="Input a web page url to get." />
            <Button
                android:id="@+id/http_url_request_button"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:text="Download Page"/>
        </LinearLayout>
    <ScrollView
```

```
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <TextView
        android:id="@+id/http_url_response_text_view"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" />
    </ScrollView>
</LinearLayout>
</androidx.constraintlayout.widget.ConstraintLayout>
```

```
//MainActivity.java
package com.example.practical_9;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.os.Handler;
import android.os.Message;
import android.text.TextUtils;
import android.util.Log;
import android.view.View;
import android.webkit.URLUtil;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
import java.io.BufferedReader;
import java.io.IOException;
import java.io.InputStream;
import java.io.InputStreamReader;
import java.net.HttpURLConnection;
import java.net.MalformedURLException;
import java.net.URL;
public class MainActivity extends AppCompatActivity {
    private static final String TAG_HTTP_URL_CONNECTION =
        "HTTP_URL_CONNECTION";
    private static final int REQUEST_CODE_SHOW_RESPONSE_TEXT
        = 1;
    private static final String KEY_RESPONSE_TEXT =
```

```
"KEY_RESPONSE_TEXT";
private static final String REQUEST_METHOD_GET = "GET";
private EditText requestUrlEditor = null;
private Button requestUrlButton = null;
private TextView responseTextView = null;
private Handler uiUpdater = null;
@Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
setTitle("Html Downloader");
initControls();
requestUrlButton.setOnClickListener(new View.OnClickListener() {
@Override
public void onClick(View v) {
String reqUrl = requestUrlEditor.getText().toString();
if(!TextUtils.isEmpty(reqUrl)) {
if(URLUtil.isHttpUrl(reqUrl) ||
URLUtil.isHttpsUrl(reqUrl)) {
startSendHttpRequestThread(reqUrl);
}else {
Toast.makeText(getApplicationContext(), "The request url is not a
valid http or
https url.", Toast.LENGTH_LONG).show();
}
}else {
Toast.makeText(getApplicationContext(), "The request url can not be
empty.",
Toast.LENGTH_LONG).show();
}
}
});
}
private void initControls()
{
if(requestUrlEditor == null) {
requestUrlEditor =
```

```
(EditText)findViewById(R.id.http_url_editor);
}
if(requestUrlButton == null) {
requestUrlButton =
(Button) findViewById(R.id.http_url_request_button);
}
if(responseTextView == null) {
responseTextView =
(TextView) findViewById(R.id.http_url_response_text_view);
}
{
uiUpdater = new Handler()
{
@Override
public void handleMessage(Message msg) {
if(msg.what == REQUEST_CODE_SHOW_RESPONSE_TEXT)
{
Bundle bundle = msg.getData();
if(bundle != null)
{
String responseText =
bundle.getString(KEY_RESPONSE_TEXT);
responseTextView.setText(responseText);
}
}
}
}
};

private void startSendHttpRequestThread(final String reqUrl)
{
Thread sendHttpRequestThread = new Thread()
{
@Override
public void run() {
HttpURLConnection httpConn = null;
InputStreamReader isReader = null;
```

```
BufferedReader bufReader = null;
StringBuffer readTextBuf = new StringBuffer();
try {
    URL url = new URL(reqUrl);
    httpConn = (HttpURLConnection)url.openConnection();
    httpConn.setRequestMethod(REQUEST_METHOD_GET);
    httpConn.setConnectTimeout(10000);
    httpConn.setReadTimeout(10000);
    InputStream inputStream = httpConn.getInputStream();
    isReader = new InputStreamReader(inputStream);
    bufReader = new BufferedReader(isReader);
    String line = bufReader.readLine();
    while(line != null) {
        readTextBuf.append(line);
        line = bufReader.readLine();
    }
    Message message = new Message();
    message.what = REQUEST_CODE_SHOW_RESPONSE_TEXT;
    Bundle bundle = new Bundle();
    bundle.putString(KEY_RESPONSE_TEXT,
    readTextBuf.toString());
    message.setData(bundle);
    uiUpdater.sendMessage(message);
} catch(MalformedURLException ex) {
    Log.e(TAG_HTTP_URL_CONNECTION, ex.getMessage(), ex);
} catch(IOException ex) {
    Log.e(TAG_HTTP_URL_CONNECTION, ex.getMessage(), ex);
} finally {
    try {
        if (bufReader != null) {
            bufReader.close();
            bufReader = null;
        }
        if (isReader != null) {
            isReader.close();
            isReader = null;
        }
    }
```

```

if (httpConn != null) {
    httpConn.disconnect();
    httpConn = null;
}
} catch (IOException ex) {
    Log.e(TAG_HTTP_URL_CONNECTION, ex.getMessage(),
          ex);
}
}
}
}
};

sendHttpRequestThread.start();
}
}
}

Permission:-(in Manifest.xml file)
<uses-permission android:name="android.permission.INTERNET"/>

```

---

44. 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).

Code:-

```

//activity_main.xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:layout_margin="20sp"
    tools:context=".MainActivity">
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"

```

```
        android:orientation="vertical">
        <TextView
            android:id="@+id/name"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Name"
            android:textSize="20sp" />
        <TextView
            android:id="@+id/salary"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Salary"
            android:textSize="20sp" />
    </LinearLayout>
</androidx.constraintlayout.widget.ConstraintLayout>
```

```
//MainActivity.java
package com.example.practical_9b;
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\":\"Kalpana Kakde\",\"salary\":40000}}";
    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();
}
}
}
}
```

---

## 45.Alert Dialog Box Demo

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:gravity="center"
    android:orientation="vertical"
    android:padding="20dp">

    <Button
        android:id="@+id	btnShowAlert"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/show_alert_dialog"/>
</LinearLayout>
```

---

MainActivity.java

```
package com.example.androidalert;
```

```
import androidx.appcompat.app.AppCompatActivity;  
  
import android.os.Bundle;  
import android.app.AlertDialog;  
import android.os.Bundle;  
import android.widget.Button;  
import android.widget.Toast;  
  
public class MainActivity extends AppCompatActivity {  
  
    Button btnShowAlert;  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main);  
  
        btnShowAlert = findViewById(R.id.btnShowAlert);  
  
        btnShowAlert.setOnClickListener(v -> showAlertDialog());  
    }  
  
    // Method to show Alert Dialog  
    private void showAlertDialog() {  
        AlertDialog.Builder builder = new  
        AlertDialog.Builder(MainActivity.this);  
        builder.setTitle("Exit Confirmation");  
        builder.setMessage("Do you really want to exit?");  
        builder.setIcon(android.R.drawable.ic_dialog_alert);  
  
        // Positive Button  
        builder.setPositiveButton("Yes", (dialog, which) -> {  
            Toast.makeText(MainActivity.this, "You clicked YES",  
            Toast.LENGTH_SHORT).show();  
            finish(); // Close the activity  
        });
```

```

    // Negative Button
    builder.setNegativeButton("No", (dialog, which) ->
        Toast.makeText(MainActivity.this, "You clicked NO",
        Toast.LENGTH_SHORT).show()
    );

    // Neutral Button
    builder.setNeutralButton("Cancel", (dialog, which) ->
        Toast.makeText(MainActivity.this, "You clicked
CANCEL", Toast.LENGTH_SHORT).show()
    );

    // Show the AlertDialog
    builder.show();
}
}

```

#### 46. Android Program to work with Locations.

Code :

MainActivity.java

package com.example.location;

```

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import android.Manifest;
import android.content.Intent;

```

```
import android.content.pm.PackageManager;
import android.location.Location;
import android.net.Uri;
import android.os.Bundle;
import android.widget.Button;
import android.widget.Toast;

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

public class MainActivity extends AppCompatActivity {

    Button btnLocation;
    FusedLocationProviderClient fusedLocationProviderClient;
    private static final int PERMISSION_ID = 44;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        btnLocation = findViewById(R.id.btnLocation);
        fusedLocationProviderClient =
        LocationServices.getFusedLocationProviderClient(this);

        btnLocation.setOnClickListener(v -> getCurrentLocation());
    }

    private void getCurrentLocation() {
        if
        (checkSelfPermission(Manifest.permission.ACCESS_FINE_LOCATION) == PackageManager.PERMISSION_GRANTED) {
            Task<Location> task =
            fusedLocationProviderClient.getLastLocation();
        }
    }
}
```

```
task.addOnSuccessListener(new  
OnSuccessListener<Location>() {  
    @Override  
    public void onSuccess(Location location) {  
        if (location != null) {  
            double latitude = location.getLatitude();  
            double longitude = location.getLongitude();  
  
            // ✅ Open in Google Maps  
            String uri = "geo:" + latitude + "," + longitude + "?q=" +  
latitude + "," + longitude + "(My Location);  
            Intent intent = new Intent(Intent.ACTION_VIEW,  
Uri.parse(uri));  
            intent.setPackage("com.google.android.apps.maps");  
            startActivity(intent);  
        } else {  
            Toast.makeText(MainActivity.this, "Unable to get  
location", Toast.LENGTH_SHORT).show();  
        }  
    }  
});  
} else {  
    // Ask for permission if not granted  
    requestPermissions(new  
String[]{Manifest.permission.ACCESS_FINE_LOCATION},  
PERMISSION_ID);  
}  
}  
  
@Override  
public void onRequestPermissionsResult(int requestCode,  
@NonNull String[] permissions, @NonNull int[] grantResults) {  
    super.onRequestPermissionsResult(requestCode, permissions,  
grantResults);  
    if (requestCode == PERMISSION_ID && grantResults.length > 0  
&& grantResults[0] == PackageManager.PERMISSION_GRANTED)  
{
```

```
        getCurrentLocation();
    }
}
}
```

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:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
```

```
    <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"
        android:padding="20dp">
```

```
        <Button
            android:id="@+id	btnLocation"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Show My Location in Maps" />
    </LinearLayout>
</androidx.constraintlayout.widget.ConstraintLayout>
```

AndroidManifest.xml

```
<manifest
    xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.location">
```

```
<uses-permission  
    android:name="android.permission.ACCESS_FINE_LOCATION" />  
    <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.Location">  
  
    <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>
```

---

## 47. Explicit Intent Demo

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:gravity="center"
    android:padding="20dp">

    <EditText
        android:id="@+id/etName"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter Your Name"
        android:inputType="textPersonName"/>
```

```
<Button  
    android:id="@+id	btnSend"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:text="Send to Second Activity"  
    android:layout_marginTop="16dp"/>  
  
</LinearLayout>  
=====  
activity_second.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"  
    android:padding="20dp">  
  
<TextView  
    android:id="@+id/tvMessage"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:textSize="22sp"  
    android:textColor="@android:color/black"/>  
  
</LinearLayout>  
=====  
MainActivity.java  
package com.example.explicitintent;  
  
import android.content.Intent;  
import android.os.Bundle;  
import android.widget.Button;  
import android.widget.EditText;  
  
import androidx.appcompat.app.AppCompatActivity;  
  
public class MainActivity extends AppCompatActivity {
```

```
EditText etName;
Button btnSend;

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    etName = findViewById(R.id.etName);
    btnSend = findViewById(R.id.btnSend);

    btnSend.setOnClickListener(v -> {
        String name = etName.getText().toString().trim();

        // Explicit Intent to open SecondActivity
        Intent intent = new Intent(MainActivity.this,
SecondActivity.class);
        intent.putExtra("username", name); // Passing data
        startActivity(intent);
    });
}
```

---

```
SecondActivity.java
package com.example.explicitintent;
import android.os.Bundle;
import android.widget.TextView;

import androidx.appcompat.app.AppCompatActivity;

public class SecondActivity extends AppCompatActivity {
```

```
    TextView tvMessage;

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

```
setContentView(R.layout.activity_second);

tvMessage = findViewById(R.id.tvMessage);

// Receiving data from Intent
String name = getIntent().getStringExtra("username");

if (name != null && !name.isEmpty()) {
    tvMessage.setText("Welcome, " + name + "!");
} else {
    tvMessage.setText("No name provided.");
}
}
```

---

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">

    <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.ExplicitIntent"
        tools:targetApi="31">
        <activity android:name=".SecondActivity" />
        <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>
```

## 48. Implicit Intent Demo

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:gravity="center"
    android:padding="20dp">

    <Button
        android:id="@+id	btnOpenBrowser"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Open Website"/>

    <Button
        android:id="@+id	btnOpenDialer"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Open Dialer"
        android:layout_marginTop="12dp"/>

    <Button
```

```
    android:id="@+id(btnSendEmail"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Send Email"
    android:layout_marginTop="12dp"/>

<Button
    android:id="@+id(btnShareText"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Share Text"
    android:layout_marginTop="12dp"/>

</LinearLayout>
```

---

## MainActivity.java

```
package com.example.intentdemo;

import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.widget.Button;
import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    Button btnOpenBrowser, btnOpenDialer, btnSendEmail,
    btnShareText;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
```

```
btnOpenBrowser = findViewById(R.id.btnOpenBrowser);
btnOpenDialer = findViewById(R.id.btnOpenDialer);
btnSendEmail = findViewById(R.id.btnSendEmail);
btnShareText = findViewById(R.id.btnShareText);

// 1 Open Browser
btnOpenBrowser.setOnClickListener(v -> {
    Uri webpage = Uri.parse("https://developer.android.com");
    Intent intent = new Intent(Intent.ACTION_VIEW, webpage);

    if (intent.resolveActivity(getApplicationContext()) != null) {
        startActivity(intent);
    } else {
        Toast.makeText(this, "No app can handle this action",
        Toast.LENGTH_SHORT).show();
    }
});

// 2 Open Dialer with number
btnOpenDialer.setOnClickListener(v -> {
    Uri phoneNumber = Uri.parse("tel:9876543210");
    Intent intent = new Intent(Intent.ACTION_DIAL,
    phoneNumber);
    startActivity(intent);
});

// 3 Send Email
btnSendEmail.setOnClickListener(v -> {
    Intent intent = new Intent(Intent.ACTION_SENDTO);
    intent.setData(Uri.parse("mailto:"));
    // Only email apps handle
this
    intent.putExtra(Intent.EXTRA_EMAIL, new
String[]{"example@gmail.com"});
    intent.putExtra(Intent.EXTRA_SUBJECT, "Admission
Inquiry");
    intent.putExtra(Intent.EXTRA_TEXT, "Hello, I would like to
know more about your courses.");
});
```

```
if (intent.resolveActivity(getApplicationContext()) != null) {  
    startActivity(intent);  
} else {  
    Toast.makeText(this, "No email client found",  
    Toast.LENGTH_SHORT).show();  
}  
});  
  
// 4 Share Text  
btnShareText.setOnClickListener(v -> {  
    Intent intent = new Intent(Intent.ACTION_SEND);  
    intent.setType("text/plain");  
    intent.putExtra(Intent.EXTRA_TEXT, "Check out this cool  
Android tutorial!");  
  
    startActivityForResult(Intent.createChooser(intent, "Share via"));  
});  
}  
}
```

---

## 49. Internal Storage Program using Android

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">

    <EditText
        android:id="@+id/editText1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentRight="true"
        android:layout_alignParentTop="true"
        android:layout_marginRight="20dp"
        android:layout_marginTop="24dp"
        android:ems="10" >
        <requestFocus />
    </EditText>

    <EditText
        android:id="@+id/editText2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignRight="@+id/editText1"
        android:layout_below="@+id/editText1"
        android:layout_marginTop="24dp"
        android:ems="10" />

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignBaseline="@+id/editText1"
        android:layout_alignBottom="@+id/editText1"
```

```
    android:layout_alignParentLeft="true"
    android:text="File Name:" />

<TextView
    android:id="@+id/textView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignBaseline="@+id/editText2"
    android:layout_alignBottom="@+id/editText2"
    android:layout_alignParentLeft="true"
    android:text="Data:" />

<Button
    android:id="@+id/button1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignLeft="@+id/editText2"
    android:layout_below="@+id/editText2"
    android:layout_marginLeft="70dp"
    android:layout_marginTop="16dp"
    android:text="save" />

<Button
    android:id="@+id/button2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignBaseline="@+id/button1"
    android:layout_alignBottom="@+id/button1"
    android:layout_toRightOf="@+id/button1"
    android:text="read" />

</RelativeLayout>
```

---

## MainActivity.java

```
package com.example.internaldemo;
```

```
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.Toast;

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

public class MainActivity extends AppCompatActivity {
    EditText editTextFileName,editTextData;
    Button saveButton,readButton;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        editTextFileName=findViewById(R.id.editText1);
        editTextData=findViewById(R.id.editText2);
        saveButton=findViewById(R.id.button1);
        readButton=findViewById(R.id.button2);

        //Performing Action on Read Button
        saveButton.setOnClickListener(new View.OnClickListener(){
            @Override
            public void onClick(View argo) {
                String filename=editTextFileName.getText().toString();
                String data=editTextData.getText().toString();

                FileOutputStream fos;
                try {
                    fos = openFileOutput(filename,
```

```
Context.MODE_PRIVATE);
        //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) {e.printStackTrace();}
    catch (IOException e) {e.printStackTrace();}

}

});

//Performing Action on Read Button
readButton.setOnClickListener(new View.OnClickListener(){

    @Override
    public void onClick(View argo) {
        String filename=editTextFileName.getText().toString();
        StringBuffer stringBuffer = new StringBuffer();
        try {
            //Attaching BufferedReader to the FileInputStream by
            //the help of InputStreamReader
            BufferedReader inputReader = new
            BufferedReader(new InputStreamReader(
                openFileInput(filename)));
            String inputString;
            //Reading data line by line and storing it into the
            stringBuffer
            while ((inputString = inputReader.readLine()) != null)
{
                stringBuffer.append(inputString + "\n");
            }
        }
    }
});
```

```
        } catch (IOException e) {
            e.printStackTrace();
        }
        //Displaying data on the toast
        Toast.makeText(getApplicationContext(),stringBuffer.toString(),
        Toast.LENGTH_LONG).show();
    }
});  
}
```

## 50. Playing Video Program using Android

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="16dp">

    <Button
        android:id="@+id	btnChoose"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Choose Video from Storage" />

    <VideoView
        android:id="@+id/videoView"
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:layout_marginTop="16dp" />

    <TextView
        android:id="@+id/tvStatus"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="No video selected"
        android:layout_marginTop="8dp"/>
</LinearLayout>
```

---

MainActivity.java

```
package com.example.videodemo1;

import androidx.activity.result.ActivityResult;
```

```
import androidx.activity.result.ActivityResultLauncher;
import androidx.activity.result.contract.ActivityResultContracts;
import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.widget.Button;
import android.widget.MediaController;
import android.widget.TextView;
import android.widget.VideoView;

public class MainActivity extends AppCompatActivity {
    private VideoView videoView;
    private Button btnChoose;
    private TextView tvStatus;

    // SAF launcher for choosing video
    private ActivityResultLauncher<Intent> pickVideoLauncher;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        videoView = findViewById(R.id.videoView);
        btnChoose = findViewById(R.id.btnChoose);
        tvStatus = findViewById(R.id.tvStatus);

        // Setup media controls for VideoView
        MediaController mediaController = new
        MediaController(this);
        mediaController.setAnchorView(videoView);
        videoView.setMediaController(mediaController);

        // Register launcher for SAF file picking
        pickVideoLauncher = registerForActivityResult(
            new ActivityResultContracts.StartActivityForResult(),
            (ActivityResult result) -> {
```

```
        if (result.getResultCode() == RESULT_OK &&
result.getData() != null) {
            Uri videoUri = result.getData().getData();
            if (videoUri != null) {
                playVideo(videoUri);
            }
        }
    });

btnChoose.setOnClickListener(v -> openVideoPicker());
}

private void openVideoPicker() {
    Intent intent = new
Intent(Intent.ACTION_OPEN_DOCUMENT);
    intent.addCategory(Intent.CATEGORY_OPENABLE);
    intent.setType("video/*");
    pickVideoLauncher.launch(intent);
}

private void playVideo(Uri videoUri) {
    tvStatus.setText("Playing: " + videoUri.toString());
    videoView.setVideoURI(videoUri);
    videoView.start();
}
```

---

## 51. Program to demonstrate the use of audio file

Step1 : First of all create raw folder in res folder by right clocking and select directory

Step2 ) open in explorer raw folder and paste audio file in raw folder

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/play"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Play"
    android:layout_centerInParent="true"/>

</RelativeLayout>
```

---

### ActivityMain.java

```
package com.example.audiofile;

import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivity extends AppCompatActivity {
    Button play;
    MediaPlayer mediaPlayer;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        play = (Button) findViewById(R.id.play);
        mediaPlayer =
            MediaPlayer.create(getApplicationContext(),R.raw.sample);
```

```
play.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        mediaPlayer.start();
    }
});
}
protected void stop()
{
    mediaPlayer.release();
    mediaPlayer=null;
    super.onStop();
}
}
```

---

## 52. Program to demonstrate the use of Internal File Storage

```
activity_main.xml
<?xml version="1.0" encoding="utf-8"?>
<ScrollView
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="16dp">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="vertical">

        <EditText
            android:id="@+id/etFilename"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:hint="File name (e.g. notes.txt)"/>

        <EditText
            android:id="@+id/etContent"
            android:layout_width="match_parent"
            android:layout_height="160dp"
            android:hint="File content"
            android:gravity="top"
            android:inputType="textMultiLine"
            android:layout_marginTop="8dp"/>

        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
```

```
    android:orientation="horizontal"
    android:layout_marginTop="8dp">

    <Button
        android:id="@+id btnSave"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="Save"/>

    <Button
        android:id="@+id btnAppend"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="Append"
        android:layout_marginStart="8dp"/>
</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:layout_marginTop="8dp">

    <Button
        android:id="@+id btnRead"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="Read"/>

    <Button
        android:id="@+id btnDelete"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
```

```
    android:text="Delete"
    android:layout_marginStart="8dp"/>
</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    android:layout_marginTop="8dp">

    <Button
        android:id="@+id/btnList"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="List Files"/>

    <Button
        android:id="@+id/btnSaveCache"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="Save to Cache"
        android:layout_marginStart="8dp"/>
</LinearLayout>

<Button
    android:id="@+id/btnClear"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Clear Fields"
    android:layout_marginTop="12dp"/>

<TextView
    android:id="@+id/tvFilesDir"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
```

```
        android:text="Files dir path will appear here"
        android:layout_marginTop="12dp"/>

    <TextView
        android:id="@+id/tvOutput"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Output"
        android:layout_marginTop="8dp"/>
</LinearLayout>
</ScrollView>
```

---

## MainActivity.java

```
package com.example.internalfile;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.text.TextUtils;
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.InputStreamReader;

public class MainActivity extends AppCompatActivity {
    EditText etFilename, etContent;
    Button btnSave, btnAppend, btnRead, btnDelete, btnList,
    btnSaveCache, btnClear;
    TextView tvOutput, tvFilesDir;
```

```
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    etFilename = findViewById(R.id.etFilename);
    etContent = findViewById(R.id.etContent);
    btnSave = findViewById(R.id.btnSave);
    btnAppend = findViewById(R.id.btnAppend);
    btnRead = findViewById(R.id.btnRead);
    btnDelete = findViewById(R.id.btnDelete);
    btnList = findViewById(R.id.btnList);
    btnSaveCache = findViewById(R.id.btnSaveCache);
    btnClear = findViewById(R.id.btnClear);

    tvOutput = findViewById(R.id.tvOutput);
    tvFilesDir = findViewById(R.id.tvFilesDir);

    // Show the internal files directory path
    tvFilesDir.setText("Files dir: " + getFilesDir().getAbsolutePath());

    btnSave.setOnClickListener(v -> {
        String filename = etFilename.getText().toString().trim();
        String content = etContent.getText().toString();
        if (validate(filename, content)) {
            boolean ok = writeFile(filename, content, false);
            showToast(ok ? "File saved" : "Save failed");
        }
    });
}

btnAppend.setOnClickListener(v -> {
    String filename = etFilename.getText().toString().trim();
    String content = etContent.getText().toString();
    if (validate(filename, content)) {
        boolean ok = writeFile(filename, content, true);
        showToast(ok ? "Appended to file" : "Append failed");
    }
})
```

```
});
```

```
btnRead.setOnClickListener(v -> {
    String filename = etFilename.getText().toString().trim();
    if (TextUtils.isEmpty(filename)) {
        etFilename.setError("Enter filename");
        return;
    }
    String data = readFile(filename);
    if (data == null) {
        showToast("Read failed / file not found");
        tvOutput.setText("");
    } else {
        tvOutput.setText("Contents of " + filename + ":\n\n" + data);
    }
});
```

```
btnDelete.setOnClickListener(v -> {
    String filename = etFilename.getText().toString().trim();
    if (TextUtils.isEmpty(filename)) {
        etFilename.setError("Enter filename");
        return;
    }
    boolean deleted = deleteFile(filename);
    showToast(deleted ? "File deleted" : "Delete failed or file not
found");
});
```

```
btnList.setOnClickListener(v -> {
    String[] files = fileList();
    if (files.length == 0) {
        tvOutput.setText("No files found in internal storage.");
    } else {
        StringBuilder sb = new StringBuilder();
        sb.append("Files in internal storage:\n");
        for (String f : files) {
            sb.append("- ").append(f).append("\n");
        }
    }
});
```

```
        }
        tvOutput.setText(sb.toString());
    }
});

btnSaveCache.setOnClickListener(v -> {
    String filename = etFilename.getText().toString().trim();
    String content = etContent.getText().toString();
    if (validate(filename, content)) {
        boolean ok = writeToCache(filename, content);
        showToast(ok ? "Saved to cache" : "Cache save failed");
    }
});

btnClear.setOnClickListener(v -> {
    etFilename.setText("");
    etContent.setText("");
    tvOutput.setText("");
});

private boolean validate(String filename, String content) {
    if (TextUtils.isEmpty(filename)) {
        etFilename.setError("Enter filename");
        return false;
    }
    if (filename.contains("/") || filename.contains("\\")) {
        etFilename.setError("Filename must not contain path
separators");
        return false;
    }
    if (TextUtils.isEmpty(content)) {
        etContent.setError("Enter content");
        return false;
    }
    return true;
}
```

```

/**
 * Write or append to internal file using openFileOutput.
 * @param filename name (no path)
 * @param data content
 * @param append true -> append, false -> overwrite
 * @return true if success
 */
private boolean writeFile(String filename, String data, boolean
append) {
    FileOutputStream fos = null;
    try {
        int mode = append ? MODE_APPEND : MODE_PRIVATE;
        fos = openFileOutput(filename, mode);
        fos.write(data.getBytes());
        fos.flush();
        return true;
    } catch (Exception e) {
        e.printStackTrace();
        return false;
    } finally {
        if (fos != null) {
            try { fos.close(); } catch (IOException ignored) {}
        }
    }
}

/**
 * Read file from internal storage.
 * @param filename name
 * @return file contents string or null on error
 */
private String readFile(String filename) {
    FileInputStream fis = null;
    try {
        fis = openFileInput(filename);
        InputStreamReader isr = new InputStreamReader(fis);
        BufferedReader br = new BufferedReader(isr);

```

```
StringBuilder sb = new StringBuilder();
String line;
while ((line = br.readLine()) != null) {
    sb.append(line).append('\n');
}
return sb.toString().trim();
} catch (FileNotFoundException fnf) {
    fnf.printStackTrace();
    return null;
} catch (IOException e) {
    e.printStackTrace();
    return null;
} finally {
    if (fis != null) {
        try { fis.close(); } catch (IOException ignored) {}
    }
}
}

/**
 * Write data to internal cache directory (getCacheDir()).
 */
private boolean writeToCache(String filename, String data) {
    FileOutputStream fos = null;
    try {
        File cacheFile = new File(getCacheDir(), filename);
        fos = new FileOutputStream(cacheFile);
        fos.write(data.getBytes());
        fos.flush();
        return true;
    } catch (Exception e) {
        e.printStackTrace();
        return false;
    } finally {
        if (fos != null) {
            try { fos.close(); } catch (IOException ignored) {}
        }
    }
}
```

```
        }  
    }  
  
    private void showToast(String msg) {  
        Toast.makeText(this, msg, Toast.LENGTH_SHORT).show();  
    }  
}
```

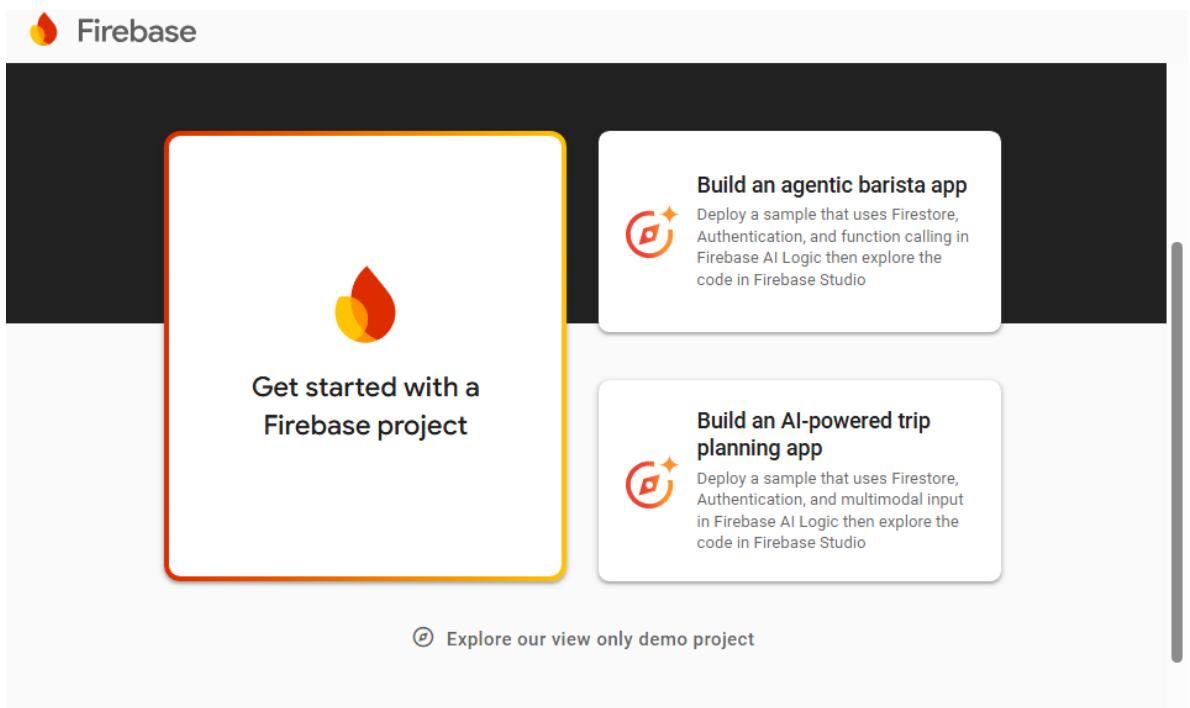
---

## 53. FIREBASE DATABASE CONNECTIVITY USING ANDROID Program

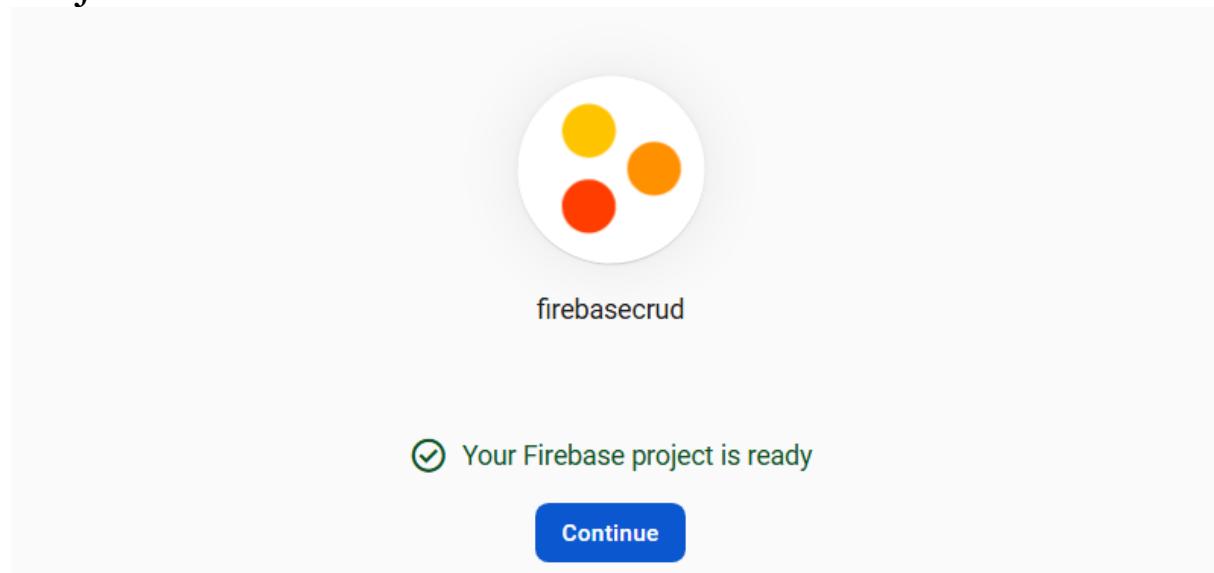
To use Firebase Realtime Database in your Android project, you need to follow these Firebase Setup Prerequisites:

---

- 1. Create Firebase Project
  - 1. Go to: <https://console.firebaseio.google.com>



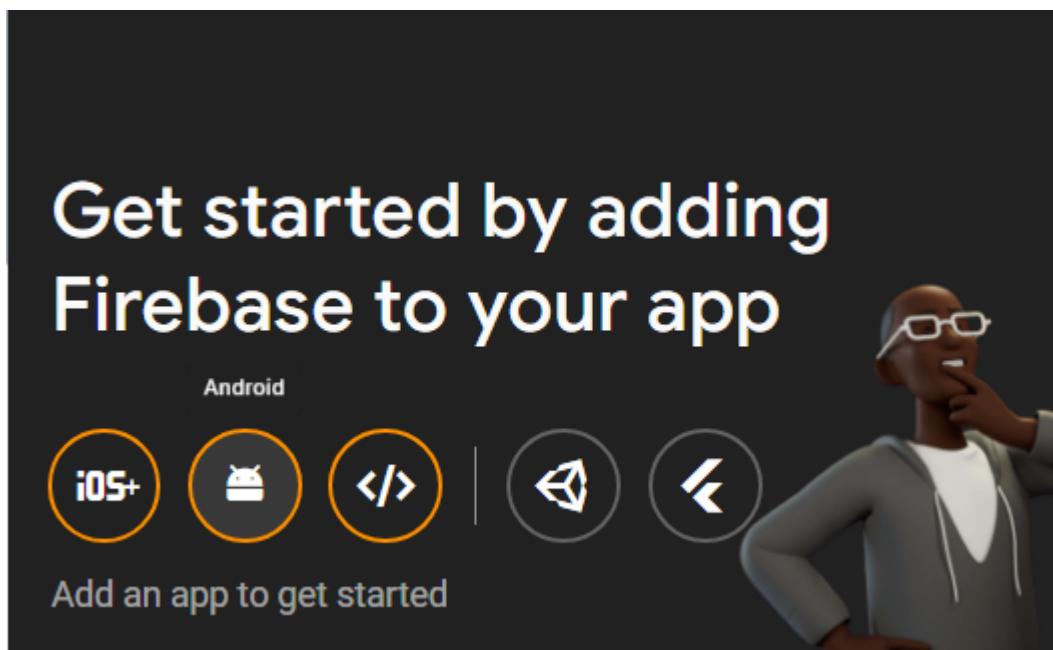
2. Click "Add Project".
3. Enter a Project Name, click Continue.
4. Disable or enable Google Analytics (your choice), click Create Project.



---

## 2. Register Your Android App

1. After creating the project, click "Add app" → Android icon.



### 2. Fill in:

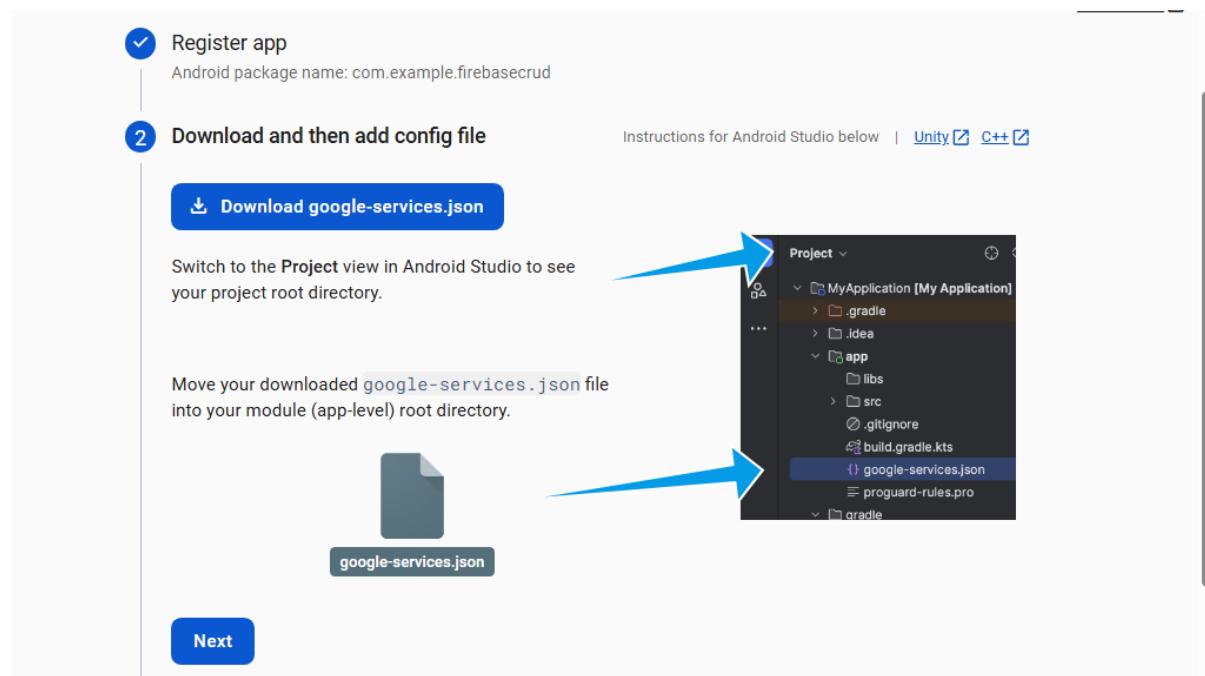
- Android package name (e.g. com.example.firebaseiocrud)
  - App nickname (optional)
  - SHA-1 (required for Firebase Auth, optional for Realtime DB)

### 3. Click Register App.

---

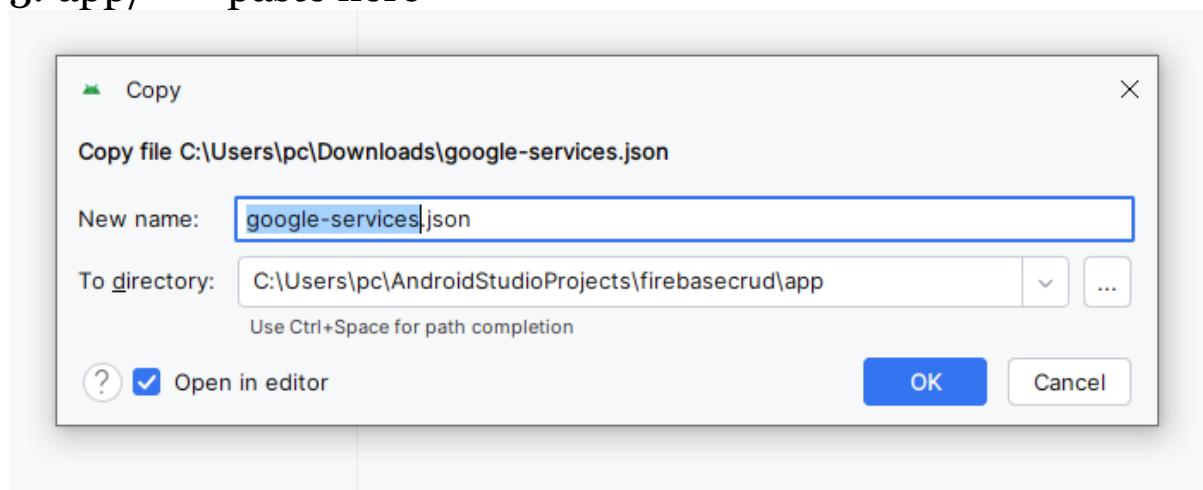
#### ✓ 3. Download google-services.json

1. After registration, click "Download google-services.json".

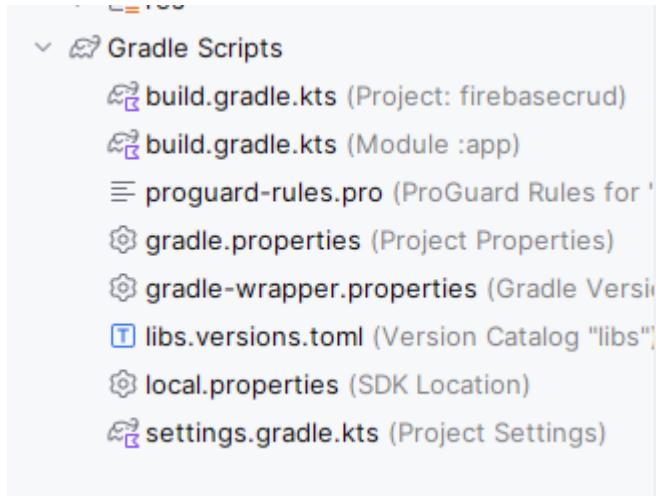


2. Place this file inside your project:

3. app/ --> paste here



#### ✓ 4. Add Firebase SDK to Your App



In Project-level build.gradle:

```
buildscript {  
    dependencies {  
        classpath 'com.google.gms:google-services:4.4.1'  
    }  
}
```

In App-level(Add this) build.gradle:

```
plugins {  
    id 'com.android.application'  
    id 'com.google.gms.google-services' // Add this  
}  
  
dependencies {  
    // Firebase Realtime Database and Auth  
    implementation 'com.google.firebaseio:firebase-database:20.3.0'  
    implementation 'com.google.firebase:firebase-auth:22.3.0'  
}
```

---

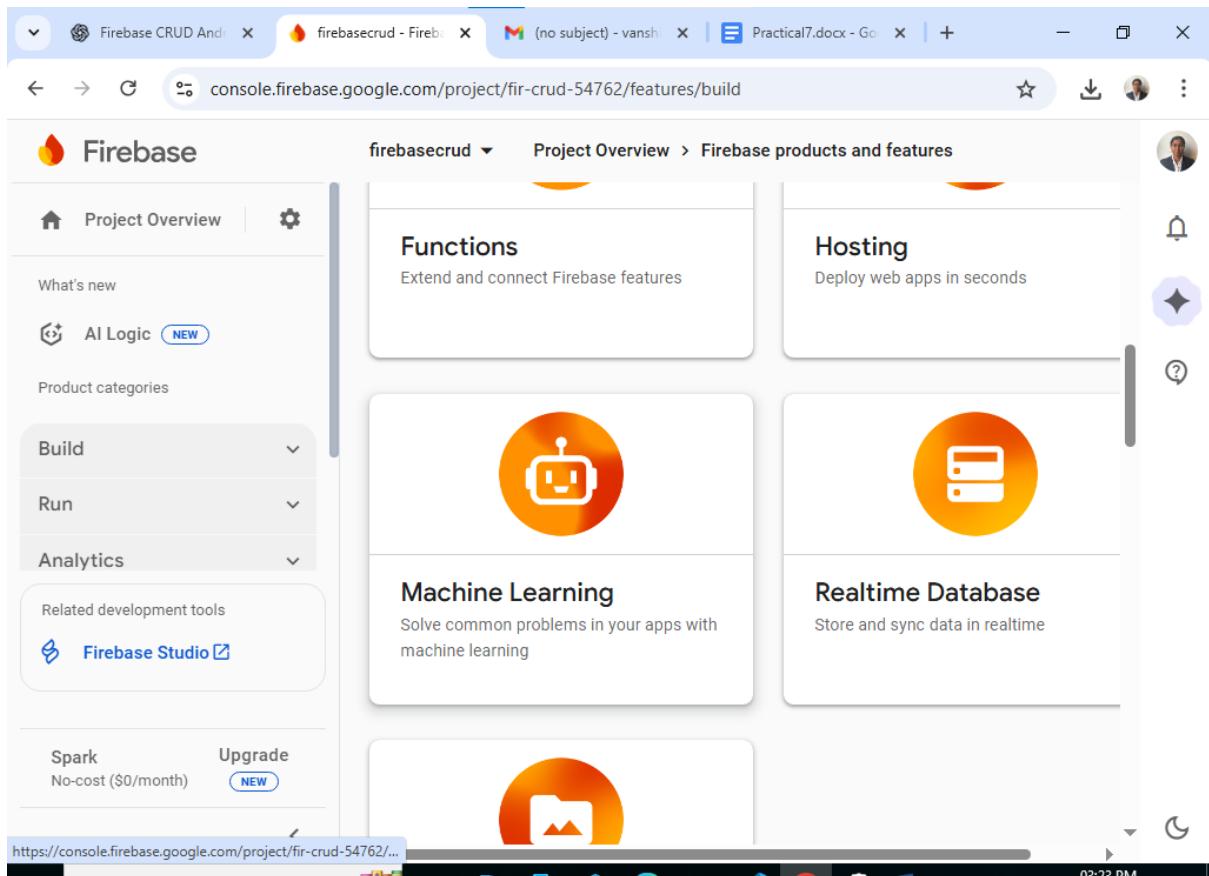
## 5. Sync Project with Gradle

Click "Sync Now" when prompted in Android Studio.

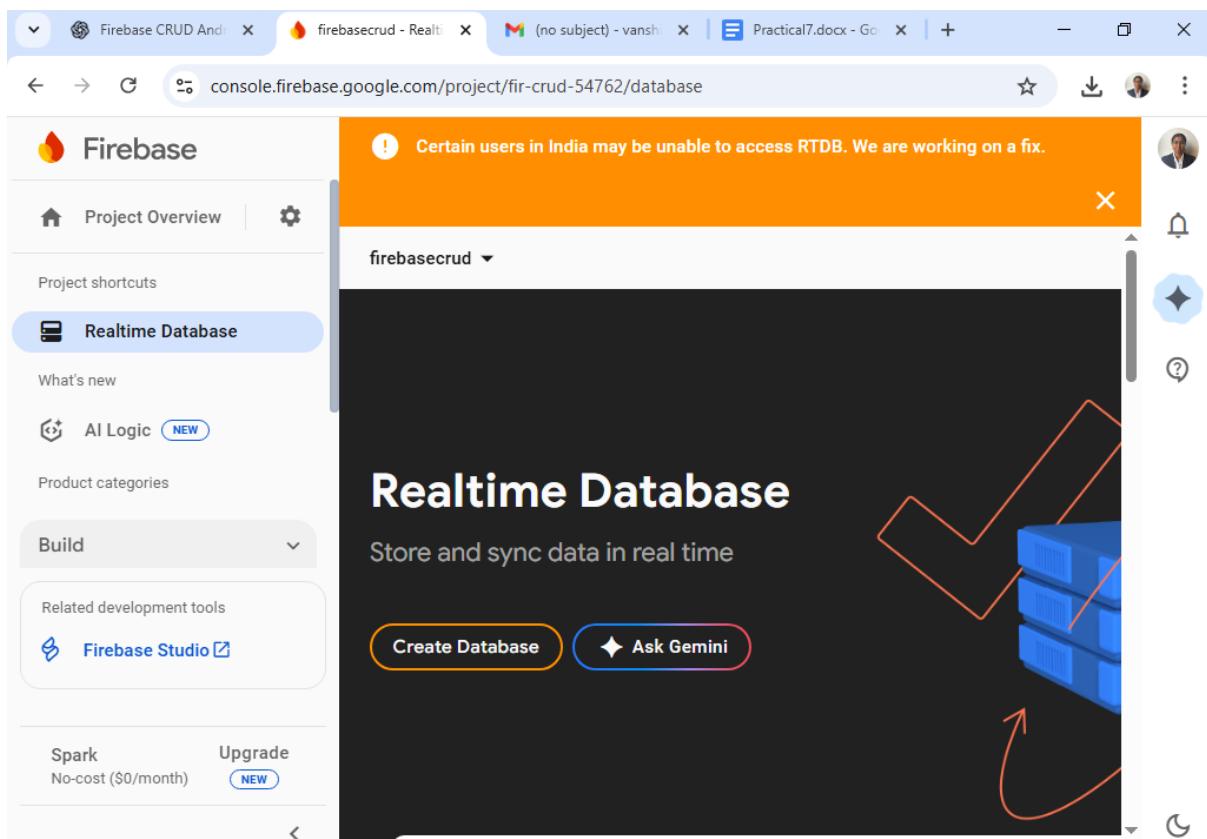
---

## 6. Enable Realtime Database in Firebase Console

1. Go to Firebase Console → Your Project
2. Open Build > Realtime Database



3. Click "Create Database"



#### 4. Select your region and start in test mode (for development)

```
{  
  "rules": {  
    ".read": true,  
    ".write": true  
  }  
}
```

```
1  {
2    "rules": {
3      ".read": true,
4      ".write": true
5    }
6 }
```

Click Publish

MainActivity.java

```
package com.example.firebaseio;
```

```
import static com.example.firebaseio.R.*;
```

```
import android.os.Bundle;
```

```
import android.view.View;
```

```
import android.widget.*;
```

```
import androidx.annotation.NonNull;
```

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

```
import com.google.firebase.analytics.FirebaseAnalytics;
```

```
import com.google.firebaseio.database.*;
```

```
import java.util.*;
```

```
public class MainActivity extends AppCompatActivity {
```

```
EditText etName, etEmail;
Button btnAdd, btnUpdate, btnDelete, btnViewAll;
ListView listView;

FirebaseAnalytics firebaseAnalytics;
DatabaseReference dbRef;
List<User> userList;
String selectedUserId = "";

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    firebaseAnalytics = FirebaseAnalytics.getInstance(this);

    // Initialize views
    etName = findViewById(R.id.etName);
    etEmail = findViewById(R.id.etEmail);
    btnAdd = findViewById(R.id.btnAdd);
    btnUpdate = findViewById(R.id.btnUpdate);
    btnDelete = findViewById(R.id.btnDelete);
    btnViewAll = findViewById(R.id.btnViewAll);
    listView = findViewById(R.id.listView);

    dbRef = FirebaseDatabase.getInstance().getReference("users");
    userList = new ArrayList<>();

    // Button actions
    btnAdd.setOnClickListener(view -> {
        addUser();
        logEvent("add_user");
    });

    btnUpdate.setOnClickListener(view -> {
        updateUser();
        logEvent("update_user");
    });
}
```

```
});

btnDelete.setOnClickListener(view -> {
    deleteUser();
    logEvent("delete_user");
});

btnViewAll.setOnClickListener(view -> {
    retrieveUsers(); // Only fetch when View All is clicked
});

listView.setOnItemClickListener((adapterView, view, i, l) -> {
    User user = userList.get(i);
    etName.setText(user.getName());
    etEmail.setText(user.getEmail());
    selectedUserId = user.getId();
});
}

private void logEvent(String action) {
    Bundle bundle = new Bundle();
    bundle.putString(FirebaseAnalytics.Param.METHOD, action);

    firebaseAnalytics.logEvent(FirebaseAnalytics.Event.SELECT_CONTENT, bundle);
}

private void addUser() {
    String name = etName.getText().toString();
    String email = etEmail.getText().toString();
    if (name.isEmpty() || email.isEmpty()) {
        Toast.makeText(this, "Enter name and email",
Toast.LENGTH_SHORT).show();
        return;
    }

    String id = dbRef.push().getKey();
```

```
User user = new User(id, name, email);
dbRef.child(id).setValue(user);
Toast.makeText(this, "User Added",
Toast.LENGTH_SHORT).show();

etName.setText("");
etEmail.setText("");
}

private void updateUser() {
if (!selectedUserId.isEmpty()) {
String name = etName.getText().toString();
String email = etEmail.getText().toString();
User user = new User(selectedUserId, name, email);
dbRef.child(selectedUserId).setValue(user);
Toast.makeText(this, "User Updated",
Toast.LENGTH_SHORT).show();
} else {
Toast.makeText(this, "Select a user to update",
Toast.LENGTH_SHORT).show();
}
}

private void deleteUser() {
if (!selectedUserId.isEmpty()) {
dbRef.child(selectedUserId).removeValue();
Toast.makeText(this, "User Deleted",
Toast.LENGTH_SHORT).show();
etName.setText("");
etEmail.setText("");
selectedUserId = "";
} else {
Toast.makeText(this, "Select a user to delete",
Toast.LENGTH_SHORT).show();
}
}
```

```
private void retrieveUsers() {
    dbRef.addListenerForSingleValueEvent(new
ValueEventListener() {
    @Override
    public void onDataChange(@NonNull DataSnapshot snapshot)
{
    userList.clear();
    for (DataSnapshot postSnapshot : snapshot.getChildren()) {
        User user = postSnapshot.getValue(User.class);
        userList.add(user);
    }

    List<String> displayList = new ArrayList<>();
    for (User user : userList) {
        displayList.add("Name: " + user.getName() + "\nEmail: " +
user.getEmail());
    }

    ArrayAdapter<String> adapter = new
ArrayAdapter<>(MainActivity.this,
        android.R.layout.simple_list_item_1, displayList);
    listView.setAdapter(adapter);

    Toast.makeText(MainActivity.this, "Data displayed on
device", Toast.LENGTH_SHORT).show();
}

    @Override
    public void onCancelled(@NonNull DatabaseError error) {
        Toast.makeText(MainActivity.this, "Error: " +
error.getMessage(), Toast.LENGTH_SHORT).show();
    }
});
```

User.java

```
package com.example.firebaseiocrud;

public class User {
    private String id;
    private String name;
    private String email;

    public User() {} // Required for Firebase

    public User(String id, String name, String email) {
        this.id = id;
        this.name = name;
        this.email = email;
    }

    public String getId() { return id; }
    public String getName() { return name; }
    public String getEmail() { return email; }

    public void setId(String id) { this.id = id; }
    public void setName(String name) { this.name = name; }
    public void setEmail(String email) { this.email = email; }
}

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

    <LinearLayout
        xmlns:android="http://schemas.android.com/apk/res/android"
            android:padding="16dp"
            android:orientation="vertical"
            android:layout_width="match_parent"
```

```
    android:layout_height="match_parent"
    android:fitsSystemWindows="true">

<EditText
    android:id="@+id/etName"
    android:hint="Name"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"/>

<EditText
    android:id="@+id/etEmail"
    android:hint="Email"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"/>

<Button
    android:id="@+id	btnAdd"
    android:text="Add User"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"/>

<Button
    android:id="@+id	btnUpdate"
    android:text="Update User"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"/>

<Button
    android:id="@+id	btnDelete"
    android:text="Delete User"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"/>

<Button
    android:id="@+id	btnViewAll"
    android:text="View All Users"
```

```
    android:layout_width="match_parent"
    android:layout_height="wrap_content"/>

<ListView
    android:id="@+id/listView"
    android:layout_width="match_parent"
    android:layout_height="0dp"
    android:layout_weight="1"/>

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

AndriodManifest.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"
    package="com.example.firebaseiocrud">

    <!-- Required for Firebase Realtime Database & Analytics -->
    <uses-permission android:name="android.permission.INTERNET"
/>

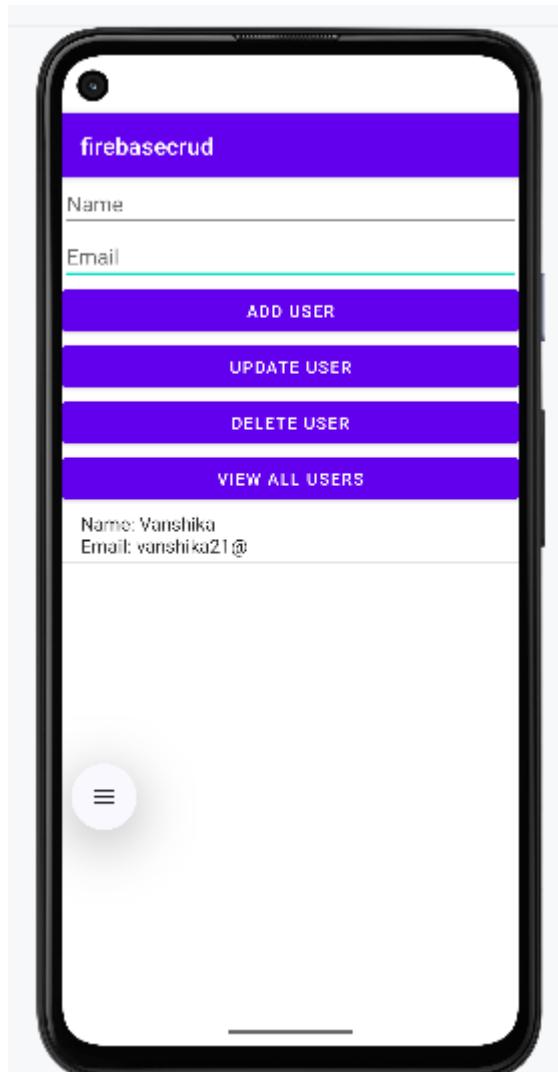
    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Firebasecrud">

        <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>
```



## 54. ASYNCTASK IN ANDROID

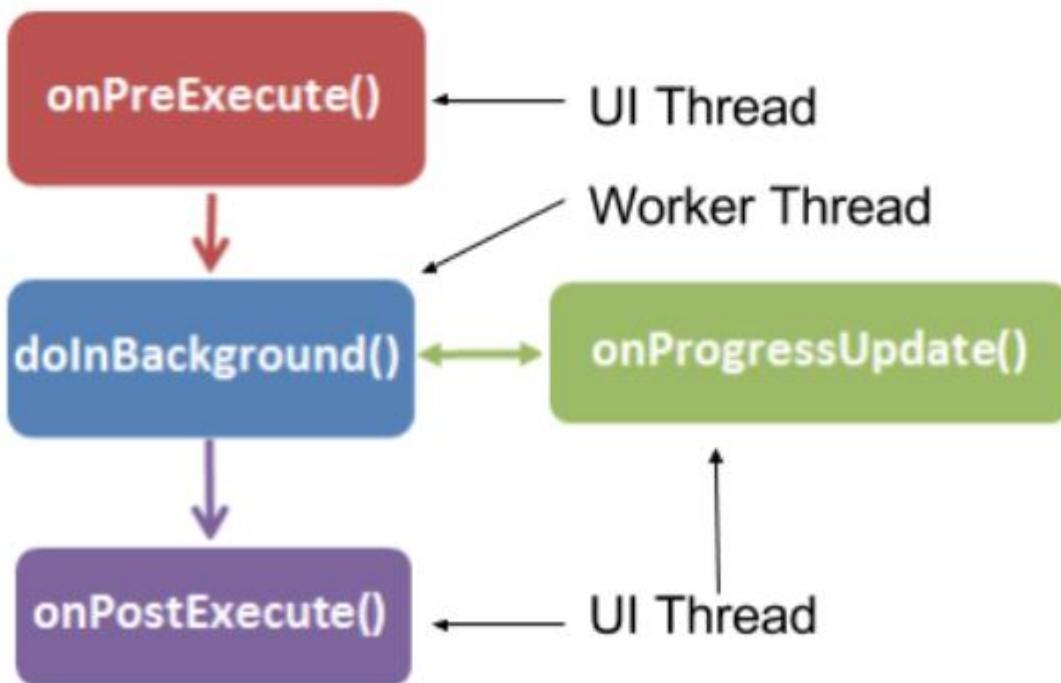
AsyncTask (asynchronous task) is an Android class that makes it easier to do operations on a background thread and publish the result on the User Interface (UI)/ main thread without having to manipulate threads and handlers ourselves.

In Android, updating a UI from a separate thread is a frequently encountered scenario. It's so frequent that Android provides ready to use API for such kinds of scenarios. AsyncTask is basically an API.

AsyncTask is defined by three generic types. These are called Params, Progress, and Result. AsyncTask has four methods that are called onPreExecute, doInBackground, onProgressUpdate and onPostExecute.

Example: Downloading, etc.

## METHODS OF ASYNCTASK:



AsyncTask has four different types of methods to make sure you are able to do long tasks in a way that you do not do in the main thread.

These methods are as follows:

>`onPreExecute()` - This part of the method gets executed on the main thread. Before doing a background operation you should show something on-screen like a progress bar or an animation to the user.

>`doInBackground(Params)` - This method is used to do background operations on the background thread. Operations in `doInBackground()` method should not touch on any main thread activities or fragments.

>`onProgressUpdate(Progress...)` - This method receives progress updates from the `doInBackground` method and runs on the UI thread. This method is used to display progress bars in the UI.

>`onPostExecute(Result)` - In this method you can update the UI of the background operation result.

## GENERIC TYPES IN ASYNCTASK:

>TypeOfVarArgParams - This contains information about what type of params are used for execution.

>ProgressValue - This contains information about progress units.

While doing background operations we can update information on the UI using the onProgressUpdate() method.

>ResultValue - This contains information about result type.

Example

activitymain.xml

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

    <EditText
        android:id="@+id/etNrTimes"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:ems="10"
        android:hint="Enter nr of times to roll dice"
        android:gravity="center_vertical"
        android:inputType="number"
        android:layout_marginTop="10dp"
        android:layout_marginLeft="10dp"
        android:layout_marginRight="10dp"/>

    <Button
        android:id="@+id/btnRollDice"
        android:layout_width="match_parent"
```

```
    android:layout_height="wrap_content"
    android:layout_marginLeft="20dp"
    android:layout_marginTop="10dp"
    android:layout_marginRight="10dp"
    android:text="Roll Dice"/>

<TextView
    android:id="@+id/tvResults"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginLeft="10dp"
    android:layout_marginTop="10dp"
    android:layout_marginRight="10dp"
    android:text="TextView"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.asyntask;

import androidx.appcompat.app.AppCompatActivity;
import android.app.AlertDialog;
import android.os.AsyncTask;
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.util.Random;

public class MainActivity extends AppCompatActivity {

    TextView tvResults;
    Button btnRollDice;
    EditText etNrTimes;

    @Override
```

```
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    etNrTimes = (EditText) findViewById(R.id.etNrTimes);
    tvResults = (TextView) findViewById(R.id.tvResults);
    btnRollDice = (Button) findViewById(R.id.btnRollDice);

    tvResults.setVisibility(View.GONE);

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

            int nrOfTimes = Integer.parseInt(etNrTimes.getText()
                .toString()
                .trim());
            new ProcessDiceInBackground()
                .execute(nrOfTimes);

        }
    });
}

public class ProcessDiceInBackground extends AsyncTask < Integer,
Integer, String > {
    ProgressDialog dialog;

    @Override
    protected void onPreExecute() {
        super.onPreExecute();

        dialog = new ProgressDialog(MainActivity.this);
        dialog.setProgressStyle(ProgressDialog.STYLE_HORIZONTAL);
        dialog.setMax(Integer.parseInt(etNrTimes.getText()
            .toString()
            .trim()));
    }
}
```

```
    dialog.show();
}

@Override
protected String doInBackground(Integer...integers) {
    int ones = 0, two = 0, threes = 0, fours = 0, fives = 0, sixes = 0,
randomNumber;

Random random = new Random();
String results;
double currentProgress = 0;
double previousProgress = 0;

for (int i = 0; i < integers[0]; i++) {
    currentProgress = (double) i / integers[0];
    if (currentProgress - previousProgress >= 0.03) {
        publishProgress(i);
        previousProgress = currentProgress;

    }
    randomNumber = random.nextInt(6) + 1;

    switch (randomNumber) {
        case 1:
            ones++;
            break;

        case 2:
            two++;
            break;

        case 3:
            threes++;
            break;

        case 4:
            fours++;
            break;
    }
}
```

```
        break;

    case 5:
        fives++;
        break;

    default:
        sixes++;
    }
}

results = "Results: \n1:" + ones + "\n2:" + two + "\n3" + threes +
"\n4" + fours +
"\n5" + fives + "\n6" + sixes;
return results;
}
```

@Override

```
protected void onProgressUpdate(Integer...values) {
    super.onProgressUpdate(values);

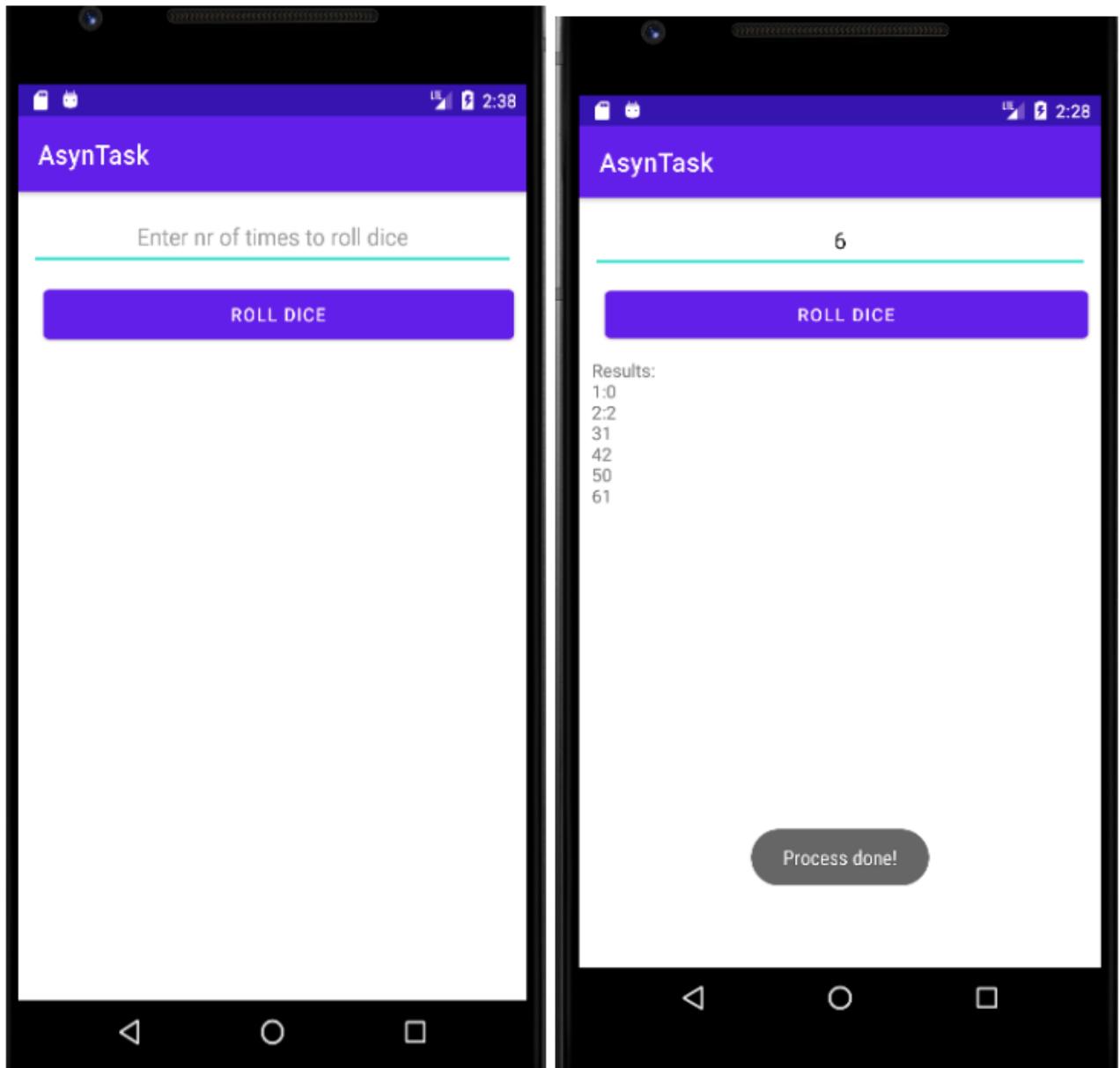
    dialog.setProgressStyle(values[0]);
}
```

@Override

```
protected void onPostExecute(String s) {
    super.onPostExecute(s);

    dialog.dismiss();
    tvResults.setText(s);
    tvResults.setVisibility(View.VISIBLE);
    Toast.makeText(MainActivity.this, "Process done!",
Toast.LENGTH_SHORT)
    .show();
}
}
}

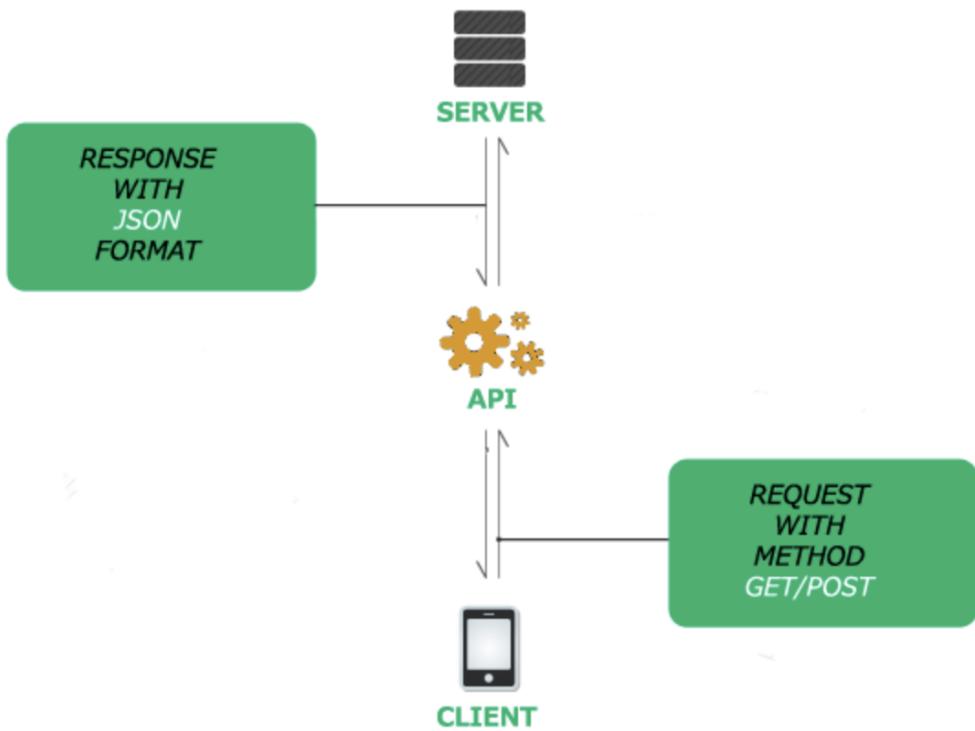
Output:
```



## 55. Retrofit Library in Android

The Retrofit library is a type-safe REST client for Android, Java, and Kotlin, developed by Square. With the help of the Retrofit library, we can have access to a powerful framework that helps us in authenticating and interacting with APIs and sending network requests with OkHttp. With the help of this library, downloading JSON or XML data from a web API becomes easy. In a Retrofit library, once the data is downloaded, it is parsed into a Plain Old Java Object (POJO) which must be defined for each “resource” in the response. Retrofit is an easy and fast library to retrieve and upload data via a REST-based web service.

Retrofit manages the process of receiving, sending, and creating HTTP requests and responses. It resolves issues before sending an error and crashing the application. It pools connections to reduce latency. It is used to cache responses to avoid sending duplicate requests.



### *Features of Retrofit*

- Retrofit is very fast.
- Retrofit enables direct communication with the web service.
- Retrofit supports dynamic URLs.
- Retrofit is easy to use and understand.
- Retrofit supports both synchronous and asynchronous network requests.
- Retrofit supports converters.
- Retrofit supports request cancellation.
- Retrofit supports post requests and multipart uploads.

### *Disadvantages of Retrofit*

- Retrofit does not support setting priorities.

- Retrofit does not support image loading.
- Retrofit requires other libraries such as Glide and Picasso.

### *Classes Used in Retrofit*

- Model Class: A model class contains the objects to be obtained from the JSON file.
- Retrofit Instance: This is a Java class. It is used to send requests to an API.
- Interface Class: This is a Java class. It is used to define endpoints.

Example:

To use Retrofit we go through the following steps:

- Step 1: In this step first we will create a new Android project in Android studio.
- Step 2: Dependencies  
In our project, add the following dependencies in the build.gradle file.

implementation 'com.squareup.retrofit2:retrofit:2.7.2'

implementation 'com.squareup.retrofit2:converter-gson:2.7.2'

implementation 'com.squareup.okhttp3:okhttp:3.6.0'

- Step 3: Permission  
We need to add internet permission in AndroidManifest.xml.

1

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

- Step 4: activity\_main.xml

```
<?xml version="1.0" encoding="utf-8"?>  
<LinearLayout  
    android:layout_width="match_parent"  
    android:layout_height="match_parent"  
    tools:context=".MainActivity"  
    android:background="@color/white">  
  
<ListView  
    android:id="@+id/superheroes_list"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content" />  
  
</LinearLayout>
```

- **Step 5:**  
We will create a model class.

Model.java

```
public class Model {  
  
    @SerializedName("name")  
    private String superName;  
  
    public Model(String name) {
```

```
    this.superName = name;  
}  
  
}
```

```
public String getName() {  
    return superName;  
}  
  
}
```

- Step 6:  
In this step, we create a Retrofit instance of the Java class. This class specifies the URL that contains the data required and uses the Retrofit Builder class.

RetrofitClient.java

```
private static RetrofitClient instance = null;  
private Api myApi;
```

```
private RetrofitClient() {  
    Retrofit retrofit = new Retrofit.Builder()  
        .baseUrl(Api.BASE_URL)  
        .addConverterFactory(GsonConverterFactory.create())  
        .build();  
  
    myApi = retrofit.create(Api.class);  
}
```

```
public static synchronized RetrofitClient getInstance() {  
    if (instance == null) {  
        instance = new RetrofitClient();  
    }  
    return instance;  
}
```

```
public Api getMyApi() {  
    return myApi;  
}  
}
```

- **Step 7:**  
In this step, we define an endpoint inside an interface class.

Api.java

```
public interface Api {  
  
    String BASE_URL = "https://simplifiedcoding.net/demos/";  
  
    @GET("marvel")  
    Call < List < Model >> getsuperHeroes();  
}
```

- Step 8:

MainActivity.java

```
public class MainActivity extends AppCompatActivity {
```

```
    ListView superListView;
```

```
    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
```

```
        super.onCreate(savedInstanceState);
```

```
        setContentView(R.layout.activity_main);
```

```
        superListView = findViewById(R.id.superheroes_list);
```

```
        getSuperHeroes();
```

```
}
```

```
    private void getSuperHeroes() {
```

```
        Call < List < Model >> call = RetrofitClient.getInstance()
```

```
            .getMyApi()
```

```
            .getsuperHeroes();
```

```
        call.enqueue(new Callback < List < Model >> () {
```

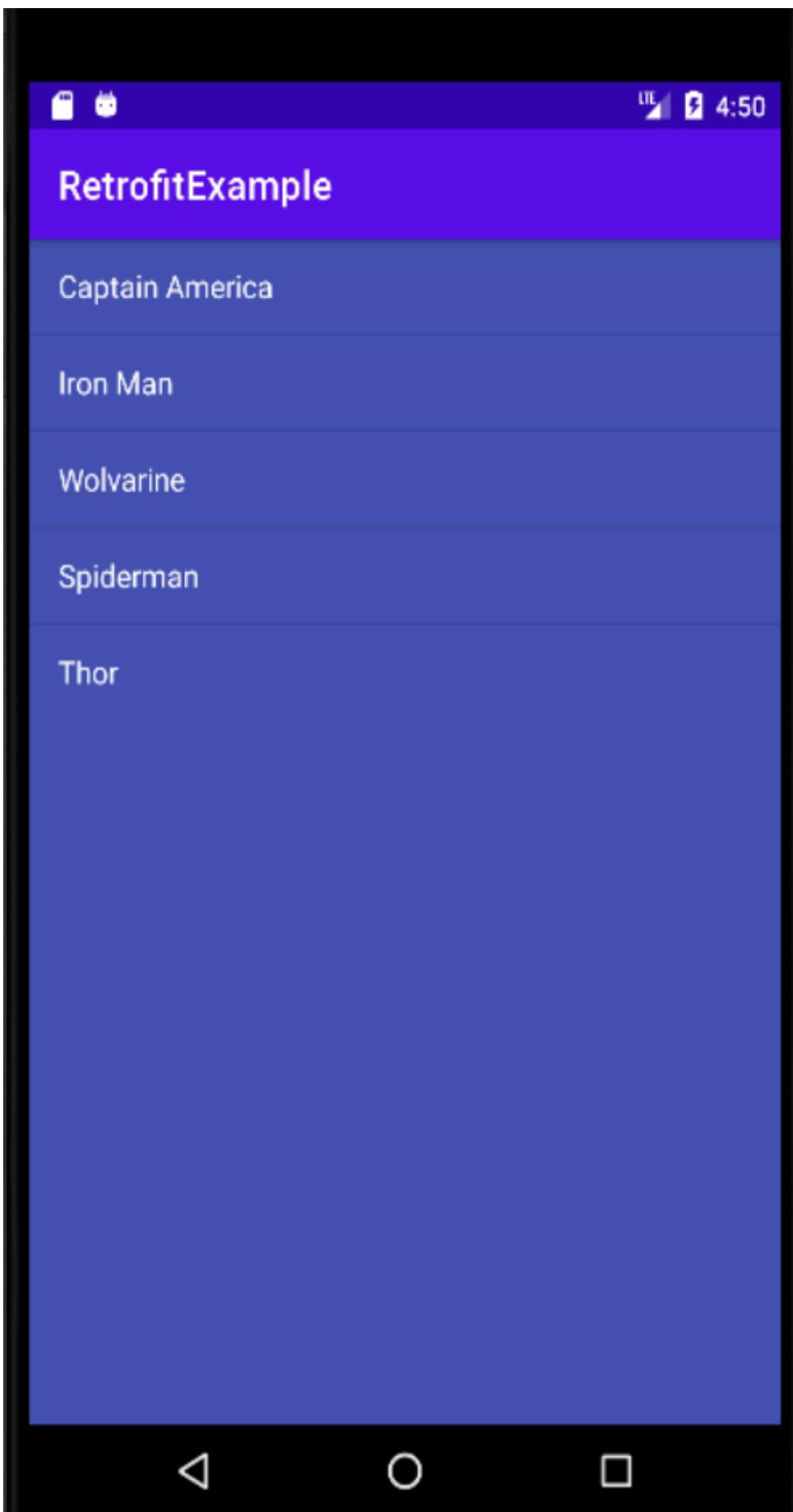
```
    @Override  
  
    public void onResponse(Call < List < Model >> call,  
    Response < List < Model >> response) {  
  
        List < Model > myheroList = response.body();  
  
        String[] oneHeroes = new String[myheroList.size()];  
  
        for (int i = 0; i < myheroList.size(); i++) {  
  
            oneHeroes[i] = myheroList.get(i)  
  
            .getName();  
        }  
  
        superListView.setAdapter(new ArrayAdapter < String >  
(getApplicationContext(),  
        android.R.layout.simple_list_item_1, oneHeroes));  
    }  
  
    @Override  
  
    public void onFailure(Call < List < Results >> call,  
    Throwable t) {  
  
        Toast.makeText(getApplicationContext(), "An error has  
        occurred", Toast.LENGTH_LONG)  
  
        .show();  
    }  
}
```

});

}

}

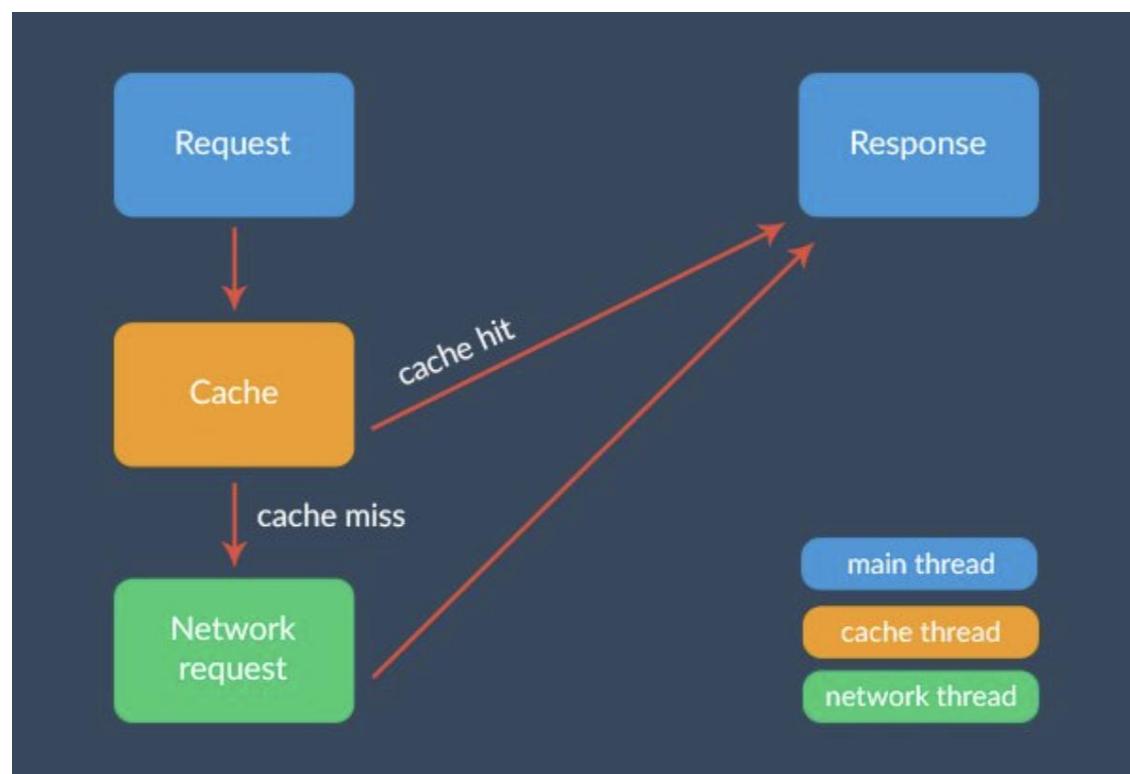
Output:



---

## 56. VOLLEY LIBRARY IN ANDROID

The Volley library was developed by Google and first introduced during Google I/O in 2013. This library was developed because there is an absence in Android SDK, that can carry networking without interfering with the user experience. It is an HTTP library and it actually makes networking very easy and fast for Android applications. This library automatically schedules all network requests, such as fetching responses for images from the web. It provides transparent disk and memory caching.



## FEATURES OF VOLLEY

- This library has a cancellation request API which is a powerful request for canceling out some blocks of requests or for canceling a single request.
- It provides powerful customization abilities.
- It provides debugging and tracing tools.
- Automatically schedules all network requests.
- Multiple concurrent network connections.
- Built-in support for string, images, JSON object, and JSON array requests.
- It supports retrying requests.

## DISADVANTAGES OF VOLLEY

- Volley is not suitable for streaming and large downloads.
- Volley does not have proper documentation yet.
- Volley is slower as compared to Retrofit.
- Volley has a complex code structure.

## CLASSES USED IN VOLLEY

Volley has two classes:

### *REQUEST QUEUE*

This class is used to dispatch network requests. It is the basic building block of the volley. With the help of this, we can manage the worker threads such that we can handle parallel requests apart from those which are responsible for reading and writing from and to the caches. It works in a First In First Out (FIFO) manner.

## *REQUEST*

It contains the necessary information to make API requests. This class is used to support POST and GET requests. This class acts as the base class which can be extended to define a custom request.

Volley provides the following types of requests built-in:

- String Request: It is used when we want the response returned in the form of a string. We can then parse the response using JSON or GSON as per our requirement.
- JSONObject Request: This request is used to send and receive JSONObject from the server.
- JSONArray Request: This request is used to send and retrieve JSONArray to and from the server. It cannot handle a request that returns a JSONObject.
- Image Request: To fetch images from any URL we can use imageRequest which is the usual way to do this. It returns a Bitmap Object that we can eventually display in our ImageView.

Example:

Step 1: First we create a new Android project in Android studio.

Step 2: Dependencies:

In our project, we have to add the following dependencies in the build.gradle file.

```
implementation 'com.android.support:design:26.1.0'  
implementation 'com.android.volley:volley:1.1.0'
```

Step 3: Permission:

We need to add permission in AndroidManifest.xml.

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

Step 4: activity\_main.xml

```
<RelativeLayout  
    android:layout_width="match_parent"  
    android:layout_height="match_parent"
```

```
tools:context="MainActivity">>

<TextView
    android:id="@+id/textDisplay"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Hello world"
    android:layout_centerHorizontal="true" />
```

```
<ProgressBar
    android:id="@+id/progressBar"
    style="?android:attr/progressBarStyleLarge"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_centerInParent="true" />
</RelativeLayout>
```

Step 5: MainActivity.java

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

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

import org.json.JSONArray;
import org.json.JSONException;
import org.json.JSONObject;

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.JsonObjectRequest;
import com.android.volley.toolbox.Volley;

public class MainActivity extends AppCompatActivity {
    private TextView txtShowResult;
```

```
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    txtShowResult = findViewById(R.id.textDisplay);

    // Replace with your actual API key
    final String apiKey = "YOUR_GOOGLE_API_KEY";
    final String url =
"https://maps.googleapis.com/maps/api/place/nearbysearch/json?location=-
33.8670522,151.1957362&radius=500&type=restaurant&keyword=cruise&key=" + apiKey;

    RequestQueue requestQueue = Volley.newRequestQueue(this);

    JsonObjectRequest jObjReq = new
JsonObjectRequest(Request.Method.GET, url, null,
        new Response.Listener<JSONObject>() {
            @Override
            public void onResponse(JSONObject response) {
                try {
                    StringBuilder formattedResult = new StringBuilder();
                    JSONArray responseJSONArray =
response.getJSONArray("results");

                    for (int i = 0; i < responseJSONArray.length(); i++) {
                        JSONObject restaurant =
responseJSONArray.getJSONObject(i);
                        String name = restaurant.optString("name", "N/A");
                        String rating = restaurant.optString("rating",
"N/A");

                    formattedResult.append("\n").append(name).append(" =>
\t").append(rating);
                }
            }
        }
    );
}
```

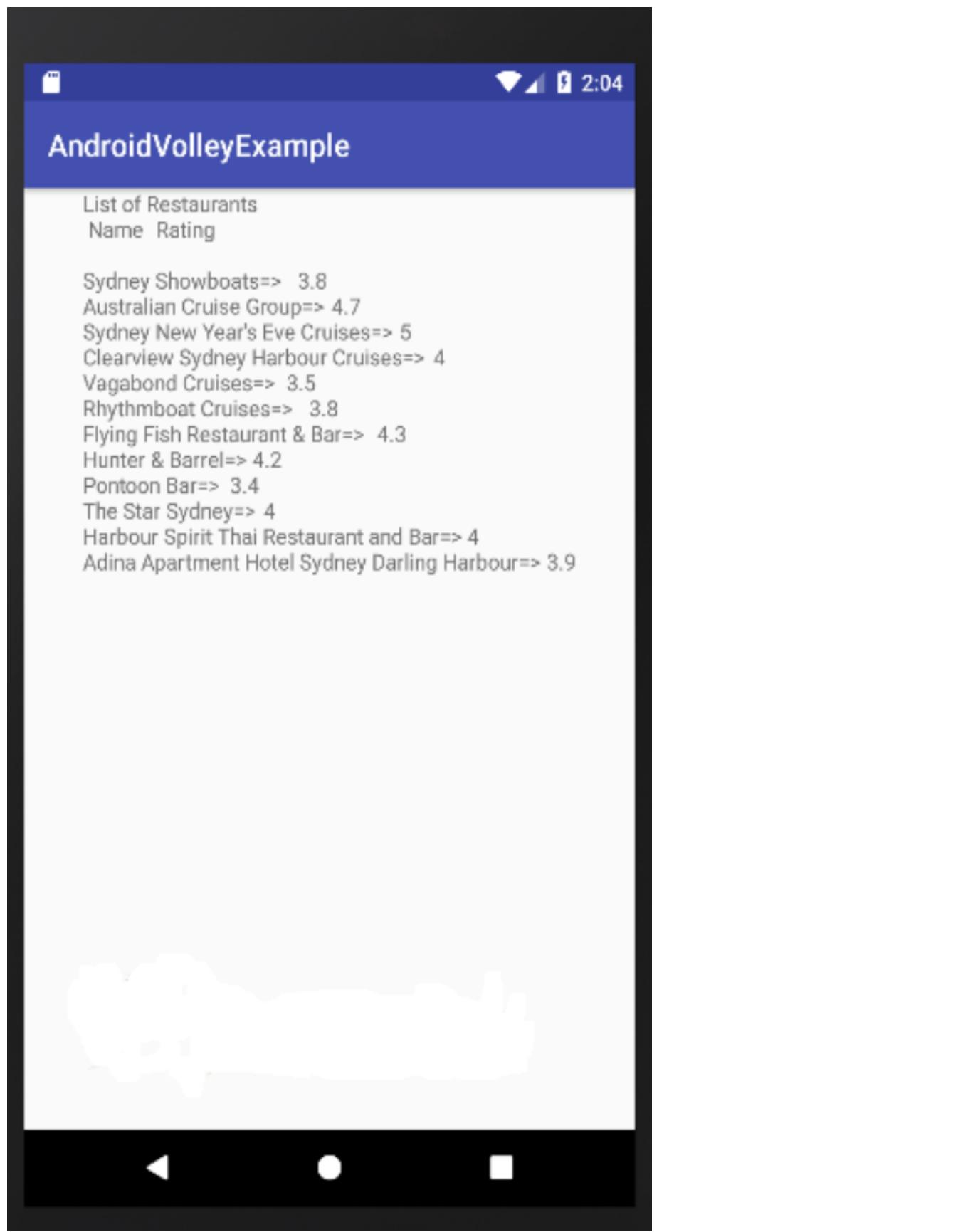
```
        }

        txtShowResult.setText("List of
Restaurants\nName\tRating\n" + formattedResult.toString());
    } catch (JSONException e) {
        txtShowResult.setText("Error parsing JSON
response");
        e.printStackTrace();
    }

findViewById(R.id.progressBar).setVisibility(View.GONE);
    }
},
new Response.ErrorListener() {
    @Override
    public void onErrorResponse(VolleyError error) {
        txtShowResult.setText("An error occurred while making
the request");

findViewById(R.id.progressBar).setVisibility(View.GONE);
    }
});

requestQueue.add(jObjReq);
}
}
```



## FLUTTER CODE

57.Flutter program using layout, widget and state management

```
main.dart
import 'package:flutter/material.dart';
import 'package:provider/provider.dart';
void main() {
  runApp(
    ChangeNotifierProvider(
      create: (context) => ProductList(),
      child: MyApp(),
    ),
  );
}
```

```
);

}

class Product {
final String imageUrl;
final String name;
final double price;
final String description;
Product({
required this.imageUrl,
required this.name,
required this.price,
required this.description,
});
}

class ProductList with ChangeNotifier {
final List<Product> _products = [
Product(
imageUrl:
'https://images.unsplash.com/photo-1505740420928-5e560c06d30e?auto=format&fit=crop&q=80&w=2070&ixlib=rb-4.0.3&ixid=M3wxMjA3fDB8MHxwaG90by1wYWdlfHx8fGVufDB8fHx8fA%3D%3D',
name: 'Boat Headphone',
price: 19.99,
description: 'Wireless audio with Boat: clear, stylish, and convenient headphones.',
),
Product(
imageUrl:
'https://images.unsplash.com/photo-1523275335684-37898b6baf30?auto=format&fit=crop&q=80&w=1999&ixlib=rb-4.0.3&ixid=M3wxMjA3fDB8MHxwaG90by1wYWdlfHx8fGVufDB8fHx8fA%3D%3D',
name: 'Apple Smart Watch',
price: 29.99,
description: 'Wristwear for smart living: time, apps, fitness, and
```

```
notifications',
),
];
List<Product> get products => _products;
void addProduct(Product product) {
    _products.add(product);
    notifyListeners();
}
}
}
class MyApp extends StatelessWidget {
@override
Widget build(BuildContext context) {
    return MaterialApp(
        home: Scaffold(
            appBar: AppBar(
                title: Text('Product Catalog'),
            ),
            body: ProductListWidget(),
        ),
    );
}
}
}
class ProductListWidget extends StatelessWidget {
@override
Widget build(BuildContext context) {
    final productProvider = Provider.of<ProductList>(context);
    return ListView.builder(
        itemCount: productProvider.products.length,
        itemBuilder: (context, index) {
            return ProductBox(product: productProvider.products[index]);
        },
    );
}
}
}
}
class ProductBox extends StatelessWidget {
final Product product;
ProductBox({required this.product});
```

```
@override
Widget build(BuildContext context) {
return Card(
margin: EdgeInsets.all(10.0),
child: Column(
crossAxisAlignment: CrossAxisAlignment.start,
children: [
Image.network(product.imageUrl),
Padding(
padding: const EdgeInsets.all(8.0),
child: Text(
product.name,
style: TextStyle(fontSize: 18, fontWeight: FontWeight.bold),
),
),
Padding(
padding: const EdgeInsets.all(8.0),
child: Text(
'Price: \$\${product.price.toStringAsFixed(2)}',
style: TextStyle(fontSize: 16),
),
),
Padding(
padding: const EdgeInsets.all(8.0),
child: Text(
product.description,
style: TextStyle(fontSize: 14),
),
),
],
);
}
}
```

```
pubspec.yaml
name: p_10
description: A new Flutter project.
publish_to: 'none'
version: 1.0.0+1
environment:
  sdk: '>=3.1.2 <4.0.0'
dependencies:
  flutter:
    sdk: flutter
  provider: ^5.0.0
  cupertino_icons: ^1.0.2
  dev_dependencies:
    flutter_test:
      sdk: flutter
    flutter_lints: ^2.0.0
  flutter:
    uses-material-design: true
```

---

## 59. FORM VALIDATION IN FLUTTER

Validating user input is an essential part of app development. This process makes the app more secure and checks whether the information provided by the user is what we anticipate them to provide so as not to introduce bugs into our application. Flutter comes with a native way of validating user inputs using the Form and TextFormField widget.

In this tutorial I will show you how to validate user inputs in Flutter using:

1. A validation mixin to contain validation logic.
2. A Form widget with a GlobalKey.
3. A TextFormField to collect user input and display validation errors.
4. A button to validate and submit the form.

### PREREQUISITES

To complete this tutorial, you will need:

To download and install [Android Studio](#) or [Visual Studio Code](#)

To download and install [Flutter](#).

To set up your editor as described [here](#).

Once you have your environment set up for Flutter, you can run the following to create a new application.

```
$ flutter create form_validation_example
```

Navigate to the new project directory on your IDE where you will find a demo application that Flutter creates. Replace the demo project with the following:

```

void main() {
  runApp(MaterialApp(home: FormValidationExample()));
}

class FormValidationExample extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      body: Form(
        child: Column(
          children: [
            ],
          ),
        ),
      );
    }
}

```

## CREATE A VALIDATION MIXIN

In order to validate the user inputs, we will create a validation mixin to handle the logic as follows:

```

mixin InputValidationMixin {
  bool isPasswordValid(String password) => password.length == 6;

  bool isEmailValid(String email) {
    Pattern pattern =
      r
      '^(([^\<>][\.\;\:\s@"]+(\.[^\<>][\.\;\:\s@"]+)*|(".+"))@((\[[0-9]{1,3}\].[0-9]{1,3}\].[0-9]{1,3}\].[0-9]{1,3}\])|(([a-zA-Z\-\_0-9]+\.)+[a-zA-Z]{2,})$';
    RegExp regex = new RegExp(pattern);
    return regex.hasMatch(email);
  }
}

```

```
}
```

Here, the password is valid if its length is 6. A regular expression is used to validate if the email is valid or not.

Add the InputValidationMixin to the FormValidationExample created earlier like this:

```
class FormValidationExample extends StatelessWidget with  
InputValidationMixin {
```

```
...
```

## CREATE A FORM WITH GLOBALKEY

To validate the user input, we need the Form widget. The Form widget serves as a container to validate multiple TextFormFieldFields and needs a GlobalKey to uniquely identify the form. It is also used to get the current state of the form.

```
final GlobalKey<FormState> form GlobalKey = GlobalKey<FormState>();
```

Don't forget to add this key to the Form widget like this:

```
Form(  
  key: form GlobalKey, ...
```

## TEXTFORMFIELD WITH THE VALIDATOR METHOD

The job of the TextFormField is to render the UI interface for the user to interact with and to display the validation error once the user enters invalid data. The TextFormField has a validator method which is called to validate the input. The validator method returns a string containing the error message when the user input is invalid or null if the user input is valid.

In most cases, you will use a regular expression to check the input. We will use both the isEmailValid and the isPasswordValid methods from

the InputValidationMixin mixin to validate the email and the password from the user respectively.

```
TextField(  
    validator: (email) {  
        if (isValidEmail(email)) return null;  
        else  
            return 'Enter a valid email address';  
    },  
,
```

```
TextField(  
    obscureText: true,  
    validator: (password) {  
        if (isValidPassword(password)) return null;  
        else  
            return 'Enter a valid password';  
    },  
,
```

## A BUTTON TO VALIDATE AND SUBMIT THE FORM

The user taps the button to submit the information. Once the button is pressed, we check if the form is valid using the currentState property from the form GlobalKey. If it is valid we use the user information but if not, we display the error message.

```
ElevatedButton(onPressed: () {  
    if (formGlobalKey.currentState.validate()) {  
        // use the information provided  
    }  
, child: Text("Submit"))
```

## COMPLETE CODE EXAMPLE

```
import 'package:flutter/material.dart';

void main() {
  runApp(MaterialApp(
    debugShowCheckedModeBanner: false,
    home: FormValidationExample(),
  ));
}

class FormValidationExample extends StatelessWidget with
InputValidationMixin {
  final GlobalKey<FormState> form GlobalKey = GlobalKey<FormState>();

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text('Form validation example'),
      ),
      body: Padding(
        padding: const EdgeInsets.symmetric(horizontal: 24),
        child: Form(
          key: form GlobalKey,
          child: Column(
            children: [
              const SizedBox(height: 50),
              TextFormField(
                decoration: InputDecoration(
                  labelText: "Email"
                ),
                validator: (email) {
                  if (isValidEmail(email)) return null;
                  else
                }
              )
            ],
          )
        )
      )
    );
  }
}
```

```
        return 'Enter a valid email address';
    },
),
const SizedBox(height: 24),
TextFormField(
decoration: InputDecoration(
labelText: "Password",
),
maxLength: 6,
obscureText: true,
validator: (password) {
    if (isPasswordValid(password)) return null;
    else
        return 'Enter a valid password';
},
),
const SizedBox(height: 50),
ElevatedButton(
 onPressed: () {
    if (formGlobalKey.currentState.validate()) {
        formGlobalKey.currentState.save();
        // use the email provided here
    }
},
child: Text("Submit"))
],
),
),
));
);
});
}
}

mixin InputValidationMixin {
bool isPasswordValid(String password) => password.length == 6;

bool isEmailValid(String email) {
Pattern pattern =
```

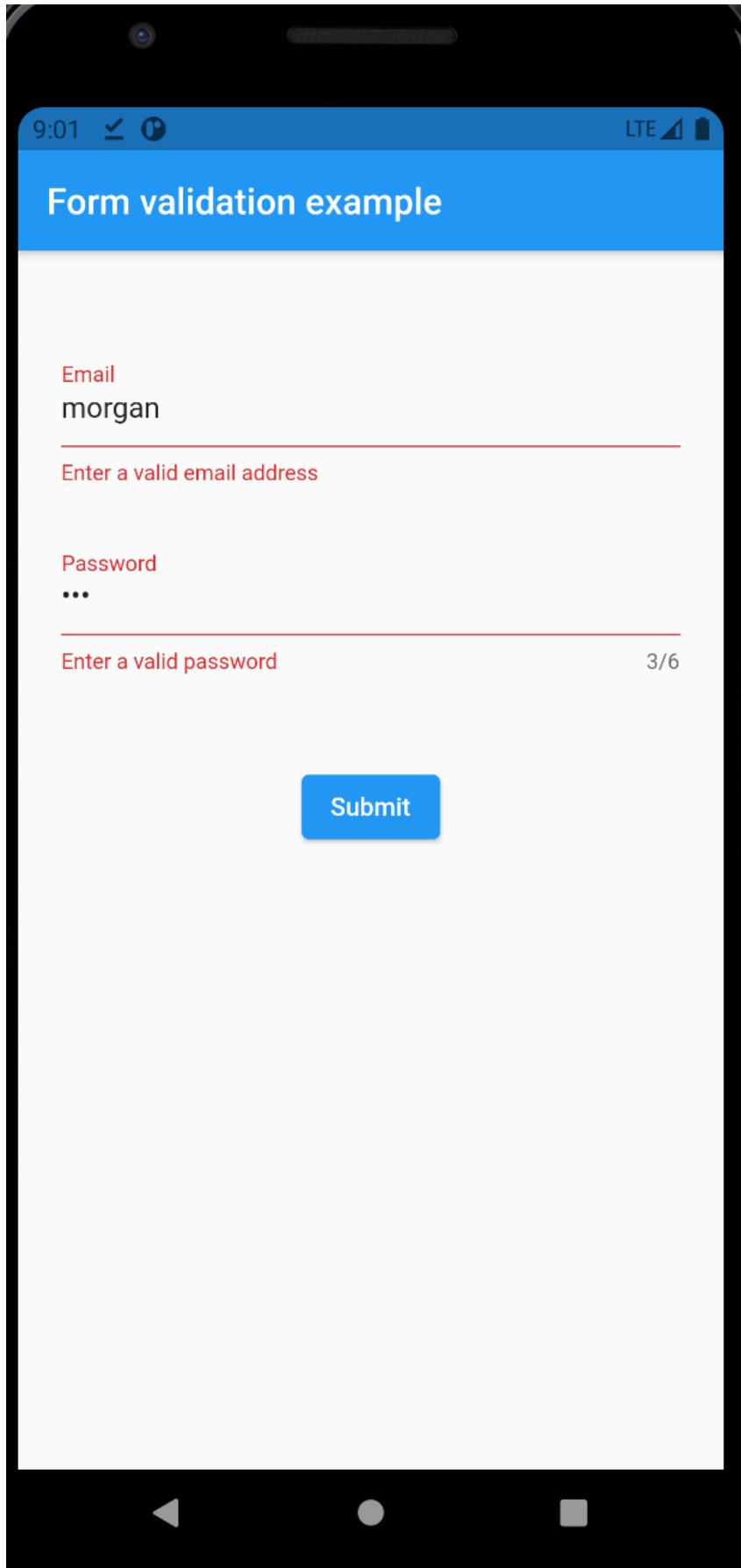
```
r
'^(([^\>][\.\,\;\:\s@"]+(\.[^\>][\.\,\;\:\s@"]+)*|("."+"))@(([o-
9]{1,3}\.[o-9]{1,3}\.[o-9]{1,3}\.[o-9]{1,3}\])|(([a-zA-Z\.-o-9]+\.)+[a-
zA-Z]{2,}))$';
  RegExp regex = new RegExp(pattern);
  return regex.hasMatch(email);
}
}
```

## DEMO LINKS AND IMAGES

Github gist: <https://gist.github.com/De-Morgan/7c85c63b0c72f8c242815cf1f6a36976>

Dart pad

link: <https://dartpad.dev/7c85c63b0c72f8c242815cf1f6a36976?>



DartPad

Form validation example

```
1: import 'package:flutter/material.dart';
2: import 'package:flutter/services.dart';
3:
4: void main() {
5:   runApp(MyApp());
6: }
7:
8: class MyApp extends StatelessWidget {
9:   @override
10:  Widget build(BuildContext context) {
11:    return MaterialApp(
12:      title: 'Form validation example',
13:      theme: ThemeData(
14:        primarySwatch: Colors.blue,
15:      ),
16:      home: MyForm(),
17:    );
18:  }
19: }
20:
21: class MyForm extends StatefulWidget {
22:   @override
23:   _MyFormState createState() => _MyFormState();
24: }
25:
26: class _MyFormState extends State<MyForm> {
27:   final GlobalKey<FormState> _formKey = GlobalKey<FormState>();
28:
29:   @override
30:   Widget build(BuildContext context) {
31:     return Padding(
32:       padding: const EdgeInsets.symmetric(horizontal: 24),
33:       child: Form(
34:         key: _formKey,
35:         child: Column(
36:           children: [
37:             TextFormField(
38:               decoration: InputDecoration(
39:                 labelText: 'Email',
40:               ),
41:               validator: (email) {
42:                 if (!isValidEmail(email)) return null;
43:                 else
44:                   return 'Enter a valid email address';
45:               },
46:             ),
47:             const SizedBox(height: 24),
48:             TextFormField(
49:               decoration: InputDecoration(
50:                 labelText: 'Password',
51:               ),
52:               validator: (password) {
53:                 if (!isValidPassword(password)) return null;
54:                 else
55:                   return 'Enter a valid password';
56:               },
57:             ),
58:           ],
59:         ),
60:       ),
61:     );
62:   }
63:
64:   bool isValidEmail(String email) {
65:     return RegExp(r'^[\w.]+@[a-zA-Z]+\.[a-zA-Z]{2,}$').hasMatch(email);
66:   }
67:
68:   bool isValidPassword(String password) {
69:     return password.length >= 6;
70:   }
71: }
72:
73: 
```

## 60.Flutter – Database Program

Add the 2 dependencies in pubspec.yaml

sqflite:

path\_provider:

main.dart:

```
import 'package:dbflutter/database_helper.dart';
import 'package:flutter/material.dart';

void main() {
    runApp(const MyApp());
}

class MyApp extends StatelessWidget {
    const MyApp({Key? key}) : super(key: key);
    // This widget is the root of your application.
    @override
    Widget build(BuildContext context) {
        return MaterialApp(
            title: 'Flutter Demo',
            theme: ThemeData(
                primarySwatch: Colors.blue,
            ),
            home: const MyHomePage(title: 'Flutter Demo Home Page'),
        );
    }
}

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

```
State<MyHomePage> createState() => _MyHomePageState();
}

class _MyHomePageState extends State<MyHomePage> {
void _incrementCounter() {
  setState(() {
    });
}
}

@Override
Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar(
      title: Text(widget.title),
    ),
    body: Center(
      child: Column(
        children: [
          ElevatedButton(onPressed: () async {
            int i = await DatabaseHelper.instance.insert({
              DatabaseHelper.columnname:'swasthi'
            });
            print('Inserted id is : $i');
          }, child: Text('Add Records')),
          ElevatedButton(onPressed: () async{
            List<Map<String,dynamic>> rows = await
DatabaseHelper.instance.showAll();
            print(rows);
          }, child: Text('Show Records')),
          ElevatedButton(onPressed: () async{
            int updatedId = await DatabaseHelper.instance.update({
              DatabaseHelper.columnid: 2,
              DatabaseHelper.columnname: 'harsha'
            });
            print('Updated $updatedId rows');
          }, child: Text('Update')),
        ],
      ),
    ),
  );
}
```

```
ElevatedButton(onPressed: () async{
    int rowsaffected = await
DatabaseHelper.instance.delete(2);
    print(rowsaffected);
}, child: Text('Delete'))
],
),
)
);

}
}
```

### database\_helper.dart

```
import 'dart:io';
import 'package:path_provider/path_provider.dart';
import 'package:sqflite/sqflite.dart';
import 'package:path/path.dart';
class DatabaseHelper{
    static final _dbName = 'student.db';
    static final _dbVersion = 1;
    static final _tableName = 'student';
    static final columnid = '_id';
    static final columnname ='name';

//Singleton Class
DatabaseHelper._privateConstructor();
static final DatabaseHelper instance =
DatabaseHelper._privateConstructor();
static Database? _database;

Future<Database?> get database async{
/*if (_database!=null)  return _database;
_database = await _initiateDatabase();
```

```
return _database; */
    _database ??=await _initiateDatabase();
    return _database;
}
_initiateDatabase() async{
    Directory directory = await
    getApplicationDocumentsDirectory();
    String path = join(directory.path, _dbName);

    return await openDatabase(path, version: _dbVersion,
    onCreate: _onCreate);
}
Future _onCreate(Database db, int version) async {
    db.execute("""
CREATE TABLE ${_tableName}(

$columnid INTEGER PRIMARY KEY,
$columnname TEXT NOT NULL
)
""");
}
Future<int> insert(Map<String, dynamic> row) async {
    Database? db = await instance.database;
    return await db!.insert(_tableName, row );
}
Future <List<Map<String,dynamic>>> showAll() async {
    Database? db = await instance.database;
    return await db!.query(_tableName);
}

Future<int> update(Map<String,dynamic> row) async{
    Database? db = await instance.database;
    int id = row[columnid];
    return await db!.update(_tableName, row, where:'$columnid =
?', whereArgs: [id]);
}

Future<int> delete(int id) async{
```

```
Database? db = await instance.database;
return await db!.delete(_tableName, where: '$columnid=?',
whereArgs: [id]);
}
}
```

---

## 61. Flutter program to work with SQLite Database.

```
main.dart
import 'package:flutter/material.dart';
import 'package:sqflite/sqflite.dart';
import 'package:path/path.dart';
void main() {
  runApp(MaterialApp(home: MyApp()));
}

class Product {
  final int? id;
  final String name;
  final double price;
  Product({this.id, required this.name, required this.price});
  Map<String, dynamic> toMap() {
    return {
      'id': id,
      'name': name,
      'price': price,
    };
  }
  factory Product.fromMap(Map<String, dynamic> map) {
    return Product(
      id: map['id'],
      name: map['name'],
      price: map['price'],
    );
  }
}

class DatabaseHelper {
  static final DatabaseHelper instance =
  DatabaseHelper._privateConstructor();
  static Database? _database;
  DatabaseHelper._privateConstructor();
  Future<Database> get database async {
    if (_database != null) return _database!;
```

```
_database = await _initDatabase();
return _database!;
}
Future<Database> _initDatabase() async {
final String path = join(await getDatabasesPath(),
'product_database.db');
return openDatabase(path, version: 1, onCreate: _onCreate);
}
Future<void> _onCreate(Database db, int version) async {
await db.execute("""
CREATE TABLE products(
id INTEGER PRIMARY KEY,
name TEXT,
price REAL
)
""");
}
Future<int> insertProduct(Product product) async {
final db = await database;
return await db.insert('products', product.toMap());
}
Future<List<Product>> getAllProducts() async {
final db = await database;
final List<Map<String, dynamic>> maps = await
db.query('products');
return List.generate(maps.length, (index) {
return Product.fromMap(maps[index]);
});
}
Future<int> updateProduct(Product product) async {
final db = await database;
return await db.update(
'products',
product.toMap(),
where: 'id = ?',
whereArgs: [product.id],
);
```

```
}

Future<int> deleteProduct(int id) async {
final db = await database;
return await db.delete('products', where: 'id = ?', whereArgs: [id]);
}
}

class MyApp extends StatelessWidget {
@override
Widget build(BuildContext context) {
return MaterialApp(
home: Scaffold(
appBar: AppBar(
title: Text('SQLite Database Example'),
),
body: ProductList(),
floatingActionButton: FloatingActionButton(
onPressed: () {
_showAddProductDialog(context);
}),
child: Icon(Icons.add),
),
),
);
}
}

void _showAddProductDialog(BuildContext context) {
final TextEditingController nameController =
TextEditingController();
final TextEditingController priceController = TextEditingController();
 showDialog(
context: context,
builder: (context) {
return AlertDialog(
title: Text('Add Product'),
content: Column(
mainAxisSize: MainAxisSize.min,
children: [TextField(
controller: nameController,
```



```
_ProductListState createState() => _ProductListState();
}
class _ProductListState extends State<ProductList> {
@override
Widget build(BuildContext context) {
return FutureBuilder<List<Product>>(
future: DatabaseHelper.instance.getAllProducts(),
builder: (context, snapshot) {
if (!snapshot.hasData) {
return CircularProgressIndicator();
}
final products = snapshot.data!;
return ListView.builder(
itemCount: products.length,
itemBuilder: (context, index) {
return ListTile(
title: Text(products[index].name),
subtitle: Text('Price: \$\${products[index].price.toStringAsFixed(2)}'),
trailing: IconButton(
icon: Icon(Icons.delete),
onPressed: () async {
int deletedRows = await
DatabaseHelper.instance.deleteProduct(products[index].id!);
if (deletedRows > 0) {
print('Deleted product with ID: ${products[index].id}');
setState(() {}); // Refresh the UI
}
},
),
),
);
},
);
},
});
```

```
pubspec.yaml
name: p_11
description: A new Flutter project.
publish_to: 'none'
version: 1.0.0+1
environment:
  sdk: '>=3.1.2 <4.0.0'
dependencies:
  flutter:
    sdk: flutter
  provider: ^5.0.0
  sqflite: any
  cupertino_icons: ^1.0.2
  dev_dependencies:
    flutter_test:
      sdk: flutter
    flutter_lints: ^2.0.0
  flutter:
  uses-material-design: true
```

## 62. RESTAPI Program using Flutter

## Main.dart

```
import 'package:flutter/material.dart';
import 'package:restflutter24/Remote_services.dart';
import 'package:restflutter24/User.dart';

void main() {
  runApp(const MyApp());
}

class MyApp extends StatelessWidget {
  const MyApp({super.key});

  // This widget is the root of your application.
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Flutter Demo',
      theme: ThemeData(
        colorScheme: ColorScheme.fromSeed(seedColor:
Colors.deepPurple),
        useMaterial3: true,
      ),
      home: const MyHomePage(title: 'Flutter Demo Home
Page'),
    );
  }
}

class MyHomePage extends StatefulWidget {
  const MyHomePage({super.key, required this.title});
  final String title;
  @override
  State<MyHomePage> createState() => _MyHomePageState();
}
```

```
class _MyHomePageState extends State<MyHomePage> {
  List<User>? users;
  var isLoaded = false;
  @override
  void initState() {
    super.initState();
    getData();
  }
  getData() async{
    users = await RemoteService().getUsers();
    if (users!=null){
      setState(() {
        isLoaded=true;
      });
    }
  }
  @override
  Widget build(BuildContext context) {

    return Scaffold(
      appBar: AppBar(
        backgroundColor:
Theme.of(context).colorScheme.inversePrimary,
        title: Text("Rest API Program"),
      ),
      body: Visibility(
        visible: isLoaded,
        child: ListView.builder(
          itemCount: users?.length,
          itemBuilder: (context,index){
            return Container(
              child: Column(
                crossAxisAlignment: CrossAxisAlignment.start,
                children: [
                  Text(users![index].name,
```

```
        maxLines: 2,
        overflow: TextOverflow.ellipsis),
    ],
),
//Column
);

}

),
replacement: const Center(child:
CircularProgressIndicator(),
)

);
}
}
```

## Remote\_services.dart

```
import 'package:restflutter24/User.dart';
import 'package:http/http.dart' as http;

class RemoteService
{
  Future<List<User>?> getUsers() async
  {
    var client = http.Client();
    var uri = Uri.parse("https://mocki.io/v1/7adbc695-79d8-
4ea8-9077-f46ffa9ca290");
    var response = await client.get(uri);
    if (response.statusCode==200)
    {
      var json = response.body;
      return userFromJson(json);
    }
  }
}
```

```
}
```

## User.dart

```
// To parse this JSON data, do
//  
//     final user = userFromJson(jsonString);  
  
import 'dart:convert';  
  
List<User> userFromJson(String str) =>  
List<User>.from(json.decode(str).map((x) =>  
User.fromJson(x)));  
  
String userToJson(List<User> data) =>  
json.encode(List<dynamic>.from(data.map((x) =>  
x.toJson())));  
  
class User {  
    int rno;  
    String name;  
  
    User({  
        required this.rno,  
        required this.name,  
    });  
  
    factory User.fromJson(Map<String, dynamic> json) => User(  
        rno: json["rno"],  
        name: json["name"],  
    );  
  
    Map<String, dynamic> toJson() => {  
        "rno": rno,  
        "name": name,  
    };  
}
```

## Data

```
[  
  {  
    rno:10,  
    name:'abc'  
  },  
  {  
    rno:20,  
    name:'xyz'  
  },  
  {  
    rno:30,  
    name:'uvw'  
  },  
  {  
    rno:40,  
    name:'Apple'  
  }  
]
```

\*\* To generate API

<https://mocki.io/fake-json-api>

\*\* To generate Json data

<https://json-generator.com/>

Flutter - rest api – convert json to dart (Model)

<https://app.quicktype.io/>

