

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;
```

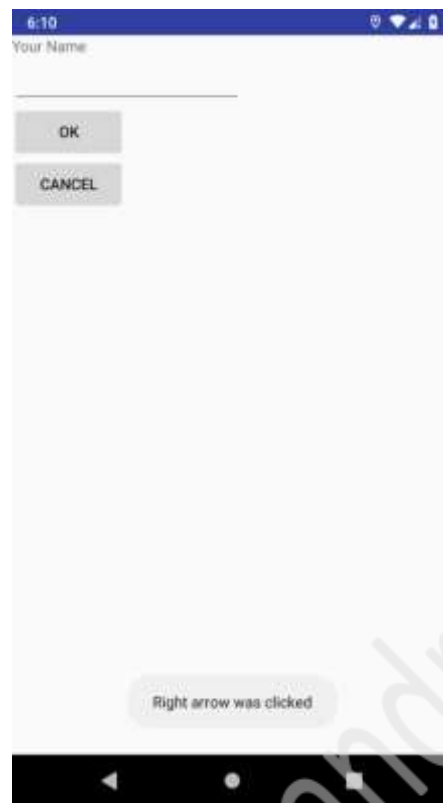
```
import android.os.Bundle;
import android.view.KeyEvent;
import android.widget.Toast;

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;
    }
}
```



2. Activity LifeCycle Demo

```
<?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 {
```

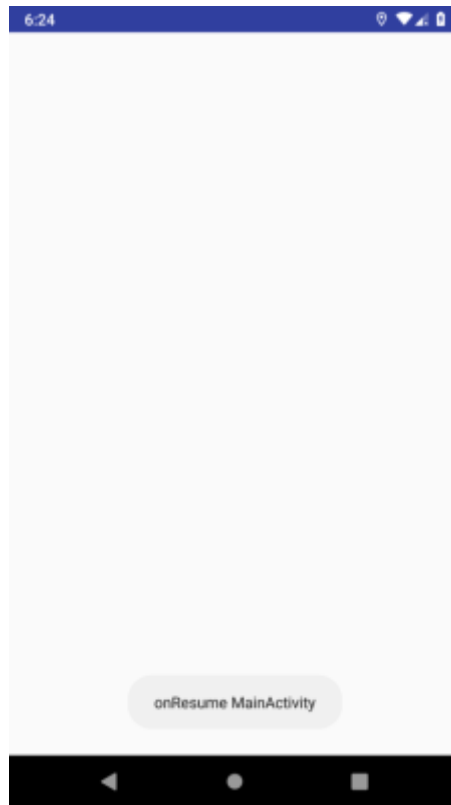
```
    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        notify("onCreate");
    }
```

```
    protected void onPause()
```

```
{
    super.onPause();
    notify("onPause");
}
protected void onResume()
{
    super.onResume();
    notify("onResume");
}
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:



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:



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/bgcolor">
        <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/txtusername"
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:



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/editText1"
        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_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/editText1">

        <RadioButton
            android:id="@+id/radio0"
            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:

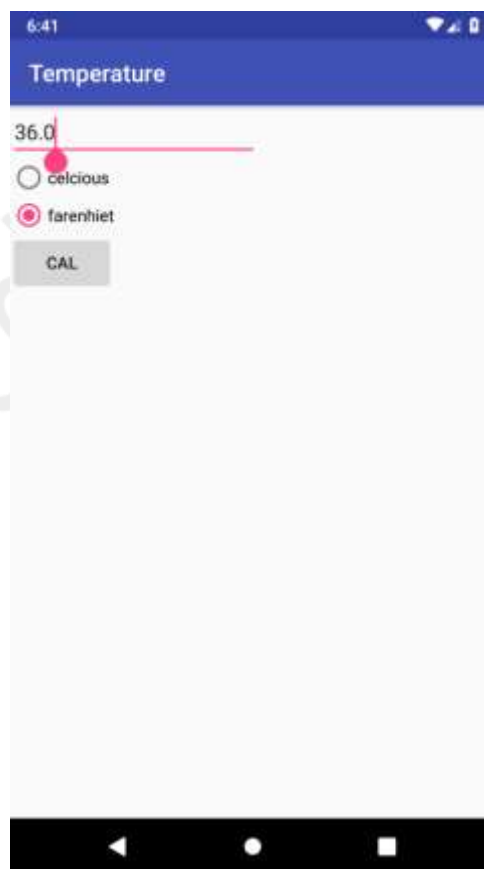
```
package com.tymca.www.temperature;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.Toast;

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:



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"
```

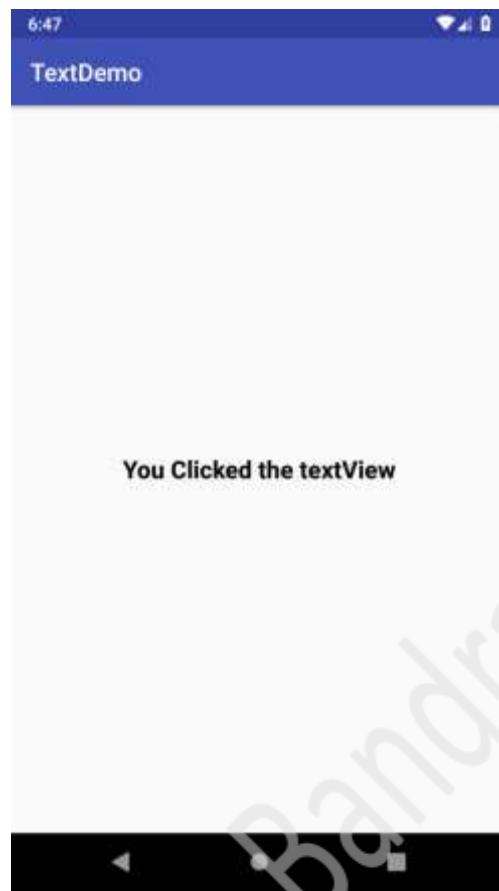


```
        android:textStyle="bold" />
    </RelativeLayout>
```

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



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/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="16dp"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/editText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:hint="Enter your Name"
        android:layout_marginTop="150dp"
        android:inputType="text"/>

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="75dp"
        android:layout_centerVertical="true"
        android:layout_centerHorizontal="true"
        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.textEditable;
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:



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/tools"
    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_parent"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="10dp"
        android:completionThreshold="1"/>

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

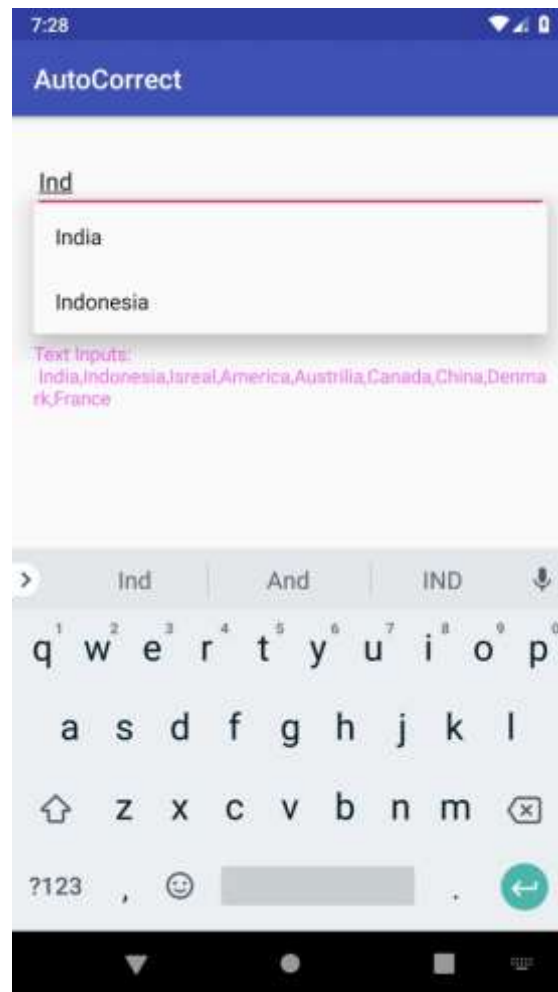
</RelativeLayout>
```

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","China",
    ,"Denmark","France"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        acTextView =
        (AutoCompleteTextView)findViewById(R.id.acTextView);
        textView = (TextView)findViewById(R.id.textView);
        textView.setText("Text Inputs:\n
        India,Indonesia,Isreal,America,Austrilia,Canada,China,Denmark,France"
        );
        ArrayAdapter<String> adapter = new
        ArrayAdapter<String>(this,android.R.layout.simple_list_item_1,inputs);
        acTextView.setAdapter(adapter);
    }
}
Output:
```



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/tools"
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_content"
    android:layout_height="wrap_content"
    android:layout_centerVertical="true"
```



```
android:layout_centerHorizontal="true"  
android:text="Click Me"/>
```

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



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="true">
```

<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:

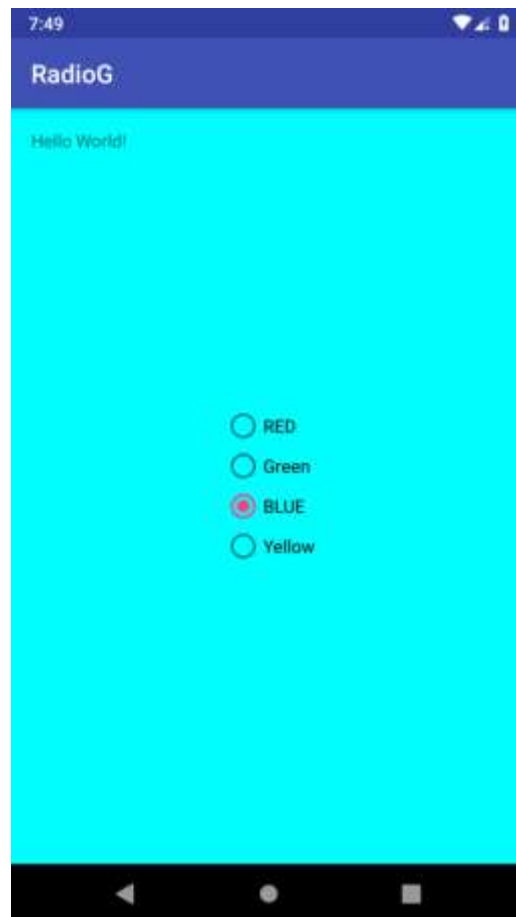
relativeLayout.setBackgroundColor(Color.parseColor("#ff0000"));
                break;
            case R.id.radiobutton2:

relativeLayout.setBackgroundColor(Color.parseColor("#00ff00"));
                break;
            case R.id.radiobutton3:

relativeLayout.setBackgroundColor(Color.parseColor("#0000ff"));
                case R.id.radiobutton4:
```

```
relativeLayout.setBackgroundColor(Color.parseColor("#00ffff"));  
    }  
    }  
});  
}  
}
```

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/tools"
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_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true"
        android:stepSize="0.2"
    />

    <TextView
        android:layout_above="@+id/textView1"
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        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>
```

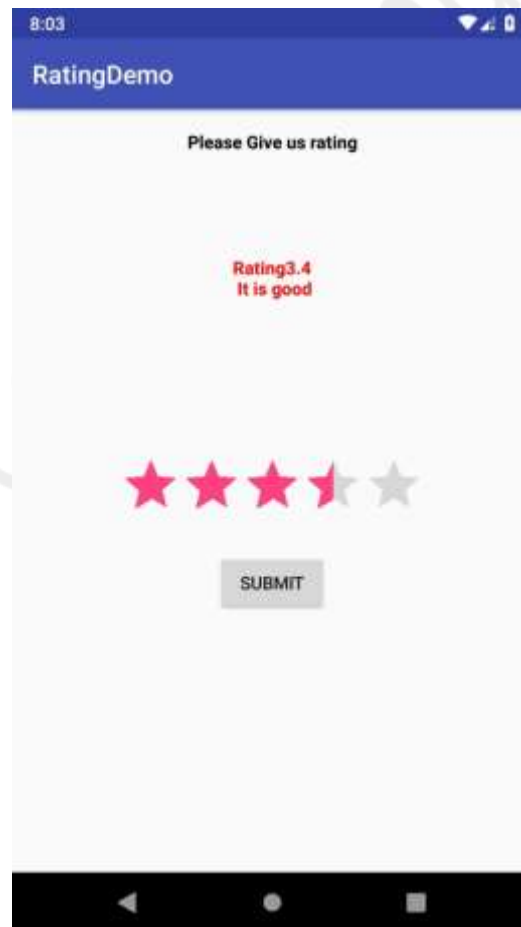
Java Code

```
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/tools"
    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_content"
        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_content"
        android:layout_height="wrap_content"
        android:layout_alignParentBottom="true"
        android:layout_marginBottom="14dp"
        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_amt"
        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"/>

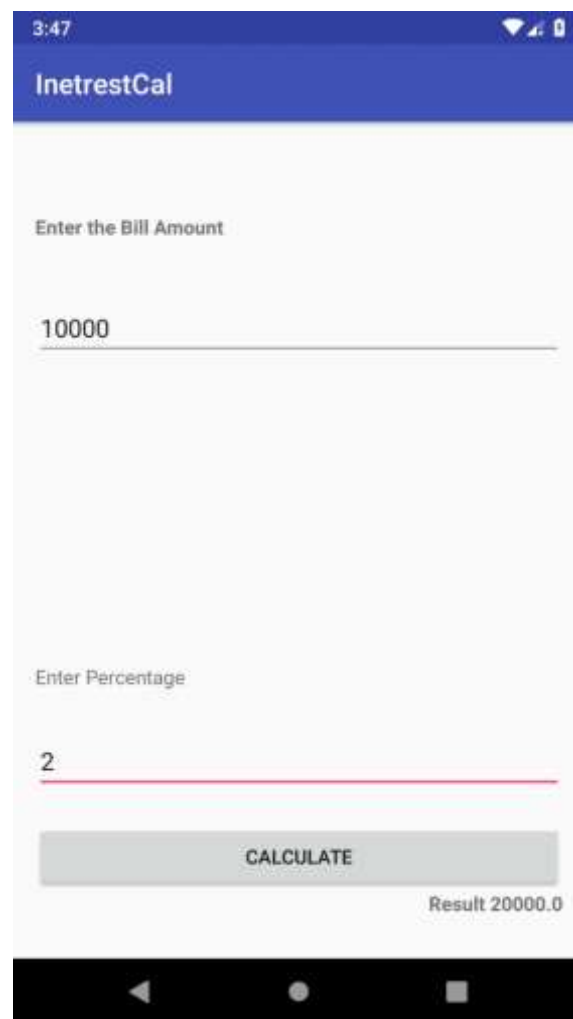
</RelativeLayout>
```

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="100dp"
    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;

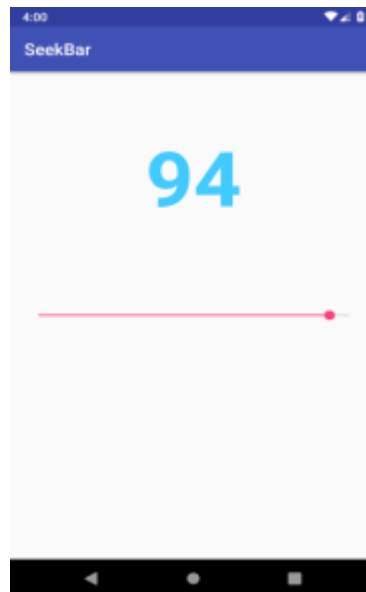
public class MainActivity extends AppCompatActivity {
    SeekBar seekBar;
    TextView textView;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```

```

seekBar =(SeekBar)findViewById(R.id.seekBar);
textView = (TextView)findViewById(R.id.textView);
seekBar.setOnSeekBarChangeListener(new
SeekBar.OnSeekBarChangeListener() {
    @Override
    public void onProgressChanged(SearchBar seekBar, int i, boolean b) {
        textView.setTextSize(i);
        textView.setText(""+(i++));
    }
    @Override
    public void onStartTrackingTouch(SearchBar seekBar) {
    }
    @Override
    public void onStopTrackingTouch(SearchBar 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/tools"
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_parent"
    android:layout_height="match_parent"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="10dp"/>
<Button
    android:id="@+id/button1"
    android:layout_below="@+id/progressBar"
    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="parent"
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;

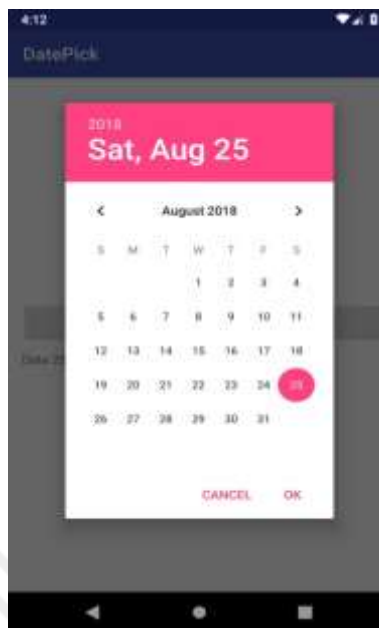
```

```
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, dateListener, 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:



16. 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/openBtn"
    android:layout_width="match_parent"
    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>
```

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:supportRtl="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:



17. Popup 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"
    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="#efebef"/>
    <Button
        android:id="@+id/showPopupBtn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/show"/>

</LinearLayout>
```

Java Code

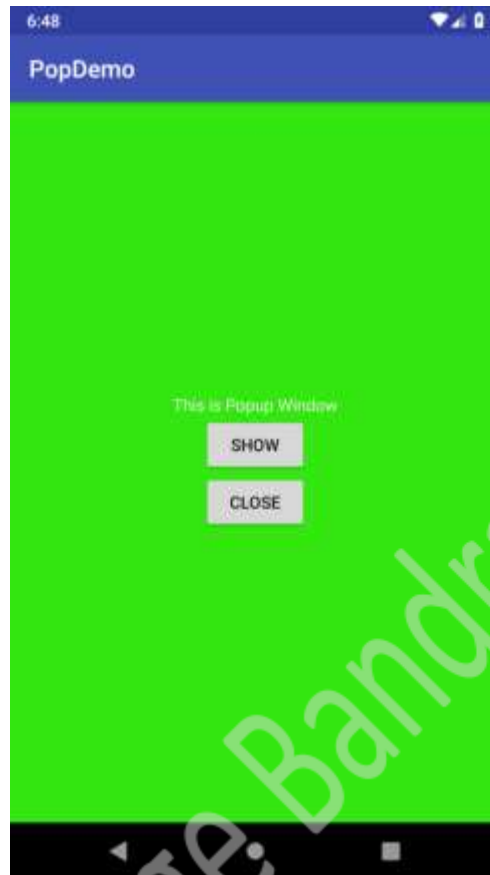
```
package com.tymca.www.popdemo;
import android.content.Context;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.Gravity;
import android.view.LayoutInflater;
import android.widget.Button;
import android.widget.TextView;
import android.widget.LinearLayout;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



```
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 inflater =
                (LayoutInflater)MainActivity.this.getSystemService(Context.LAYOUT_INFL
                ATER_SERVICE);
                View customView =
                inflater.inflate(R.layout.activity_main,null);
                popupWindow = new
                PopupWindow(customView,LayoutParams.WRAP_CONTENT,LayoutParams.
                WRAP_CONTENT);
                popupWindow.showAtLocation(linearLayout,
                Gravity.CENTER,0,0);
                closePopupBtn.setOnClickListener(new View.OnClickListener() {
                    @Override
                    public void onClick(View view) {
                        popupWindow.dismiss();
                    }
                });
            }
        });
    }
}
```

Output:



18. 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>
```

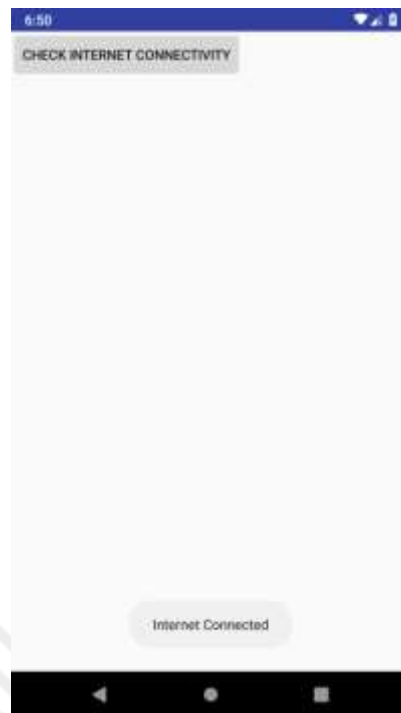
Java File

```
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:



19. 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_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/name"
        android:orientation="vertical">

        <Button
            android:id="@+id/insert"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Insert"
            android:onClick="buttonAction"/>

        <Button
            android:id="@+id/view"
            android:layout_width="match_parent"
```

```
        android:layout_height="wrap_content"
        android:text="Retrive"
        android:onClick="buttonAction"
    />
    <Button
        android:id="@+id/update"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Update"
        android:onClick="buttonAction"/>
    <Button
        android:id="@+id/delete"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Delete"
        android:onClick="buttonAction"/>

</LinearLayout>
<TextView
    android:id="@+id/text"
    android:layout_width="match_parent"
    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.getRecords());  
            break;  
        case R.id.update:  
            db.updateRecord(id.getText().toString(),name.getText().toString());  
            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:



20. SharedPreferences 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/btnSave"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerVertical="true"
        android:layout_alignParentLeft="true"
        android:layout_alignParentStart="true"
        android:onClick="Save"
        android:text="Save"/>

    <Button
        android:id="@+id/btnRetr"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        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"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        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:



21.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_parent"
        android:layout_height="wrap_content"
        android:id="@+id/btnwrite"
        android:text="Write File" />
    <EditText
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:id="@+id/fnameread"
        android:hint="File Name" />
    <Button
        android:layout_width="fill_parent"
        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(fpath));

    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_main);
        fname = (EditText)findViewById(R.id.fname);
        fcontent = (EditText)findViewById(R.id.fcontent);
    }
}
```

```
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 arg0) {
        // 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 arg0) {
        // 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:



22.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/getExternalStorage"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    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/textAppearanceMedium" />

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

Output:



23. Working with Content Provider

- *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.SQLiteCursor;
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 CouponSQLiteOpenHelper( getContext(),
    COUPONS_DBNAME, SQL_CREATE_COUPON );
    return true;
}
@Nullable
@Override
public Cursor query(Uri uri,String[] projection,String selection,String[]
selectionArgs,
                    String sortOrder) {
    String tableNme = "";
    switch(uriMatcher.match(uri)){
        case 1 :
            tableNme = COUPON_TABLE;
            break;
        default:
            return null;
    }
    cpnDB = sqLiteOpenHelper.getWritableDatabase();

    Cursor cursor = (SQLiteCursor)cpnDB.query(tableNme, projection,
    selection, selectionArgs,
        null, null, sortOrder);
    return cursor;
}
@Nullable
@Override
public String getType(Uri uri) {
    return null;
}
@Nullable
@Override
public Uri insert(Uri uri, ContentValues contentValues) {
    String tableNme = "";
```

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

@Override

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

@Override

```
public int update(Uri uri, ContentValues contentValues, String where,
String[] selectionArgs) {
    String tableNme = "";
    switch(uriMatcher.match(uri)){
        case 1 :
            tableNme = COUPON_TABLE;
            break;
        default:
            return 0;
    }
}
```

```
        cpnDB = sqLiteOpenHelper.getWritableDatabase();
        return cpnDB.update(tableNme,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.SQLiteOpenHelper;

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:supportRtl="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.provider"
            android:name=".CouponsContentProvider"></provider>
    </application>

</manifest>
```

Prog No. 4

Content Resolver Activity

```
import android.content.ContentValues;
```

```
import android.database.Cursor;
```

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

```
import android.support.v4.widget.SimpleCursorAdapter;
```

```
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(  
            getApplicationContext(),  
            R.layout.coupon_row,  
            cursor,  
            cursorColumns,  
            viewIds,  
            0);
```

```
        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,mProjection,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,
        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="restart"
    android:repeatCount="infinite"
    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="800"
        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_parent"  
    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_in" />
```


<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="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"
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.AnimationUtils;
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, animZoomOut, animRotate
, animMove, animSlideUp, animSlideDown, animBounce, animSequential, animTo
gether, animCrossFadeIn, animCrossFadeOut;
    TextView
txtFadeIn, txtFadeOut, txtBlink, txtZoomIn, txtZoomOut, txtRotate, txtMove, 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(animCrossFadeIn);

            // start fade out animation
            txtIn.startAnimation(animCrossFadeOut);
        }
    });
    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(animRotate);
    }
});
animMove = AnimationUtils.loadAnimation(getApplicationContext(),
    R.anim.move);
// Move
btnMove.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        txtMove.startAnimation(animMove);
    }
});
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(animTogether);  
        }  
    });  
}
```

29.

Android Capture Image Camera Gallery Using FileProvider 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.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>
```

Create an xml folder inside the res directory.

Add the `provider_paths.xml` file in it:

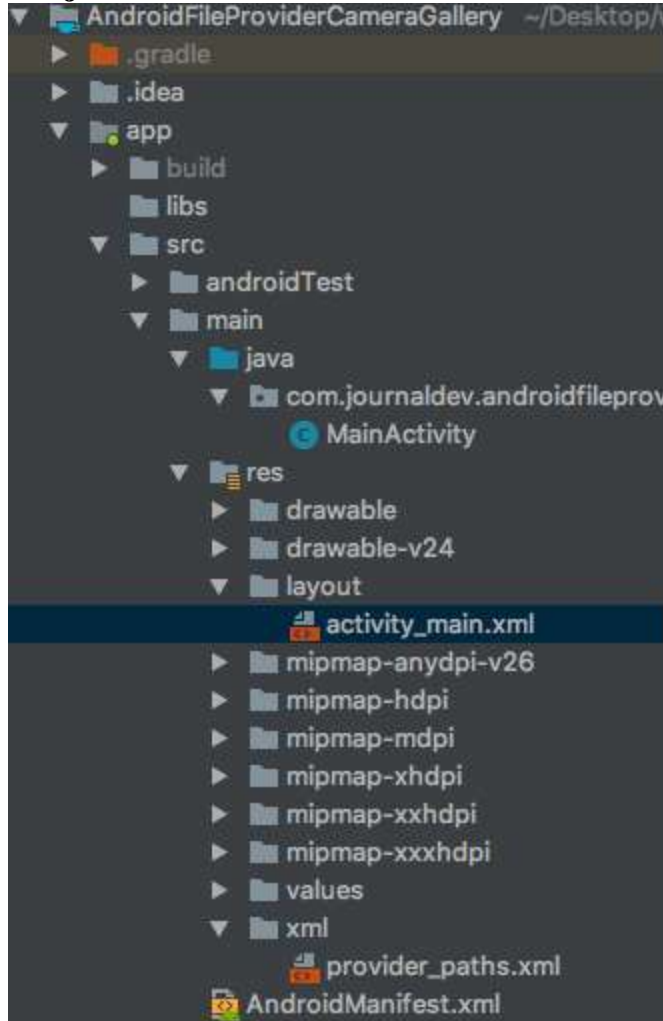
```
<?xml version="1.0" encoding="utf-8"?>
<paths xmlns:android="http://schemas.android.com/apk/res/android">
    <external-path name="external_files" path="."/>
</paths>
```

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(new
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(captureIntent, 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.documentsui.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);
    }

    @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.get(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;
}
}
}
```

Following is 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

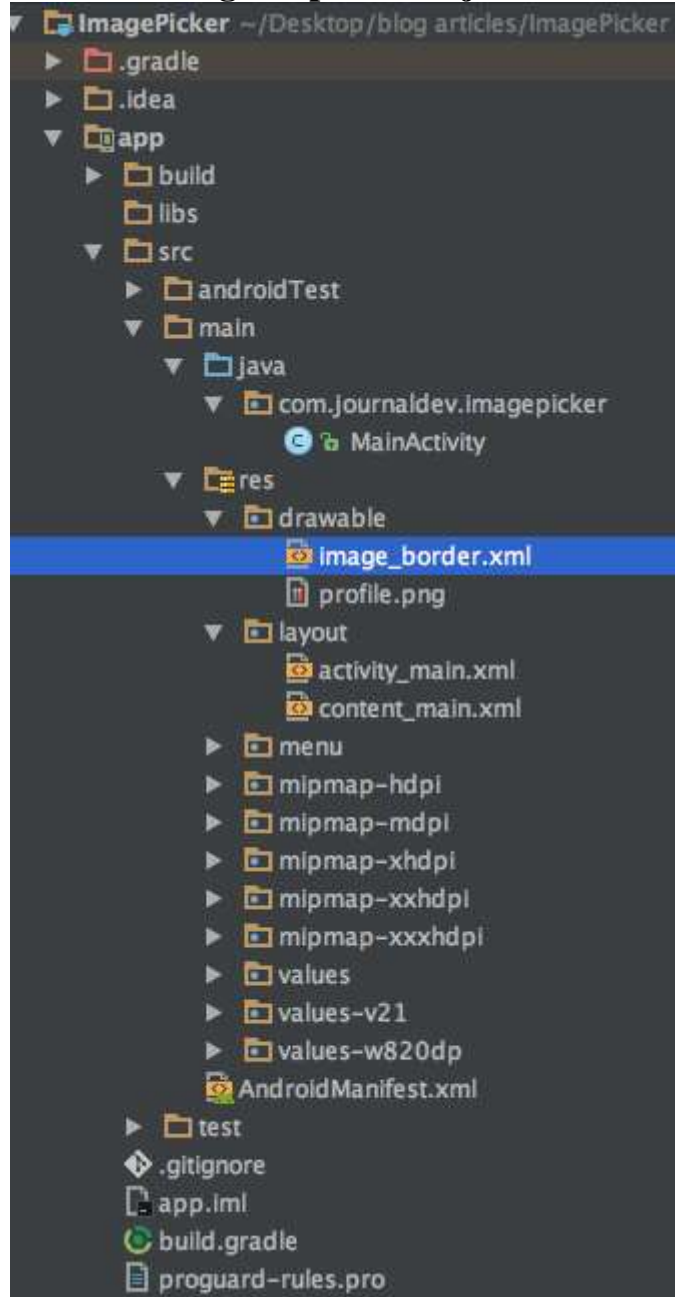
requires **android.provider.MediaStore.ACTION_IMAGE_CAPTURE**.

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/android"
    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="#000000"
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" />
```

```
</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(new
                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, 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);
        }
    }
```

```
// 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.documentsui.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);
            }
            imageView.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_180:
            return rotateImage(img, 180);
        case ExifInterface.ORIENTATION_ROTATE_270:
            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(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);
}
@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.get(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", "permissionrejected " +
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.journaldev.MapsInAction;

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);
}
@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:

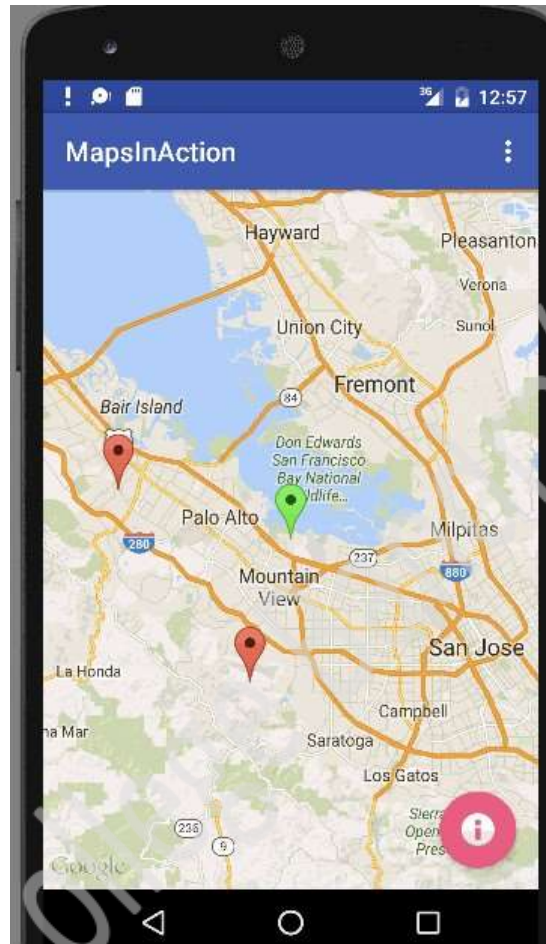
```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    app:layout_behavior="@string/appbar_scrolling_view_behavior"
    tools:context="com.journaldev.MapsInAction.MainActivity"
    tools:showIn="@layout/activity_main">

    <fragment
        android:id="@+id/map"
        android:name="com.google.android.gms.maps.SupportMapFragment"
        android:layout_width="match_parent"
```

android:layout_gravity="center"

```
android:layout_height="match_parent"  
</>
```

```
</RelativeLayout>
```



24. Google Static Maps Android Code

compile 'com.pskmmte.view:circularimageview:1.1'

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

- httpclient-4.3.3.jar
- httpcore-4.3.3.jar
- 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/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: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.CircularImageView  
    android:layout_width="250dp"  
    android:layout_height="250dp"  
    android:clickable="true"  
    android:id="@+id/img_map_route"  
    android:layout_gravity="center"  
    android:layout_centerVertical="true"  
    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.HttpGet;  
import org.apache.http.impl.client.DefaultHttpClient;  
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|Reykjavik,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(new
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(perm)) {
            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_HIGH_ACCURA
CY);
        mLocationRequest.setInterval(UPDATE_INTERVAL);
        mLocationRequest.setFastestInterval(FATEST_INTERVAL);
        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 (canMakeSmoes()) {
            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.get(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.FusedLocationApi
            .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;

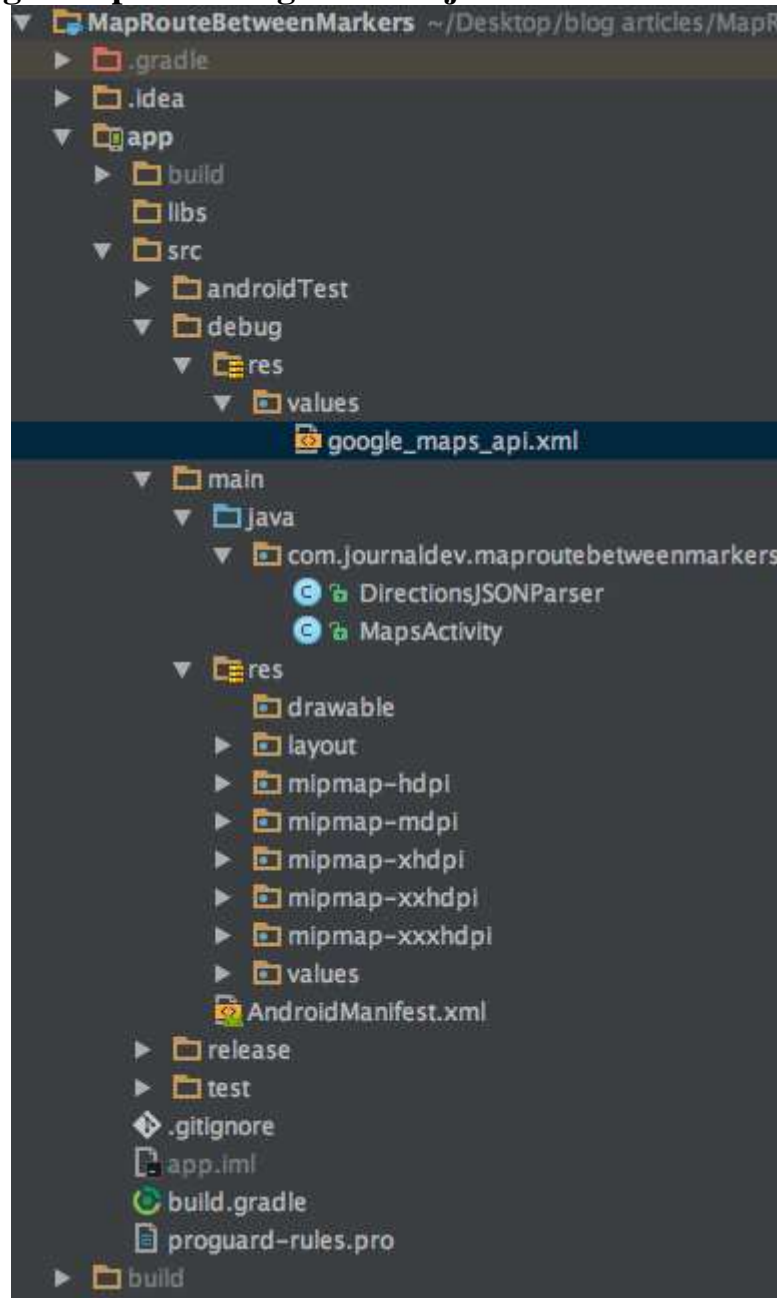
@Override

```
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:

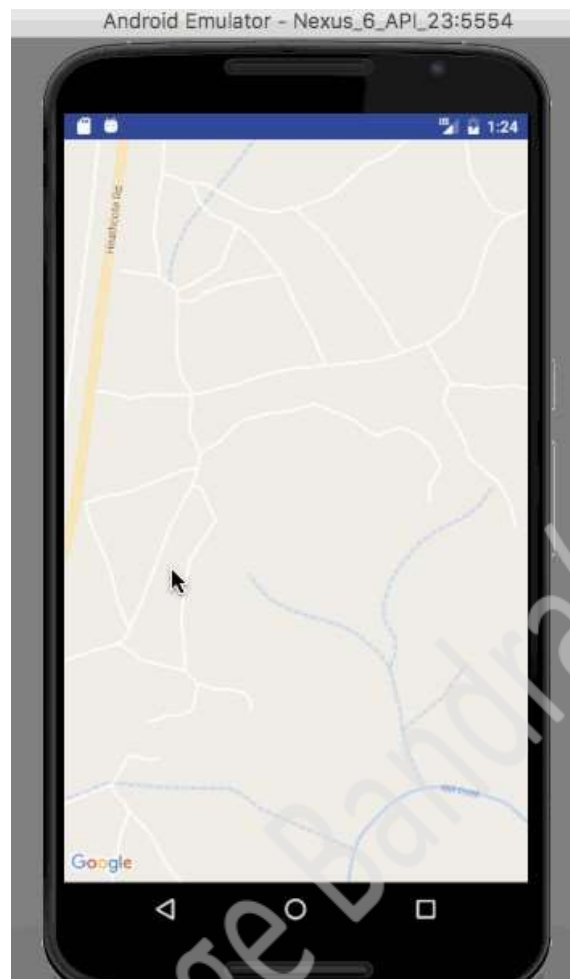
```
String parameters = str_origin + "&" + str_dest + "&" + sensor + "&" +
mode;
```

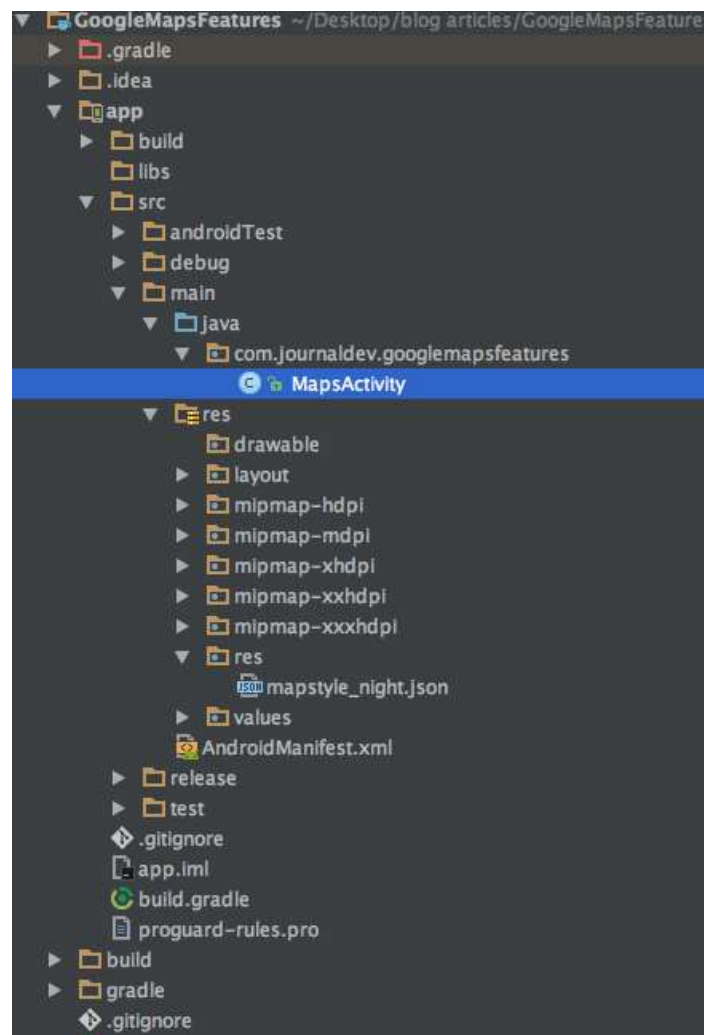
We've set the **mode=driving** in the current application.

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.

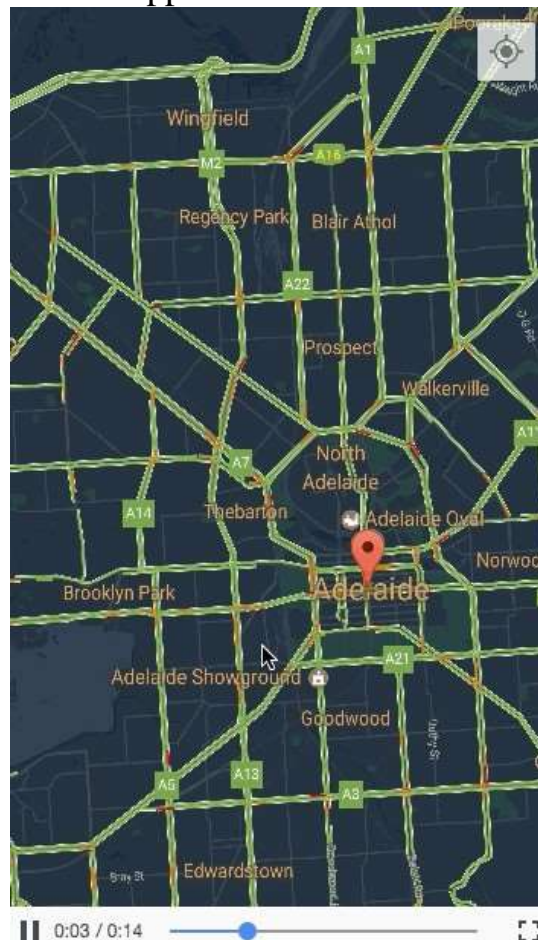
To implement the above. Let's take LatLngBounds for a part of city Adelaide for example.

Following is a snippet that's put inside **onMapReady** method

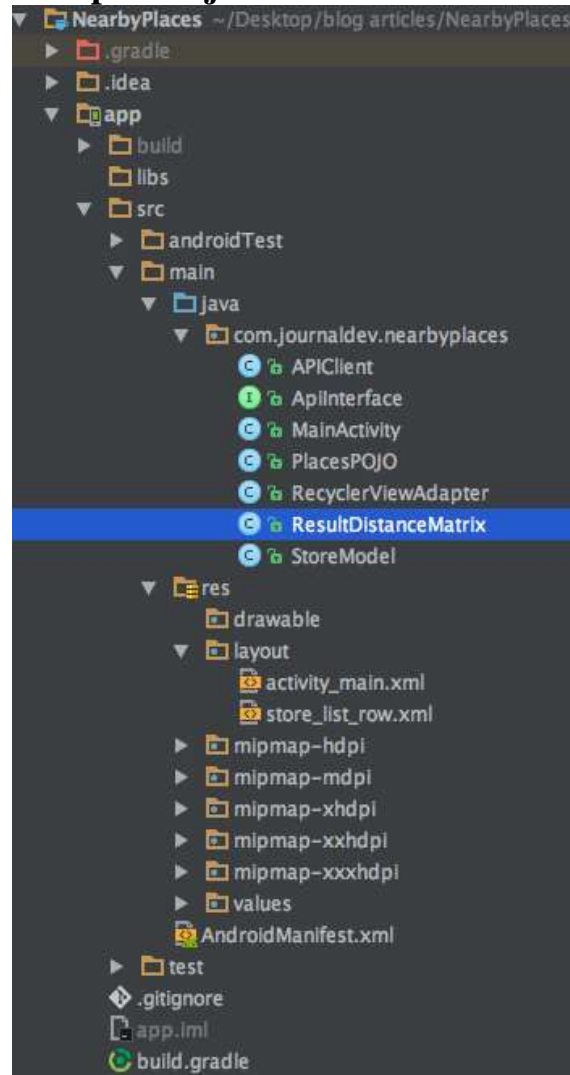
```
final LatLngBounds ADELAIDE = new LatLngBounds(  
    new LatLng(-35.0, 138.58), new LatLng(-34.9, 138.61));  
final CameraPosition ADELAIDE_CAMERA = new CameraPosition.Builder()  
    .target(new LatLng(-34.92873,  
138.59995)).zoom(20.0f).bearing(0).tilt(0).build();  
mMap.setLatLngBoundsForCameraTarget(ADELAIDE);  
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.BODY);
        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;  
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("vicinity")  
        public String vicinity;  
        @SerializedName("name")  
        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.SerializedName;
import java.util.List;
public class ResultDistanceMatrix {
    @SerializedName("status")
    public String status;
    @SerializedName("rows")
    public List rows;
    public class InfoDistanceMatrix {
        @SerializedName("elements")
        public List elements;
        public class DistanceElement {
            @SerializedName("status")
            public String status;
            @SerializedName("duration")
            public ValueItem duration;
            @SerializedName("distance")
            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_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;
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;
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(new
String[permissionsToRequest.size()]), ALL_PERMISSIONS_RESULT);
        else {
            fetchLocation();
        }
    } else {
        fetchLocation();
    }
    apiService = APIClient.getClient().create(ApiInterface.class);
    recyclerView = (RecyclerView) findViewById(R.id.recyclerView);
    recyclerView.setNestedScrollingEnabled(false);
    recyclerView.setHasFixedSize(true);
    LinearLayoutManager layoutManager = new LinearLayoutManager(this);
    recyclerView.setLayoutManager(layoutManager);
    editText = (EditText) findViewById(R.id.editText);
    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(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 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
(showShouldShowRequestPermissionRationale(permissionsRejected.get(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;
}
} 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());
            }
        })
    }
```

```
    });  
}  
  
private void fetchDistance(final PlacesPOJO.CustomA info) {  
  
    Call<ResultDistanceMatrix> call =  
apiService.getDistance(APIClient.GOOGLE_PLACE_API_KEY, latLngString,  
info.geometry.locationA.lat + "," + info.geometry.locationA.lng);  
    call.enqueue(new Callback<ResultDistanceMatrix>() {  
        @Override  
        public void onResponse(Call<ResultDistanceMatrix> call,  
Response<ResultDistanceMatrix> response) {  
  
            ResultDistanceMatrix resultDistance = response.body();  
            if ("OK".equalsIgnoreCase(resultDistance.status)) {  
  
                ResultDistanceMatrix.InfoDistanceMatrix infoDistanceMatrix =  
resultDistance.rows.get(0);  
                ResultDistanceMatrix.InfoDistanceMatrix.DistanceElement  
distanceElement = infoDistanceMatrix.elements.get(0);  
                if ("OK".equalsIgnoreCase(distanceElement.status)) {  
                    ResultDistanceMatrix.InfoDistanceMatrix.ValueItem  
itemDuration = distanceElement.duration;  
                    ResultDistanceMatrix.InfoDistanceMatrix.ValueItem  
itemDistance = distanceElement.distance;  
                    String totalDistance = String.valueOf(itemDistance.text);  
                    String totalDuration = String.valueOf(itemDuration.text);  
  
                    storeModels.add(new StoreModel(info.name, info.vicinity,  
totalDistance, totalDuration));  
                    if (storeModels.size() == 10 || storeModels.size() ==  
results.size()) {  
                        RecyclerViewAdapter adapterStores = new  
RecyclerViewAdapter(results, storeModels);  
                        recyclerView.setAdapter(adapterStores);  
                    }  
                }  
            }  
        }  
    }  
    @Override  
    public void onFailure(Call<ResultDistanceMatrix> call, Throwable t) {
```

```
        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 and the second word in the name parameter of the `fetchStores()` 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()`. Once it's done for all the stores, we populate 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_parent"
    android:layout_height="wrap_content"
    android:orientation="vertical"
    android:padding="5dp">
```

```
<TextView
    android:id="@+id/txtStoreName"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:paddingBottom="5dp"
    android:textColor="#212121" />
```

```
<TextView
    android:id="@+id/txtStoreAddr"
    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>
```

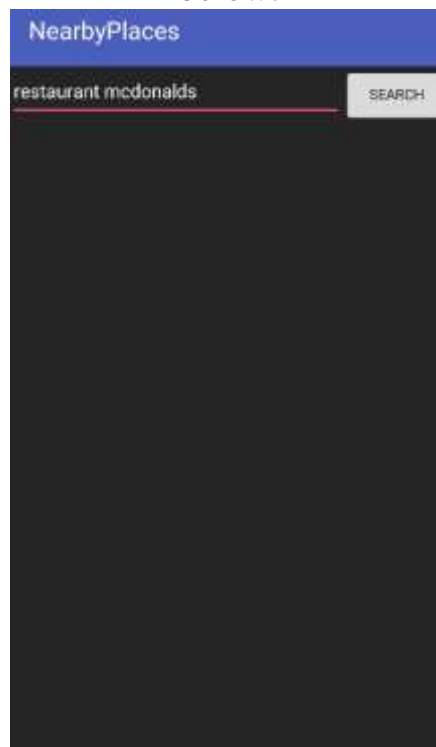
The **RecyclerViewAdapter.java** code is given below.

```
public class RecyclerViewAdapter extends
RecyclerView.Adapter<RecyclerViewAdapter.MyViewHolder> {
    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.txtStoreName);
            this.txtStoreAddr = (TextView)
itemView.findViewById(R.id.txtStoreAddr);
        }
    }
}
```

```
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/progressBar"
    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="true"
    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();
            }
        });

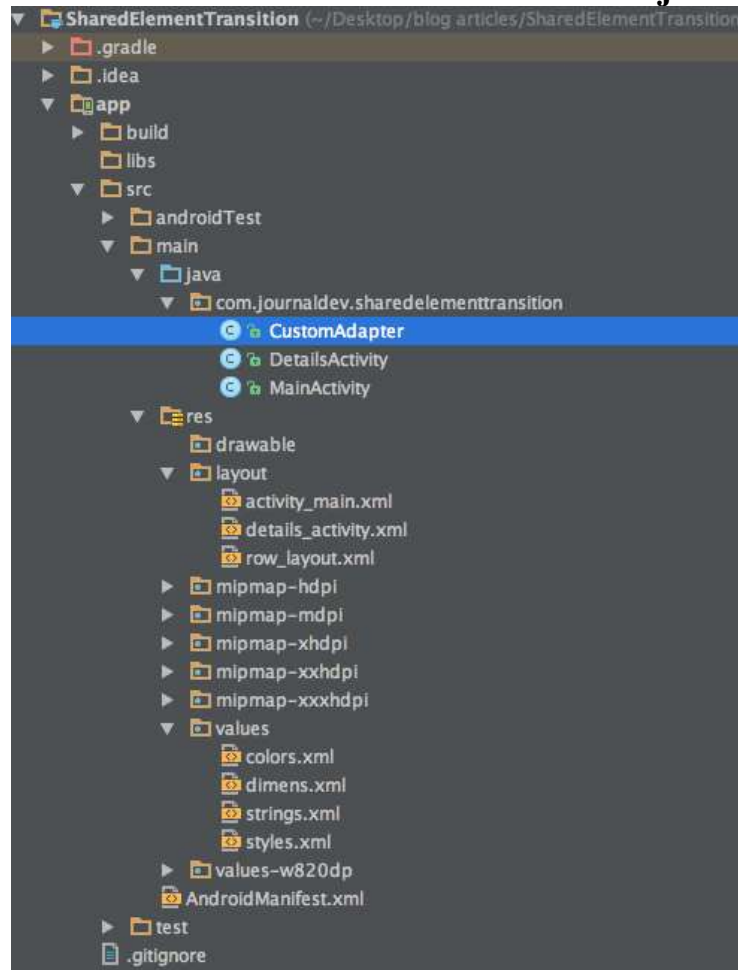
        stop_timer.setOnClickListener(new View.OnClickListener() {
```

```
@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 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/language"
    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;
        LayoutInflater inflater = (LayoutInflater) c
            .getSystemService(Context.LAYOUT_INFLATER_SERVICE);
        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.shardelementtransition;
```

```
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.AdapterView.OnItemClickListener;
```

```
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_green_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_A700))});
        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(MainActivity.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.finishAfterTransition(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.

The screenshot shows the Google Play Developer Console sign-up interface. At the top, it says "This is the Google account that will be associated with your Developer Console. If you would like to use a different account, you can choose from the following options below. If you are an organization, consider registering a new Google account rather than using a personal account." Below this, there are two buttons: "SIGN IN WITH A DIFFERENT ACCOUNT" and "CREATE A NEW GOOGLE ACCOUNT". On the left, there is a profile picture of a person and the name "Jatin singh" with the email "singhjatin775@gmail.com". Below the sign-up options, there is a section titled "Before you continue..." which contains three steps: "Accept developer agreement", "Review distribution countries", and "Credit card". Each step has a brief description and a checkbox or icon indicating the next action.

Accept developer agreement
Read and agree to the Google Play Developer distribution agreement.
☐ I agree and I am willing to associate my account registration with the Google Play Developer distribution agreement.

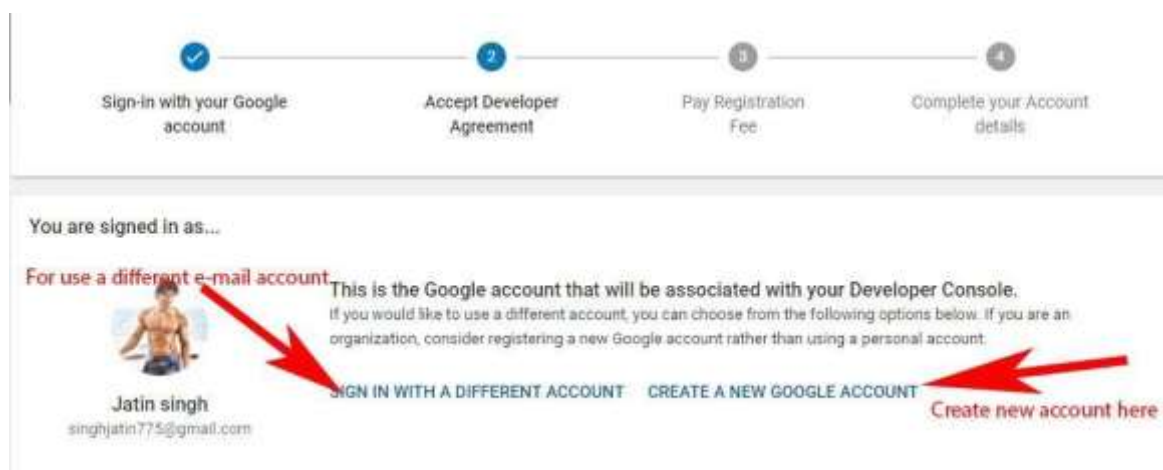
Review distribution countries
Review the distribution countries where you can distribute and sell applications. If you are planning to sell apps or in-app products, check if you can have a merchant account in your country.

Credit card
Make sure you have your credit card handy to pay the \$25 registration fee in the next step.

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.

Complete your purchase

Google Play Developer Registration Fee \$21.00

Enter your card detail here

Add credit or debit card

Card number

Cardholder name Jatin singh

Billing address

By continuing, you create a Google Payments account and agree to Terms of Service - Buyer (India) and Privacy Notice

Enter your billing address here and then click on pay

PAY

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 PROFILE

Fields marked with * need to be filled before saving.

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, +1-800-555-0199.

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



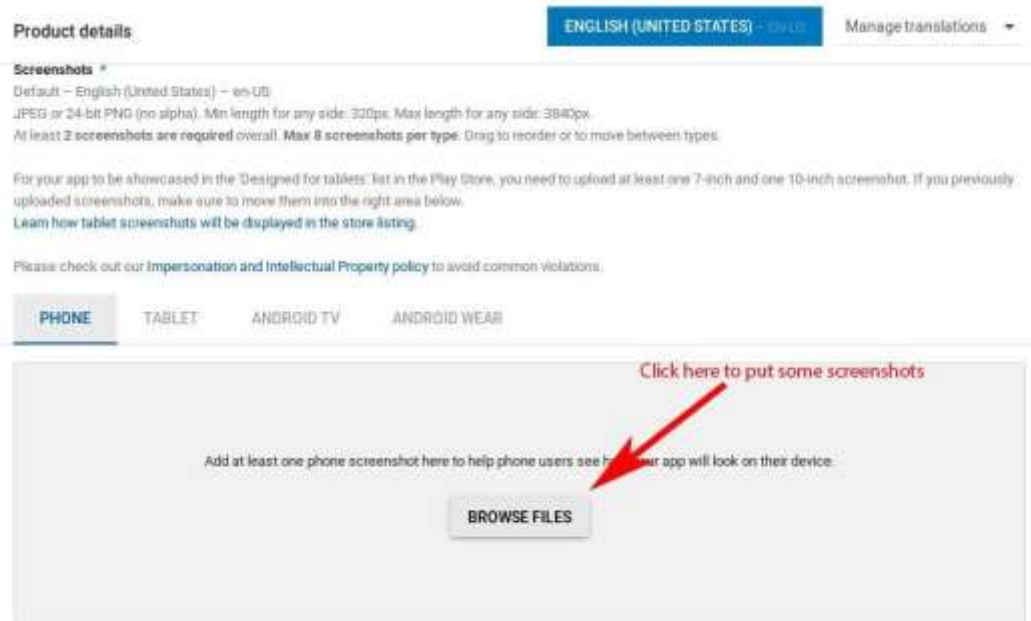
Step 9: Enter the name of your App.

The screenshot shows the 'Create application' form. The 'Default language' is set to 'English (United States) - en-US'. The 'Title' field is empty and has a red arrow pointing to it with the text 'Enter the name of your app here'. Below the title field, there is a 'Now Click on Create' text with a red arrow pointing to the 'CREATE' button. The 'CANCEL' button is also visible.

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

The screenshot shows the 'Product details' form. The 'Title' field is filled with 'App Demo' and has a red arrow pointing to it with the text 'Enter the name of your app'. The 'Short description' field is filled with 'This is a app publish Demo' and has a red arrow pointing to it with the text 'Short description about you app'. The 'Full description' field is filled with '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' and has a red arrow pointing to it with the text 'Enter your full description about app'.

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.

The screenshot shows the 'Store listing' form for an application. Red arrows and text provide instructions:

- At last save it in draft**: Points to the **SAVE DRAFT** button at the top right.
- Choose application type**: Points to the **Application type** dropdown menu, which currently shows 'Application' and 'Games'.
- Select your category**: Points to the **Category** dropdown menu, which currently shows 'Select a category'.
- Check it**: Points to the **Privacy Policy** section, which includes a checkbox and the text 'Not submitting a privacy policy URL at this time. Learn more'.

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



Step 15: Now you will see create release now click on it.

Create release

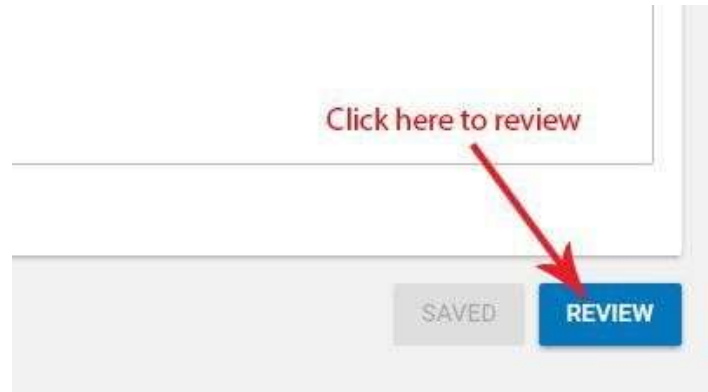
You can prepare, review, and then publish the version of your app you want to make available to users of the Play Store.



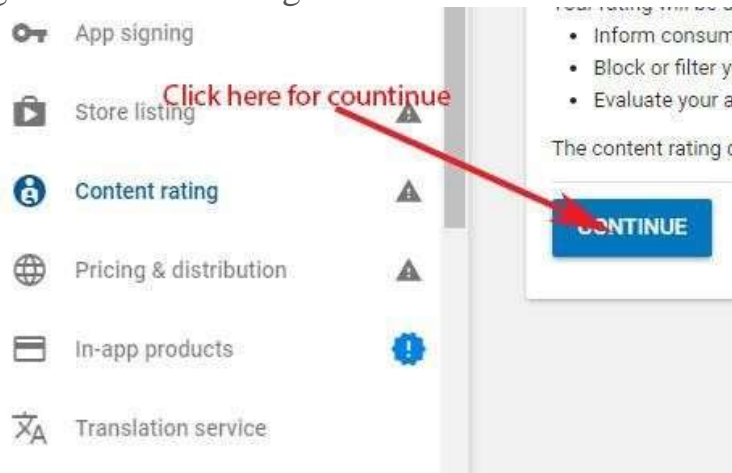
Step 16: After click on create release you will see browse files click on it and upload your signed APK.



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



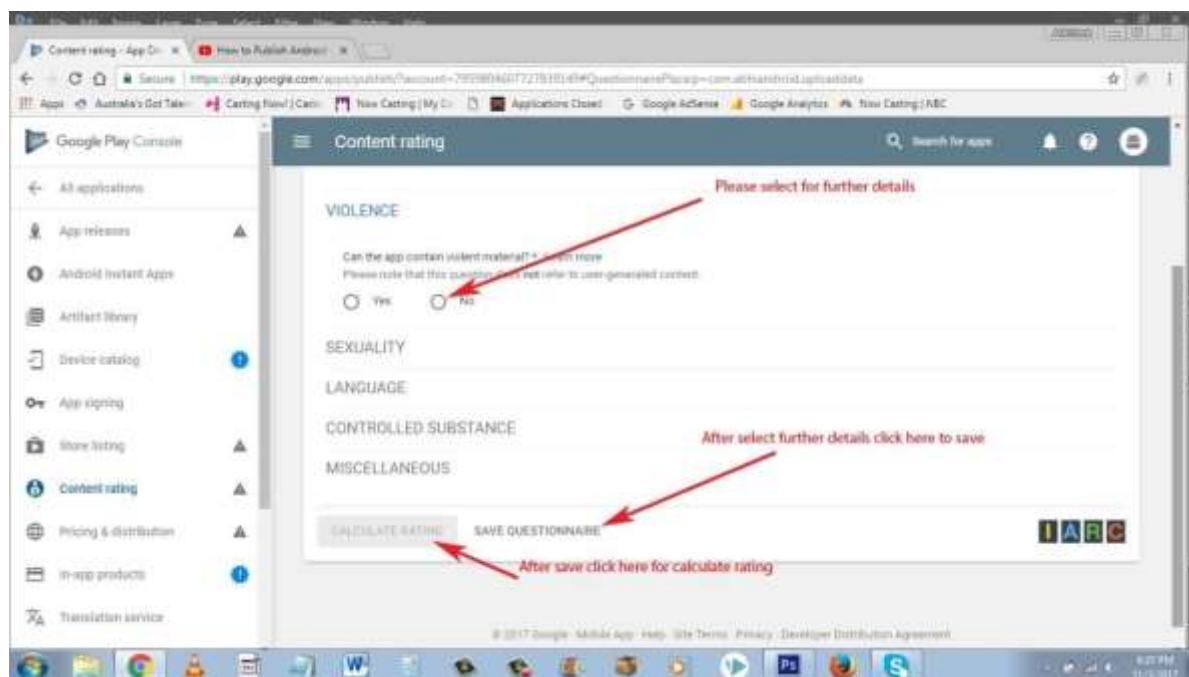
Step 18: Now go to Content Rating and click on continue.



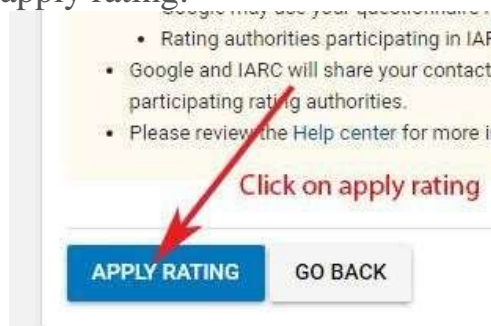
Step 19: Fill details which include email address and select your categories.

A screenshot of the app submission form. It includes fields for 'Email address *' and 'Confirm email address *', both containing 'abc243@gmail.com'. Red arrows point from the text 'Enter your email address' to the first field and from 'Confirm your email address' to the second field. Below the email fields is a section titled 'Select your app category'. It lists two categories: 'REFERENCE, NEWS, OR EDUCATIONAL' and 'SOCIAL NETWORKING, FORUMS, BLOGS, AND UGC SHARING'. Each category has a brief description and examples of apps. The 'REFERENCE, NEWS, OR EDUCATIONAL' category includes Wikipedia, BBC News, Dictionary.com, and Medscape. The 'SOCIAL NETWORKING, FORUMS, BLOGS, AND UGC SHARING' category includes Facebook, Chat Roulette, 9Gag, Yelp, Google Plus, YouTube, and Twitter.

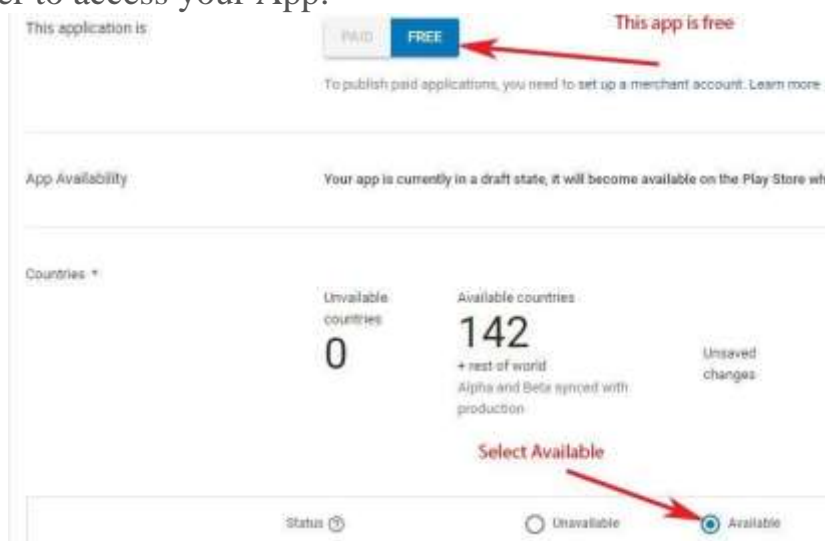
Step 20: Now select Violence, Sexuality, Language, Controlled Substance and Miscellaneous based on your App. First click on save questionnaire for save and then click on calculate rating.



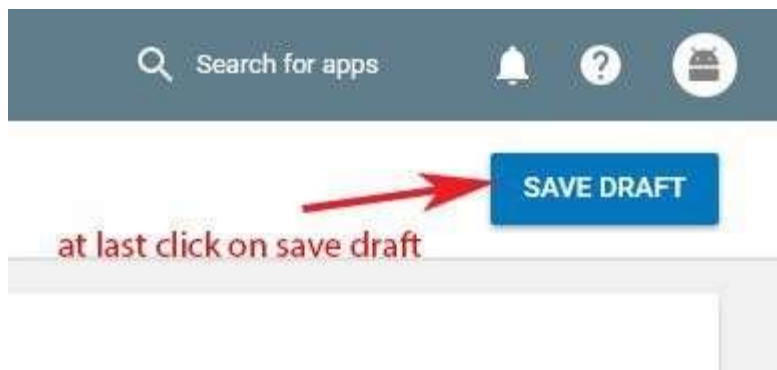
Step 21: Now click on apply rating.



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

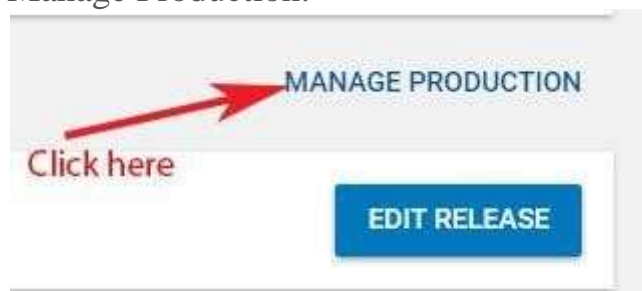


Step 23: Now scroll down and see mandatory things with * you need to select After this click on save draft .



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

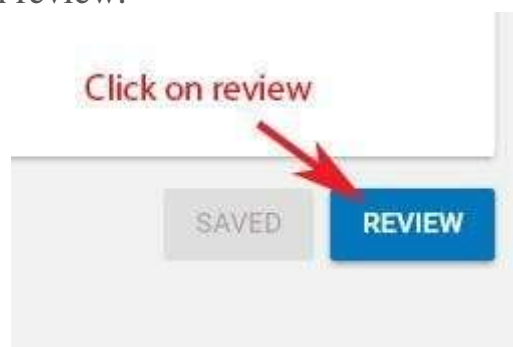
Step 25: Click on Manage Production.



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.



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,"Login  
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_parent"  
        android:layout_height="wrap_content"  
        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="10dp"
    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_parent"  
android:layout_height="wrap_content"  
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="10dp"/>
```

```
<Button  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:textSize="20dp"  
    android:text="Logout"  
    android:layout_marginTop="20dp"  
    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/buttonRequest"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        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/v2/5bd018723100006300afcbce";

@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);

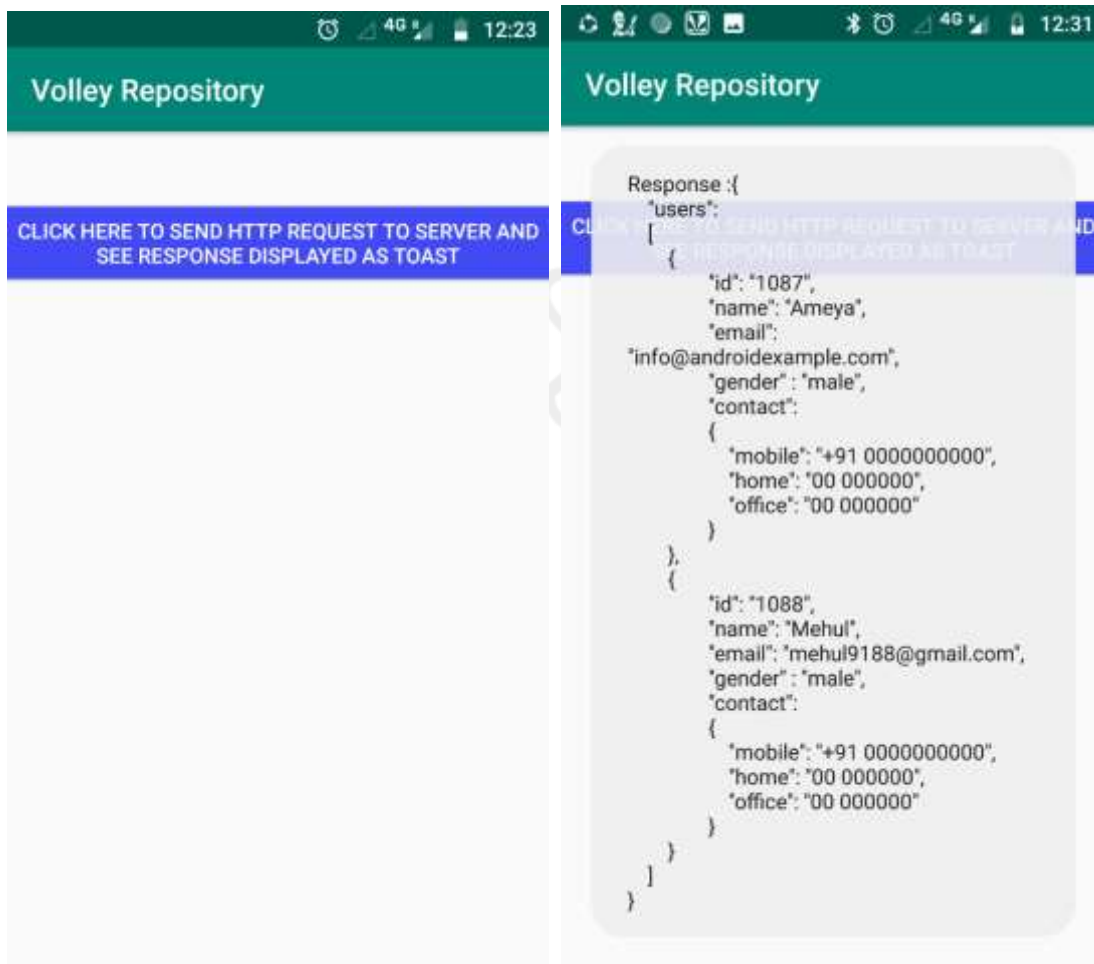
    //String Request initialized
    mStringRequest = new StringRequest(Request.Method.GET, url, new
    Response.Listener<String>() {
        @Override
        public void onResponse(String response) {

            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());  
}  
});  
  
mRequestQueue.add(mStringRequest);  
}  
}
```

Output:



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="true"
```

```
        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/coverImage"
            android:lines="2"
            android:paddingTop="20dp"
            android:text="Title"

            android:textAppearance="@style/TextAppearance.AppCompat.Medium"
        />
```

```
    </RelativeLayout>

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

MainActivity.java

```
package com.ameyashinde.retrofitexample;

import android.app.ProgressDialog;
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 **progressDoalog**;

@Override

```
protected void onCreate(Bundle savedInstanceState) {  
    super.onCreate(savedInstanceState);  
    setContentView(R.layout.activity_main);  
    progressDoalog = new ProgressDialog(MainActivity.this);  
    progressDoalog.setMessage("Loading....");  
    progressDoalog.show();
```

*/*Create handle for the RetrofitInstance interface*/*

```
    GetDataService service =  
    RetrofitClientInstance.getRetrofitInstance().create(GetDataService.class);  
    Call<List<RetroPhoto>> call = service.getAllPhotos();  
    call.enqueue(new Callback<List<RetroPhoto>>() {  
        @Override  
        public void onResponse(Call<List<RetroPhoto>> call,  
Response<List<RetroPhoto>> response) {  
            progressDoalog.dismiss();  
            generateDataList(response.body());  
        }  
    })
```

@Override

```
    public void onFailure(Call<List<RetroPhoto>> call, Throwable t) {  
        progressDoalog.dismiss();  
        Toast.makeText(MainActivity.this, "Something went wrong...Please  
try later!", Toast.LENGTH_SHORT).show();  
    }  
});  
}
```

```
private void generateDataList(List<RetroPhoto> photoList) {  
    recyclerView = 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) {
    LayoutInflater inflater = LayoutInflater.from(parent.getContext());
    View view = inflater.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 inflater = LayoutInflater.from(parent.getContext());  
    View view = inflater.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();  
}  
}
```

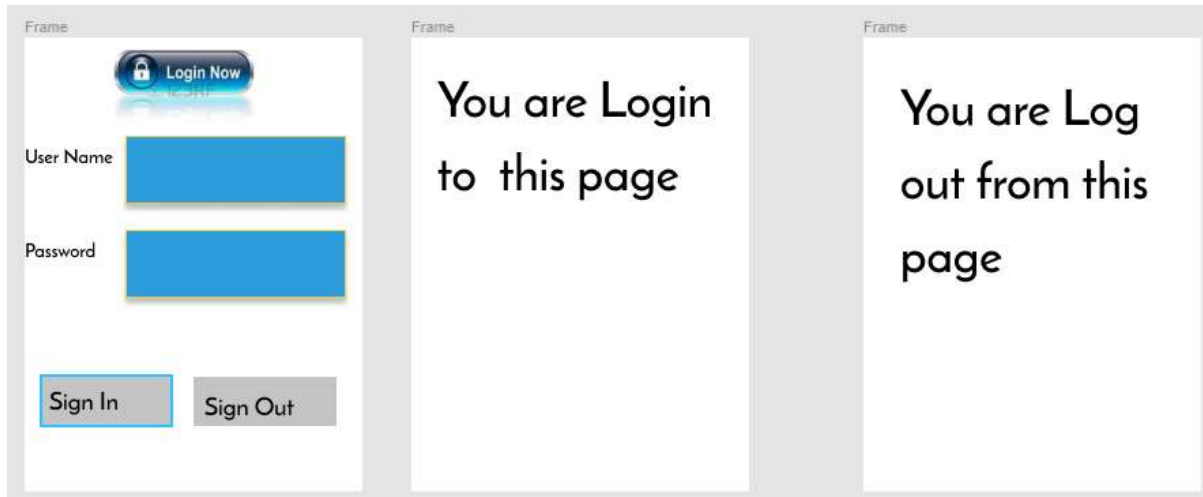
Output:



FIGMA

Figma

Prog1. Design a UI for Login Page using Figma



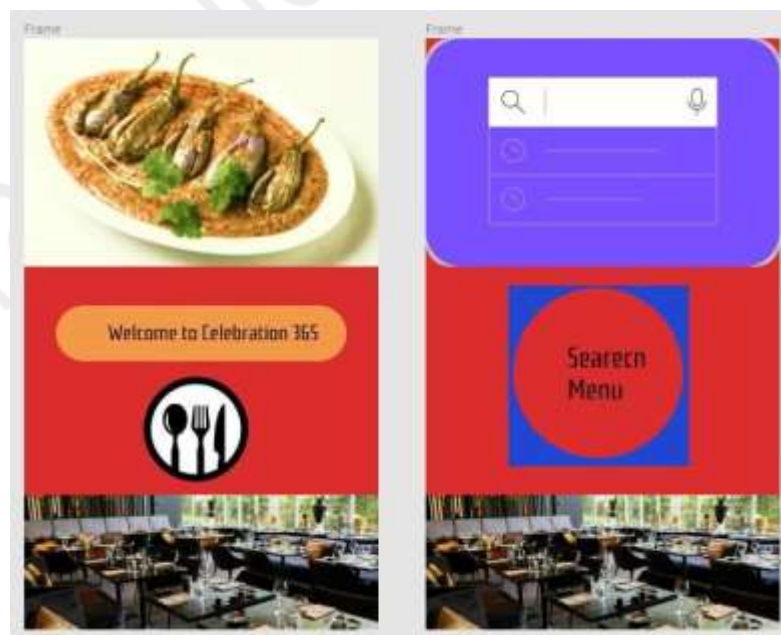
Prog 2 : Design a UI for Windows Media Player



Prog. 3 : Design a UI for Dominzo Pizza online order



Prog . 4 Design a UI for Restaurants App Home Page

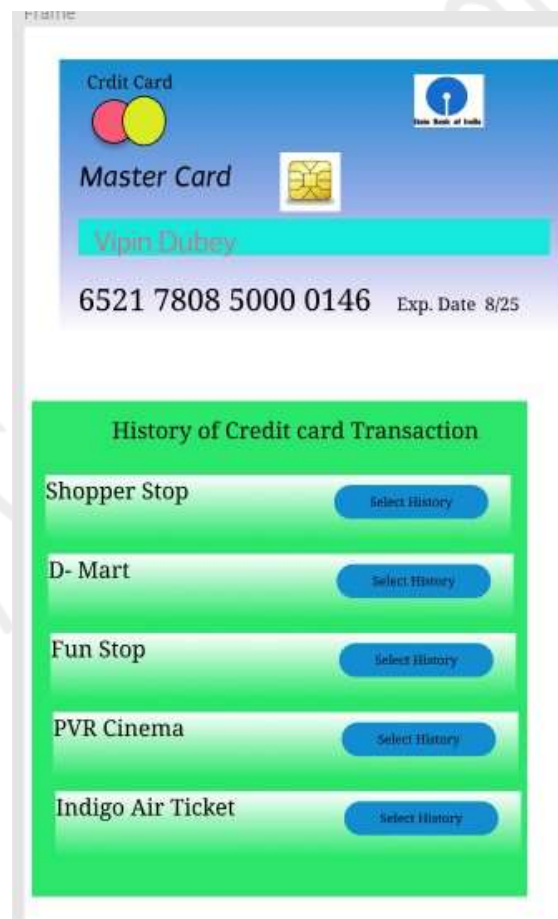


Prog. 5 : Design a UI for College Notice Board using Figma

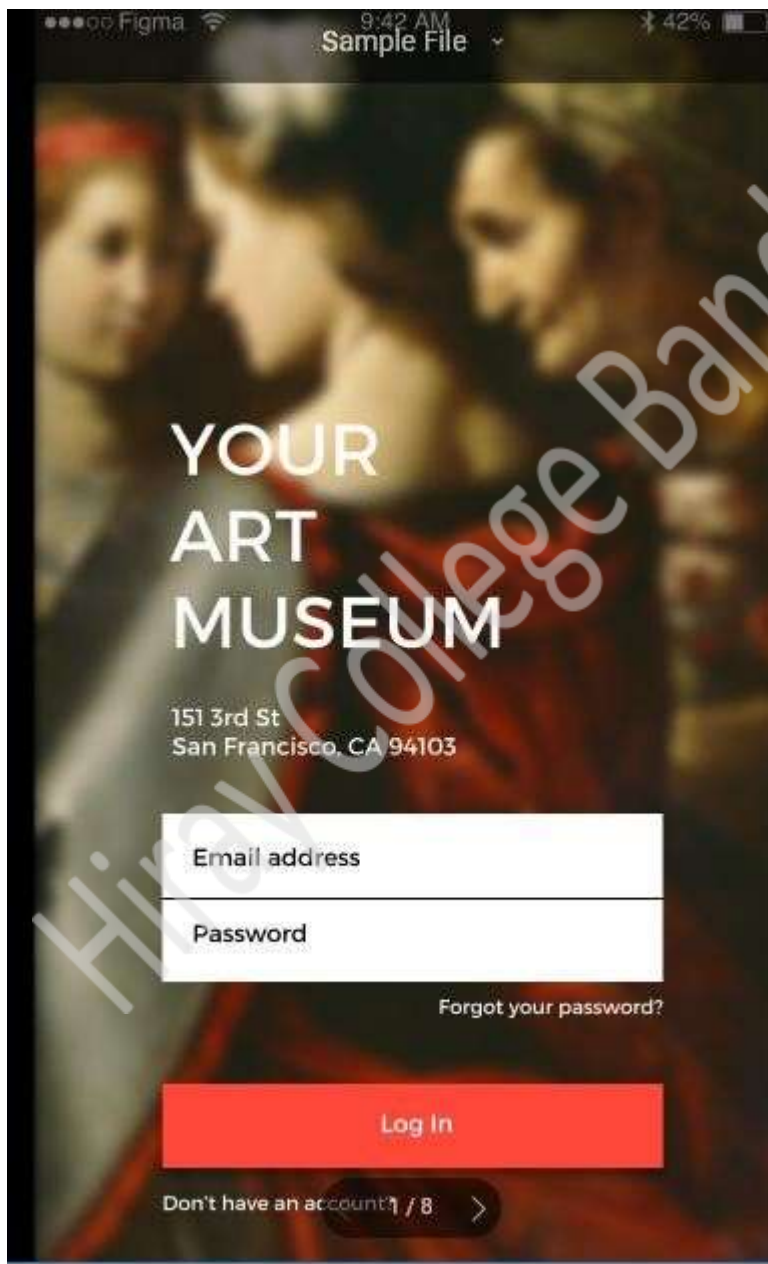
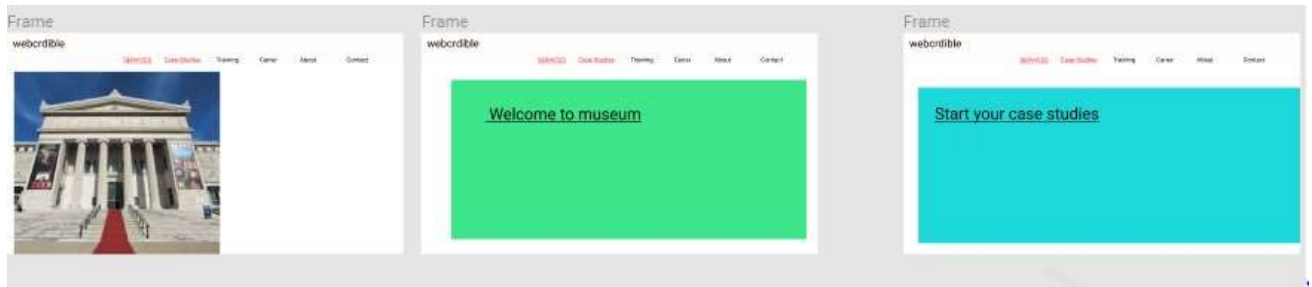




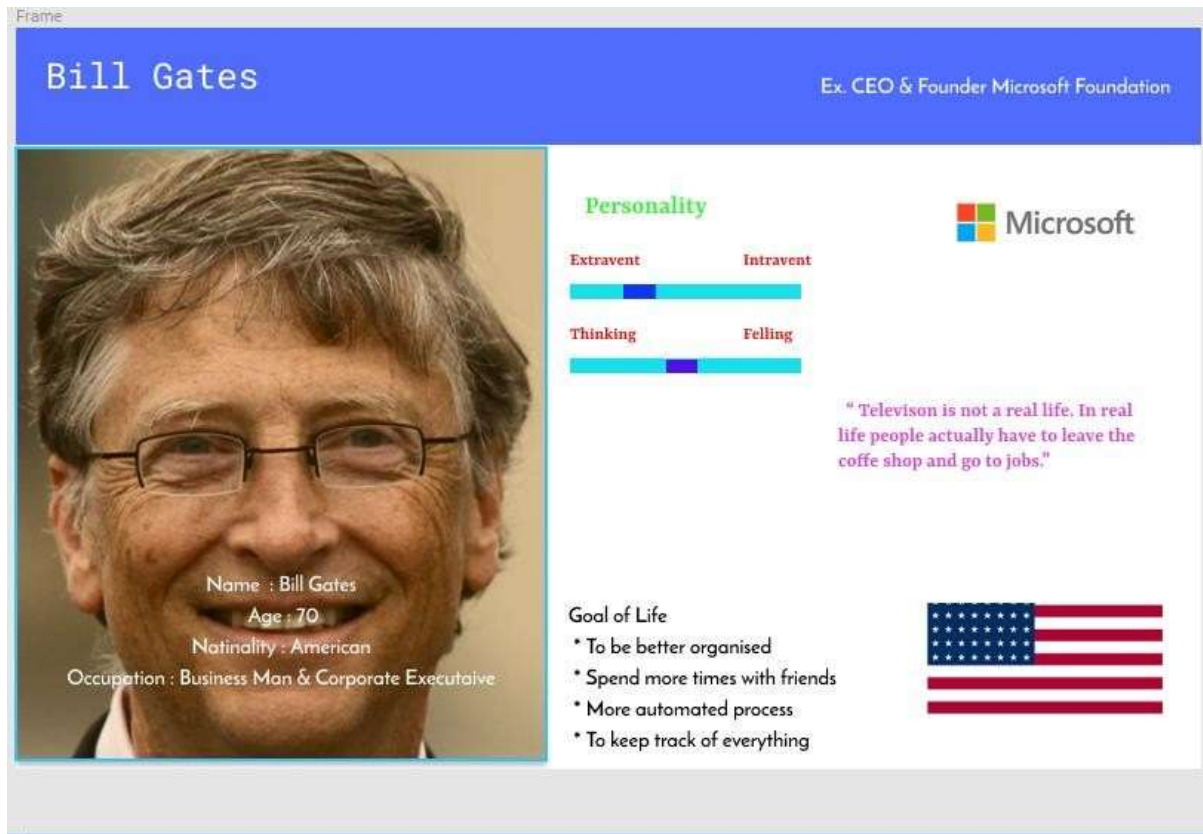
Prog. 6 : Design a UI for Credit Card Transaction History using Figma



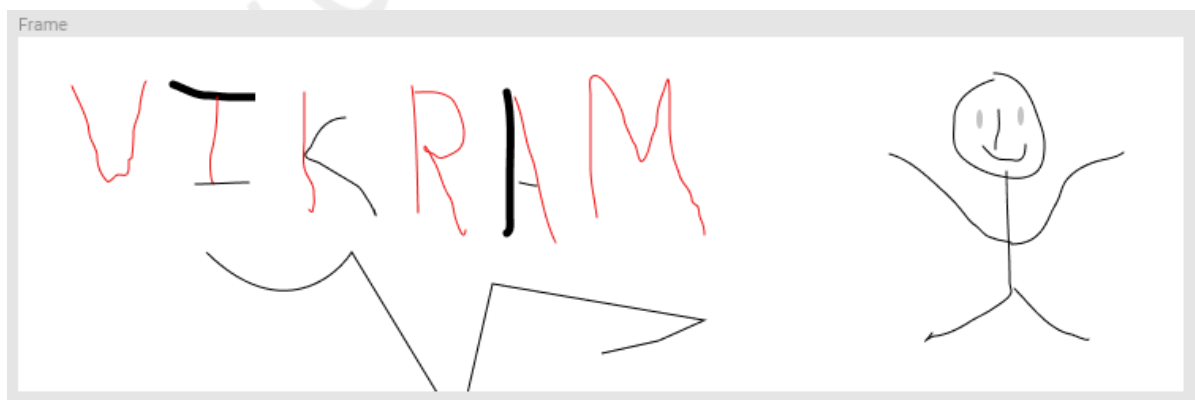
Prog 7 : Design UI for Museums Website using Figma



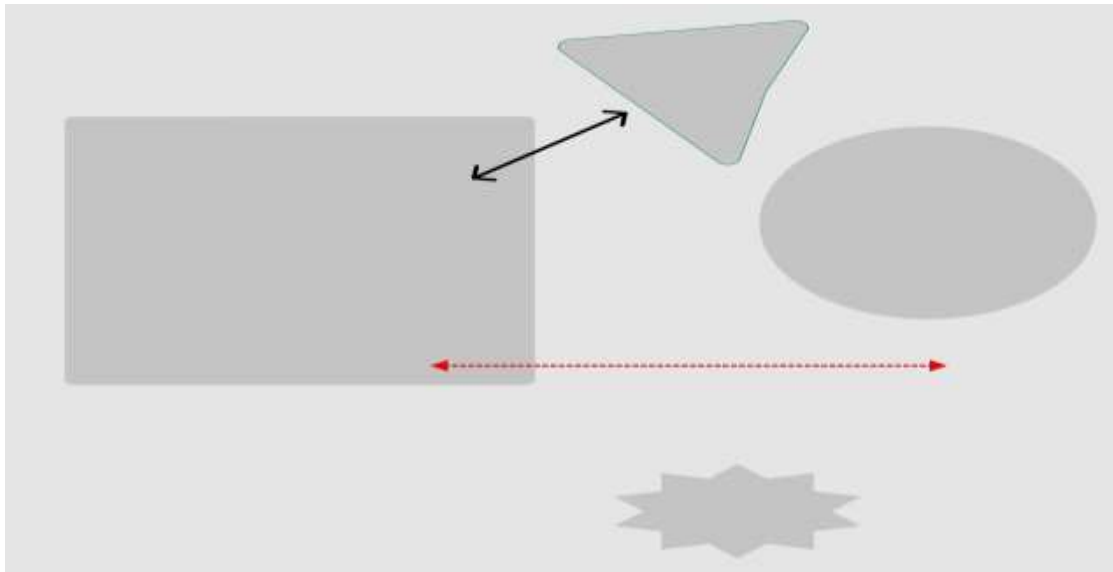
Prog 8 : Design a Persona Template for Bill Gates using Figma



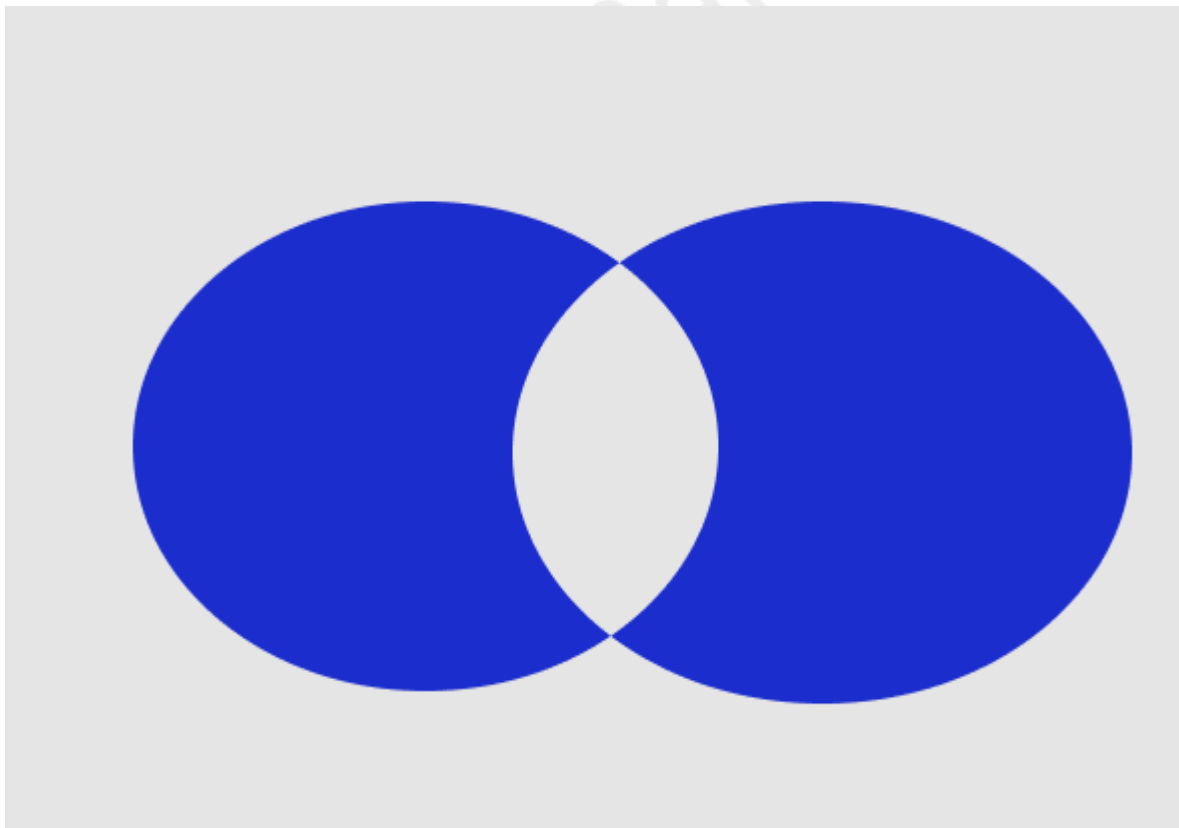
Prog. 9 : Design a UI using Pencil tool of Figma.



Prog. 10 : Design a simple UI using various Figma components



Prog. 11 Design a UI for Boolean operation in Figma



Prog. 12 Design UI for Restrorent HomePage



Prog.13 Design UI for E-Commerce Site for Cloth



Prog. 14 Design UI for Login Page for Decoration Site

The image displays three panels of a user interface design for a login page, all featuring the 'उत्सव MAKERS' logo with a red flower icon and the tagline 'Surprise your love'.

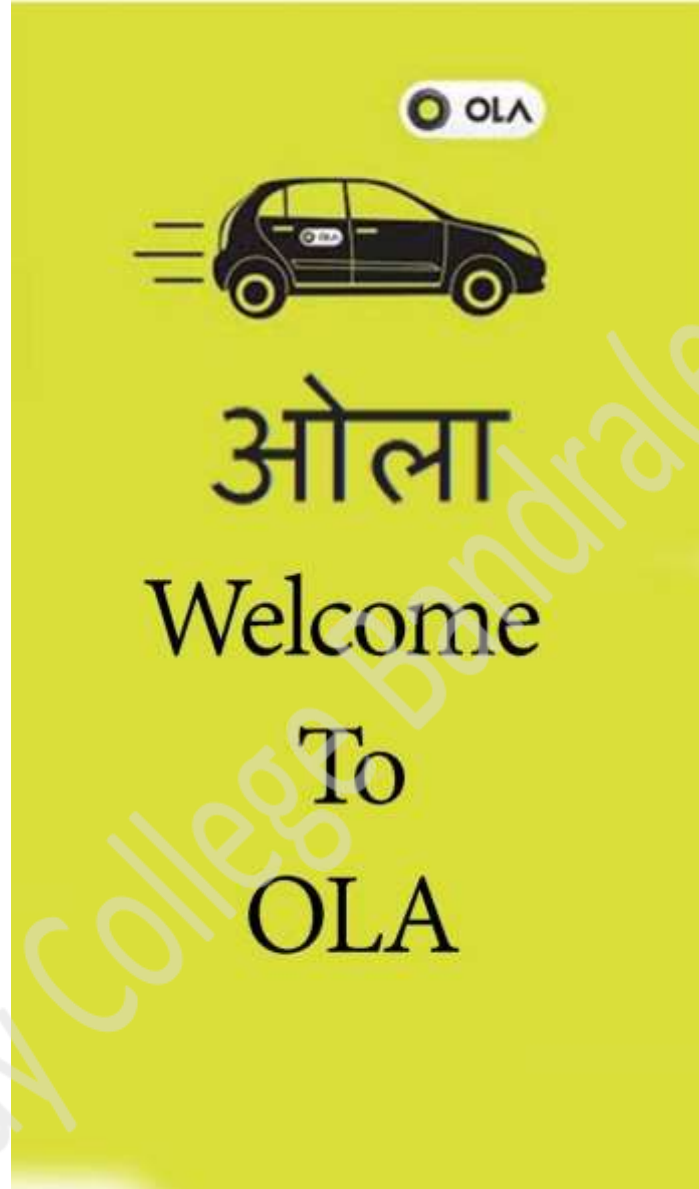
Left Panel (Login Form): This panel has a black header with the logo. Below it, on a blue background, are two input fields labeled 'Enter Email ID' and 'Enter Password'. Below these fields are two buttons: a rectangular 'LOGIN' button and an oval 'Sign Up' button.

Middle Panel (User Profile): This panel has a blue header with the logo. Below it is a square profile picture of a man. Below the picture, the text 'WELCOME Mehul Sarvaiya' is displayed.

Right Panel (Registration Form): This panel has a blue header with the logo. Below it, on a light blue background, are three input fields labeled 'Enter Your Name Here', 'Enter Your Email Id', and 'Enter Your Password'. Below these fields is an oval 'Sign Up' button.

Prog.15 Design UI For Travelmate (example OLA) and Implement Localization frame work for UI

(Hint : Write Text Into Hindi Or Marathi)



Prog. 15

Design a UI for Simple Arithmetic Calculator.

