# 移动应用开发

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# Review Android Basic Components

Android app resources

- String resource
- Color resource
- Dimen resource
- Layout resource
- Array resource
- Image resource
- Style resource
- Menu resource
- Android app internationalization

# String resource

- **Usually under res\values**

  - ☐ **strings.xml**

  <resources>
      <string name="name">value</string>
  </resources>

- **Utilize string resource**

  - ☐ **Java**

    [<package>.]R.string.name

    e.g., value of introduction
    getResources().getString(R.string.introduction)

  - ☐ **XML**

    @[<package>:]string/name

    e.g., value of introduction
    android:text="@string/introduction"

# Color resource

- **Android provides color definition with RGB and Alpha values with # as start**

  - **i.e., Alpha-Red-Green-Blue pattern, Alpha value could be omitted and make the color as non-transparent**

    #RGB: Red/Green/Blue is specified by 0~f, e.g., red: #f00
    **#ARGB:** Alpha/ Red/Green/Blue is specified by 0~f (0: totally transparent, f: totally non-transparent), e.g., demi-transparent red: #6f00
    #RRGGBB: Red/Green/Blue is specified by 00~ff, e.g., blue: #0000ff
    #AARRGGBB: Alpha/ Red/Green/Blue is specified by 00~ff, e.g., demi-transparent green: #6600ff00

  - **Color resource file**

    - **Under res\values**
      ```
      <resources>
          <color name="colorName">#colorValue</color>
      </resources>
      ```

    - **Java**
      [<package>.]R.color.colorName
      TextView tv = (TextView)findViewById(R.id.title);

    - **XML**
      @[<package>:]color/colorName
      android:textColor="@color/title"

# Dimen resource

■ **Used to set font size, component margin, etc.**

| Dimen unit | Description | Applied for |
|---|---|---|
| dip or dp (independent pixels) | Based on screen density | Screen definition/clarity |
| sp (proportional pixels) | Mainly for setting font size | Font size |
| px (pixels) | Corresponding to screen pixel | Number of pixels |
| pt (points as pounds) | Screen physical size, 1 pound = 1/72 inch | Font size (seldom use) |
| in (inches) | Standard length unit, 1 inch = 2.54cm | Diagonal length of screen |
| mm (milimeters) | Screen physical length unit | Physical rectangle length of screen |

☐ *dp is jointly determined by screen density,*

　　☐ **e.g., under 160dpi, 1dp=1px, under 320dpi, 1dp=2px**
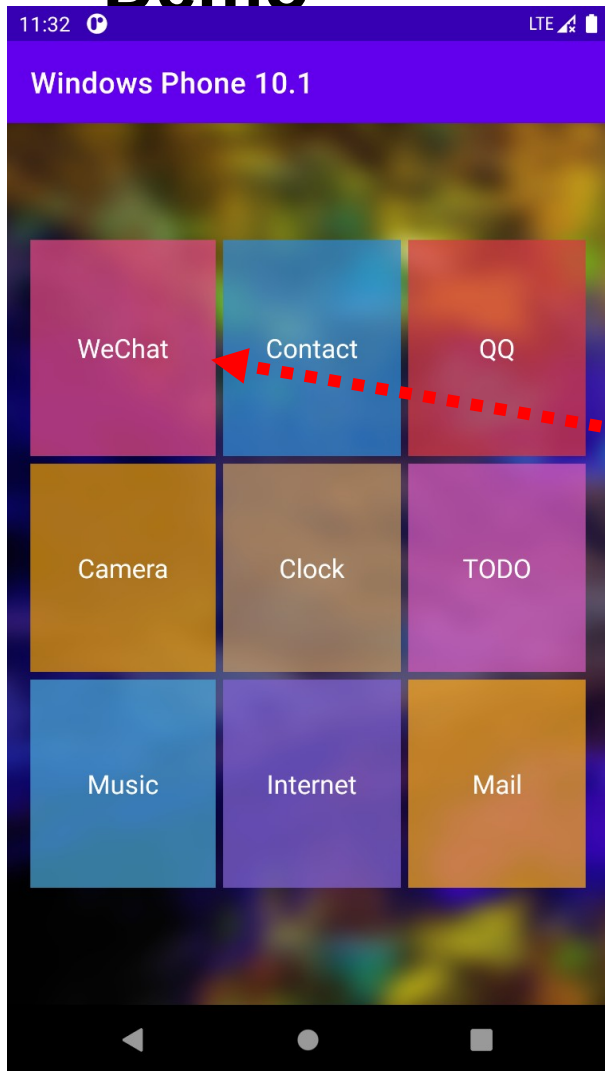
　　☐ **Java**

　　[<package>.]R.dimen.dimenName
　　tv.setTextSize(getResources().getDimension(R.dimen.title));

☐ **XML**

@[<package>:]dimen/dimenName
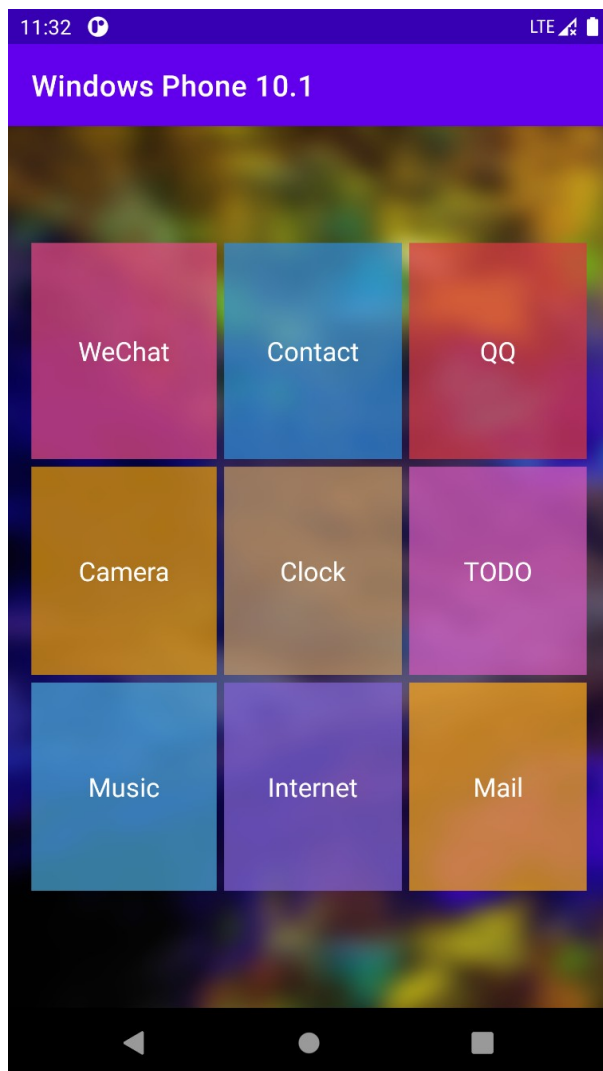android:textSize="@dimen/title"

# Demo



```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:background="@drawable/bg"
    android:orientation="vertical"
    android:paddingBottom="80dp"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="80dp"
    tools:context="com.example.applicationresources.MainActivity">
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:orientation="horizontal">
        <TextView
            android:id="@+id/textView1"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:background="@color/textView1"
            android:gravity="center"
            android:text="@string/textView1"
            android:textColor="@color/wordcolor"
            android:textSize="@dimen/wordsize"/>
        <TextView
            android:id="@+id/textView2"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_marginLeft="@dimen/margin"
            android:layout_weight="1"
            android:background="@color/textView2"
            android:gravity="center"
            android:text="@string/textView2"
            android:textColor="@color/wordcolor"
            android:textSize="@dimen/wordsize"/>
        <TextView
            android:id="@+id/textView3"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_marginLeft="@dimen/margin"
            android:layout_weight="1"
            android:background="@color/textView3"
            android:gravity="center"
            android:text="@string/textView3"
            android:textColor="@color/wordcolor"
            android:textSize="@dimen/wordsize"/>
    </LinearLayout>
```

```xml
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_marginTop="@dimen/margin"
    android:layout_weight="1"
    android:orientation="horizontal">
    <TextView
        android:id="@+id/textView4"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:background="@color/textView4"
        android:gravity="center"
        android:text="@string/textView4"
        android:textColor="@color/wordcolor"
        android:textSize="@dimen/wordsize"/>
    <TextView
        android:id="@+id/textView5"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_marginLeft="@dimen/margin"
        android:layout_weight="1"
        android:background="@color/textView5"
        android:gravity="center"
        android:text="@string/textView5"
        android:textColor="@color/wordcolor"
        android:textSize="@dimen/wordsize"/>
    <TextView
        android:id="@+id/textView6"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_marginLeft="@dimen/margin"
        android:layout_weight="1"
        android:background="@color/textView6"
        android:gravity="center"
        android:text="@string/textView6"
        android:textColor="@color/wordcolor"
        android:textSize="@dimen/wordsize"/>
</LinearLayout>
```

```xml
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_marginTop="@dimen/margin"
    android:layout_weight="1"
    android:orientation="horizontal">
    <TextView
        android:id="@+id/textView7"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:background="@color/textView7"
        android:gravity="center"
        android:text="@string/textView7"
        android:textColor="@color/wordcolor"
        android:textSize="@dimen/wordsize"/>
    <TextView
        android:id="@+id/textView8"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_marginLeft="@dimen/margin"
        android:layout_weight="1"
        android:background="@color/textView8"
        android:gravity="center"
        android:text="@string/textView8"
        android:textColor="@color/wordcolor"
        android:textSize="@dimen/wordsize"/>
    <TextView
        android:id="@+id/textView9"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_marginLeft="@dimen/margin"
        android:layout_weight="1"
        android:background="@color/textView9"
        android:gravity="center"
        android:text="@string/textView9"
        android:textColor="@color/wordcolor"
        android:textSize="@dimen/wordsize"/>
</LinearLayout>
</LinearLayout>
```

# Demo



```xml
<resources>
    <color name="colorPrimary">#3F51B5</color>
    <color name="colorPrimaryDark">#303F9F</color>
    <color name="colorAccent">#FF4081</color>
    <color name="wordcolor">#FFFFFF</color>
    <color name="textView1">#BBE24A83</color>
    <color name="textView2">#BB318AD6</color>
    <color name="textView3">#BBD73943</color>
    <color name="textView4">#BBE69A08</color>
    <color name="textView5">#BBBD9663</color>
    <color name="textView6">#BBD45ABC</color>
    <color name="textView7">#BB4AA6D6</color>
    <color name="textView8">#BB8064D2</color>
    <color name="textView9">#BBF7A81E</color>
    <color name="purple_200">#FFBB86FC</color>
    <color name="purple_500">#FF6200EE</color>
    <color name="purple_700">#FF3700B3</color>
    <color name="teal_200">#FF03DAC5</color>
    <color name="teal_700">#FF018786</color>
    <color name="black">#FF000000</color>
    <color name="white">#FFFFFFFF</color>
</resources>
```
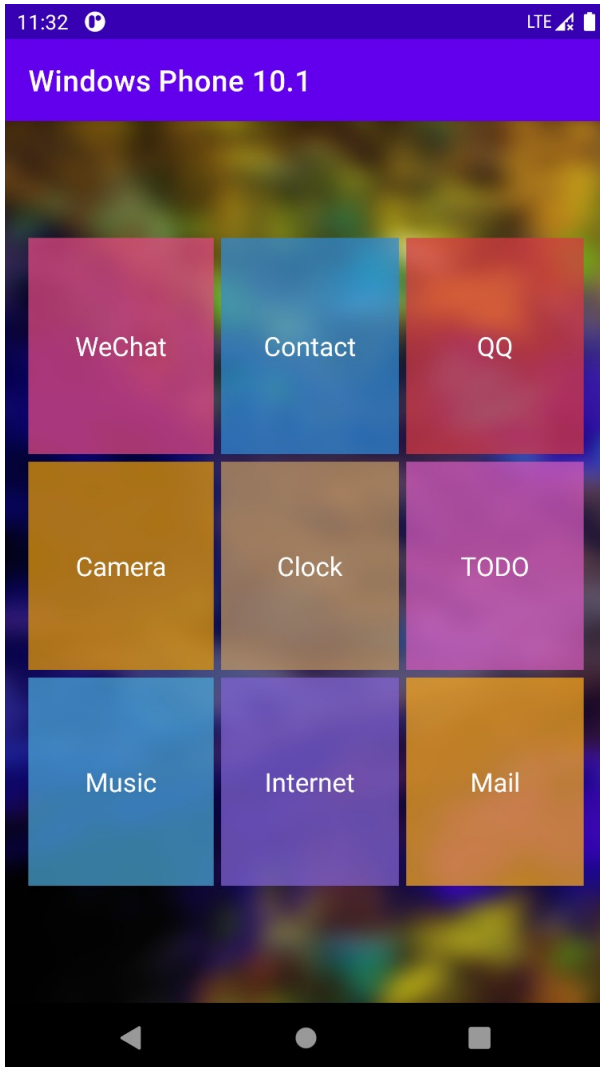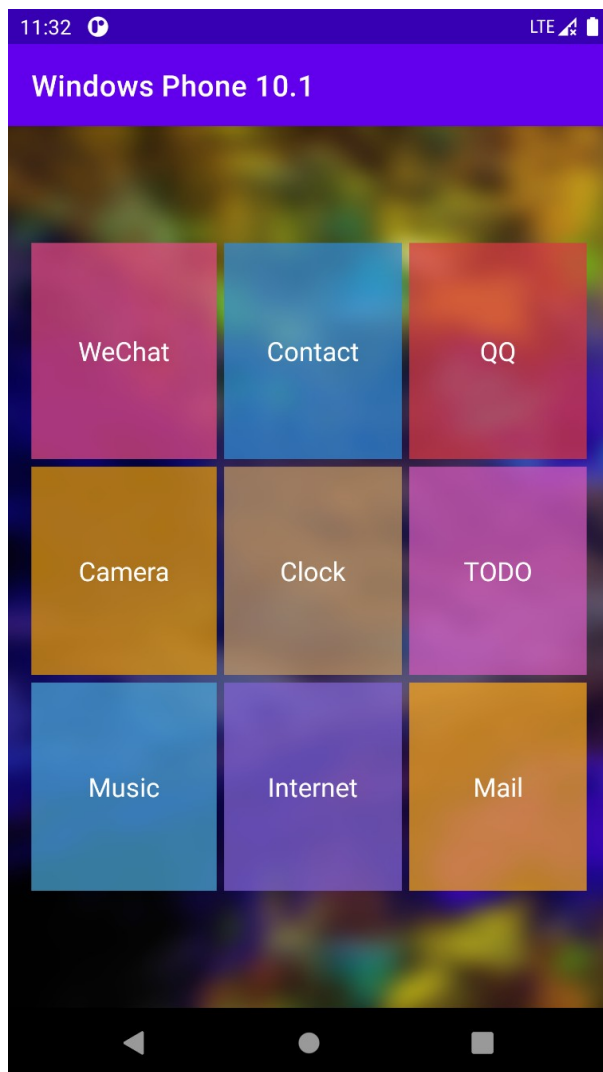
# Demo



```xml
<resources>
    <string name="app_name">Windows Phone 10.1</string>
    <string name="textView1">WeChat</string>
    <string name="textView2">Contact</string>
    <string name="textView3">QQ</string>
    <string name="textView4">Camera</string>
    <string name="textView5">Clock</string>
    <string name="textView6">TODO</string>
    <string name="textView7">Music</string>
    <string name="textView8">Internet</string>
    <string name="textView9">Mail</string>
</resources>
```

# Demo



```xml
<resources>
    <!-- Default screen margins, per the Android Design guidelines. -->
    <dimen name="activity_horizontal_margin">16dp</dimen>
    <dimen name="activity_vertical_margin">16dp</dimen>
    <dimen name="wordsize">18sp</dimen>
    <dimen name="margin">5dp</dimen>
</resources>
```

# Array resource

- **Array resource should located under res\values**

  - ☐ **Attribute name: sets array name**

  - ☐ **Root element: <resources></resources>**

    - ☐ **<array>: defines array of regular type**

    - ☐ **<integer-array>:defines array of integer type**

    - ☐ **<string-array>:defines array of strings**

  - ☐ **<item>: specifies array element**
    ```
    <resources>
        <string-array name="listItem">
            <item>Account management</item>
            <item>Cellphone number</item>
            <item>Others</item>
        </string-array>
    </resources>
    ```
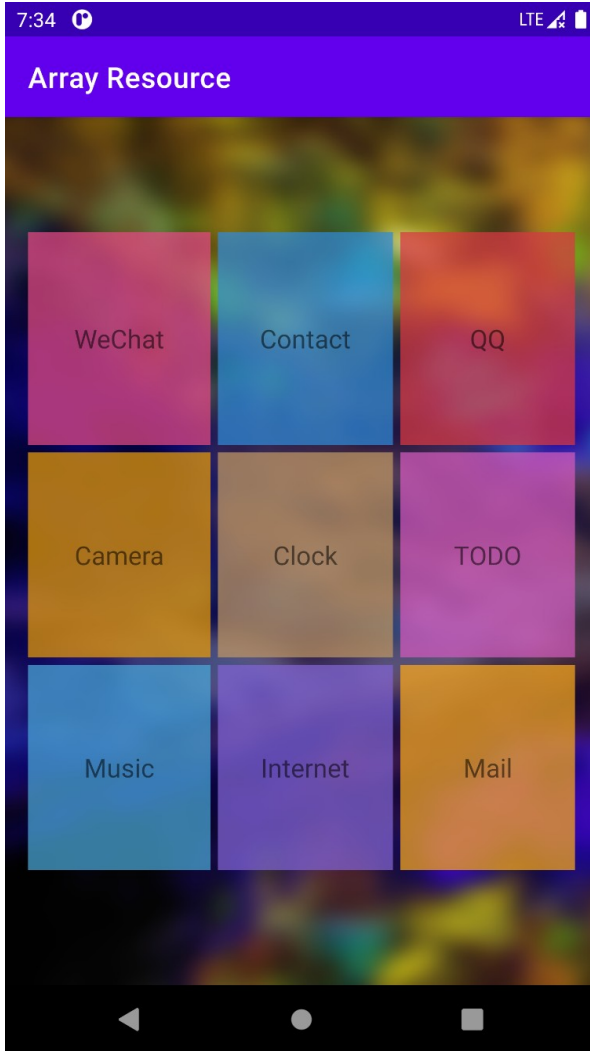
  - ☐ **Use array resources**
    ```
    Java[<package>.]R.array.arrayName
    XML @[<package>:]array/arrayName
    ```

    ```
    <ListView
        android:id="@+id/listView1"
        android:entries="@array/listItem"
        android:layout_width="match_parent"
        android:layout_height="wrap_content">
    </ListView>
    ```
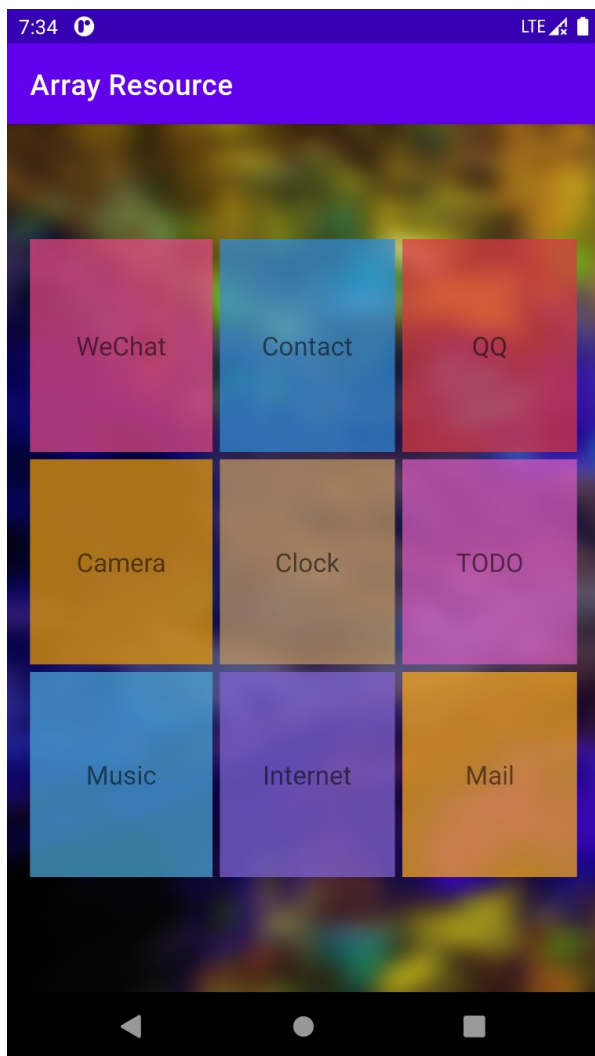
# Demo



No "android:text" attribute?
Where is "WeChat" on TextView ?

```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:background="@drawable/bg"
    android:orientation="vertical"
    android:paddingBottom="80dp"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="80dp"
    tools:context="com.example.applicationresources.MainActivity">
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:orientation="horizontal">
        <TextView
            android:id="@+id/textView1"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:gravity="center"
            android:textSize="@dimen/wordsize"/>
        <TextView
            android:id="@+id/textView2"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_marginLeft="@dimen/margin"
            android:layout_weight="1"
            android:gravity="center"
            android:textSize="@dimen/wordsize"/>
        <TextView
            android:id="@+id/textView3"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_marginLeft="@dimen/margin"
            android:layout_weight="1"
            android:gravity="center"
            android:textSize="@dimen/wordsize"/>
    </LinearLayout>
```

```xml
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_marginTop="@dimen/margin"
        android:layout_weight="1"
        android:orientation="horizontal">
        <TextView
            android:id="@+id/textView4"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:gravity="center"
            android:textSize="@dimen/wordsize"/>
        <TextView
            android:id="@+id/textView5"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_marginLeft="@dimen/margin"
            android:layout_weight="1"
            android:gravity="center"
            android:textSize="@dimen/wordsize"/>
        <TextView
            android:id="@+id/textView6"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_marginLeft="@dimen/margin"
            android:layout_weight="1"
            android:gravity="center"
            android:textSize="@dimen/wordsize"/>
    </LinearLayout>
```
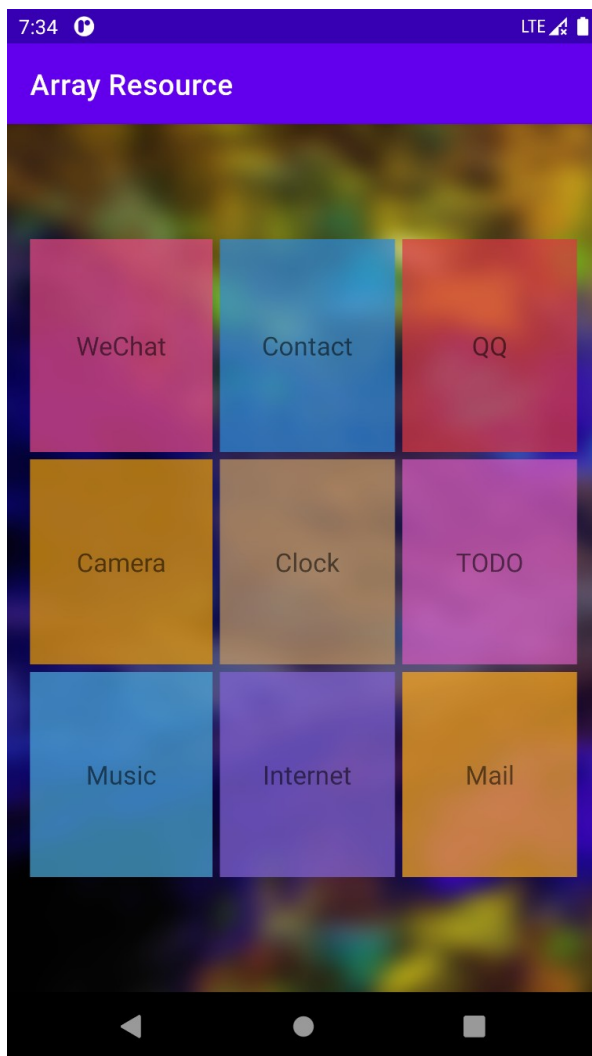
```xml
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_marginTop="@dimen/margin"
        android:layout_weight="1"
        android:orientation="horizontal">
        <TextView
            android:id="@+id/textView7"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:gravity="center"
            android:textSize="@dimen/wordsize"/>
        <TextView
            android:id="@+id/textView8"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_marginLeft="@dimen/margin"
            android:layout_weight="1"
            android:gravity="center"
            android:textSize="@dimen/wordsize"/>
        <TextView
            android:id="@+id/textView9"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_marginLeft="@dimen/margin"
            android:layout_weight="1"
            android:gravity="center"
            android:textSize="@dimen/wordsize"/>
    </LinearLayout>
</LinearLayout>
```

# Demo



```xml
<resources>
    <integer-array name="bgcolor">
        <item>0xBBE24A83</item>
        <item>0xBB318AD6</item>
        <item>0xBBD73943</item>
        <item>0xBBE69A08</item>
        <item>0xBBBD9663</item>
        <item>0xBBD45ABC</item>
        <item>0xBB4AA6D6</item>
        <item>0xBB8064D2</item>
        <item>0xBBF7A81E</item>
    </integer-array>
    <string-array name="word">
        <item>WeChat</item>
        <item>Contact</item>
        <item>QQ</item>
        <item>Camera</item>
        <item>Clock</item>
        <item>TODO</item>
        <item>Music</item>
        <item>Internet</item>
        <item>Mail</item>
    </string-array>
</resources>
```

# Demo



```java
public class MainActivity extends AppCompatActivity {
    int[] tvid = {R.id.textView1, R.id.textView2, R.id.textView3, R.id.textView4, R.id.textView5,
            R.id.textView6, R.id.textView7, R.id.textView8, R.id.textView9};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        int[] color = getResources().getIntArray(R.array.bgcolor);
        String[] word = getResources().getStringArray(R.array.word);
        for(int i = 0; i < 9; i++){
            TextView tv = (TextView)findViewById(tvid[i]);
            tv.setBackgroundColor(color[i]);
            tv.setText(word[i]);
        }
    }
}
```

# Image resource

- **Image resource should located under res\drawable-xxx**

  Java [<package>.]R.drawable.<fileName>

  ```
  ImageView iv = (ImageView)findViewById(R.id.imageView1);
  iv.setImageResource(R.drawable.head);
  ```

  XML [<package>:]drawable/fileName

  ```
  <ImageView
      android:id="@+id/imageView1"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:src="@drawable/head"/>
  ```

  - **StateListDrawable**

    - **Also located under res\drawable**

    - **Root element: <selector></selector>**

      - **It has multiple <item></item>**

      - **android:color / android:drawable: specifies color or Drawable resources**

      - **android:state_xxx: specifies particular state**

        | android:state_active | android:state_focused | android:state_selected |
        |---|---|---|
        | android:state_checked | android:state_last | android:state_window_focused |
        | android:state_enabled | android:state_middle | |
        | android:state_first | android:state_pressed | |

# Image resource

- **Image resource should located under res\drawable-xxx**

```
<selector xmlns:android="http://schemas.android.com/apk/res/android">
    <item android:color="#f60" android:state_focused="true">
    <item android:color="#0a0" android:state_focused="false">
</selector>
```
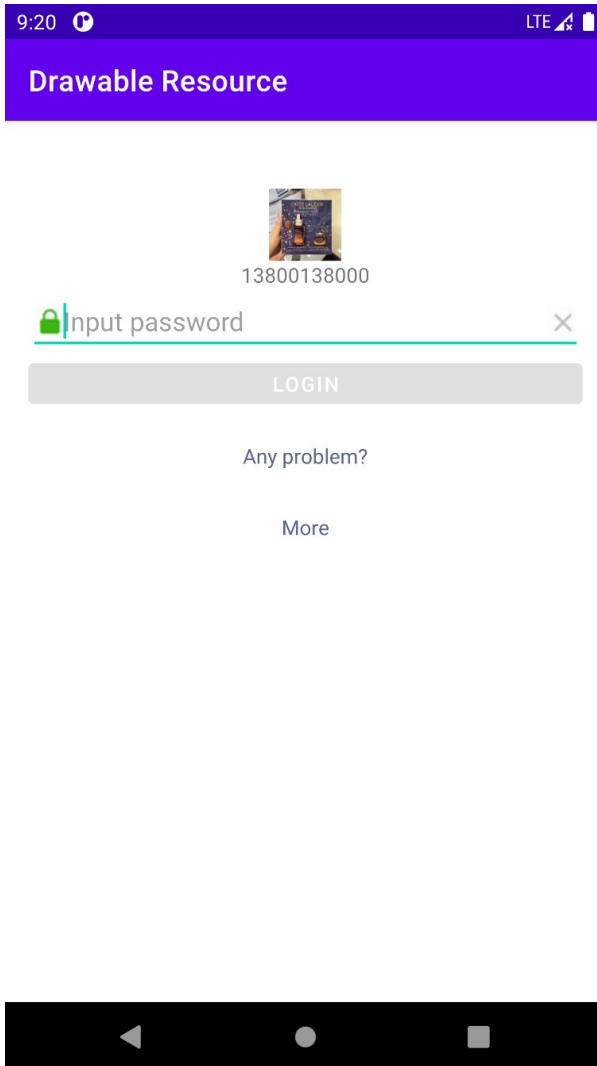
e.g.,
named as "edittext_focused.xml"

- ☐ **After create StateListDrawable resource, it is located under res\drawable.**

```
<EditText
    android:id="+@id/editText"
    android:width="wrap_content"
    android:height="wrap_content"
    android:textColor="@drawable/edittext_focused"
    android:text="Please input text"
</selector>
```

# Demo



```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:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context="com.example.drawableresource.MainActivity">
    <ImageView
        android:layout_width="@dimen/imageView"
        android:layout_height="@dimen/imageView"
        android:layout_gravity="center"
        android:layout_marginTop="@dimen/imageView_layout_marginTop"
        android:src="@drawable/ico_144_144a"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:text="@string/text_number"/>
    <EditText
        android:id="@+id/editText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:drawableLeft="@drawable/lock"
        android:drawableRight="@drawable/close"
        android:password="true"
        android:hint="@string/editText_hint"/>
    <Button
        android:id="@+id/btn_login"
        android:layout_width="match_parent"
        android:layout_height="@dimen/button_height"
        android:background="@drawable/button_enable"
        android:text="@string/text_login"
        android:enabled="false"
        android:textColor="@color/button_text_white"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:layout_marginTop="@dimen/textView_marginTop"
        android:text="@string/text_issue"
        android:textColor="@color/textView_bottom"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:layout_marginTop="@dimen/imageView_layout_marginTop"
        android:text="@string/text_more"
        android:textColor="@color/textView_bottom"/>
</LinearLayout>
```
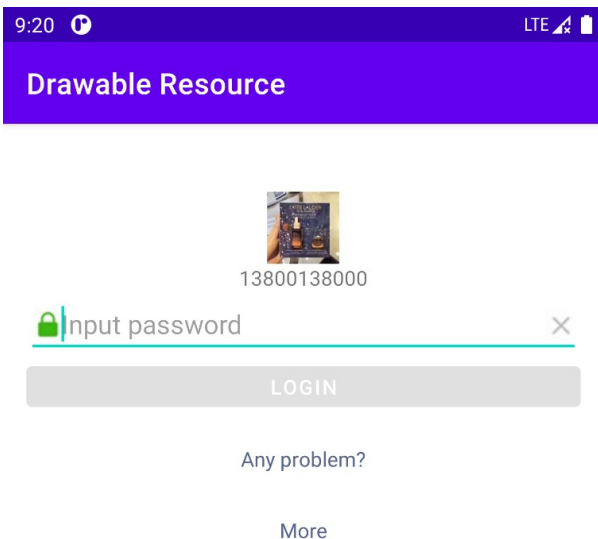
# Demo



```xml
<selector xmlns:android="http://schemas.android.com/apk/res/android">
    <item android:drawable="@drawable/green" android:state_enabled="true"/>
    <item android:drawable="@drawable/green_mint" android:state_enabled="false"/>
</selector>


<resources>
    <string name="app_name">Drawable Resource</string>
    <string name="password">Please input passord</string>
    <string name="text_issue">Any problem?</string>
    <string name="text_more">More</string>
    <string name="text_number">13800138000</string>
    <string name="text_login">Login</string>
    <string name="editText_hint">Input password</string>
</resources>


<resources>
    <color name="purple_200">#FFBB86FC</color>
    <color name="purple_500">#FF6200EE</color>
    <color name="purple_700">#FF3700B3</color>
    <color name="teal_200">#FF03DAC5</color>
    <color name="teal_700">#FF018786</color>
    <color name="black">#FF000000</color>
    <color name="white">#FFFFFFFF</color>
    <color name="colorPrimary">#3F51B5</color>
    <color name="colorPrimaryDark">#303F9F</color>
    <color name="colorAccent">#FF4081</color>
    <color name="textView_bottom">#566489</color>
    <color name="button_text_white">#FFFFFF</color>
</resources>
```
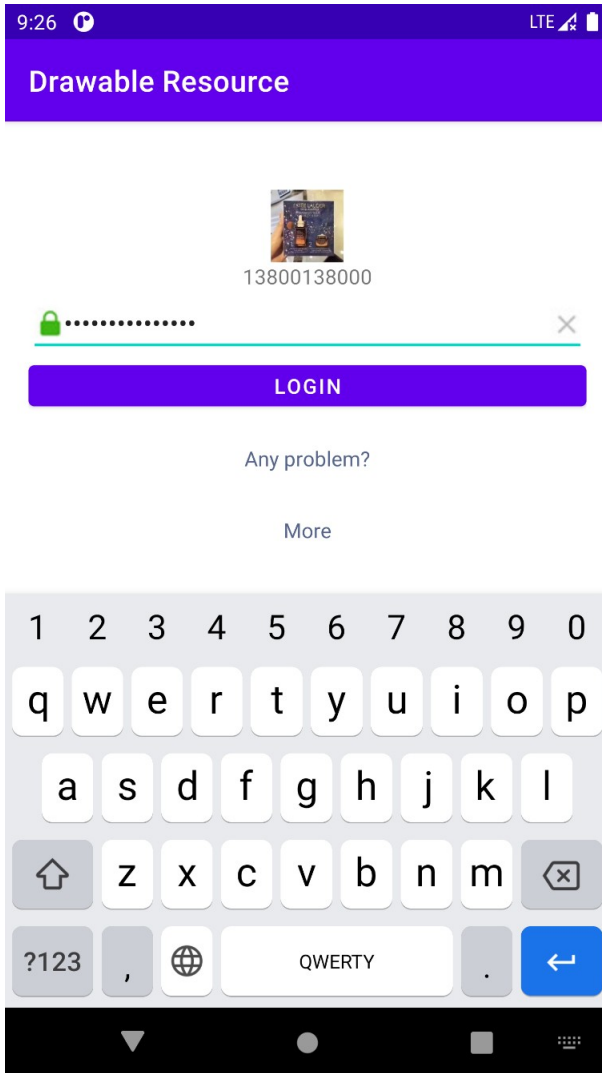
```xml
<resources>
    <dimen name="activity_horizontal_margin">16dp</dimen>
    <dimen name="activity_vertical_margin">16dp</dimen>
    <dimen name="imageView">50dp</dimen>
    <dimen name="imageView_layout_marginTop">30dp</dimen>
    <dimen name="button_height">40dp</dimen>
    <dimen name="textView_marginTop">20dp</dimen>
</resources>
```
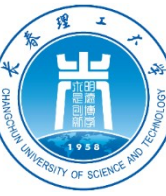
# Demo



```java
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        final EditText editText = (EditText) findViewById(R.id.editText);
        final Button button = (Button) findViewById(R.id.btn_Login);
        editText.addTextChangedListener(new TextWatcher() {
            @Override
            public void beforeTextChanged(CharSequence s, int start, int count, int after) {
            }
            @Override
            public void onTextChanged(CharSequence s, int start, int before, int count) {
                if (editText.length() > 0) {
                    button.setEnabled(true);
                } else {
                    button.setEnabled(false);
                }
            }
            @Override
            public void afterTextChanged(Editable s) {
            }
        });
    }
}
```

# Style resource

■ **Maintain various styles to adopt everywhere instead of separately configuring**

   **attributes of components**

```
<style name="title">
    <item name="android:textSize">30sp</item>
    <item name="android:textColor">#f60</item>
</style>
```

   ☐ **Root element: <resources></resources>**

   ☐ **Using: <style></style>, attribute name to specify**
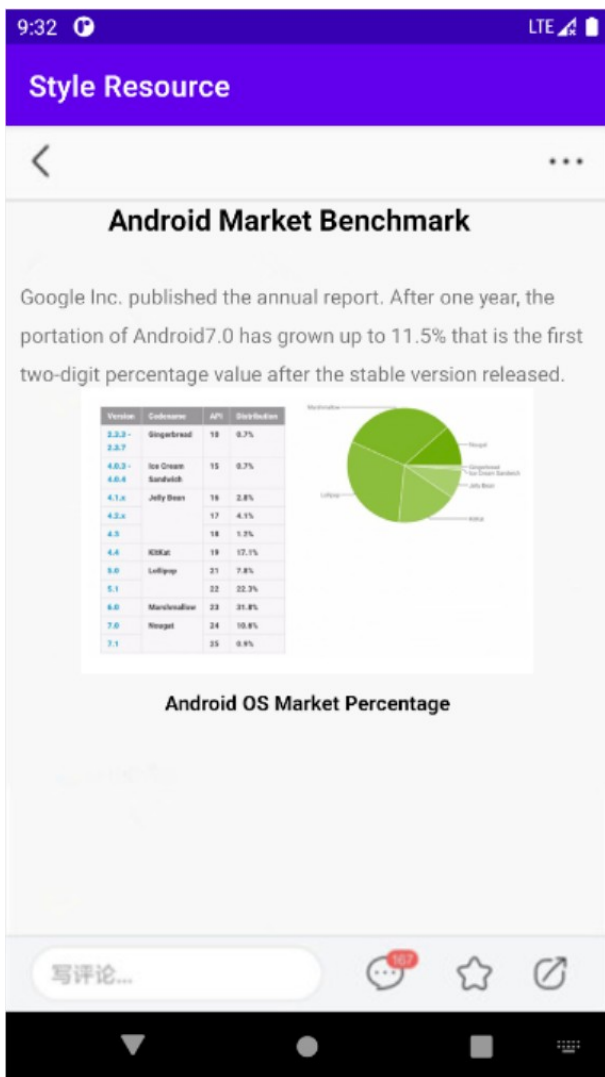
   ☐ **Within one <style></style>, there could be mulple <item></item> specifying various**

   **parameters**

   ☐ **<style> is capable to inherit/extend existed styles**

   ☐ **Configure parent attribute**

```
<style name="basic">
    <item name="android:textSize">30sp</item>
    <item name="android:textColor">#f60</item>
</style>
<style name="title" parent="basic">
    <item name="android:padding">10dp</item>
    <item name="android:gravity">center</item>
</style>
```

# Demo



```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:background="@drawable/background"
    tools:context="com.example.styleresource.MainActivity">
    <TextView
        android:id="@+id/title"
        style="@style/black"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="50dp"
        android:layout_marginLeft="70dp"
        android:layout_marginRight="70dp"
        android:text="@string/title"
        android:textSize="20sp" />
    <TextView
        android:id="@+id/text"
        android:lineSpacingExtra="10dp"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/title"
        android:layout_marginLeft="10dp"
        android:layout_marginTop="30dp"
        android:text="@string/text1"/>
    <ImageView
        android:id="@+id/image"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/text"
        android:src="@drawable/image"
        android:layout_gravity="center"/>

    <TextView
        android:id="@+id/text_down"
        style="@style/text_down"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/image"
        android:layout_marginTop="10dp"
        android:text="@string/text_down"/>
</LinearLayout>
```

# Demo



```xml
<resources>
    <!-- Base application theme. -->
    <style name="AppTheme" parent="Theme.AppCompat.Light.DarkActionBar">
        <!-- Customize your theme here. -->
        <item name="colorPrimary">@color/colorPrimary</item>
        <item name="colorPrimaryDark">@color/colorPrimaryDark</item>
        <item name="colorAccent">@color/colorAccent</item>
    </style>
    <style name="black">
        <item name="android:textStyle">bold</item>
        <item name="android:textColor">@color/black</item>
    </style>
    <style name="text_down" parent="black">
        <item name="android:layout_gravity">center_horizontal</item>
    </style>
</resources>
```

```xml
<resources>
    <string name="app_name">Style Resource</string>
    <string name="title">Android Market Benchmark</string>
    <string name="text1">Google Inc. published the annual report.
        After one year, the portation of Android7.0
        has grown up to 11.5% that is the first two-digit
        percentage value after the stable version released.</string>
    <string name="text_down">Android OS Market Percentage</string>
</resources>
```

```xml
<resources>
    <color name="purple_200">#FFBB86FC</color>
    <color name="purple_500">#FF6200EE</color>
    <color name="purple_700">#FF3700B3</color>
    <color name="teal_200">#FF03DAC5</color>
    <color name="teal_700">#FF018786</color>
    <color name="white">#FFFFFFFF</color>
    <color name="colorPrimary">#3F51B5</color>
    <color name="colorPrimaryDark">#303F9F</color>
    <color name="colorAccent">#FF4081</color>
    <color name="black">#000000</color>
</resources>
```

# Menu resource

■ **Under res\menu, menu folder should be manually created by developers**

  ❑ **Root element: <menu></menu>**

    ❑ **Using: <item></item>,**

    ❑ **Attributes**

| Attribute | Description |
|---|---|
| android:id | Specifies identity |
| android:title | Sets menu title |
| android:alphabeticShortcut | Sets shortcut key of characters |
| android:numericShortcut | Sets shortcut key of digits |
| android:icon | Sets menu icon |
| android:enabled | Sets whether the menu is available to use |
| android:checkable | Sets whether the menu is allowed to select |
| android:checked | Sets whether the menu is checked |
| android:visible | Sets whether the menu is visible or not |

# Menu resource

- **Option menu**

  - **Steps**

    - **Override onCreateOptionsMenu() method in Activity**

      - **Create a MenuInflater object for parsing menu resource file**

      - **Call inflate() method of MenuInflater to parse the content of menu resource file**

      - **Preserve the menu obtained through parsing menu resource file**

        ```
        public boolean onCreateOptionsMenu(Menu menu){
            MenuInflater inflater = new MenuInflater(this);
            inflater.inflate(R.menu.optionmenu, menu);
            return super.onCreateOptionsMenu(menu);
        }
        ```

    - **Override onOptionsItemSelected() to configure corresponding action when selecting one menu**

      ```
      public boolean onOptionsItemSelected(MenuItem item){
          Toast.makeText(MainActivity.this, item.getTitle(), Toast.LENGTH_SHORT.show();
          return super.onOptionsItemSelected(item);
      }
      ```

# Small demo



```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:background="@drawable/background1"
    tools:context="com.example.menuresource.MainActivity">
</RelativeLayout>


<menu xmlns:android="http://schemas.android.com/apk/res/android">
    <item
        android:id="@+id/settings"
        android:title="@string/menu_title_settings"></item>
    <item
        android:id="@+id/regard"
        android:title="@string/menu_title_regard"></item>
</menu>
```

# Small demo



```java
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        MenuInflater inflater = new MenuInflater(this);
        inflater.inflate(R.menu.menu, menu);
        return super.onCreateOptionsMenu(menu);
    }
    @Override
    public boolean onOptionsItemSelected(@NonNull MenuItem item) {
        switch (item.getItemId()){
            case R.id.settings:
                Intent intent = new Intent(MainActivity.this, Settings.class);
                startActivity(intent);
                break;
            case R.id.regard:
                Intent intent1 = new Intent(MainActivity.this, Regard.class);
                startActivity(intent1);
                break;
        }
        return super.onOptionsItemSelected(item);
    }
}
```

# Small demo



```java
public class Regard extends Activity {

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




public class Settings extends Activity {

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

# Small demo



```xml
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.menuresource">
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.ActivityProgramming">
        <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=".Settings"></activity>
        <activity
            android:name=".Regard"
            android:label="@string/Regard_name"></activity>
    </application>
</manifest>
```

# Small demo



```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:background="@drawable/settings1"
    tools:context="com.example.menuresource.Settings">
</RelativeLayout>
```

# Small demo



```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:background="@drawable/regard1"
    android:orientation="vertical"
    tools:context="com.example.menuresource.Regard">
    <TextView
        android:id="@+id/title1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center_horizontal"
        android:layout_marginTop="@dimen/title1_marginTop"
        android:text="@string/title1"
        android:textSize="@dimen/title1_textSize" />
    <TextView
        android:id="@+id/text1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center_horizontal"
        android:layout_marginTop="@dimen/marginTop'
        android:text="@string/text1" />
    <TextView
        android:id="@+id/text2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center_horizontal"
        android:layout_marginTop="@dimen/marginTop'
        android:text="@string/text2" />
    <TextView
        android:id="@+id/text3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center_horizontal"
        android:layout_marginTop="@dimen/marginTop"
        android:text="@string/text3" />
    <TextView
        android:id="@+id/text4"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center_horizontal"
        android:layout_marginTop="@dimen/marginTop"
        android:text="@string/text4" />
</LinearLayout>
```

# Menu resource

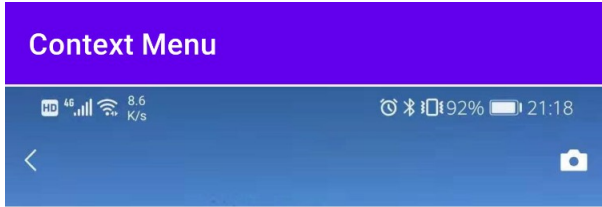- **Context menu: when long pressing components, the popup menu is usually context menu**

    - ☐ **Steps**

        ```
        TextView tv = (TextView)findViewById(R.id.show);
        registerForContextMenu(tv);
        ```

        - ☐ **Register context menu within onCreate() method in Activity**

            - ☐ **e.g., register context menu onto TextView, i.e., long press TextView to invoke menu**

        - ☐ **Override onCreateContextMenu() method**

            - ☐ **Create a MenuInflater object used to parse menu resource file**

            - ☐ **Call inflate() method in MenuInflater object to parse menu resource file, and then save the parsed menu item(s) in menu**

            - ☐ **Configure icon and title for menu**

        - ☐ **Override onContextItemSelected() method to invoke the handling actions when the item is selected**

# Small demo



```xml
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/mainLayout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="top"
    tools:context="com.example.contextmenu.MainActivity">
    <ImageView
        android:id="@+id/title"
        android:layout_width="match_parent"
        android:layout_height="85dp"
        android:layout_alignParentTop="true"
        android:src="@drawable/wei_top"/>
    <ImageView
        android:id="@+id/head"
        android:layout_width="@dimen/head"
        android:layout_height="@dimen/head"
        android:layout_below="@+id/title"
        android:layout_marginLeft="@dimen/margin"
        android:layout_marginTop="@dimen/margin"
        android:src="@drawable/head"/>
    <TextView
        android:id="@+id/name"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignTop="@+id/head"
        android:layout_marginLeft="@dimen/margin"
        android:layout_toEndOf="@+id/head"
        android:layout_toRightOf="@+id/head"
        android:text="@string/name"
        android:textColor="@color/name"/>
    <TextView
        android:id="@+id/introduce"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignLeft="@+id/name"
        android:layout_below="@+id/name"
        android:layout_marginTop="@dimen/margin"
        android:text="@string/introduce"/>

    <ImageView
        android:id="@+id/left_book"
        android:layout_width="@dimen/book_image_width_height"
        android:layout_height="@dimen/book_image_width_height"
        android:layout_alignLeft="@+id/name"
        android:layout_below="@+id/introduce"
        android:layout_marginTop="@dimen/margin"
        android:src="@drawable/java"/>
    <ImageView
        android:id="@+id/right_book"
        android:layout_width="@dimen/book_image_width_height"
        android:layout_height="@dimen/book_image_width_height"
        android:layout_below="@+id/introduce"
        android:layout_marginTop="@dimen/margin"
        android:layout_toRightOf="@+id/left_book"
        android:src="@drawable/java_t"/>
    <ImageView
        android:id="@+id/bottom"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/left_book"
        android:layout_marginTop="@dimen/bottom_margin"
        android:src="@drawable/wei_bottom"/>
</RelativeLayout>
```
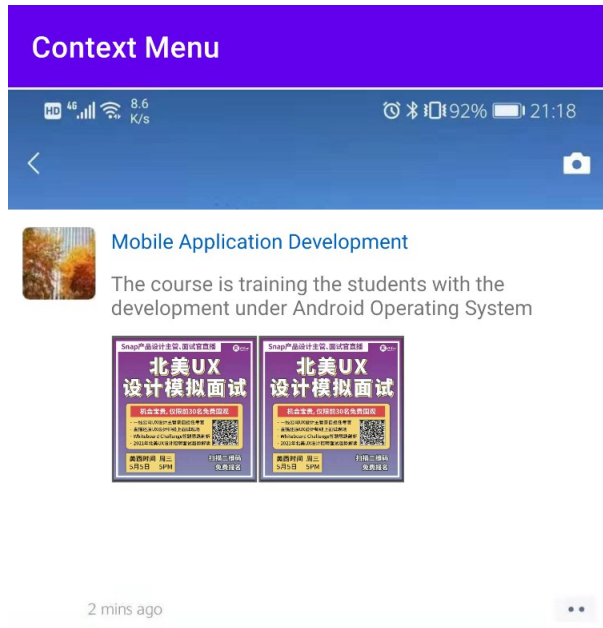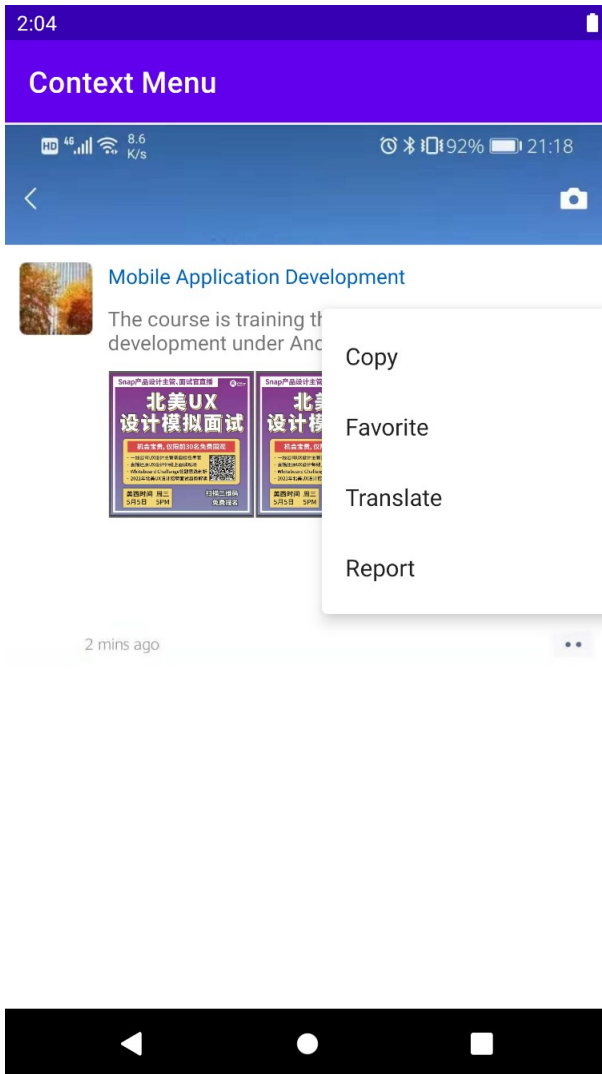
# Small demo



```xml
<menu xmlns:android="http://schemas.android.com/apk/res/android">
    <item
        android:id="@+id/menu_copy"
        android:title="@string/introduce_copy"></item>
    <item
        android:id="@+id/menu_collect"
        android:title="@string/introduce_collect"></item>
    <item
        android:id="@+id/menu_translate"
        android:title="@string/introduce_translate"></item>
    <item
        android:id="@+id/menu_report"
        android:title="@string/introduce_report"></item>
</menu>
```

```xml
<resources>
    <string name="app_name">Context Menu</string>
    <string name="introduce_copy">Copy</string>
    <string name="introduce_collect">Favorite</string>
    <string name="introduce_translate">Translate</string>
    <string name="introduce_report">Report</string>
    <string name="book_collect">Book Collection</string>
    <string name="book_report">Book Report</string>
    <string name="name">Mobile Application Development</string>
    <string name="introduce">The course is training the students
with the development under Android Operating System</string>
</resources>
```

# Small demo



```java
public class MainActivity extends AppCompatActivity {
    TextView introduce;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        introduce = (TextView)findViewById(R.id.introduce);
        registerForContextMenu(introduce);
    }
    @Override
    public void onCreateContextMenu(ContextMenu menu, View v, ContextMenu.ContextMenuInfo menuInfo) {
        MenuInflater inflater = new MenuInflater(this);
        inflater.inflate(R.menu.introduce_menu,menu);
    }
    @Override
    public boolean onContextItemSelected(@NonNull MenuItem item) {
        switch (item.getItemId()){
            case R.id.menu_copy:
                Toast.makeText(MainActivity.this, "Copied", Toast.LENGTH_LONG).show();
                break;
            case R.id.menu_collect:
                Toast.makeText(MainActivity.this, "Collected", Toast.LENGTH_LONG).show();
                break;
        }
        return true;
    }
}
```