

# Mobile Application Development

Higher Diploma in Science in Computer Science

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Produced  
by

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MyRent V0

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# MyRent

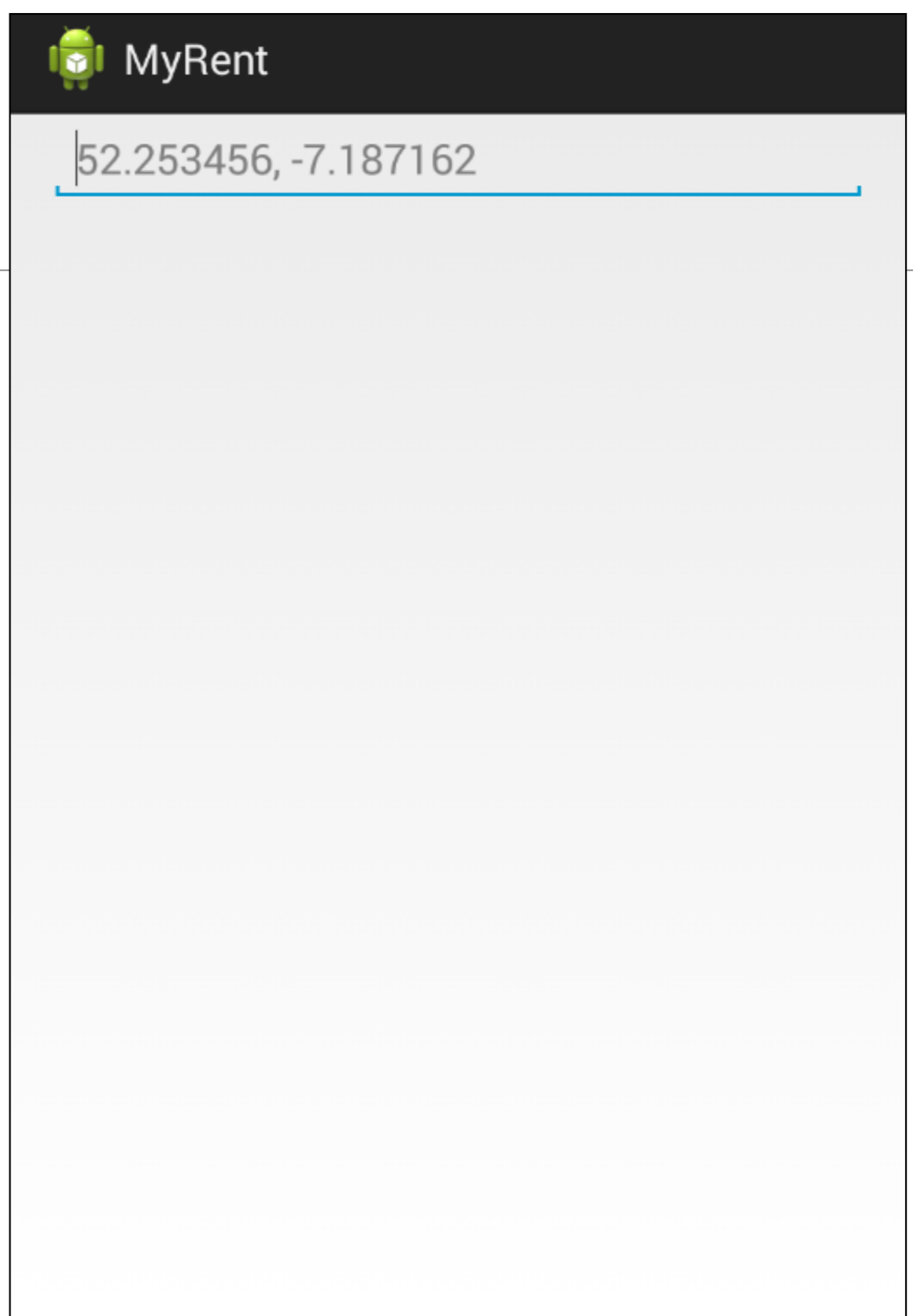
---

- A an application to track location, rental status and other information about properties.
- Developer in several versions to include:
  - multiple properties
  - location map
  - images
  - contact information
  - etc...
- MyRentV00
- MyRentV01
- MyRentV02
- MyRentV03
- MyRentV04
- etc...

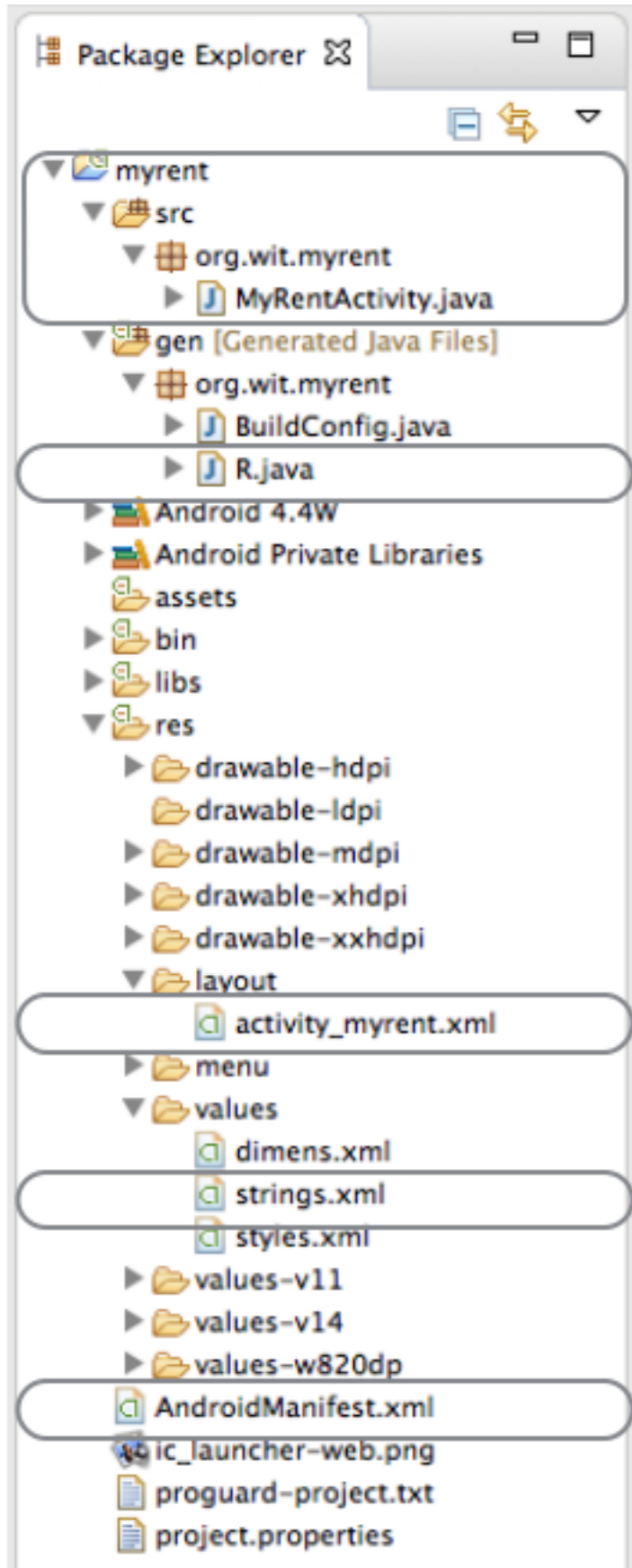
# MyRent V00

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- Simple TextField
- User enters two coordinates, separated by comma



# Project Structure



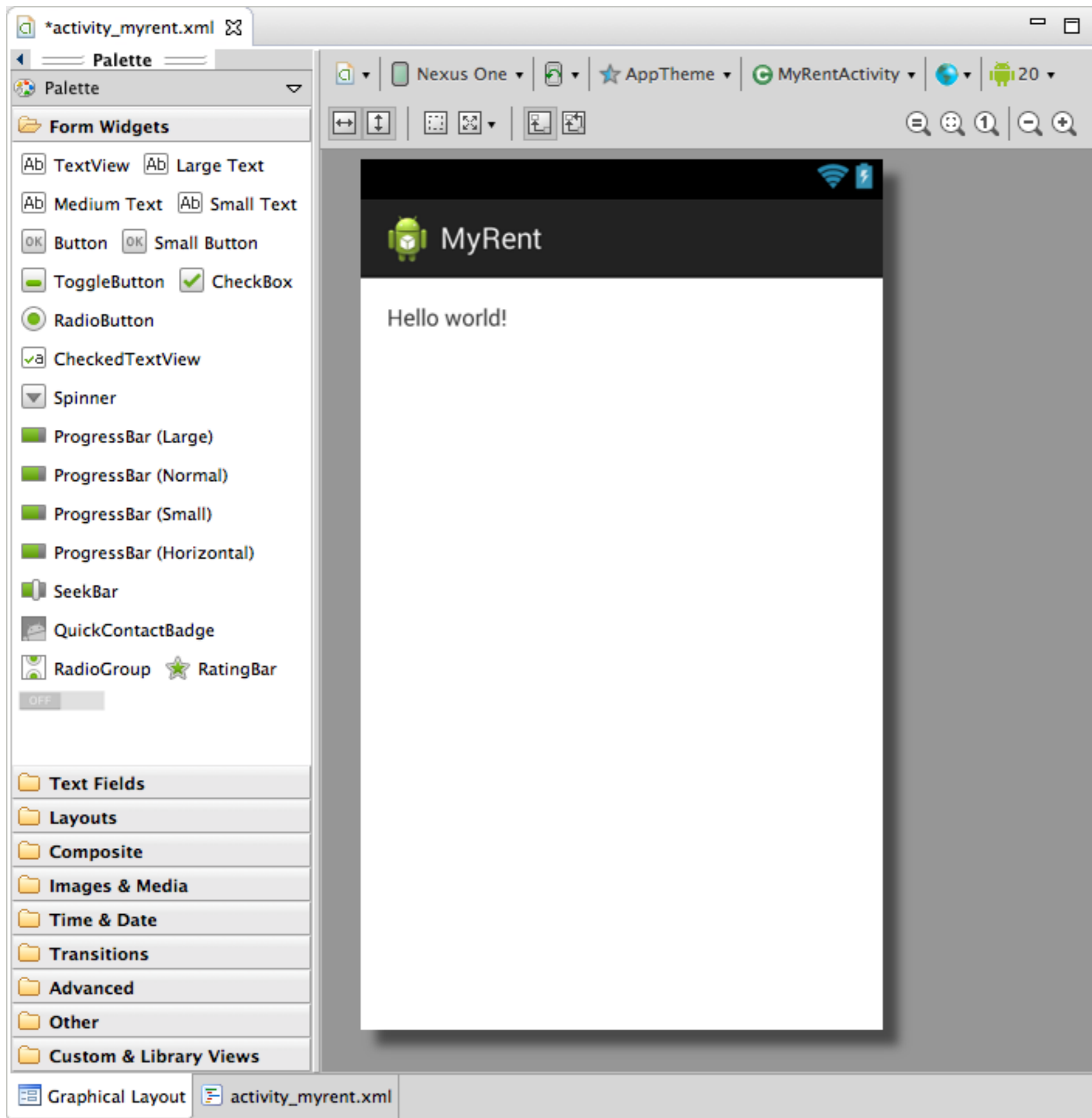
Java files located in *org.wit.myrent* package

R File: auto-generated file provides glue between Java and resources (e.g. XML, images).

Layout XML File: specifies screen layout

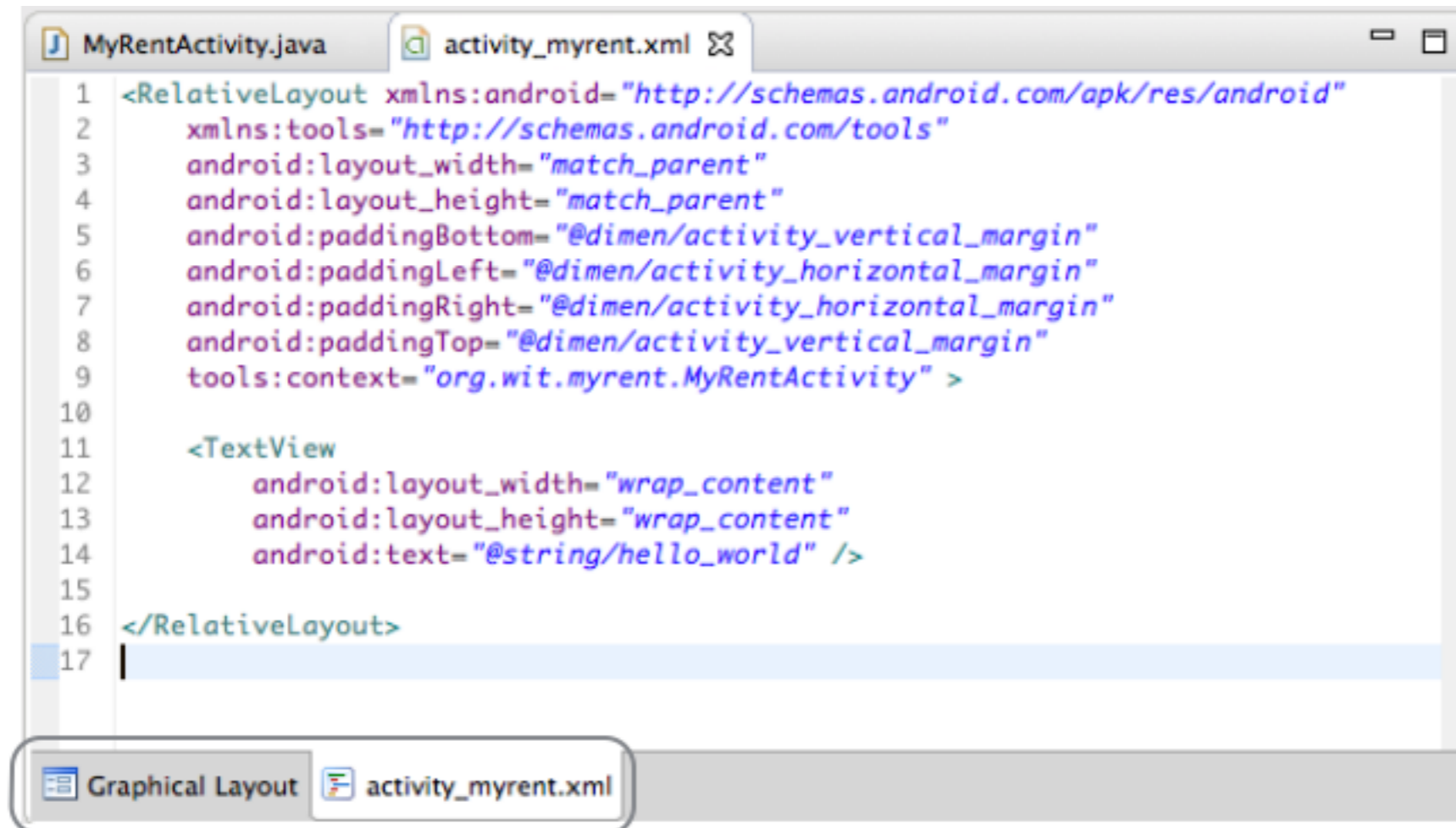
*strings.xml* contains text used in app, for example on buttons, labels and so on.

Manifest File: hold everything together



# Layout Editor Visual

# Layout Editor - Textual



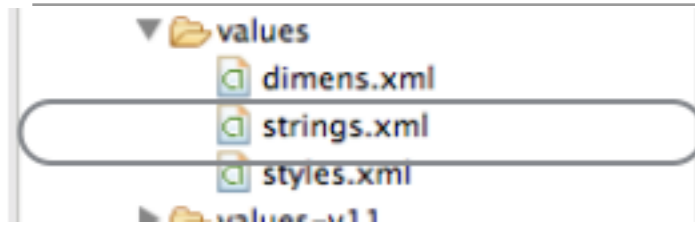
The screenshot shows the Android Studio interface with the Layout Editor in textual mode. The main editor window displays the XML code for the layout file. The code is as follows:

```
1 <RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
2   xmlns:tools="http://schemas.android.com/tools"
3   android:layout_width="match_parent"
4   android:layout_height="match_parent"
5   android:paddingBottom="@dimen/activity_vertical_margin"
6   android:paddingLeft="@dimen/activity_horizontal_margin"
7   android:paddingRight="@dimen/activity_horizontal_margin"
8   android:paddingTop="@dimen/activity_vertical_margin"
9   tools:context="org.wit.myrent.MyRentActivity" >
10
11   <TextView
12     android:layout_width="wrap_content"
13     android:layout_height="wrap_content"
14     android:text="@string/hello_world" />
15
16 </RelativeLayout>
17
```

At the bottom of the editor, there are two tabs: "Graphical Layout" and "activity\_myrent.xml". The "activity\_myrent.xml" tab is currently selected, and it is highlighted with a blue background. An arrow points from the text below to this tab.

Tabs facilitate switching between textual and graphical views of layout file

# Strings - TextView Example

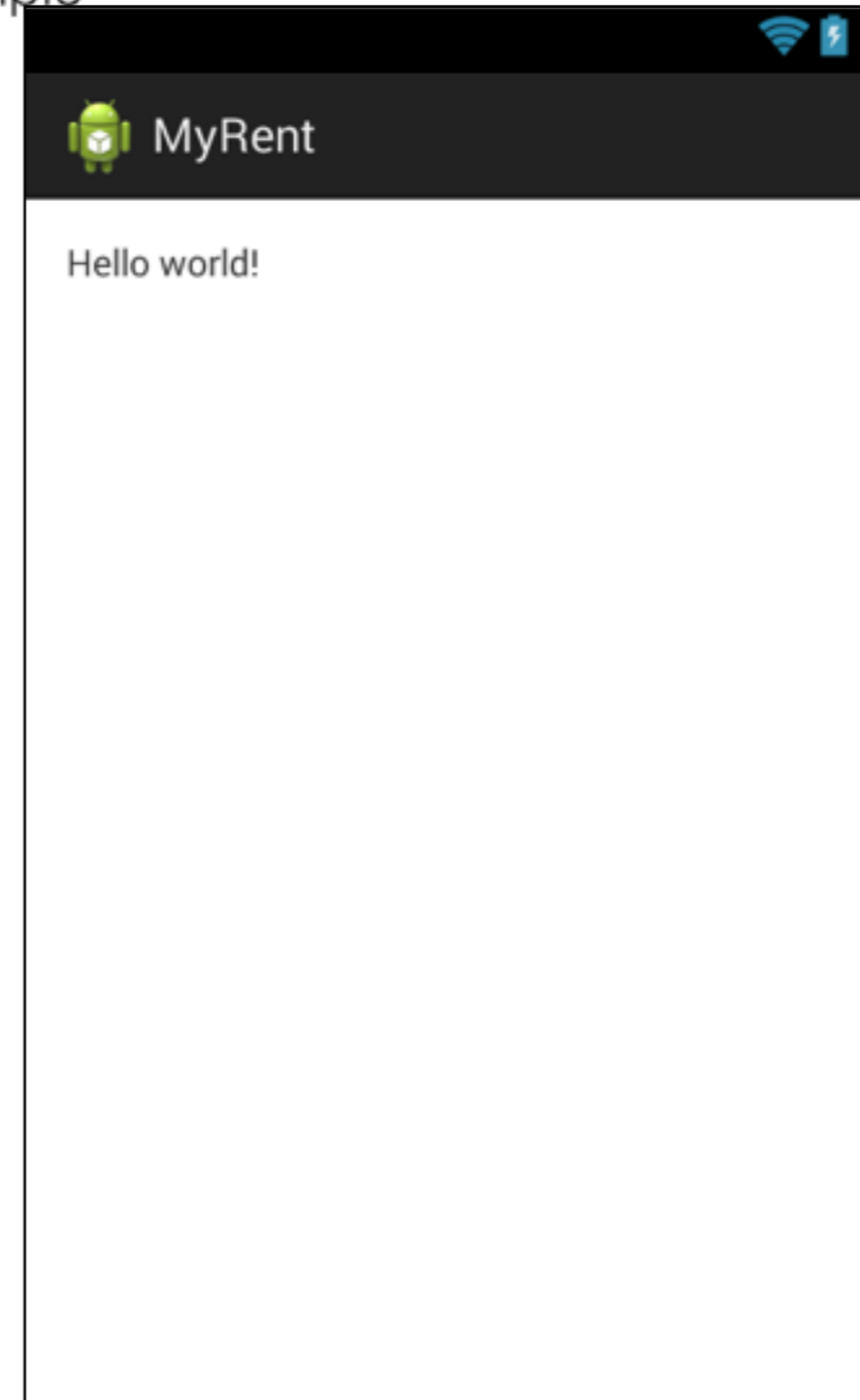


Strings: contains text used in app example on buttons, labels and so on.

```
strings.xml
1 <?xml version="1.0" encoding="utf-8"?>
2 <resources>
3
4   <string name="app_name">MyRent</string>
5   <string name="hello_world">Hello world!</string>
6   <string name="action_settings">Settings</string>
7
8 </resources>
```

```
activity_myrent.xml
1 <RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
2   xmlns:tools="http://schemas.android.com/tools"
3   android:layout_width="match_parent"
4   android:layout_height="match_parent"
5   android:paddingBottom="@dimen/activity_vertical_margin"
6   android:paddingLeft="@dimen/activity_horizontal_margin"
7   android:paddingRight="@dimen/activity_horizontal_margin"
8   android:paddingTop="@dimen/activity_vertical_margin"
9   tools:context="org.wit.myrent.MyRentActivity" >
10
11   <TextView
12     android:layout_width="wrap_content"
13     android:layout_height="wrap_content"
14     android:text="@string/hello_world"
15
16 </RelativeLayout>
```

← Hello world!





# Strings: Menu Example

```
strings.xml
1 <?xml version="1.0" encoding="utf-8"?>
2 <resources>
3
4   <string name="app_name">MyRent</string>
5   <string name="hello_world">Hello world!</string>
6   <string name="action_settings">Settings</string>
7
8 </resources>
```

```
my_rent.xml
1 <menu xmlns:android="http://schemas.android.com/apk/res/android"
2   xmlns:tools="http://schemas.android.com/tools"
3   tools:context="org.wit.myrent.MyRentActivity" >
4
5   <item
6     android:id="@+id/action_settings"
7     android:orderInCategory="100"
8     android:showAsAction="never"
9     android:title="@string/action_settings"/>
10
11 </menu>
```

```
public class MyRentActivity extends Activity implements TextWatcher
{
    //...

    @Override
    public boolean onCreateOptionsMenu(Menu menu)
    {
        getMenuInflater().inflate(R.menu.my_rent, menu);
        return true;
    }
}
```



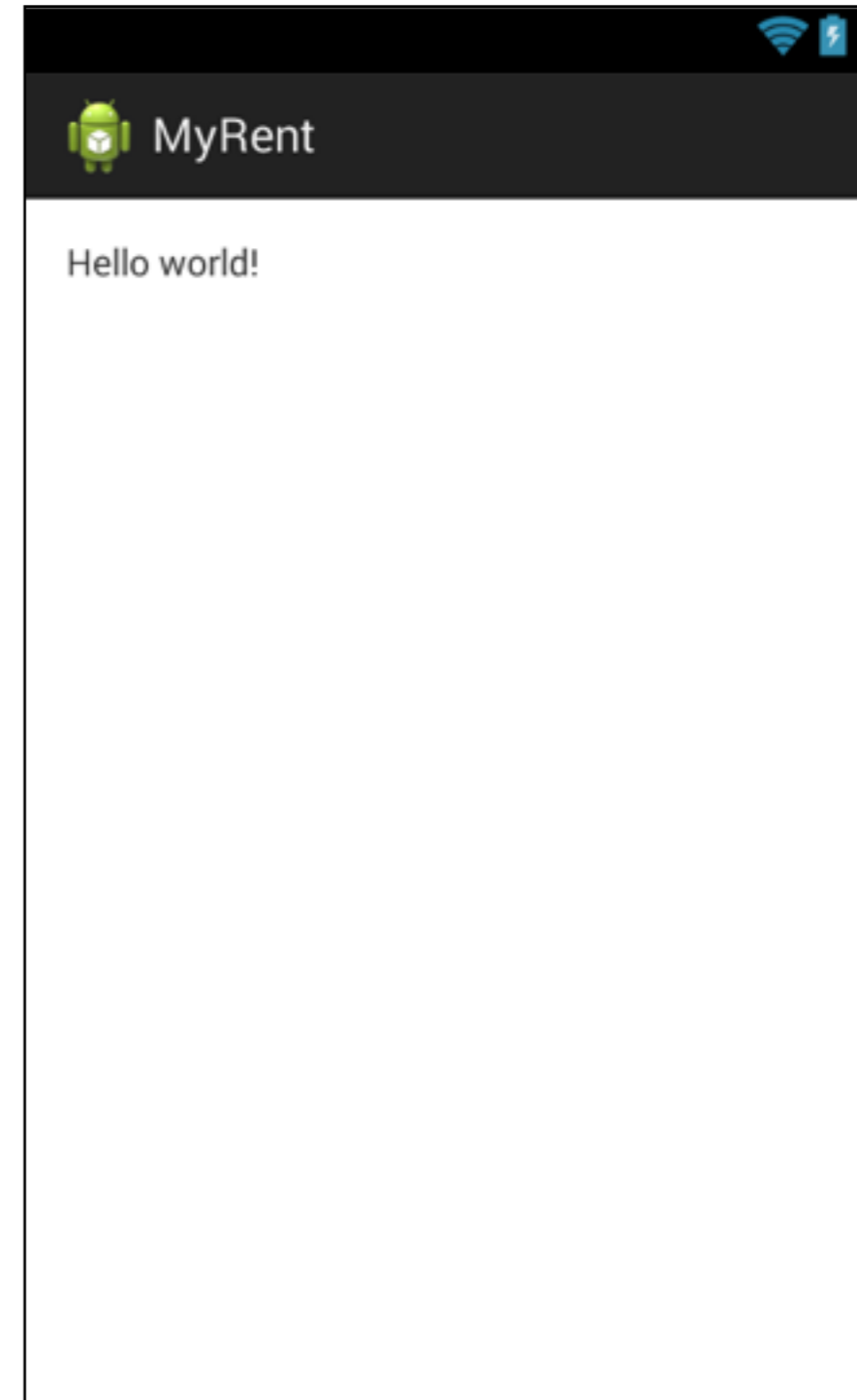
Action overflow

# Strings: Application Title Example

```
strings.xml
1 <?xml version="1.0" encoding="utf-8"?>
2 <resources>
3
4     <string name="app_name">MyRent</string>
5     <string name="hello_world">Hello world!</string>
6     <string name="action_settings">Settings</string>
7
8 </resources>
```

```
myrent Manifest
1 <?xml version="1.0" encoding="utf-8"?>
2 <manifest xmlns:android="http://schemas.android.com/apk/res/android"
3     package="org.wit.myrent"
4     android:versionCode="1"
5     android:versionName="1.0" >
6
7     <uses-sdk
8         android:minSdkVersion="16"
9         android:targetSdkVersion="19" />
10
11     <application
12         android:allowBackup="true"
13         android:icon="@drawable/ic_launcher"
14         android:label="@string/app_name"
15         android:theme="@style/AppTheme" >
16         <activity
17             android:name=".MyRentActivity"
18             android:label="@string/app_name" >
19             <intent-filter>
20                 <action android:name="android.intent.action.MAIN" />
21
22                 <category android:name="android.intent.category.LAUNCHER" />
23             </intent-filter>
24         </activity>
25     </application>
26
27 </manifest>
```

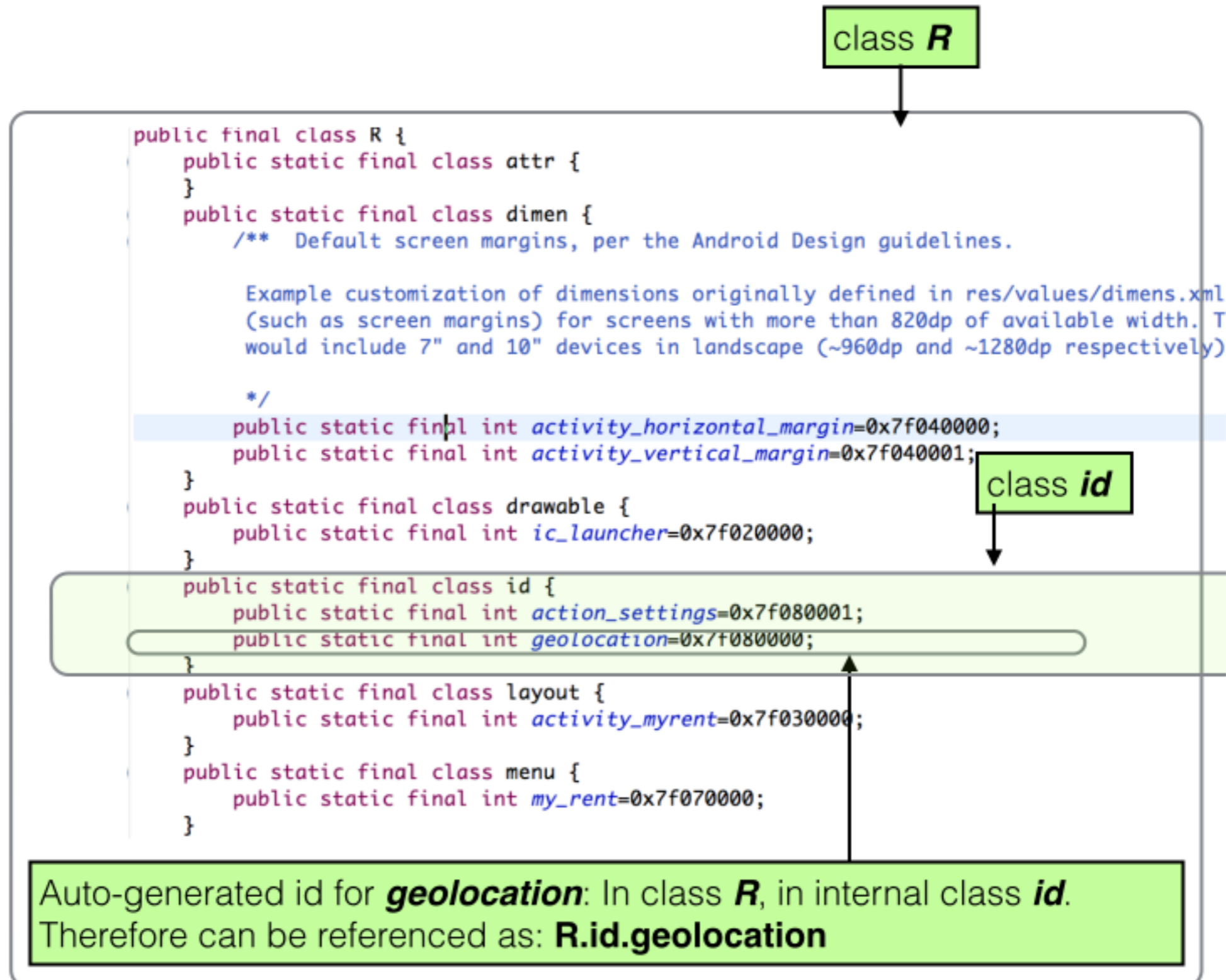
Application name



# R.java

gen [Generated Java Files]  
org.wit.myrent  
BuildConfig.java  
R.java  
Android 4.4W  
Android Private Libraries

R File: auto-generated file provides glue between Java and resources (e.g. XML, images).



```

public class MyRentActivity extends Activity implements TextWatcher
{
    private EditText geolocation;
    private Residence residence;

    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_myrent);
        geolocation = (EditText) findViewById(R.id.geolocation);
        residence = new Residence();

        geolocation.addTextChangedListener(this);
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu)
    {
        getMenuInflater().inflate(R.menu.my_rent, menu);
        return true;
    }

    @Override
    public boolean onOptionsItemSelected(MenuItem item)
    {
        int id = item.getItemId();
        if (id == R.id.action_settings)
        {
            return true;
        }
        return super.onOptionsItemSelected(item);
    }

    @Override
    public void afterTextChanged(Editable c)
    {
        residence.setGeolocation(c.toString());
    }

    @Override
    public void beforeTextChanged(CharSequence c, int start, int count, int after)
    {
    }

    @Override
    public void onTextChanged(CharSequence c, int start, int count, int after)
    {
    }
}

```

# MyRent V00 Classes

```

public class Residence
{
    private UUID id;
    private String geolocation;

    public Residence()
    {
        id = UUID.randomUUID();
    }

    public void setGeolocation(String geolocation)
    {
        this.geolocation = geolocation;
    }

    public String getGeolocation()
    {
        return geolocation;
    }
}

```

# Debugging

The screenshot shows the Eclipse IDE interface during a debug session. The main editor displays the `Residence.java` file with a breakpoint at line 25. The Variables window shows the state of the program, with the `geolocation` variable highlighted. The LogCat window shows the application's startup logs.

**Verify input in Variables window**

**Program stopped at breakpoint**

```
public void setGeolocation(String geolocation)
{
    this.geolocation = geolocation;
}

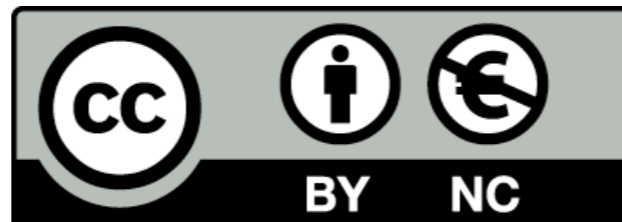
public String getGeolocation()
{
    return geolocation;
}
```

Name	Value
this	Residence (id=831695636304)
geolocation	"54.6,-7.098" (id=831695671792)
count	11
hashCode	0
offset	0
value	(id=831695671824)

Lev	Time	PID	TID	Application	Tag	Tex
W	08-12 15:58:21.637	2884	2884	org.wit.myrent	EGL_gerymotion	egl
E	08-12 15:58:21.637	2884	2884	org.wit.myrent	OpenGLRenderer	Get
E	08-12 15:58:21.637	2884	2884	org.wit.myrent	OpenGLRenderer	Get
D	08-12 15:58:21.641	2884	2884	org.wit.myrent	OpenGLRenderer	Enc

```
[2014-08-12 15:58:14 - myrent] -----
[2014-08-12 15:58:14 - myrent] Android Launch!
[2014-08-12 15:58:14 - myrent] adb is running normally.
[2014-08-12 15:58:14 - myrent] Performing org.wit.myrent.MyRentActivity activity launch
[2014-08-12 15:58:15 - myrent] Application already deployed. No need to reinstall.
[2014-08-12 15:58:15 - myrent] Starting activity org.wit.myrent.MyRentActivity on device
[2014-08-12 15:58:15 - myrent] ActivityManager: Starting: Intent { act=android.intent.act
[2014-08-12 15:58:16 - myrent] Attempting to connect debugger to 'org.wit.myrent' on port
```

Launching myrent



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