Maps - Setup

Lab-05

MapsActivity · api keys · GoogleMap · OnMapReadyCallback · LatLng · addMarker · moveCamera · Location · MarkerOptions · onBackPressed

New Set Location Button

strings.xml

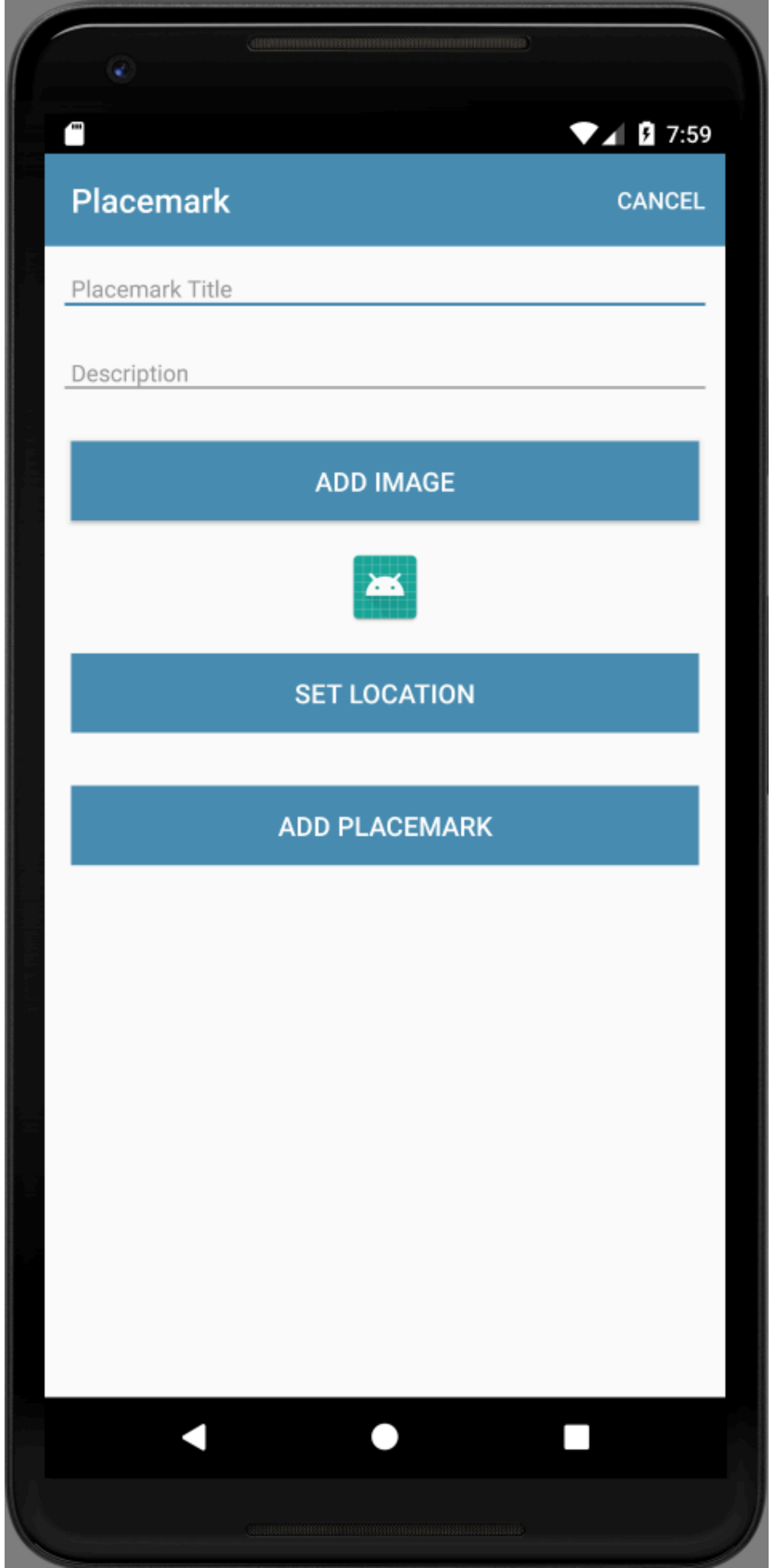
```
<string name="button_location">Set Location</string>
```

activity_placemark.xml

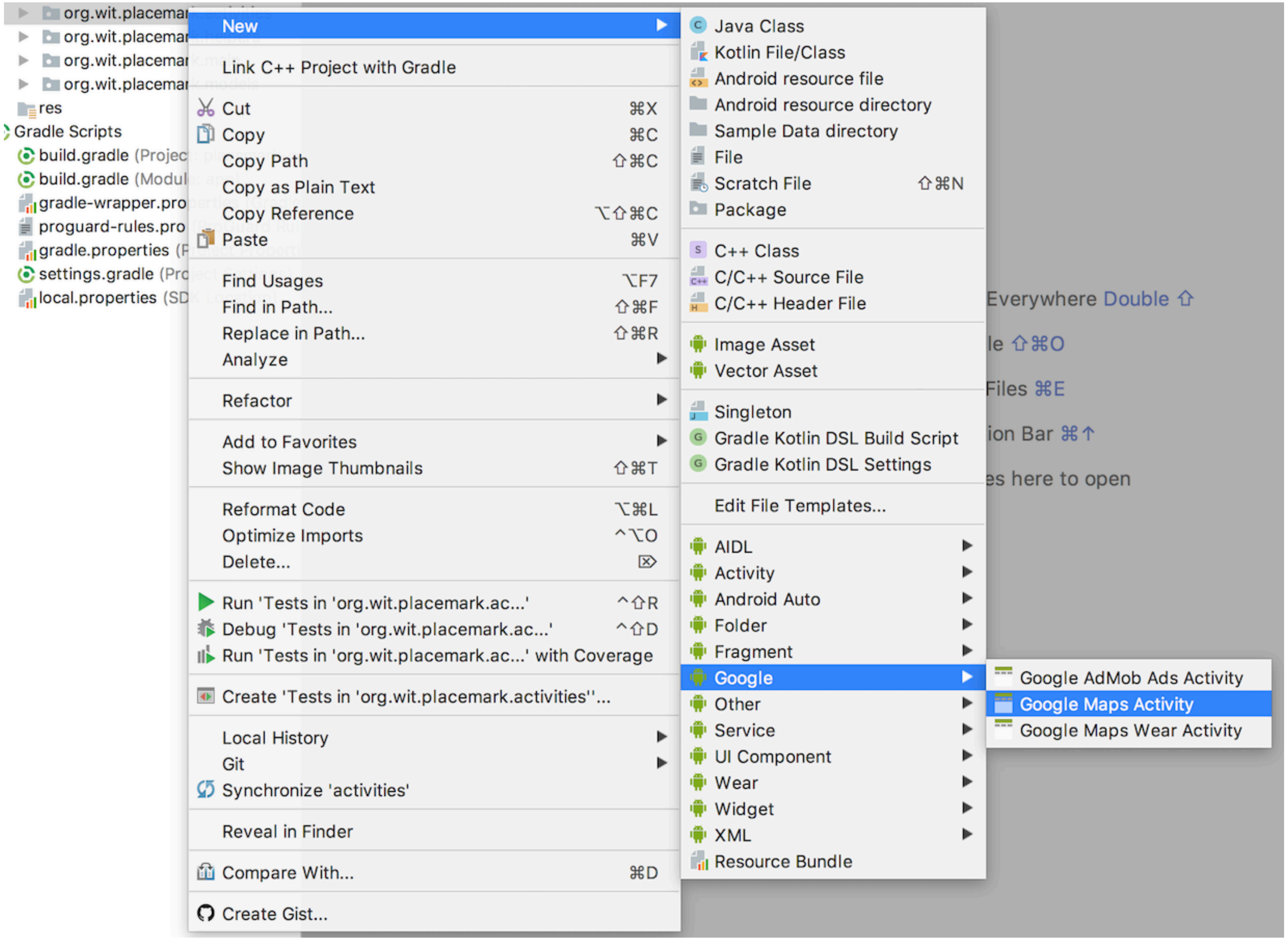
```
<Button
    android:id="@+id/placemarkLocation"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="16dp"
    android:background="@color/colorAccent"
    android:paddingBottom="8dp"
    android:paddingTop="8dp"
    android:stateListAnimator="@null"
    android:text="@string/button_location"
    android:textColor="@color/colorPrimary"
    android:textSize="16sp"/>
```

PlacemarkActivity

```
placemarkLocation.setOnClickListener {
}
```



Add Google Maps Activity



Add Google Maps Activity

Generates these updates

build.gradle:

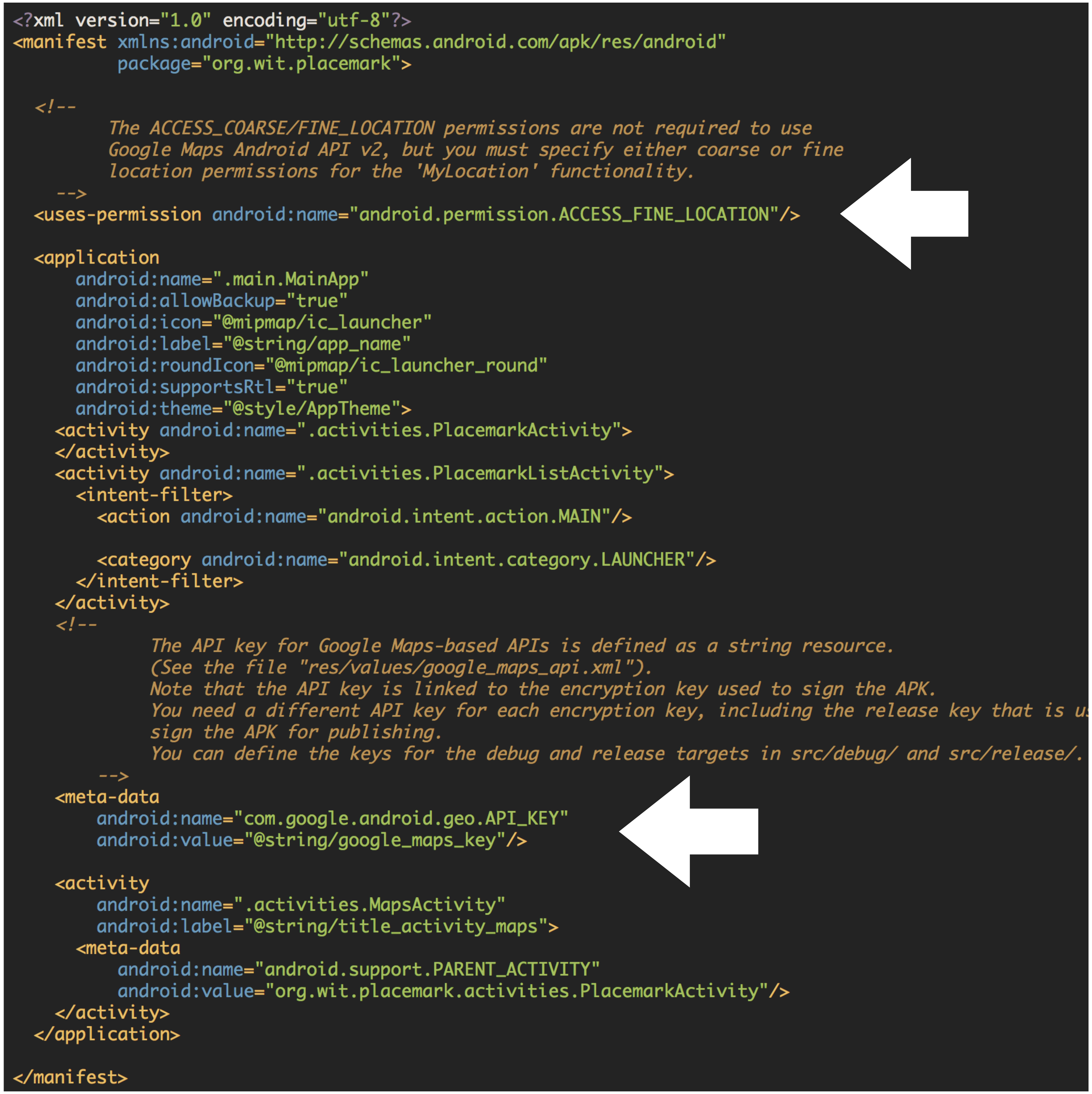
```
implementation 'com.google.android.gms:play-services-maps:11.6.2'
```

strings.xml

```
<string name="title_activity_maps">Map</string>
```

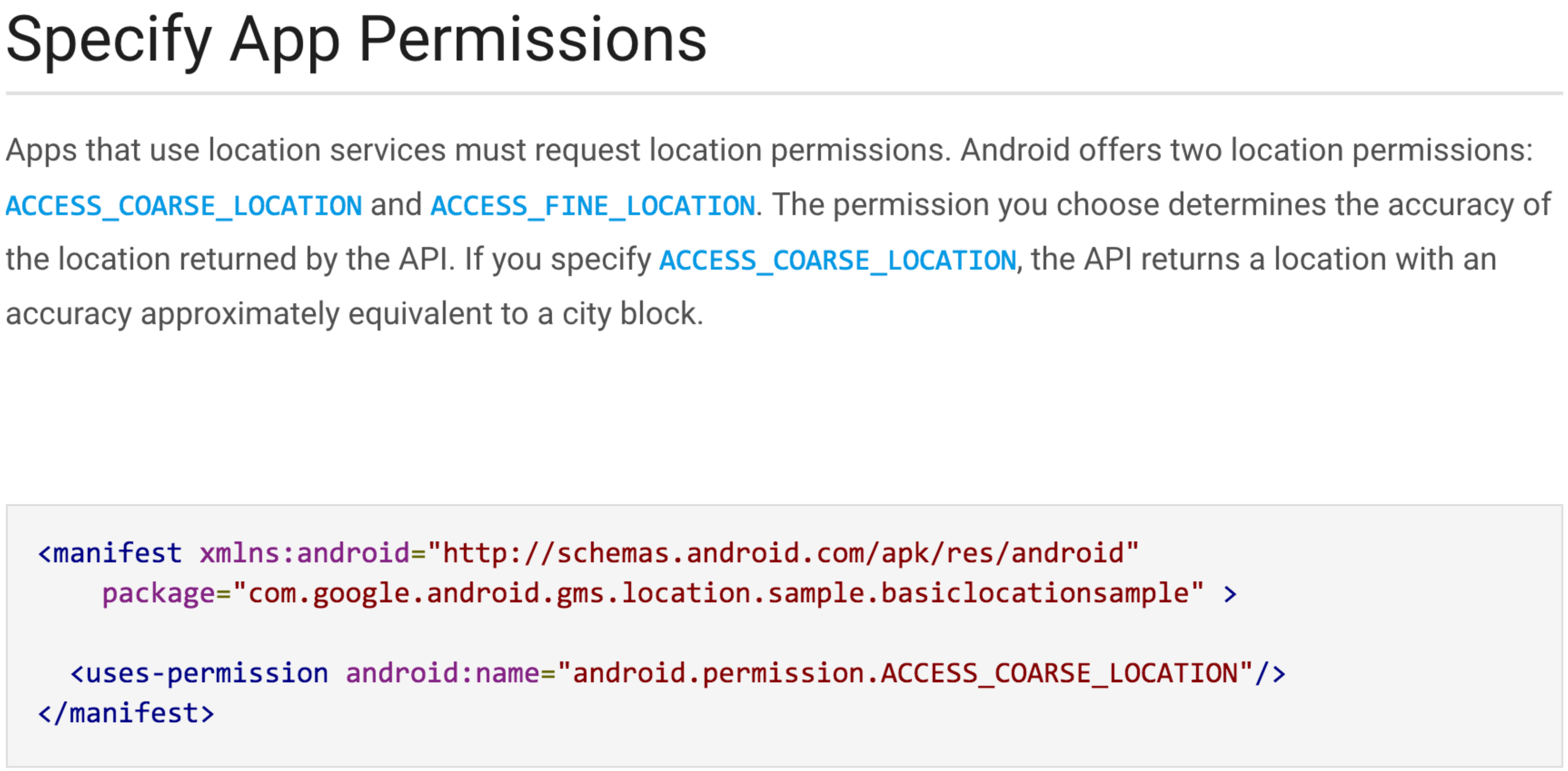
+

AndroidManifest.xml



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

  <!--
         The ACCESS_COARSE/FINE_LOCATION permissions are not required to use
         Google Maps Android API v2, but you must specify either coarse or fine
         location permissions for the 'MyLocation' functionality.
    -->
  <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION"/>

  <application
      android:name=".main.MainApp"
      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=".activities.PlacemarkActivity">
    </activity>
    <activity android:name=".activities.PlacemarkListActivity">
      <intent-filter>
        <action android:name="android.intent.action.MAIN"/>

        <category android:name="android.intent.category.LAUNCHER"/>
      </intent-filter>
    </activity>
    <!--
             The API key for Google Maps-based APIs is defined as a string resource.
             (See the file "res/values/google_maps_api.xml").
             Note that the API key is linked to the encryption key used to sign the APK.
             You need a different API key for each encryption key, including the release key that is us
             sign the APK for publishing.
             You can define the keys for the debug and release targets in src/debug/ and src/release/.
        -->
    <meta-data
        android:name="com.google.android.geo.API_KEY"
        android:value="@string/google_maps_key"/>

    <activity
        android:name=".activities.MapsActivity"
        android:label="@string/title_activity_maps">
      <meta-data
          android:name="android.support.PARENT_ACTIVITY"
          android:value="org.wit.placemark.activities.PlacemarkActivity"/>
    </activity>
  </application>

</manifest>
```

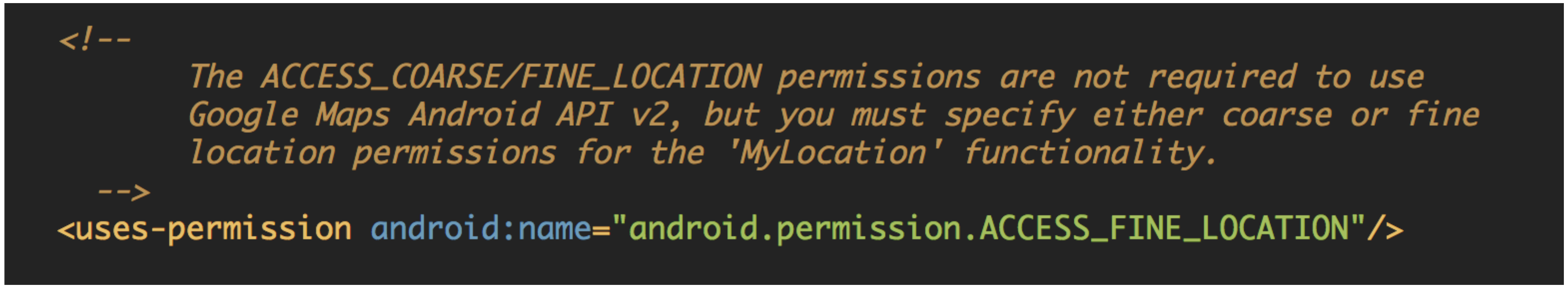
AndroidManifest.xml - Permissions



Specify App Permissions

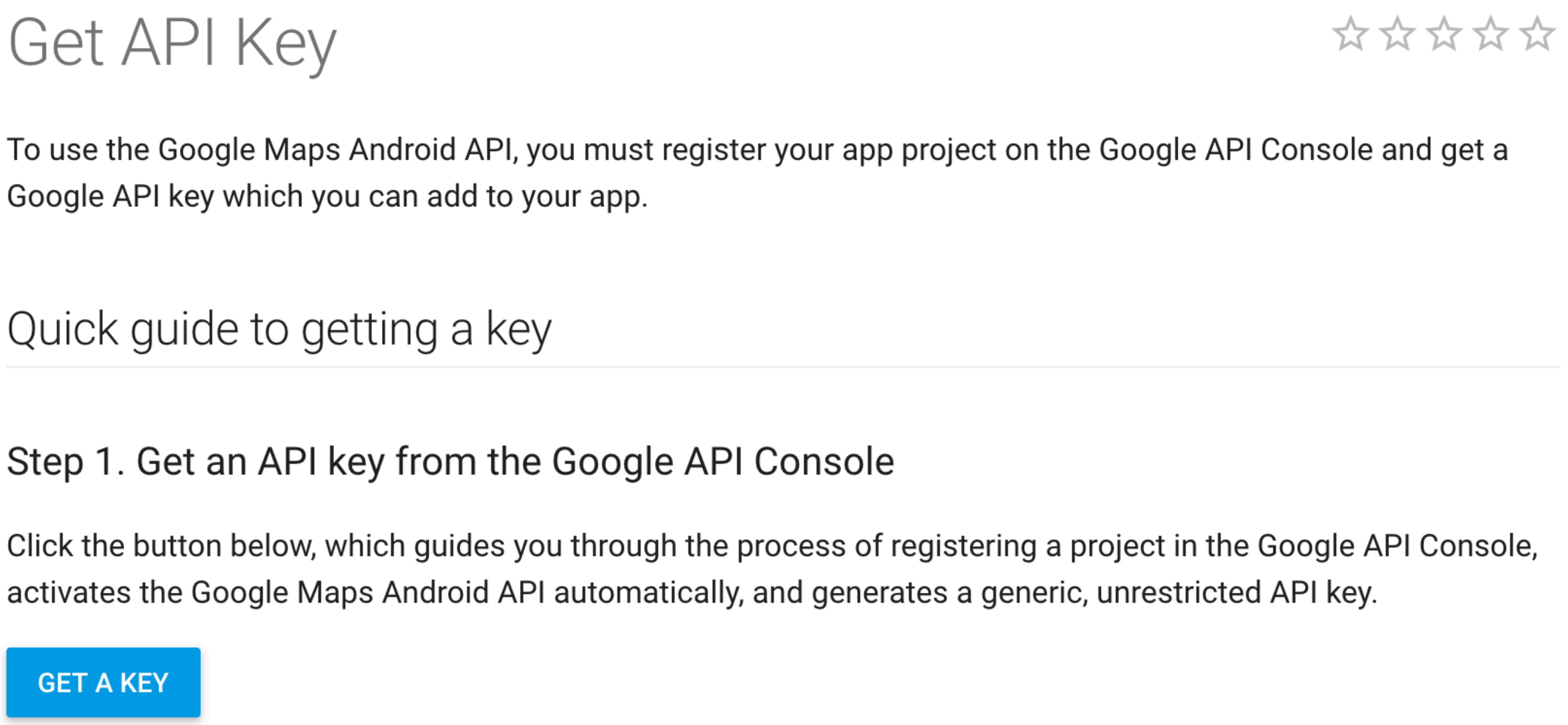
Apps that use location services must request location permissions. Android offers two location permissions: `ACCESS_COARSE_LOCATION` and `ACCESS_FINE_LOCATION`. The permission you choose determines the accuracy of the location returned by the API. If you specify `ACCESS_COARSE_LOCATION`, the API returns a location with an accuracy approximately equivalent to a city block.

```
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.google.android.gms.location.sample.basiclocationsample" >

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



```
<!--
       The ACCESS_COARSE/FINE_LOCATION permissions are not required to use
       Google Maps Android API v2, but you must specify either coarse or fine
       location permissions for the 'MyLocation' functionality.
  -->
<uses-permission android:name="android.permission.ACCESS_FINE_LOCATION"/>
```

AndroidManifest.xml - Keys



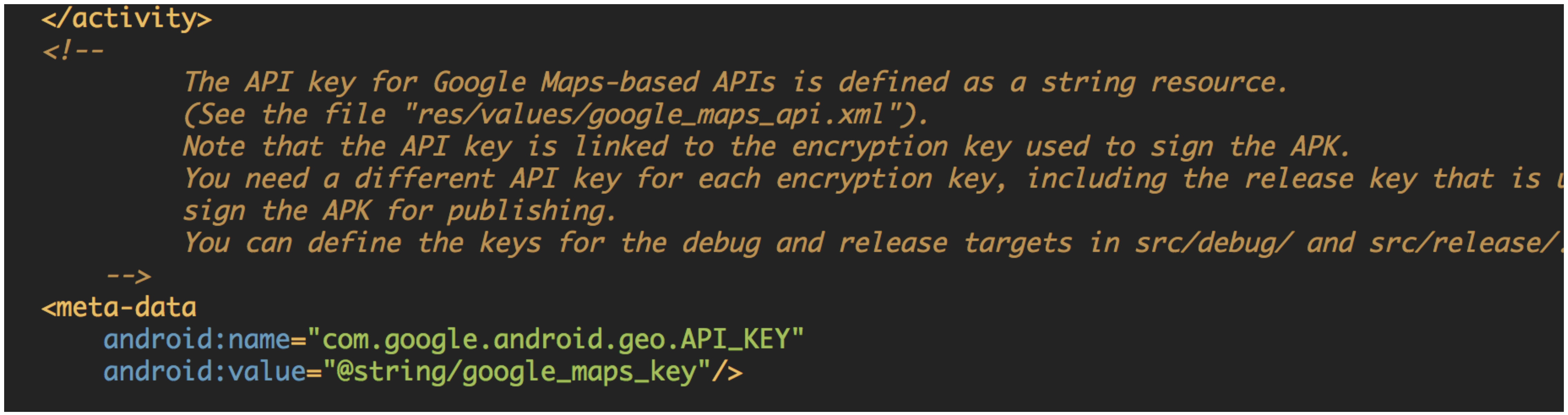
Get API Key

To use the Google Maps Android API, you must register your app project on the Google API Console and get a Google API key which you can add to your app.

Quick guide to getting a key

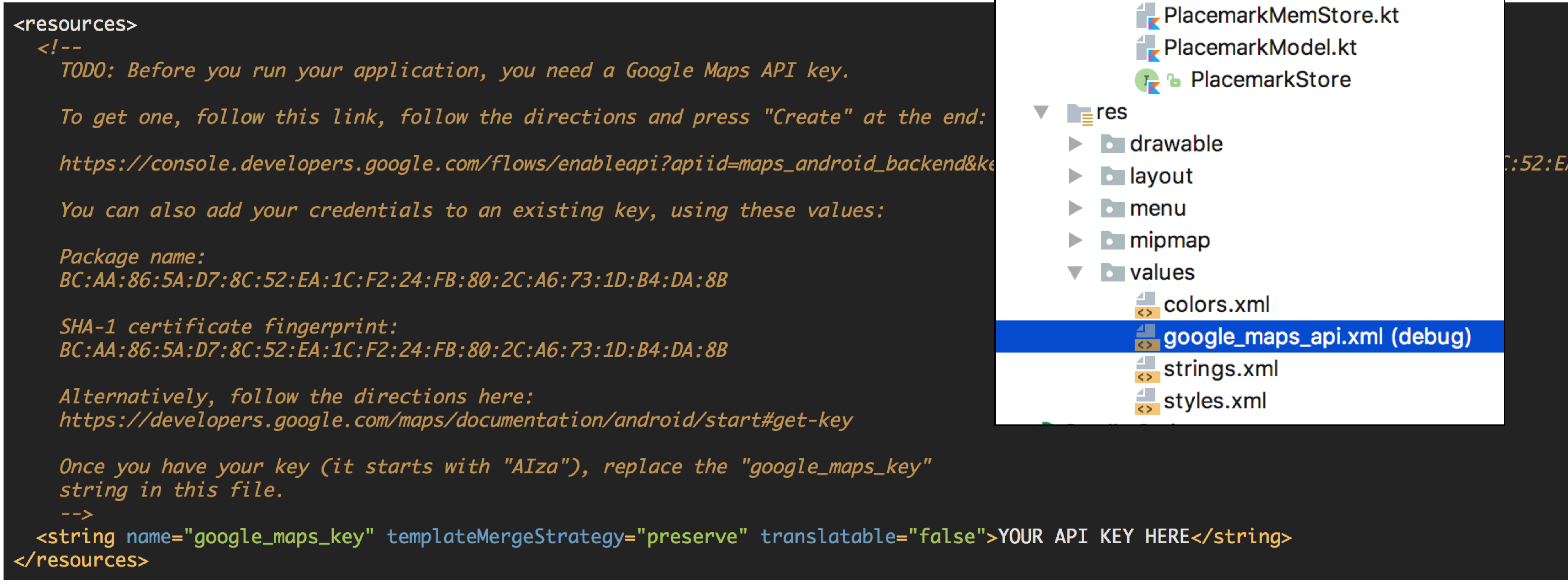
Step 1. Get an API key from the Google API Console

Click the button below, which guides you through the process of registering a project in the Google API Console, activates the Google Maps Android API automatically, and generates a generic, unrestricted API key.

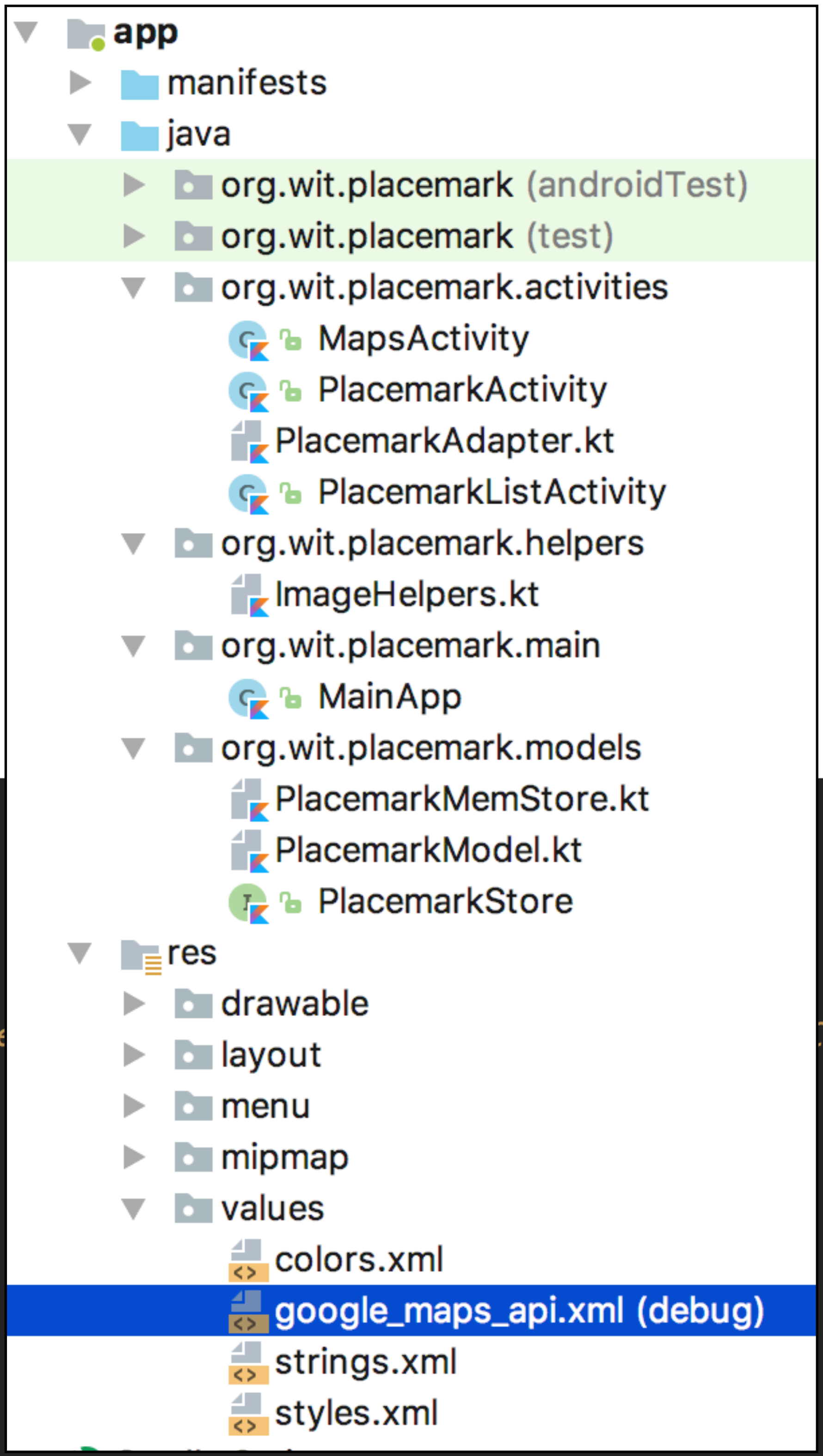


```
</activity>
<!--
         The API key for Google Maps-based APIs is defined as a string resource.
         (See the file "res/values/google_maps_api.xml").
         Note that the API key is linked to the encryption key used to sign the APK.
         You need a different API key for each encryption key, including the release key that is u
         sign the APK for publishing.
         You can define the keys for the debug and release targets in src/debug/ and src/release/
    -->
<meta-data
    android:name="com.google.android.geo.API_KEY"
    android:value="@string/google_maps_key"/>
```

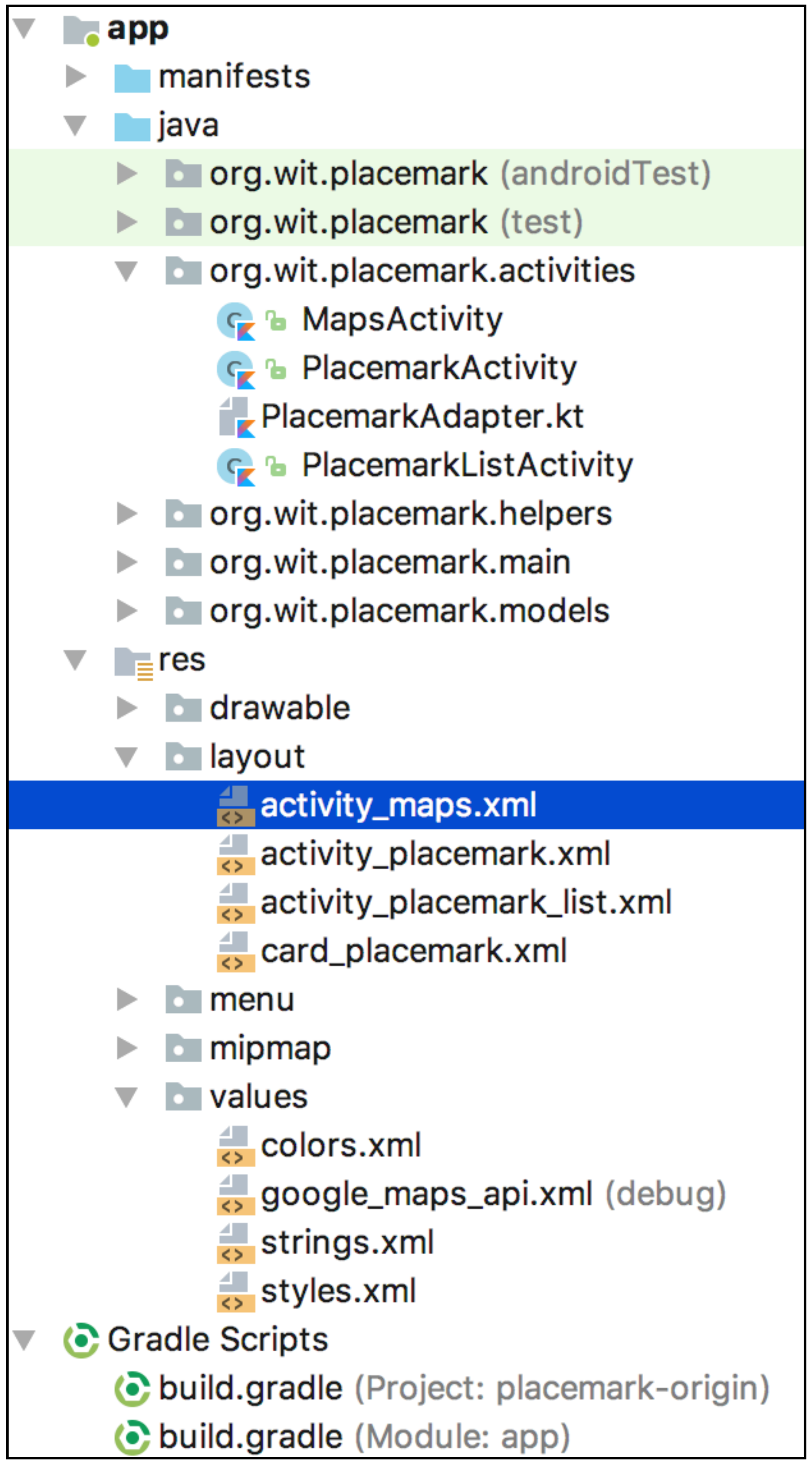
google_maps_api.xml



```
<resources>
  <!--
    TODO: Before you run your application, you need a Google Maps API key.

    To get one, follow this link, follow the directions and press "Create" at the end:

    https://console.developers.google.com/flows/enableapi?apiid=maps_android_backend&ke                          :52:E

    You can also add your credentials to an existing key, using these values:

    Package name:
    BC:AA:86:5A:D7:8C:52:EA:1C:F2:24:FB:80:2C:A6:73:1D:B4:DA:8B

    SHA-1 certificate fingerprint:
    BC:AA:86:5A:D7:8C:52:EA:1C:F2:24:FB:80:2C:A6:73:1D:B4:DA:8B

    Alternatively, follow the directions here:
    https://developers.google.com/maps/documentation/android/start#get-key

    Once you have your key (it starts with "AIza"), replace the "google_maps_key"
    string in this file.
    -->
  <string name="google_maps_key" templateMergeStrategy="preserve" translatable="false">YOUR API KEY HERE</string>
</resources>
```



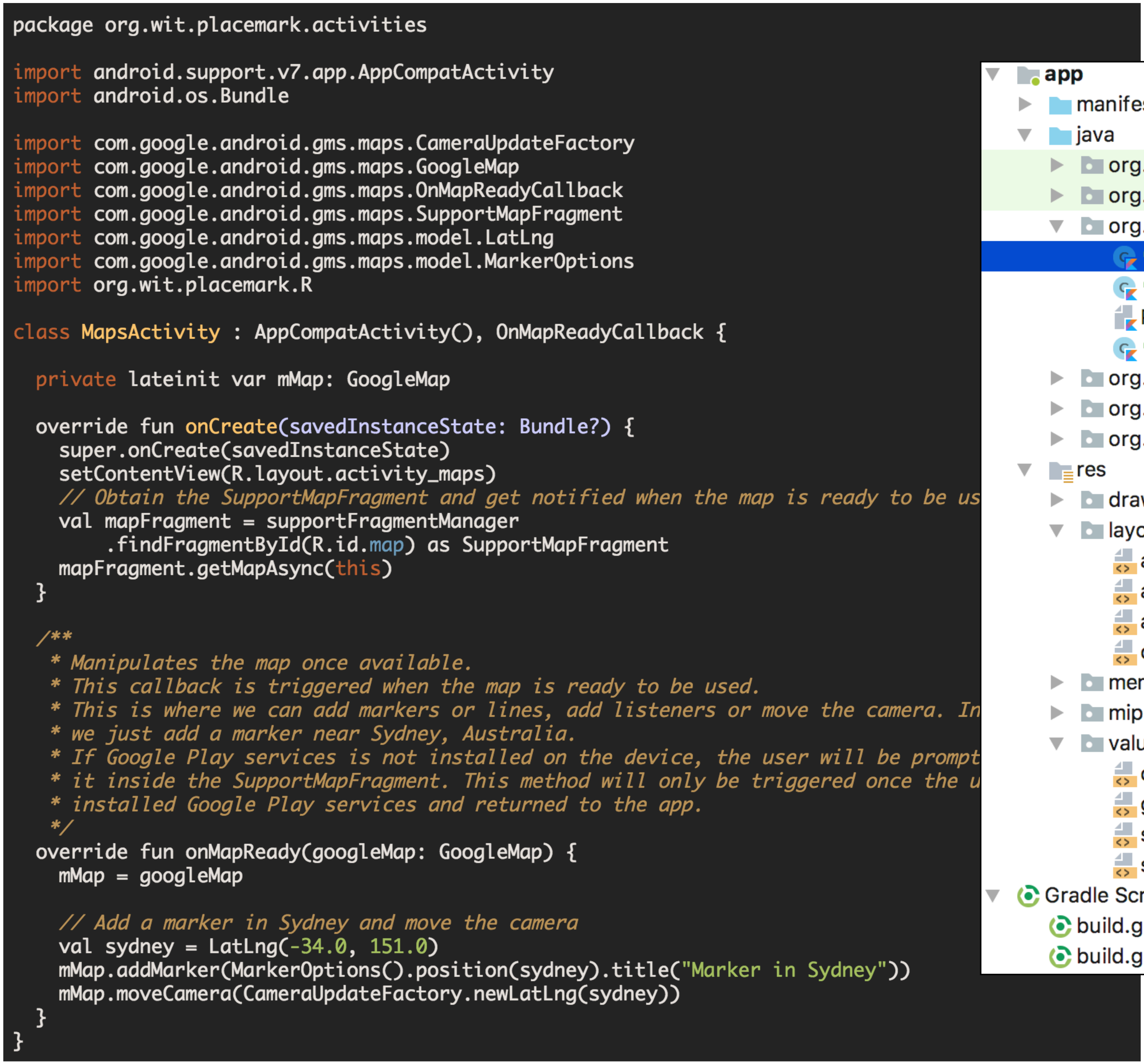
```
▼ app
    ▶ manifests
    ▼ java
        ▶ org.wit.placemark (androidTest)
        ▶ org.wit.placemark (test)
        ▼ org.wit.placemark.activities
              MapsActivity
              PlacemarkActivity
              PlacemarkAdapter.kt
              PlacemarkListActivity
        ▼ org.wit.placemark.helpers
              ImageHelpers.kt
        ▼ org.wit.placemark.main
              MainApp
        ▼ org.wit.placemark.models
              PlacemarkMemStore.kt
              PlacemarkModel.kt
              PlacemarkStore
    ▼ res
        ▶ drawable
        ▶ layout
        ▶ menu
        ▶ mipmap
        ▼ values
              colors.xml
              google_maps_api.xml (debug)
              strings.xml
              styles.xml
```


app
manifests
java
org.wit.placemark (androidTest)
org.wit.placemark (test)
org.wit.placemark.activities
MapsActivity
PlacemarkActivity
PlacemarkAdapter.kt
PlacemarkListActivity
org.wit.placemark.helpers
org.wit.placemark.main
org.wit.placemark.models
res
drawable
layout
activity_maps.xml
activity_placemark.xml
activity_placemark_list.xml
card_placemark.xml
menu
mipmap
values
colors.xml
google_maps_api.xml (debug)
strings.xml
styles.xml
Gradle Scripts
build.gradle (Project: placemark-origin)
build.gradle (Module: app)

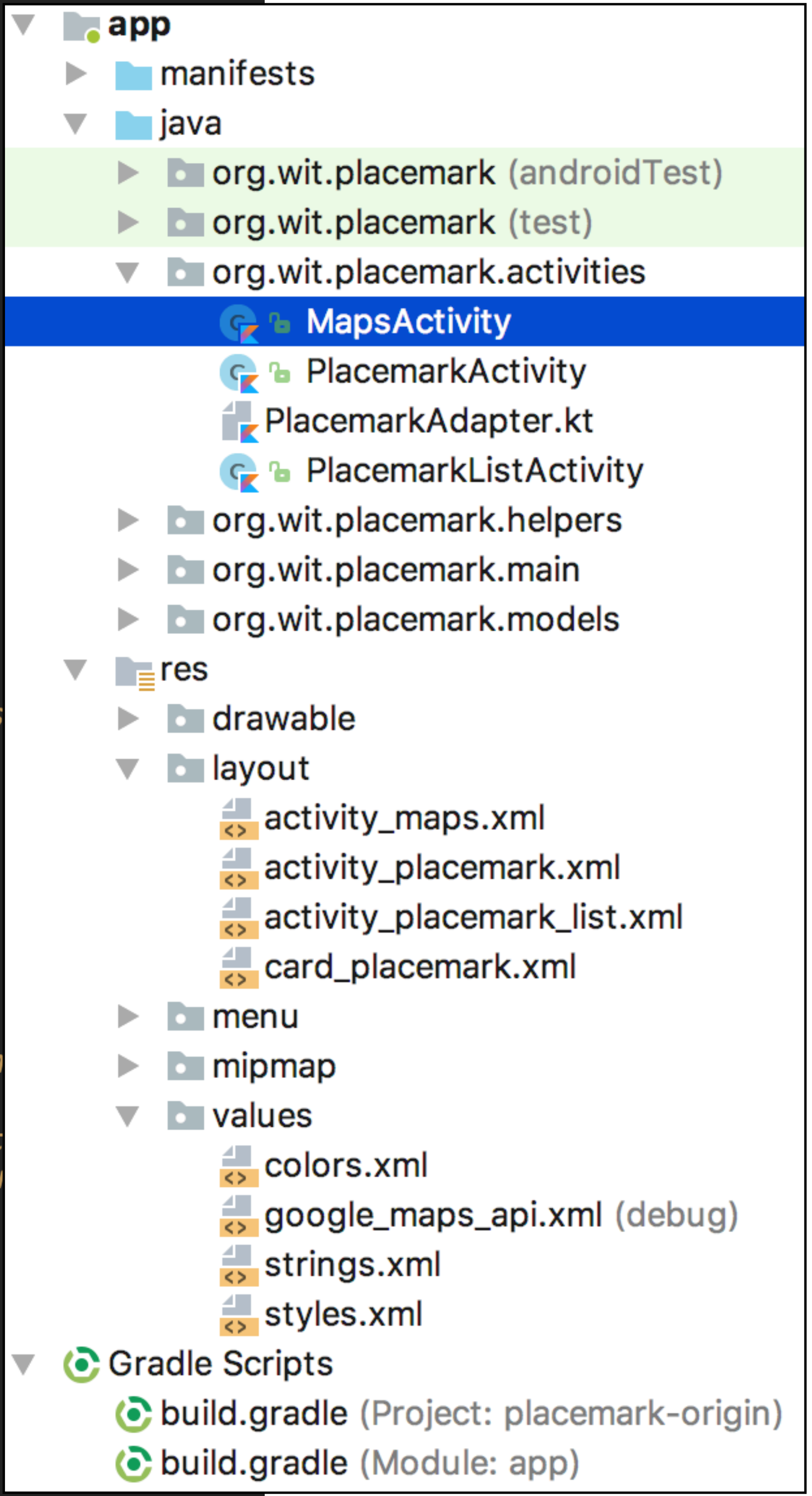
activity_maps.xml

```
<fragment xmlns:android="http://schemas.android.com/apk/res/android"
          xmlns:map="http://schemas.android.com/apk/res-auto"
          xmlns:tools="http://schemas.android.com/tools"
          android:id="@+id/map"
          android:name="com.google.android.gms.maps.SupportMapFragment"
          android:layout_width="match_parent"
          android:layout_height="match_parent"
          tools:context="org.wit.placemark.activities.MapsActivity"/>
```

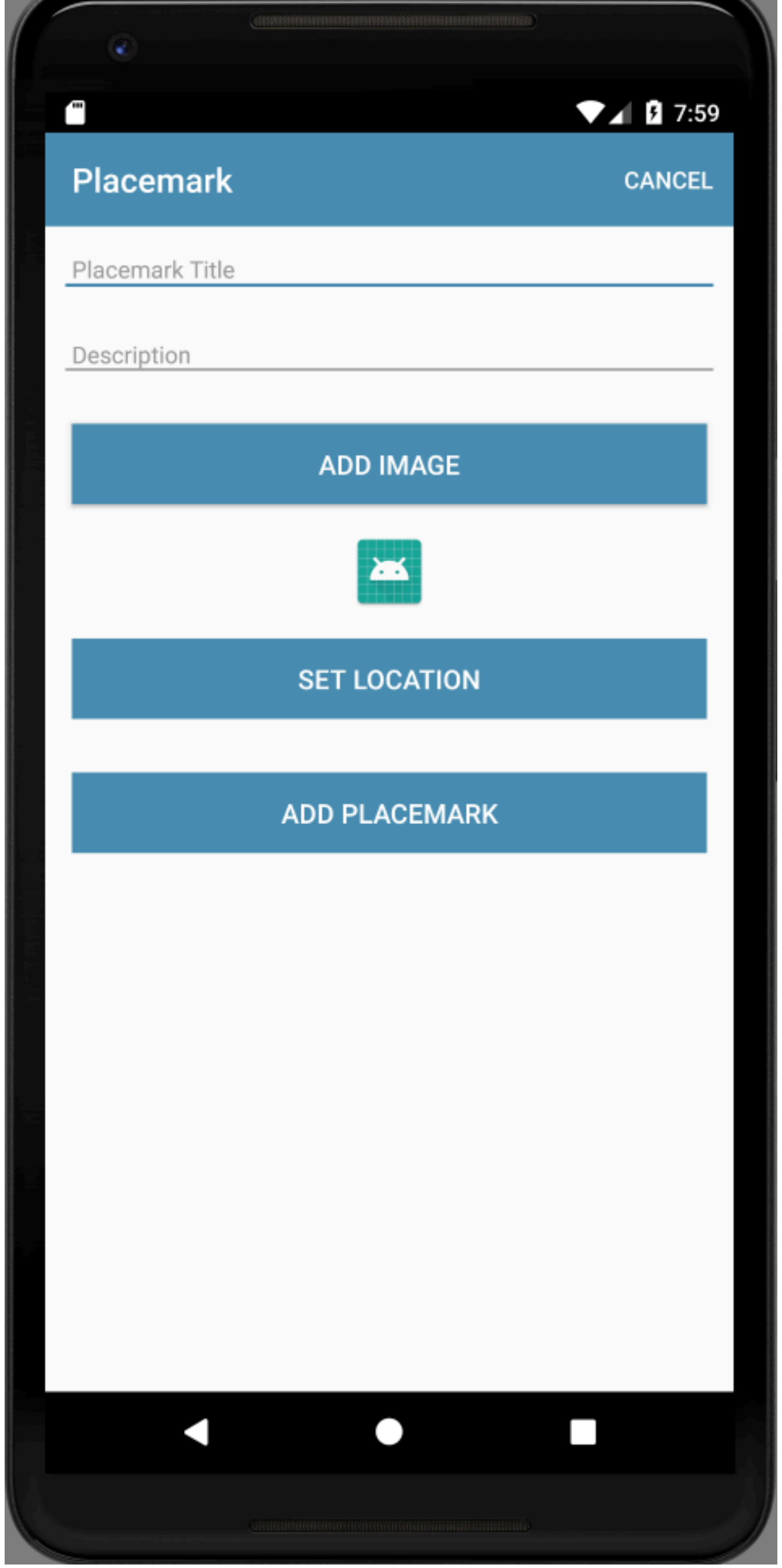
MapsActivity



```
package org.wit.placemark.activities

import android.support.v7.app.AppCompatActivity
import android.os.Bundle

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.LatLng
import com.google.android.gms.maps.model.MarkerOptions
import org.wit.placemark.R

class MapsActivity : AppCompatActivity(), OnMapReadyCallback {

  private lateinit var mMap: GoogleMap

  override fun onCreate(savedInstanceState: Bundle?) {
    super.onCreate(savedInstanceState)
    setContentView(R.layout.activity_maps)
    // Obtain the SupportMapFragment and get notified when the map is ready to be us
    val mapFragment = supportFragmentManager
        .findFragmentById(R.id.map) as SupportMapFragment
    mapFragment.getMapAsync(this)
  }

  /**
   * 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
   * we just add a marker near Sydney, Australia.
   * If Google Play services is not installed on the device, the user will be prompt
   * it inside the SupportMapFragment. This method will only be triggered once the u
   * installed Google Play services and returned to the app.
   */
  override fun onMapReady(googleMap: GoogleMap) {
    mMap = googleMap

    // Add a marker in Sydney and move the camera
    val sydney = LatLng(-34.0, 151.0)
    mMap.addMarker(MarkerOptions().position(sydney).title("Marker in Sydney"))
    mMap.moveCamera(CameraUpdateFactory.newLatLng(sydney))
  }
}
```

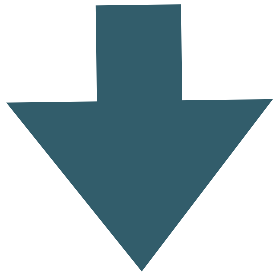


```
app
  manifests
  java
    org.wit.placemark (androidTest)
    org.wit.placemark (test)
    org.wit.placemark.activities
      MapsActivity
      PlacemarkActivity
      PlacemarkAdapter.kt
      PlacemarkListActivity
    org.wit.placemark.helpers
    org.wit.placemark.main
    org.wit.placemark.models
  res
    drawable
    layout
      activity_maps.xml
      activity_placemark.xml
      activity_placemark_list.xml
      card_placemark.xml
    menu
    mipmap
    values
      colors.xml
      google_maps_api.xml (debug)
      strings.xml
      styles.xml
Gradle Scripts
  build.gradle (Project: placemark-origin)
  build.gradle (Module: app)
```



PlacemarkActivity

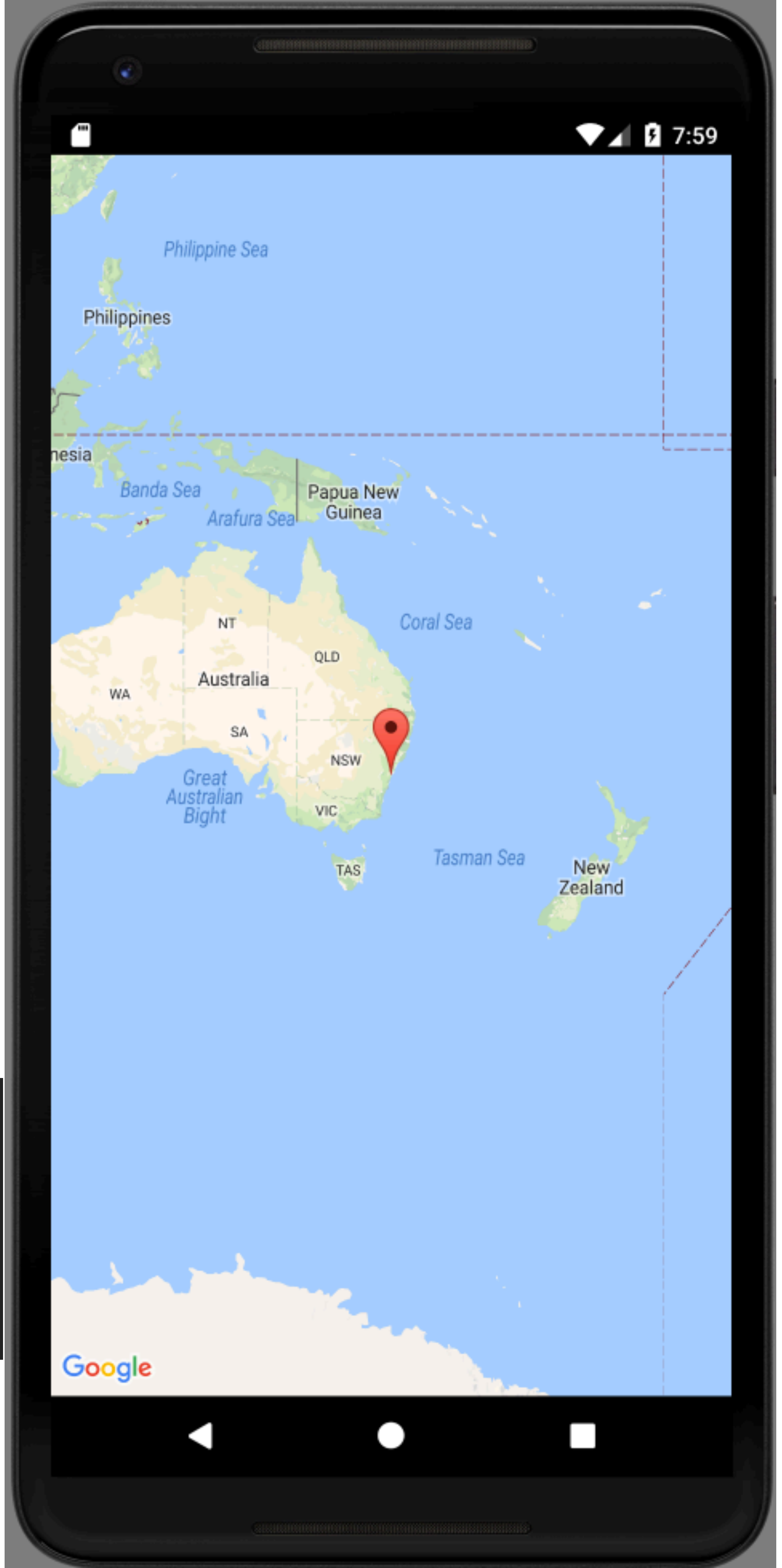
```
placemarkLocation.setOnClickListener {
}
```



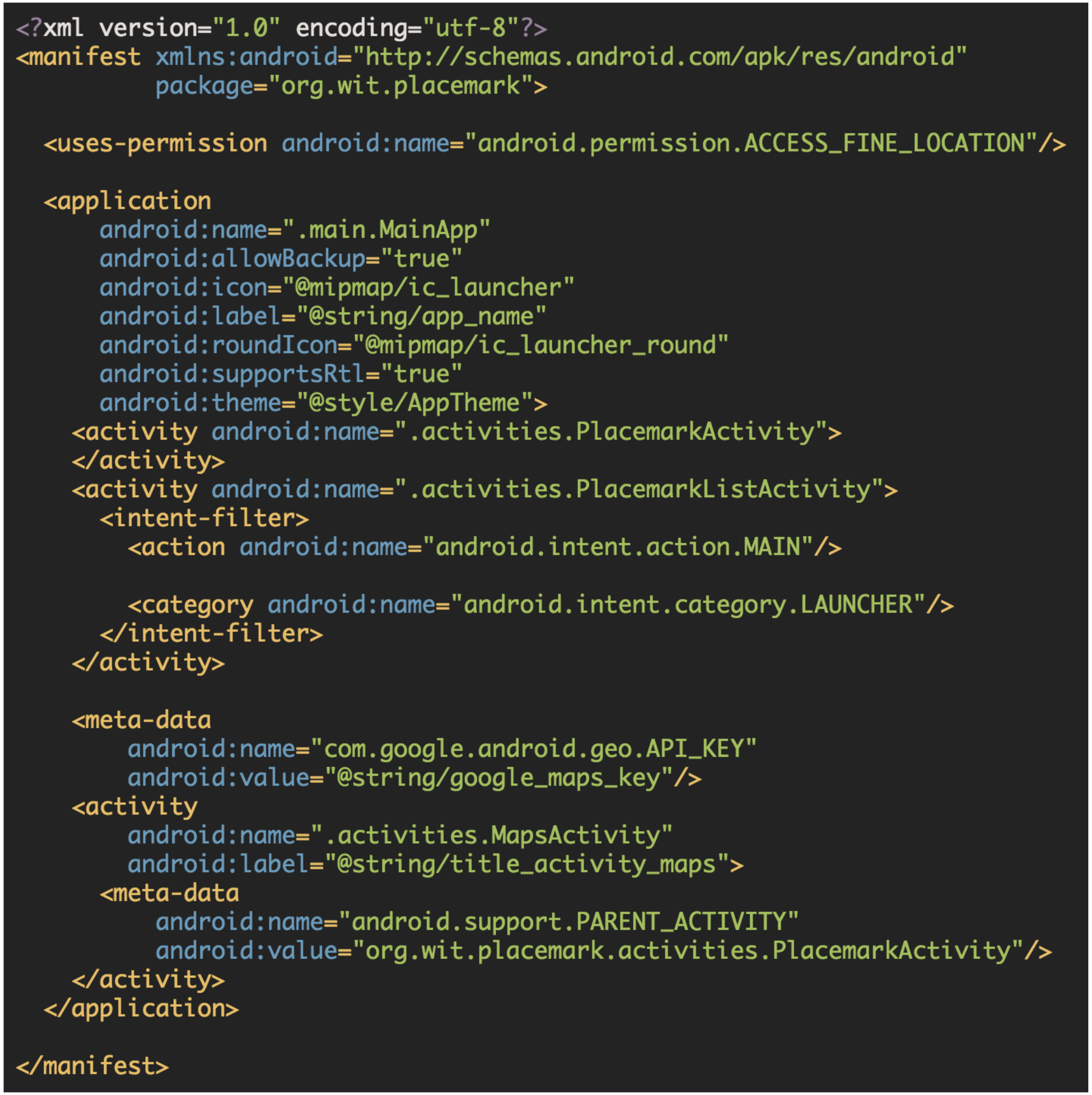
```
placemarkLocation.setOnClickListener {
  startActivity (intentFor<MapsActivity>())
}
```

```
    placemarkLocation.setOnClickListener {
      startActivity (intentFor<MapsActivity>())
    }
```

```
  override fun onMapReady(googleMap: GoogleMap) {
    mMap = googleMap

    // Add a marker in Sydney and move the camera
    val sydney = LatLng(-34.0, 151.0)
    mMap.addMarker(MarkerOptions().position(sydney).title("Marker in Sydney"))
    mMap.moveCamera(CameraUpdateFactory.newLatLng(sydney))
  }
```

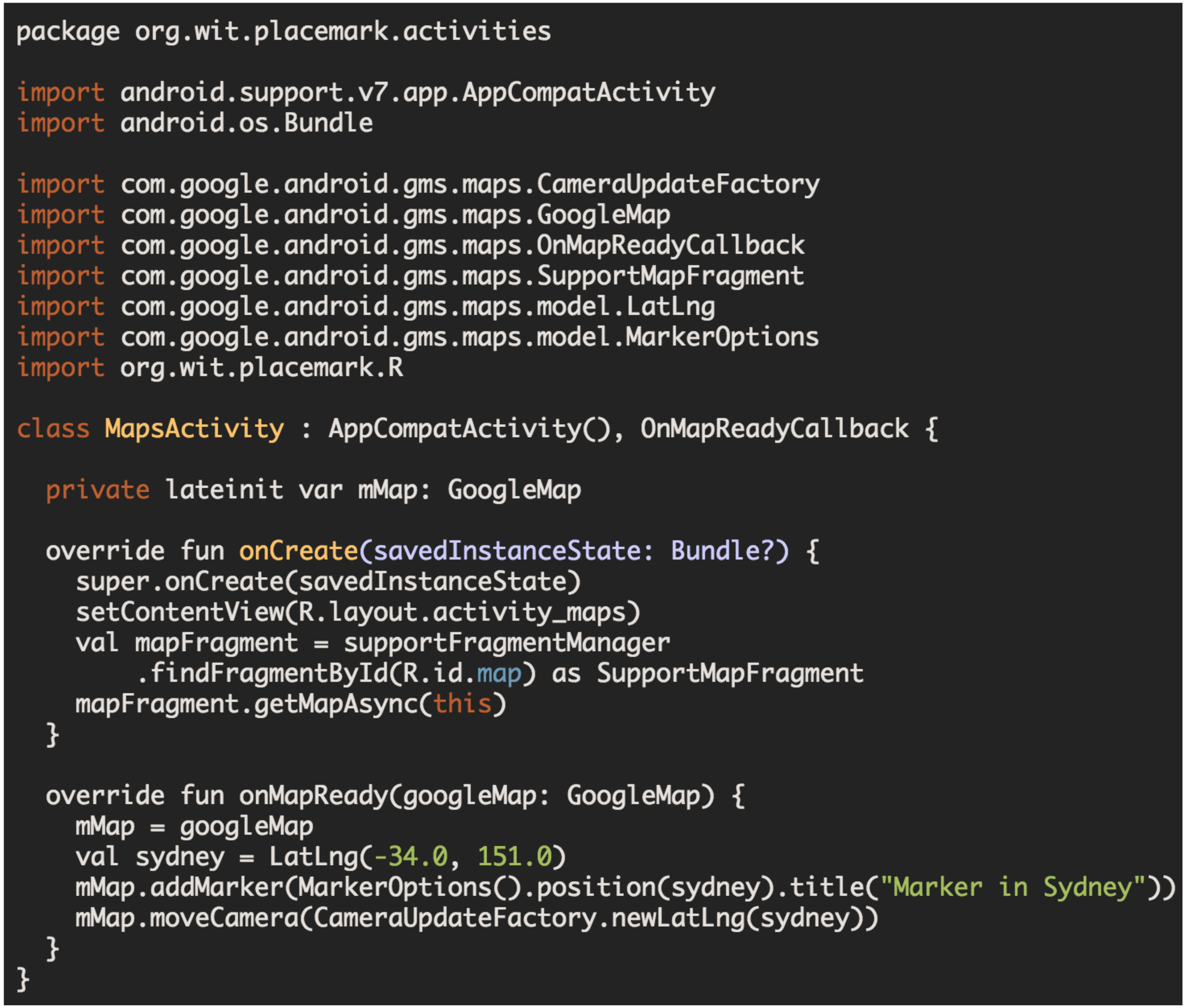


Review AndroidManifest.xml



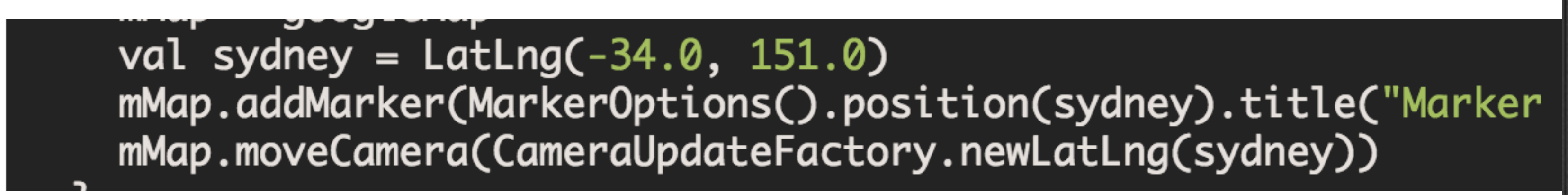
```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
          package="org.wit.placemark">

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

  <application
      android:name=".main.MainApp"
      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=".activities.PlacemarkActivity">
    </activity>
    <activity android:name=".activities.PlacemarkListActivity">
      <intent-filter>
        <action android:name="android.intent.action.MAIN"/>

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

    <meta-data
        android:name="com.google.android.geo.API_KEY"
        android:value="@string/google_maps_key"/>
    <activity
        android:name=".activities.MapsActivity"
        android:label="@string/title_activity_maps">
      <meta-data
          android:name="android.support.PARENT_ACTIVITY"
          android:value="org.wit.placemark.activities.PlacemarkActivity"/>
    </activity>
  </application>

</manifest>
```

Review MapsActivity

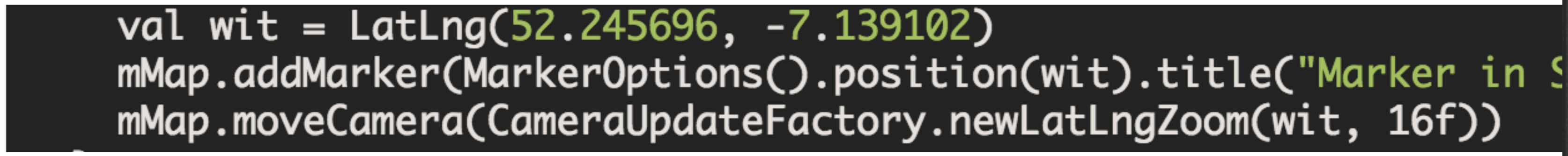


```kotlin
package org.wit.placemark.activities

import android.support.v7.app.AppCompatActivity
import android.os.Bundle

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.LatLng
import com.google.android.gms.maps.model.MarkerOptions
import org.wit.placemark.R

class MapsActivity : AppCompatActivity(), OnMapReadyCallback {

  private lateinit var mMap: GoogleMap

  override fun onCreate(savedInstanceState: Bundle?) {
    super.onCreate(savedInstanceState)
    setContentView(R.layout.activity_maps)
    val mapFragment = supportFragmentManager
        .findFragmentById(R.id.map) as SupportMapFragment
    mapFragment.getMapAsync(this)
  }

  override fun onMapReady(googleMap: GoogleMap) {
    mMap = googleMap
    val sydney = LatLng(-34.0, 151.0)
    mMap.addMarker(MarkerOptions().position(sydney).title("Marker in Sydney"))
    mMap.moveCamera(CameraUpdateFactory.newLatLng(sydney))
  }
}
```

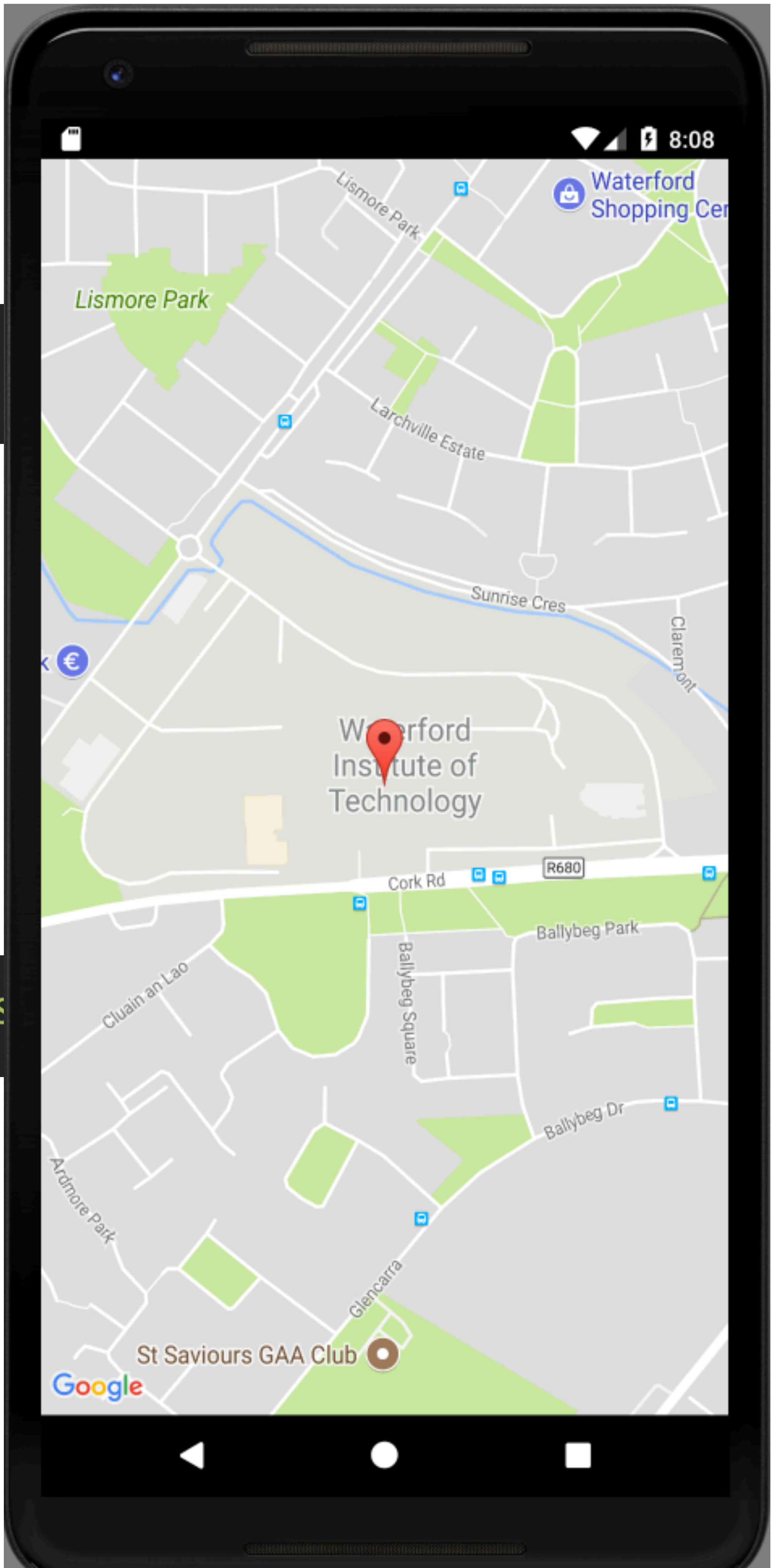
Change Location + Zoom Level



```
    val sydney = LatLng(-34.0, 151.0)
    mMap.addMarker(MarkerOptions().position(sydney).title("Marker
    mMap.moveCamera(CameraUpdateFactory.newLatLng(sydney))
```



```
    val wit = LatLng(52.245696, -7.139102)
    mMap.addMarker(MarkerOptions().position(wit).title("Marker in S
    mMap.moveCamera(CameraUpdateFactory.newLatLngZoom(wit, 16f))
```


8:08
Waterford Shopping Cer
Lismore Park
Lismore Park
Larchville Estate
Sunrise Cres
Claremont
Waterford Institute of Technology
Cork Rd
R680
Ballybeg Park
Cluain an Lao
Ballybeg Square
Ballybeg Dr
Ardmore Park
Glencarra
St Saviours GAA Club
Google