

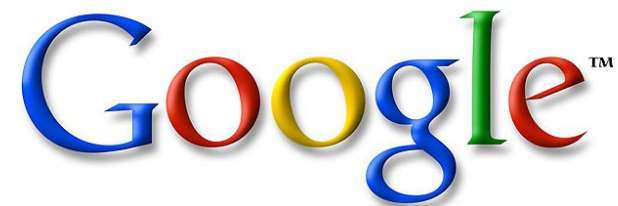
Introduction to Android GoogleMap API V2

CS 436 Software Development on Mobile

By Dr.Paween Khoenkaw



ANDROID



Google Service

Google Service

Google offers a variety of services that help you build new revenue streams, manage app distribution, track app usage, and enhance your app with features such as **maps**, **sign-in**, and **cloud messaging**.



Google Service



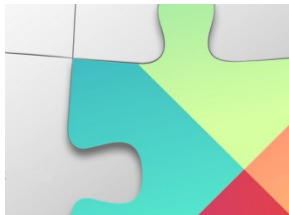
Location APIs



Google+ Platform for Android



Google Maps Android API



Google Play Services

Google Service



Location APIs



Google+ Platform for Android



Google Maps Android API



Google Play Services



Google Cloud Messaging for Android0

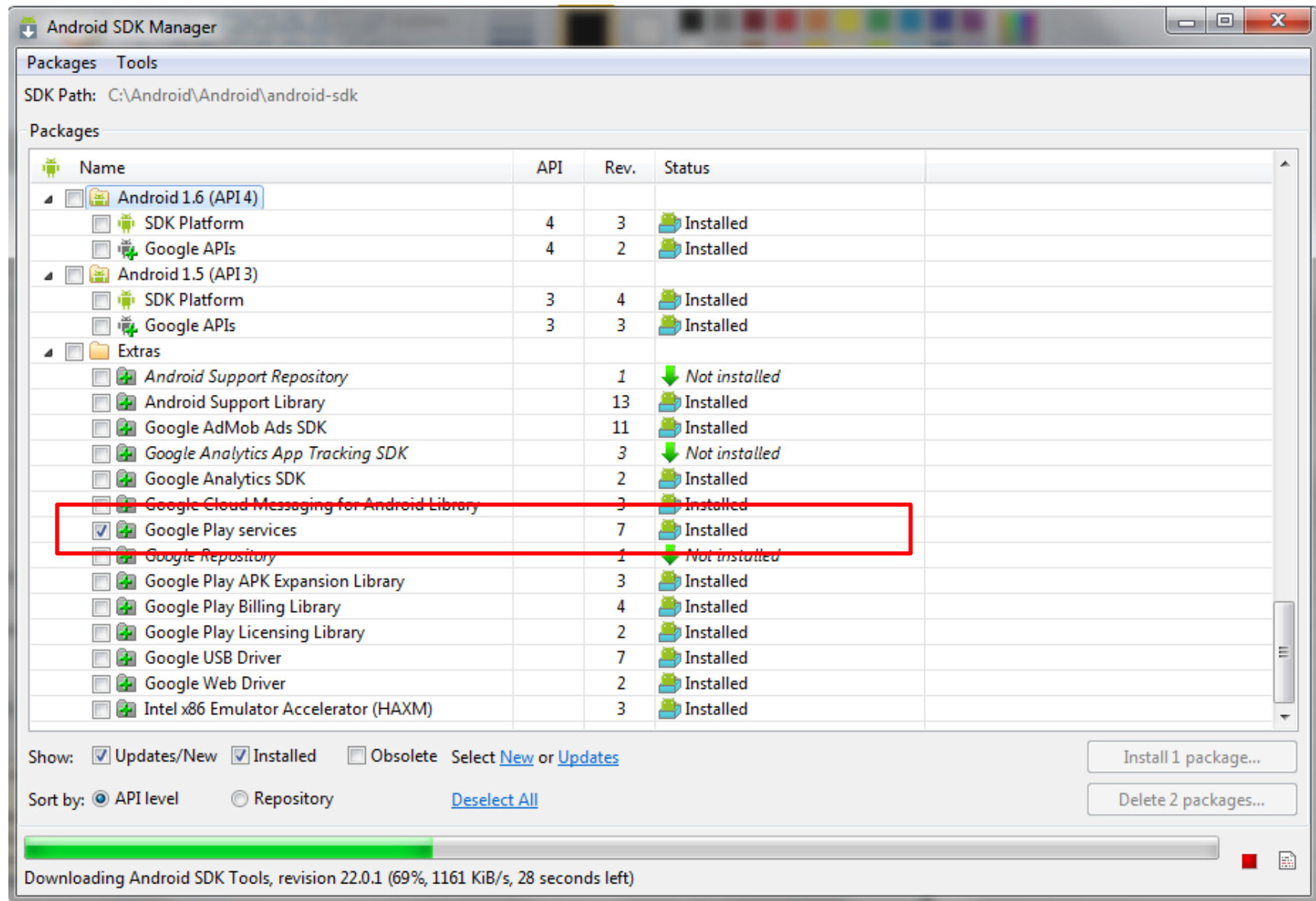
How to use Google Services

Google Service API

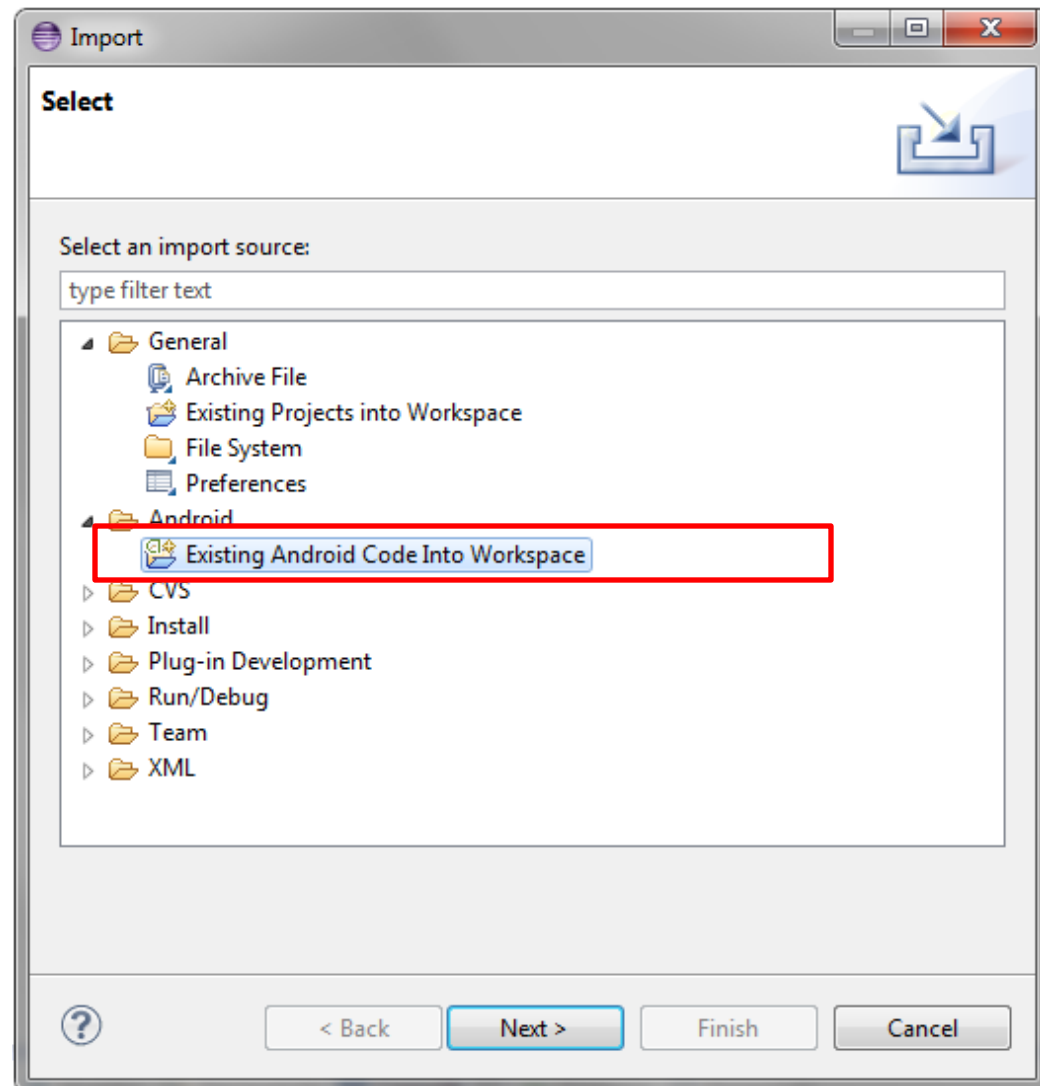
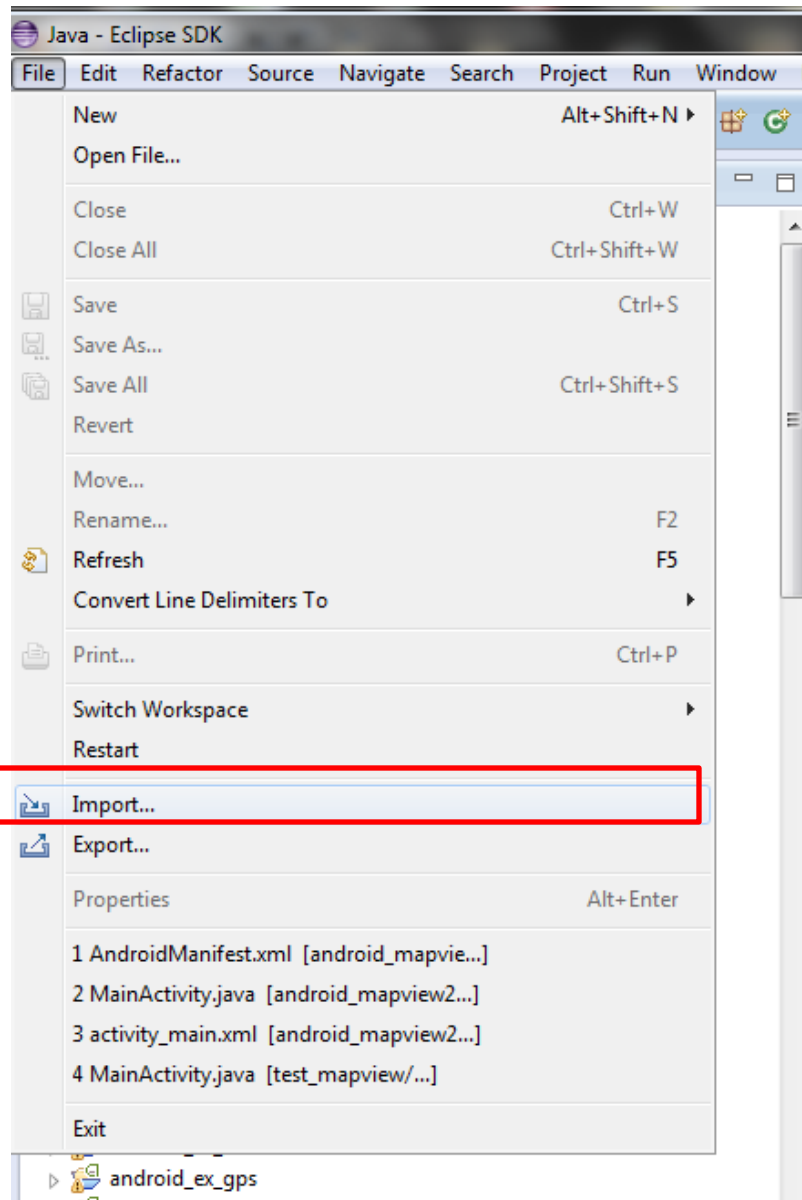
- Google account (Gmail account)
- Private key to generate self-signed certificate
- Enable Google API service
- Obtain API key
- Google Play Service library
- Internet access
- Device with Google Play Service



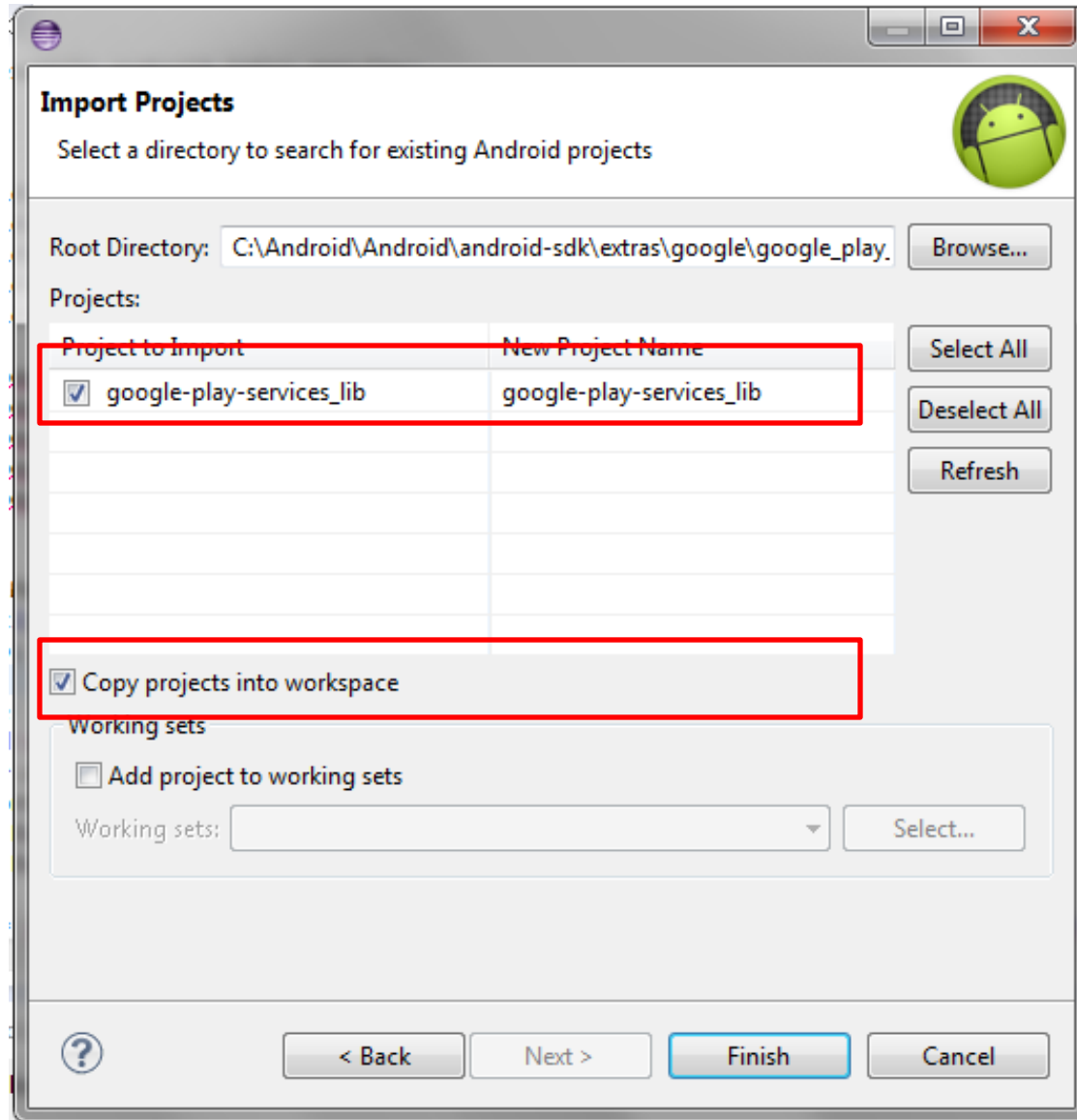
Install Google play services library



Import Google play service library to workspace

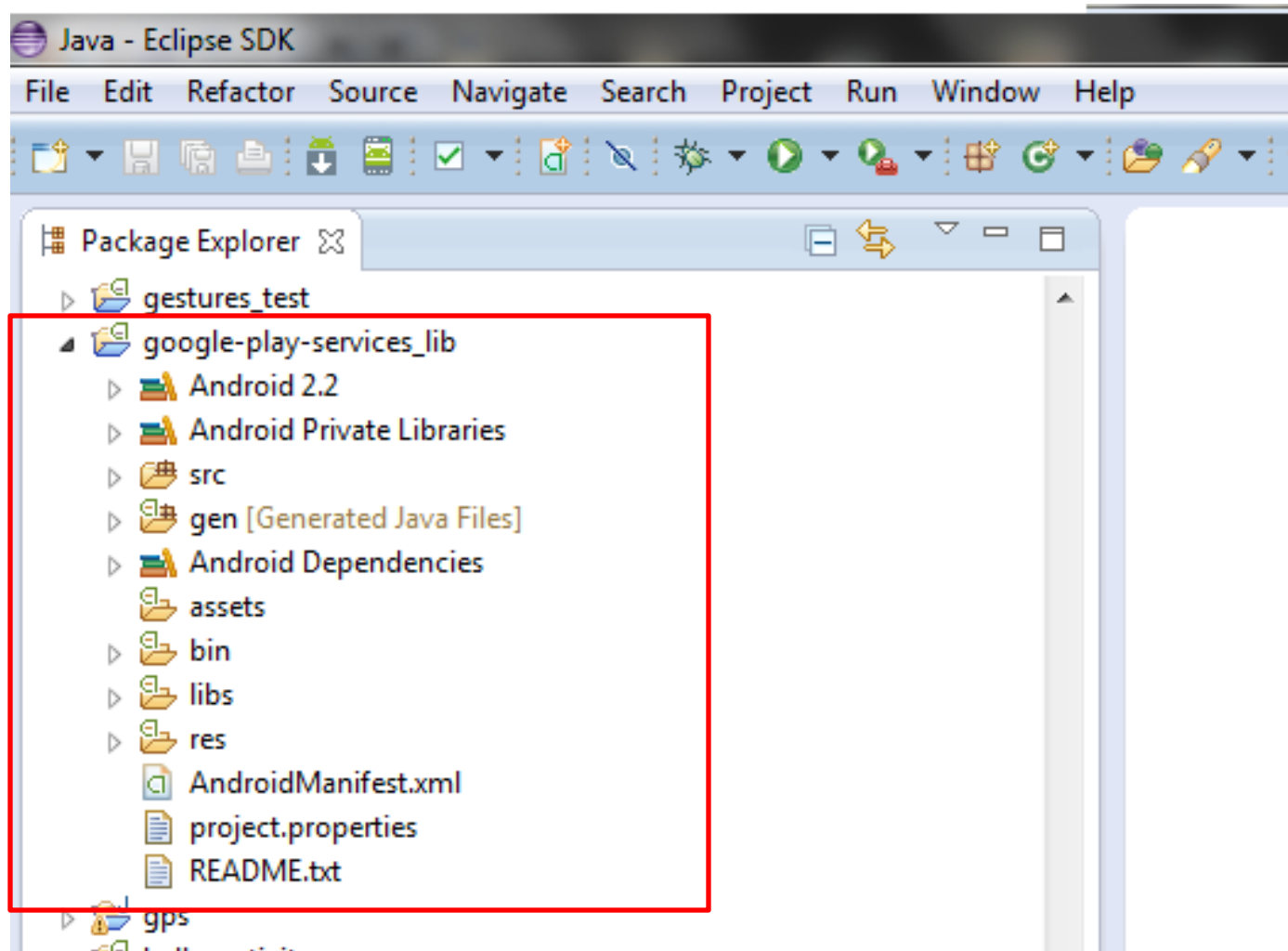


Import Google play service library to workspace



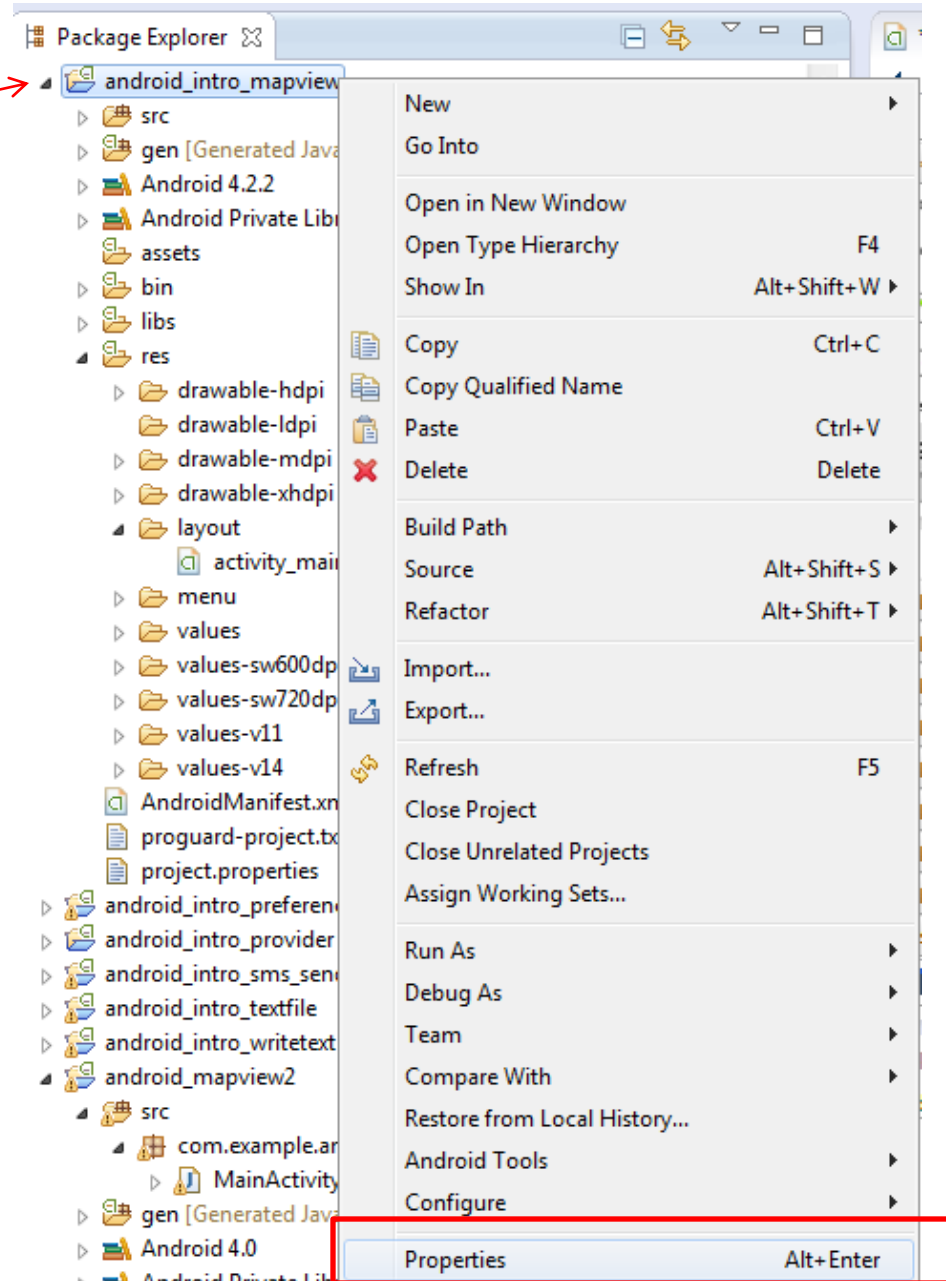
Browse to “android-sdk\extras\google\google_play_services\libproject”

Import Google play service library to workspace

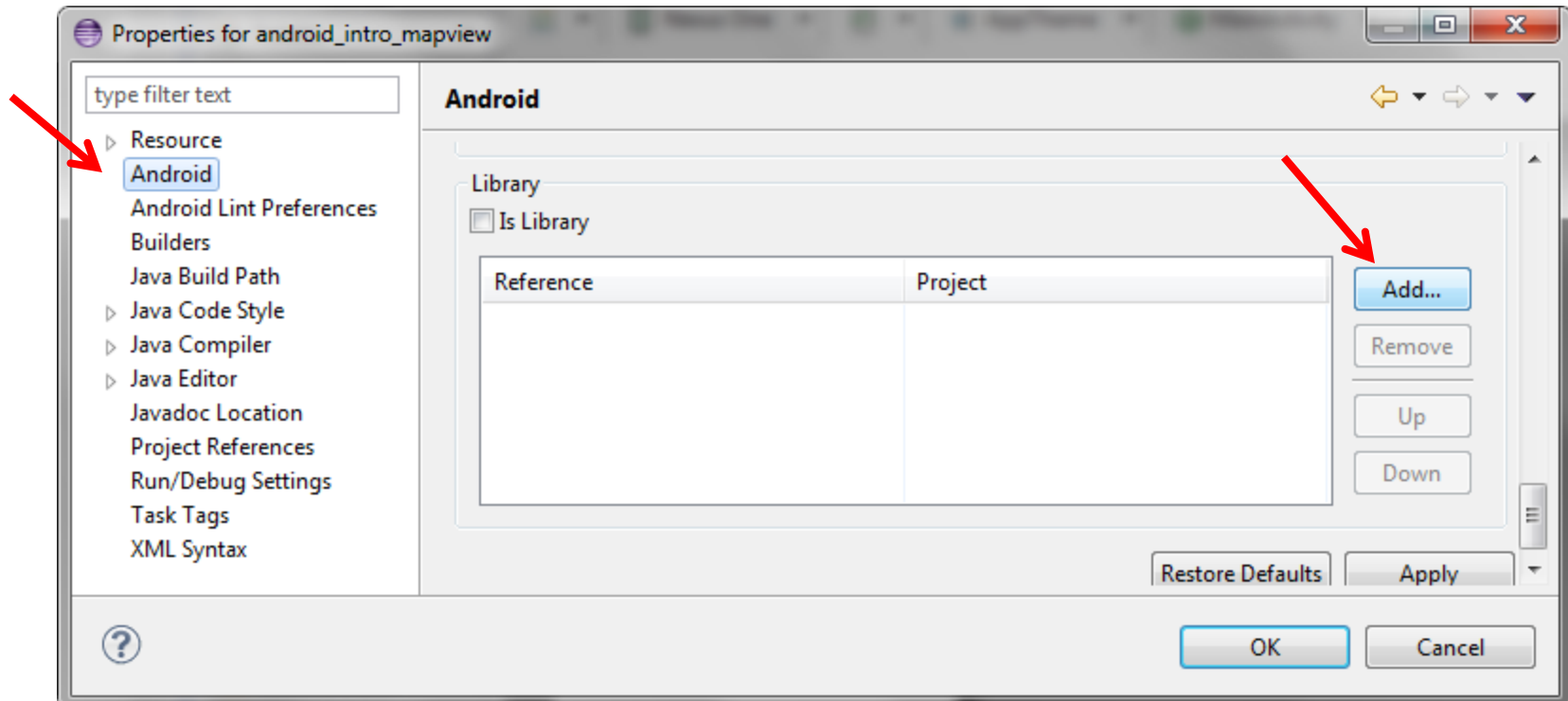


Add Google play services library to new project

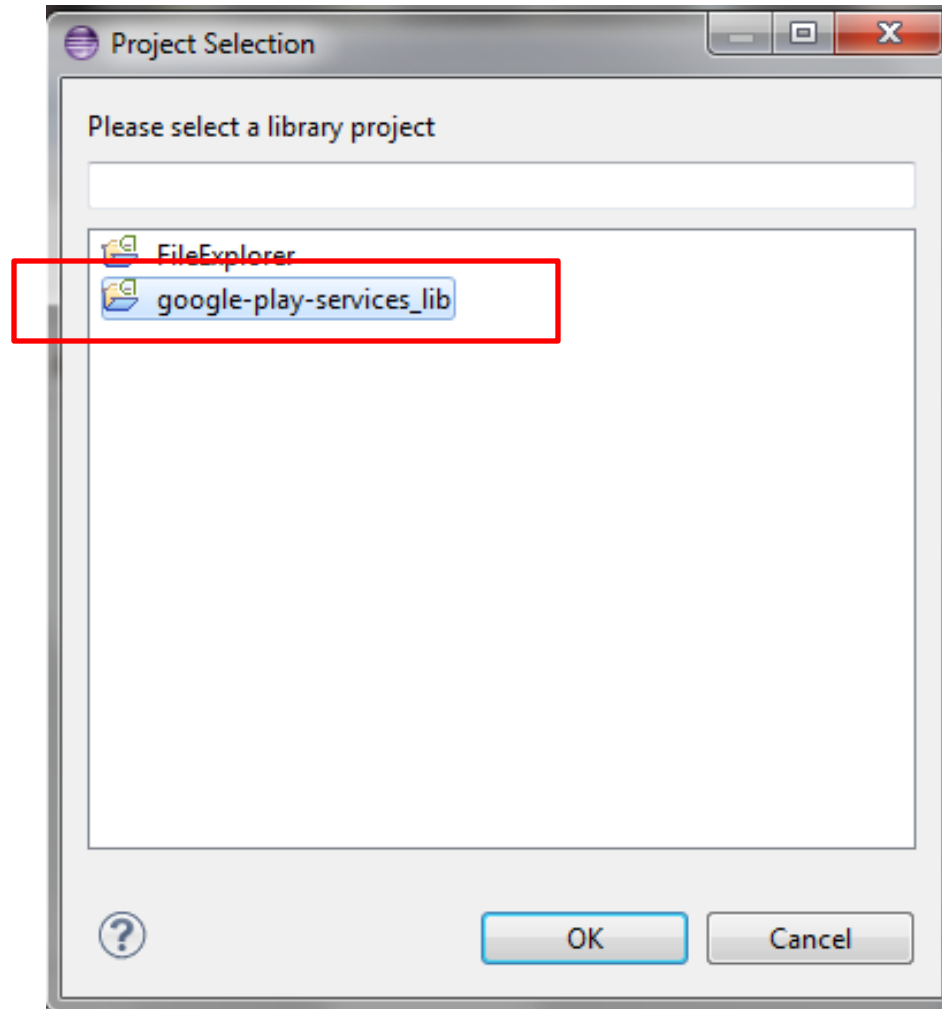
Right Click



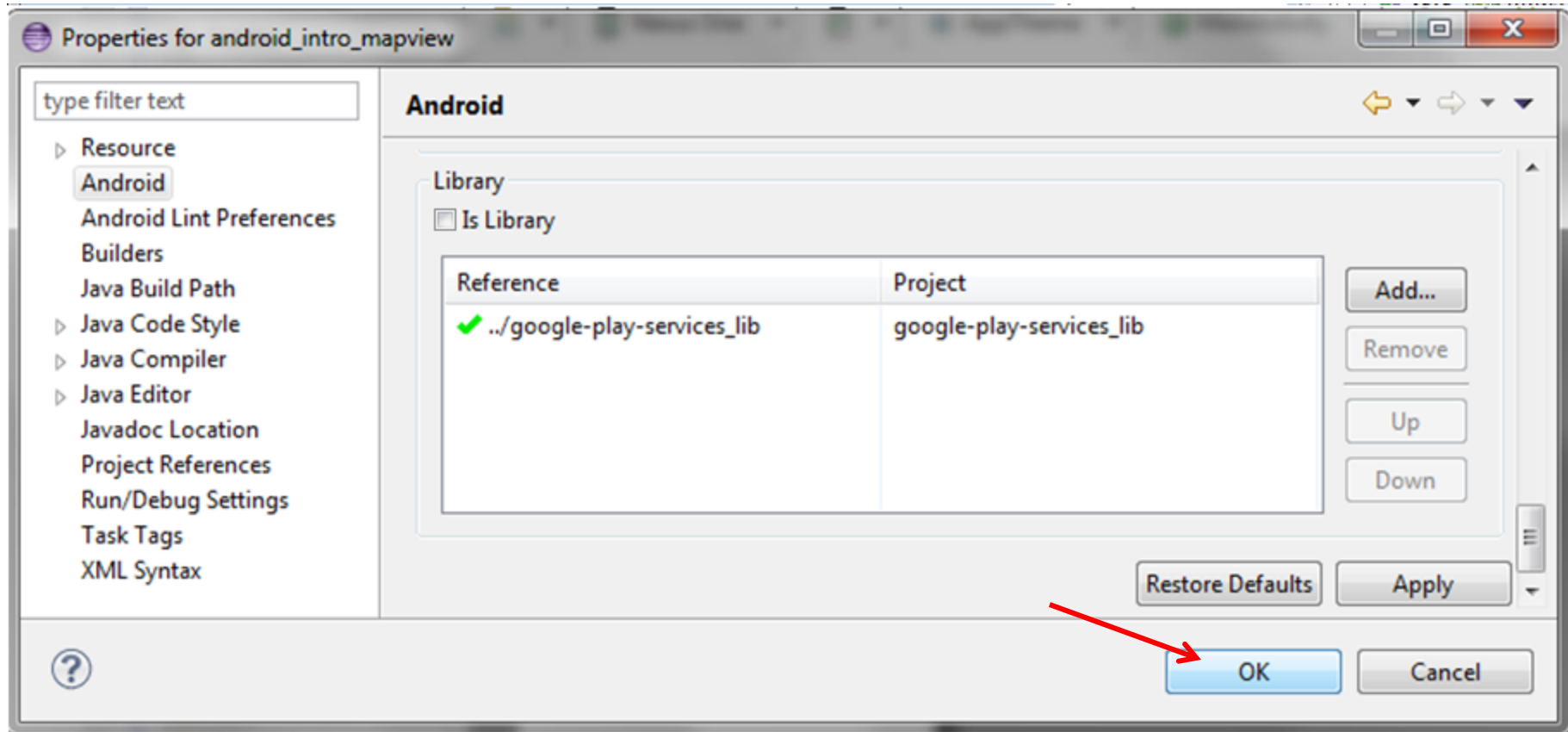
Add Google play services library to new project



Add Google play services library to new project

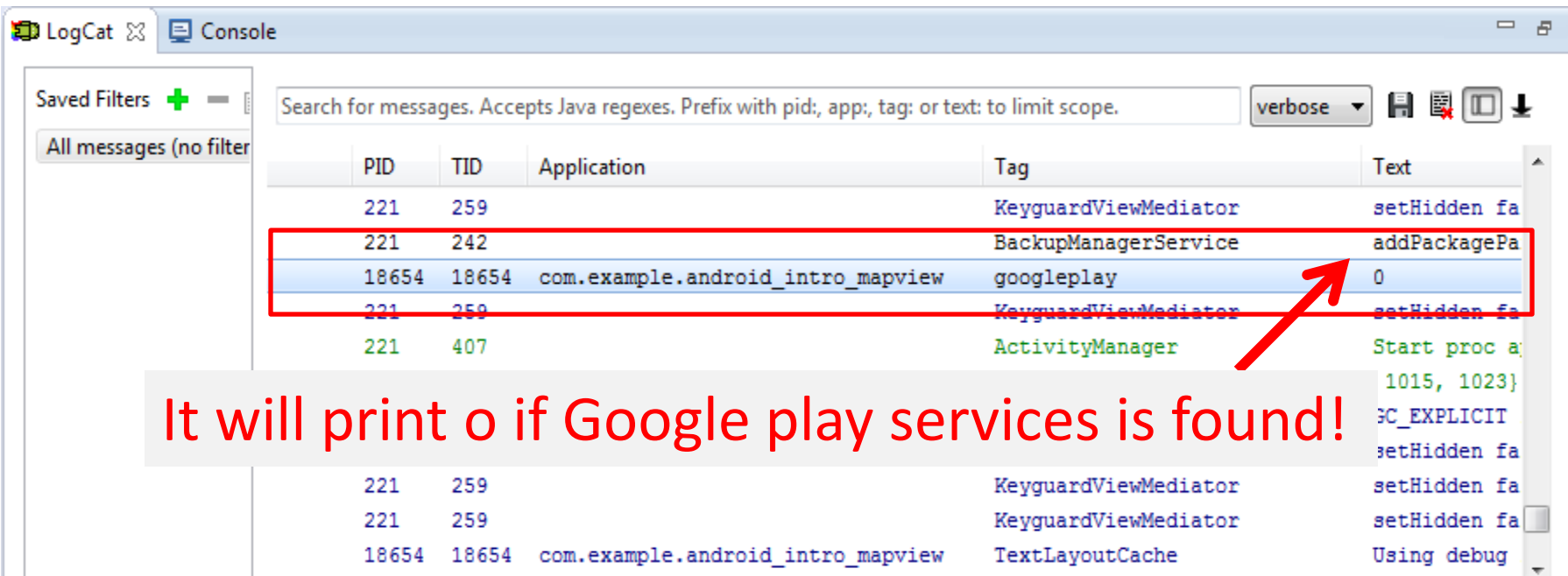


Add Google play services library to new project



Test Google Play Services

```
@Override  
protected void onResume() {  
    super.onResume();  
    Log.v("googleplay",String.valueOf(  
        GooglePlayServicesUtil.isGooglePlayServicesAvailable(  
        getApplicationContext()) ));  
}
```



LogCat Console

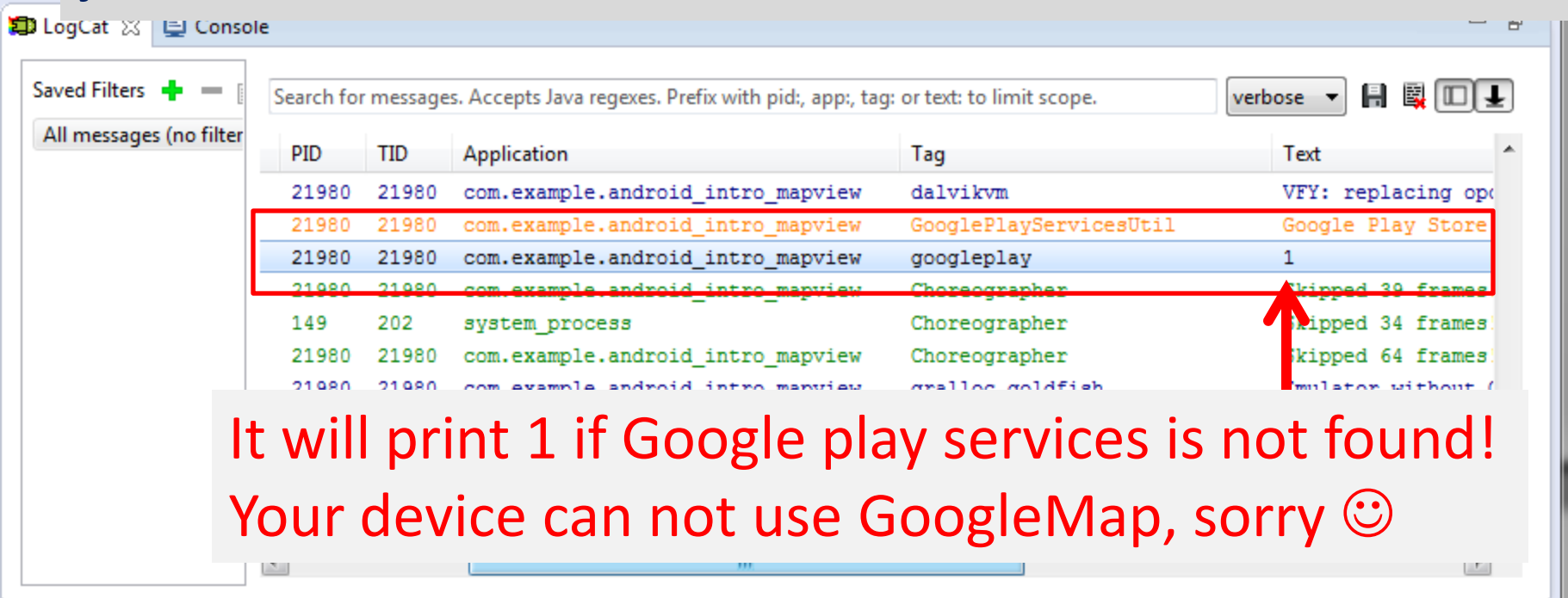
Search for messages. Accepts Java regexes. Prefix with pid, app, tag, or text: to limit scope. verbose

PID	TID	Application	Tag	Text
221	259		KeyguardViewMediator	setHidden fa
221	242		BackupManagerService	addPackagePa
18654	18654	com.example.android_intro_mapview	googleplay	0
221	259		KeyguardViewMediator	setHidden fa
221	407		ActivityManager	Start proc a 1015, 1023} 3C_EXPLICIT setHidden fa setHidden fa Using debug
221	259		KeyguardViewMediator	setHidden fa
221	259		KeyguardViewMediator	setHidden fa
18654	18654	com.example.android_intro_mapview	TextLayoutCache	Using debug

It will print 0 if Google play services is found!

Test Google Play Services

```
@Override  
protected void onResume() {  
    super.onResume();  
    Log.v("googleplay",String.valueOf(  
        GooglePlayServicesUtil.isGooglePlayServicesAvailable(  
        getApplicationContext()) ));  
}
```



LogCat Console

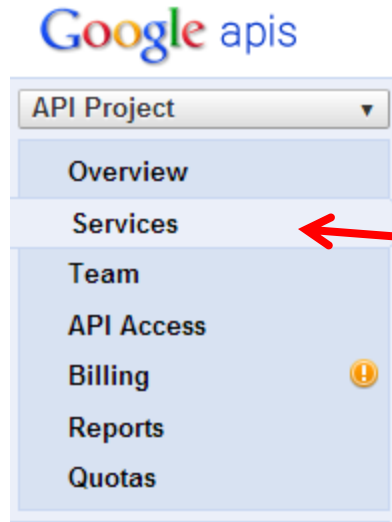
Search for messages. Accepts Java regexes. Prefix with pid; app; tag; or text: to limit scope. verbose Save Clear Log Download

PID	TID	Application	Tag	Text
21980	21980	com.example.android_intro_mapview	dalvikvm	VFY: replacing op
21980	21980	com.example.android_intro_mapview	GooglePlayServicesUtil	Google Play Store
21980	21980	com.example.android_intro_mapview	googleplay	1
21980	21980	com.example.android_intro_mapview	Choreographer	Skipped 39 frames
149	202	system_process	Choreographer	Skipped 34 frames
21980	21980	com.example.android_intro_mapview	Choreographer	Skipped 64 frames
21980	21980	com.example.android_intro_mapview	android.graphics.drawable	Simulator without /

It will print 1 if Google play services is not found!
Your device can not use GoogleMap, sorry ☺

Go to Google API console

<https://code.google.com/apis/console/>



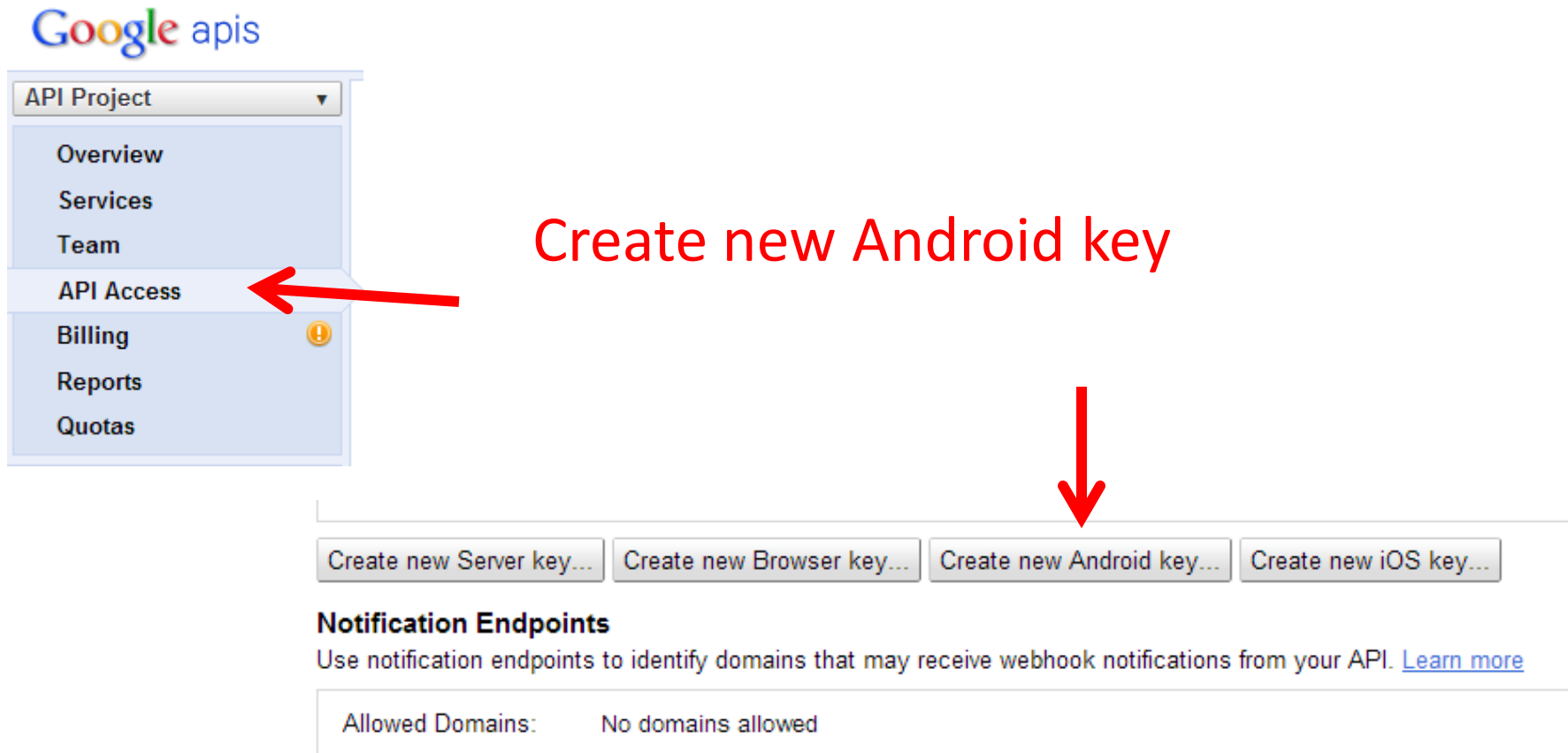
Enable Google Maps Android



 Google Maps Android API v2		☒	
 Google Maps API v2		☒	Courtesy limit: 25,000 requests/day • Pricing
 Google Maps API v3		☒	Courtesy limit: 25,000 requests/day • Pricing
 Google Maps Coordinate API		☒	Courtesy limit: 1,000 requests/day

Go to Google API console

<https://code.google.com/apis/console/>



The screenshot shows the Google APIs console interface. On the left, a sidebar menu contains the following items: API Project (with a dropdown arrow), Overview, Services, Team, API Access (highlighted with a red arrow pointing to it from the text 'Create new Android key'), Billing (with a warning icon), Reports, and Quotas. Below the sidebar, there are four buttons: 'Create new Server key...', 'Create new Browser key...', 'Create new Android key...' (pointed to by a red arrow from the text 'Create new Android key'), and 'Create new iOS key...'. Below these buttons, the section 'Notification Endpoints' is visible, with the text 'Use notification endpoints to identify domains that may receive webhook notifications from your API. [Learn more](#)'. At the bottom, it says 'Allowed Domains: No domains allowed'.

Google apis

API Project ▼

- Overview
- Services
- Team
- API Access
- Billing
- Reports
- Quotas

Create new Android key

Create new Server key... Create new Browser key... Create new Android key... Create new iOS key...

Notification Endpoints
Use notification endpoints to identify domains that may receive webhook notifications from your API. [Learn more](#)

Allowed Domains: No domains allowed

Go to Google API console

<https://code.google.com/apis/console/>

Configure Android Key for API Project

This key can be deployed in your Android applications.

API requests are sent directly to Google from your clients' Android devices. Google verifies that each request originates from an Android application that matches one of the certificate SHA1 fingerprints and package names listed below. You can discover the SHA1 fingerprint of your developer certificate using the following command:
`keytool -list -v -keystore mystore.keystore` [Learn more](#)

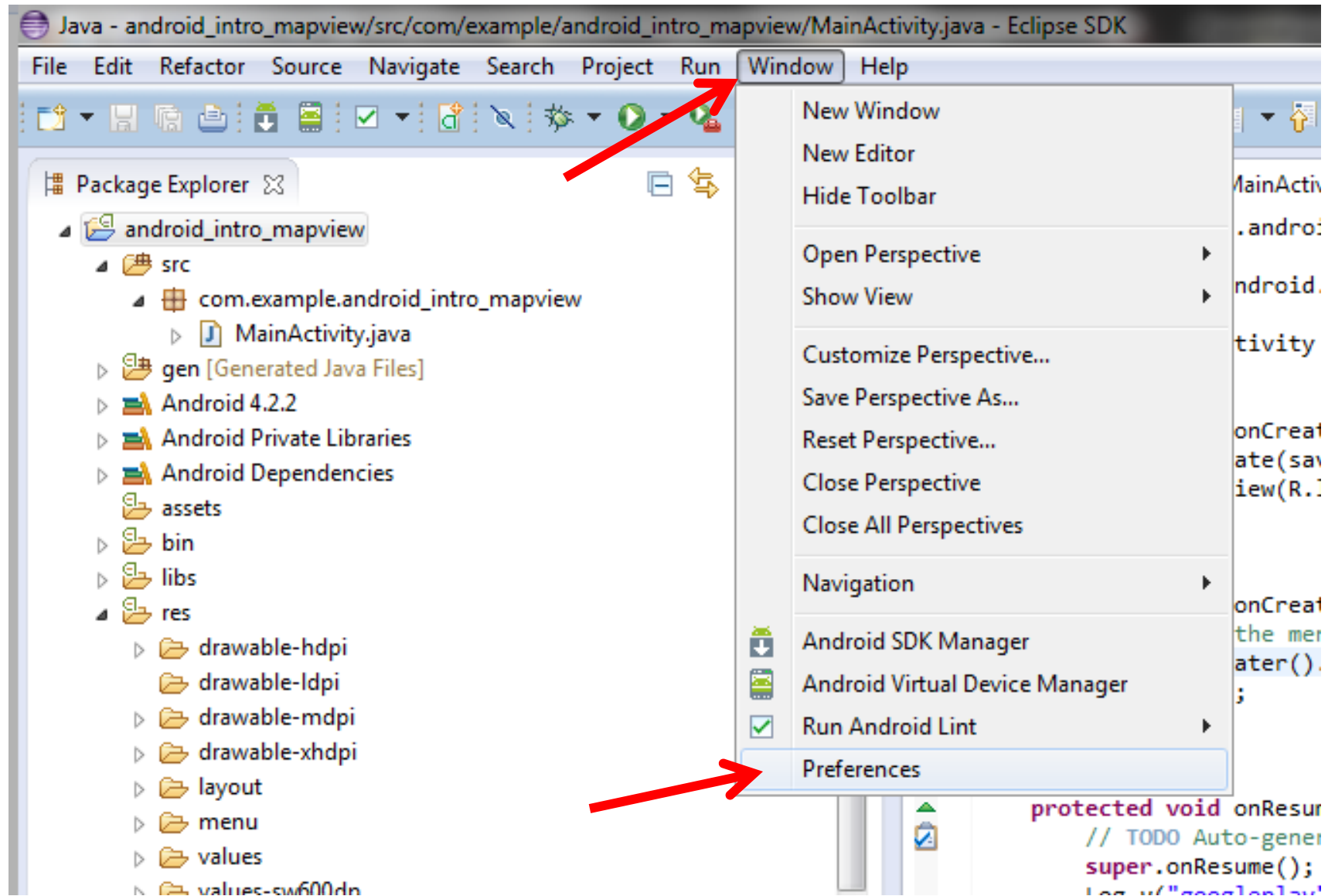
Accept requests from an Android application with one of the certificate fingerprints and package names listed below:

One SHA1 certificate fingerprint and package name (separated by a semicolon) per line. Example:
45:B5:E4:6F:36:AD:0A:98:94:B4:02:66:2B:12:17:F2:56:26:A0:E0;com.example

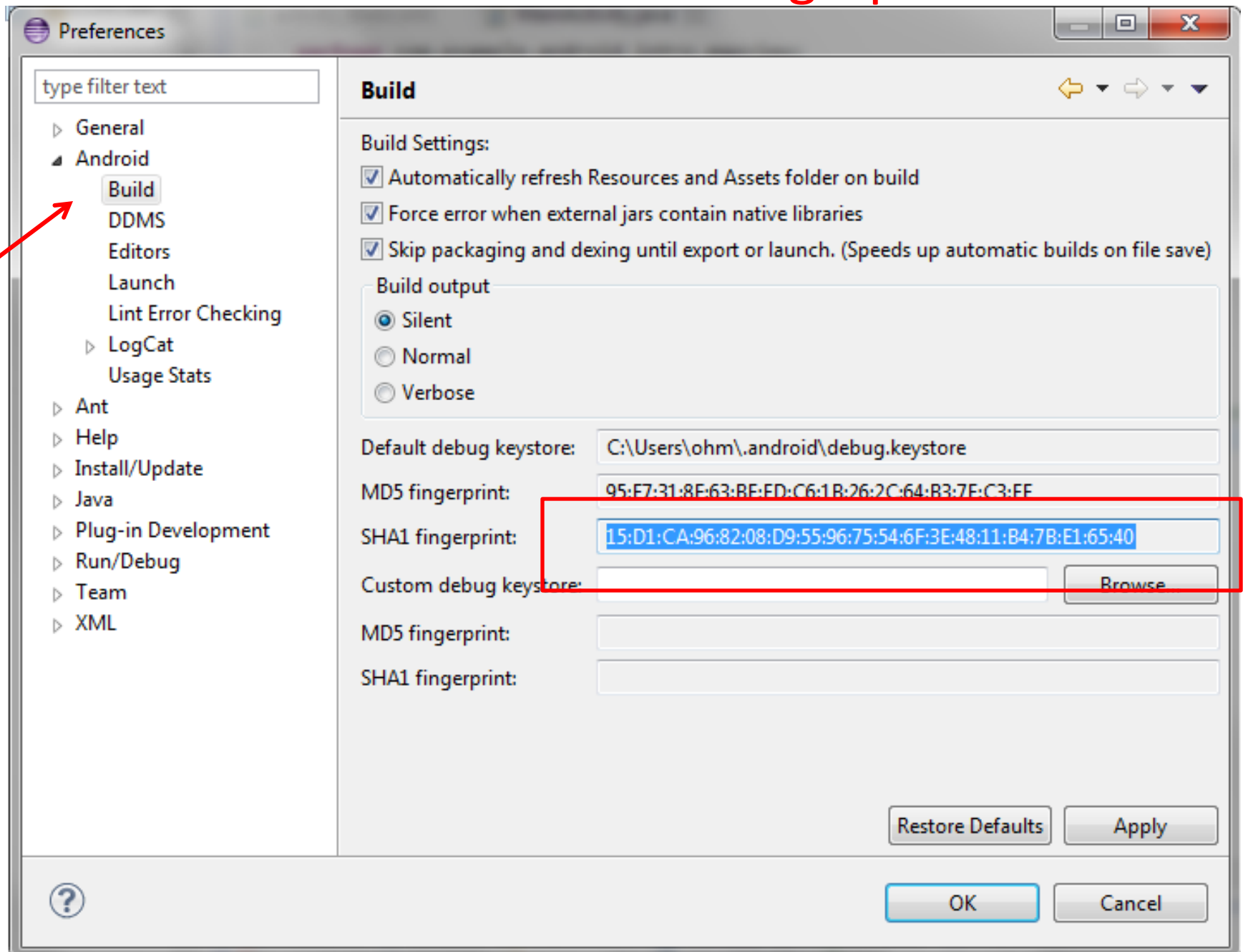
Create

Cancel

Get certificate SHA1 fingerprint



Get certificate SHA1 fingerprint



Create Android key

Configure Android Key for API Project

This key can be deployed in your Android applications.

API requests are sent directly to Google from your clients' Android devices. Google verifies that each request originates from an Android application that matches one of the certificate SHA1 fingerprints and package names listed below. You can discover the SHA1 fingerprint of your developer certificate using the following command:

```
keytool -list -v -keystore mystore.keystore Learn more
```

Accept requests from an Android application with one of the certificate fingerprints and package names listed below:

```
15:D1:CA:96:82:08:D9:55:96:75:54:6F:3E:48:11:B4:7B:E1:65:40;com.example.  
android_intro_mapview
```

One SHA1 certificate fingerprint and package name (separated by a semicolon) per line. Example:
45:B5:E4:6F:36:AD:0A:98:94:B4:02:66:2B:12:17:F2:56:26:A0:E0;com.example

Create

Cancel

activity_main.xml

MainActivity.java

```
package com.example.android_intro_mapview;
```

```
+ import com.google.android.gms.common.GooglePlayServicesUtil;
```

```
public class MainActivity extends Activity {
```

```
- @Override
```

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

Create Android key

API Project ▼

Overview

Services

Team

API Access

Billing

Reports

Quotas

API Access

To prevent abuse, Google places limits on API requests. Using a valid OAuth token or API key allows you to exceed anonymous limits by connecting requests back to your project.

Authorized API Access

OAuth 2.0 allows users to share specific data with you (for example, contact lists) while keeping their usernames, passwords, and other information private. A single project may contain up to 20 client IDs. [Learn more](#)



Create an OAuth 2.0 client ID...

Simple API Access

Use API keys to identify your project when you do not need to access user data. [Learn more](#)

Key for Android apps (with certificates)		Generate new key...
API key:	AIzaSyDFSjHBPP9LcwqsxB8NHMc_aWMguLeSUm	Edit allowed Android apps...
Android apps:	15:D1:CA:96:82:08:D9:55:96:75:54:6F:3E:48:11:B4:7B:E1:65:40;com.example.android_intro_mapview	Delete key...
Activated on:	Jun 7, 2013 6:41 AM	
Activated by:	frxprince@gmail.com – you	

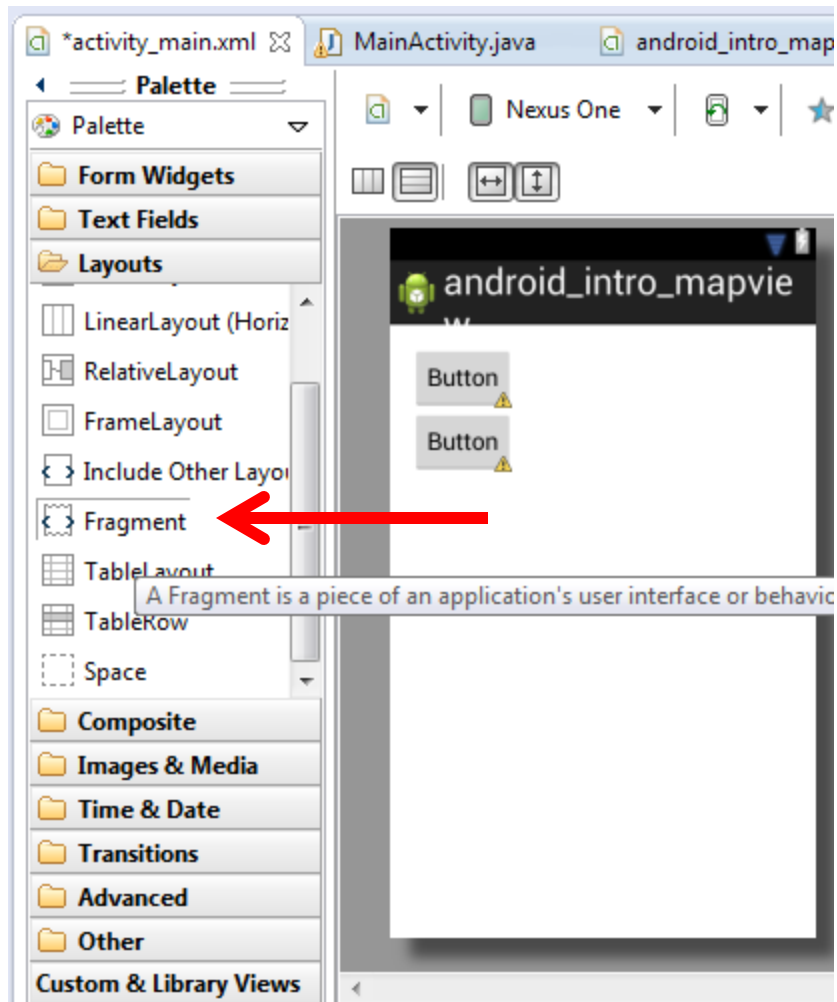
Let 's start programming

AndroidManifest

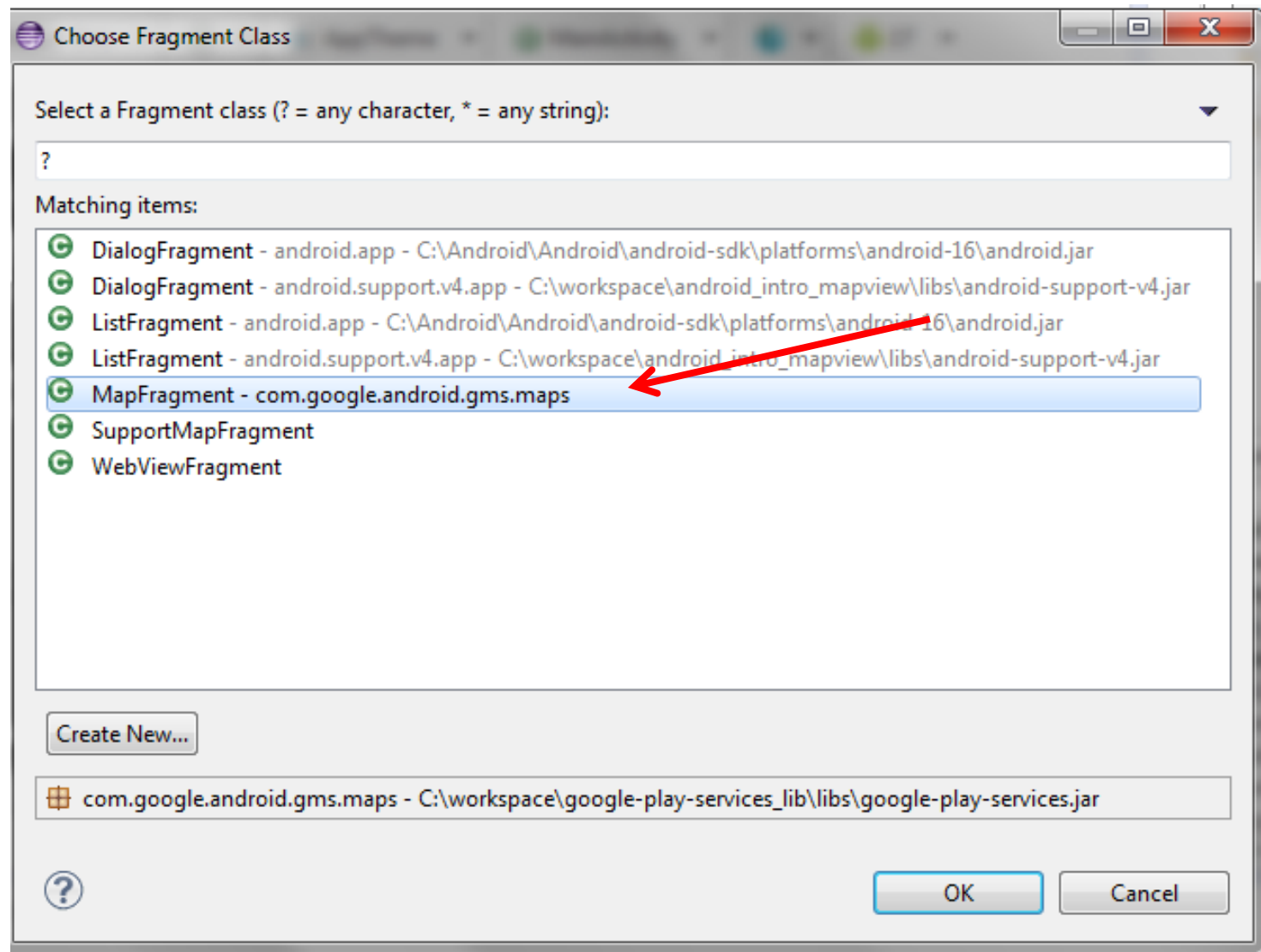
```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.android_intro_mapview"
    android:versionCode="1"
    android:versionName="1.0" >
    <uses-sdk android:minSdkVersion="8"
        android:targetSdkVersion="14" />
    <permission android:protectionLevel="signature"
        android:name="com.example.android_intro_mapview.permission.MAPS_RECEIVE"></permission>
    <uses-permission android:name="android.permission.INTERNET"/>
    <uses-permission android:name="com.google.android.providers.gsf.permission.READ_GSERVICES"/>
    <uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION"/>
    <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION"/>

    <application android:allowBackup="true" android:icon="@drawable/ic_launcher"
        android:label="@string/app_name" android:theme="@style/AppTheme" >
        <activity android:name="com.example.android_intro_mapview.MainActivity"
            android:label="@string/app_name" >
            <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.maps.v2.API_KEY"
            android:value="AlzaSyDFSjHBPP9LcwqsxB8NHMc_aWMguLeSUmg"/>
    </application>
</manifest>
```

Layout

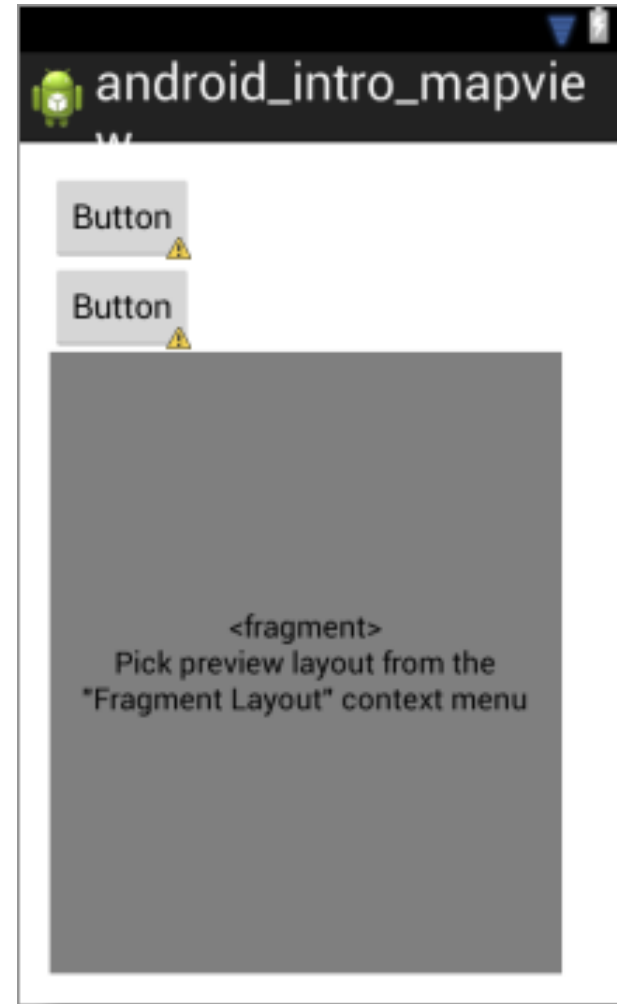


Layout



Layout

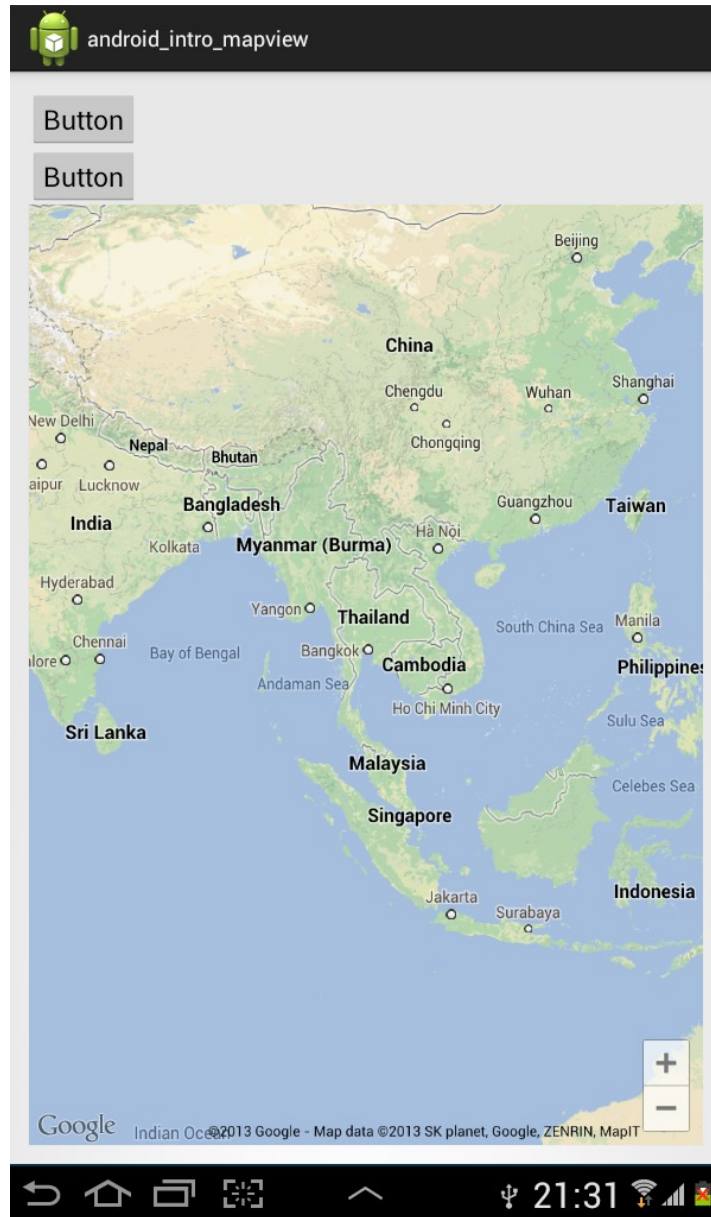
```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/LinearLayout1"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context=".MainActivity" >
    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Button" />
    <Button
        android:id="@+id/button2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Button" />
    <fragment
        android:id="@+id/fragment1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        class="com.google.android.gms.maps.SupportMapFragment"
        />
</LinearLayout>
```



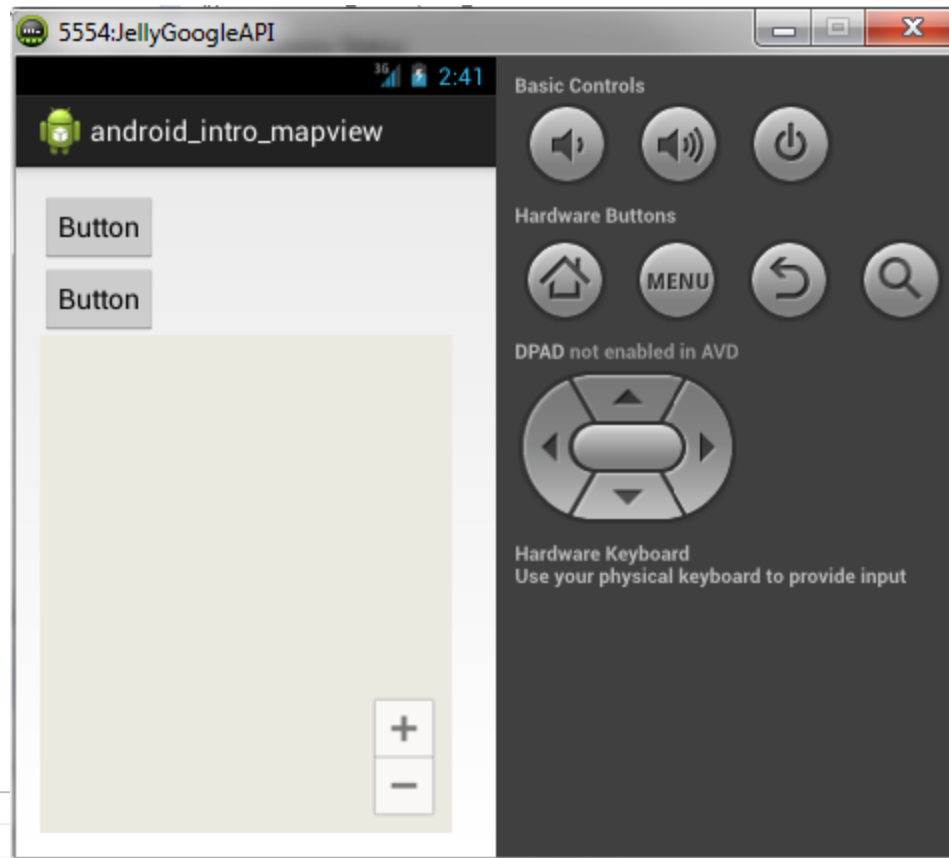
Activity

```
public class MainActivity extends FragmentActivity {  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main);  
    }  
    @Override  
    protected void onResume() {  
        super.onResume();  
Log.v("googleplay",String.valueOf(  
GooglePlayServicesUtil.isGooglePlayServicesAvailable(  
getApplicationContext())) );  
    }  
}
```

Activity



Activity



ppp; tag; or text: to limit scope.

verbose ▾

Application	Tag	
com.example.an...	dalvikvm	GC_FOR_ALLOC freed 306K, 17% free 3013K/3628K, paused 33ms, total 39ms
com.example.an...	dalvikvm	GC_FOR_ALLOC freed 325K, 17% free 3014K/3628K, paused 38ms, total 42ms
com.example.an...	dalvikvm	GC_FOR_ALLOC freed 304K, 17% free 3014K/3628K, paused 29ms, total 32ms
system_process	Broadcast...	<u>Permission Denial: receiving Intent { act=com.google.android.maps.api.action.TOKEN_RESPO</u> NSE flg=0x10 pkg=com.example.android_intro_mapview (has extras) } to ProcessRecord{40fab af0 1065:com.example.android_intro_mapview/u0a10053} (pid=1065, uid=10053) requires com. example.android_intro_mapview.permission.MAPS_RECEIVE due to sender com.google.android.a pps.maps (uid 10026)
system_process	Broadcast...	Permission Denial: receiving Intent { act=com.google.android.maps.api.action.TOKEN_RESPO NSE flg=0x10 pkg=com.example.android_intro_mapview (has extras) } to ProcessRecord{40fab af0 1065:com.example.android_intro_mapview/u0a10053} (pid=1065, uid=10053) requires com. example.android_intro_mapview.permission.MAPS_RECEIVE due to sender com.google.android.a pps.maps (uid 10026)
system_process	Broadcast...	Permission Denial: receiving Intent { act=com.google.android.maps.api.action.TOKEN_RESPO

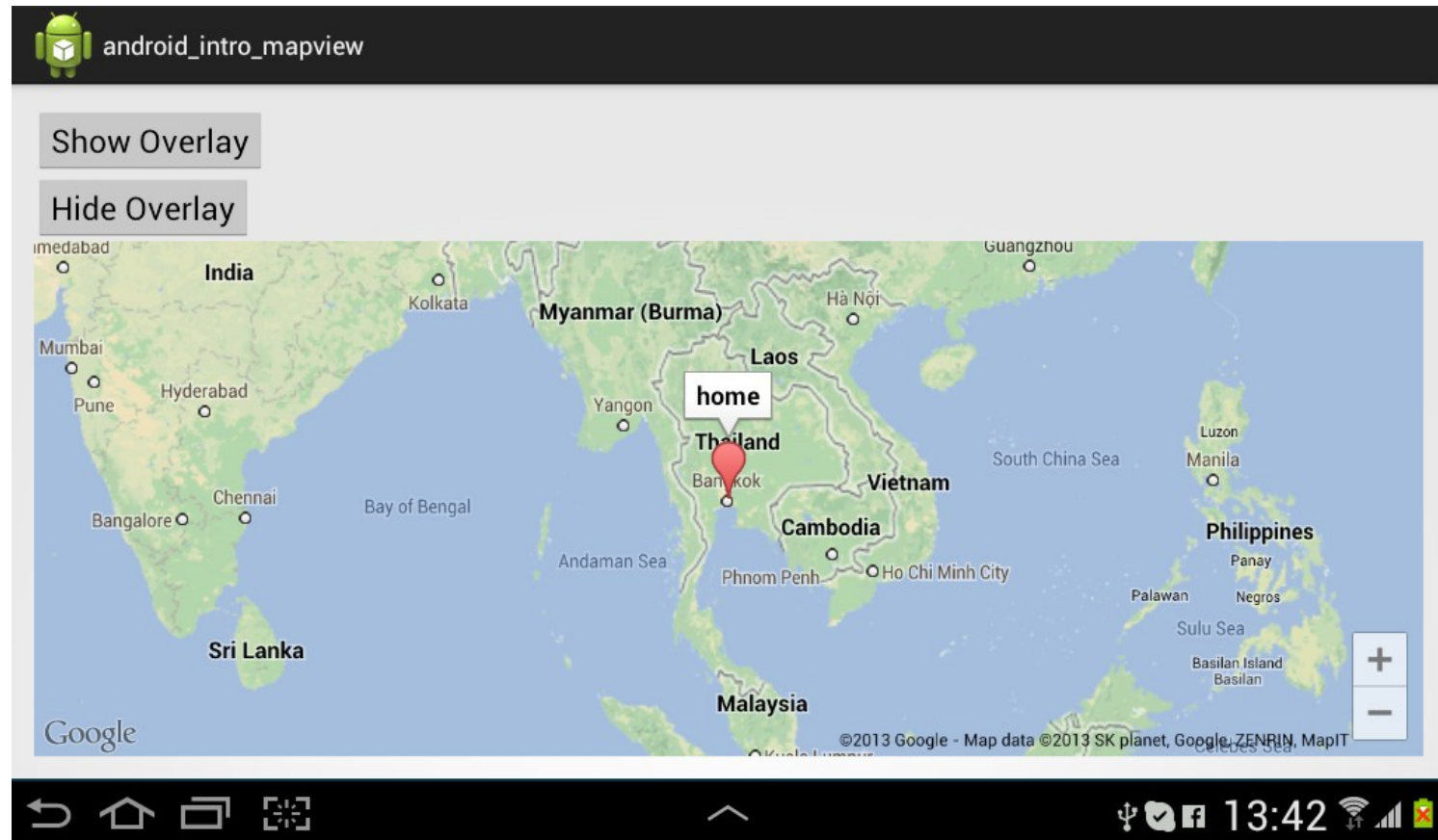
Instantiate GoogleMap

```
GoogleMap map;
```

```
map = ((SupportMapFragment)  
getSupportFragmentManager().findFragmentById(  
R.id.fragment1)).getMap();
```

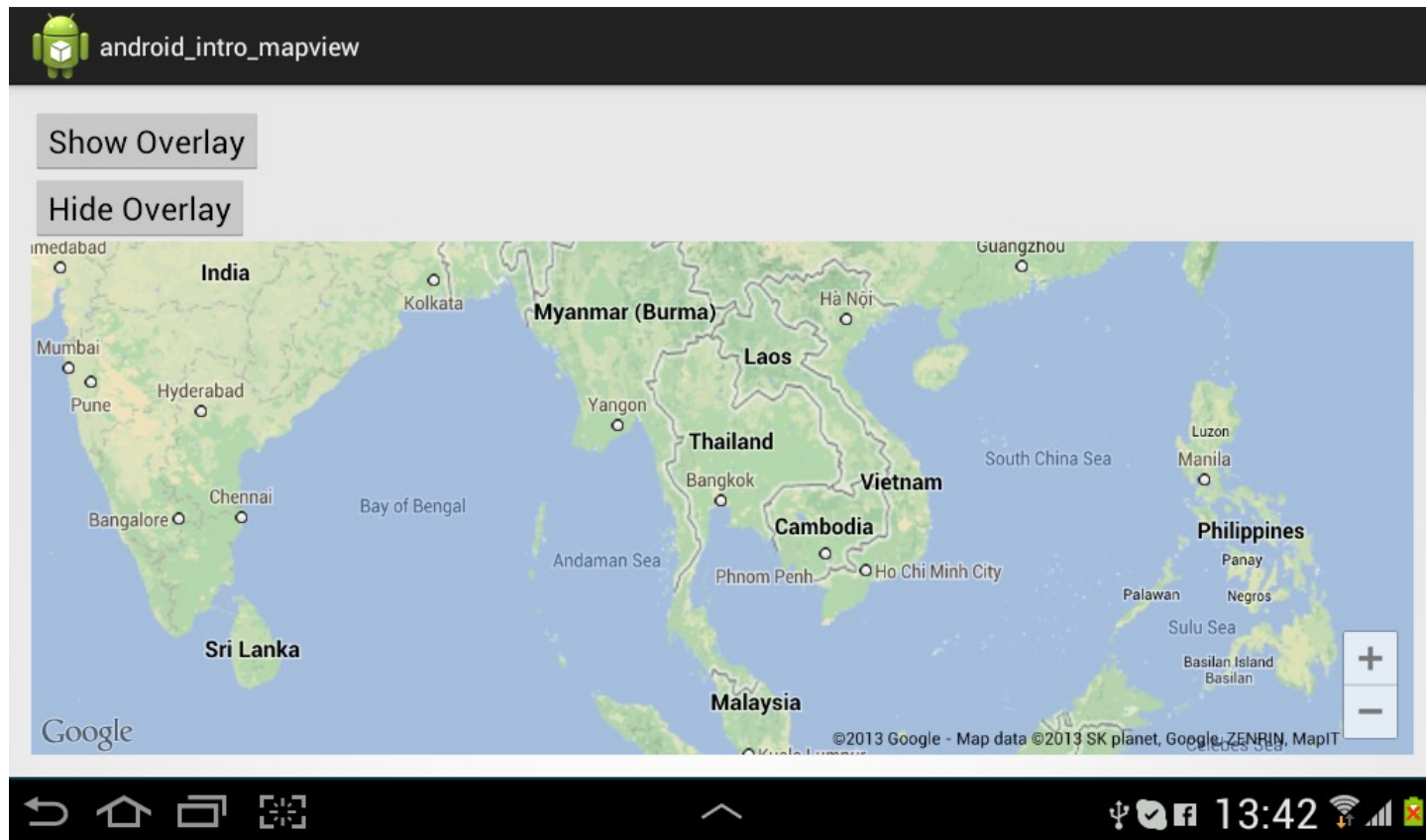
Add Marker

```
MarkerOptions home=new MarkerOptions();  
home.position(new LatLng(13.846061,100.568281));  
home.title("home");  
map.addMarker(home);
```



Clear Marker

```
map.clear();
```



Marker click listener

```
public class MainActivity extends FragmentActivity implements  
OnMarkerClickListener {
```

```
map.setOnMarkerClickListener(this);
```

```
@Override  
public boolean onMarkerClick(Marker arg0) {  
    if(arg0.getTitle().equals("home"))  
    {  
        Intent i = new Intent(Intent.ACTION_VIEW, Uri  
            .parse("http://www.ku.ac.th"));  
        startActivity(i);  
    }  
    return false;  
}
```

Control Camera

```
LatLng latLng = new LatLng( 13.846061, 100.568281 );  
CameraUpdate cameraUpdate =  
CameraUpdateFactory.newLatLngZoom(latLng, 10);  
map.animateCamera(cameraUpdate);
```

No delay version

Zoom factor

```
map.moveCamera(cameraUpdate);
```

Thank you 😊