Android Google Services

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Agenda

- Introduction to Google services
- Google Map service on Android
- Assignment
- Q&A

Course Audience and Prerequisite

- The course is for programmers who are interested in Android development.
- The following are prerequisites to this course:
  - Java and OOP
  - Google services
  - Android programming basic

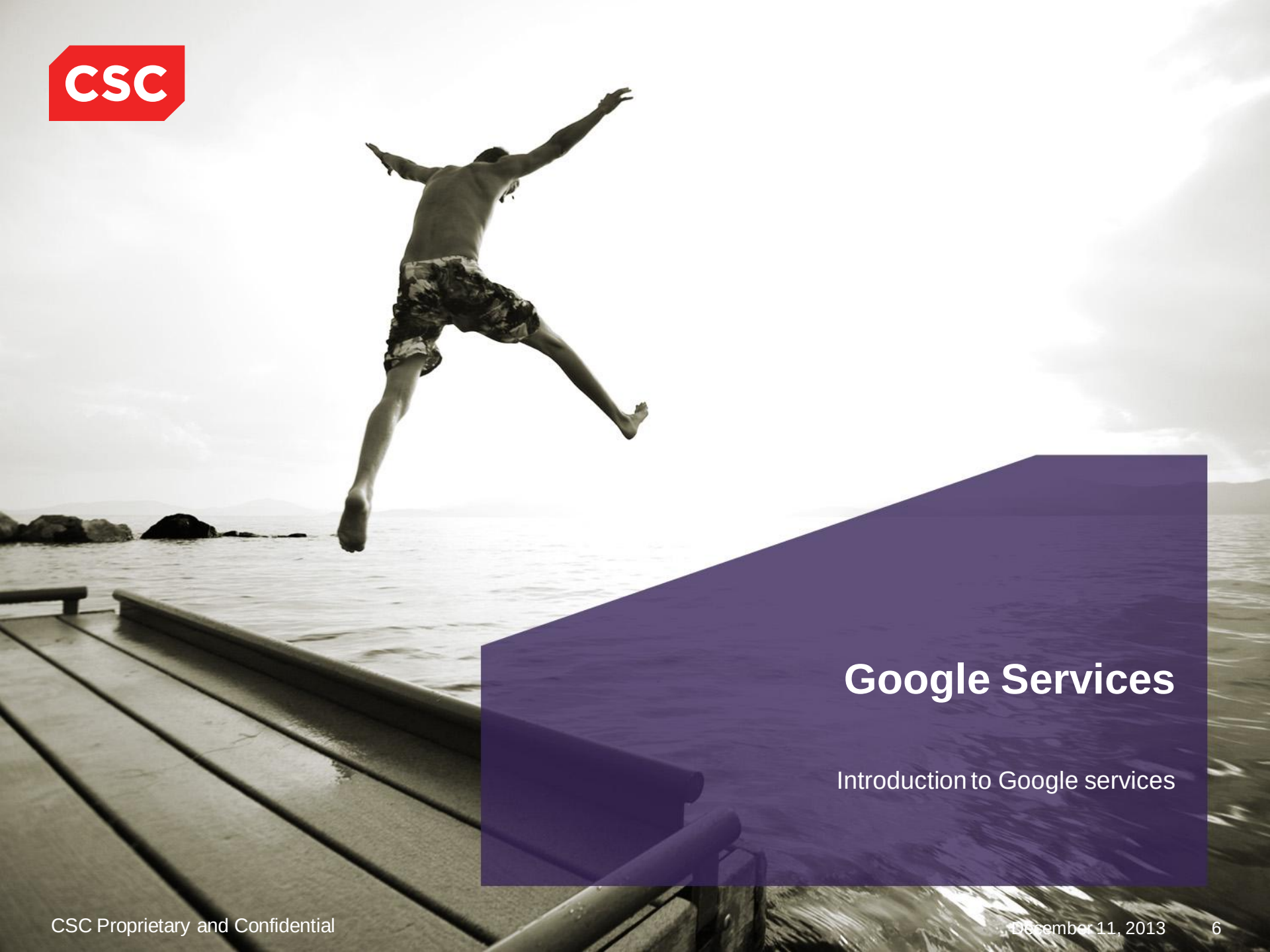
Assessment Disciplines

- Class Participation: 40%
- Assignment: 60%
- Final Exam: 0%
- Passing Scores: 70%

Course Administration

In order to complete the course you must:

- Sign in the Class Attendance List
- Participate in the course
- Provide your feedback in the End of Course Evaluation



Google Services

Introduction to Google services

Google services

Give your apps more features to attract users on a wider range of devices.

- Google Maps
- Google Cloud Messaging
- Google Analytic
- Google adMobs Ads
- Google Play In-app billing

How Google service works on devices

- Google Play services client library
  - contains the interfaces to the individual Google services
  - allows you to obtain authorization from users to gain access to these services with their credentials.
- The Google Play services APK
  - contains the individual Google services and runs as a background service in the Android OS
  - is delivered through the Google Play Store

Google Maps

- Embed maps to an activity as a fragment
- Customize the map
  - Add marker
  - Draw polylines and polygones
- Control user's view
  - Control the rotation, pan, view, etc

Google Cloud Messaging (GCM)

GCM allows you to send data from your server to your Android devices and vice versa:

- Send data from server to Android devices
- Send “Send-sync-messages”
- Send messages with payload

Google Analytic

Allow developers to collect user engagement data from their apps

- The number of active users are using their applications.
- From where in the world the application is being used.
- Adoption and usage of specific features.
- In-app purchases and transactions.
- The number and type of application crashes.

Google Map service on Android

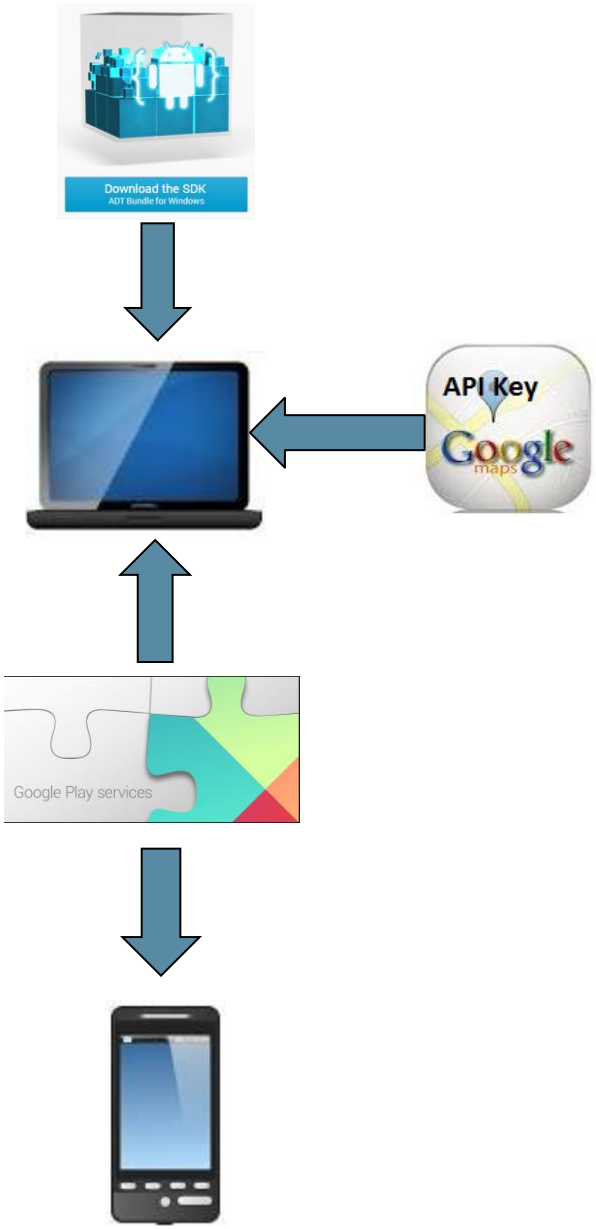
Deliver Google Map service to Android device

Prerequisites

- ADT Bundle (Android SDK, Eclipse, SDK Manager)
- Google API service SDK
- Google Play service framework
- Google API key

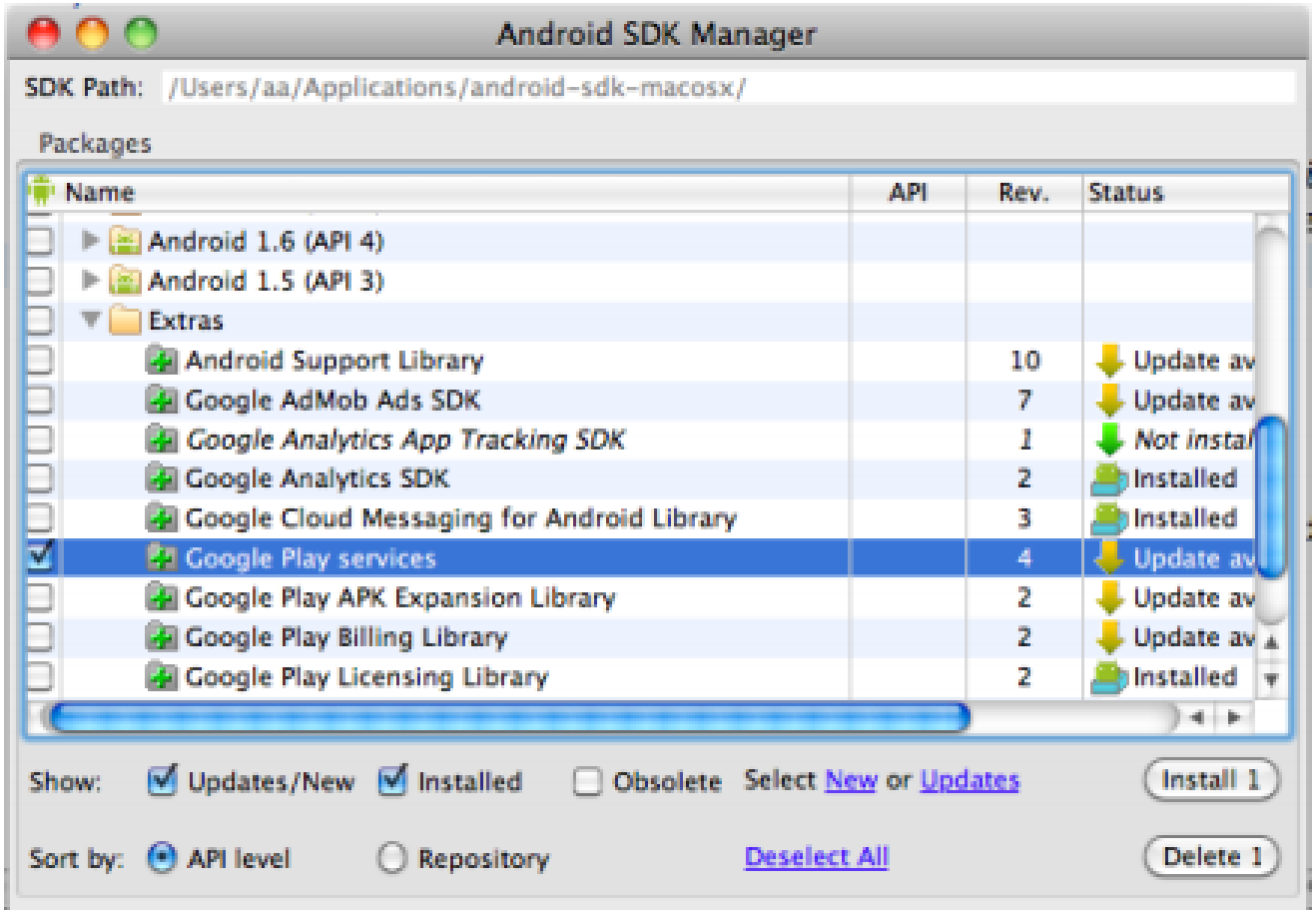
Setting up environment

- Deploy ADT Bundle
- Install Google Play Services from SDK Manager
- Import project library to WorkSpace
- Set GooglePlay service library as an Android library
- Obtain the API key from Google service



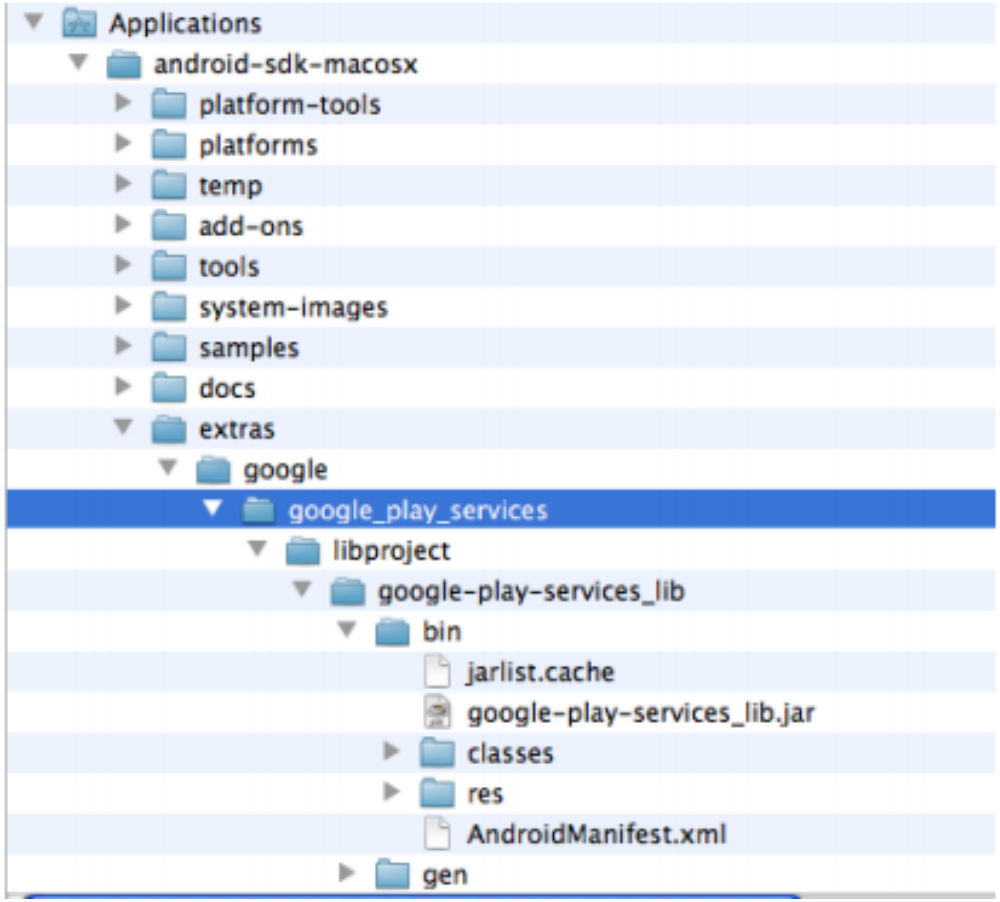
Install Google Play service API

- Launch SDK Manager
- Select Extra->Google Play services



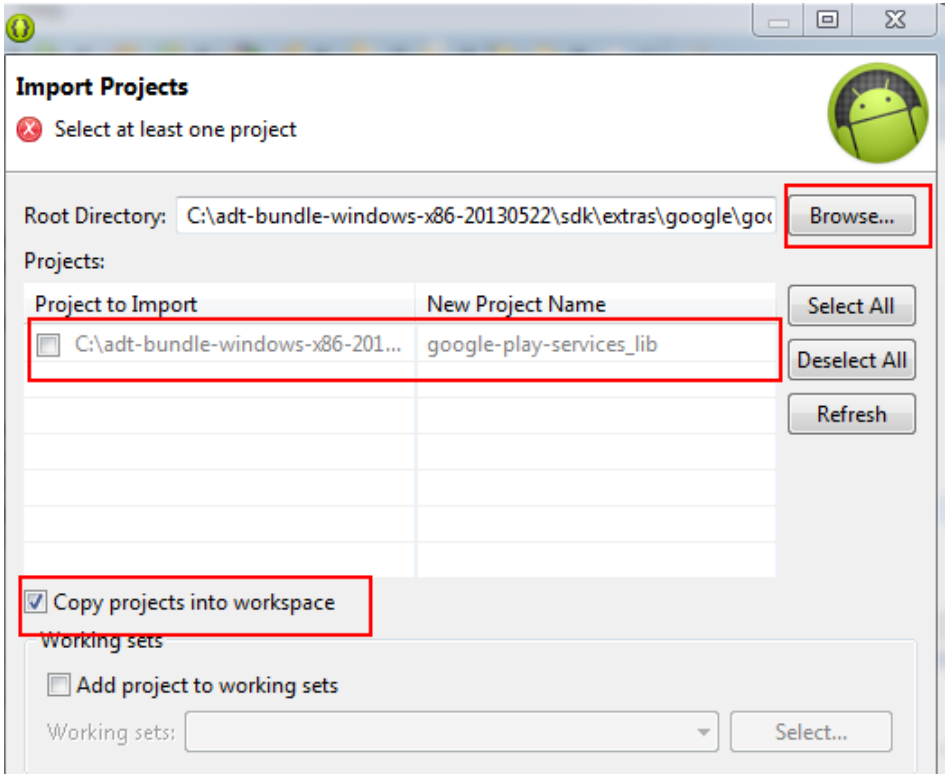
Install Google Play service API

The service library locates at Android SDK-> extras->google->google-play-services



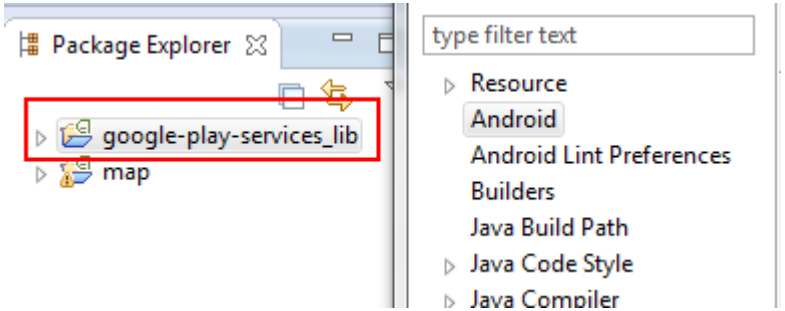
Import library project into workspace

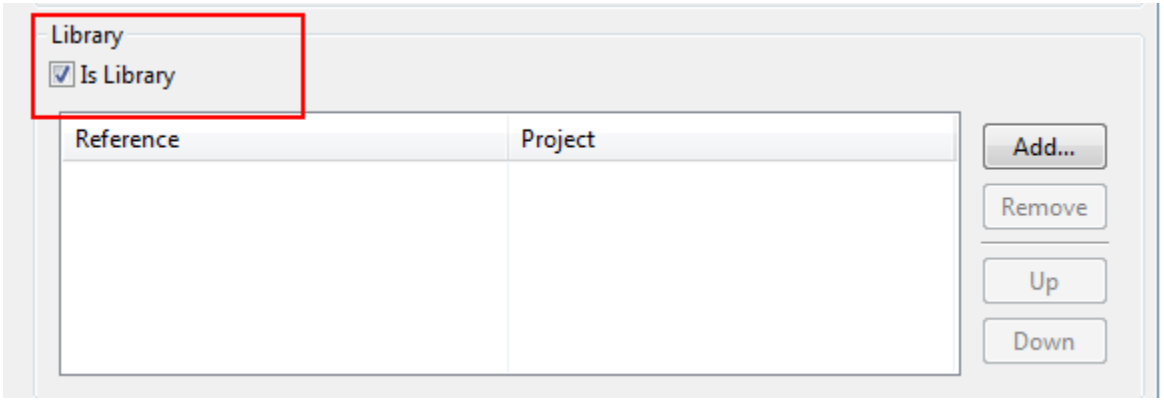
Click File->Import, select Android->Existing Android code into Workspace



Set GooglePlay library as Android library

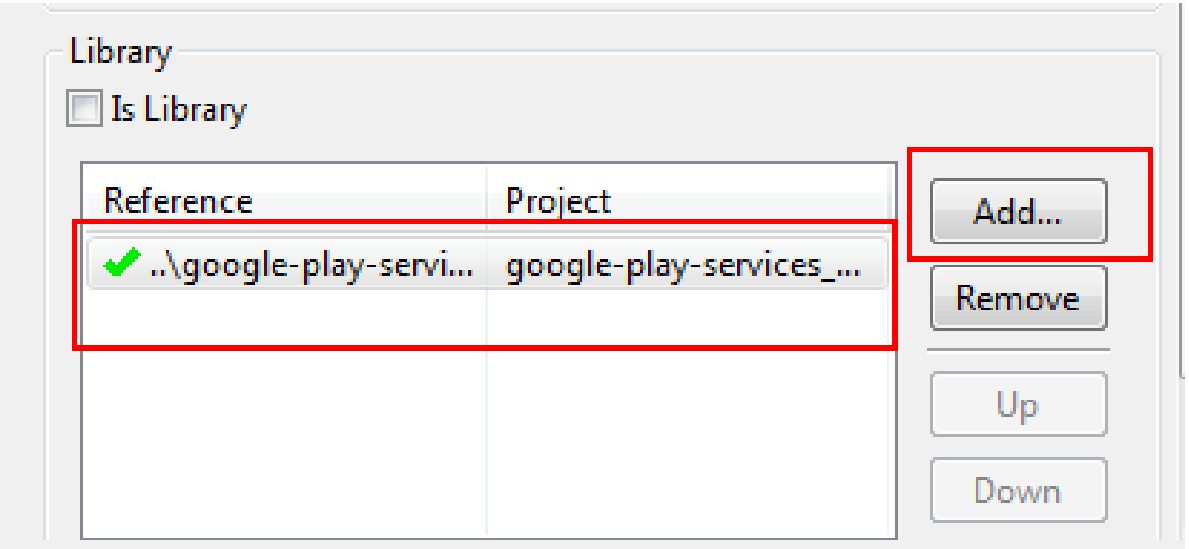
Right click and choose google-play-services_lib->Property->Android





Add the library to app project

Project name ->property->android

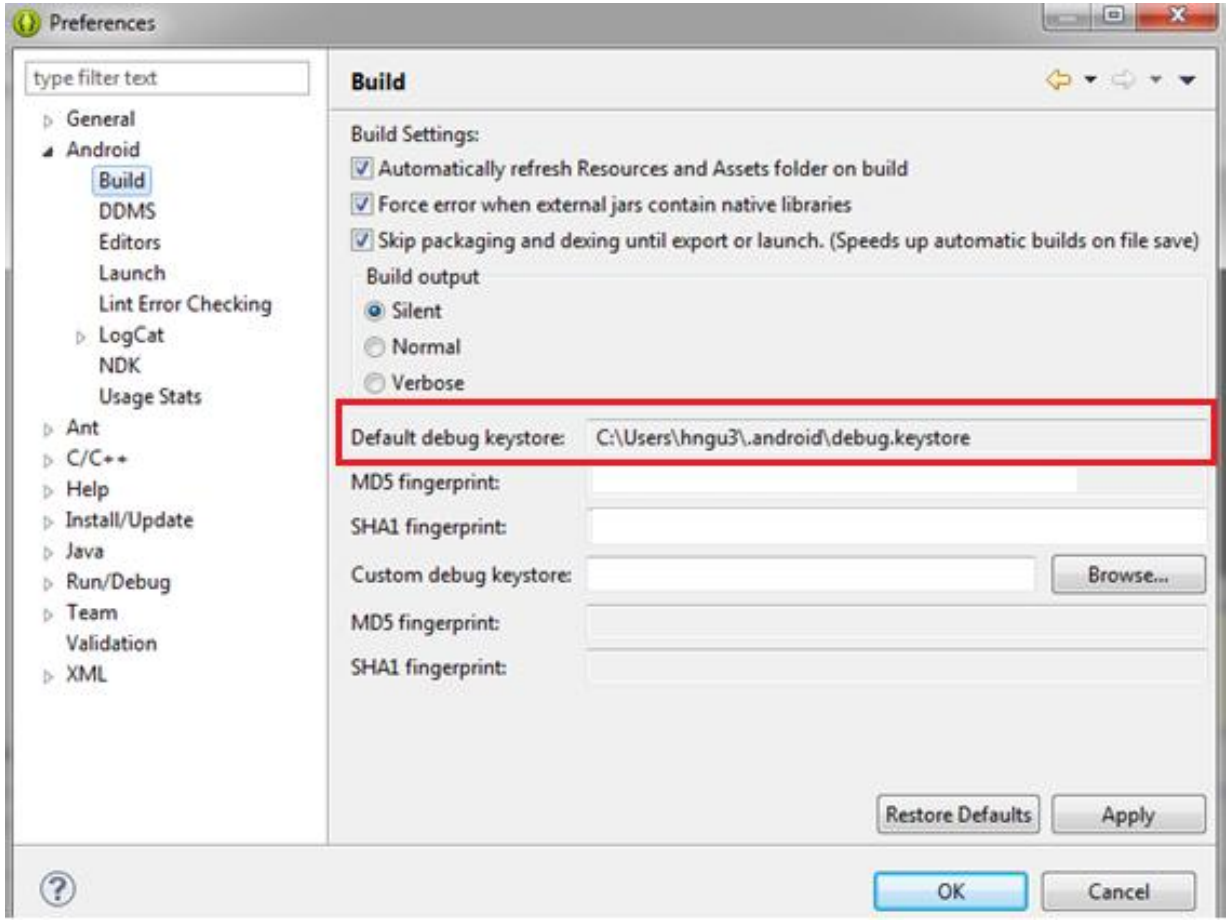


Obtain API key from Google service

- Google provide separate Maps API keys for debug keystore and release keystore.
- Retrieve information about app certificate
- Register a project in Google APIs Console and add Maps API as a service request
- Generate the key

Certificate Info & SHA1 Fingerprint

Locate Keystore: Go to Preferences-> Android-> Build



Get SHA1 Fingerprint

Open cmd and use the keytool to access debug keyStore and create SHA1

```
C:\>cd C:\Program Files (x86)\Java\jre6\bin

C:\Program Files (x86)\Java\jre6\bin>keytool -list -v -keystore C:\Users\hngu3\.
android\debug.keystore -alias androiddebugkey -storepass android -keypass androi
d
Alias name: androiddebugkey
Creation date: Jun 22, 2013
Entry type: PrivateKeyEntry
Certificate chain length: 1
Certificate[1]:
Owner: CN=Android Debug, O=Android, C=US
Issuer: CN=Android Debug, O=Android, C=US
Serial number: 51c5881c
Valid from: Sat Jun 22 18:18:52 ICT 2013 until: Mon Jun 15 18:18:52 ICT 2043
Certificate fingerprints:
         MD5:  C7:B1:AA:60:35:CF:41:D6:24:40:DE:02:EE:55:38:EE
         SHA1: 6F:A0:57:B4:29:57:2B:09:90:EF:A7:D7:16:12:36:1A:03:AE:F6:68
         Signature algorithm name: SHA1withRSA
         Version: 3
```

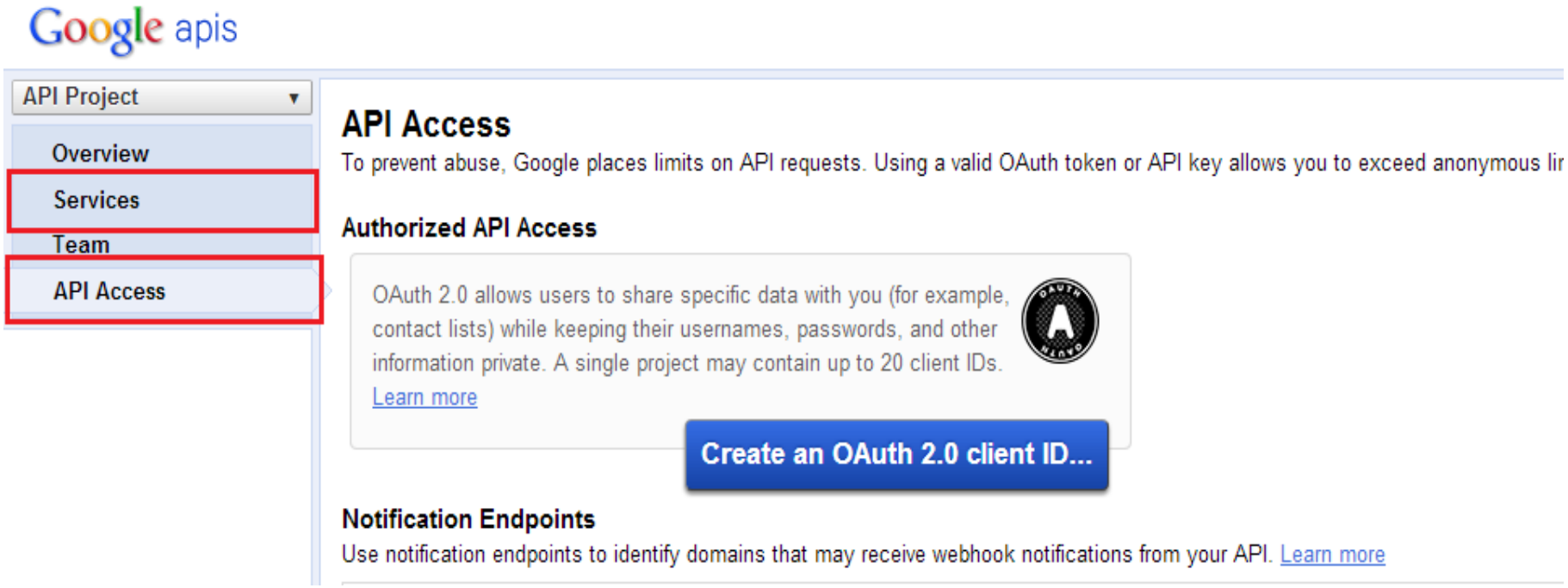
Creating Google API project

- Navigate to Google API Console and Login with Gmail ID.

  https://code.google.com/apis/console/
- Enable Google Android Map V2 from the service list
- Create new Android key

Creating Google API project

Navigate to Google API Concole https://code.google.com/apis/console/ and Login with Gmail ID.



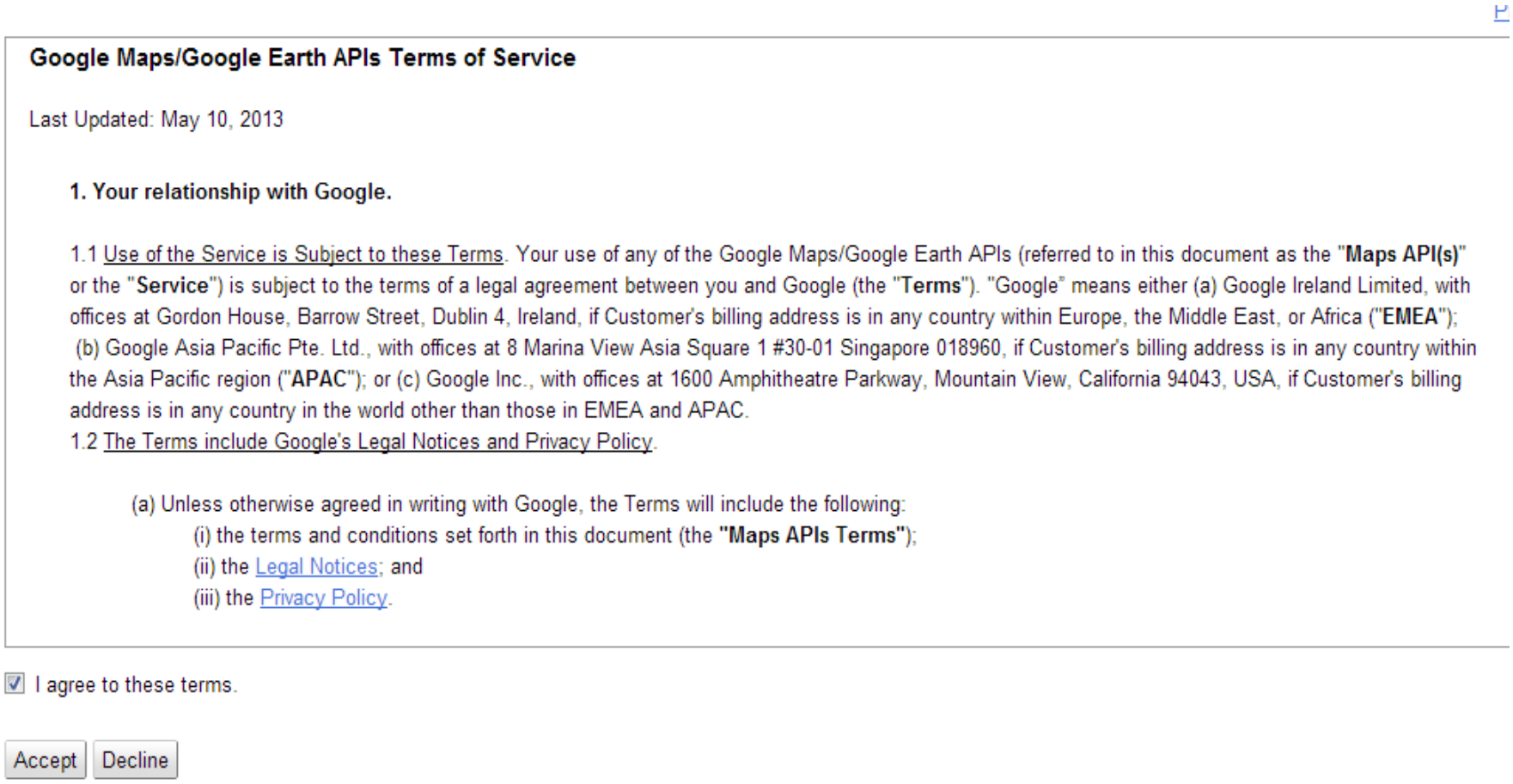
Create Google API project

Enable Google Android Map V2 from the service list

Google Cloud Storage JSON API	OFF	
Google Compute Engine	Request access...	Pricing
Google Contacts CardDAV API	OFF	Courtesy limit: 10,000 requests/day
Google Maps Android API v2	OFF	
Google Maps API v2	OFF	Courtesy limit: 25,000 requests/day • Pricing
Google Maps API v3	OFF	Courtesy limit: 25,000 requests/day • Pricing
Google Maps Coordinate API	OFF	Courtesy limit: 1,000 requests/day
Google Maps Engine API	OFF	Courtesy limit: 10,000 requests/day
Google Maps Geolocation API	OFF	Courtesy limit: 0 requests/day • Pricing
Google Maps SDK for iOS	OFF	
Google Maps Tracks API	OFF	
Google Play Android Developer API	OFF	Courtesy limit: 15,000 requests/day

Create Google API project

Enable Google Android Map V2 from the service list



Google Maps/Google Earth APIs Terms of Service

Last Updated: May 10, 2013

1. Your relationship with Google.

1.1 Use of the Service is Subject to these Terms. Your use of any of the Google Maps/Google Earth APIs (referred to in this document as the "**Maps API(s)**" or the "**Service**") is subject to the terms of a legal agreement between you and Google (the "**Terms**"). "Google" means either (a) Google Ireland Limited, with offices at Gordon House, Barrow Street, Dublin 4, Ireland, if Customer's billing address is in any country within Europe, the Middle East, or Africa ("**EMEA**"); (b) Google Asia Pacific Pte. Ltd., with offices at 8 Marina View Asia Square 1 #30-01 Singapore 018960, if Customer's billing address is in any country within the Asia Pacific region ("**APAC**"); or (c) Google Inc., with offices at 1600 Amphitheatre Parkway, Mountain View, California 94043, USA, if Customer's billing address is in any country in the world other than those in EMEA and APAC.

1.2 The Terms include Google's Legal Notices and Privacy Policy.

(a) Unless otherwise agreed in writing with Google, the Terms will include the following:

(i) the terms and conditions set forth in this document (the **"Maps APIs Terms"**);

(ii) the Legal Notices; and

(iii) the Privacy Policy.

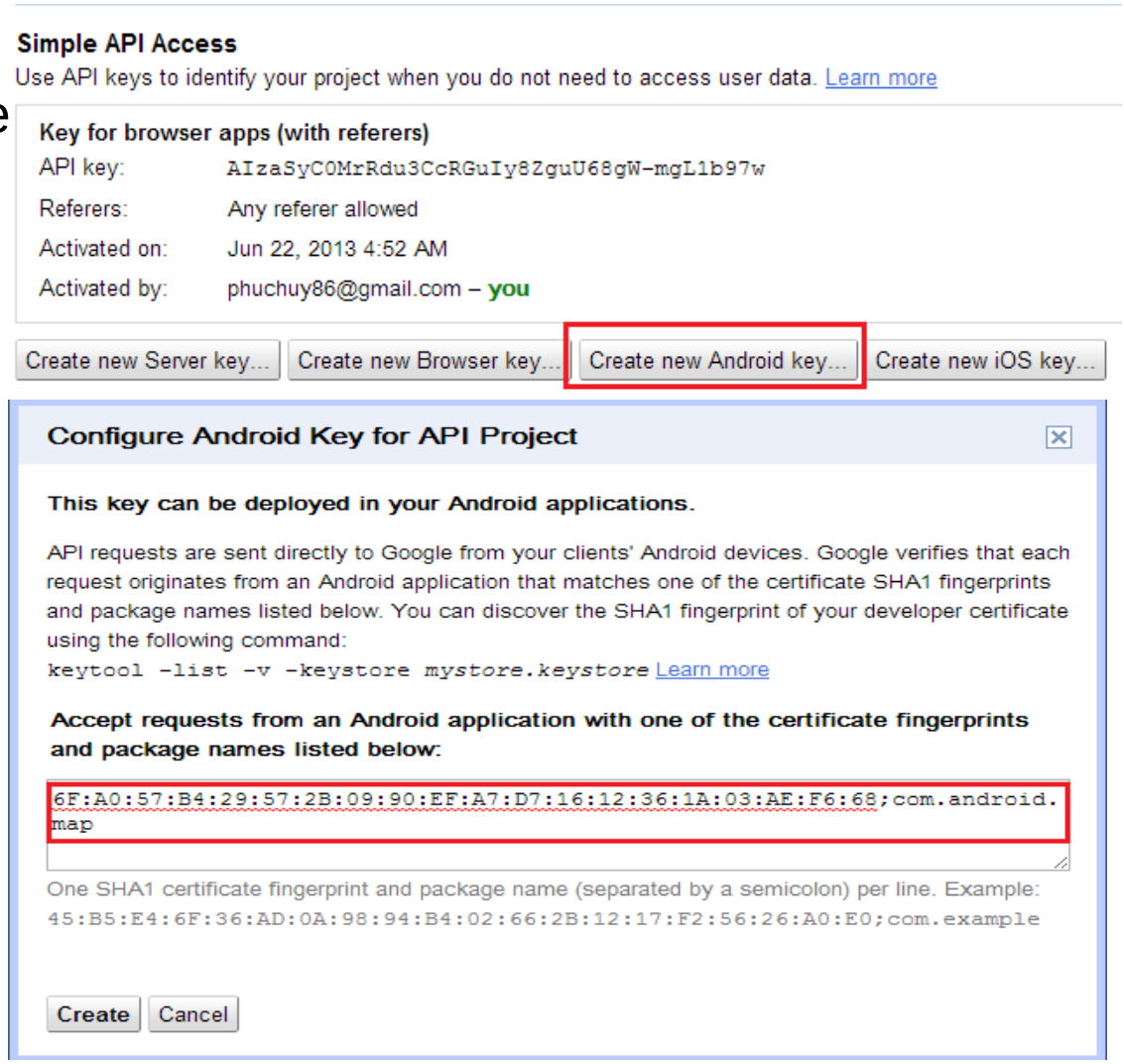
I agree to these terms.

Accept Decline

Generate the API key

Create new Android key:

SHA1 key; android package



Generate the API key

Navigate to homepage of Google Service project

Key for Android apps (with certificates)

API key:	AIzaSyAx2uVg-1cibGhsyFblQb1_6H0C5-SxOJA
Android apps:	6F:A0:57:B4:29:57:2B:09:90:EF:A7:D7:16:12:36:1A:03:AE:F6:68;com.android.map
Activated on:	Jun 23, 2013 9:25 PM
Activated by:	phuchuy86@gmail.com – **you**

Android app configuration

- Adding API key to Android app
- Adding necessary permissions to Android app

Adding key to Android app

Insert the API key into <meta-data> of Android manifest file

```
<meta-data
    android:name="com.google.android.maps.v2.API_KEY"
    android:value="your_apikey" />
```

Adding permission to Android app

```
<uses-permission android:name="android.permission.INTERNET" />
<uses-permission android:name="android.permission.ACCESS_NETWORK_STATE"/>
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
<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" />
```

Name	Description
Internet	Download map tiles from Google Map server
Access_Network_State	Check connection status
Write_External_Storage	Allow to cache map data into external storage
Read_GServices	Access Google Web-based services
Access_Coarse_Location	Allow to use Wifi or mobile cell data to find location
Access_Coarse_Location	Allow to use GPS to find location

Adding Map to Android app

Use **Fragment** class to provide access to Google map

- Act as container for a map
- Multiple fragments in a single activities
- Android API 12 or upper

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

Adding Map to Android app

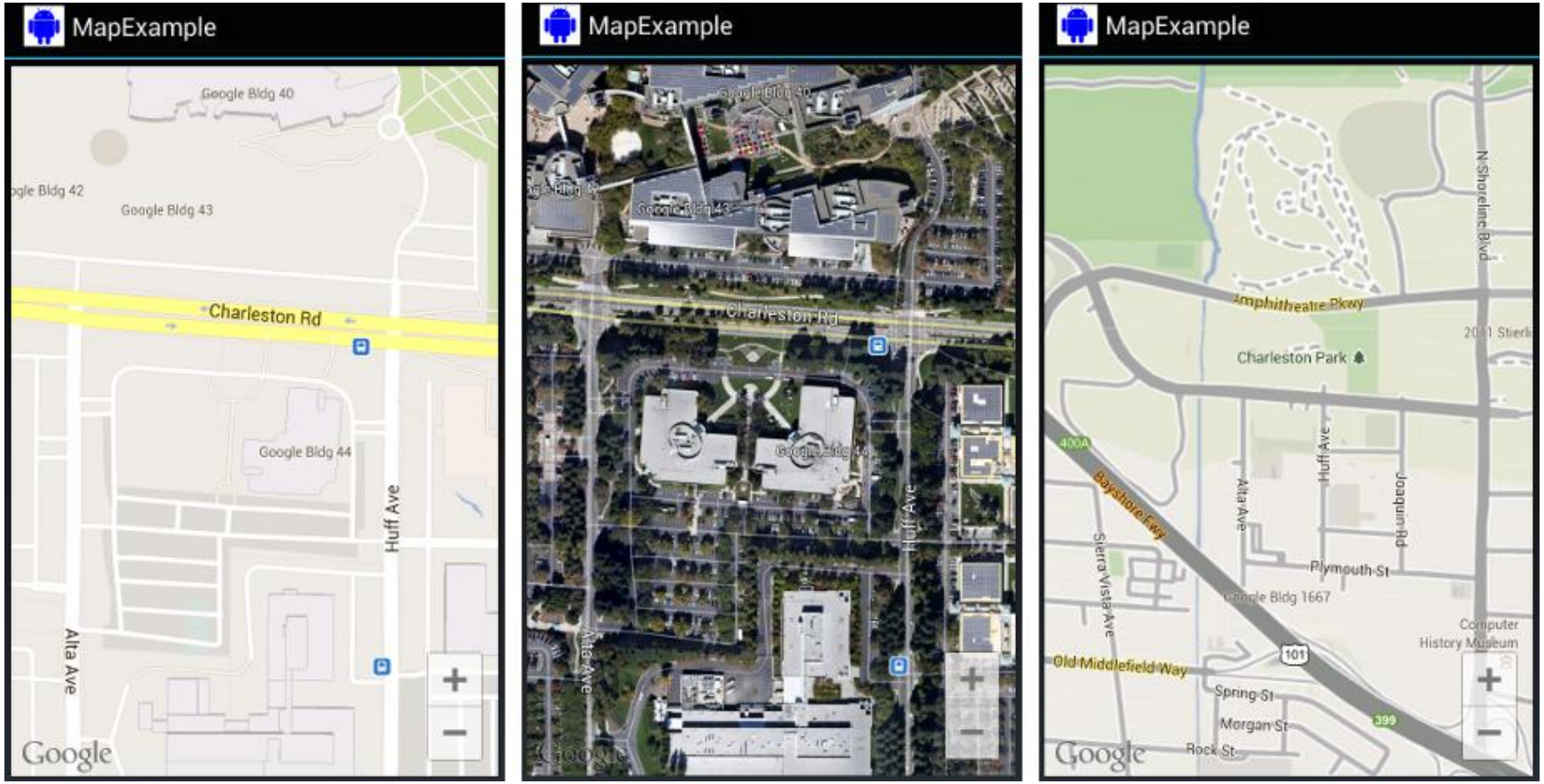
```
public class MainActivity extends Activity {

    private GoogleMap gmap;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        gmap = ((MapFragment) getFragmentManager().findFragmentById(R.id.map)).getMap();
        gmap.setMapType(GoogleMap.MAP_TYPE_HYBRID);


    }
```

Set the Map type: Hybrid, Normal, Terrain

Adding Map to Android app



Adding Map to Android app

```
import android.app.Activity;

public class MainActivity extends Activity {

    private GoogleMap gmap;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        gmap = ((MapFragment) getFragmentManager().findFragmentById(R.id.map)).getMap();
        gmap.setMapType(GoogleMap.MAP_TYPE_HYBRID);
        gmap.setMyLocationEnabled(true);
```

Enable My Location Layer on map

Assignment

Q&A

Revision History

Date	Version	Description	Updated by	Reviewed and Approved By
June 20, 2013	1		Huy Ngu	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