Google Map Api for Android

DoubleLin

- What is APIs ?
- What is Google Map API ?
- How to use it ?
- Demo

What is APIs ?

- API(Application Programming Interface)
  - 一座連接您的程式與服務提供者的橋樑
  - 讓開發人員得以呼叫一組函式功能
  - 無須考慮其底層的原始碼為何、或理解其內部工作機制的細節。

What is Google Map API ?

- 將Google map的完善功能和日常實用性嵌入
- 詳細規格參考
  - http://code.google.com/intl/zh-TW/android/add-ons/google-apis/reference/index.html

Discover what you can do with the Google Maps APIs

Build location-based apps
Use Google tools and services to build innovative location-based apps.

Build maps for mobile apps
Build high performance apps that work on multiple mobile devices.

Visualize Geospatial Data
Create 3D images with the Earth API, heat maps in Fusion Tables, and more.
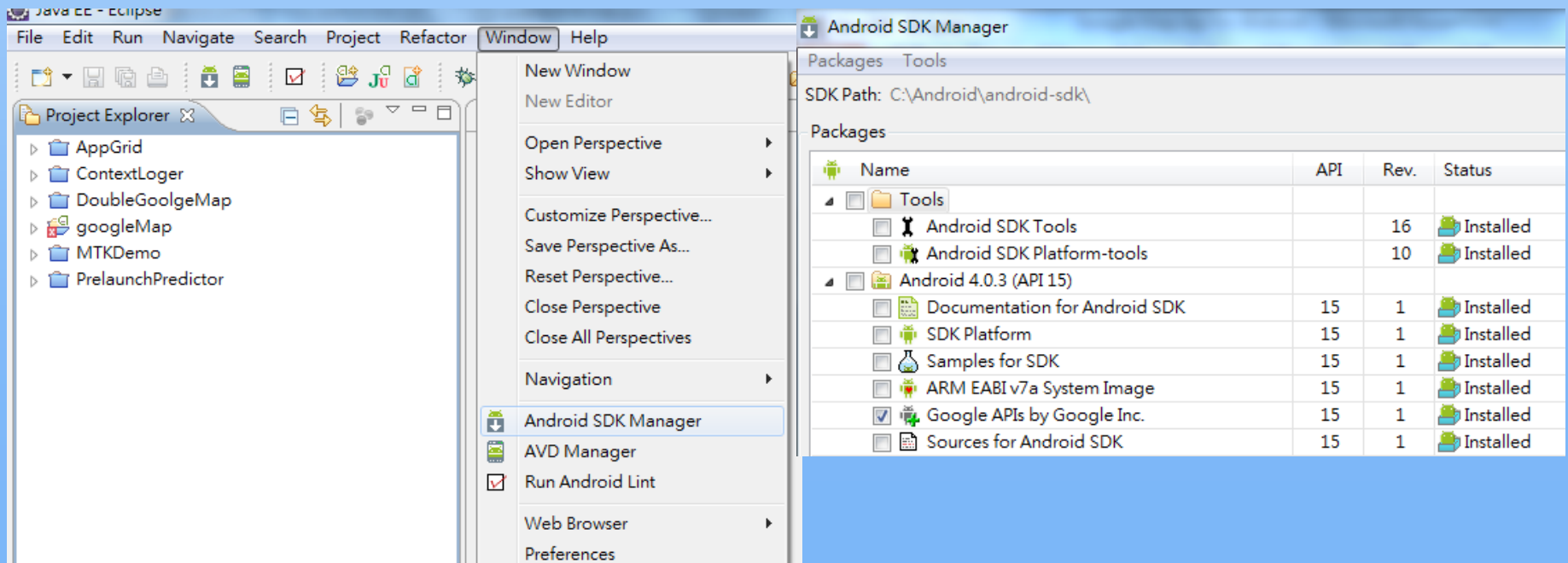
Customize your maps
Create customized maps that highlight your data, imagery, and brand.

準備工作

■ 在windows→Android SDK Manager→Android 4.0.3(API 15)下新增Google APIs by Google Inc.

準備工作(cont.)

- 在windows→AVD Manager→New
- 在Target選單選擇Google APIs→Create AVD

Google Map 組成元素

- 地圖模型
  - 地點資訊(GeoPoint)
  - 路徑
- 地圖展示
  - 展示區域(MapView)
  - 圖層(OverLay)
- 地圖控制
  - 控制檢視圖類型:地圖.衛星.街景
  - 控制縮放尺度(Zoom)

How to use it ?

- ◻ Get the Key
- ◻ Set the key into your project
- ◻ Set MapActivity
- ◻ Add GeoPoint and Zoom
- ◻ Demo

Get the KEY!

- ◘ Get your certificate's MD5 fingerprint

```
keytool -list -alias androiddebugkey -keystore
C:\Users\doublelin\.android\debug.keystore -storepass android  -
keypass android
```

Get the KEY!(cont.)

- ◪ Sign Up for the Android Maps API
  - ◩ http://code.google.com/intl/zh-TW/android/maps-api-signup.html

Get the KEY!(cont.)

感謝您申請 Android Maps API 金鑰！

您的金鑰為：

```
0xU7GiDLgi13KAShEPI97cXtlT2eH0QemvkCPeg
```

此金鑰適合所有使用以下指紋憑證所簽署的應用程式：

```
14:65:31:CF:30:5C:18:73:18:34:3B:F5:15:B2:15:C8
```
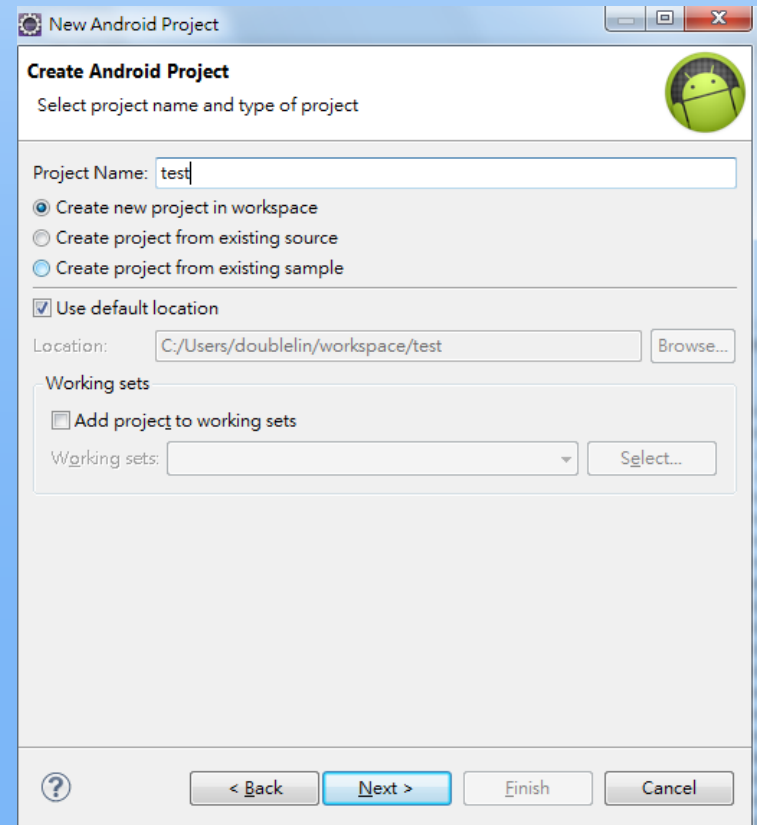
此處提供您 xml 配置的範例，您可依照自己的方法使用地圖功能：

```xml
<com.google.android.maps.MapView
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:apiKey="0xU7GiDLgi13KAShEPI97cXtlT2eH0QemvkCPeg"
    />
```
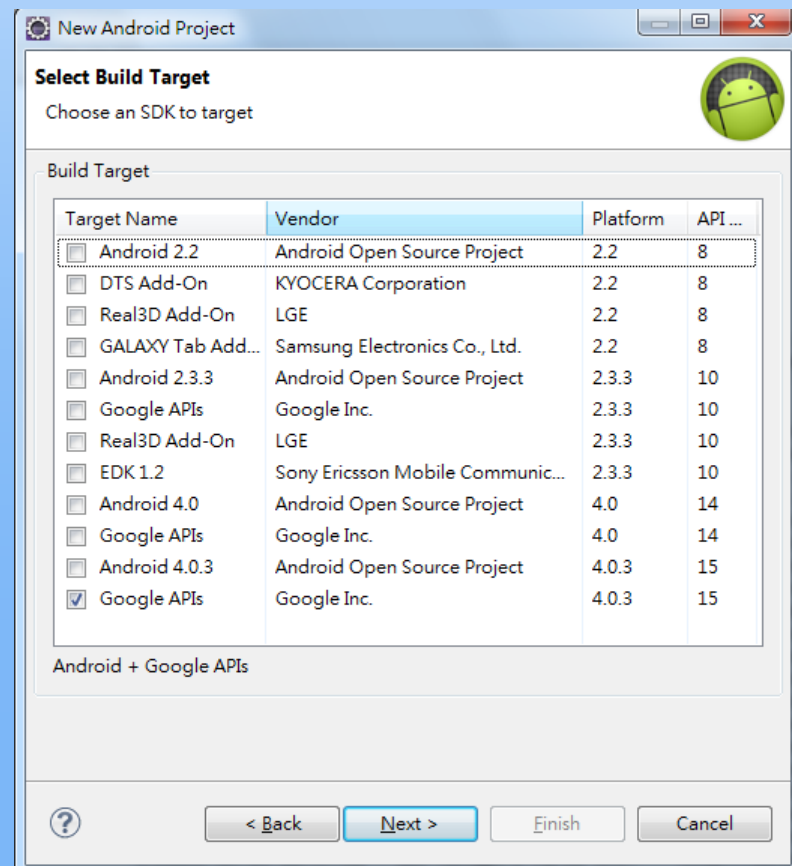
請參閱 API 文件以取得詳細資訊。

Let's Start !

- 新增一個Google APIs專案
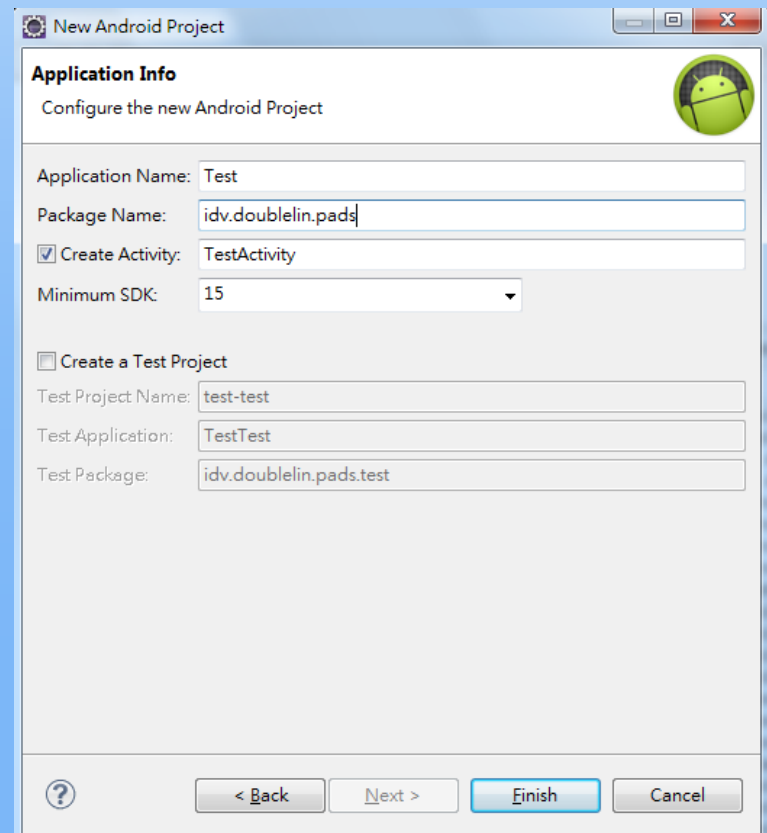- Eclipse→File→New→Other→Android→Android Project
- Project Name：專案名稱
- 接下來按 Next

特別注意：請勾選Google APIs 4.0.3

And then …Next

輸入Package Name .
按Finish 開始寫程式！！

Set the key in your project

■ 定義清單 AndroidManifest.xml

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

```
<application android:icon="@drawable/icon" android:label="@string/app_name">
    <activity .....
    </activity>
    <uses-library android:name="com.google.android.maps"
        android:required="true"></uses-library>

</application>
        ..
        ..
```

Set the key in your project(cont.)

- 定義XML資源檔
- 路徑：res/layout/main.xml

```
<com.google.android.maps.MapView
    android:id="@+id/map"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:apiKey="你的ApiKey"
    android:clickable="true"
    />
```

Set MapActivity

編輯主要程式

路徑：/src/idv.doublelin.pads/main.java (參考用)

```java
public class Main extends MapActivity {
    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);
}
..

..
```

Note:現在可以用虛擬機器測試，試試看！

Example

Add GeoPoint and Zoom

- 修改**TrainingMapActivity.java**

```
public void onCreate(Bundle savedInstanceState) {
        ....
    findViews();
    setupMap();
  }


private MapView map;
private MapController controller;
private void findViews() {
        map = (MapView) findViewById(R.id.map);
        controller = map.getController();
  }
```
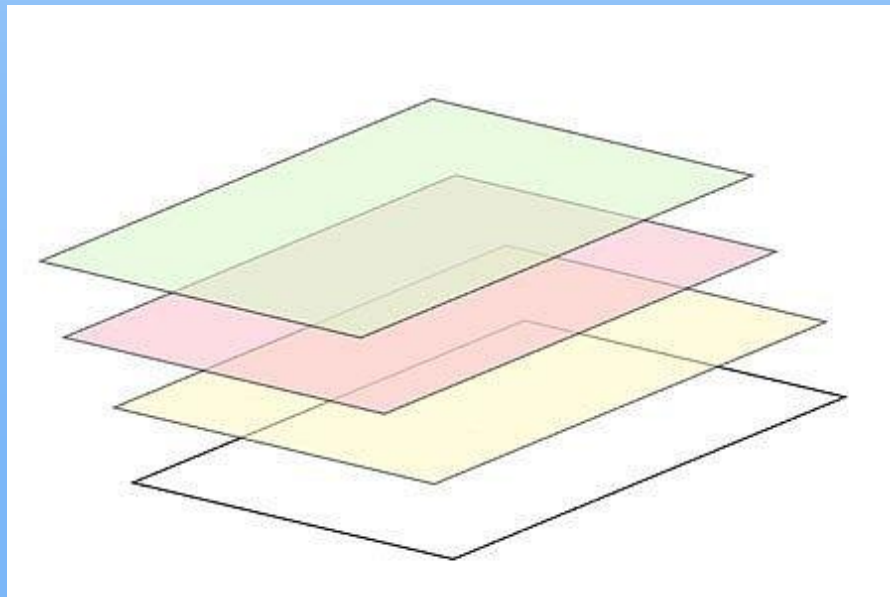
Add GeoPoint and Zoom

```java
private void setupMap() {
        GeoPoint station_taipei = new GeoPoint(
                (int) (25.047192 * 1000000),
                (int) (121.516981 * 1000000)
        );
        map.setTraffic(false);
        map.setBuiltInZoomControls(true);
        controller.setZoom(17);//1~21
        controller.animateTo(station_taipei);
    }
```

MyLocationOverlay

- 將定位功能和地圖功能結合在一起
- 透過重疊一層透明紙，並且在透明紙上畫出座標，即達到我們要顯示的效果

修改AndroidMainifast.xml

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

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

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

- 修改TrainingMapActivity.java

```java
private void setupMap() {

…

locLayer = new MyLocationOverlay(this, map);
map.getOverlays().add(locLayer);
locLayer.runOnFirstFix(new Runnable() {
        public void run() {
            // Zoom in to current location
            map.setTraffic(true);
            controller.setZoom(17);
            controller.animateTo(locLayer.getMyLocation());
        }
    });
```

```java
@Override
protected void onResume() {
        // TODO Auto-generated method stub
        super.onResume();

        ..

        ..

        locLayer.enableMyLocation();

        ..
    }
```

```java
@Override
protected void onPause() {
        // TODO Auto-generated method stub
        super.onPause();
        locLayer.disableMyLocation();
    }
```

Reference

- **Google！Android 3手機應用程式設計入門(第四版)**
- http://developer.android.com/reference/android/package-summary.html
- http://code.google.com/intl/zh-TW/android/add-ons/google-apis/reference/index.html

Homework

- 建立一個下拉式選單，提供台北/台中/高雄車站三個車站地理資訊。使用者可以透過點選選單，改變地圖的顯示資訊。