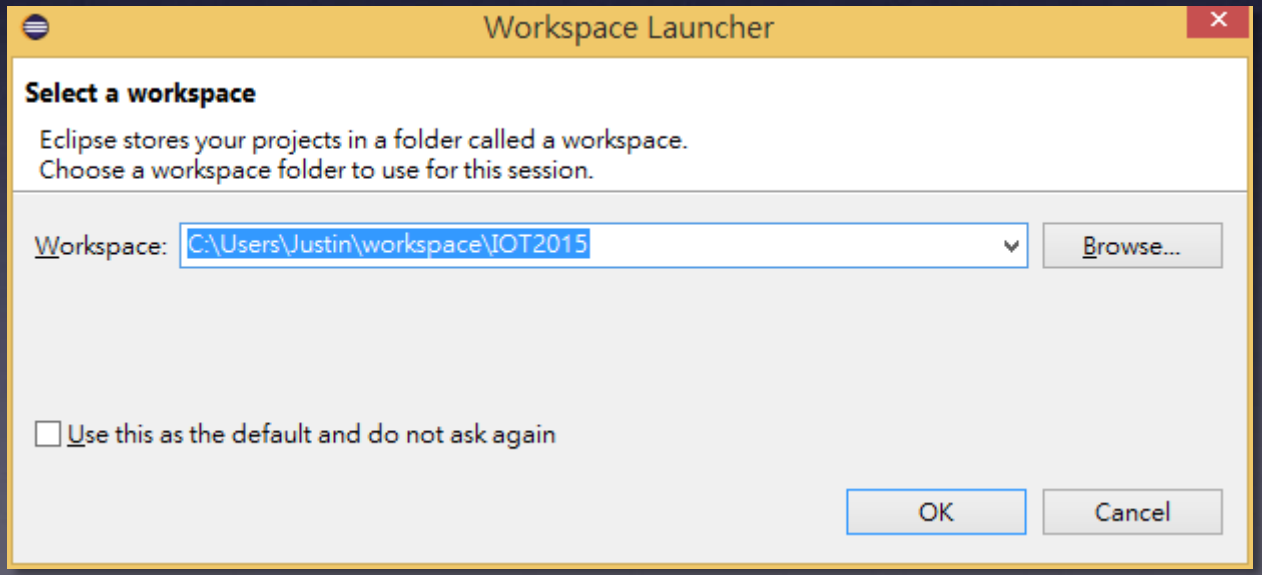
第一章

ANDROID基本教學

建立WORKSPACE

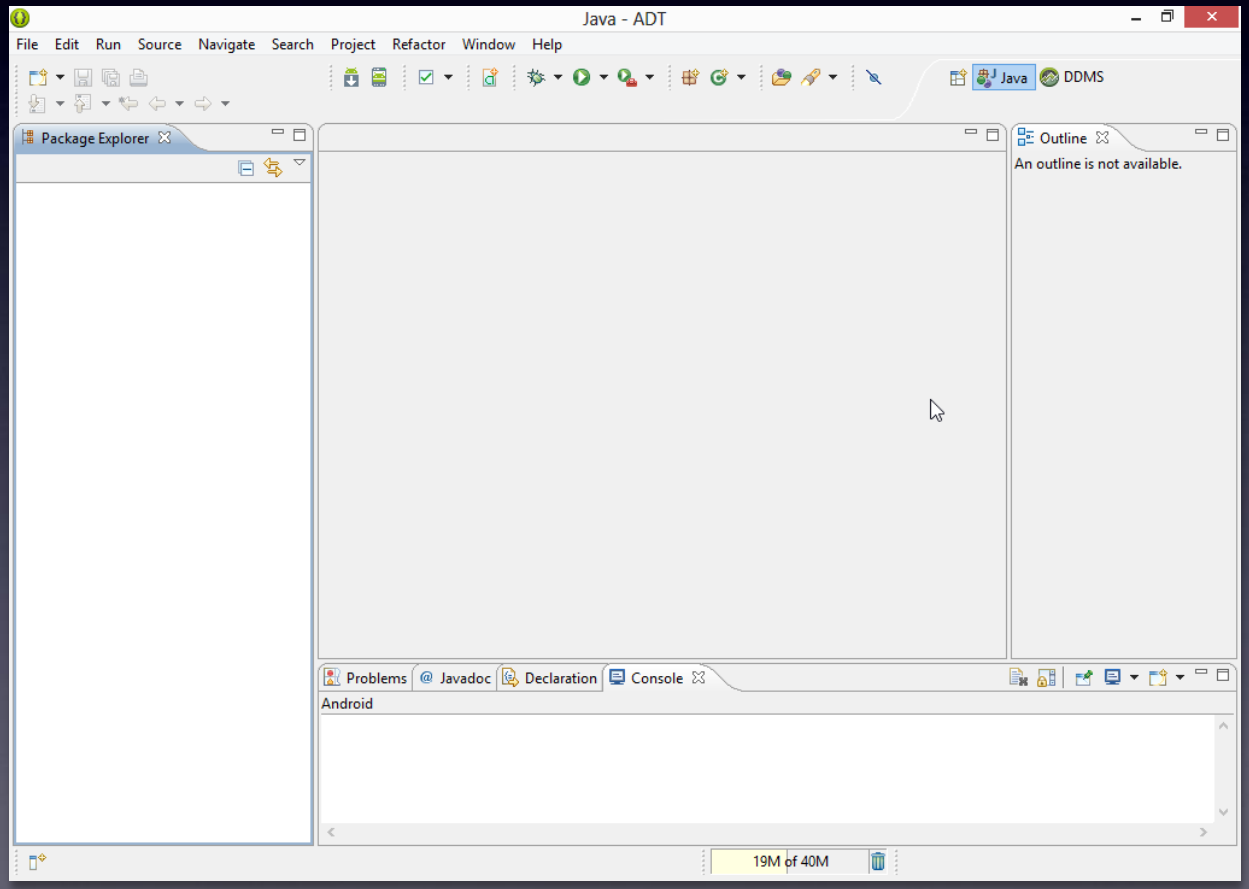
開啟第一個WORKSPACE

- Eclipse是以專案型式來管理程式碼
- workspace表示眾多專案集合的地方
- 可以針對不同的專案，或不同的時間，建立不同的workspace



開啟第一個WORKSPACE

- 恭喜你，開啟成功了

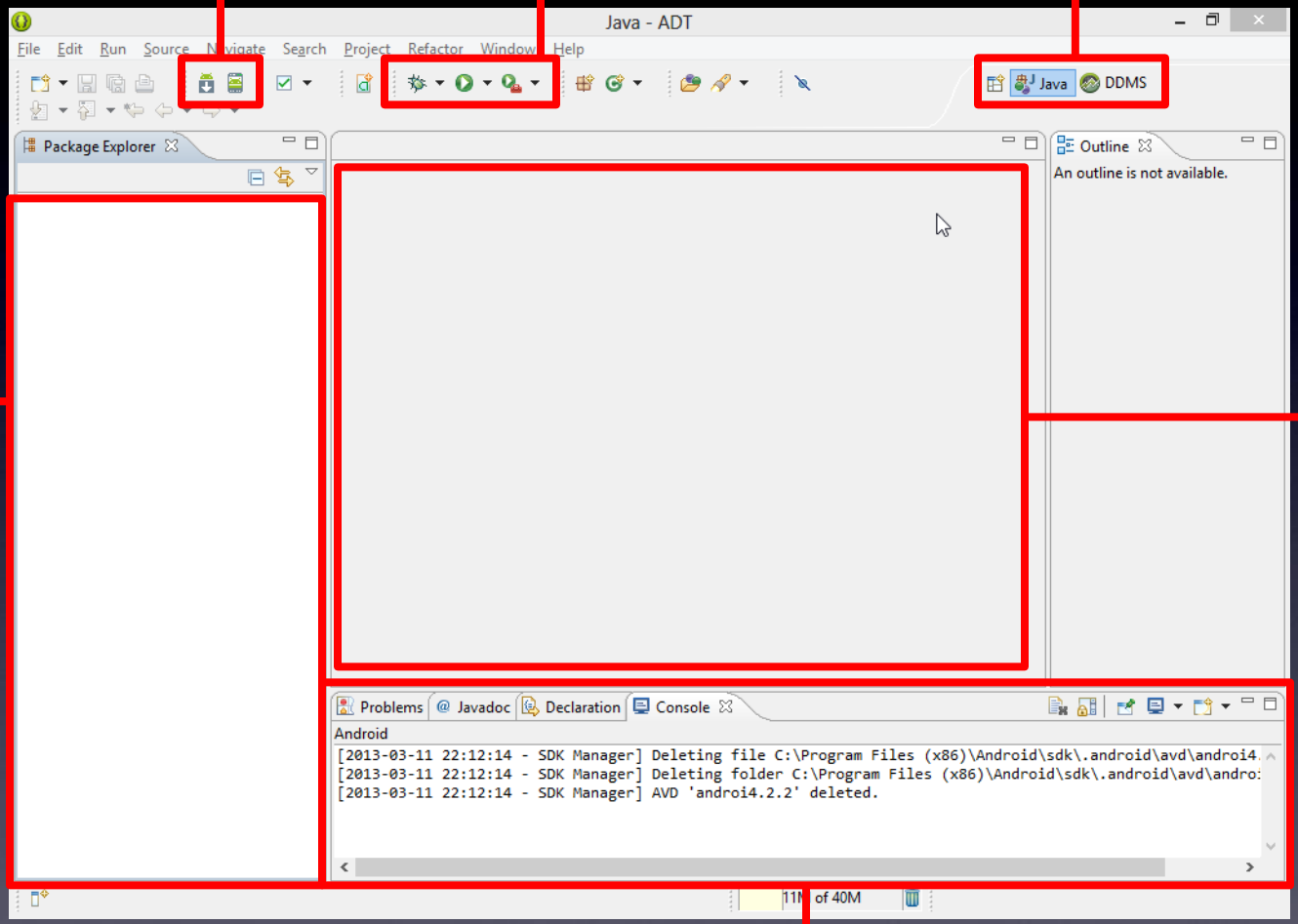


ECLIPSE與SDK說明

Android ADT
工具區

專案編譯
除錯工具

切換模式



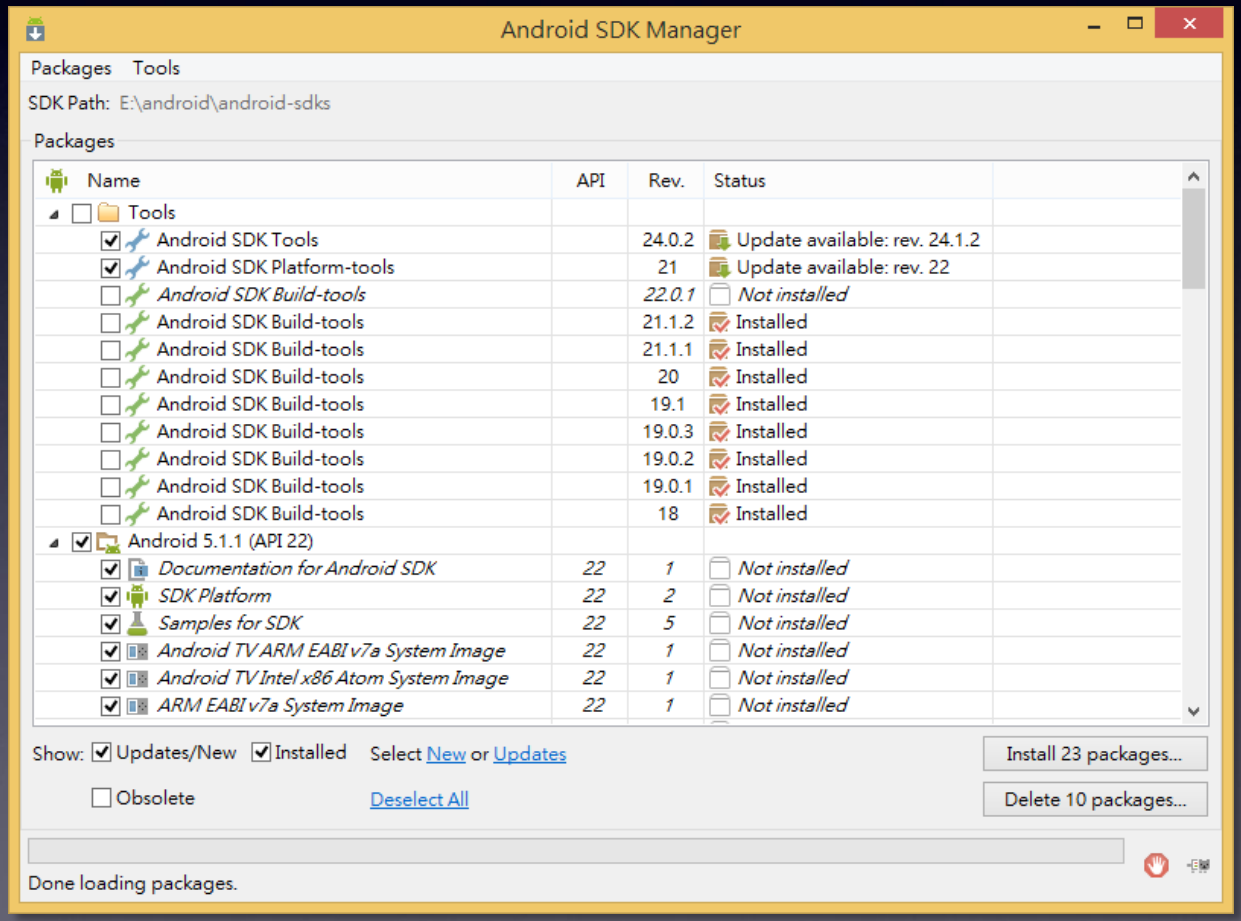
專案
列表區

程式
編輯區

資訊輸出區

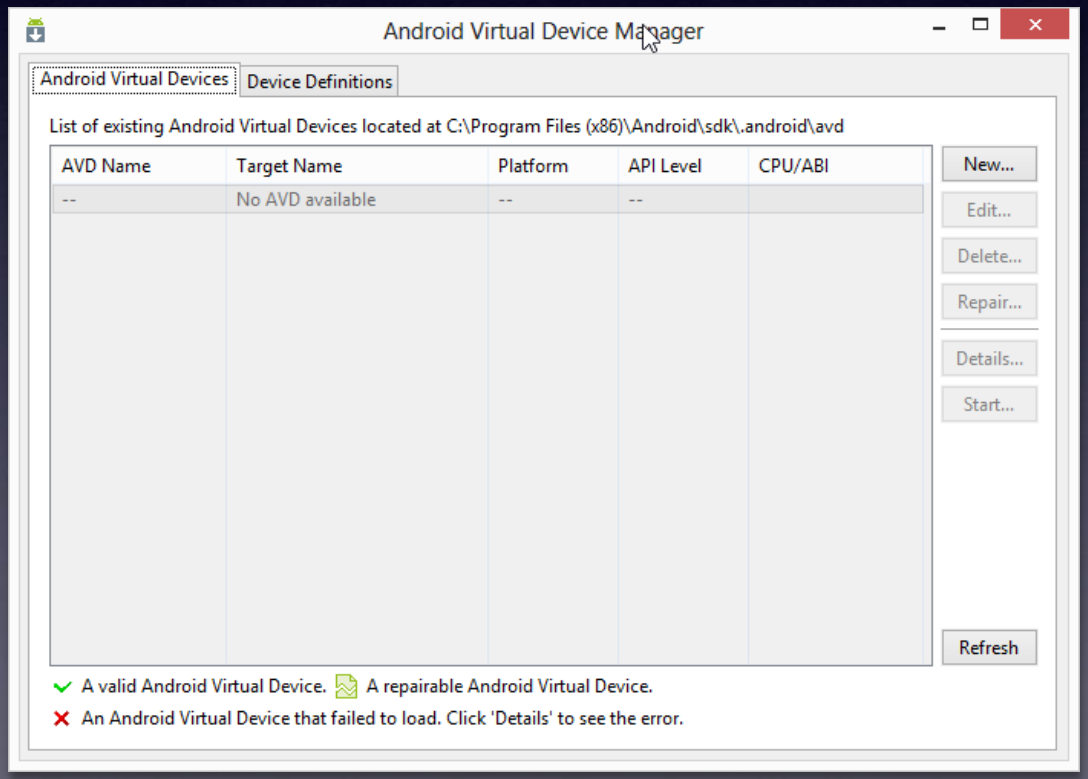
打開SDK MANAGER

- 點選Eclipse上方的ADT工具區圖示 
- 可以勾選要下載的SDK版本來進行開發



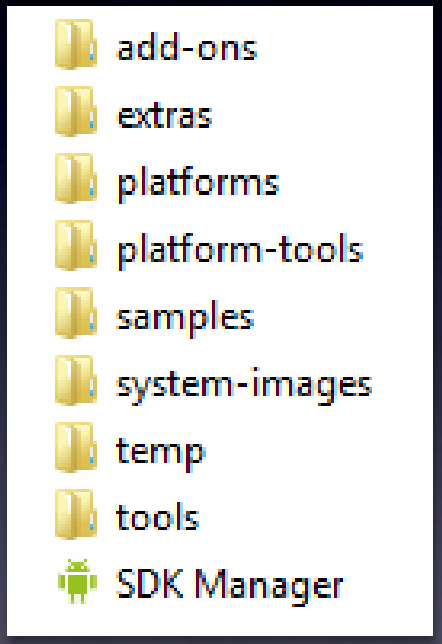
打開AVD MANAGER

- AVD: Android Virtual Device
- Eclipse上方的ADT工具區圖示 



ANDROID SDK架構

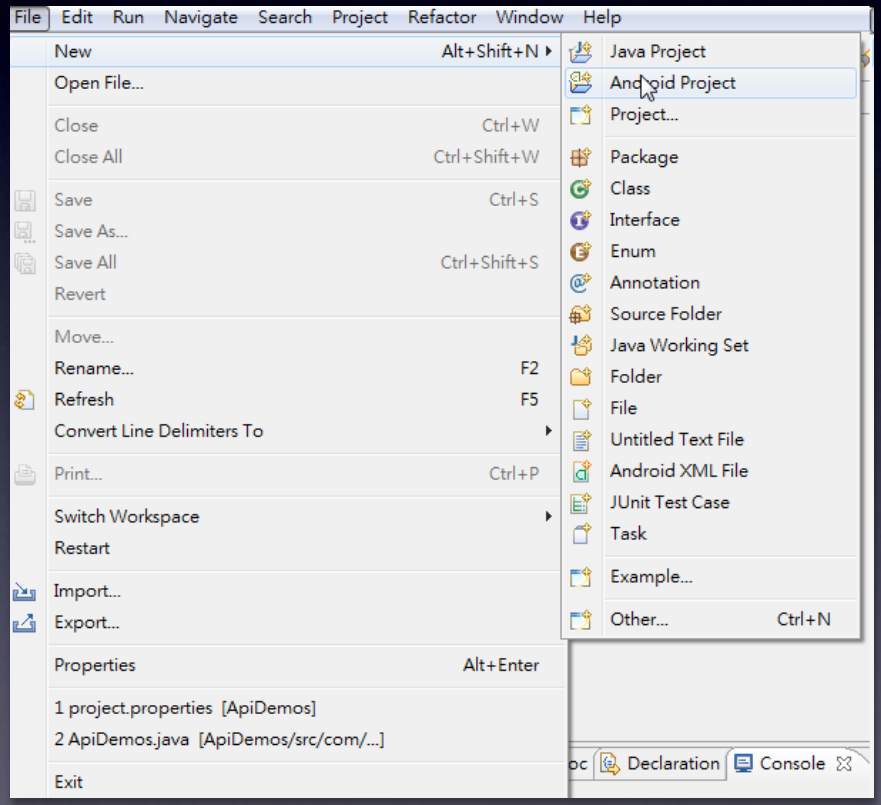
- SDK Manager.exe
  - Android SDK管理器
- tools資料夾
  - Android執行時所需執行檔和函式庫
- samples資料夾
  - 依照不同target而提供的範例程式碼
- platform-tools
  - 編譯android和除錯時所需的執行檔和函式庫
- platforms
  - 不同版本的android模擬器的資料及映像檔



建立新專案

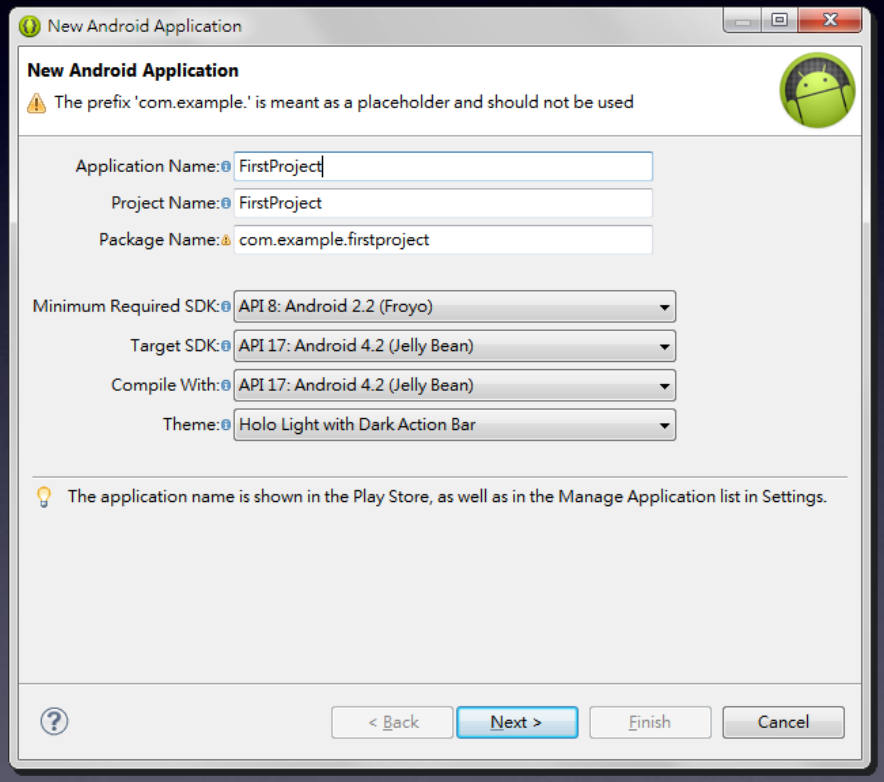
建立新專案

- 選擇上方選單
  File→New→Android Project



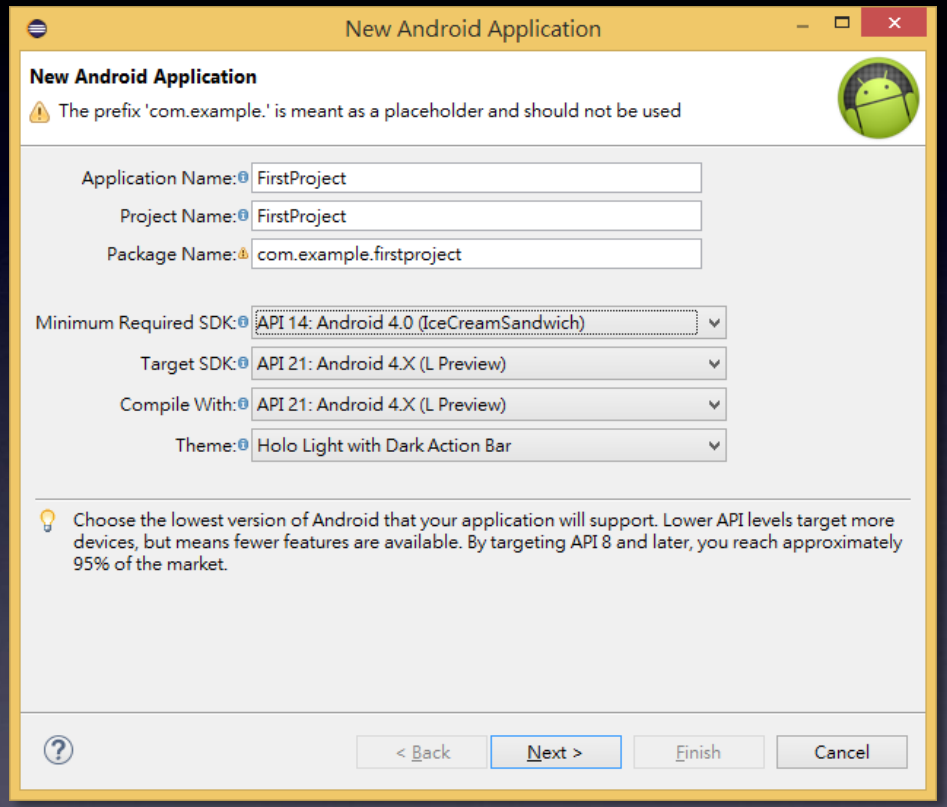
建立新專案

- Application Name
  - 安裝後呈現的名稱
- Project Name
  - 在workspace的名稱
- Package Name
  - 要獨立的名稱
- Minimum Require SDK
  - 可執行App的最低Android版本



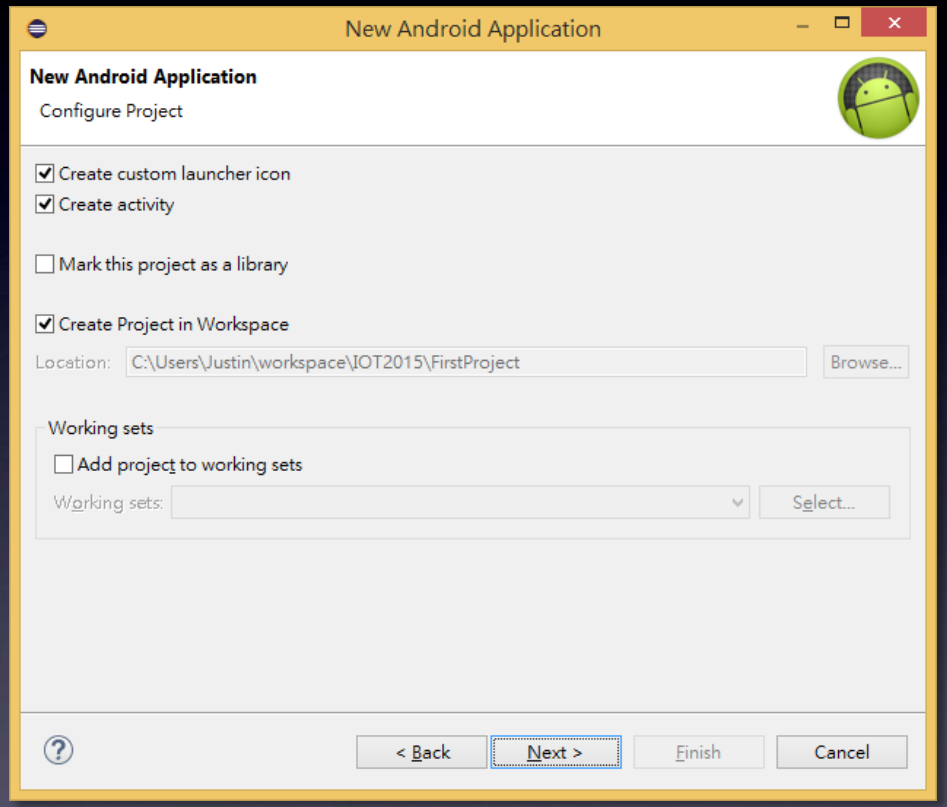
建立新專案

- Target SDK
  - App最重點執行的Android版本
- Compile With
  - 使用哪個版本的SDK來編譯
- Theme
  - 應用程式的佈景主題



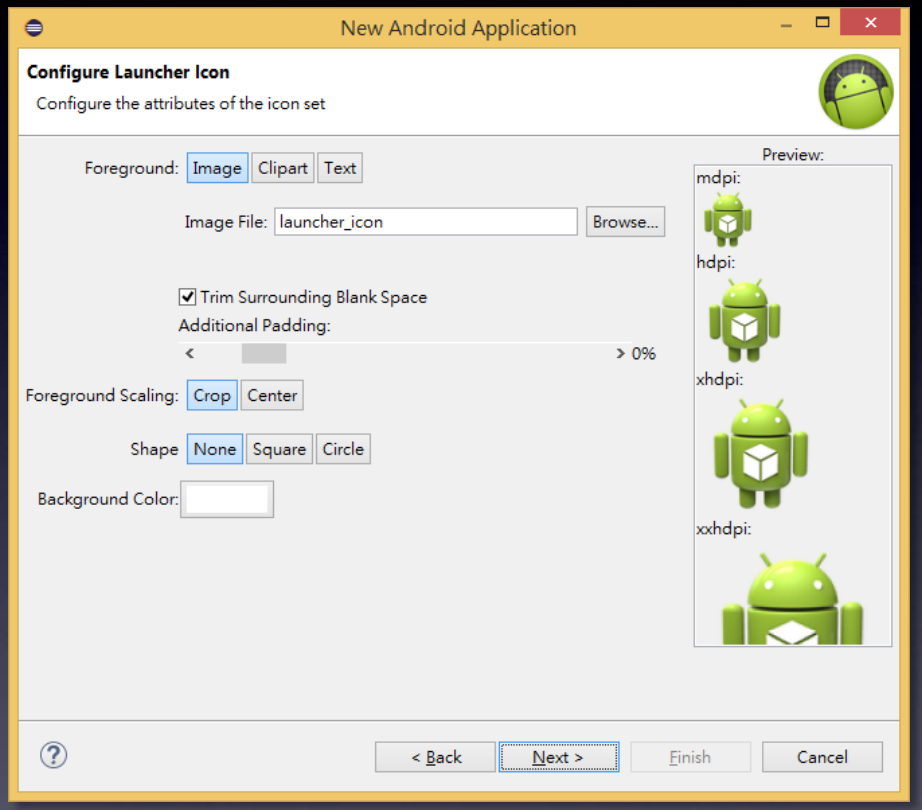
建立新專案

- Create custom launcher icon
  - 可以藉由工具建立app的圖示
- Create activity
  - 建立最基本的畫面
- Create Project in Workspace
  - 建立的專案是否擺放在workspace中



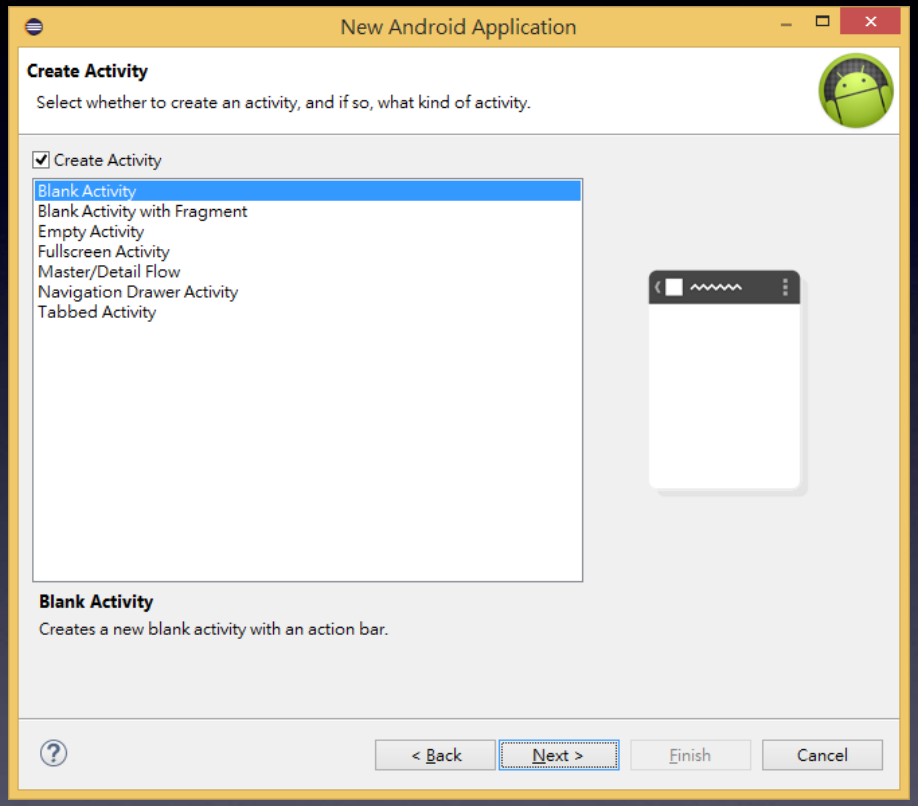
建立新專案

- Create Custom launcher icon
  - 建立客製化的app圖示



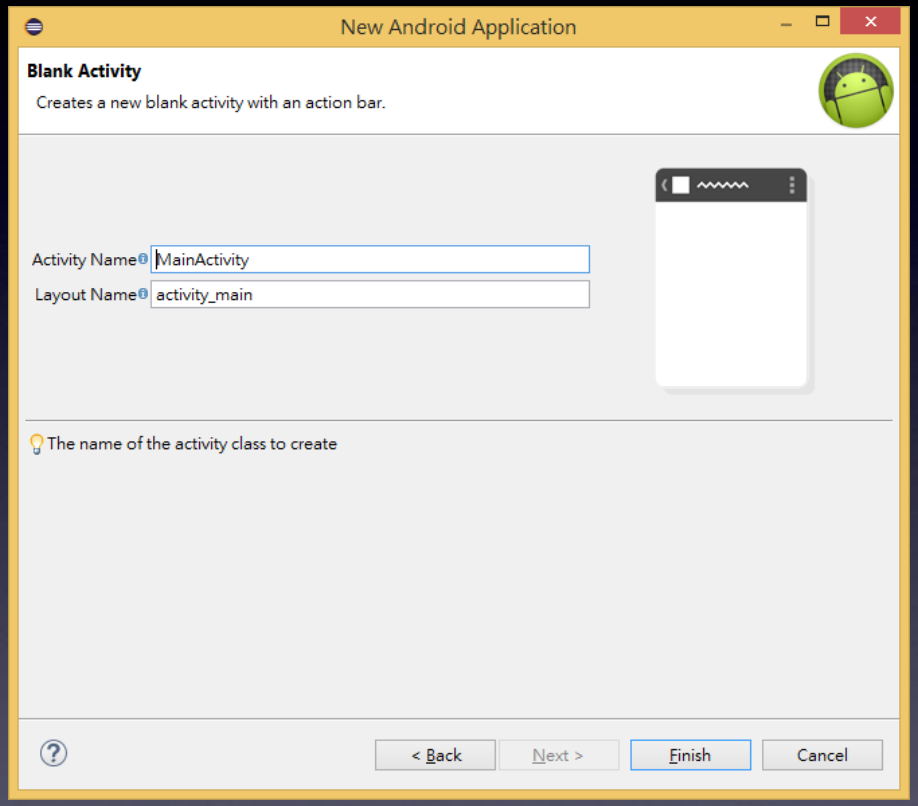
建立新專案

- Create Activity
  - 建立基本畫面的類型
  - 選擇Blank Activity即可

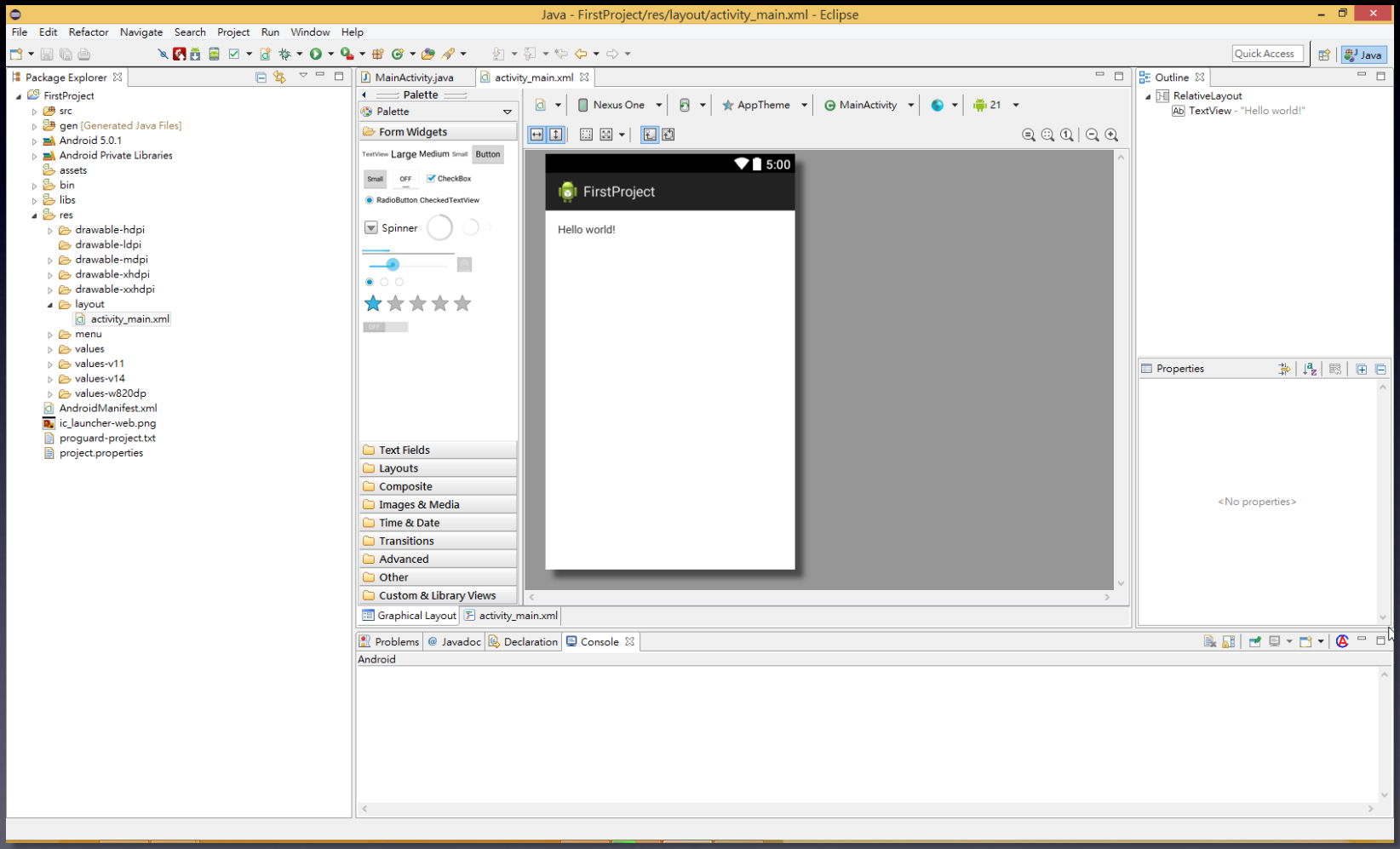


建立新專案

- Activity Name
  - 畫面會產生一個Java檔，檔案的名稱
- Layout Name
  - 介面定義檔的名稱
  - Java檔要呈現的畫面會以XML定義



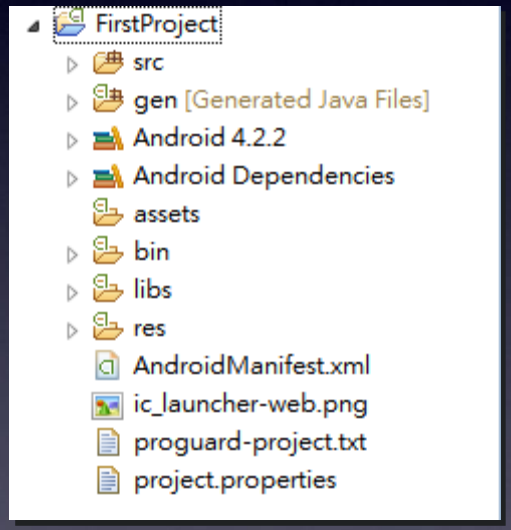
建立完成


Java - FirstProject/res/layout/activity_main.xml - Eclipse
File Edit Refactor Navigate Search Project Run Window Help
Package Explorer
FirstProject
src
gen [Generated Java Files]
Android 5.0.1
Android Private Libraries
assets
bin
libs
res
drawable-hdpi
drawable-ldpi
drawable-mdpi
drawable-xhdpi
drawable-xxhdpi
layout
activity_main.xml
menu
values
values-v11
values-v14
values-w820dp
AndroidManifest.xml
ic_launcher-web.png
proguard-project.txt
project.properties
MainActivity.java
activity_main.xml
Palette
Form Widgets
Large Medium
Button
CheckBox
RadioButton CheckedTextView
Spinner
Text Fields
Layouts
Composite
Images & Media
Time & Date
Transitions
Advanced
Other
Custom & Library Views
Graphical Layout
activity_main.xml
Nexus One
AppTheme
MainActivity
21
5:00
FirstProject
Hello world!
Outline
RelativeLayout
TextView - "Hello world!"
Properties
<No properties>
Problems
Javadoc
Declaration
Console
Android
Quick Access
Java

專案架構與執行方式

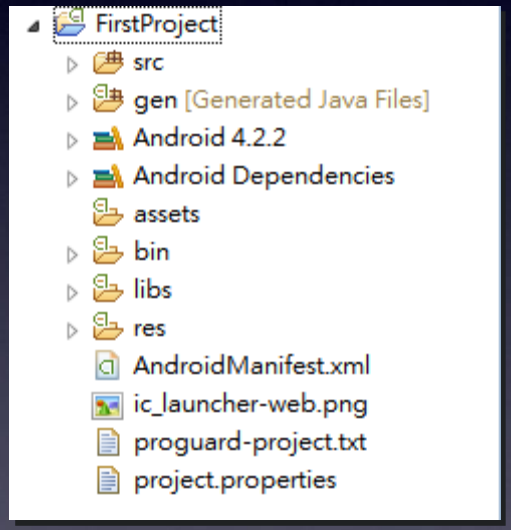
專案架構

- src
  - 專案原始碼的擺放位置
- gen
  - 編譯後自動產生Android需要用的程式碼的擺放處
- Android x.x.x
  - Android SDK函式庫



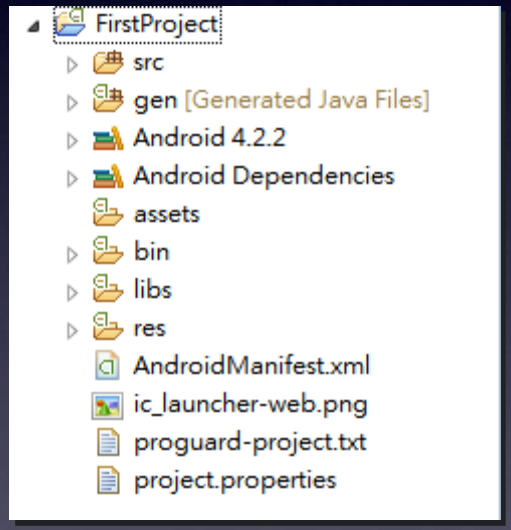
專案架構

- Android Dependencies
  - 編譯Android需要用的其他的官方library
- assets
  - 專案額外用的資源檔
- bin
  - 編譯後產生目的檔和APK的地方



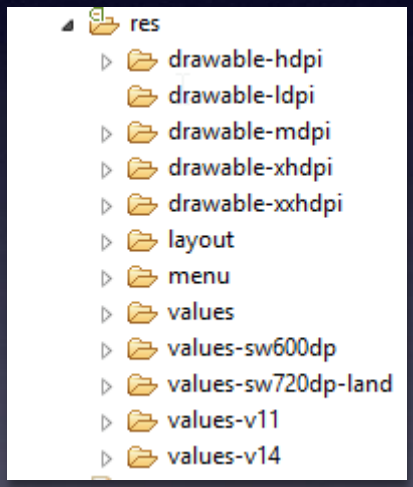
專案架構

- libs
  - 編譯專案自己客製的library
  - **之後會常常使用，要有印象**
- res
  - 資源檔擺放處
- AndroidManifest.xml
  - Android app屬性定義檔



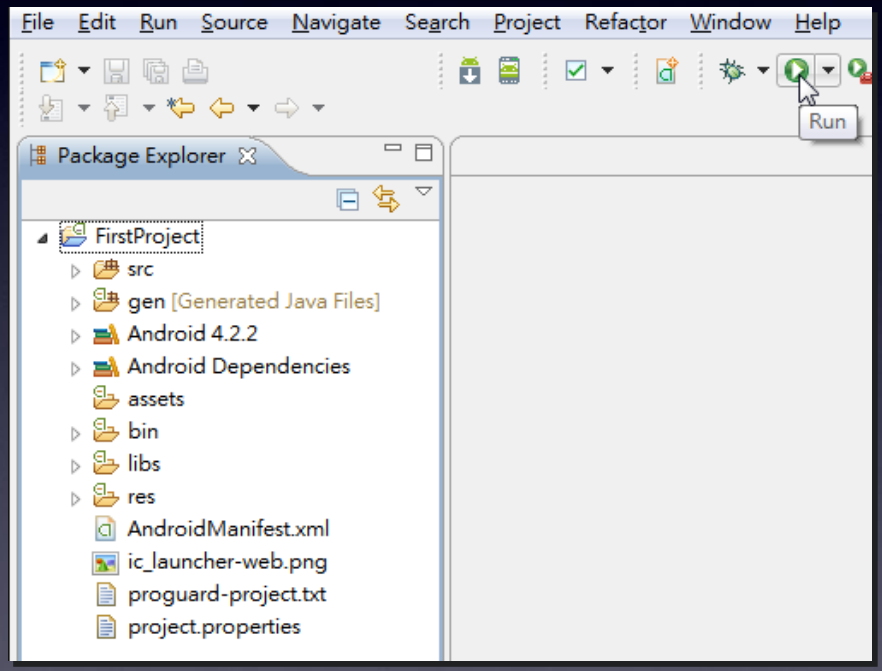
專案架構

- Res資料夾
  - drawable
    - 圖檔
  - layout
    - 介面定義檔
  - menu
    - 選單定義檔
  - values
    - 字串
    - 程式參數定義檔
    - 佈景主題



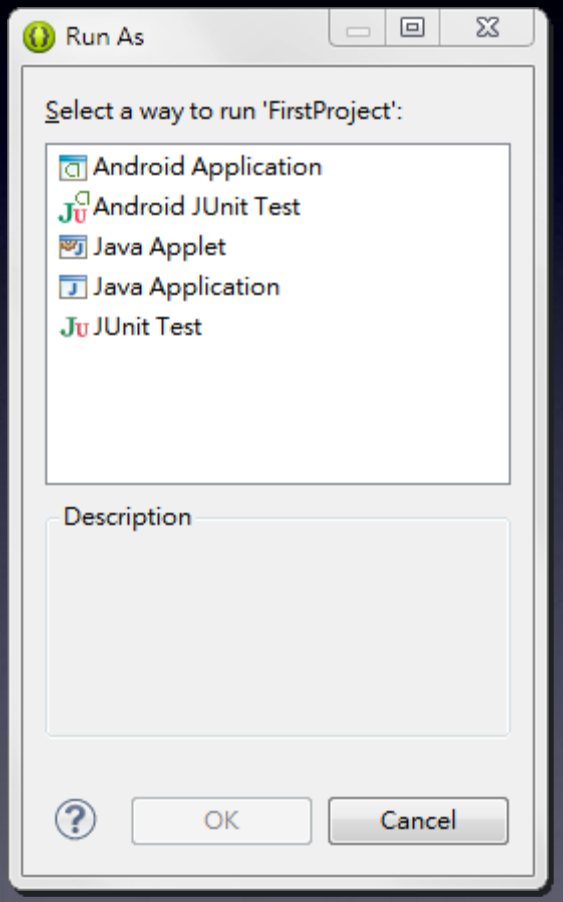
執行專案

- 選擇要執行的專案
- 按下右圖中右上方的按鈕 



執行專案

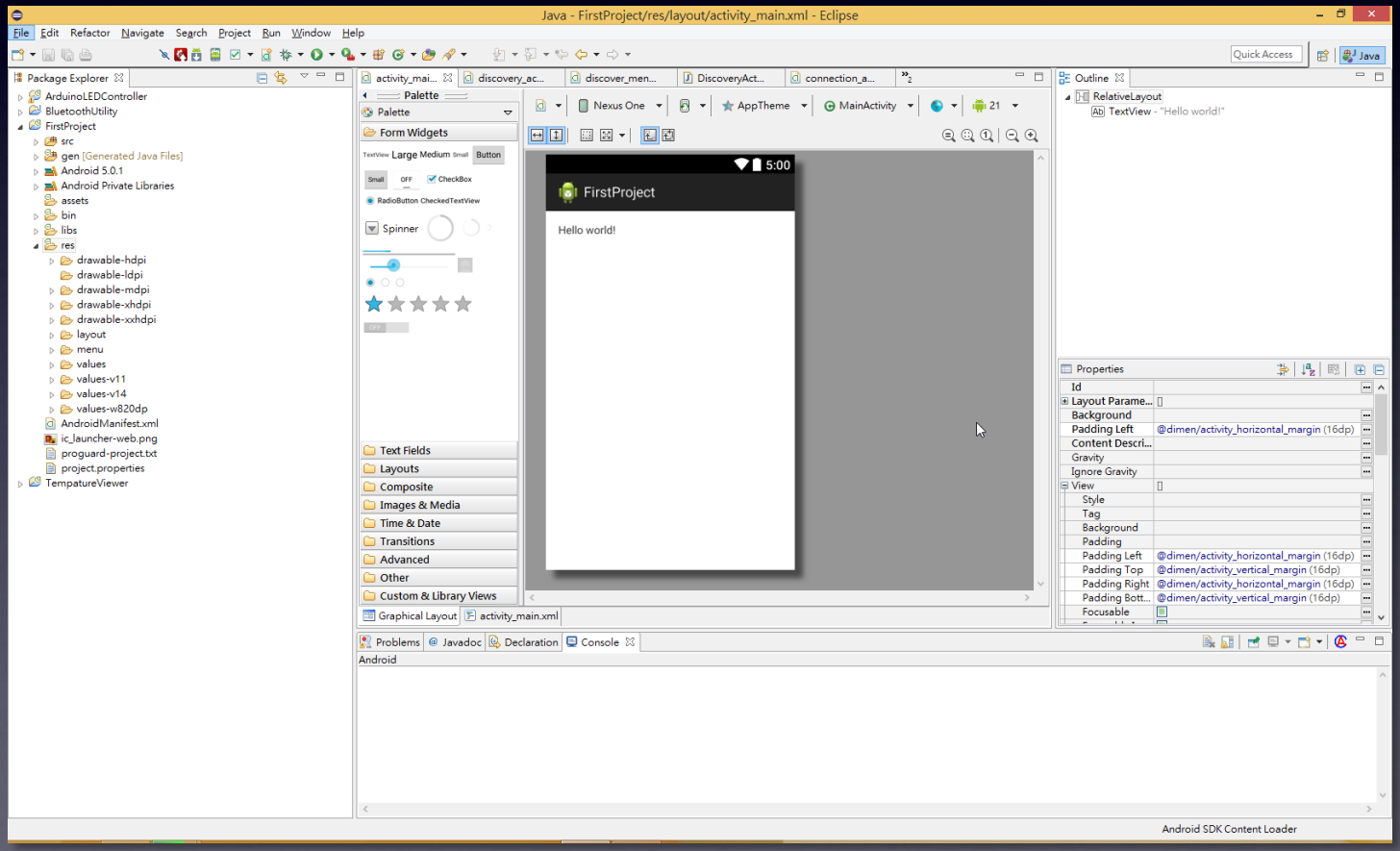
- 選擇Android Application
- OK



介面(LAYOUT)定義檔

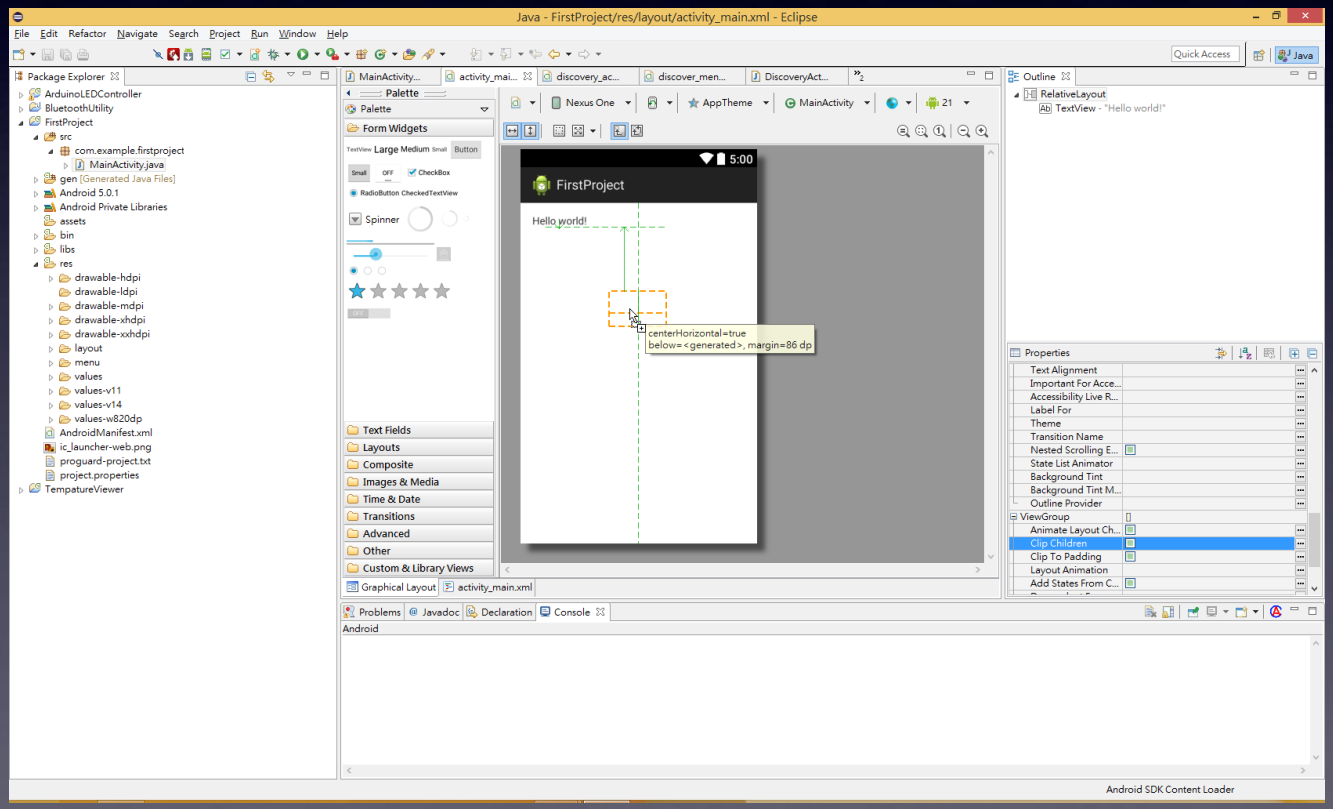
介面定義檔

- 打開專案資料夾res/layout中的activity_main.xml
- 下圖為Android Layout編輯器



介面定義檔

- 使用滑鼠將按鈕從左方拖進畫面
  讓畫面增加一個按鈕



常用基本元件

- 常用基本元件屬性
  - id
    - 給每個建立的元件一個索引值，@+id/<索引值名稱>
  - Layout Parameters
    - width, height
      - 元件長寬
  - View
    - Visibility
      - 元件是否可視

呈現畫面

呈現畫面

頁面要繼承Activity

```
public class MainActivity extends Activity {

        @Override
        protected void onCreate(Bundle savedInstanceState) {
                super.onCreate(savedInstanceState);
                setContentView(R.layout.activity_main);
        }
}
```

呈現畫面

```
public class MainActivity extends Activity {

        @Override
        protected void onCreate(Bundle savedInstanceState) {
                super.onCreate(savedInstanceState);
                setContentView(R.layout.activity_main);
        }
}
```

onCreate是啟動Activity
在這個方法中新增畫面

呈現畫面

```
public class MainActivity extends Activity {

        @Override
        protected void onCreate(Bundle savedInstanceState) {
                super.onCreate(savedInstanceState);
                setContentView(R.layout.activity_main);
        }
}
```

先呼叫父類別的onCreate
讓父類別作初始化

呈現畫面

```
public class MainActivity extends Activity {

        @Override
        protected void onCreate(Bundle savedInstanceState) {
                super.onCreate(savedInstanceState);
                setContentView(R.layout.activity_main);
        }
}
```

設定本Activity
呈現的畫面

呈現畫面

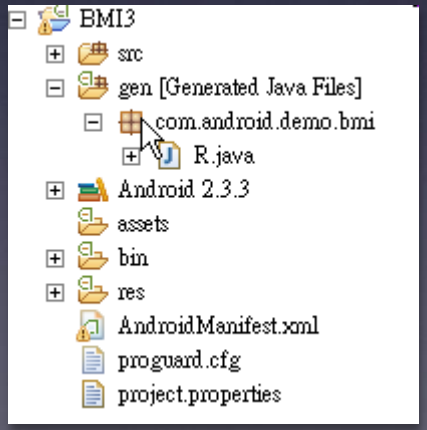
```
public class MainActivity extends Activity {

        @Override
        protected void onCreate(Bundle savedInstanceState) {
                super.onCreate(savedInstanceState);
                setContentView(R.layout.activity_main);
        }
}
```

設定layout給activity
R.layout是什麼？

呈現畫面

- 在Android中，會自動將資源檔以它的類型轉為class，再以索引值轉變為特殊的變數，每個變數都可以讓我們存取到該資源
- 這個Android自動產生的檔案稱為R.java，它存在於/gen/<應用程式的package>/R.java



程式讓畫面顯示

- 我們在程式中要存取資源檔，就是使用 R.<資源類型>.<索引值>
- 例如
  - R.layout.main
  - R.string.hello
  - R.drawable.launcher
  - R.id.btn_ok
- setContentView()會依照傳入的參數來將整個XML的介面元件轉為Java的物件

那我要切換應用程式畫面時
使用setContentView()設定其他頁面就可以了嗎??

- **千萬不要!!**
- 一個Activity只呼叫一次setContentView()
- 要換頁面就使用Activity切換

點擊(CLICK)事件

點擊(CLICK)事件

- Click就是使用者用手指頭去點的動作
- 撰寫程式時必須得撰寫View接收到事件後的行為要達到這個目的，包含以下步驟
  1. 在程式中找出該按鈕(使用findViewById)
  2. 針對該按鈕，設定事件接受器OnClickListener
- 來看看程式怎麼寫

按鈕事件

```
public class MainActivity extends Activity {

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    Button button = (Button) findViewById(R.id.button1);
    button.setOnClickListener(new OnClickListener() {

        @Override
        public void onClick(View v) {

        }
    });
}
```

findViewById找出View

按鈕事件

```
public class MainActivity extends Activity {

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    Button button = (Button) findViewById(R.id.button1);
    button.setOnClickListener(new OnClickListener() {

        @Override
        public void onClick(View v) {

        }
    });
}
```

轉型成特定的View
在此是轉型成Button

按鈕事件

```
public class MainActivity extends Activity {

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    Button button = (Button) findViewById(R.id.button1);
    button.setOnClickListener(new OnClickListener() {

        @Override
        public void onClick(View v) {

        }
    });
}
```

設定事件接收器
OnClickListener給View

按鈕事件

```
public class MainActivity extends Activity {

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    Button button = (Button) findViewById(R.id.button1);
    button.setOnClickListener(new OnClickListener() {

        @Override
        public void onClick(View v) {

        }
    });
}
```

使用new建立一個OnClickListener的實體

按鈕事件

```
public class MainActivity extends Activity {

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    Button button = (Button) findViewById(R.id.button1);
    button.setOnClickListener(new OnClickListener() {

        @Override
        public void onClick(View v) {

        }
    });
}
```

按到按鈕後的程式寫在onClick的方法內

按鈕事件

```
public class MainActivity extends Activity {

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    Button button = (Button) findViewById(R.id.button1);
    button.setOnClickListener(new OnClickListener() {

        @Override
        public void onClick(View v) {

        }
    });
}
```

參數傳入的v就是Button
R.id.button1

接收事件

- 其他事件
  - 長按事件

```
new View.OnLongClickListener() {
          public void onLongClick(View v) {}
}
```

  - 指觸事件

```
new View.OnTouchListener() {
          public void onTouch(View v, MotionEvent e) {}
}
```

  - 按鍵事件

```
new View.OnKeyListener() {
     public void onKey(View v, int keyCode, KeyEvent e) {}
}
```

結束ACTIVITY

- 如果我希望讓按鈕按下後目前的畫面(Activity)就關閉，該怎麼做？
  - `finish()`
    - 只要在Activity內呼叫此方法，Activity就會關閉

結束ACTIVITY

```
public class MainActivity extends Activity {

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    Button button = (Button) findViewById(R.id.button1);
    button.setOnClickListener(new OnClickListener() {

        @Override
        public void onClick(View v) {
            finish();
        }
    });
}
```

呼叫finish結束Activity

畫面提示

畫面提示

- Toast是短暫性跳出通知使用者的一種方式
  - 只能顯示資訊，使用者無法互動

- 常用在通知APP狀態
  - 登入失敗、資料未填

畫面提示

```
public class MainActivity extends Activity {

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    Button button = (Button) findViewById(R.id.button1);
    button.setOnClickListener(new OnClickListener() {

        @Override
        public void onClick(View v) {
              Toast.makeText(MainActivity.this, "Click!!",
                    Toast.LENGTH_LONG).show();
        }
    });
}
```

畫面提示

```
public class MainActivity extends Activity {

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    Button button = (Button) findViewById(R.id.button1);
    button.setOnClickListener(new OnClickListener() {

        @Override
        public void onClick(View v) {
            Toast.makeText(MainActivity.this, "Click!!",
                    Toast.LENGTH_LONG).show();
        }
    });
}
```

Toast.makeText來建立畫面提示

畫面提示

```
public class MainActivity extends Activity {

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    Button button = (Button) findViewById(R.id.button1);
    button.setOnClickListener(new OnClickListener() {

        @Override
        public void onClick(View v) {
            Toast.makeText(MainActivity.this, "Click!!",
                Toast.LENGTH_LONG).show();
        }
    });
}
```

參數1傳入Activity

畫面提示

```
public class MainActivity extends Activity {

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    Button button = (Button) findViewById(R.id.button1);
    button.setOnClickListener(new OnClickListener() {

        @Override
        public void onClick(View v) {
              Toast.makeText(MainActivity.this, "Click!!",
                    Toast.LENGTH_LONG).show();
        }
    });
}
```

參數2傳入要顯示的文字

畫面提示

```
public class MainActivity extends Activity {

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    Button button = (Button) findViewById(R.id.button1);
    button.setOnClickListener(new OnClickListener() {

        @Override
        public void onClick(View v) {
              Toast.makeText(MainActivity.this, "Click!!",
                    Toast.LENGTH_LONG).show();
        }
    });
}
```

參數3決定通知顯示的長短
LENGTH_LONG or LENGTH_SHORT

畫面提示

```
public class MainActivity extends Activity {

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    Button button = (Button) findViewById(R.id.button1);
    button.setOnClickListener(new OnClickListener() {

        @Override
        public void onClick(View v) {
              Toast.makeText(MainActivity.this, "Click!!",
                    Toast.LENGTH_LONG).show();
        }
    });
}
```

最後一定要記得呼叫show
才會顯示在畫面上

作業

- 寫一個登入畫面，如右圖
  有兩個EditText和兩個Button
- EditText要預設有提示字
  告訴使用者輸入帳號和輸入密碼
- 按下登入按鈕
  - 帳號欄和密碼欄都有輸入文字
    就顯示「登入成功」的Toast
- 按下取消按鈕
  - 關閉這個頁面

應用程式配置設定檔

應用程式配置設定檔

- 前面有說到每個App都可包含多個載體
- 而載體在App安裝到裝置時，必須得向Android Framework註冊
- 註冊的內容就是寫在應用程式配置設定檔AndroidManifest.xml中
- 打開FirstProject的AndroidMainfest.xml

應用程式配置設定檔

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.firstproject"
    android:versionCode="1"
    android:versionName="1.0" >

    <uses-sdk android:minSdkVersion="14" android:targetSdkVersion="17"/>

    <application
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name" >
        <activity
            android:name=".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>
    </application>
</manifest>
```

應用程式的package

應用程式配置設定檔

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.firstproject"
    android:versionCode="1"
    android:versionName="1.0" >

    <uses-sdk android:minSdkVersion="14" android:targetSdkVersion="17" />

    <application
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name" >
        <activity
            android:name=".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>
    </application>
</manifest>
```

應用程式開發的版號
versionCode是給開發者看的版本
versionName是給使用者看的版號

應用程式配置設定檔

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.firstproject"
    android:versionCode="1"
    android:versionName="1.0" >

    <uses-sdk android:minSdkVersion="14" android:targetSdkVersion="17"/>

    <application
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name" >
        <activity
            android:name=".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>
    </application>
</manifest>
```

App可安裝的Android版本
minSdkVersion 最低支援版本
targetSdkVersion App最佳支援版本

應用程式配置設定檔

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.firstproject"
    android:versionCode="1"
    android:versionName="1.0" >

    <uses-sdk android:minSdkVersion="14" android:targetSdkVersion="17"/>

    <application
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name" >
        <activity
            android:name=".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>
    </application>
</manifest>
```

表示開始定義應用程式的設定

應用程式配置設定檔

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.firstproject"
    android:versionCode="1"
    android:versionName="1.0" >

    <uses-sdk android:minSdkVersion="14" android:targetSdkVersion="17"/>

    <application
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name" >
        <activity
            android:name=".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>
    </application>
</manifest>
```

icon App的ICON
label App呈現在裝置上的名稱

應用程式配置設定檔

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.firstproject"
    android:versionCode="1"
    android:versionName="1.0" >

    <uses-sdk android:minSdkVersion="14" android:targetSdkVersion="17"/>

    <application
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name" >
        <activity
            android:name=".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>
    </application>
</manifest>
```

表示開始定義頁面的設定
App有幾個Activity，就有幾個定義

應用程式配置設定檔

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.firstproject"
    android:versionCode="1"
    android:versionName="1.0" >

    <uses-sdk android:minSdkVersion="14" android:targetSdkVersion="17"/>

    <application
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name" >
        <activity
            android:name=".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>
    </application>
</manifest>
```

activity的定義一定要寫在<application>內

應用程式配置設定檔

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.firstproject"
    android:versionCode="1"
    android:versionName="1.0" >

    <uses-sdk android:minSdkVersion="14" android:targetSdkVersion="17"/>

    <application
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name" >
        <activity
            android:name=".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>
    </application>
</manifest>
```

name 頁面所使用的class

應用程式配置設定檔

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.firstproject"
    android:versionCode="1"
    android:versionName="1.0" >

    <uses-sdk android:minSdkVersion="14" android:targetSdkVersion="17"/>

    <application
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name" >
        <activity
            android:name=".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>
    </application>
</manifest>
```

Android會自動將此名稱與最上方宣告的packag結合

應用程式配置設定檔

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.firstproject"
    android:versionCode="1"
    android:versionName="1.0" >

    <uses-sdk android:minSdkVersion="14" android:targetSdkVersion="17"/>

    <application
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name" >
        <activity
            android:name=".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>
    </application>
</manifest>
```

就是這個!!

應用程式配置設定檔

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.firstproject"
    android:versionCode="1"
    android:versionName="1.0" >

    <uses-sdk android:minSdkVersion="14" android:targetSdkVersion="17"/>

    <application
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name" >
        <activity
            android:name=".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>
    </application>
</manifest>
```

所以這邊指的就是
com.example.firstproject.MainActivity

應用程式配置設定檔

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.firstproject"
    android:versionCode="1"
    android:versionName="1.0" >

    <uses-sdk android:minSdkVersion="14" android:targetSdkVersion="17"/>

    <application
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name" >
        <activity
            android:name=".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>
    </application>
</manifest>
```

label
會顯示在頁面最上方的標題

應用程式配置設定檔

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.firstproject"
    android:versionCode="1"
    android:versionName="1.0" >

    <uses-sdk android:minSdkVersion="14" android:targetSdkVersion="17"/>

    <application
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name" >
        <activity
            android:name="..."
            android:label="@string/app_name" >
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

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

安裝App時，每個頁面都要向Android的Framework註冊

應用程式配置設定檔

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.firstproject"
    android:versionCode="1"
    android:versionName="1.0" >

    <uses-sdk android:minSdkVersion="14" android:targetSdkVersion="17"/>

    <application
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name" >
        <activity
            android:name="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>
    </application>
</manifest>
```

intent-filter就是註冊的條件

應用程式配置設定檔

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.firstproject"
    android:versionCode="1"
    android:versionName="1.0" >

    <uses-sdk android:minSdkVersion="14" android:targetSdkVersion="17"/>

    <application
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name" >
        <activity
            android:name="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>
    </application>
</manifest>
```

因為每個頁面可以啟動的條件不一樣
例如：有些頁面專門用來當作App的啟動頁

應用程式配置設定檔

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.firstproject"
    android:versionCode="1"
    android:versionName="1.0" >

    <uses-sdk android:minSdkVersion="14" android:targetSdkVersion="17"/>

    <application
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name" >
        <activity
            android:name=".MathActivity"
            android:label="@string/app_name" >
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

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

一個Activity可以有多個註冊的條件

應用程式配置設定檔

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.firstproject"
    android:versionCode="1"
    android:versionName="1.0" >

    <uses-sdk android:minSdkVersion="14" android:targetSdkVersion="17"/>

    <application
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name" >
        <activity
            android:name="..."
            android:label="@string/app_name" >
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

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

以下的action和category的組合就是
搭配出此頁為應用程式的啟動頁

應用程式配置設定檔

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.firstproject"
    android:versionCode="1"
    android:versionName="1.0" >

    <uses-sdk android:minSdkVersion="14" android:targetSdkVersion="17"/>

    <application
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name" >
        <activity
            android:name=".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>
    </application>
</manifest>
```

一個「可以啟動」的App至少
要有一個Activity是註冊成App的啟動頁

ACTIVITY概觀

ACTIVITY概觀

- 盡量保持每個Activity只負責一個畫面
- 要轉至其他畫面就使用Activity切換

- 依照是否需要與其它Activity交換資料來區分，Activity可分為兩種類型
  - 獨立的Activity
  - 相依的Activity

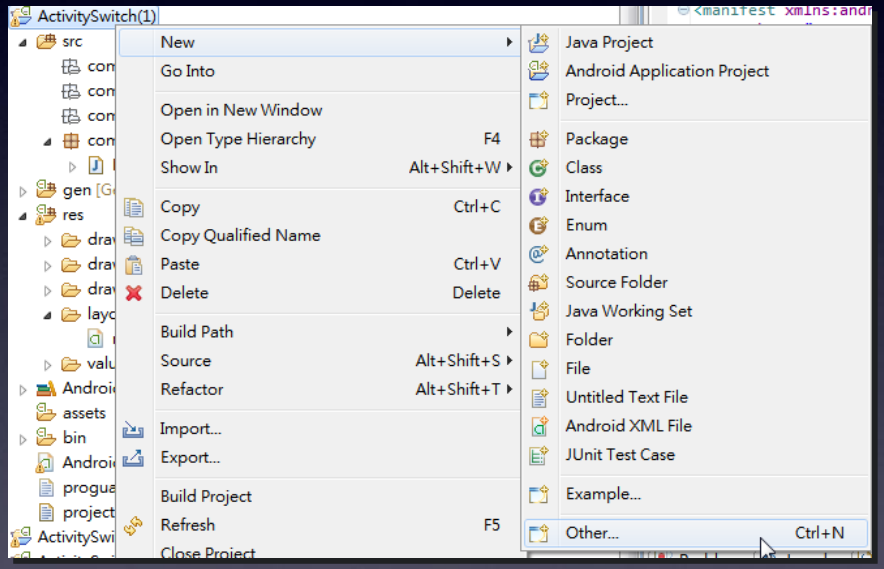
ACTIVITY概觀

- 獨立的Activity
  - 單純從一個螢幕跳到另一個螢幕，不涉及資料交換
- 相依的Activity
  - 需要與其它的Activity交換資料
  - 分為單向交換與雙向交換
    - 單向：資料由一個螢幕攜帶至另一個螢幕
    - 雙向：螢幕上的資料除了攜帶至另一個螢幕外，還會因為另一個螢幕的操作而改變，進而影響到原本螢幕的資料呈現

新增一個ACTIVITY

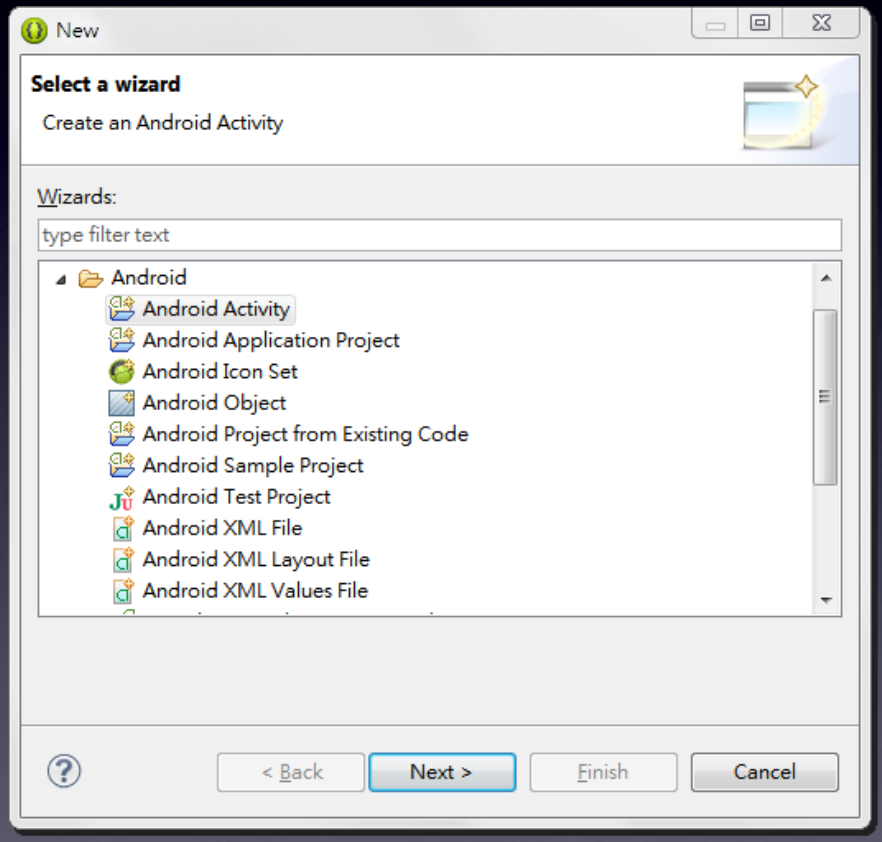
新增一個ACTIVITY

- 對專案按下滑鼠右鍵
- New
- Others



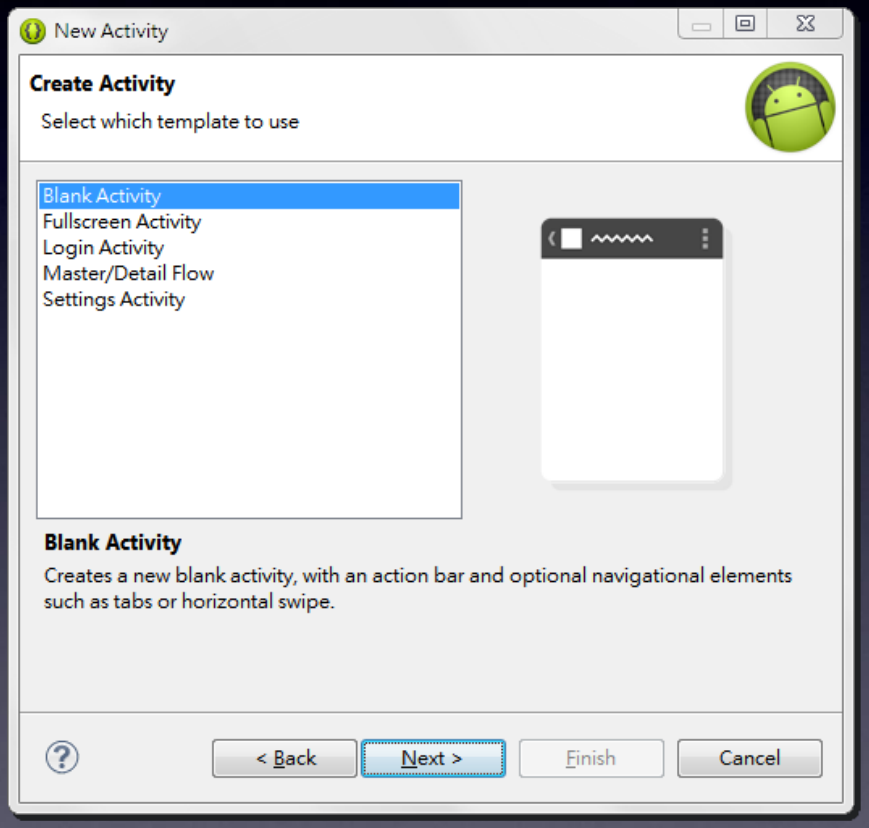
新增一個ACTIVITY

- 選擇Android的 Android Activity
- Next



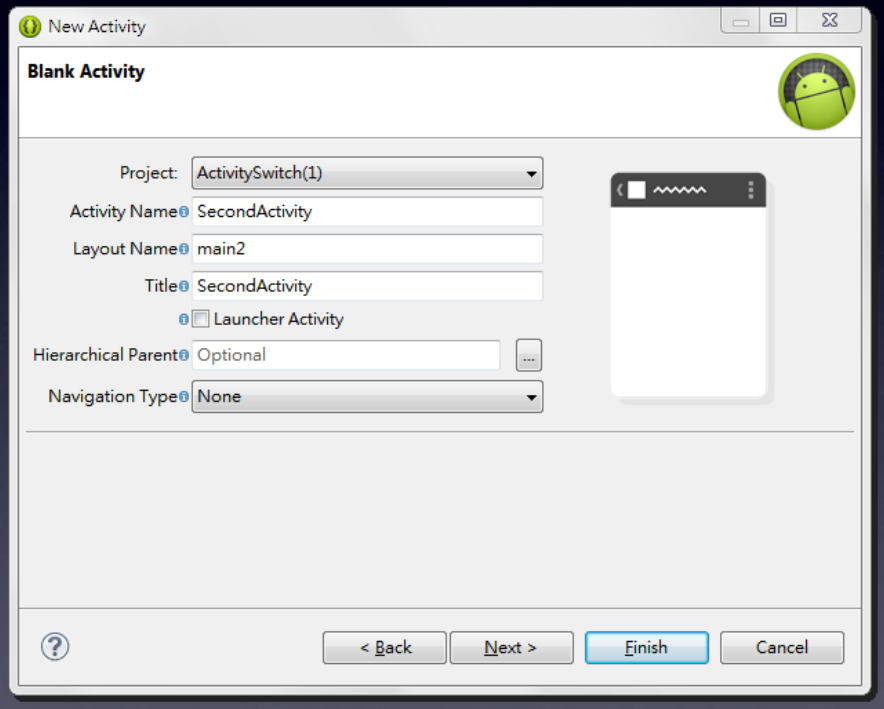
新增一個ACTIVITY

- 選擇Blank Activity
- Next



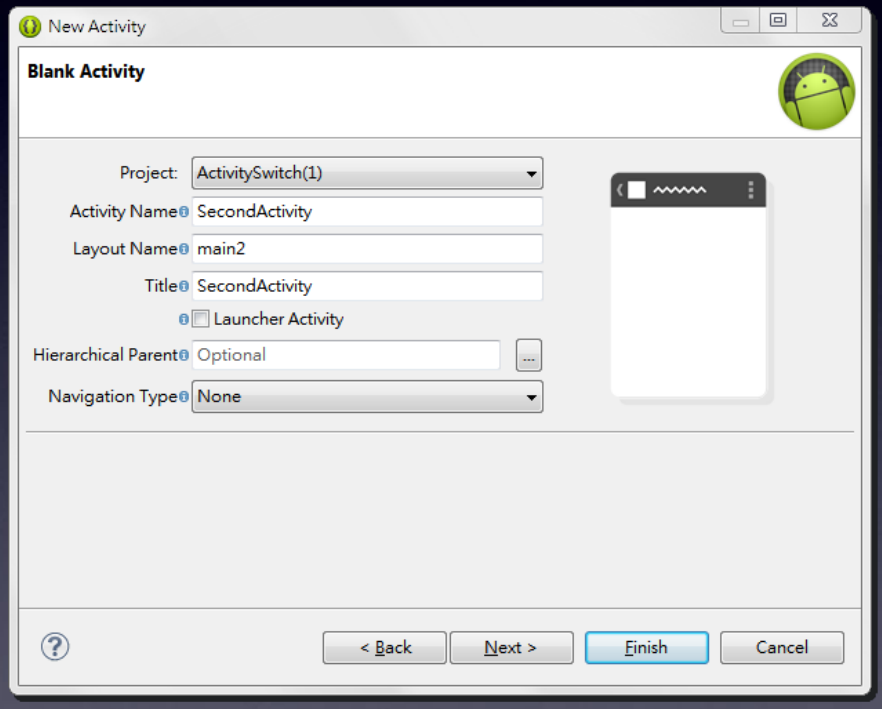
新增一個ACTIVITY

- Activity Name
  - 建立Java檔
- Layout Name
  - 介面設定檔的名稱
- Title
  - Activity的名稱
- Launcher Activity
  - 勾選表示這是程式進入的Activity



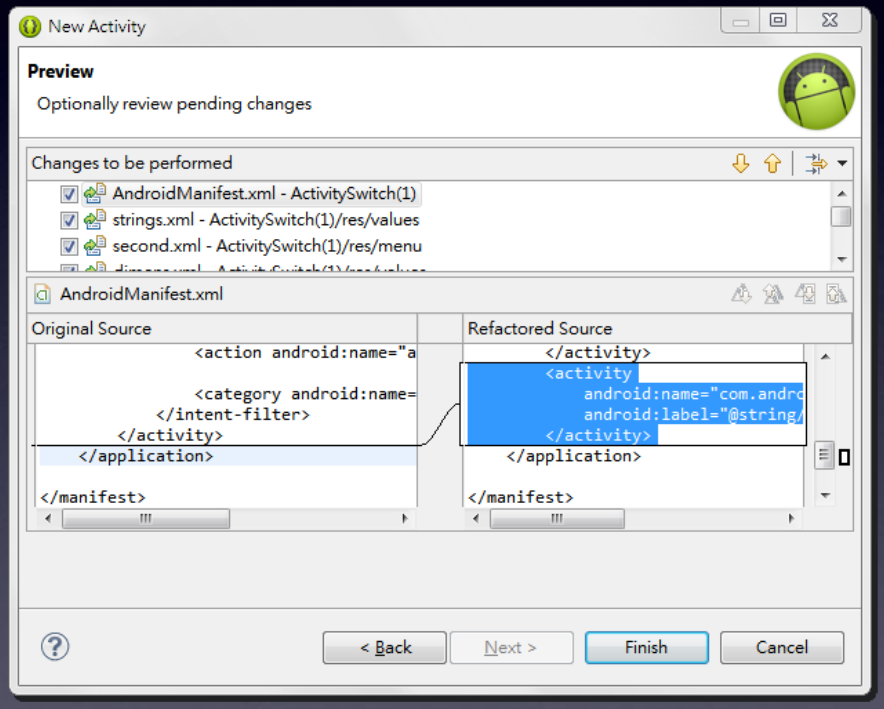
新增一個ACTIVITY

- Launcher Activity
  - 勾選表示這是程式進入的Activity
- Next

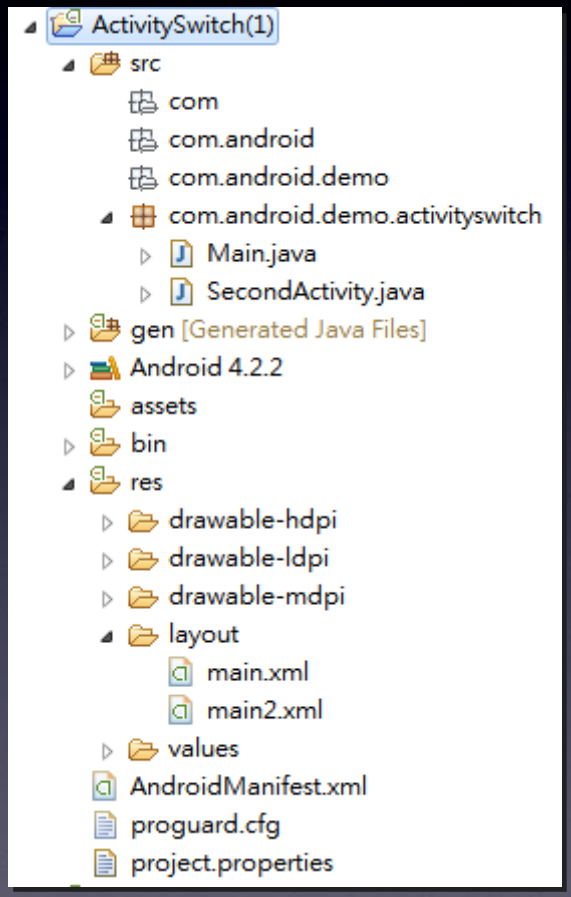


新增一個ACTIVITY

- 接下來ADT會自動將相關程式碼加入AndroidManifest.xml中
- Finish



新增一個ACTIVITY



- 建立完成
- 確認AndroidManifest.xml有新的Activity定義

androidbasic/ActivitySwitch

切換至另一個ACTIVITY

切換至另一個ACTIVITY

- Android之間的頁面切換使用Intent來進行
- 要傳遞的內容也是藉由Intent來傳遞
- Activity切換
  - 使用 `Intent.setClass`
    - `Intent.setClass(目前Activity.this, 目標Activity.class)`
  - 再呼叫`startActivity(intent)`

切換至另一個ACTIVITY

- 資料傳遞
  - 送出端
    - `Intent.putExtra(String key, 型態 val)`
      - 支援的傳遞類型
        - Int, boolean, byte, char, double, float, long, String, short
        - 上述型態的陣列
        - Serializable, Parcelable
  - 接收端
    - 要知道傳遞過來的型態為何、索引值為何
並呼叫對應的方法取出傳遞的數值
    - `getIntent().getStringExtra(String key)`
    - `getIntent().getIntExtra(String key, int default)`

傳送端

```
public class Main extends Activity {
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);
        Button button = (Button) findViewById(R.id.button1);
        button.setOnClickListener(new OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent = new Intent(Main.this, SecondActivity.class);
                intent.putExtra("string_value", "This is Main Activity");
                intent.putExtra("text_size", 25);
                startActivity(intent);
            }
        });
    }
}
```

傳送端

```
public class Main extends Activity {
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);
        Button button = (Button) findViewById(R.id.button1);
        button.setOnClickListener(new OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent = new Intent(Main.this, SecondActivity.class);
                intent.putExtra("string_value", "This is Main Activity");
                intent.putExtra("text_size", 25);
                startActivity(intent);
            }
        });
    }
}
```

建立Intent
參數為(目前Activity, 目標Activity)

傳送端

```
public class Main extends Activity {
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);
        Button button = (Button) findViewById(R.id.button1);
        button.setOnClickListener(new OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent = new Intent(Main.this, SecondActivity.class);
                intent.putExtra("string_value", "This is Main Activity");
                intent.putExtra("text_size", 25);
                startActivity(intent);
            }
        });
    }
}
```

放置要傳遞的數值，以(索引值,內容)來設定

傳送端

```
public class Main extends Activity {
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);
        Button button = (Button) findViewById(R.id.button1);
        button.setOnClickListener(new OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent = new Intent(Main.this, SecondActivity.class);
                intent.putExtra("string_value", "This is Main Activity");
                intent.putExtra("text_size", 25);
                startActivity(intent);
            }
        });
    }
}
```

使用startActivity，讓Android Framework開始進行畫面轉換的流程

接收端

```
public class SecondActivity extends Activity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main2);
        Intent intent = getIntent();
        String value = intent.getStringExtra("string_value");
        int textSize = intent.getIntExtra("text_size", 15);
        TextView text = (TextView) findViewById(R.id.textView1);
        text.setText(value);
        text.setTextSize(textSize);
    }
}
```

接收端

```
public class SecondActivity extends Activity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main2);
        Intent intent = getIntent();
        String value = intent.getStringExtra("string_value");
        int textSize = intent.getIntExtra("text_size", 15);
        TextView text = (TextView) findViewById(R.id.textView1);
        text.setText(value);
        text.setTextSize(textSize);
    }
}
```

取得傳遞到這個Activity的Intent

接收端

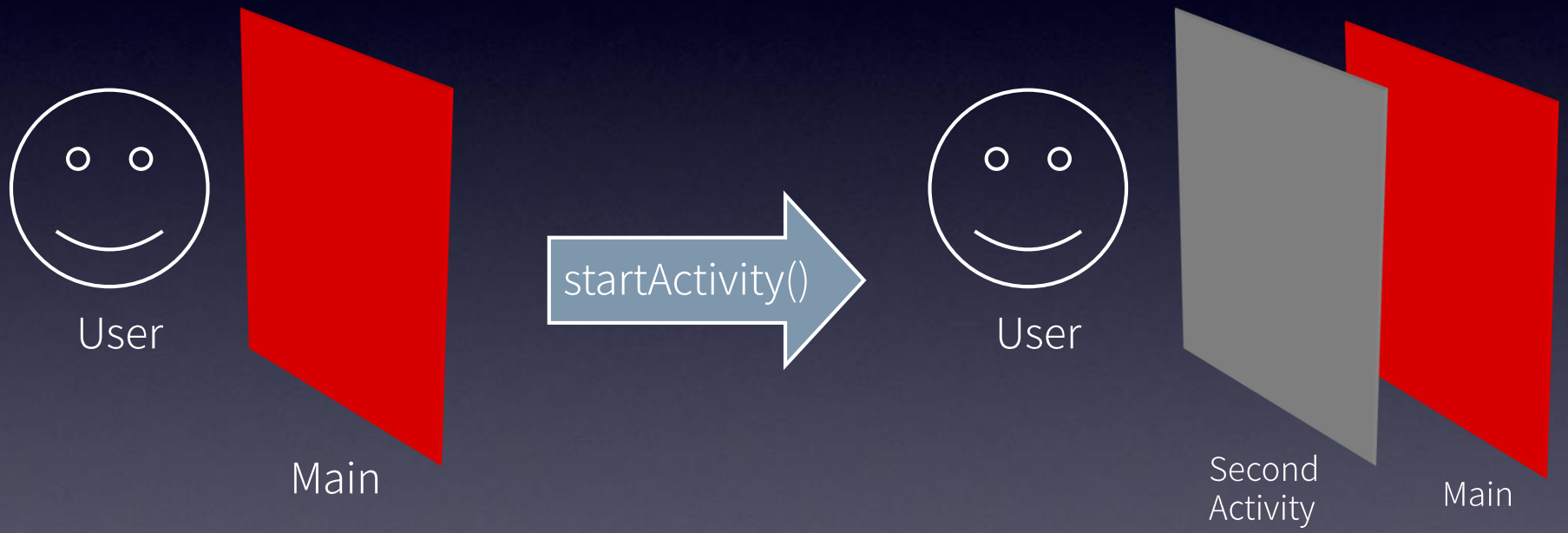
```
public class SecondActivity extends Activity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main2);
        Intent intent = getIntent();
        String value = intent.getStringExtra("string_value");
        int textSize = intent.getIntExtra("text_size", 15);
        TextView text = (TextView) findViewById(R.id.textView1);
        text.setText(value);
        text.setTextSize(textSize);
    }
}
```

取得傳遞內容，使用相對應型態的
get型態Extra(索引值)

ACTIVITY切換的原理

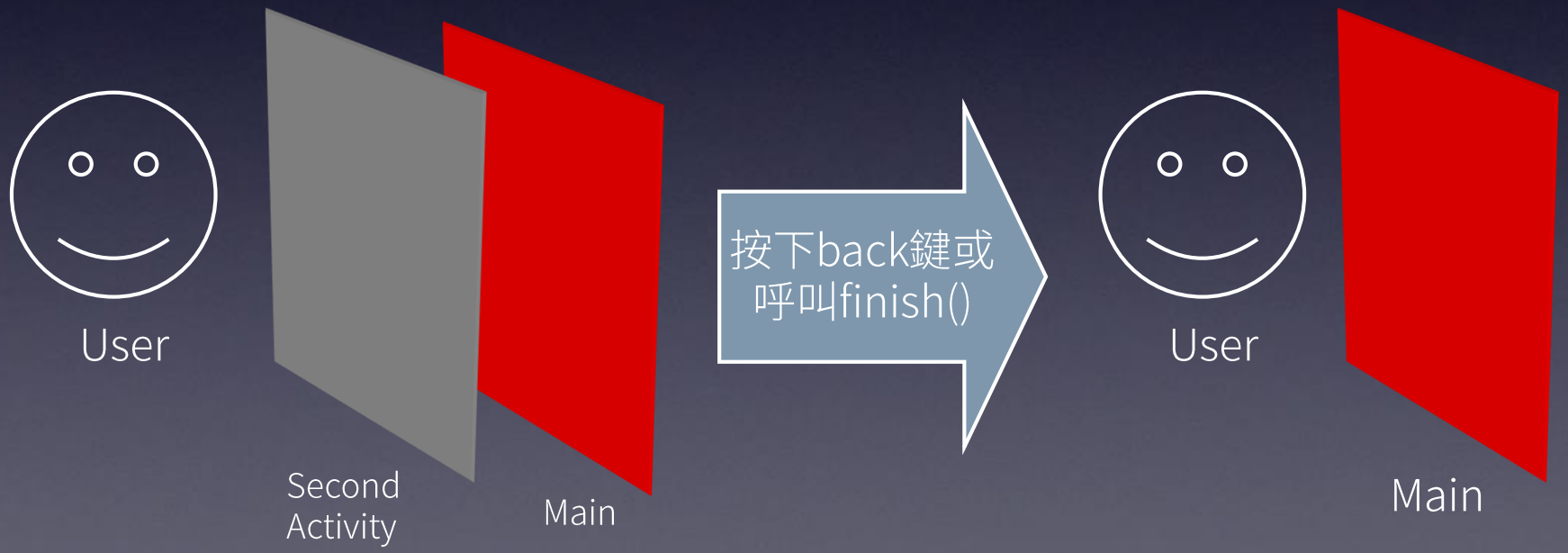
ACTIVITY切換的原理

- 轉換Activity時，其實就是把新的畫面推到使用者眼前

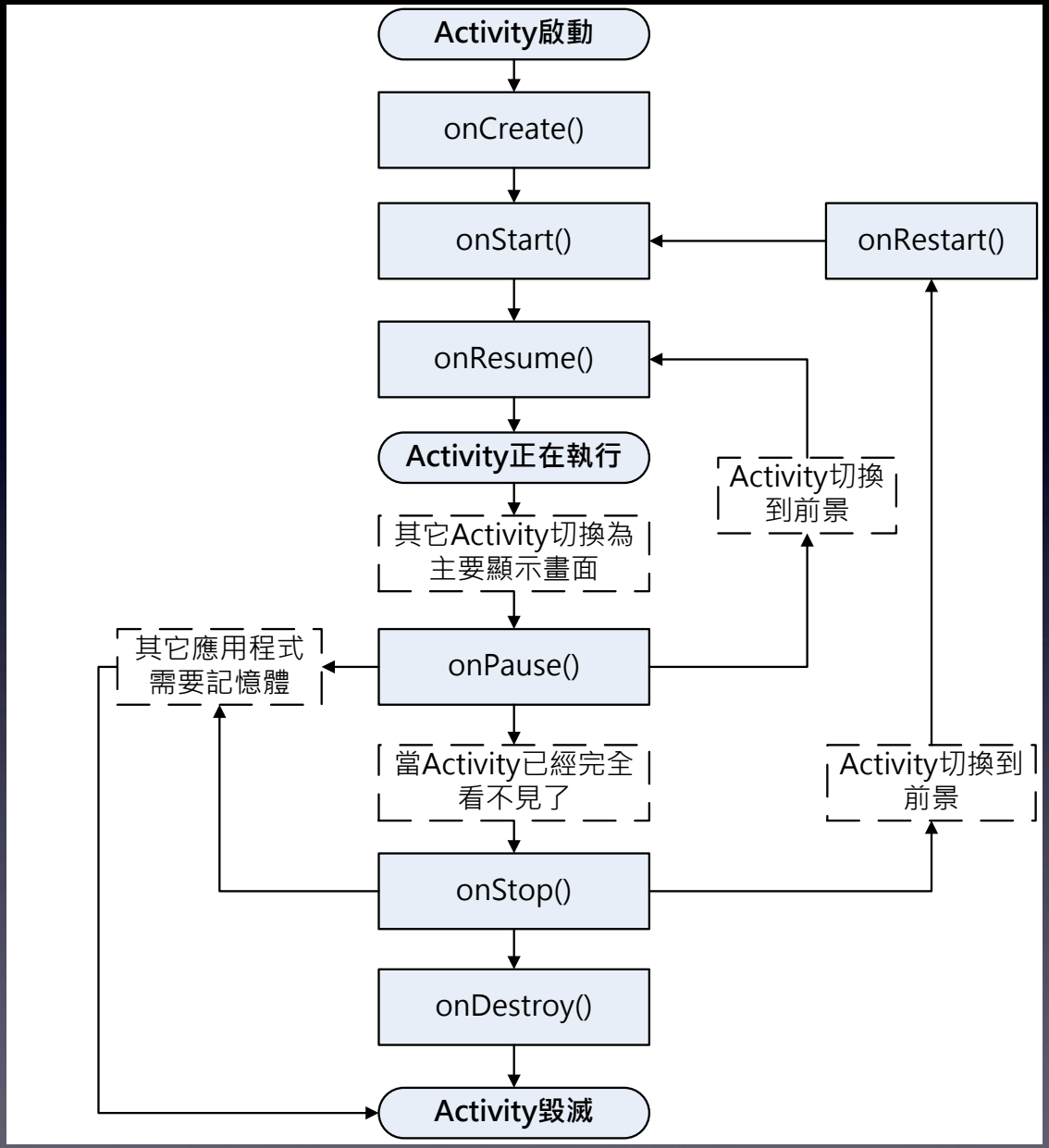


ACTIVITY切換的原理

- 所以要回到上一個畫面時，千萬不要用startActivity()來啟動，而是要移除現在最前方的Activity
- 當你按下back鍵，或是在第二個Activity中呼叫finish()都可以使Activity結束



ACTIVITY生命週期

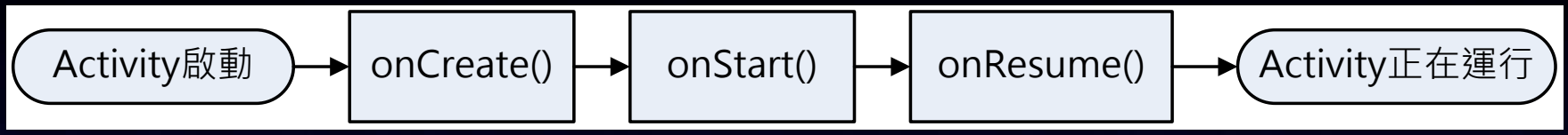

Activity啟動
onCreate()
onStart()
onRestart()
onResume()
Activity正在執行
Activity切換到前景
其它Activity切換為主要顯示畫面
其它應用程式需要記憶體
onPause()
當Activity已經完全看不見了
Activity切換到前景
onStop()
onDestroy()
Activity毀滅

ACTIVITY生命週期

- Android的Activity有各種不同的狀態需要處理
- onDestroy() 表示Activity要結束了
- onCreate() 表示Activity要建立了
- onStop()表示Activity要完全在畫面上看不見了
- onStart()表示Activity要在開始運作了
- onPause()表示Activity要離開前景了
- onResume()表示Activity表示畫面要顯示在前景了

生命週期

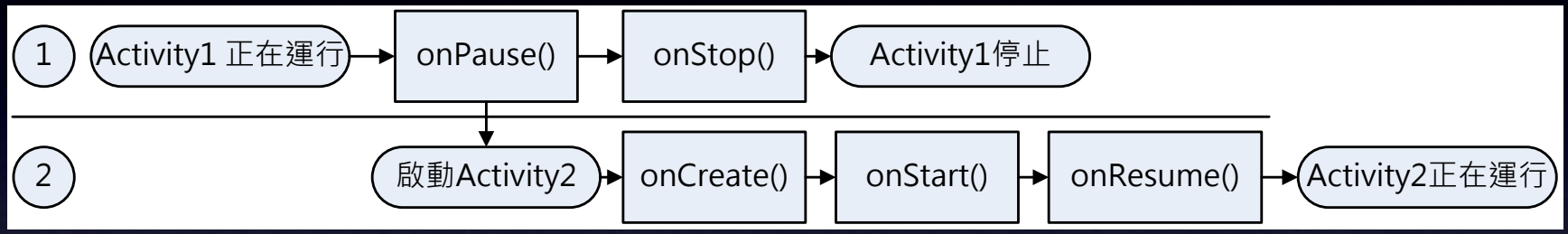
- 正常啟動Activity



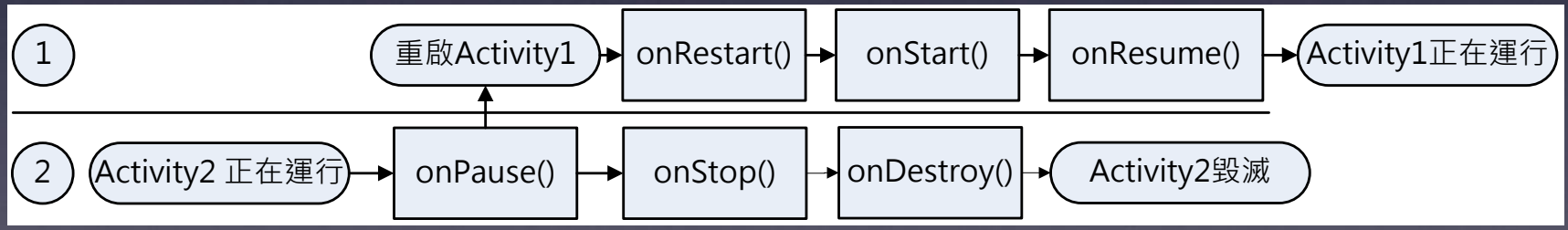
- 正常中止Activity

生命週期

- 呼叫另一個Activity (由1到2)



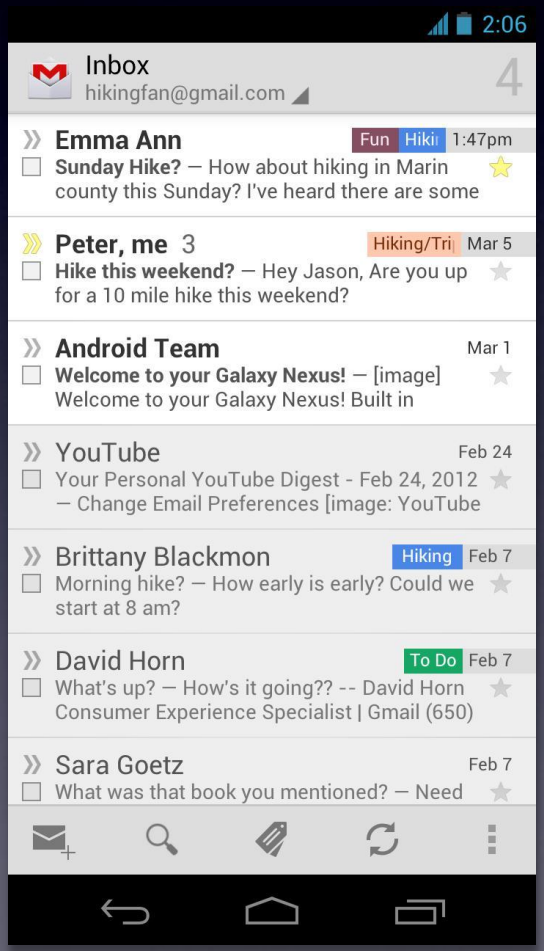
- 按下Back鍵返回原Activity (由2到1)

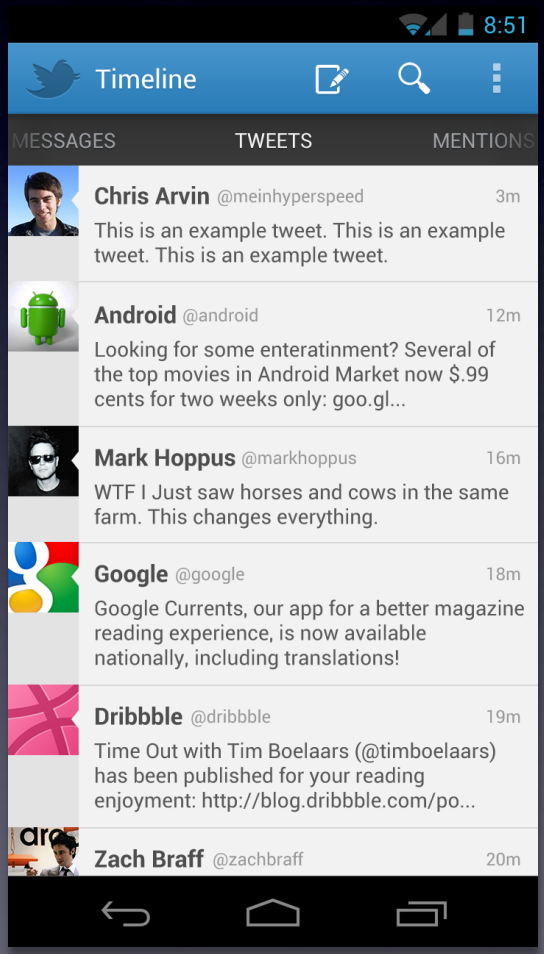


LISTVIEW與ADAPTER

LISTVIEW

- ListView可以說是資料在手機上呈現最好的方法





LISTVIEW

- 建立ListView的流程
  - 準備一連串資料
  - 準備呈現資料的Layout
  - 準備整合資料和Layout的Adapter (適配器)
  - 將Adapter設定給ListView

什麼是ADAPTER

- Adapter就是你的資料、要呈現的Layout與ListView之間的溝通橋樑
- Adapter提供給ListView呈現的畫面與資料的資訊
- Adapter整合資料到Layout上
- Adapter是資料與畫面的結合處
- Adapter是一種Design Pattern
  - http://en.wikipedia.org/wiki/Adapter_pattern

什麼是ADAPTER

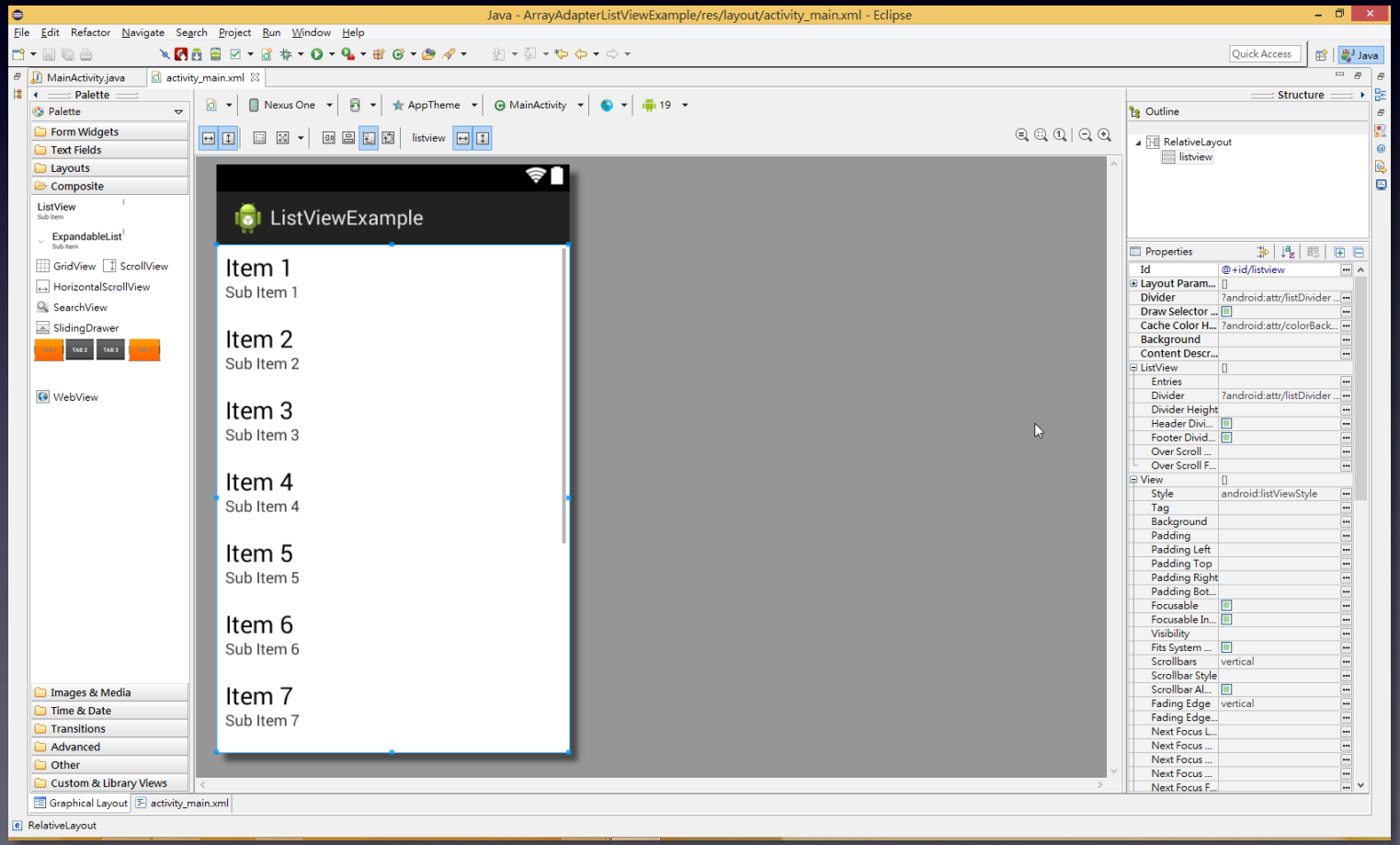
- 為了方便大家製作，Android提供了簡便的Adapter
  - ArrayAdapter
  - SimpleAdapter

androidbasic/ArrayAdapterListViewExample

ARRAY ADAPTER

LAYOUT

- 畫面中擺放Composite→ListView
- id設定為listview



程式碼

```
public class MainActivity extends Activity {
    private static final String[] NAMES = {
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        ListView listView = (ListView) findViewById(R.id.listview);
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
        android.R.layout.simple_list_item_1, NAMES);
        listView.setAdapter(adapter);
    }
}
```

程式碼

```
public class MainActivity extends Activity {
    private static final String[] NAMES = {
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        ListView listView = (ListView) findViewById(R.id.listview);
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
        android.R.layout.simple_list_item_1, NAMES);
        listView.setAdapter(adapter);
    }
}
```

準備要呈現的資料

程式碼

```
public class MainActivity extends Activity {
    private static final String[] NAMES = {
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        ListView listView = (ListView) findViewById(R.id.listview);
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
        android.R.layout.simple_list_item_1, NAMES);
        listView.setAdapter(adapter);
    }
}
```

設定Activity介面

程式碼

```
public class MainActivity extends Activity {
    private static final String[] NAMES = {
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        ListView listView = (ListView) findViewById(R.id.listview);
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
        android.R.layout.simple_list_item_1, NAMES);
        listView.setAdapter(adapter);
    }
}
```

findViewById找出id為listview
並轉型成ListView

程式碼

```
public class MainActivity extends Activity {
    private static final String[] NAMES = {
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        ListView listView = (ListView) findViewById(R.id.listview);
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
        android.R.layout.simple_list_item_1, NAMES);
        listView.setAdapter(adapter);
    }
}
```

建立一個ArrayAdapter
列表的資料型態是字串

程式碼

```
public class MainActivity extends Activity {
    private static final String[] NAMES = {
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        ListView listView = (ListView) findViewById(R.id.listview);
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
        android.R.layout.simple_list_item_1, NAMES);
        listView.setAdapter(adapter);
    }
}
```

參數1是目前的Activity

程式碼

```
public class MainActivity extends Activity {
    private static final String[] NAMES = {
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        ListView listView = (ListView) findViewById(R.id.listview);
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
        android.R.layout.simple_list_item_1, NAMES);
        listView.setAdapter(adapter);
    }
}
```

參數2是ListView的每一個條列呈現時要使用的layout

程式碼

```
public class MainActivity extends Activity {
    private static final String[] NAMES = {
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        ListView listView = (ListView) findViewById(R.id.listview);
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
        android.R.layout.simple_list_item_1, NAMES);
        listView.setAdapter(adapter);
    }
}
```

本處使用Android Framework提供的
android.R.layout.simple_list_item1

程式碼

```
public class MainActivity extends Activity {
    private static final String[] NAMES = {
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        ListView listView = (ListView) findViewById(R.id.listview);
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
        android.R.layout.simple_list_item_1, NAMES);
        listView.setAdapter(adapter);
    }
}
```

這個layout的細節，可以看
<SDK資料夾>/platforms/<Android版本>
/data/res/layout/simple_list_item_1.xml

程式碼

```
public class MainActivity extends Activity {
    private static final String[] NAMES = {
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        ListView listView = (ListView) findViewById(R.id.listview);
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
        android.R.layout.simple_list_item_1, NAMES);
        listView.setAdapter(adapter);
    }
}
```

參數3是ListView要呈現的資料陣列
型態必須得與建立Adapter時一致

程式碼

```
public class MainActivity extends Activity {
    private static final String[] NAMES = {
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark"};
    @Override
    protected void onCreate(Bundle sa
        super.onCreate(savedInstanceS
        setContentView(R.layout.activ
        ListView listView = (ListView) findViewById(R.id.
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
        android.R.layout.simple_list_item_1, NAMES);
        listView.setAdapter(adapter);
    }
}
```

型態必須得與建立Adapter時一致
這就是建立時的型態

程式碼

```
public class MainActivity extends Activity {
    private static final String[] NAMES = {
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        ListView listView = (ListView) findViewById(R.id.listview);
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
        android.R.layout.simple_list_item_1, NAMES);
        listView.setAdapter(adapter);
    }
}
```

最後記得要呼叫setAdapter
將建立好的Adapter設定給ListView

androidbasic/ListViewEventExample

LISTVIEW事件

點擊事件

- 在ListView中可以使用OnItemClickListener接收到點擊事件

程式碼

```
public class MainActivity extends Activity {
    private static final String[] NAMES = {
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        ListView listView = (ListView) findViewById(R.id.listview);
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
        android.R.layout.simple_list_item_1, NAMES);
        listView.setAdapter(adapter);
        listView.setOnItemClickListener(mOnItemClickListener);
    }
    private OnItemClickListener mOnItemClickListener = …
}
```

程式碼

```
public class MainActivity extends Activity {
    private static final String[] NAMES = {
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setCo
        ListV                                    id.listview);
        Array                                    er<String>(this,
        andro
        listView.setAda
        listView.setOnItemClickListener(mOnItemClickListener);
    }
    private OnItemClickListener mOnItemClickListener = …
}
```

使用setOnItemClickListener設定
ListView每個條列的事件接收器

程式碼

```
public class MainActivity extends Activity {
    private static final String[] NAMES = {
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark",
    "John", "Luke", "Matthew", "Peter", "Mark"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        ListView listView = (ListView) findViewById(R.id.listview);
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
        android.R.layout.simple_list_item_1, NAMES);
        listView.setAdapter(adapter);
        listView.setOnItemClickListener(mOnItemClickListener);
    }
    private OnItemClickListener mOnItemClickListener = …
}
```

事件接收器在此宣告成「成員變數」

程式碼

事件接收器在此宣告成「成員變數」

```
private OnItemClickListener mOnItemClickListener = new
OnItemClickListener() {

    @Override
    public void onItemClick(AdapterView<?> parent, View view, int
    position, long id) {
        Toast.makeText(MainActivity.this, NAMES[position],
        Toast.LENGTH_SHORT).show();
    }
};
```

程式碼

```
private OnItemClickListener mOnItemClickListener = new
OnItemClickListener() {

    @Override
    public void onItemClick(AdapterView<?> parent, View view, int
    position, long id) {
        Toast.makeText(MainActivity.this, NAMES[position],
        Toast.LENGTH_SHORT).show();
    }
};
```

使用new建立OnItemClickListener

程式碼

```
private OnItemClickListener mOnItemClickListener = new
OnItemClickListener() {
    @Override
    public void onItemClick(AdapterView<?> parent, View view, int
    position, long id) {
        Toast.makeText(MainActivity.this, NAMES[position],
        Toast.LENGTH_SHORT).show();
    }
};
```

當有點擊到ListView的Item的時候
onItemClick就會被呼叫

程式碼

```
private OnItemClickListener mOnItemClickListener = new
OnItemClickListener() {

    @Override
    public void onItemClick(AdapterView<?> parent, View view, int
    position, long id) {
        Toast.makeText(MainActivity.this, NAMES[position],
        Toast.LENGTH_SHORT).show();
    }
};
```

參數1其實就是ListView，
AdapterView為ListView的父類別

程式碼

```
private OnItemClickListener mOnItemClickListener = new
OnItemClickListener() {

    @Override
    public void onItemClick(AdapterView<?> parent, View view, int
    position, long id) {
        Toast.makeText(MainActivity.this, NAMES[position],
        Toast.LENGTH_SHORT).show();
    }
};
```

參數2就是點擊到ListView的那一列的View

程式碼

```
private OnItemClickListener mOnItemClickListener = new
OnItemClickListener() {
    @Override
    public void onItemClick(AdapterView<?> parent, View view, int
    position, long id) {
        Toast.makeText(MainActivity.this, NAMES[position],
        Toast.LENGTH_SHORT).show();
    }
};
```

參數3就是點擊到的ListView的索引值
就等同於陣列的索引值

Q & A