

IEEM535300

智慧化企業整合

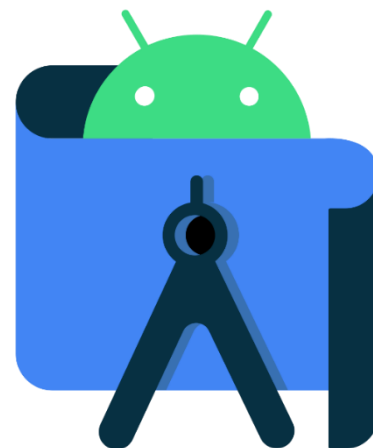
Website to App

助教 陳道明

課程大綱

1. WebView原理
2. 操作步驟
3. 疑難排解

4. 呈現結果



WebView 原理

WebView

- 寫好了網站，如何快速轉換成APP？
- 利用 Android WebView，
將網頁內嵌於App的包裝中！



WebView 方法

- **Webview**
 - loadUrl (*string*) : 載入網址
- **WebSettings**
 - setJavaScriptEnabled (*boolean*) :
 - 設定網頁是否啟用 JavaScript (通常必須設定為 true)
- **WebViewClient**
 - shouldOverrideUrlLoading() :
 - 載入網頁時不調用系統瀏覽器，而是在 APP 的 WebView 中顯示

操作步驟

操作步驟

1. 建立Android Studio project
2. 建立WebView
3. 設定WebView
4. 設定網路連線權限
5. 設定Action Bar



建立 Android Studio project

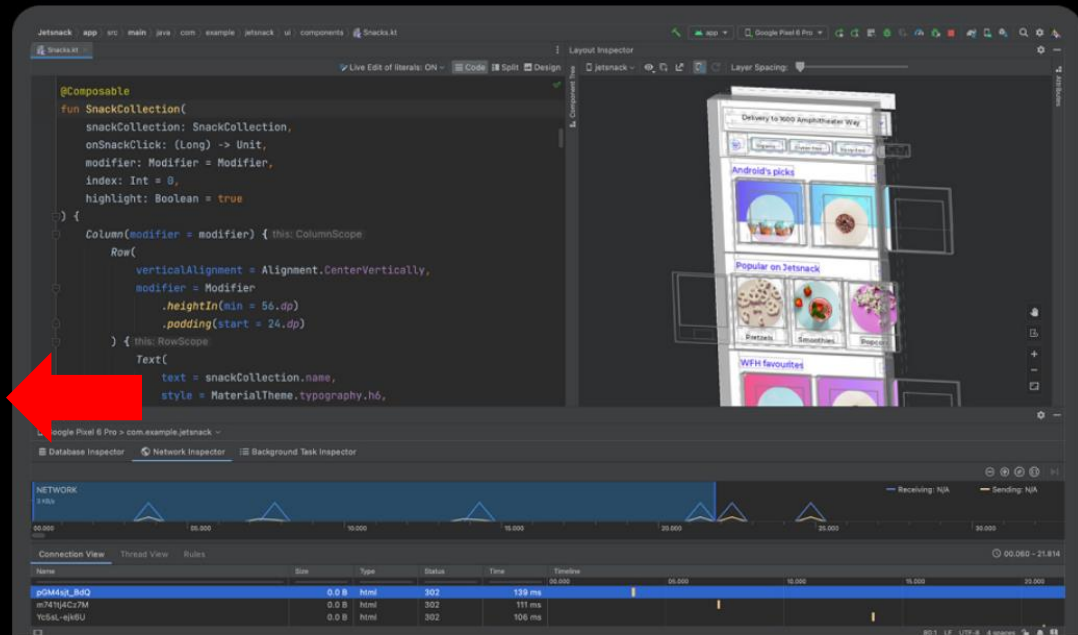


Android Studio

Get the official Integrated Development Environment (IDE) for Android app development.

[Download Android Studio Electric Eel](#) 📄

[Read release notes](#) 📄



建立 Android Studio project

13. Changes to the License Agreement

13.1 Google may make changes to the License Agreement as it distributes new versions of the SDK. When these changes are made, Google will make a new version of the License Agreement available on the website where the SDK is made available.

14. General Legal Terms

14.1 The License Agreement constitutes the whole legal agreement between you and Google and governs your use of the SDK (excluding any services which Google may provide to you under a separate written agreement), and completely replaces any prior agreements between you and Google in relation to the SDK. 14.2 You agree that if Google does not exercise or enforce any legal right or remedy which is contained in the License Agreement (or which Google has the benefit of under any applicable law), this will not be taken to be a formal waiver of Google's rights and that those rights or remedies will still be available to Google. 14.3 If any court of law, having the jurisdiction to decide on this matter, rules that any provision of the License Agreement is invalid, then that provision will be removed from the License Agreement without affecting the rest of the License Agreement. The remaining provisions of the License Agreement will continue to be valid and enforceable. 14.4 You acknowledge and agree that each member of the group of companies of which Google is the parent shall be third party beneficiaries to the License Agreement and that such other companies shall be entitled to directly enforce, and rely upon, any provision of the License Agreement that confers a benefit on (or rights in favor of) them. Other than this, no other person or company shall be third party beneficiaries to the License Agreement. 14.5 EXPORT RESTRICTIONS. THE SDK IS SUBJECT TO UNITED STATES EXPORT LAWS AND REGULATIONS. YOU MUST COMPLY WITH ALL DOMESTIC AND INTERNATIONAL EXPORT LAWS AND REGULATIONS THAT APPLY TO THE SDK. THESE LAWS INCLUDE RESTRICTIONS ON DESTINATIONS, END USERS AND END USE. 14.6 The rights granted in the License Agreement may not be assigned or transferred by either you or Google without the prior written approval of the other party. Neither you nor Google shall be permitted to delegate their responsibilities or obligations under the License Agreement without the prior written approval of the other party. 14.7 The License Agreement, and your relationship with Google under the License Agreement, shall be governed by the laws of the State of California without regard to its conflict of laws provisions. You and Google agree to submit to the exclusive jurisdiction of the courts located within the county of Santa Clara, California to resolve any legal matter arising from the License Agreement. Notwithstanding this, you agree that Google shall still be allowed to apply for injunctive remedies (or an equivalent type of urgent legal relief) in any jurisdiction. July 27, 2021

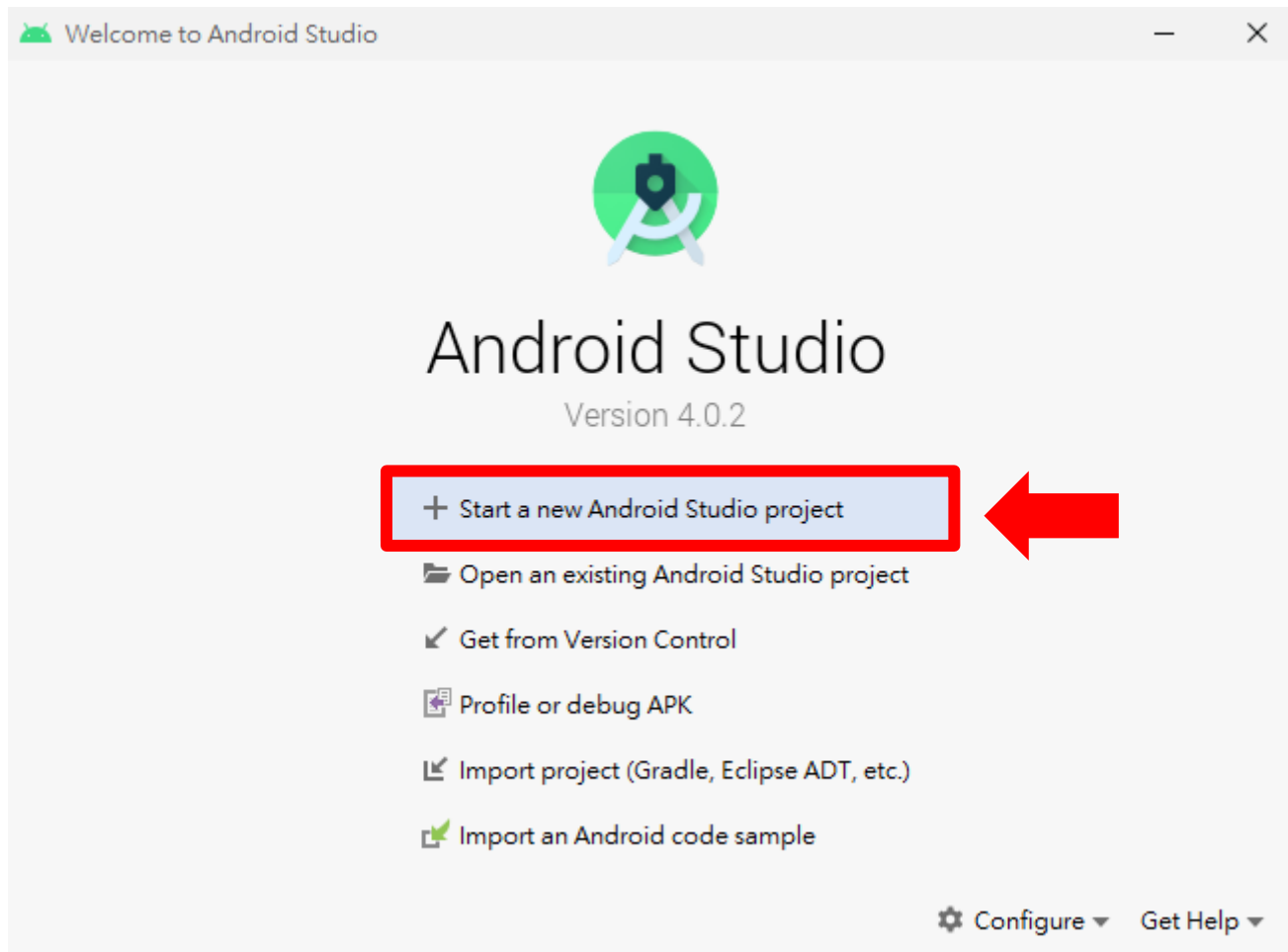
I have read and agree with the above terms and conditions

Download Android Studio Electric Eel | 2022.1.1 Patch 2 for Windows

android-studio-2022.1.1.21-windows.exe

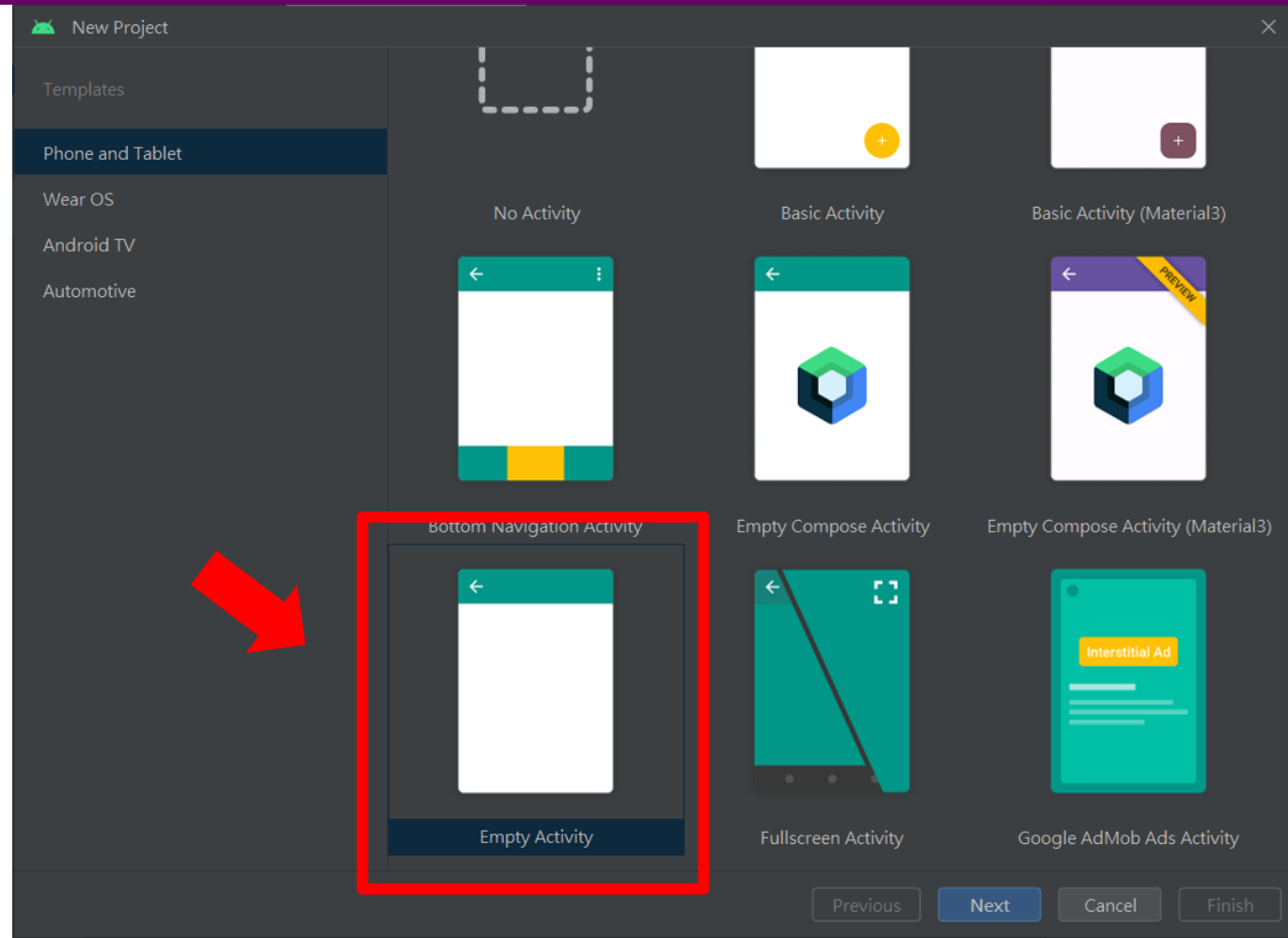


建立 Android Studio project

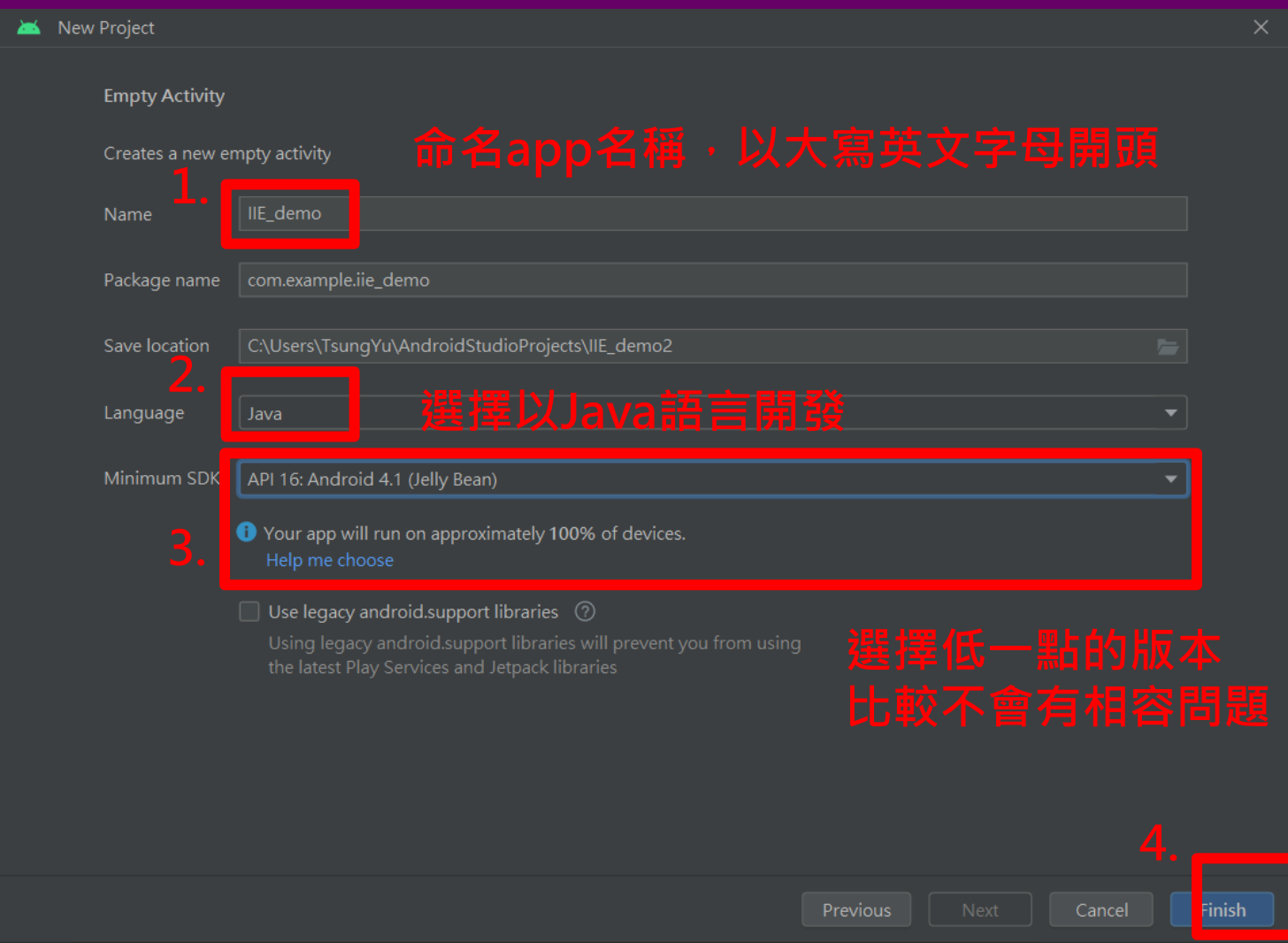


建立 Android Studio project

選擇
Empty Activity



建立 Android Studio project

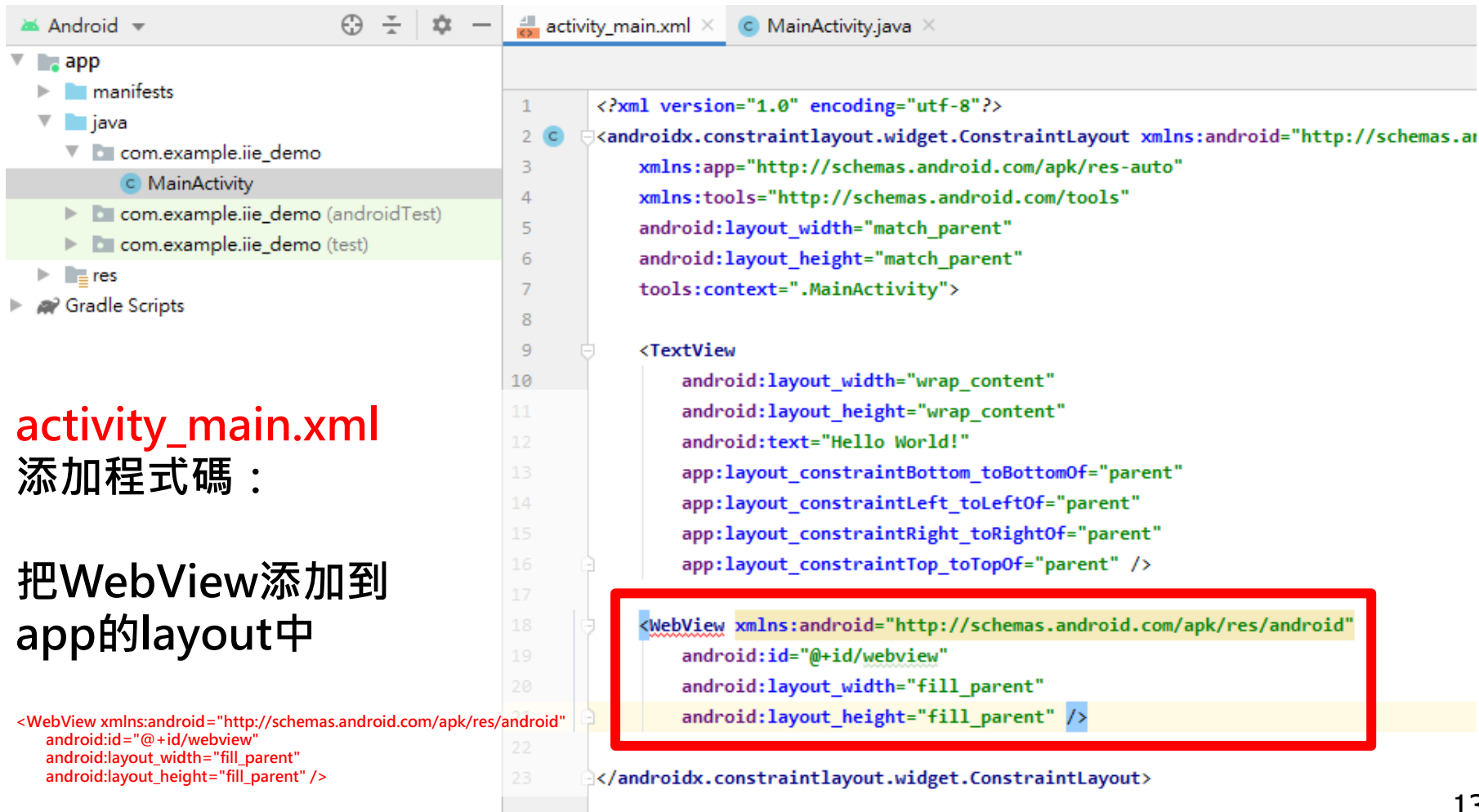


The screenshot shows the 'New Project' dialog in Android Studio. The dialog is titled 'New Project' and contains the following fields and options:

- Empty Activity**: Creates a new empty activity.
- Name**: `IIE_demo` (Annotated with '1. 命名app名稱，以大寫英文字母開頭')
- Package name**: `com.example.iie_demo`
- Save location**: `C:\Users\TsungYu\AndroidStudioProjects\IIE_demo2`
- Language**: `Java` (Annotated with '2. 選擇以Java語言開發')
- Minimum SDK**: `API 16: Android 4.1 (Jelly Bean)` (Annotated with '3. 選擇低一點的版本 比較不會有相容問題')
- Use legacy android.support libraries**: (Annotated with '4.')

At the bottom of the dialog, there are four buttons: 'Previous', 'Next', 'Cancel', and 'Finish' (Annotated with '4.').

建立WebView



```

1  <?xml version="1.0" encoding="utf-8"?>
2  <androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.a
3      xmlns:app="http://schemas.android.com/apk/res-auto"
4      xmlns:tools="http://schemas.android.com/tools"
5      android:layout_width="match_parent"
6      android:layout_height="match_parent"
7      tools:context=".MainActivity">
8
9      <TextView
10         android:layout_width="wrap_content"
11         android:layout_height="wrap_content"
12         android:text="Hello World!"
13         app:layout_constraintBottom_toBottomOf="parent"
14         app:layout_constraintLeft_toLeftOf="parent"
15         app:layout_constraintRight_toRightOf="parent"
16         app:layout_constraintTop_toTopOf="parent" />
17
18         <WebView xmlns:android="http://schemas.android.com/apk/res/android"
19             android:id="@+id/webview"
20             android:layout_width="fill_parent"
21             android:layout_height="fill_parent" />
22
23  </androidx.constraintlayout.widget.ConstraintLayout>
    
```

activity_main.xml
添加程式碼：

把WebView添加到
app的layout中

```

<WebView xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/webview"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent" />
    
```

設定WebView

MainActivity.java
添加程式碼：

詳細設定WebView內容

```
Android ▾
├── app
│   ├── manifests
│   └── java
│       └── com.example.iie_demo
│           ├── MainActivity
│           ├── com.example.iie_demo (androidTest)
│           └── com.example.iie_demo (test)
├── res
└── Gradle Scripts

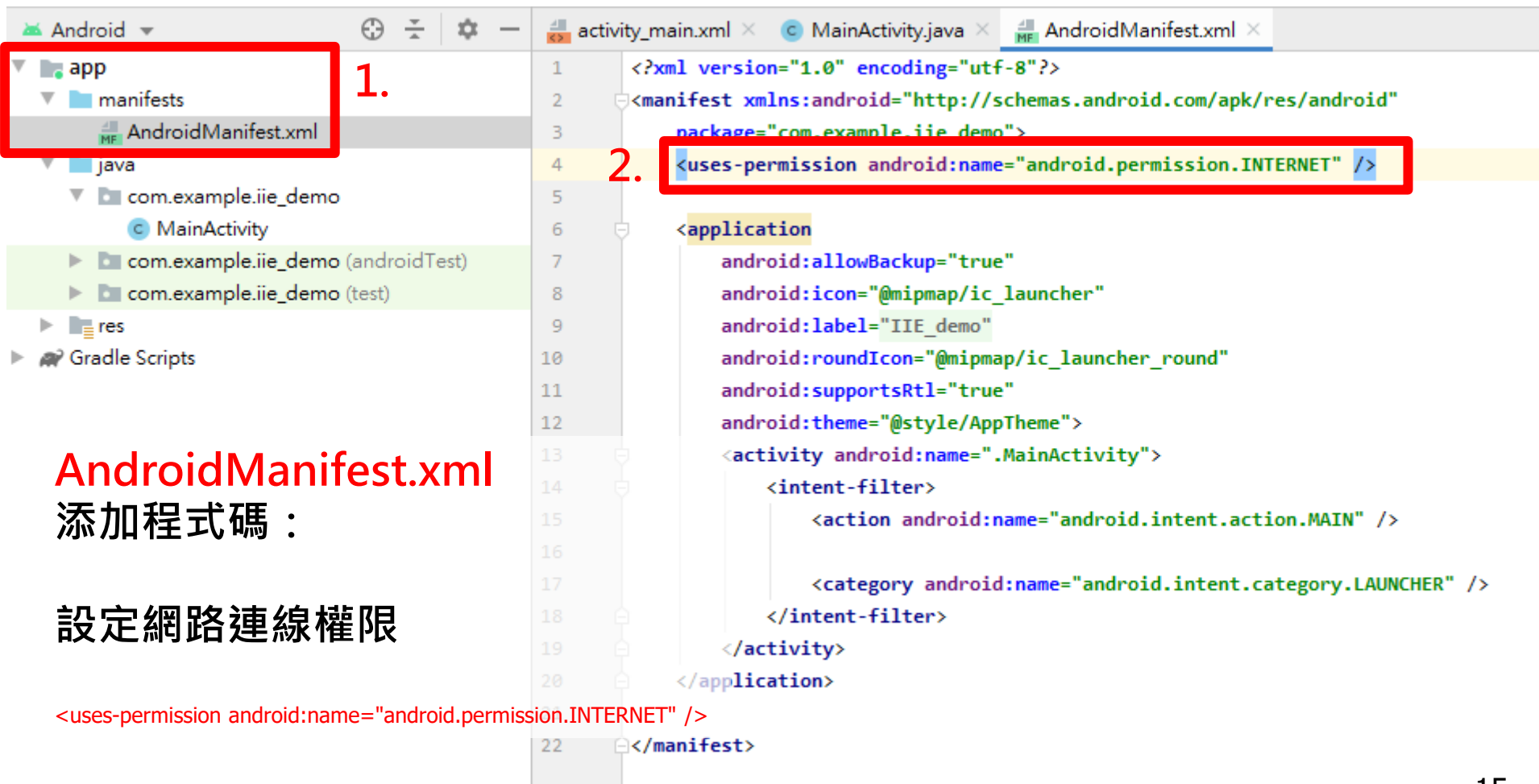
activity_main.xml x MainActivity.java x
1 package com.example.iie_demo;
2
3 import androidx.appcompat.app.AppCompatActivity;
4
5 import android.os.Bundle;
6 import android.webkit.WebSettings;
7 import android.webkit.WebView;
8 import android.webkit.WebViewClient;
9
10 public class MainActivity extends AppCompatActivity {
11
12     @Override
13     protected void onCreate(Bundle savedInstanceState) {
14         super.onCreate(savedInstanceState);
15         setContentView(R.layout.activity_main);
16         WebView myweb = findViewById(R.id.webview);
17         WebSettings webSettings = myweb.getSettings();
18         webSettings.setJavaScriptEnabled(true);
19         myweb.loadUrl("http://ielab.ie.nthu.edu.tw/index.html");
20         myweb.setWebViewClient(new WebViewClientDemo());
21     }
22     private class WebViewClientDemo extends WebViewClient {
23         @Override
24         public boolean shouldOverrideUrlLoading(WebView view, String url){
25             view.loadUrl(url);
26             return true;
27         }
28     }
29 }
```

載入所需套件

宣告WebView
設定JavaScript
設定網址連結

設定在App中
顯示網頁

設定網路連線權限



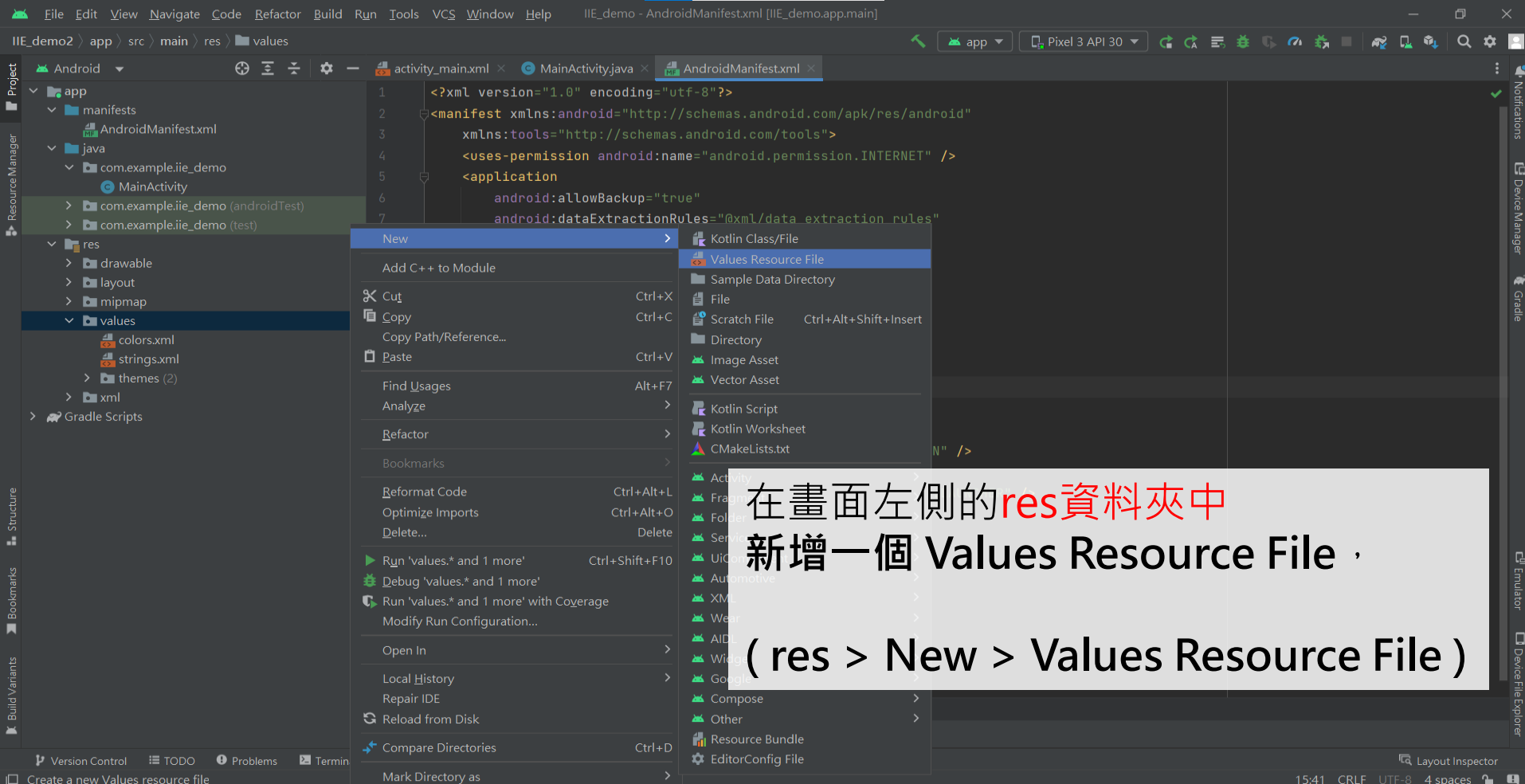
The screenshot shows an IDE window with the following components:

- Left Panel (Project Explorer):** A tree view showing the project structure. The `app` folder is expanded, and the `manifests` sub-folder is selected. The `AndroidManifest.xml` file is highlighted. A red box and the number "1." are placed next to this file.
- Right Panel (Code Editor):** The content of `AndroidManifest.xml` is displayed. Line 4 contains the code `<uses-permission android:name="android.permission.INTERNET" />`, which is highlighted with a red box and the number "2.".

AndroidManifest.xml
添加程式碼：
設定網路連線權限

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

設定 Action Bar



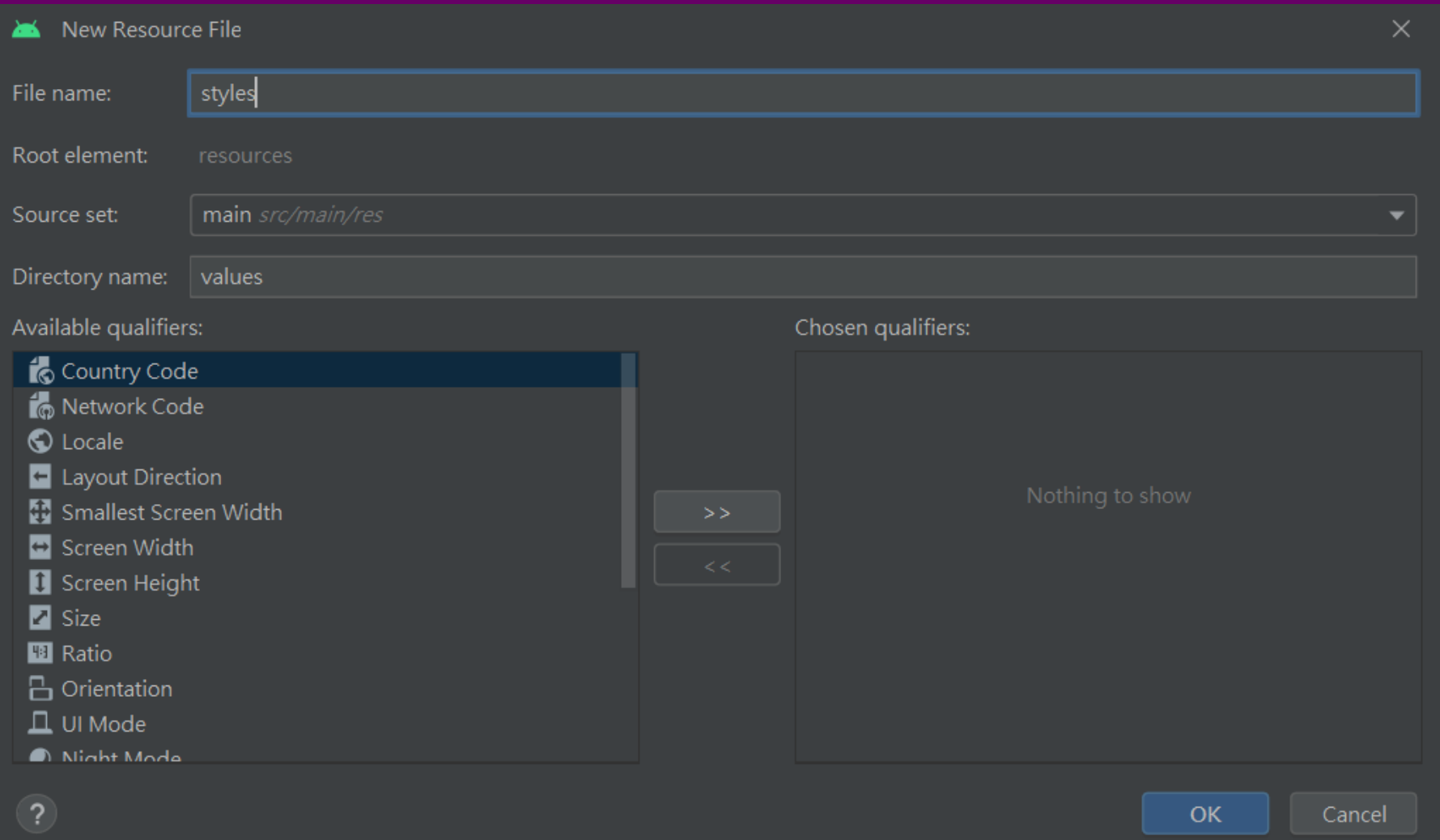
The screenshot shows an IDE interface with the following elements:

- Project Explorer (Left):** Shows the project structure with the `res` folder expanded to `values`.
- Code Editor (Center):** Displays the `AndroidManifest.xml` file with the following content:

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <manifest xmlns:android="http://schemas.android.com/apk/res/android"
3       xmlns:tools="http://schemas.android.com/tools">
4   <uses-permission android:name="android.permission.INTERNET" />
5   <application
6       android:allowBackup="true"
7       android:dataExtractionRules="@xml/data_extraction_rules"
```
- Context Menu (Overlaid):** A 'New' menu is open over the `values` folder, with 'Values Resource File' selected.

在畫面左側的 **res** 資料夾中
新增一個 Values Resource File ,
(res > New > Values Resource File)

設定Action Bar



New Resource File

File name:

Root element: resources

Source set:

Directory name:

Available qualifiers:

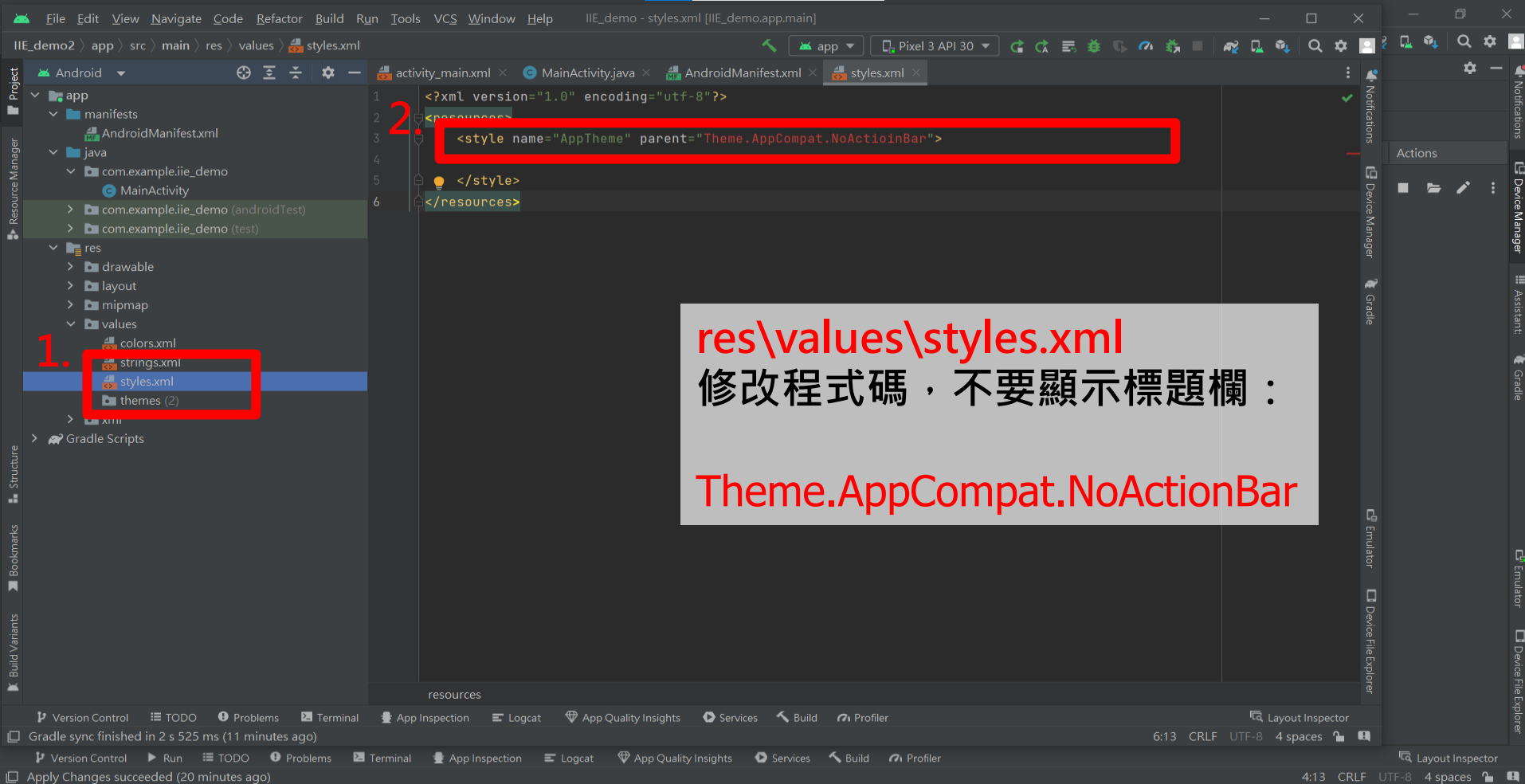
- Country Code
- Network Code
- Locale
- Layout Direction
- Smallest Screen Width
- Screen Width
- Screen Height
- Size
- Ratio
- Orientation
- UI Mode
- Night Mode

Chosen qualifiers:

Nothing to show

OK Cancel

設定Action Bar



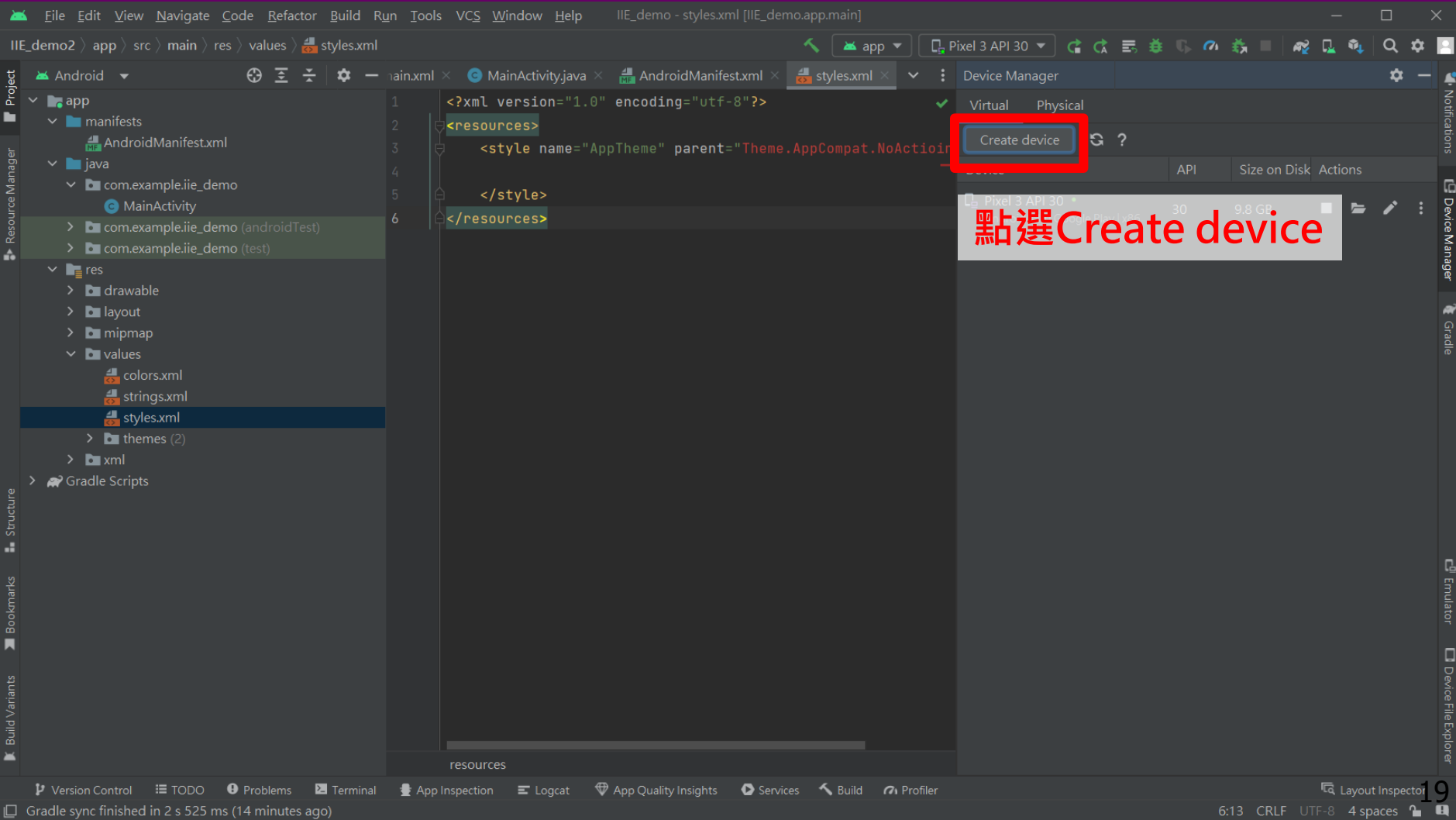
The screenshot shows an IDE with the following components:

- Project Explorer (Left):** Shows the project structure. A red box labeled "1." highlights the `styles.xml` file in the `res/values` directory.
- Code Editor (Center):** Shows the content of `styles.xml`. A red box labeled "2." highlights the following code:

```
<style name="AppTheme" parent="Theme.AppCompat.NoActionBar">
```
- Text Box (Center):** Contains the following text:

res/values/styles.xml
修改程式碼，不要顯示標題欄：
Theme.AppCompat.NoActionBar
- Bottom Panel:** Shows the status bar with the text "Apply Changes succeeded (20 minutes ago)".

運行 app



The screenshot shows the Android Studio IDE interface. The main editor displays the `styles.xml` file with the following content:

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <resources>
3   <style name="AppTheme" parent="Theme.AppCompat.NoAction
4
5   </style>
6 </resources>
```

The `Device Manager` tab is active, showing a table with columns for API, Size on Disk, and Actions. The `Create device` button is highlighted with a red box. A red text overlay with the Chinese characters "點選 Create device" (Click Create device) is positioned over the button.

At the bottom of the IDE, the status bar shows "Gradle sync finished in 2 s 525 ms (14 minutes ago)" and "Layout Inspector 19".

運行 app

The screenshot shows an IDE interface with the following elements:

- Project Explorer:** Shows the project structure for 'IIE_demo2', including 'app', 'manifests', 'java', 'res', and 'Gradle Scripts'.
- Code Editor:** Displays the 'styles.xml' file with the following content:

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
  <style name="AppTheme" parent="Theme.AppCompat.NoAct...
</style>
</resources>
```
- Running devices menu:** A red box highlights the 'Device Manager' option in the 'Running devices' menu, which also includes 'Pixel 3 API 30', 'Select Multiple Devices...', 'Pair Devices Using Wi-Fi', and 'Troubleshoot Device Connections'.
- Text Box:** A white box with red text '新增裝置虛擬環境' (Add virtual device environment) is positioned below the IDE.
- Bottom Bar:** Shows the status bar with '6:13 CRLF UTF-8 4 spaces' and 'Apply Changes succeeded (21 minutes ago)'.

運行 app

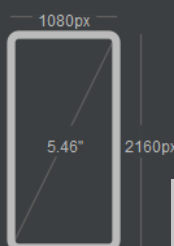
Virtual Device Configuration

Select Hardware

Choose a device definition

Category	Name	Play Store	Size	Resolution	Density
Phone	Pixel 3a		5.6"	1080x22...	440dpi
Tablet	Pixel 3 XL		6.3"	1440x29...	560dpi
Wear OS	Pixel 3		5.46"	1080x21...	440dpi
Desktop	Pixel 2 XL		5.99"	1440x28...	560dpi
TV	Pixel 2		5.0"	1080x19...	420dpi
Automotive	Pixel		5.0"	1080x19...	420dpi
	Pixel S		4.0"	480x800	hdpi

Pixel 3



Size: large
Ratio: long
Density: 440dpi

選擇裝置類型

Buttons: New Hardware Profile, Import Hardware Profiles, Refresh, Clone Device...










Navigation: Previous, Next, Cancel, Finish

運行 app

選擇系統映像檔
通常需要下載，點選右邊的下載圖標下載即可

Select a system image

Recommended x86 Images Other Images

Release Name	API Level	ABI	Target
UpsideDownCake 	UpsideDownCake	x86_64	Android API UpsideDo
TiramisuPrivacySa... 	TiramisuPrivacySa	x86_64	Android API TiramisuP
Tiramisu 	33	x86_64	Android 13.0 (Google I
Sv2 	32	x86_64	Android 12L (Google P
S 	31	x86_64	Android 12.0 (Google
R 	30	x86	Android 11.0 (Google P
Q 	29	x86	Android 11.0 (Google P
Pie 	28	x86	Android 10.0 (Google P
Pie 	25	x86	Android 9.0 (Google P

R

API Level

30

Android

11.0

Google Inc.

System Image

x86

We recommend these Google Play images because this device is compatible with Google Play.

Previous

Next

Cancel

Finish

運行 app

Virtual Device Configuration

Android Virtual Device (AVD)

Verify Configuration

AVD Name: Pixel 3 API 30 2

Pixel 3	5.46 1080x2160 440dpi	Change...
R	Android 11.0 x86	Change...

Startup orientation: Portrait (selected), Landscape

Emulated Graphics: Automatic

Show Advanced Settings

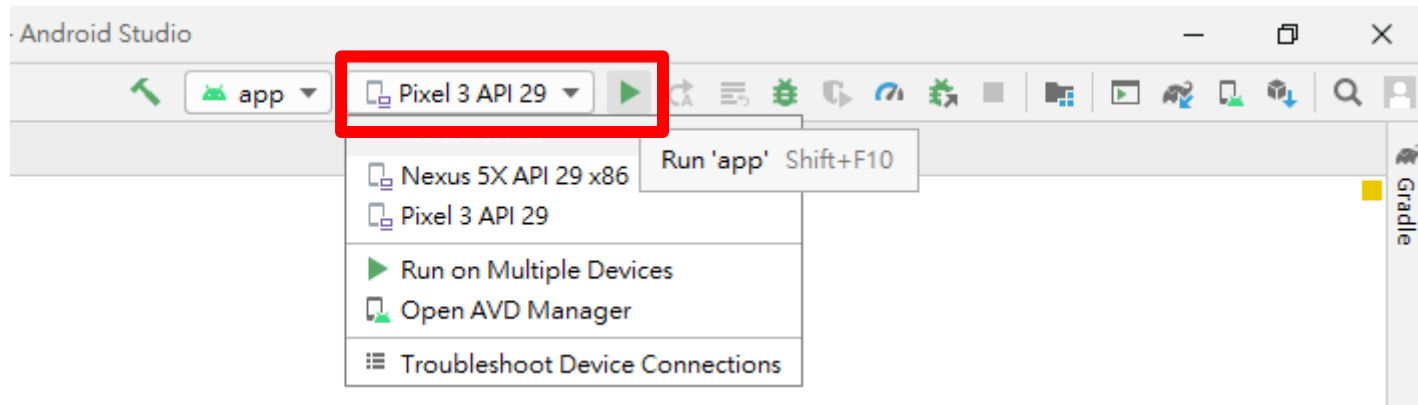
AVD Name: The name of this AVD.

最終規格確認
這邊直接Finish即可

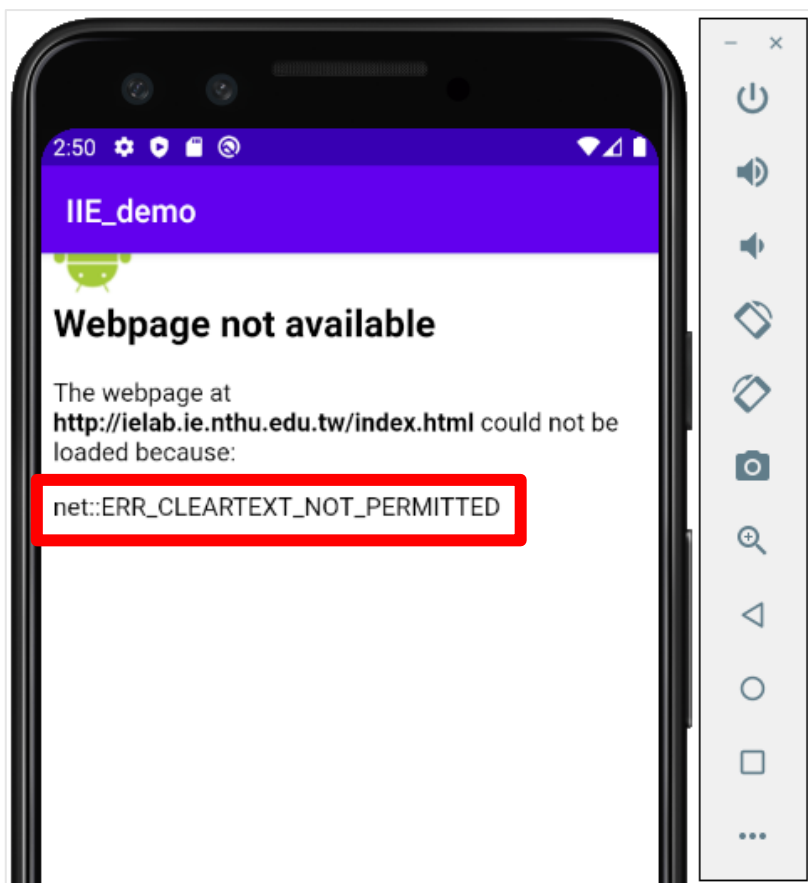
Previous Next Cancel **Finish**

運行 app

- 於畫面右上角，選擇Android模擬器的裝置
- 點選 Run 'app'



執行app可能會出現問題

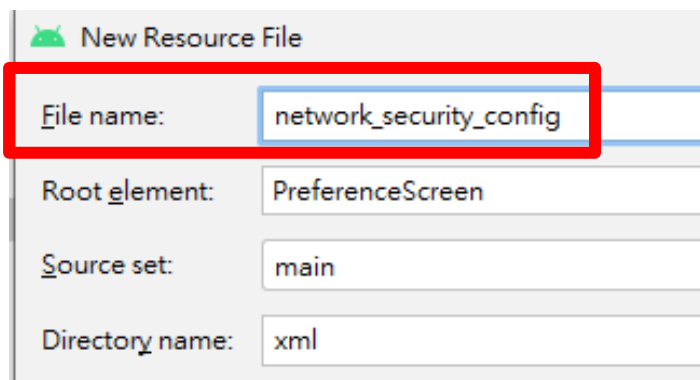
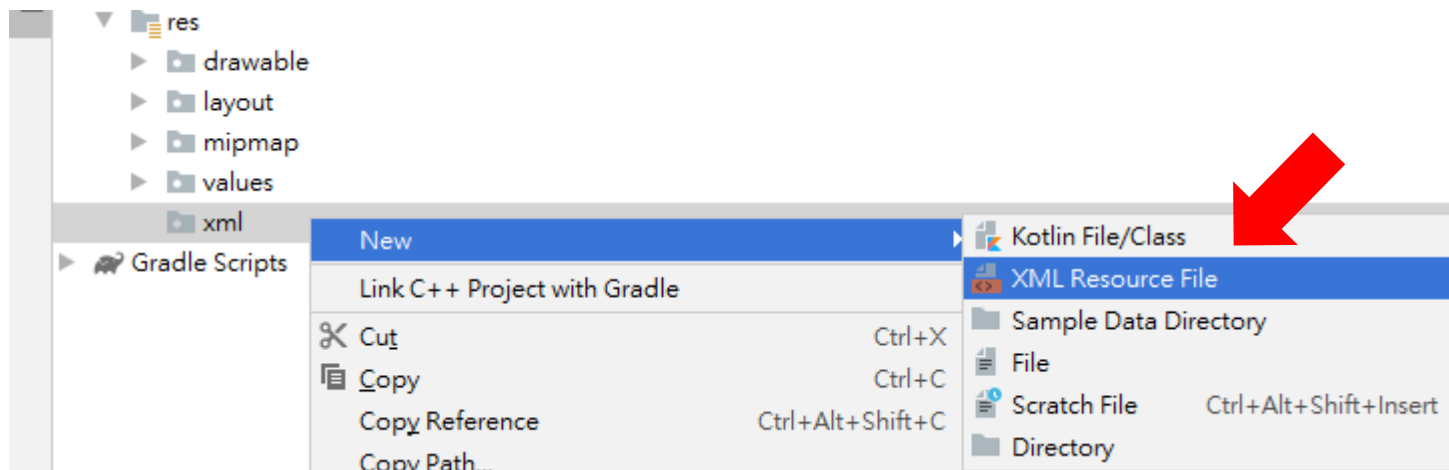


比較新版的 Android 模擬器
開啟時可能會出現

net:ERR_CLEARTEXT_NOT_PERMITTED

疑難排解

疑難排解 step 1

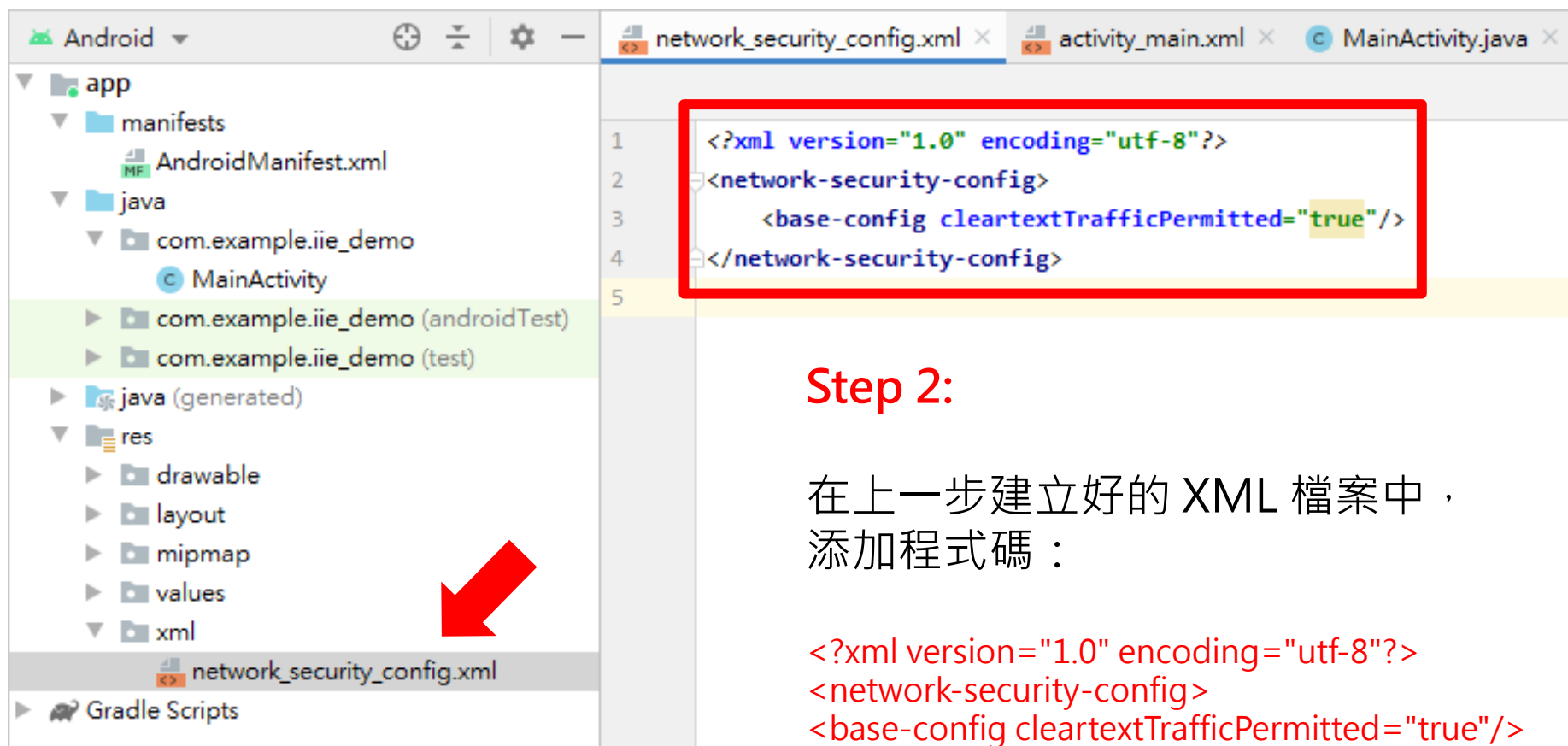


Step 1:

在上一步建立好的 xml 資料夾中，
新增一個 XML Resource File，
名稱叫做 **network_security_config**

(res\xml > New > XML Resource File)

疑難排解 step 2



The screenshot shows an IDE interface with a project structure on the left and a code editor on the right. The project structure includes folders for manifests, java, res, and xml. The xml folder is highlighted with a red arrow. The code editor shows the following XML code:

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <network-security-config>
3     <base-config cleartextTrafficPermitted="true"/>
4 </network-security-config>
5
```

Step 2:

在上一步建立好的 XML 檔案中，
添加程式碼：

```
<?xml version="1.0" encoding="utf-8"?>
<network-security-config>
<base-config cleartextTrafficPermitted="true"/>
</network-security-config>
```

疑難排解 step 3



```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
package="com.example.iie_demo"
<uses-permission android:name="android.permission.INTERNET" />

<application
    android:allowBackup="true"
    android:icon="@mipmap/ic_launcher"
    android:label="IIE_demo"
    android:roundIcon="@mipmap/ic_launcher_round"
    android:supportsRtl="true"
    android:theme="@style/AppTheme"
    android:networkSecurityConfig="@xml/network_security_config">
    <activity android:name=".MainActivity">
        <intent-filter>
            <action android:name="android.intent.action.MAIN" />
            <category android:name="android.intent.category.LAUNCHER" />
        </intent-filter>
    </activity>
</application>
```

Step 3:
在 **AndroidManifest.xml** 中，
添加程式碼：
android:networkSecurityConfig="@xml/network_security_config"

大功告成



Thank You for Your Listening