

Royal University of Bhutan

Unit II: Building an Android Application

CTE308- AS2025

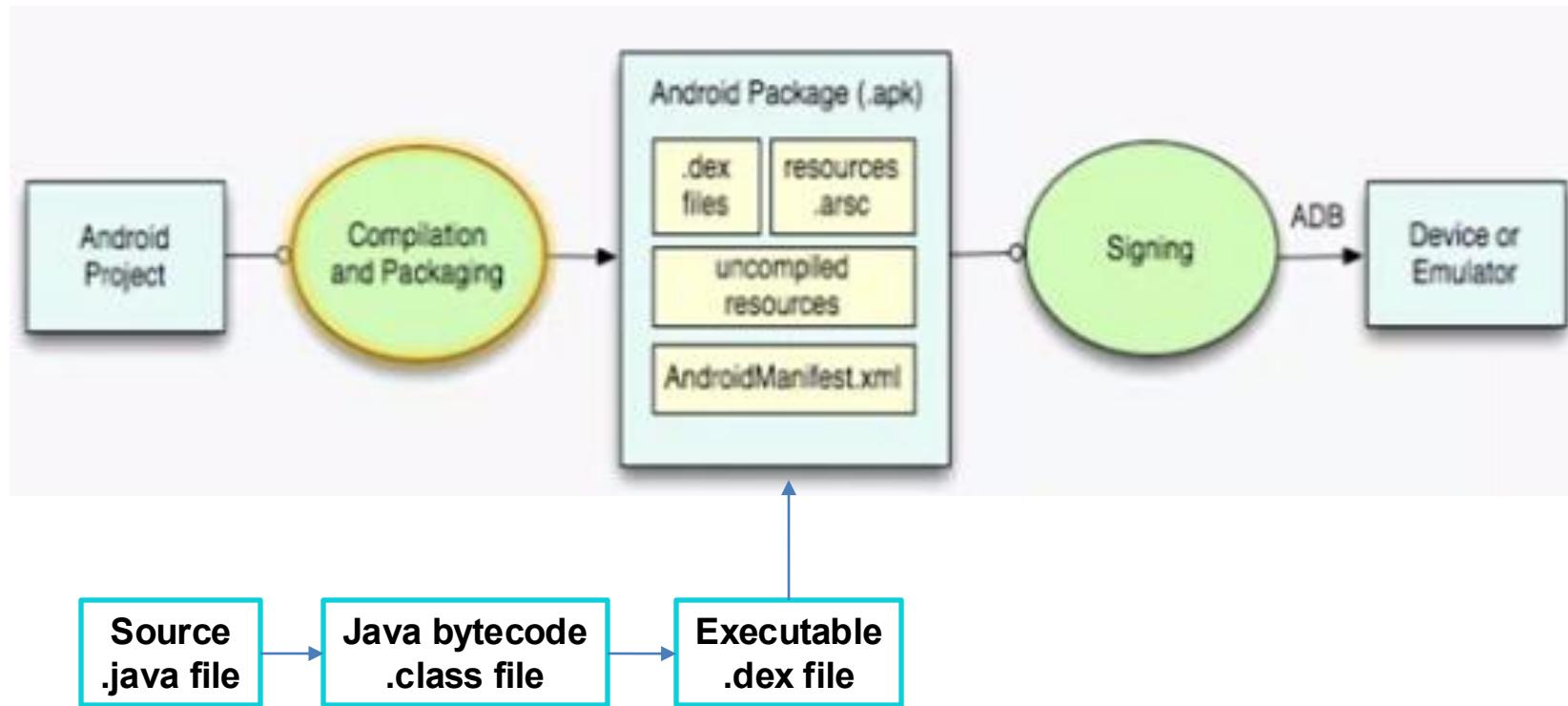
Tutor: Pema Galey
#17682761

Outline

- Project Compilation and Execution
- Identify Project Files

Compilation and Execution

App Compilation & Execution



Project Files

Manifests File

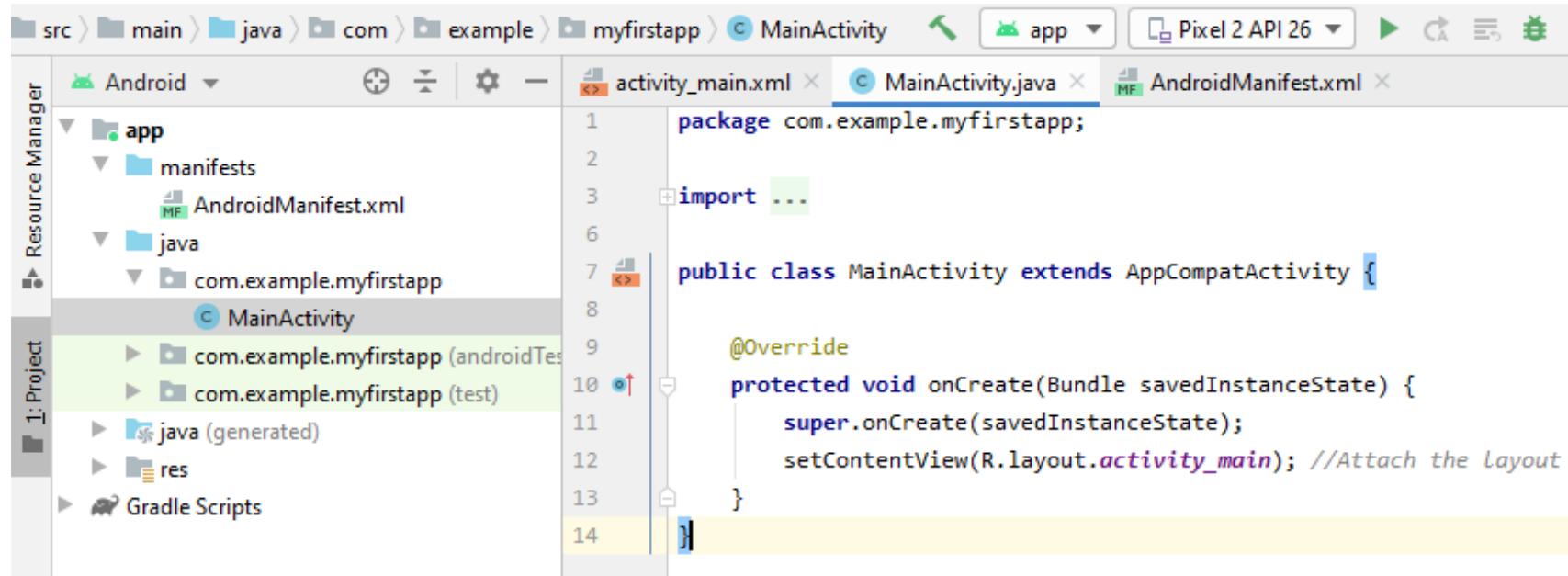
The screenshot shows the Android Studio interface with the project 'MyFirstApp' open. The left sidebar displays the project structure under 'Resource Manager'. The 'app' folder is selected, showing its contents: 'Android', 'manifests' (containing 'AndroidManifest.xml'), 'java', 'java (generated)', 'res', and 'Gradle Scripts'. The main editor area shows the 'AndroidManifest.xml' file with the following XML code:

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

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="MyFirstApp"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
            </intent-filter>
        </activity>
    </application>
</manifest>
```

The bottom status bar indicates a successful build: 'MyFirstApp: 6 s 551 ms' and 'UP-TO-DATE'. The bottom right corner shows the time as '1:40 PM' and a message: 'ADB rejected shell command (ls /sys)'.

Java Files



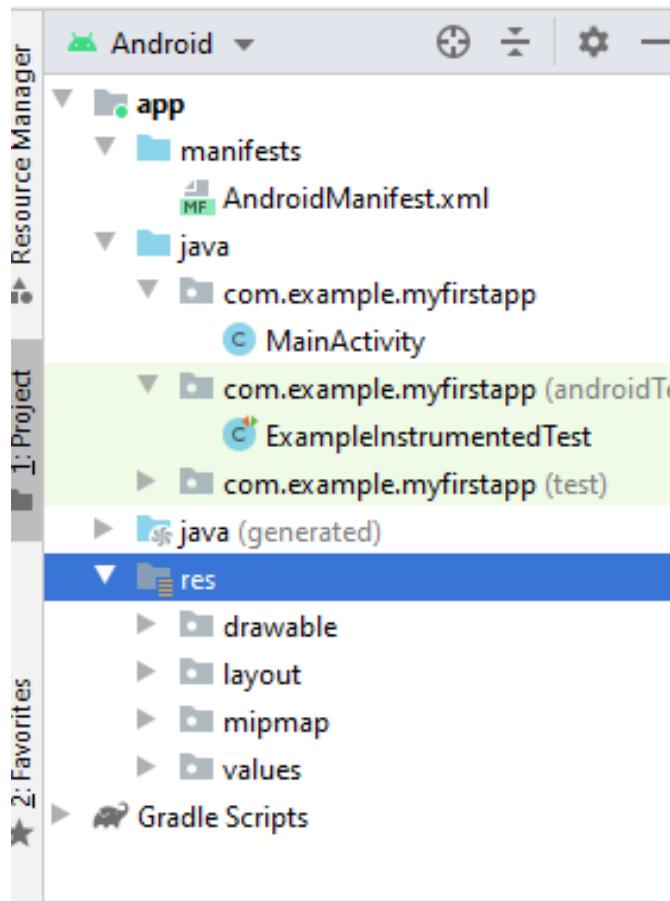
The screenshot shows the Android Studio interface with the project structure and code editor. The project structure on the left shows a file tree for 'app' with 'manifests', 'java', and 'com.example.myfirstapp'. Inside 'com.example.myfirstapp', 'MainActivity' is selected. The code editor on the right displays the MainActivity.java code:

```
1 package com.example.myfirstapp;
2
3 import ...
4
5
6
7 public class MainActivity extends AppCompatActivity {
8
9     @Override
10    protected void onCreate(Bundle savedInstanceState) {
11        super.onCreate(savedInstanceState);
12        setContentView(R.layout.activity_main); //Attach the Layout
13    }
14}
```

Purpose:

- Code Development
- UI Testing
- JUnit Testing

Resource Files



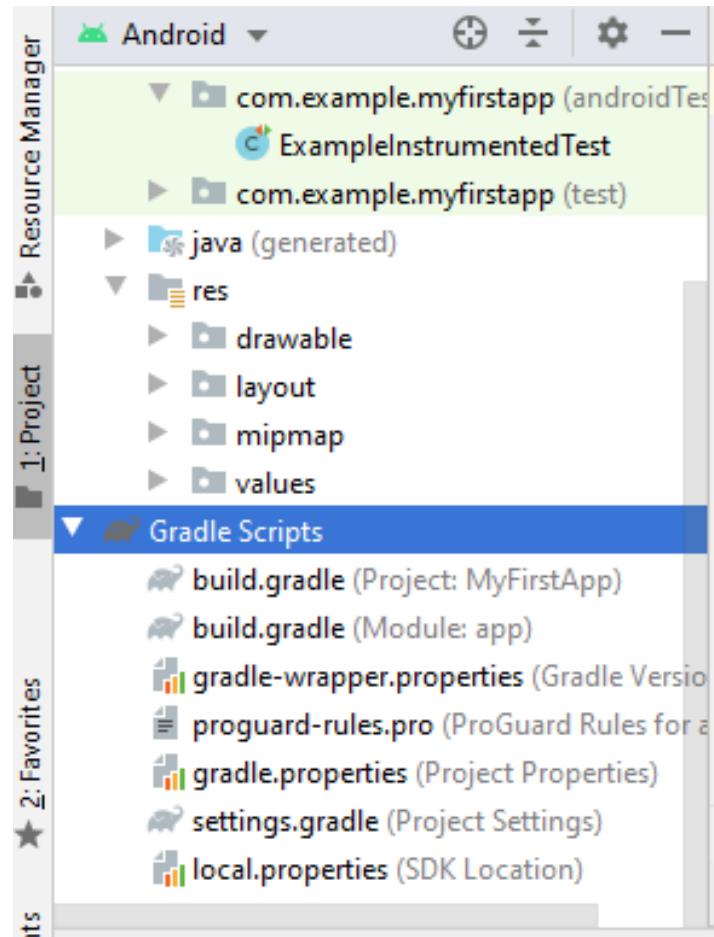
Use-case:

- Images, Animation parts in **drawable**
- App layout in **layout**
- Different resolution devices app icons in **mipmap**
- other resources such as String, Color and Style in **values**.

How?

- Anything you use from res folder is registered in R.java which is system generated file.
- Reference from Java code as **R**.
- Reference from XML code as **@resourcefolder**.

Gradle Scripts



Gradle?

- Subsystem of Android Studio
- Flexibility and Performance

Build Gradle Types

- Project
- Module
- Settings

APK vs AAB

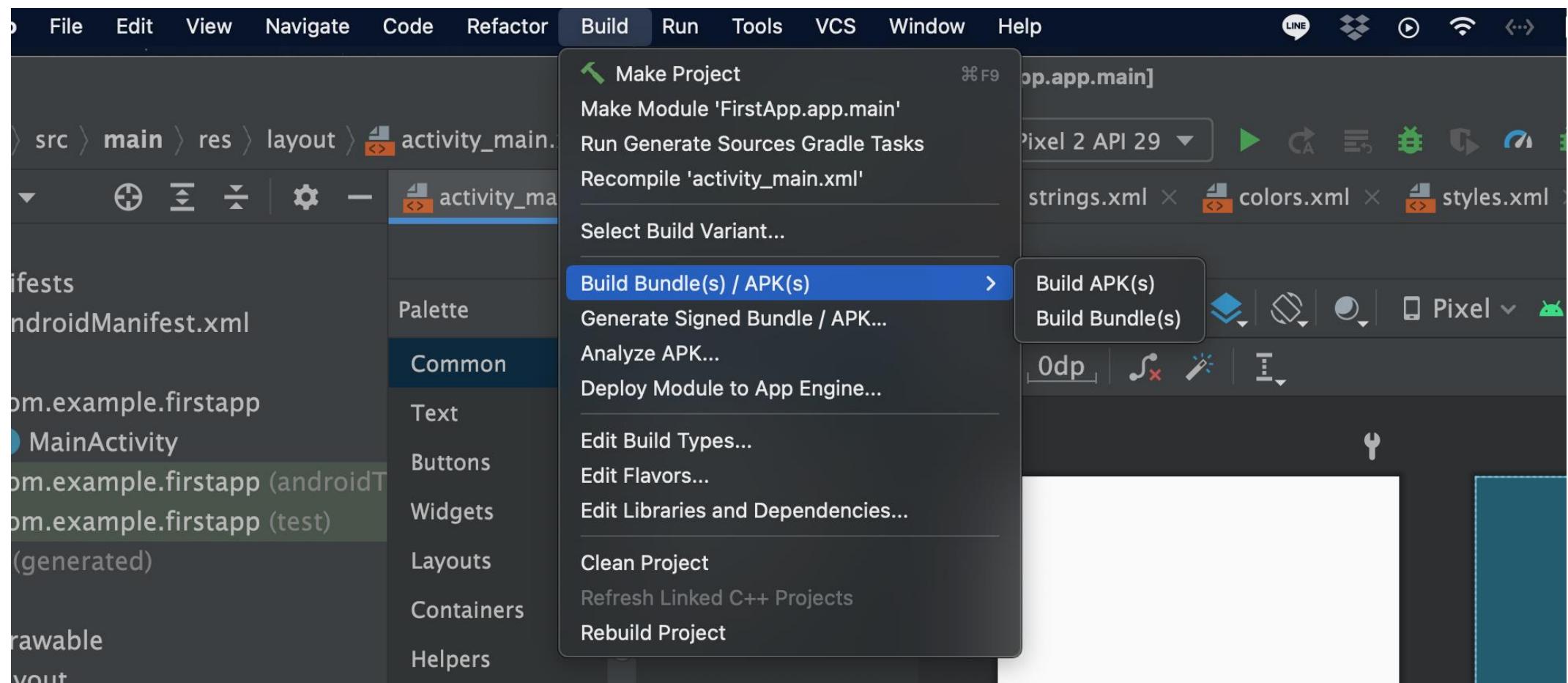
- **App Bundles (.aab)** are a publishing format, whereas **APK** (Android application Package) is the packaging format which eventually will be installed on device.
- App Bundles use [bundletool](#) to create a set of APK (.apks). This can be extracted and the base and configuration splits as well as potential dynamic feature modules can be deployed to a device.

Android App Bundle

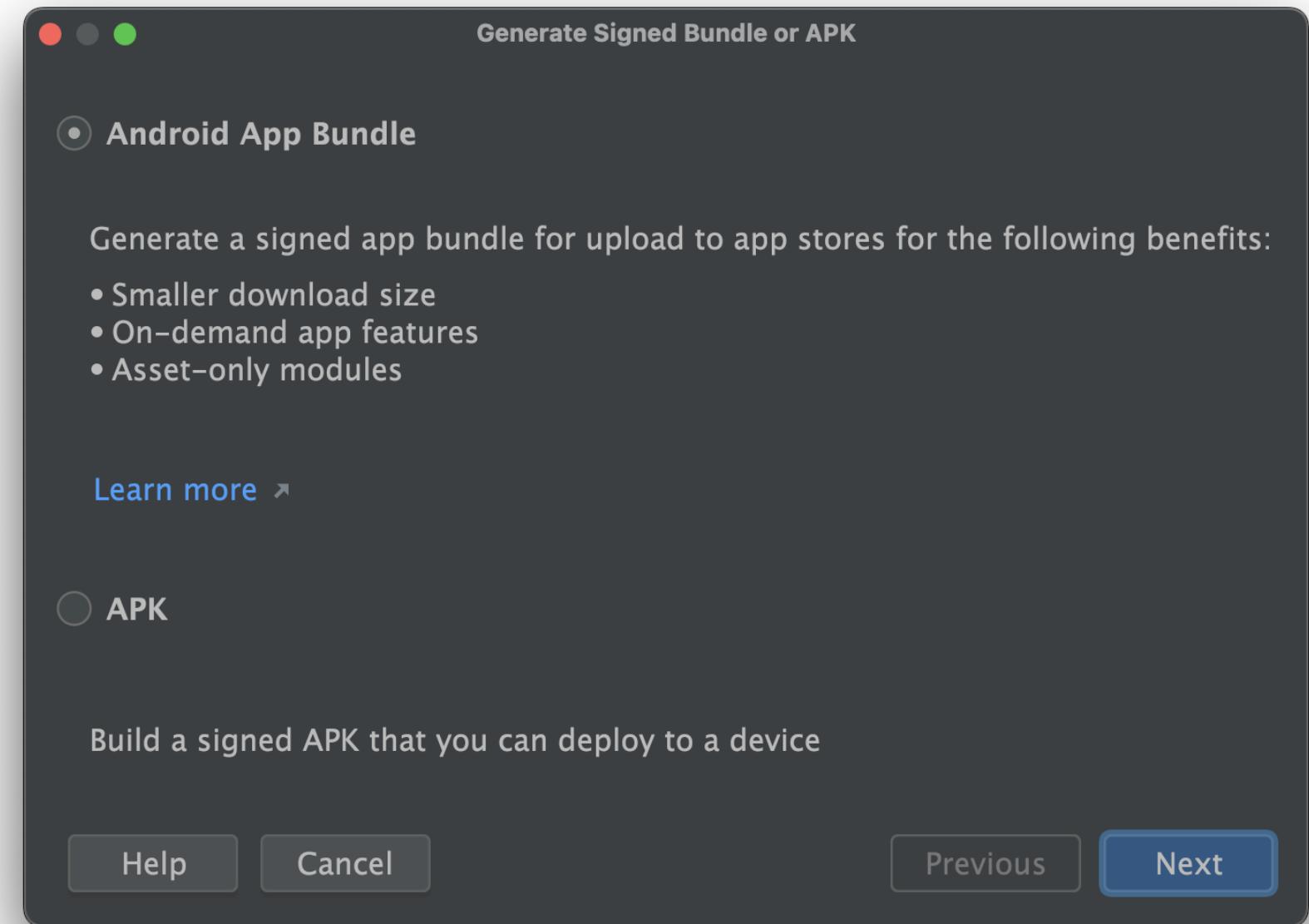


- Google uses **app bundle** to generate and serve **optimized** APKs for each user's device configuration, so they download only the code and resources they need to run your app.
- Therefore, users can get **smaller** and more **optimized** downloads.

Buidling AAD/APK



Android App Bundle



Thank you!