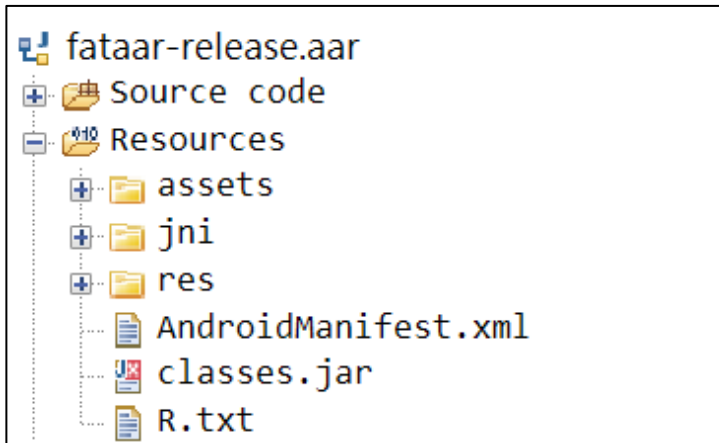# Android Fat Aar

Melody

Outline

- Android aar
- Android aar content
- Android fat aar
- Gradle
- Gradle tasks
- Custom tasks
- Fat aar content
- Reference

Android aar

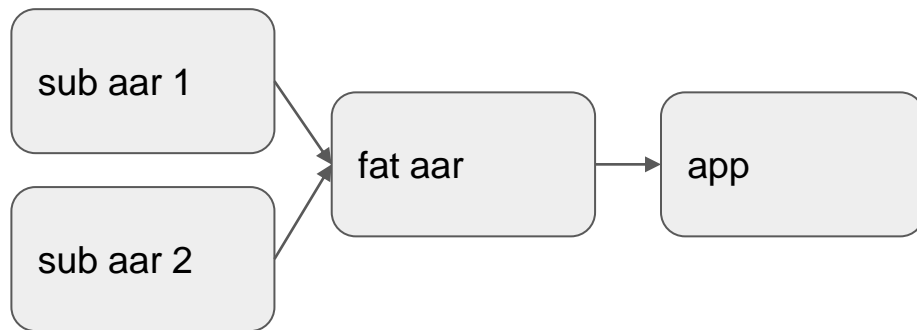- one of the file formats of android sdk (other: jar)

Android aar content

- assets
- jni
- res
- AndroidManifest.xml
- classes.jar
- R.txt
- libs/*.jar

```
fataar-release.aar
  Source code
  Resources
    assets
    jni
    res
    AndroidManifest.xml
    classes.jar
    R.txt
```
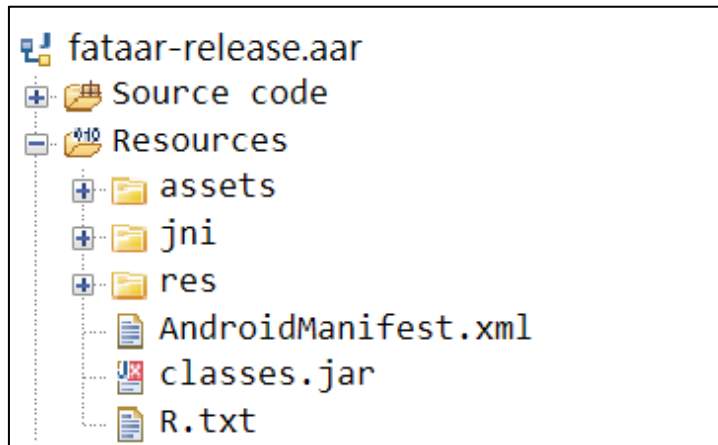
Android fat aar

- dependencies of aar contains other local aars
- not supported by current android tool
- need to merge sub aars by ourselves by using gradle

```
sub aar 1
sub aar 2
        → fat aar → app
```

Gradle

- Android gradle plugin version to com.android.tools.build:gradle:4.1.3
- Gradle version: 6.5
- add custom tasks of gradle to generate fat aar
  - task to merge **res**
  - task to merge **classes**
  - task to merge **jni**
  - task to merge **R.txt**
  - task to merge **assets**

  - (we don't merge AndroidManifest.xml)
  - (we don't merge libs/*.jar)

```
fataar-release.aar
  Source code
  Resources
    assets
    jni
    res
    AndroidManifest.xml
    classes.jar
    R.txt
```

Gradle tasks

- Relative tasks are shown on the right side
- notes:
    - <mark>task name may different when version of gradle tool changed</mark>
    - <mark>task name would be different after productFlavors added</mark>

packageReleaseResources

generateReleaseRFile

copyReleaseJniLibsProjectAndLocalJars

generateReleaseAssets

mergeReleaseResources

compileReleaseJavaWithJavac

syncReleaseLibJars

bundleReleaseAar

Custom tasks (1)
- unzip sub aar

- unzip sub aar, extractAar

packageReleaseResources

generateReleaseRFile

copyReleaseJniLibsProjectAndLocalJars

generateReleaseAssets

mergeReleaseResources

compileReleaseJavaWithJavac

syncReleaseLibJars

bundleReleaseAar

Custom tasks (2)
- merge resources

- add resource dir, embedLibraryResources
- to shrink size of fat aar, remove resources if any dpi of resource exist

removeDuplicateResourcesIfAnyDpiExist

extractAar

packageReleaseResources

generateReleaseRFile

copyReleaseJniLibsProjectAndLocalJars

generateReleaseAssets

mergeReleaseResources

compileReleaseJavaWithJavac

syncReleaseLibJars

bundleReleaseAar

Custom tasks (3)
- merge classes

- copy classes.jar, embedClassesAndJars

extractAar

packageReleaseResources

generateReleaseRFile

copyReleaseJniLibsProjectAndLocalJars

generateReleaseAssets

mergeReleaseResources

compileReleaseJavaWithJavac

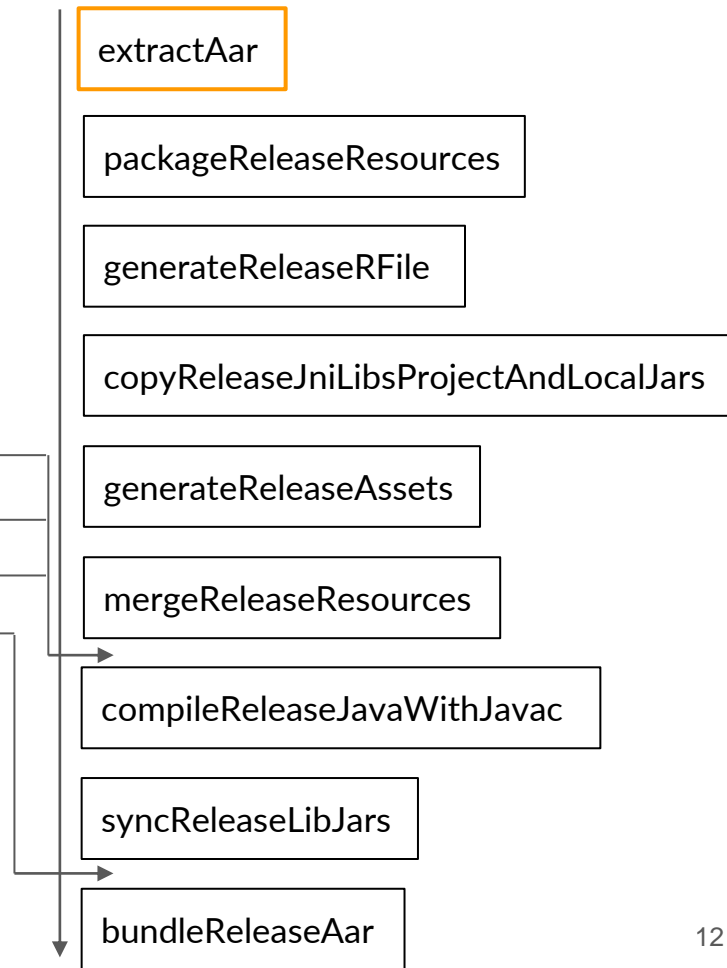syncReleaseLibJars

bundleReleaseAar

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Custom tasks (4)
- merge jni

- copy jni, embedJniLibs

extractAar

packageReleaseResources

generateReleaseRFile

copyReleaseJniLibsProjectAndLocalJars

generateReleaseAssets

mergeReleaseResources

compileReleaseJavaWithJavac

syncReleaseLibJars

bundleReleaseAar

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Custom tasks (5)
- merge R.txt

- generate R.java from R.txt, generateRJava
- compile R.java to R.classes, compileRJava
- pack R.classes to embedR.jar, embedRClass
- copy embedR.jar after obfuscate, copyEmbedRJar

extractAar

packageReleaseResources

generateReleaseRFile

copyReleaseJniLibsProjectAndLocalJars

generateReleaseAssets

mergeReleaseResources

compileReleaseJavaWithJavac

syncReleaseLibJars

bundleReleaseAar

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Custom tasks (5)
- merge R.txt

- sample of R.java for sub aar
- let resources be map to package of fat aar

```
package com.example.subaar1;

public final class R {
  public static final class string {
    public static int sub_aar_1_text = com.example.fataar.R.string.sub_aar_1_text;
  }
}
```

Custom tasks (6)
- merge assets

● add assets dir, embedAssets

extractAar

packageReleaseResources

generateReleaseRFile

copyReleaseJniLibsProjectAndLocalJars
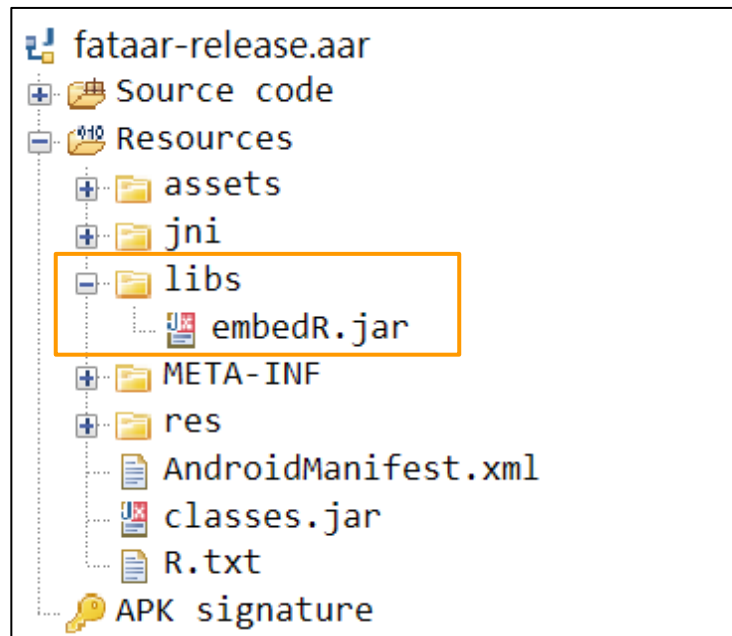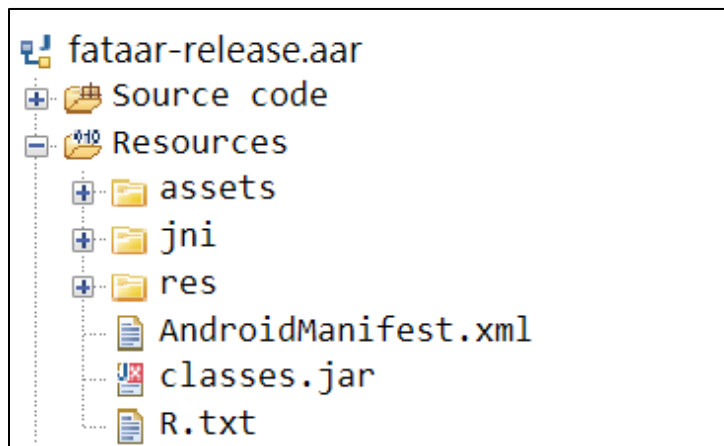
generateReleaseAssets

mergeReleaseResources

compileReleaseJavaWithJavac

syncReleaseLibJars
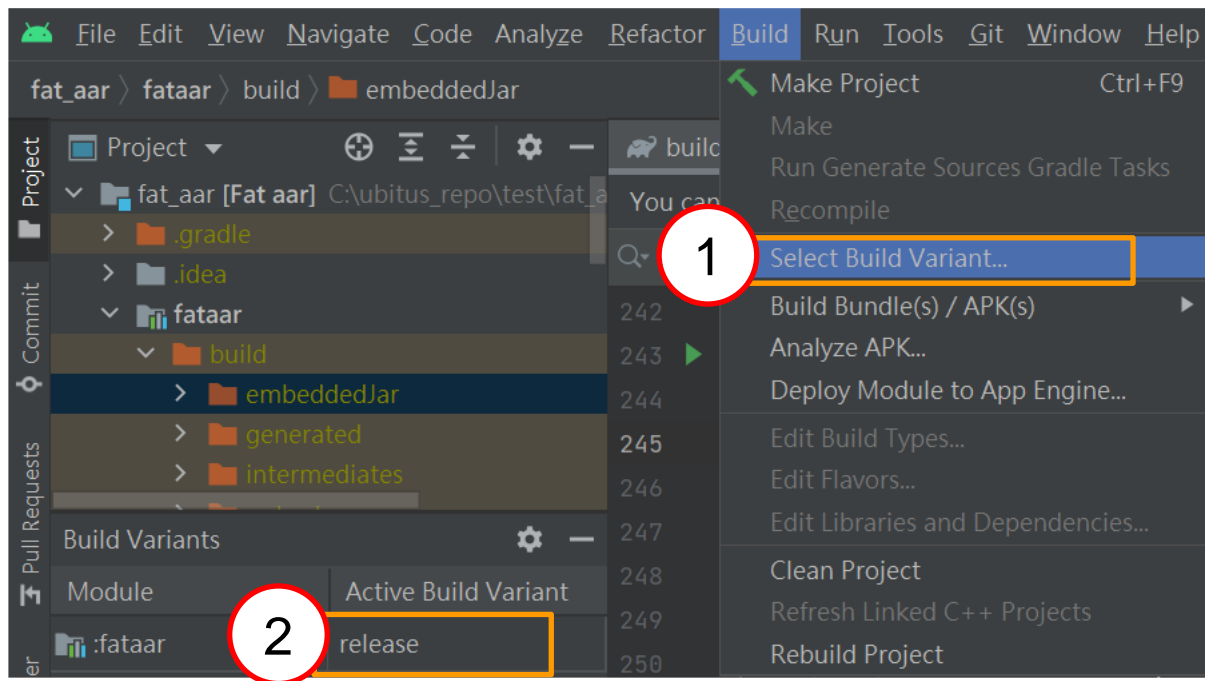
bundleReleaseAar

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Fat aar content

- embedR.jar is been included
- other resources are all merged into fat aar

Build fat aar

- Build variant in fat aar must use <mark>release</mark> to do obfuscation

Reference

https://www.jianshu.com/p/57024509b1d6

https://www.jianshu.com/p/8f7e32015836

AS 3.1 多library合併打包成aar的正確方式（fat-aar）

android-fat-aar/fat-aar.gradle at master · adwiv/android-fat-aar · GitHub