

APK tool:

APKTool is a powerful tool for reverse engineering Android APK files. Its primary functions include:

1. **Disassembly:** APKTool can disassemble an APK file into its constituent resources and smali code, which is a human-readable representation of the compiled Dalvik bytecode.
2. **Reassembly:** After making modifications to the smali code or resources, APKTool can reassemble the APK file, allowing the modified app to be packaged and installed again.
3. **Resource Decoding:** It can decode the resources of an APK file, such as XML files, images, and other assets, into nearly original form, which can then be edited and recompiled.
4. **Rebuilding:** It can rebuild the APK file from the modified resources and smali code, ensuring the changes are reflected in the newly created APK.

APKTool is commonly used for tasks such as modifying app behavior, localizing applications, or studying the internal structure of an app.

Decompile:

```
C:\Users\nannu\OneDrive\Desktop\APKTOOL>apktool d calculator.apk
```

Recompile:

```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22631.3672]
(c) Microsoft Corporation. All rights reserved.

C:\Users\nannu\OneDrive\Desktop\APKTOOL>apktool b "C:\Users\nannu\OneDrive\Desktop\APKTOOL\calculator" -o modified.apk
I: Using Apktool 2.9.3
I: Checking whether sources has changed...
I: Checking whether sources has changed...
I: Checking whether sources has changed...
I: Smaling smali_classes3 folder into classes3.dex...
I: Checking whether sources has changed...
I: Checking whether resources has changed...
I: Building resources...
I: Building apk file...
I: Copying unknown files/dir...
I: Built apk into: modified.apk

C:\Users\nannu\OneDrive\Desktop\APKTOOL>
```

Zipalign: used to optimize APK files by aligning their data

```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22631.3672]
(c) Microsoft Corporation. All rights reserved.

C:\Users\nannu\AppData\Local\Android\Sdk\build-tools\34.0.0>zipalign -p -f -v 4 "C:\Users\nannu\OneDrive\Desktop\APKTOOL\modified.apk" "C:\Users\nannu\OneDrive\Desktop\APKTOOL\modified1.apk"
Verifying alignment of C:\Users\nannu\OneDrive\Desktop\APKTOOL\modified1.apk (4)...
  49 AndroidManifest.xml (OK - compressed)
 1814 classes.dex (OK - compressed)
3985946 classes2.dex (OK - compressed)
4102358 classes3.dex (OK - compressed)
4104340 classes4.dex (OK - compressed)
4106118 kotlin/annotation/annotation.kotlin_builtins (OK - compressed)
4106769 kotlin/collections/collections.kotlin_builtins (OK - compressed)
4108380 kotlin/coroutines/coroutines.kotlin_builtins (OK - compressed)
4108623 kotlin/internal/internal.kotlin_builtins (OK - compressed)
4109092 kotlin/kotlin.kotlin_builtins (OK - compressed)
4114178 kotlin/ranges/ranges.kotlin_builtins (OK - compressed)
4115526 kotlin/reflect/reflect.kotlin_builtins (OK - compressed)
4116899 META-INF/services/kotlinx.coroutines.CoroutineExceptionHandler (OK - compressed)
4117062 META-INF/services/kotlinx.coroutines.internal.MainDispatcherFactory (OK - compressed)
4117181 res/anim/abc_fade_in.xml (OK - compressed)
4117469 res/anim/abc_fade_out.xml (OK - compressed)
4117774 res/anim/abc_grow_fade_in_from_bottom.xml (OK - compressed)
4118222 res/anim/abc_popup_enter.xml (OK - compressed)
4118552 res/anim/abc_popup_exit.xml (OK - compressed)
```

To align infile.apk and save it as outfile.apk:

```
zipalign -p -f -v 4 infile.apk outfile.apk
```

To confirm the alignment of existing.apk, use the following command.

```
zipalign -c -v 4 existing.apk
```

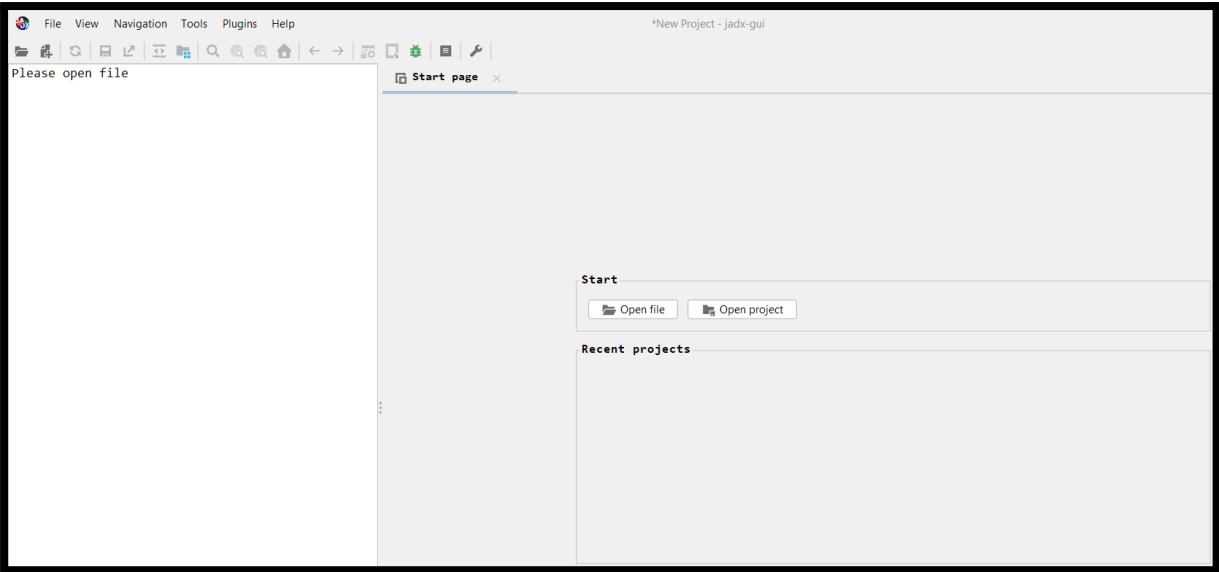
JADX:

JADX is a decompiler for Android applications. Its primary functions include:

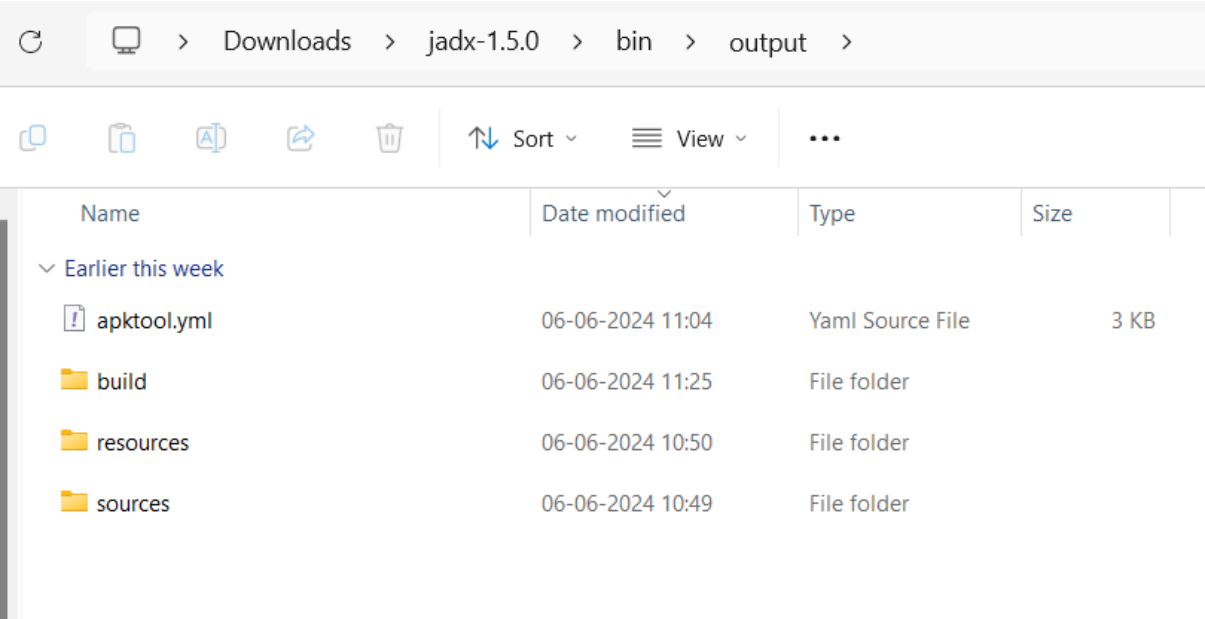
1. **Decompiling APKs:** JADX converts Dalvik bytecode (contained in the APK files) into readable Java source code, making it easier to understand the logic and flow of an application.
2. **GUI and Command Line:** It offers both a graphical user interface (GUI) and command-line interface (CLI) for browsing and analyzing the decompiled code.
3. **Code Navigation:** The GUI version provides features for easy navigation through the decompiled code, such as jumping to definitions, searching for usages, and viewing the overall project structure.
4. **Smali Support:** While JADX focuses on producing readable Java code, it also integrates well with smali code for lower-level bytecode analysis.

```
C:\Users\nannu\Downloads\jadx-1.5.0\bin>.\jadx-gui.bat
```

The above command opens the jadx GUI.



Then we can choose a file to open and analyse.



Name	Date modified	Type	Size
⌵ Earlier this week			
📁 kotlin	06-06-2024 10:49	File folder	
📁 android	06-06-2024 10:49	File folder	
📁 androidx	06-06-2024 10:49	File folder	
📁 com	06-06-2024 10:49	File folder	
📁 kotlinx	06-06-2024 10:49	File folder	
📁 org	06-06-2024 10:49	File folder	

JADX is useful for understanding how an app works, identifying potential security issues, or simply learning from existing applications.