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移动端调试利器：Objection

- 最新版本： v1.0.0
- 更新时间： 20230916

简介

整理移动端调试利器，用Objection调试Android和iOS的程序。先是Objection的概览；然后是初始化开发环境；接着介绍通用逻辑，包括查看子命令的参数、hook函数的参数；然后是如何调试Android，主要包括 android各种子命令，包括hooking、intent；而hooking下面有子命令list、watch、search；list下有子命令 class_methods、class_method、services、activities、class_loaders；intent有子命令launch_activity；以及memory的各种子命令，包括search、dump；然后是调试iOS；以及常见问题，包括调试安卓的；最后给出附录，包括语法help、教程和资料。

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- [crifan/mobile_reverse_debug_objection](#): 移动端调试利器：Objection

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详见：[crifan/honkit_template: demo how to use crifan honkit template and demo](#)

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- 移动端调试利器：[Objection crifan.github.io](#)

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鸣谢

感谢我的老婆陈雪的包容理解和悉心照料，才使得我 crifan 有更多精力去专注技术专研和整理归纳出这些电子书和技术教程，特此鸣谢。

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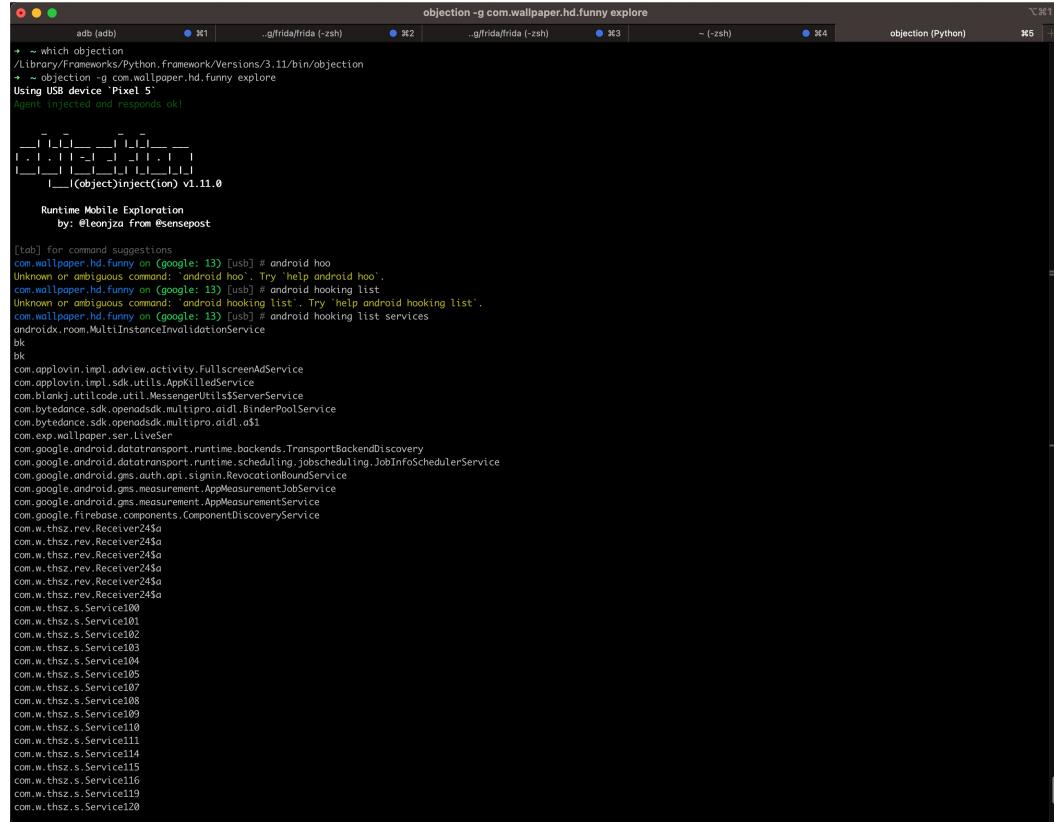
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Objection概览

- Objection
 - 是什么：底层依赖于Frida的移动端（Android和iOS）的hook调试工具
 - 一句话概述：objection is a runtime mobile exploration toolkit, powered by Frida, built to help you assess the security posture of your mobile applications, without needing a jailbreak
 - 功能=特点
 - 支持iOS和Android
 - 支持查看和修改移动端的文件系统内容
 - 支持绕过SSL pinning=证书绑定（实现https抓包查看明文数据）
 - 支持导出keychains
 - 支持各种内存相关操作：dump导出、patching打补丁等
 - 支持操作Heap堆
 - 等等
 - Github
 - [sensepost/objection](#): objection - runtime mobile exploration (github.com)
 - 截图

- hook调试安卓



The screenshot shows the Objection interface running on a Mac OS X desktop. It features a tab bar with five tabs: adb (adb), .g/frida/frida (-zsh), .g/frida/frida (-zsh), .g/frida/frida (-zsh), and objection (Python). The main window displays the file system of the target application, com.wallpaper.hd.funny. The terminal output shows the command `objection -g com.wallpaper.hd.funny explore` being run, followed by the path `/Library/Frameworks/Python.framework/Versions/3.11/bin/objection`. Below this, it says "Using USB device 'Pixel 5'" and "Agent injected and responds ok!". The file system listing includes numerous files and directories starting with "com.w.thsz.", such as "com.w.thsz.receiver243a", "com.w.thsz.receiver243b", and many others ending in "000".

- A file system listing of the iOS applications main bundle

```

2. objection explore -q (python3.7)
~ » objection explore -q
Using USB device 'iPhone'
Agent injected and responds ok!
za.sensepost.ipewpew on (iPhone: 12.1.4) [usb] # pwd print
Current directory: /var/containers/Bundle/Application/708BD606-32BC-4C93-8638-D517B8377284/PewPew.app
za.sensepost.ipewpew on (iPhone: 12.1.4) [usb] # ls
NSFileType      Perms NSFileProtection   Read    Write   Owner        Group       Size     Creation          Name
-----
Regular         493  None             True     False  _installld (33) _installld (33)  940.0 KIB  2019-02-22 18:16:08 +0000  PewPew
Directory        493  None             True     False  _installld (33) _installld (33)  96.0 B   1970-01-01 00:00:00 +0000  Base.lproj
Directory        493  None             True     False  _installld (33) _installld (33)  96.0 B   1970-01-01 00:00:00 +0000  _CodeSignature
Directory        493  None             True     False  _installld (33) _installld (33)  64.0 B   1970-01-01 00:00:00 +0000  META-INF
Regular         420  None             True     False  _installld (33) _installld (33)  1.6 KiB  2019-02-22 16:39:56 +0000  swapi.co.der
Directory        493  None             True     False  _installld (33) _installld (33)  96.0 B   1970-01-01 00:00:00 +0000  Frameworks
Regular         420  None             True     False  _installld (33) _installld (33)  1.5 KiB  2019-02-22 18:16:08 +0000  Info.plist
Regular         420  None             True     False  _installld (33) _installld (33)  8.0 B    2019-02-22 18:16:08 +0000  PkgInfo
Regular         420  None             True     False  _installld (33) _installld (33)  116.7 KiB 2019-02-22 16:39:58 +0000  Assets.car
Regular         420  None             True     False  _installld (33) _installld (33)  7.4 KiB  2019-02-22 16:39:53 +0000  embedded.mobileprovision
Regular         420  None             True     False  _installld (33) _installld (33)  7.9 KiB  2019-02-22 16:39:57 +0000  AppIcon40x40@2x.png

Readable: True  Writable: False
za.sensepost.ipewpew on (iPhone: 12.1.4) [usb] # env
env      Print information about the environment
reconnect Reconnect to the current device

```

■ A file system listing of the Android applications bundle

```

2. objection -g com.reddit.frontpage explore -q (python3.7)
~ » objection -g com.reddit.frontpage explore -q
com.reddit.frontpage on (Samsung: 7.1.2) [usb] # pwd print
Current directory: /data/user/0/com.reddit.frontpage
com.reddit.frontpage on (Samsung: 7.1.2) [usb] # ls
Type      Last Modified   Read    Write  Hidden   Size     Name
-----
Directory  2019-02-22 18:30:52 GMT  True   True   False   4.0 KiB  cache
Directory  2019-01-19 11:22:03 GMT  True   True   False   4.0 KiB  code_cache
Directory  2019-01-19 11:21:55 GMT  True   False  False   4.0 KiB  lib
Directory  2019-02-22 18:31:02 GMT  True   True   False   4.0 KiB  shared_prefs
Directory  2019-01-19 11:22:32 GMT  True   True   False   4.0 KiB  no_backup
Directory  2019-02-21 15:28:05 GMT  True   True   False   4.0 KiB  files
Directory  2019-01-19 11:22:32 GMT  True   True   False   4.0 KiB  databases
Directory  2019-02-22 18:30:52 GMT  True   True   False   4.0 KiB  app_com_birbit_jobqueue_jobs
Directory  2019-01-24 13:10:39 GMT  True   True   False   4.0 KiB  app_dallicacheProviderStateCache
Directory  2019-01-24 13:11:59 GMT  True   True   False   4.0 KiB  lib-main
Directory  2019-01-24 13:11:51 GMT  True   True   False   4.0 KiB  app_webview
Directory  2019-01-24 13:11:51 GMT  True   True   False   4.0 KiB  app_textures

Readable: True  Writable: True
com.reddit.frontpage on (Samsung: 7.1.2) [usb] # android hooking list activities
hooking   Commands used for hooking methods in Android
shell_exec Execute a shell command

```

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环境初始化

- Mac

```
pip3 install objection
```

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Objection基本用法

支持子命令的自动tab补全

当输入了对应命令后，后续会自动tab补全=显示有哪些子命令：

The screenshot shows a terminal window titled 'objection -g com.wallpaper.hd.funny explore'. The terminal displays various command-line options and a list of commands. A specific command, 'android hooking list', is being typed, and the terminal shows tab-completion options: 'get', 'list', and 'search'. The 'list' option is highlighted.

```

adb (adb)      .g/frida/frida (-zsh)    .g/frida/frida (-zsh)    ~ (-zsh)      objection (Python)
-ah, --api-host TEXT [default: 127.0.0.1]
-ap, --api-port INTEGER [default: 8888]
-g, --gadget TEXT Name of the Frida Gadget/Process to connect to.
-S, --serial TEXT A device serial to connect to.
-d, --debug Enable debug mode with verbose output. (Includes agent source map in stack traces)
--help Show this message and exit.

Commands:
api      Start the objection API server in headless mode.
device-type Get information about an attached device.
explore  Start the objection exploration REPL.
patchapk Patch an APK with the FridaGadget dylib.
patchipa Patch an IPA with the FridaGadget dylib.
run     Run a single objection command.
signapk Zipalign and sign an APK with the objection key.
version Prints the current version and exists.
~ which objection
/Library/Frameworks/Python.framework/Versions/3.11/bin/objection
~ objection -g com.wallpaper.hd.funny explore
Using USB device 'Pixel 5'
Agent injected and responds ok!

____|____|____|____|____|____|____|____|
| . | . | | - | . | . | . | . |
|____|____|____|____|____|____|____|____|
|____|(object)inject(ion) v1.11.0

Runtime Mobile Exploration
by: @Leonjza from @sensepost

[tab] for command suggestions
com.wallpaper.hd.funny on (google: 13) [usb] # android hook
Unknown or ambiguous command: 'android hook'. Try 'help android hook'.
com.wallpaper.hd.funny on (google: 13) [usb] # android hooking list
  get  Get various values
  list Lists various bits of information
  search Search for various classes and or methods

Found 87 classes
android on (google: 13) [usb] # android hooking list services
  activities  List the registered Activities
  class_loaders List the registered class loaders
  class_methods List the methods available on a class

```

如此，即可靠自己，慢慢摸索出，常用的命令，以及后续的语法和子命令了。

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Objection中查看子命令的参数

- 需求：Objection中，想要查看某个命令的子命令和参数
- 举例：子命令：

```
android hooking watch class_method
```

- 事后，已知，有参数：
 - dump-return
 - dump-args
 - dump-backtrace
- 想知道：
 - android hooking watch class_method 这个子命令
 - 是否还有其他什么参数
 - 以及这些参数的具体含义

- 目前已知：
 - android hooking watch class_method 这个子命令，是否还有其他什么参数
 - 可以通过tab补全，会自动列出，所有可能的参数
 - 其他子命令
 - 只有最末尾，加上 --help，可以输出基本的，精简的 help 信息

效果举例

- 无法识别的

- 图

```

objection -g system_server explore
adb (adb) ❶ .gfrida/frida (-zsh) ❷ .gfrida/frida (-zsh) ❸ ~ (-zsh) ❹ objection (Python) ❺ ~ (-zsh) ❻
public void com.android.server.am.ActivityManagerService.writeOtherProcessesInfoToProtoLSP(android.util.proto.ProtoOutputStream,java.lang.String,int,int)
Found 695 methods()
android on (google:13) [usb] # android hooking wa
Unknown or ambiguous command: 'android hooking wa'. Try 'help android hooking wa'.
android on (google:13) [usb] # android hooking watch class.method --help
Usage: android hooking watch class.method <fully qualified class method> <optional overload> (optional: --dump-args) (optional: --dump-backtrace) (optional: --dump-return)
android on (google:13) [usb] # android hooking --help
Unknown or ambiguous command: 'android hooking --help'. Try 'help android hooking --help'.
android on (google:13) [usb] # android hooking generate --help
Unknown or ambiguous command: 'android hooking generate --help'. Try 'help android hooking generate --help'.
android on (google:13) [usb] # android hooking generate class --help
// Frida Java hooking helper class.
//
// Edit the example below the HookManager class to suit your
// needs and then run with:
// frida -U "App Name" --runtime=v8 -l objhookmanager.js
//
// Generated using objection:
// https://github.com/sensepost/objection

class JavaHookManager {
    // create a new Hook for clazzName, specifying if we
    // want verbose logging of this class' internals.
    constructor(clazzName, verbose = false) {
        this.printVerbose(`Booting JavaHookManager for ${clazzName}...`);
    }

    this.target = Java.use(clazzName);
    // store hooked methods as { method: x, replacements: [y1, y2] }
    this.hooks = [];
    this.availableMethods = [];
    this.verbose = verbose;
    this.populateAvailableMethods(clazzName);
}

printVerbose(message) {
    if (!this.verbose) { return; }
    this.print(`[v] ${message}`);
}

print(message) {
    console.log(message);
}

// basically from:
// https://github.com/sensepost/objection/blob/fa6a8b8f9b68d6be41b51acb512e6d08754a2f1e/agent/src/android/hooks.ts#L43
populateAvailableMethods(clazz) {
    this.printVerbose(`Populating available methods...`);
    this.availableMethods = this.target.class.getDeclaredMethods().map((method) => {
        var m = method.toGenericString();

        // Remove generics from the method
        while (m.includes('<')) { m = m.replace('<.*?>', ''); }

        // remove any "Throws" the method may have
        if (m.indexOf(' throws ') != -1) { m = m.substring(0, m.indexOf(' throws ')); }
    });
}

```

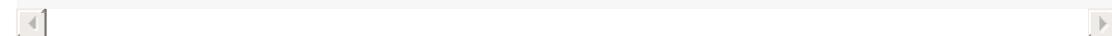
- 不到末尾，输入 --help，无法识别
 - 文字

```
android on (google: 13) [usb] # android hooking --help
Unknown or ambiguous command: `android hooking --help` Try `help android hooking --help`
android on (google: 13) [usb] # android hooking generate --help
Unknown or ambiguous command: `android hooking generate --help` Try `help android hooking generate --help`
```

- 正确用法

- 只有最末尾，加上--help，可以输出基本的，精简的help信息

```
android on (google: 13) [usb] # android hooking watch class_method --help
Usage: android hooking watch class_method <fully qualified class method> <optional overload> (optional: --dump-args) (optional: --dump-backtrace) (optional: --dump-return)
```



- 可以通过tab补全，会自动列出所有可能的参数

- 图



```
android on (google: 13) [usb] # android hooking watch class_method -  
-help  
--dump  
-args  
--dump  
-backtrace  
--dump  
-return
```

hook函数的参数

Objection去hook安卓或iOS的函数，有些通用的逻辑

其中就包括：

- hook函数的参数
 - --dump-args : 打印函数参数值
 - --dump-backtrace : 打印函数调用堆栈
 - --dump-return : 打印函数返回值

举例

- Android

```
android hooking watch class_method android.app.ActivityManager.forceStopPackage --dump-args --dump-backtrace --dump-return

android hooking watch class_method com.android.server.am.ActivityManagerService.startService --dump-args --dump-backtrace --dump-return

android hooking watch class_method jd.wjlogin_sdk.common.inland.WJLoginInland.JDLoginWithPasswordNew --dump-args --dump-backtrace --dump-return
```

- iOS

```
ios hooking watch method "-[iGoat_Swift.BinaryCookiesExerciseVC verifyItemPressed]"
--dump-args --dump-backtrace --dump-return
```

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Objection调试Android

- 用Objection去调试安卓app

- 命令

```
objection -g {androidAppPackageName} explore
```

- 举例

```
objection -g com.wallpaper.hd.funny explore
```

```
objection -g system_server explore
```

举例

Objection去调试360Wallpaper

- 背景

- 被调试安卓app

- app名称: 360Wallpaper
- 包名: com.wallpaper.hd.funny

- 命令

```
objection -g com.wallpaper.hd.funny explore
```

- 输出效果

- 图

```

objection -g com.wallpaper.hd.funny explore
adb (adb) 3t1 ...-g/frida/frida (-zsh) 3t2 ...-g/frida/frida (-zsh) 3t3 ~ (-zsh) 3t4 objection (Python) 3t5 +
objection -g com.wallpaper.hd.funny explore
Using USB device 'Pixel 5'
adb shell: /data/local/tmp/objection -g com.wallpaper.hd.funny explore
[adb] For command suggestions
com.wallpaper.hd.funny on (google: 13) [usb] # android hook

```

The screenshot shows a terminal window with the following content:

- Terminal title: objection -g com.wallpaper.hd.funny explore
- Terminal prompt: adb (adb)
- Output of the objection command:

 - Help text for the 'explore' command.
 - Execution of a Frida Gadget injection command: `adb shell: /data/local/tmp/objection -g com.wallpaper.hd.funny explore`
 - Final command: `adb shell: android hook`

- 文字

```
→ ~ objection -g com.wallpaper.hd.funny explore
Using USB device `Pixel 5`
Agent injected and responds ok

_____
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | (object)inject(ion) v1.11.0

Runtime Mobile Exploration
by: @leonjza from @sensepost

[tab] for command suggestions
com.wallpaper.hd.funny on (google: 13) [usb] #
```

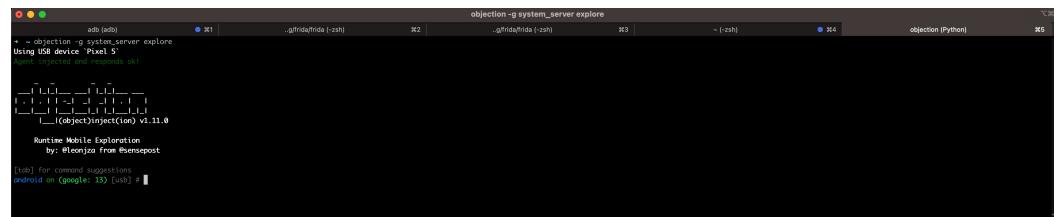
Objection去调试system_server

- 命令

```
objection -g system_server explore
```

- 输出效果

- 图



- 文字

```
→ ~ objection -g system_server explore
Using USB device `Pixel 5`
Agent injected and responds ok

_____
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | (object)inject(ion) v1.11.0

Runtime Mobile Exploration
by: @leonjza from @sensepost

[tab] for command suggestions
android on (google: 13) [usb] #
```


android

Objection中，对于安卓逆向的功能，都是 android 子命令下面的。

- 常用子命令
 - android hooking
 - android intent

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android hooking

Objection中hook安卓一个重要的二级子命令是 hooking , 即: android hooking

- 常用子命令

- android hooking list
- android hooking watch
- android hooking search

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android hooking list

- 常用子命令
 - android hooking list class_methods
 - android hooking list class_method
 - android hooking list services
 - android hooking list activities
 - android hooking list class_loaders

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android hooking list class_methods

Objection去hook列出单个类的所有函数 class_methods :

- 语法

```
android hooking list class_methods {AndroidClassName}
```

- 注

- 如果不带参数，则会提示语法

```
android on (google: 13) [usb] # android hooking list class_methods
Usage: android hooking list class_methods <class name>
```

举例

com.example.androiddemo.Activity.FridaActivity2

- 命令

```
android hooking list class_methods com.example.androiddemo.Activity.FridaActivity2
```

◦

system_server

- 命令

```
android hooking list class_methods com.android.server.am.ActivityManagerService
```

- 图

```

objectection -g system_server explore
adb (adb) 361 ...@frida/frida (-zsh) 362 ...@frida/frida (-zsh) 363 ~ (-zsh) 364 objection (Python) 365 +
Found 12 class loaders
android on (google: 13) [usb] # android hooking list class_methods <class name>
Usage: android hooking list class_methods <class name>
...
objectection -g system_server explore
adb (adb) 361 ...@frida/frida (-zsh) 362 ...@frida/frida (-zsh) 363 ~ (-zsh) 364 objection (Python) 365 +
Found 605 methods()
android on (google: 13) [usb] #

```

o log

```

android on (google: 13) [usb] # android hooking list class_methods com.android.server.am.ActivityManagerService
private java.lang.Boolean com.android.server.am.ActivityManagerService.lambda$updatePhantomProcessCpuTimeLPr$23(long,boolean,com.android.server.am.ProcessReco

```

```

rd,int,long,com.android.server.am.PhantomProcessRecord)
private void com.android.server.am.ActivityManagerService.lambda$checkExcessive
PowerUsage$20(long,long,boolean,boolean,com.android.server.am.ProcessRecord)
private void com.android.server.am.ActivityManagerService.lambda$handleAppDiedL
ocked$1(com.android.server.am.ProcessRecord)
private void com.android.server.am.ActivityManagerService.lambda$killPids$4(jav
a.util.ArrayList,java.lang.String)
private void com.android.server.am.ActivityManagerService.lambda$performIdleMai
ntenance$5(com.android.server.am.ProcessRecord,long,long)
private void com.android.server.am.ActivityManagerService.lambda$performIdleMai
ntenance$6(boolean,long,long,long,com.android.server.am.ProcessRecord)
private void com.android.server.am.ActivityManagerService.lambda$scheduleBinder
HeavyHitterAutoSampler$33(java.util.List,int,float,long)
private void com.android.server.am.ActivityManagerService.lambda$scheduleBinder
HeavyHitterAutoSampler$34(java.util.List,int,float,long)
private void com.android.server.am.ActivityManagerService.lambda$scheduleBinder
HeavyHitterAutoSampler$35()
private void com.android.server.am.ActivityManagerService.lambda$schedulePending
SystemServerWtf$10(java.util.LinkedList)
private void com.android.server.am.ActivityManagerService.lambda$scheduleUpdate
BinderHeavyHitterWatcherConfig$28(java.util.List,int,float,long)
private void com.android.server.am.ActivityManagerService.lambda$scheduleUpdate
BinderHeavyHitterWatcherConfig$29(java.util.List,int,float,long)
private void com.android.server.am.ActivityManagerService.lambda$scheduleUpdate
BinderHeavyHitterWatcherConfig$30(java.util.List,int,float,long)
private void com.android.server.am.ActivityManagerService.lambda$scheduleUpdate
BinderHeavyHitterWatcherConfig$31(java.util.List,int,float,long)
private void com.android.server.am.ActivityManagerService.lambda$scheduleUpdate
BinderHeavyHitterWatcherConfig$32()
private void com.android.server.am.ActivityManagerService.lambda$startBinderTra
cking$26(com.android.server.am.ProcessRecord)
private void com.android.server.am.ActivityManagerService.lambda$stopBinderTrac
kingAndDump$27(java.io.PrintWriter,android.os.ParcelFileDescriptor,com.android.
server.am.ProcessRecord)
private void com.android.server.am.ActivityManagerService.lambda$systemReady$7(
android.os.PowerSaveState)
private void com.android.server.am.ActivityManagerService.lambda$systemReady$8(
int)
...
public void com.android.server.am.ActivityManagerService.startPersistentApps(int
)
public void com.android.server.am.ActivityManagerService.startSystemLockTaskMode
(int) throws android.os.RemoteException
public void com.android.server.am.ActivityManagerService.stopAppForUser(java.la
ng.String,int)
public void com.android.server.am.ActivityManagerService.stopAppForUserInternal(
java.lang.String,int)
public void com.android.server.am.ActivityManagerService.stopAppSwitches()
public void com.android.server.am.ActivityManagerService.stopAssociationLocked(
int,java.lang.String,int,long,android.content.ComponentName,java.lang.String)
public void com.android.server.am.ActivityManagerService.stopDelegateShellPermi
ssionIdentity()
public void com.android.server.am.ActivityManagerService.suppressResizeConfigCh
anges(boolean) throws android.os.RemoteException
public void com.android.server.am.ActivityManagerService.systemReady(java.lang.
Runnable,com.android.server.utils.TimingsTraceAndSlog)

```

```
public void com.android.server.am.ActivityManagerService.tempAllowlistForPendingIntentLocked(int,int,int,long,int,int,java.lang.String)
public void com.android.server.am.ActivityManagerService.tempAllowlistUidLocked(int,long,int,java.lang.String,int,int)
public void com.android.server.am.ActivityManagerService.unbindBackupAgent(android.content.pm.ApplicationInfo)
public void com.android.server.am.ActivityManagerService.unbindFinished(android.os.IBinder,android.content.Intent,boolean)
public void com.android.server.am.ActivityManagerService.unhandledBack()
public void com.android.server.am.ActivityManagerService.unregisterIntentSenderCancelListener(android.content.IIntentSender,com.android.internal.os.IResultReceiver)
public void com.android.server.am.ActivityManagerService.unregisterProcessObserver(android.app.IProcessObserver)
public void com.android.server.am.ActivityManagerService.unregisterReceiver(android.content.IIntentReceiver)
public void com.android.server.am.ActivityManagerService.unregisterTaskStackListener(android.app.ITaskStackListener)
public void com.android.server.am.ActivityManagerService.unregisterUidObserver(android.app.IUidObserver)
public void com.android.server.am.ActivityManagerService.unregisterUserSwitchObserver(android.app.IUserSwitchObserver)
public void com.android.server.am.ActivityManagerService.unstableProviderDied(android.os.IBinder)
public void com.android.server.am.ActivityManagerService.updateActivityUsageStats(android.content.ComponentName,int,int,android.os.IBinder,android.content.ComponentName)
public void com.android.server.am.ActivityManagerService.updateBatteryStats(android.content.ComponentName,int,int,boolean)
public void com.android.server.am.ActivityManagerService.updateCpuStats()
public void com.android.server.am.ActivityManagerService.updateCpuStatsNow()
public void com.android.server.am.ActivityManagerService.updateForegroundServiceUsageStats(android.content.ComponentName,int,boolean)
public void com.android.server.am.ActivityManagerService.updateLockTaskPackages(int,java.lang.String[])
public void com.android.server.am.ActivityManagerService.updateOomAdjPendingTargetsLocked(java.lang.String)
public void com.android.server.am.ActivityManagerService.updatePersistentConfiguration(android.content.res.Configuration)
public void com.android.server.am.ActivityManagerService.updatePersistentConfigurationWithAttribution(android.content.res.Configuration,java.lang.String,java.lang.String)
public void com.android.server.am.ActivityManagerService.updateServiceGroup(android.app.IServiceConnection,int,int)
public void com.android.server.am.ActivityManagerService.updateSystemUiContext()

public void com.android.server.am.ActivityManagerService.updateUidReadyForBootCompletedBroadcastLocked(int)
public void com.android.server.am.ActivityManagerService.waitForBroadcastIdle()
public void com.android.server.am.ActivityManagerService.waitForBroadcastIdle(java.io.PrintWriter)
public void com.android.server.am.ActivityManagerService.waitForNetworkStateUpdate(long)
public void com.android.server.am.ActivityManagerService.writeBroadcastsToProtoLocked(android.util.proto.ProtoOutputStream)
public void com.android.server.am.ActivityManagerService.writeOtherProcessesInfo()
```

```
oToProtoLSP(android.util.proto.ProtoOutputStream,java.lang.String,int,int)

Found 605 method(s)
android on (google: 13) [usb] #
```



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2023-09-17 01:06:59

android hooking watch class_method

Objection去hook列出单个函数 class_method :

- 语法

```
android hooking watch class_method {AndroidClassFunction} [optionalParameters]
```

- 举例

- 只加函数名

```
android hooking watch class_method android.app.ActivityManager.forceStopPackage
```

- 加上额外参数

```
android hooking watch class_method android.app.ActivityManager.forceStopPackage  
--dump-args --dump-backtrace --dump-return
```

```
android hooking watch class_method jd.wjlogin_sdk.common.inland.WJLoginInland.J  
DLoginWithPasswordNew --dump-args --dump-backtrace --dump-return
```

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2023-09-17 01:17:21

android hooking list services

Objection去hook列出服务进程：

- 命令

```
android hooking list services
```

举例

system_server

- 截图

◦

- 文字

```
android on (google: 13) [usb] # android hooking list services
android.hardware.location.GeofenceHardwareService
android.net.ConnectivityManager$ModuleServiceConnection
android.net.ConnectivityManager$ModuleServiceConnection
android.service.selectiontoolbar.DefaultSelectionToolbarRenderService
com.android.internal.infra.AbstractRemoteService$RemoteServiceConnection
com.android.server.BinaryTransparencyService$UpdateMeasurementsJobService
```

```
com.android.server.MountServiceIdler
com.android.server.NetworkScoreService$ScoringServiceConnection
com.android.server.PreloadsFileCacheExpirationJobService
com.android.server.PruneInstantAppsJobService
com.android.server.SmartStorageMaintIdler
com.android.server.ZramWriteback
com.android.server.appsearch.contactsindexer.ContactsIndexerMaintenanceService
com.android.server.autofill.AutofillCompatAccessibilityService
com.android.server.autofill.RemoteAugmentedAutofillService
com.android.server.backup.FullBackupJob
com.android.server.backup.KeyValueBackupJob
com.android.server.blob.BlobStoreIdleJobService
com.android.server.bluetooth.BluetoothManagerService$BluetoothServiceConnection
com.android.server.bluetooth.BluetoothManagerService$ProfileServiceConnections
com.android.server.camera.CameraStatsJobService
com.android.server.companion.InactiveAssociationsRemovalService
com.android.server.compos.IsolatedCompilationJobService
com.android.server.content.SyncJobService
com.android.server.content.SyncManager$ActiveSyncContext
com.android.server.content.SyncManager$ActiveSyncContext
com.android.server.content.SyncManager$ActiveSyncContext
com.android.server.content.SyncManager$ActiveSyncContext
com.android.server.display.BrightnessIdleJob
com.android.server.dreams.DreamController$DreamRecord
com.android.server.inputmethod.InputMethodBindingController$2
com.android.server.job.JobServiceContext
com.android.server.job.JobServiceContext
com.android.server.job.JobServiceContext
com.android.server.job.JobServiceContext
com.android.server.job.JobServiceContext
com.android.server.location.geofence.GeofenceProxy$GeofenceProxyServiceConnection
com.android.server.net.watchlist.ReportWatchlistJobService
com.android.server.notification.ManagedServices$1
com.android.server.notification.ManagedServices$1
com.android.server.notification.ManagedServices$1
com.android.server.notification.ManagedServices$1
com.android.server.notification.ManagedServices$1
com.android.server.notification.ManagedServices$1
com.android.server.notification.ManagedServices$1
com.android.server.notification.ManagedServices$1
com.android.server.notification.NotificationHistoryJobService
com.android.server.notification.ReviewNotificationPermissionsJobService
com.android.server.people.data.DataMaintenanceService
com.android.server.pm.BackgroundDexOptJobService
com.android.server.pm.DynamicCodeLoggingService
com.android.server.pm.InstantAppResolverConnection$MyServiceConnection
com.android.server.pm.PackageManagerShellCommandDataLoader
com.android.server.policy.Keyguard.KeyguardServiceDelegate$1
```

```
com.android.server.profcollect.ProfcollectForwardingService$ProfcollectBGJobService
com.android.server.servicewatcher.ServiceWatcherImpl$MyServiceConnection
com.android.server.servicewatcher.ServiceWatcherImpl$MyServiceConnection
com.android.server.servicewatcher.ServiceWatcherImpl$MyServiceConnection
com.android.server.servicewatcher.ServiceWatcherImpl$MyServiceConnection
com.android.server.servicewatcher.ServiceWatcherImpl$MyServiceConnection
com.android.server.servicewatcher.ServiceWatcherImpl$MyServiceConnection
com.android.server.storage.DiskStatsLoggingService
com.android.server.storage.StorageUserConnection$ActiveConnection$1
com.android.server.systemcaptions.RemoteSystemCaptionsManagerService$RemoteServiceConnection
com.android.server.telecom.TelecomLoaderService$TelecomServiceConnection
com.android.server.timezone.TimeZoneUpdateIdler
com.android.server.usage.UsageStatsIdleService
com.android.server.voiceinteraction.VoiceInteractionManagerService$Impl$2
com.android.server.wallpaper.WallpaperManagerService$WallpaperConnection
com.android.server.wallpaper.WallpaperManagerService$WallpaperConnection

Found 87 classes
android on (google: 13) [usb] #
```

com.wallpaper.hd.funny

- 截图

◦

- - 文字

```
com.wallpaper.hd.funny on (google: 13) [usb] # android hooking list services
androidx.room.MultiInstanceInvalidationService
bk
bk
com.applovin.impl.adview.activity.FullscreenAdService
com.applovin.impl.sdk.utils.AppKilledService
com.blankj.utilcode.util.MessengerUtils$ServerService
com.bytedance.sdk.openadsdk.multipro.aidl.BinderPoolService
com.bytedance.sdk.openadsdk.multipro.aidl.a$1
com.exp.wallpaper.ser.LiveSer
com.google.android.datatransport.runtime.backends.TransportBackendDiscovery
com.google.android.datatransport.runtime.scheduling.jobscheduling.JobInfoSchedulers
service
com.google.android.gms.auth.api.signin.RevocationBoundService
com.google.android.gms.measurement.AppMeasurementJobService
com.google.android.gms.measurement.AppMeasurementService
com.google.firebaseio.components.ComponentDiscoveryService
com.w.thsz.rev.Receiver24$a
com.w.thsz.rev.Receiver24$a
com.w.thsz.rev.Receiver24$a
com.w.thsz.rev.Receiver24$a
com.w.thsz.rev.Receiver24$a
com.w.thsz.rev.Receiver24$a
com.w.thsz.s.Service100
com.w.thsz.s.Service101
com.w.thsz.s.Service102
com.w.thsz.s.Service103
```

```
com.w.thsz.s.Service104
com.w.thsz.s.Service105
com.w.thsz.s.Service107
com.w.thsz.s.Service108
com.w.thsz.s.Service109
com.w.thsz.s.Service110
com.w.thsz.s.Service111
com.w.thsz.s.Service114
com.w.thsz.s.Service115
com.w.thsz.s.Service116
com.w.thsz.s.Service119
com.w.thsz.s.Service120
eb.a$a
eb.a$a
eb.a$a
v6.b$a
v6.b$a
v6.b$a
w.a.l.p.ser.Ser111
w.a.l.p.ser.Ser22
w.a.l.p.ser.Ser222
w.a.l.p.ser.Ser33
w.a.l.p.ser.Ser333
w.a.l.p.ser.Ser44
w.a.l.p.ser.Ser444
w.a.l.p.ser.Ser55
w.a.l.p.ser.Ser555
w.a.l.p.ser.Ser66
w.a.l.p.ser.Ser666
w.a.l.p.ser.Ser77
w.a.l.p.ser.Ser777
w.a.l.p.ser.Ser88
w.a.l.p.ser.Ser888
w.a.l.p.ser.Ser99
w.a.l.p.ser.Ser999
x6.g$a
x6.g$a
x6.g$a
x6.g$a
x6.g$a
x6.g$a
Found 66 classes
com.wallpaper.hd.funny on (google: 13) [usb] #
```

android hooking list activities

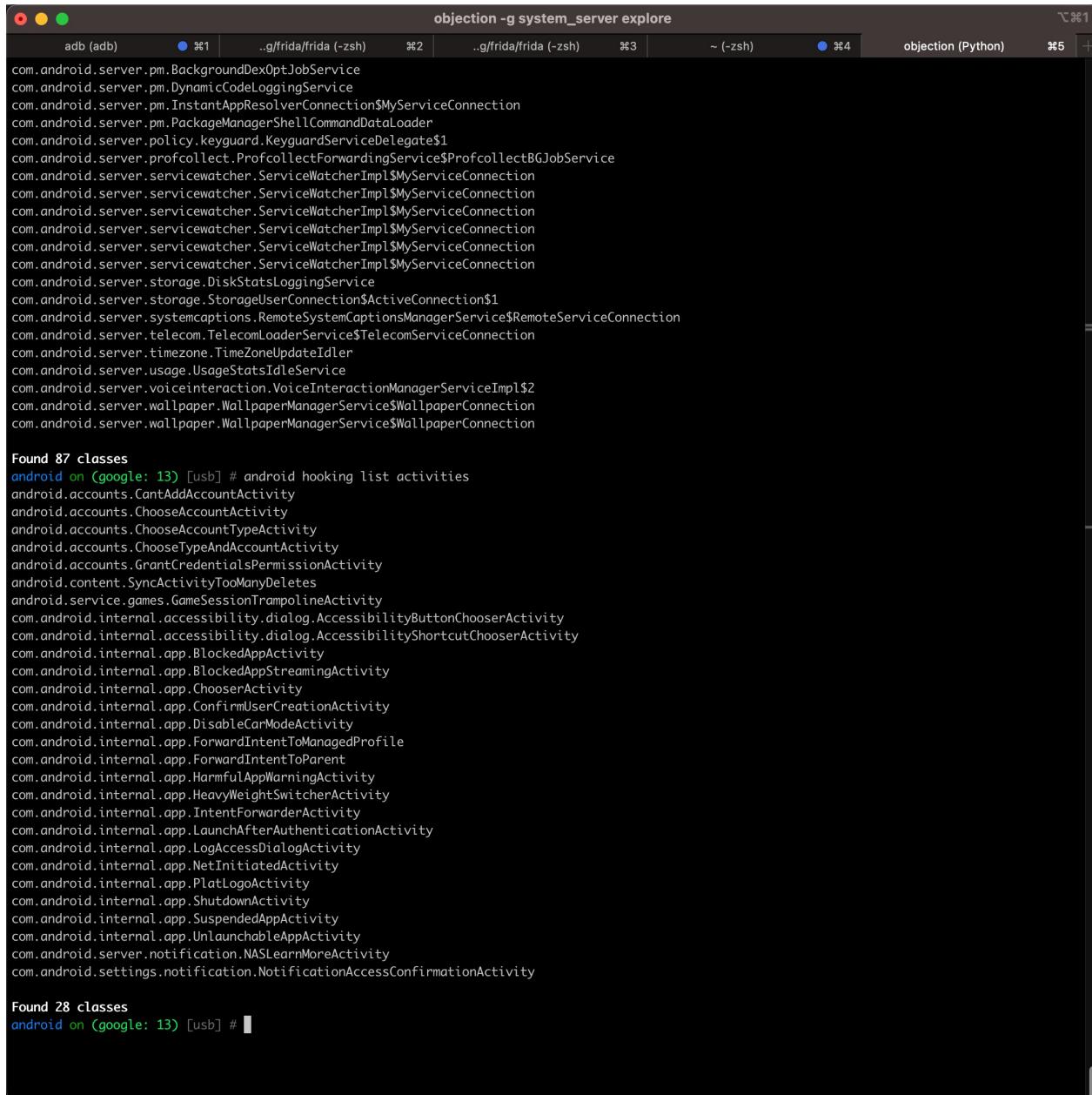
Objection去hook列出Activity页面：

- 命令

```
android hooking list activities
```

举例

system_server



The screenshot shows a terminal window titled "objection -g system_server explore". The window has five tabs at the top: adb (adb), .g/frida/frida (-zsh), .g/frida/frida (-zsh), ~ (-zsh), and objection (Python). The main pane displays a list of Java class names found in the system_server process. The output is as follows:

```

objection -g system_server explore
adb (adb)   #1  .g/frida/frida (-zsh)  #2  .g/frida/frida (-zsh)  #3  ~ (-zsh)  #4  objection (Python)  #5

com.android.server.pm.BackgroundDexOptJobService
com.android.server.pm.DynamicCodeLoggingService
com.android.server.pm.InstantAppResolverConnection$MyServiceConnection
com.android.server.pm.PackageManagerShellCommandDataLoader
com.android.server.policy.keyguard.KeyguardServiceDelegate$1
com.android.server.profcollect.ProfcollectForwardingService$ProfcollectBGJobService
com.android.server.servicewatcher.ServiceWatcherImpl$MyServiceConnection
com.android.server.servicewatcher.ServiceWatcherImpl$MyServiceConnection
com.android.server.servicewatcher.ServiceWatcherImpl$MyServiceConnection
com.android.server.servicewatcher.ServiceWatcherImpl$MyServiceConnection
com.android.server.servicewatcher.ServiceWatcherImpl$MyServiceConnection
com.android.server.servicewatcher.ServiceWatcherImpl$MyServiceConnection
com.android.server.servicewatcher.ServiceWatcherImpl$MyServiceConnection
com.android.server.storage.DiskStatsLoggingService
com.android.server.storage.StorageUserConnection$ActiveConnection$1
com.android.server.systemcaptions.RemoteSystemCaptionsManagerService$RemoteServiceConnection
com.android.server.telecom.TelcomLoaderService$TelecomServiceConnection
com.android.server.timezone.TimeZoneUpdateIdler
com.android.server.usage.UsageStatsIdleService
com.android.server.voiceinteraction.VoiceInteractionManagerServiceImpl$2
com.android.server.wallpaper.WallpaperManagerService$WallpaperConnection
com.android.server.wallpaper.WallpaperManagerService$WallpaperConnection

Found 87 classes
android on (google: 13) [usb] # android hooking list activities
android.accounts.CantAddAccountActivity
android.accounts.ChooseAccountActivity
android.accounts.ChooseAccountTypeActivity
android.accounts.ChooseTypeAndAccountActivity
android.accounts.GrantCredentialsPermissionActivity
android.content.SyncActivityTooManyDeletes
android.service.games.GameSessionTrampolineActivity
com.android.internal.accessibility.dialog.AccessibilityButtonChooserActivity
com.android.internal.accessibility.dialog.AccessibilityShortcutChooserActivity
com.android.internal.app.BlockedAppActivity
com.android.internal.app.BlockedAppStreamingActivity
com.android.internal.app.ChooserActivity
com.android.internal.app.ConfirmUserCreationActivity
com.android.internal.app.DisableCarModeActivity
com.android.internal.app.ForwardIntentToManagedProfile
com.android.internal.app.ForwardIntentToParent
com.android.internal.app.HarmfulAppWarningActivity
com.android.internal.app.HeavyWeightSwitcherActivity
com.android.internal.app.IntentForwarderActivity
com.android.internal.app.LaunchAfterAuthenticationActivity
com.android.internal.app.LogAccessDialogActivity
com.android.internal.app.NetInitiatedActivity
com.android.internal.app.PlatLogoActivity
com.android.internal.app.ShutdownActivity
com.android.internal.app.SuspendedAppActivity
com.android.internal.app.UnlaunchableAppActivity
com.android.server.notification.NASLearnMoreActivity
com.android.settings.notification.NotificationAccessConfirmationActivity

Found 28 classes
android on (google: 13) [usb] # 
```

```
android on (google: 13) [usb] # android hooking list activities
android.accounts.CantAddAccountActivity
```

```

    android.accounts.ChooseAccountActivity
    android.accounts.ChooseAccountTypeActivity
    android.accounts.ChooseTypeAndAccountActivity
    android.accounts.GrantCredentialsPermissionActivity
    android.content.SyncActivityTooManyDeletes
    android.service.games.GameSessionTrampolineActivity
    com.android.internal.accessibility.dialog.AccessibilityButtonChooserActivity
    com.android.internal.accessibility.dialog.AccessibilityShortcutChooserActivity
    com.android.internal.app.BlockedAppActivity
    com.android.internal.app.BlockedAppStreamingActivity
    com.android.internal.app.ChooserActivity
    com.android.internal.app.ConfirmUserCreationActivity
    com.android.internal.app.DisableCarModeActivity
    com.android.internal.app.ForwardIntentToManagedProfile
    com.android.internal.app.ForwardIntentToParent
    com.android.internal.app.HarmfulAppWarningActivity
    com.android.internal.app.HeavyWeightSwitcherActivity
    com.android.internal.app.IntentForwarderActivity
    com.android.internal.app.LaunchAfterAuthenticationActivity
    com.android.internal.app.LogAccessDialogActivity
    com.android.internal.app.NetInitiatedActivity
    com.android.internal.app.PlatLogoActivity
    com.android.internal.app.ShutdownActivity
    com.android.internal.app.SuspendedAppActivity
    com.android.internal.app.UnlauchableAppActivity
    com.android.server.notification.NASLearnMoreActivity
    com.android.settings.notification.NotificationAccessConfirmationActivity

```

Found 28 classes

com.example.androiddemo

```

E:\homework_python\venv\Scripts>objection -g com.example.androiddemo explore
Checking for a newer version of objection...
Using USB device `Pixel 4'
Agent injected and responds ok!

Runtime Mobile Exploration
by: @leonjza from @sensepost

[tab] for command suggestions
com.example.androiddemo on (google: 11) [usb] #
com.example.androiddemo on (google: 11) [usb] #
3com.example.androiddemo on (google: 11) [usb] #
com.example.androiddemo on (google: 11) [usb] # android hooking list activities
2com.example.androiddemo.Activity.BaseFridaActivity
com.example.androiddemo.Activity.FridaActivity1
com.example.androiddemo.Activity.FridaActivity2
dcom.example.androiddemo.Activity.FridaActivity3
3com.example.androiddemo.Activity.FridaActivity4
com.example.androiddemo.Activity.FridaActivity5
com.example.androiddemo.Activity.FridaActivity6
com.example.androiddemo.Activity.FridaActivity7
com.example.androiddemo.Activity.LoginActivity
com.example.androiddemo.MainActivity

```



android hooking list class_loaders

Objection去hook列出类加载器：

- 命令

```
android hooking list class_loaders
```

举例

system_server

- 命令

```
android hooking list class_loaders
```

○ 图

```
adb (adb) ① ...g/frida/frida (-zsh) ② ...g/frida/frida (-zsh) ③ - (-zsh) ④ objection (Python) ⑤
objection -g system_server explore
Found 87 classes
* android.accounts.ContAddAccountActivity
* android.accounts.ChooseAccountActivity
* android.accounts.ChooseAccountTypeActivity
* android.accounts.ChooseTypeAndAccountActivity
* android.accounts.GrantCredentialsPermissionActivity
* android.content.SyncActivityTooManyDeletes
* android.service.games.GameSessionTrompolineActivity
* com.android.internal.accessibility.dialog.AccessibilityButtonChooserActivity
* com.android.internal.accessibility.dialog.AccessibilityShortcutChooserActivity
* com.android.internal.app.BlockedAppActivity
* com.android.internal.app.BlockedAppStreamingActivity
* com.android.internal.app.ChooserActivity
* com.android.internal.app.ConfirmUserCreationActivity
* com.android.internal.app.DisableCarModeActivity
* com.android.internal.app.ForwardIntentToManagedProfile
* com.android.internal.app.ForwardIntentToParent
* com.android.internal.app.HarmfulAppWarningActivity
* com.android.internal.app.HeavyWeightSwitcherActivity
* com.android.internal.app.IntentForwarderActivity
* com.android.internal.app.LaunchAfterAuthenticationActivity
* com.android.internal.app.LogAccessDialogActivity
* com.android.internal.app.NefInitiatedActivity
* com.android.internal.app.PlotLogitivity
* com.android.internal.app.RoutingdownActivity
* com.android.internal.app.SuspendAndAppActivity
* com.android.internal.app.UntouchableAppActivity
* com.android.server.notification.NASLearnMoreActivity
* com.android.settings.notification.NotificationAccessConfirmationActivity

Found 28 classes
* dalvik.system.InMemoryDexClassLoader[DexPathList[[dex file "InMemoryDexFile[cookie=[0, -5476376610526921072]]"],nativeLibraryDirectories=[/system/lib64, /system_ext/lib64]]]
* dalvik.system.PathClassLoader[DexPathList[[directory "."]],nativeLibraryDirectories=[/system/lib64, /system_ext/lib64]]
* dalvik.system.PathClassLoader[DexPathList[[zip file "/apex/com.android.btservices/javalib/service-bluetooth.jar"]],nativeLibraryDirectories=[/system/lib64, /system_ext/lib64]]
* dalvik.system.PathClassLoader[DexPathList[[zip file "/apex/com.android.os.statsd/jar"]],nativeLibraryDirectories=[/system/lib64, /system_ext/lib64]]
* dalvik.system.PathClassLoader[DexPathList[[zip file "/apex/com.android.scheduling/jar"]],nativeLibraryDirectories=[/system/lib64, /system_ext/lib64]]
* dalvik.system.PathClassLoader[DexPathList[[zip file "/apex/com.android.tethering/javalib/service-connectivity.jar"]],nativeLibraryDirectories=[/system/lib64, /system_ext/lib64]]
* dalvik.system.PathClassLoader[DexPathList[[zip file "/apex/com.android.wifi/jar"]],nativeLibraryDirectories=[/system/lib64, /system_ext/lib64]]
* dalvik.system.PathClassLoader[DexPathList[[zip file "/system/framework/com.android.location.provider.jar"]],zip file "/system/framework/services.jar", zip file "/apex/com.android.adservices/javalib/service-adservices.jar"]
* dalvik.system.PathClassLoader[DexPathList[[zip file "/apex/com.android.media/javalib/service-media-s.jar"]],zip file "/apex/com.android.permission/javalib/service-permission.jar"]
* dalvik.system.PathClassLoader[DexPathList[[zip file "/system/prv-app/FusedLocation.apk"]],nativeLibraryDirectories=[/system/prv-app/FusedLocation/lib/arm64, /system/lib64, /system_ext/lib64]]
* dalvik.system.PathClassLoader[DexPathList[[zip file "/system/prv-app/SettingsProvider.apk"]],nativeLibraryDirectories=[/system/prv-app/SettingsProvider/lib/arm64, /system/lib64, /system_ext/lib64]]
* dalvik.system.PathClassLoader[DexPathList[[zip file "/system/prv-app/Telecom.Telecom.apk"]],nativeLibraryDirectories=[/system/prv-app/Telecom/lib/arm64, /system/lib64, /system_ext/lib64, /system/lib64, /system_ext/lib64]]
* java.lang.BootClassLoader@14171b

Found 12 class loaders
android on (google: 13) [usb] #
```

○ log

```
android on (google: 13) [usb] # android hooking list class_loaders
* dalvik.system.InMemoryDexClassLoader[DexPathList[[dex file "InMemoryDexFile[cookie=[0, -5476376610526921072]]"],nativeLibraryDirectories=[/system/lib64, /system_ext/lib64]]]
* dalvik.system.PathClassLoader[DexPathList[[directory "."]],nativeLibraryDirectories=[/system/lib64, /system_ext/lib64, /system/lib64, /system_ext/lib64]]]
```

```

* dalvik.system.PathClassLoader[DexPathList[[zip file "/apex/com.android.bluetooth/javalib/service-bluetooth.jar"],nativeLibraryDirectories=[/system/lib64, /system_ext/lib64]]]
* dalvik.system.PathClassLoader[DexPathList[[zip file "/apex/com.android.os.statsd/javalib/service-statsd.jar"],nativeLibraryDirectories=[/system/lib64, /system_ext/lib64]]]
* dalvik.system.PathClassLoader[DexPathList[[zip file "/apex/com.android.scheduling/javalib/service-scheduling.jar"],nativeLibraryDirectories=[/system/lib64, /system_ext/lib64]]]
* dalvik.system.PathClassLoader[DexPathList[[zip file "/apex/com.android.tethering/javalib/service-connectivity.jar"],nativeLibraryDirectories=[/system/lib64, /system_ext/lib64]]]
* dalvik.system.PathClassLoader[DexPathList[[zip file "/apex/com.android.wifi/javalib/service-wifi.jar"],nativeLibraryDirectories=[/system/lib64, /system_ext/lib64]]]
* dalvik.system.PathClassLoader[DexPathList[[zip file "/system/framework/com.android.location.provider.jar", zip file "/system/framework/services.jar", zip file "/apex/com.android.adservices/javalib/service-adservices.jar", zip file "/apex/com.android.adservices/javalib/service-sdksandbox.jar", zip file "/apex/com.android.appsearch/javalib/service-appsearch.jar", zip file "/apex/com.android.art/javalib/service-art.jar", zip file "/apex/com.android.media/javalib/service-media-s.jar", zip file "/apex/com.android.permission/javalib/service-permission.jar"],nativeLibraryDirectories=[/system/lib64, /system_ext/lib64, /system/lib64, /system_ext/lib64]]]
* dalvik.system.PathClassLoader[DexPathList[[zip file "/system/priv-app/FusedLocation/FusedLocation.apk"],nativeLibraryDirectories=[/system/priv-app/FusedLocation/lib/arm64, /system/lib64, /system_ext/lib64, /system/lib64, /system_ext/lib64]]]
* dalvik.system.PathClassLoader[DexPathList[[zip file "/system/priv-app/SettingsProvider/SettingsProvider.apk"],nativeLibraryDirectories=[/system/priv-app/SettingsProvider/lib/arm64, /system/lib64, /system_ext/lib64, /system/lib64, /system_ext/lib64]]]
* dalvik.system.PathClassLoader[DexPathList[[zip file "/system/priv-app/Telecom/Telecom.apk"],nativeLibraryDirectories=[/system/priv-app/Telecom/lib/arm64, /system/lib64, /system_ext/lib64, /system/lib64, /system_ext/lib64]]]
* java.lang.BootClassLoader@14171b

```

Found 12 class loaders

android hooking watch

hook安卓的类

- 命令

```
android hooking watch class {androidFullClassName}
```

举例

com.tlamb96.kgbmessenger.MessengerActivity

- 命令

```
android hooking watch class com.tlamb96.kgbmessenger.MessengerActivity
```

◦

asvid.github.io.fridaapp.MainActivity

- 命令

```
android hooking watch class asvid.github.io.fridaapp.MainActivity --dump-args --dump-return
```

◦

com.example.androidddemo.Activity.LoginActivity

- 命令

```
android hooking watch class com.example.androidddemo.Activity.LoginActivity
```

◦

com.example.androidddemo.Activity.FridaActivity2

- 命令

```
android hooking watch class com.example.androidddemo.Activity.FridaActivity2
```

◦

hook安卓的函数

- 命令

```
android hooking watch class_method {androidFunctionName}
```

举例

asvid.github.io.fridaapp.MainActivity.sum

- 命令

```
android hooking watch class_method asvid.github.io.fridaapp.MainActivity.sum --dump
--args --dump-backtrace --dump-return
```

◦

com.android.server.am.ActivityManagerService.forceStopPackage

- 命令

```
android hooking watch class_method com.android.server.am.ActivityManagerService.
forceStopPackage --dump-args --dump-backtrace --dump-return
```

◦ 图

```
crifan@crifanlidleMacBook-Pro:~
```

```
adb (adb) *#1 .gfrida/frida (-zsh) #2 ..gfrida/frida (-zsh) #3 - (-zsh) #4 - (-zsh) #5 - (-zsh) #6 +
```

```
(agent) [780469] Called com.android.server.am.ActivityManagerService.startService(android.app.IApplicationThread, android.content.Intent, java.lang.String, boolean, java.lang.String, java.lang.String, int)
(agent) [780469] Backtrace:
com.android.server.am.ActivityManagerService.startService(Native Method)
    android.app.IActivityManager$Stub.onTransact(IActivityManager.java:2452)
com.android.server.am.ActivityManagerService.onTransact(ActivityManagerService.java:2628)
    android.os.Binder.execTransactInternal(Binder.java:1280)
    android.os.Binder.execTransact(Binder.java:1244)

(agent) [780469] Arguments com.android.server.am.ActivityManagerService.startService([object Object], Intent { cmp=com.crifan.keepaliveandroid/.Service1 }, (none), (none), com.crifan.keepaliveandroid.KeepAliveService)
(agent) [780469] Return Value: ComponentInfo[com.crifan.keepaliveandroid/com.crifan.keepaliveandroid.Service1]

android on (google: 13) [usb] #

(agent) [817434] Called com.android.server.am.ActivityManagerService.forceStopPackage(java.lang.String, int)
(agent) [817434] Backtrace:
com.android.server.am.ActivityManagerService.forceStopPackage(Native Method)
    android.app.IActivityManager$Stub.onTransact(IActivityManager.java:3108)
com.android.server.am.ActivityManagerService.onTransact(ActivityManagerService.java:2628)
    android.os.Binder.execTransactInternal(Binder.java:1280)
    android.os.Binder.execTransact(Binder.java:1244)

(agent) [817434] Arguments com.android.server.am.ActivityManagerService.forceStopPackage(com.wallpaper.hd.funny, (none))
(agent) [817434] Return Value: (none)
(agent) [780469] Called com.android.server.am.ActivityManagerService.startService(android.app.IApplicationThread, android.content.Intent, java.lang.String, boolean, java.lang.String, java.lang.String, int)
(agent) [780469] Backtrace:
com.android.server.am.ActivityManagerService.startService(Native Method)
    android.app.IActivityManager$Stub.onTransact(IActivityManager.java:2452)
com.android.server.am.ActivityManagerService.onTransact(ActivityManagerService.java:2628)
    android.os.Binder.execTransactInternal(Binder.java:1280)
    android.os.Binder.execTransact(Binder.java:1244)

(agent) [780469] Arguments com.android.server.am.ActivityManagerService.startService((none), Intent { cmp=com.wallpaper.hd.funny/com.w.thsz.s.Service108 }, (none), (none), com.wallpaper.hd.funny)
    (none), (none))
(agent) [780469] Return Value: ComponentInfo[?/app is in background uid null]
(agent) [780469] Called com.android.server.am.ActivityManagerService.startService(android.app.IApplicationThread, android.content.Intent, java.lang.String, boolean, java.lang.String, java.lang.String, int)
(agent) [780469] Backtrace:
com.android.server.am.ActivityManagerService.startService(Native Method)
    android.app.IActivityManager$Stub.onTransact(IActivityManager.java:2452)
com.android.server.am.ActivityManagerService.onTransact(ActivityManagerService.java:2628)
    android.os.Binder.execTransactInternal(Binder.java:1285)
    android.os.Binder.execTransact(Binder.java:1244)

(agent) [780469] Arguments com.android.server.am.ActivityManagerService.startService((none), Intent { cmp=com.wallpaper.hd.funny/com.w.thsz.s.Service108 }, (none), (none), com.wallpaper.hd.funny)
    (none), (none))
(agent) [780469] Return Value: ComponentInfo[?/app is in background uid null]
(agent) [780469] Called com.android.server.am.ActivityManagerService.startService(android.app.IApplicationThread, android.content.Intent, java.lang.String, boolean, java.lang.String, java.lang.String, int)
```

- log

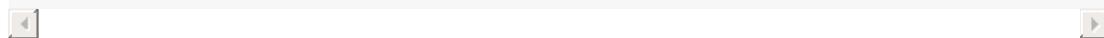
- 添加时

```
android on (google: 13) [usb] # android hooking watch class_method com.android.server.am.ActivityManagerService.forceStopPackage --dump-args --dump-backtrace --dump-return
(agent) Attempting to watch class com.android.server.am.ActivityManagerService and method forceStopPackage.
(agent) Hooking com.android.server.am.ActivityManagerService.forceStopPackage (java.lang.String, int)
(agent) Registering job 817434. Type: watch-method for: com.android.server.am.ActivityManagerService.forceStopPackage
```

- 触发时

```
android on (google: 13) [usb] # (agent) [817434] Called com.android.server.am.ActivityManagerService.forceStopPackage(java.lang.String, int)
(agent) [817434] Backtrace:
com.android.server.am.ActivityManagerService.forceStopPackage(Native Method)
    android.app.IActivityManager$Stub.onTransact(IActivityManager.java:3108)
com.android.server.am.ActivityManagerService.onTransact(ActivityManagerService.java:2628)
    android.os.Binder.execTransactInternal(Binder.java:1280)
    android.os.Binder.execTransact(Binder.java:1244)

(agent) [817434] Arguments com.android.server.am.ActivityManagerService.forceStopPackage(com.wallpaper.hd.funny, (none))
(agent) [817434] Return Value: (none)
```



android.app.ActivityManager.forceStopPackage

- 命令

```
android hooking watch class_method android.app.ActivityManager.forceStopPackage --dump-args --dump-backtrace --dump-return
```

- 图

```
android on (google: 13) [usb] # android hooking watch class_method android.app.ActivityManager.forceStopPackage --dump-args --dump-backtrace --dump-return
(agent) Attempting to watch class android.app.ActivityManager and method forceStopPackage.
(agent) Hooking android.app.ActivityManager.forceStopPackage(java.lang.String)
(agent) Registering job 050991. Type: watch-method for: android.app.ActivityManager.forceStopPackage
android on (google: 13) [usb] #
```

- log

```
android on (google: 13) [usb] # android hooking watch class_method android.app.ActivityManager.forceStopPackage --dump-args --dump-backtrace --dump-return
(agent) Attempting to watch class android.app.ActivityManager and method forceStopPackage.
(agent) Hooking android.app.ActivityManager.forceStopPackage(java.lang.String)
(agent) Registering job 050991. Type: watch-method for: android.app.ActivityManager.forceStopPackage
```

com.android.server.am.ActivityManagerService.startService

- 命令

```
android hooking watch class_method com.android.server.am.ActivityManagerService.startService --dump-args --dump-backtrace --dump-return
```

- 图

```
android on (google: 13) [usb] # android hooking watch class_method android.app.ActivityManager.forceStopPackage --dump-args --dump-backtrace --dump-return
(agent) Attempting to watch class android.app.ActivityManager and method forceStopPackage.
(agent) Hooking android.app.ActivityManager.forceStopPackage(java.lang.String)
(agent) Registering job 050991. Type: watch-method for: android.app.ActivityManager.forceStopPackage
android on (google: 13) [usb] # android hooking watch class_method com.android.server.am.ActivityManagerService.startService --dump-args --dump-backtrace --dump-return
(agent) Attempting to watch class com.android.server.am.ActivityManagerService and method startService.
(agent) Hooking com.android.server.am.ActivityManagerService.startService(android.app.IApplicationThread, android.content.Intent, java.lang.String, boolean, java.lang.String, java.lang.String, int)
(agent) Registering job 780469. Type: watch-method for: com.android.server.am.ActivityManagerService.startService
android on (google: 13) [usb] #
```

- log

```
android on (google: 13) [usb] # android hooking watch class_method com.android.server.am.ActivityManagerService.startService --dump-args --dump-backtrace --dump-return
(agent) Attempting to watch class com.android.server.am.ActivityManagerService and method startService.
(agent) Hooking com.android.server.am.ActivityManagerService.startService(android.app.IApplicationThread, android.content.Intent, java.lang.String, boolean, java.lang.String, java.lang.String, int)
(agent) Registering job 780469. Type: watch-method for: com.android.server.am.ActivityManagerService.startService
```

- 触发时效果

- 效果1

■ 图

```

objection -g system_server explore
adb (adb) ● x1 .gfrida/frida (-zsh) ● x2 ..gfrida/frida (-zsh) ● x3 ~ (-zsh) ● x4 objection (Python) x5 ~ (-zsh) ● x6 +
at c (frida/runtime/message-dispatcher.js:23)

android on (google: 13) [usb] # android hooking watch class.method android.app.ActivityManager.forceStopPackage --dump-args --dump-backtrace --dump-return
(agent) Attempting to watch class android.app.ActivityManager and method forceStopPackage.
(agent) Hooking android.app.ActivityManager.forceStopPackage$Java.lang.String
(agent) Registering job 050991. Type: watch-method for: android.app.ActivityManager.forceStopPackage
android on (google: 13) [usb] # android hooking watch class.method com.android.server.am.ActivityManagerService.startService --dump-args --dump-backtrace --dump-return
(agent) Attempting to watch class com.android.server.am.ActivityManagerService and method startService.
(agent) Hooking com.android.server.am.ActivityManagerService.startService$Android.app.IApplicationThread, android.content.Intent, java.lang.String, boolean, java.lang.String, java.lang.String, int
(agent) Registering job 780469. Type: watch-method for: com.android.server.am.ActivityManagerService.startService
android on (google: 13) [usb] # (agent) [780469] Called com.android.server.am.ActivityManagerService.startService$Android.app.IApplicationThread, android.content.Intent, java.lang.String, boolean, java.lang.String, int
(agent) [780469] Backtrace:
    com.android.server.am.ActivityManagerService.startService(Native Method)
        android.app.IActivityManager$Stub.onTransact(IActivityManager.java:2452)
    com.android.server.am.ActivityManagerService.onTransact(ActivityManagerService.java:2628)
    android.os.Binder.execTransactInternal(Binder.java:1280)
    android.os.Binder.execTransact(Binder.java:1244)

(agent) [780469] Arguments com.android.server.am.ActivityManagerService.startService([object Object], Intent { act=com.google.android.gms.common.broadcast.DELIVER_BROADCAST cat=[targeted_intent_op_prefix:.common.broadcast.BackgroundBroadcastReceiverSupport$PersistentReceiverIntentOperation] cmp=com.google.android.gms/.chimera.PersistentIntentOperationService (has extras) }, (none), (none), com.google.android.gms, gms_broadcast_receiver, (none))
(agent) [780469] Return Value: ComponentInfo{com.google.android.gms/com.google.android.gms.chimera.PersistentIntentOperationService}
(agent) [780469] Called com.android.server.am.ActivityManagerService.startService$Android.app.IApplicationThread, android.content.Intent, java.lang.String, boolean, java.lang.String, java.lang.String, int
(agent) [780469] Backtrace:
    com.android.server.am.ActivityManagerService.startService(Native Method)
        android.app.IActivityManager$Stub.onTransact(IActivityManager.java:2452)
    com.android.server.am.ActivityManagerService.onTransact(ActivityManagerService.java:2628)
    android.os.Binder.execTransactInternal(Binder.java:1280)
    android.os.Binder.execTransact(Binder.java:1244)

(agent) [780469] Arguments com.android.server.am.ActivityManagerService.startService([object Object], Intent { act=com.google.android.gms.common.broadcast.DELIVER_BROADCAST cat=[targeted_intent_op_prefix:.common.broadcast.BackgroundBroadcastReceiverSupport$PersistentReceiverIntentOperation] cmp=com.google.android.gms/.chimera.PersistentIntentOperationService (has extras) }, (none), (none), com.google.android.gms, gms_broadcast_receiver, (none))
(agent) [780469] Return Value: ComponentInfo{com.google.android.gms/com.google.android.gms.chimera.PersistentIntentOperationService}
(agent) [780469] Called com.android.server.am.ActivityManagerService.startService$Android.app.IApplicationThread, android.content.Intent, java.lang.String, boolean, java.lang.String, java.lang.String, int
(agent) [780469] Backtrace:
    com.android.server.am.ActivityManagerService.startService(Native Method)
        android.app.IActivityManager$Stub.onTransact(IActivityManager.java:2452)
    com.android.server.am.ActivityManagerService.onTransact(ActivityManagerService.java:2628)
    android.os.Binder.execTransactInternal(Binder.java:1280)
    android.os.Binder.execTransact(Binder.java:1244)

(agent) [780469] Arguments com.android.server.am.ActivityManagerService.startService([object Object], Intent { act=android.intent.action.USER_PRESENT flg=0x24200010 pkg=com.google.android.gms cmp=com.google.android.gms/.chimera.GmsIntentOperationService (has extras) }, (none), (none), com.google.android.gms, gms_intent_receiver, (none))
(agent) [780469] Return Value: ComponentInfo{com.google.android.gms/com.google.android.gms.chimera.GmsIntentOperationService}
(agent) [780469] Called com.android.server.am.ActivityManagerService.startService$Android.app.IApplicationThread, android.content.Intent, java.lang.String, boolean, java.lang.String, java.lang.String, int
(agent) [780469] Backtrace:
    com.android.server.am.ActivityManagerService.startService(Native Method)
        android.app.IActivityManager$Stub.onTransact(IActivityManager.java:2452)
    com.android.server.am.ActivityManagerService.onTransact(ActivityManagerService.java:2628)
    android.os.Binder.execTransactInternal(Binder.java:1280)
    android.os.Binder.execTransact(Binder.java:1244)

```

■ log

```

android on (google: 13) [usb] # (agent) [780469] Called com.android.server.am.ActivityManagerService.startService(android.app.IApplicationThread, android.content.Intent, java.lang.String, boolean, java.lang.String, java.lang.String, int)
(agent) [780469] Backtrace:
    com.android.server.am.ActivityManagerService.startService(Native Method)
        android.app.IActivityManager$Stub.onTransact(IActivityManager.java:2452)
    com.android.server.am.ActivityManagerService.onTransact(ActivityManagerService.java:2628)
    android.os.Binder.execTransactInternal(Binder.java:1280)
    android.os.Binder.execTransact(Binder.java:1244)

(agent) [780469] Arguments com.android.server.am.ActivityManagerService.startService([object Object], Intent { act com.google.android.gms.common.broadcast.DELIVER_BROADCAST cat=[targeted_intent_op_prefix:.common.broadcast.BackgroundBroadcastReceiverSupport$PersistentReceiverIntentOperation] cmp=com.google.android.gms/.chimera.PersistentIntentOperationService (has extras) }, (none), (none), com.google.android.gms, gms_broadcast_receiver, (none))
(agent) [780469] Return Value: ComponentInfo{com.google.android.gms/com.google.android.gms.chimera.PersistentIntentOperationService}
(agent) [780469] Called com.android.server.am.ActivityManagerService.startService$Android.app.IApplicationThread, android.content.Intent, java.lang.String, boolean, java.lang.String, java.lang.String, int
(agent) [780469] Backtrace:
    com.android.server.am.ActivityManagerService.startService(Native Method)
        android.app.IActivityManager$Stub.onTransact(IActivityManager.java:2452)
    com.android.server.am.ActivityManagerService.onTransact(ActivityManagerService.java:2628)
    android.os.Binder.execTransactInternal(Binder.java:1280)
    android.os.Binder.execTransact(Binder.java:1244)

(agent) [780469] Arguments com.android.server.am.ActivityManagerService.startService([object Object], Intent { act com.google.android.gms.common.broadcast.DELIVER_BROADCAST cat=[targeted_intent_op_prefix:.common.broadcast.BackgroundBroadcastReceiverSupport$PersistentReceiverIntentOperation] cmp=com.google.android.gms/.chimera.PersistentIntentOperationService (has extras) }, (none), (none), com.google.android.gms, gms_broadcast_receiver, (none))
(agent) [780469] Return Value: ComponentInfo{com.google.android.gms/com.google.android.gms.chimera.PersistentIntentOperationService}
(agent) [780469] Called com.android.server.am.ActivityManagerService.startService$Android.app.IApplicationThread, android.content.Intent, java.lang.String, boolean, java.lang.String, java.lang.String, int
(agent) [780469] Backtrace:
    com.android.server.am.ActivityManagerService.startService(Native Method)
        android.app.IActivityManager$Stub.onTransact(IActivityManager.java:2452)
    com.android.server.am.ActivityManagerService.onTransact(ActivityManagerService.java:2628)

```

```

        android.os.Binder.execTransactInternal(Binder.java:1280)
        android.os.Binder.execTransact(Binder.java:1244)

(agent) [780469] Arguments com.android.server.am.ActivityManagerService.startService([object Object], Intent { act=com.google.android.gms.common.broadcast.DELIVER_BROADCAST cat=[targeted_intent_op_prefix:.common.broadcast.BackgroundBroadcastReceiverSupport$PersistentReceiverIntentOperation] cmp=com.google.android.gms/.chimera.PersistentIntentOperationService (has extras) }, (none), (none), com.google.android.gms, gms_broadcast_receiver, (none))
(agent) [780469] Return Value: ComponentInfo{com.google.android.gms/com.google.android.gms.chimera.PersistentIntentOperationService}

...
(agent) [780469] Arguments com.android.server.am.ActivityManagerService.startService([object Object], Intent { act=android.intent.action.BATTERY_CHANGED cmp=com.google.android.apps.scone/.coex.StateService (has extras) }, (none), (none), com.google.android.apps.scone, (none), (none))
(agent) [780469] Return Value: ComponentInfo{com.google.android.apps.scone/com.google.android.apps.scone.coex.StateService}
(agent) [780469] Called com.android.server.am.ActivityManagerService.startService(android.app.IApplicationThread, android.content.Intent, java.lang.String, boolean, java.lang.String, java.lang.String, int)
(agent) [780469] Backtrace:
    com.android.server.am.ActivityManagerService.startService(Native Method)
    android.app.IActivityManager$Stub.onTransact(IActivityManager.java:2452)
    com.android.server.am.ActivityManagerService.onTransact(ActivityManagerService.java:2628)
        android.os.Binder.execTransactInternal(Binder.java:1280)
        android.os.Binder.execTransact(Binder.java:1244)

(agent) [780469] Arguments com.android.server.am.ActivityManagerService.startService([object Object], Intent { act=com.google.android.gms.ipa.mediastore.indexer.INSTANT_INDEX cat=[targeted_intent_op_prefix:.ipa.mediastoreindexer.InstantIndexingIntentOperation] cmp=com.google.android.gms/.chimera.GmsIntentOperationService (has extras) }, (none), (none), com.google.android.gms, com.google.android.gms.ipa, (none))
(agent) [780469] Return Value: ComponentInfo{com.google.android.gms/com.google.android.gms.chimera.GmsIntentOperationService}
(agent) [780469] Called com.android.server.am.ActivityManagerService.startService(android.app.IApplicationThread, android.content.Intent, java.lang.String, boolean, java.lang.String, java.lang.String, int)
(agent) [780469] Backtrace:
    com.android.server.am.ActivityManagerService.startService(Native Method)
    android.app.IActivityManager$Stub.onTransact(IActivityManager.java:2452)
    com.android.server.am.ActivityManagerService.onTransact(ActivityManagerService.java:2628)
        android.os.Binder.execTransactInternal(Binder.java:1280)
        android.os.Binder.execTransact(Binder.java:1244)

(agent) [780469] Arguments com.android.server.am.ActivityManagerService.startService([object Object], Intent { cmp=com.crifan.keepaliveandroid/.Service1 }, (none), (none), com.crifan.keepaliveandroid, (none), (none))
(agent) [780469] Return Value: ComponentInfo{com.crifan.keepaliveandroid/com.crifan.keepaliveandroid.Service1}

```

- 效果2

- 图

```

crifan@crifanldeMacBook-Pro:~ % adb (adb) ④1 ..gfrida/frida (-zsh) ④2 .gfrida/frida (-zsh) ④3 ~ (-zsh) ④4 ~ (-zsh) ④5 ~ (-zsh) ④6 + 
(agent) [780469] Backtrace:
    com.android.server.am.ActivityManagerService.startService(Native Method)
        android.app.IActivityManager$Stub.onTransact(IActivityManager.java:2452)
        com.android.server.am.ActivityManagerService.onTransact(ActivityManagerService.java:2628)
        android.os.Binder.execTransactInternal(Binder.java:1280)
        android.os.Binder.execTransact(Binder.java:1244)

(agent) [817434] Arguments com.android.server.am.ActivityManagerService.startService([object Object], Intent { cmp=com.crifan.keepaliveandroid/.Service1 }, (none), (none), com.crifan.keepaliveandroid/.Service1)
(android on google: 13) [usb] #

(agent) [817434] Backtrace:
    com.android.server.am.ActivityManagerService.forceStopPackage(Native Method)
        android.app.IActivityManager$Stub.onTransact(IActivityManager.java:3108)
        com.android.server.am.ActivityManagerService.onTransact(ActivityManagerService.java:2628)
        android.os.Binder.execTransactInternal(Binder.java:1280)
        android.os.Binder.execTransact(Binder.java:1244)

(agent) [817434] Arguments com.android.server.am.ActivityManagerService.forceStopPackage(com.wallpaper.hd.funny, (none))
(agent) [817434] Return Value: (none)
(agent) [780469] Called com.android.server.am.ActivityManagerService.startService(android.app.IApplicationThread, android.content.Intent, java.lang.String, boolean, java.lang.String, java.lang.String, int)
String, int)
(agent) [780469] Backtrace:
    com.android.server.am.ActivityManagerService.startService(Native Method)
        android.app.IActivityManager$Stub.onTransact(IActivityManager.java:2452)
        com.android.server.am.ActivityManagerService.onTransact(ActivityManagerService.java:2628)
        android.os.Binder.execTransactInternal(Binder.java:1285)
        android.os.Binder.execTransact(Binder.java:1244)

(agent) [780469] Arguments com.android.server.am.ActivityManagerService.startService((none), Intent { cmp=com.wallpaper.hd.funny/com.w.thsz.s.Service108 }, (none), (none), com.wallpaper.hd.funny, (none), (none))
(agent) [780469] Return Value: ComponentInfo{?/app is in background uid null}
(agent) [780469] Called com.android.server.am.ActivityManagerService.startService(android.app.IApplicationThread, android.content.Intent, java.lang.String, boolean, java.lang.String, java.lang.String, int)
String, int)
(agent) [780469] Backtrace:
    com.android.server.am.ActivityManagerService.startService(Native Method)
        android.app.IActivityManager$Stub.onTransact(IActivityManager.java:2452)
        com.android.server.am.ActivityManagerService.onTransact(ActivityManagerService.java:2628)
        android.os.Binder.execTransactInternal(Binder.java:1285)
        android.os.Binder.execTransact(Binder.java:1244)

```

- log

```

(agent) [780469] Called com.android.server.am.ActivityManagerService.startService(android.app.IApplicationThread, android.content.Intent, java.lang.String, boolean, java.lang.String, java.lang.String, int)
(agent) [780469] Backtrace:
    com.android.server.am.ActivityManagerService.startService(Native Method)
        android.app.IActivityManager$Stub.onTransact(IActivityManager.java:2452)
        com.android.server.am.ActivityManagerService.onTransact(ActivityManagerService.java:2628)
        android.os.Binder.execTransactInternal(Binder.java:1285)
        android.os.Binder.execTransact(Binder.java:1244)
(agent) [780469] Arguments com.android.server.am.ActivityManagerService.startService((none), Intent { cmp=com.wallpaper.hd.funny/com.w.thsz.s.Service108 }, (none), (none), com.wallpaper.hd.funny, (none), (none))
(agent) [780469] Return Value: ComponentInfo{?/app is in background uid null}

...
(agent) [780469] Called com.android.server.am.ActivityManagerService.startService(android.app.IApplicationThread, android.content.Intent, java.lang.String, boolean, java.lang.String, java.lang.String, int)
(agent) [780469] Backtrace:
    com.android.server.am.ActivityManagerService.startService(Native Method)
        android.app.IActivityManager$Stub.onTransact(IActivityManager.java:2452)
        com.android.server.am.ActivityManagerService.onTransact(ActivityManagerService.java:2628)
        android.os.Binder.execTransactInternal(Binder.java:1280)
        android.os.Binder.execTransact(Binder.java:1244)
(agent) [780469] Arguments com.android.server.am.ActivityManagerService.startService([object Object], Intent { cmp com.wallpaper.hd.funny/com.w.thsz.s.S

```

```
ervice109 }, (none), (none), com.wallpaper.hd.funny, (none), (none))
(agent) [780469] Return Value: ComponentInfo{?/app is in background uid UidR
ecord{2cdc265 u0a244 TRNB idle change:procadj procs:0 seq(1409661,1409161)}}
...
(agent) [780469] Called com.android.server.am.ActivityManagerService.startSe
rvice(android.app.IApplicationThread, android.content.Intent, java.lang.Stri
ng, boolean, java.lang.String, java.lang.String, int)
(agent) [780469] Backtrace:
    com.android.server.am.ActivityManagerService.startService(Native Method)
    android.app.IActivityManager$Stub.onTransact(IActivityManager.java:2452)
    com.android.server.am.ActivityManagerService.onTransact(ActivityManagers
ervice.java:2628)
    android.os.Binder.execTransactInternal(Binder.java:1280)
    android.os.Binder.execTransact(Binder.java:1244)
(agent) [780469] Arguments com.android.server.am.ActivityManagerService.star
tService([object Object], Intent { cmp com.wallpaper.hd.funny/com.w.thsz.s.S
ervice111 }, (none), (none), com.wallpaper.hd.funny, (none), (none))
(agent) [780469] Return Value: ComponentInfo{?/app is in background uid UidR
ecord{2cdc265 u0a244 TRNB idle change:procadj procs:0 seq(1409838,1409161)}}

[<] [>] 
```

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android hooking search

android hooking search classes

- 命令

```
android hooking search classes {AndroidClassName}
```

- 举例

```
android hooking search classes com.example.androiddemo.Activity.FridaActivity4
```

```
com.example.androiddemo on (google: 11) [usb] # android hooking search classes com.example.androiddemo.Activity.FridaActivity4
Note that Java classes are only loaded when they are used, so if the expected class has not been found, it might not have been loaded yet.
com.example.androiddemo.Activity.FridaActivity4
com.example.androiddemo.Activity.FridaActivity4$InnerClasses

Found 2 classes
com.example.androiddemo on (google: 11) [usb] #
com.example.androiddemo on (google: 11) [usb] # android hooking list class_methods com.example.androiddemo.Activity.FridaActivity4$InnerClasse
s
public static boolean com.example.androiddemo.Activity.FridaActivity4$InnerClasses.check1()
public static boolean com.example.androiddemo.Activity.FridaActivity4$InnerClasses.check2()
public static boolean com.example.androiddemo.Activity.FridaActivity4$InnerClasses.check3()
public static boolean com.example.androiddemo.Activity.FridaActivity4$InnerClasses.check4()
public static boolean com.example.androiddemo.Activity.FridaActivity4$InnerClasses.check5()
public static boolean com.example.androiddemo.Activity.FridaActivity4$InnerClasses.check6()

Found 6 method(s)
com.example.androiddemo on (google: 11) [usb] # android hooking watch class com.example.androiddemo.Activity.FridaActivity4$InnerClasses
(agent) Hooking com.example.androiddemo.Activity.FridaActivity4$InnerClasses.check1()
(agent) Hooking com.example.androiddemo.Activity.FridaActivity4$InnerClasses.check2()
(agent) Hooking com.example.androiddemo.Activity.FridaActivity4$InnerClasses.check3()
(agent) Hooking com.example.androiddemo.Activity.FridaActivity4$InnerClasses.check4()
(agent) Hooking com.example.androiddemo.Activity.FridaActivity4$InnerClasses.check5()
(agent) Hooking com.example.androiddemo.Activity.FridaActivity4$InnerClasses.check6()
(agent) Registering job 728219. Type: watch-class for: com.example.androiddemo.Activity.FridaActivity4$InnerClasses
com.example.androiddemo on (google: 11) [usb] # (agent) [728219] Called com.example.androiddemo.Activity.FridaActivity4$InnerClasses.check1()
(agent) [728219] Called com.example.androiddemo.Activity.FridaActivity4$InnerClasses.check1()
(agent) [728219] Called com.example.androiddemo.Activity.FridaActivity4$InnerClasses.check1()
(agent) [728219] Called com.example.androiddemo.Activity.FridaActivity4$InnerClasses.check1()
com.example.androiddemo on (google: 11) [usb] #
```



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android intent

- 常用子命令

- `android intent launch_activity`

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android intent launch_activity

- 命令

```
android intent launch_activity {AndroidIntentName}
```

- 举例

```
android intent launch_activity com.example.androiddemo.Activity.FridaActivity4
```

```
by: @leonjza from @sensepost
[tab] for command suggestions
com.example.androiddemo on (google: 11) [usb] # android hooking list activities
com.example.androiddemo.Activity.BaseFridaActivity
com.example.androiddemo.Activity.FridaActivity1
com.example.androiddemo.Activity.FridaActivity2
com.example.androiddemo.Activity.FridaActivity3
com.example.androiddemo.Activity.FridaActivity4
com.example.androiddemo.Activity.FridaActivity5
com.example.androiddemo.Activity.FridaActivity6
com.example.androiddemo.Activity.FridaActivity7
com.example.androiddemo.Activity.LoginActivity
com.example.androiddemo.MainActivity

Found 10 classes
com.example.androiddemo on (google: 11) [usb] # android intent launch_activity com.example.androiddemo.Activity.FridaActivity4...
(agent) Starting activity com.example.androiddemo.Activity.FridaActivity4...
(agent) Activity successfully asked to start.
com.example.androiddemo on (google: 11) [usb] #
```



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memory

Objection支持内存操作，主要命令就是： memory

- 常用子命令

- memory search
- memory dump

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memory search

Objection支持 暴力搜索内存

- 命令

```
memory search {contentToSearch}
```

- 举例

```
memory search "64 65 78 0a 30 33 35 00"
```

```
objection -g com.ninjacat.memorysearcher explore
Using USB device `Google Pixel`
Agent injected and responds ok!

[object]inject(ion) v1.8.3

Runtime Mobile Exploration
by: @leonjza from @sensepost

[tab] for command suggestions
com.n... on (google: 9) [usb] # memory search "64 65 78 0a 30 33 35 00"
Searching for: 64 65 78 0a 30 33 35 00
79efc00000 64 65 78 0a 30 33 35 00 31 e2 1c ca 3d 57 14 40 dex.035.1...=W.@
79efc00010 ed 87 d3 8c 45 57 7e 59 24 eb 3a fe 92 34 16 33 ....EW~Y$.:..4.3
79efc00020 c4 41 83 00 70 00 00 00 78 56 34 12 00 00 00 00 .A..p...xV4.....
79f0600000 64 65 78 0a 30 33 35 00 31 e2 1c ca 3d 57 14 40 dex.035.1...=W.@
79f0600010 ed 87 d3 8c 45 57 7e 59 24 eb 3a fe 92 34 16 33 ....EW~Y$.:..4.3
79f0600020 c4 41 83 00 70 00 00 00 78 56 34 12 00 00 00 00 .A..p...xV4.....
Pattern matched at 2 addresses
com.n... on (google: 9) [usb] # memory dump from_base 0x79efc00000 8602052 /root/Desktop/xxxxxx.dex

Dumping 8.2 MiB from 0x79efc00000 to /root/Desktop/xxxxxx.dex
Memory dumped to file: /root/Desktop/xxxxxx.dex
com.n... on (google: 9) [usb] # exit
Exiting ...
Asking jobs to stop ...
Unloading objection agent ...
root@rovsuekali:~# md5sum /root/Desktop/xxxxxx.dex
2797567604fa86f357bb3eb4e5d5871 /root/Desktop/xxxxxx.dex
root@rovsuekali:~# md5sum /root/Desktop/FRIDA-DEXDump/com.xxxxxx.xxxxxx/0x7abfc00000.dex
2797567604fa86f357bb3eb4e5d5871 /root/Desktop/FRIDA-DEXDump/com.xxxxxx.xxxxxx/0x7abfc00000.dex
```

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memory dump

- 命令

```
memory dump from_base {offset} {size} {outputFile}
```

- 举例

```
memory dump from_base 0x79efc00000 8602052 /root/Desktop/xxxxxx.dex
```

```
objection -g com.ninjacxx.researchme explore
Using USB device `Google Pixel'
Agent injected and responds ok!

[object]inject(ion) v1.8.3

Runtime Mobile Exploration
by: @leonjza from @sensepost

[tab] for command suggestions
com.n... on (google: 9) [usb] # memory search "64 65 78 0a 30 33 35 00"
Searching for: 64 65 78 0a 30 33 35 00
0x79efc00000 64 65 78 0a 30 33 35 00 31 e2 1c ca 3d 57 14 40 dex.035.1 ... =W.@
0x79efc00010 ed 87 d3 8c 45 57 7e 59 24 eb 3a fe 92 34 16 33 ....EW~Y$.: .. 4.3
0x79efc00020 c6 41 83 80 70 00 00 00 78 56 34 12 00 00 00 00 .A..p ... xV4.....
0x79f0600000 64 65 78 0a 30 33 35 00 31 e2 1c ca 3d 57 14 40 dex.035.1 ... =W.@
0x79f0600010 ed 87 d3 8c 45 57 7e 59 24 eb 3a fe 92 34 16 33 ....EW~Y$.: .. 4.3
0x79f0600020 c4 41 83 00 70 00 00 00 78 56 34 12 00 00 00 00 .A..p ... xV4.....
Pattern matched at 2 addresses
com.n... on (google: 9) [usb] # memory dump from_base 0x79efc00000 8602052 /root/Desktop/xxxxxx.dex

Dumping 8.2 MiB from 0x79efc00000 to /root/Desktop/xxxxxx.dex
Memory dumped to file: /root/Desktop/xxxxxx.dex
com.n... on (google: 9) [usb] # exit
Exiting ...
Asking jobs to stop ...
Unloading objection agent ...
root@rovsuekali:~# md5sum /root/Desktop/xxxxxx.dex
297567604fa86f357bb3eb4e5d65871 /root/Desktop/xxxxxx.dex
root@rovsuekali:~# md5sum /root/Desktop/FRIDA-DEXDump/com.xxxxxx.xxxxxx/0x7abfc00000.dex
2797567604fa86f357bb3eb4e5d65871 /root/Desktop/FRIDA-DEXDump/com.xxxxxx.xxxxxx/0x7abfc00000.dex
```

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Objection调试iOS

ios hooking watch method

- 命令

```
ios hooking watch method {iOSFullFunctionName}
```

- 举例

```
ios hooking watch method "-[iGoat_Swift.BinaryCookiesExerciseVC verifyItemPress  
ed]" --dump-args --dump-backtrace --dump-return
```

常见问题

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调试安卓常见问题

hook安卓函数

Attempting to watch class and method --dump-args A Frida agent exception has occurred

- 现象

尝试去hook安卓函数：

```
android hooking watch class_method --dump-args --dump-backtrace --dump-return android.app.ActivityManager.forceStopPackage com.android.server.am.ActivityManagerService.startService
```

结果报错：

```
objection -g system_server explore
adb (adb) ① ② .g/frida/frida (-zsh) ③ ④ .g/frida/frida (-zsh) ⑤ ⑥ ~ (-zsh) ⑦ objection (Python) ⑧ ⑨ ~ (-zsh) ⑩ + ⑪
android on [google: 13] [usb] # android hooking watch class_method --dump-args --dump-backtrace --dump-return android.app.ActivityManager.forceStopPackage com.android.server.am.ActivityManagerService.startService
(agent) Attempting to watch class and method --dump-args.
A Frida agent exception has occurred.
Error: java.lang.ClassNotFoundException: Didn't find class "" or path: DexPathList[[zip file "/system/framework/com.android.location.provider.jar", zip file "/system/framework/services.jar", zip file "/apex/com.android.adservices/javalib/service-adservices.jar", zip file "/apex/com.android.adservices/service-sdksandbox.jar", zip file "/apex/com.android.appsearch/javalib/service-apppsearch.jar", zip file "/apex/com.android.art/javalib/service-art.jar", zip file "/apex/com.android.media/javalib/service-media-s.jar", zip file "/apex/com.android.permission/javalib/service-permission.jar"],nativeLibraryDirectories[/system/lib64, /system_ext/lib64, /system/lib64, /system_ext/lib64]]
at <anonymous> (/frida/node_modules/frida-java-bridge/lib/env.js:124)
at <anonymous> (/frida/node_modules/frida-java-bridge/lib/class-factory.js:502)
at value (/frida/node_modules/frida-java-bridge/lib/class-factory.js:945)
at value (/frida/node_modules/frida-java-bridge/lib/class-factory.js:950)
at _make (/frida/node_modules/frida-java-bridge/lib/class-factory.js:165)
at use (/frida/node_modules/frida-java-bridge/lib/class-factory.js:62)
at use (/frida/node_modules/frida-java-bridge/index.js:258)
at <anonymous> (/script1.js:18783)
at <anonymous> (/script1.js:19157)
at <anonymous> (/frida/node_modules/frida-java-bridge/lib/vm.js:12)
at perform (/frida/node_modules/frida-java-bridge/index.js:205)
at <anonymous> (/script1.js:19162)
at Promise (native)
at wrapJavaPerform (/script1.js:19163)
at <anonymous> (/script1.js:18837)
at androidhookingWatchMethod (/script1.js:22614)
at apply (native)
at <anonymous> (/frida/runtime/message-dispatcher.js:13)
at c (/frida/runtime/message-dispatcher.js:23)

Python stack trace: Traceback (most recent call last):
File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/objection/console/repl.py", line 371, in start_repl
    self.run_command(document)
File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/objection/console/repl.py", line 185, in run_command
    exec_method(arguments)
File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/objection/commands/android/hooking.py", line 166, in watch_class_method
    api.android_hooking_watch_method(fully_qualified_class,
File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/frida/core.py", line 179, in method
    return script._rpc_request("call", js_name, args, **kwargs)
    ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/frida/core.py", line 86, in wrapper
    return f(*args, **kwargs)
    ^^^^^^^^^^^^^^
File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/frida/core.py", line 491, in _rpc_request
    raise result.error
frida.core.RPCException: Error: java.lang.ClassNotFoundException: Didn't find class "" on path: DexPathList[[zip file "/system/framework/com.android.location.provider.jar", zip file "/system/framework/services.jar", zip file "/apex/com.android.adservices/javalib/service-adservices.jar", zip file "/apex/com.android.adservices/service-sdksandbox.jar", zip file "/apex/com.android.appsearch/javalib/service-apppsearch.jar", zip file "/apex/com.android.art/javalib/service-art.jar", zip file "/apex/com.android.media/javalib/service-media-s.jar", zip file "/apex/com.android.permission/javalib/service-permission.jar"],nativeLibraryDirectories[/system/lib64, /system_ext/lib64, /system/lib64, /system_ext/lib64]]
at <anonymous> (/frida/node_modules/frida-java-bridge/lib/env.js:124)
at <anonymous> (/frida/node_modules/frida-java-bridge/lib/class-factory.js:502)
at value (/frida/node_modules/frida-java-bridge/lib/class-factory.js:945)
at value (/frida/node_modules/frida-java-bridge/lib/class-factory.js:950)
at _make (/frida/node_modules/frida-java-bridge/lib/class-factory.js:165)
at use (/frida/node_modules/frida-java-bridge/lib/class-factory.js:62)
at use (/frida/node_modules/frida-java-bridge/index.js:258)
at <anonymous> (/script1.js:18783)
at <anonymous> (/script1.js:19157)
at <anonymous> (/frida/node_modules/frida-java-bridge/lib/vm.js:12)
at perform (/frida/node_modules/frida-java-bridge/index.js:205)
```

```
android on [google: 13] [usb] # android hooking watch class_method --dump-args --dump-backtrace --dump-return android.app.ActivityManager.forceStopPackage com.android.server.am.ActivityManagerService.startService
(agent) Attempting to watch class and method --dump-args.
```

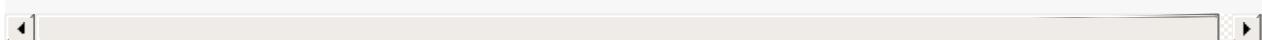
```

A Frida agent exception has occurred.

Error: java.lang.ClassNotFoundException: Didn't find class "" on path: DexPathList[[zip
file "/system/framework/com.android.location.provider.jar", zip file "/system/framework
/services.jar", zip file "/apex/com.android.adservices/javalib/service-adservices.jar",
zip file "/apex/com.android.adservices/javalib/service-sdksandbox.jar", zip file "/apex
/com.android.appsearch/javalib/service-appsearch.jar", zip file "/apex/com.android.art/
javalib/service-art.jar", zip file "/apex/com.android.media/javalib/service-media-s.jar"
, zip file "/apex/com.android.permission/javalib/service-permission.jar"],nativeLibrary
Directories [/system/lib64, /system_ext/lib64, /system/lib64, /system_ext/lib64]]

at anonymous <frida/node_modules/frida-java-bridge/lib/env.js:124>
at anonymous <frida/node_modules/frida-java-bridge/lib/class-factory.js:502>
at value (frida/node_modules/frida-java-bridge/lib/class-factory.js:945)
at value (frida/node_modules/frida-java-bridge/lib/class-factory.js:950)
at _make (frida/node_modules/frida-java-bridge/lib/class-factory.js:165)
at use (frida/node_modules/frida-java-bridge/lib/class-factory.js:62)
at use (frida/node_modules/frida-java-bridge/index.js:258)
at anonymous </script1.js:18783>
at anonymous </script1.js:19157>
at anonymous (frida/node_modules/frida-java-bridge/lib/vm.js:12)
at perform (frida/node_modules/frida-java-bridge/index.js:205)
at anonymous </script1.js:19162>
at Promise (native)
at wrapJavaPerform (</script1.js:19163>)
at anonymous </script1.js:18837>
at androidHookingWatchMethod (</script1.js:22614>)
at apply (native)
at anonymous <frida/runtime/message-dispatcher.js:13>
at c (frida/runtime/message-dispatcher.js:23)

```



- 原因：
 - 有2处
 - 不能同时hook 2个类的函数
 - 函数的hook参数的位置方面的语法错误
 - 细节：
 - 报错信息
 - Attempting to watch class and method --dump-args.
 - Error: java.lang.ClassNotFoundException: Didn't find class "" on path ...
 - 中的
 - class and 的 class 和 and 中间其实有个空格 的，其实就是表示：类名是空
 - Didn't find class "" 中的 ""，也是指的是，类名是空字符串 ""
 - 对于类名是空字符串，当然报错找不到了
 - 解决办法：
 - 单次只hook 1个函数
 - 改为正确的语法 -> 要把hook函数的 --dump-args 等参数，放在类的函数的最后才行
 - 详见：[hook函数的参数](#)
 - 具体步骤：改为

```
android hooking watch class_method android.app.ActivityManager.forceStopPackage --d
```

```
ump-args --dump-backtrace --dump-return  
  
android hooking watch class_method com.android.server.am.ActivityManager --dump-args --dump-backtrace --dump-return
```

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附录

下面列出相关参考资料。

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Objection语法help

```
→ ~ objection --help
Checking for a newer version of objection...
Usage: objection [OPTIONS] COMMAND [ARGS]...
```



Runtime Mobile Exploration
by: @leonjza from @sensepost

By default, communications will happen over USB, unless the `--network` option is provided.

Options:

<code>-N, --network</code>	Connect using a network connection instead of USB.
<code>-h, --host TEXT</code>	<code>[default: 127.0.0.1]</code>
<code>-p, --port INTEGER</code>	<code>[default: 27042]</code>
<code>-ah, --api-host TEXT</code>	<code>[default: 127.0.0.1]</code>
<code>-ap, --api-port INTEGER</code>	<code>[default: 8888]</code>
<code>-g, --gadget TEXT</code>	Name of the Frida Gadget/Process to connect to. <code>[default: Gadget]</code>
<code>-S, --serial TEXT</code>	A device serial to connect to.
<code>-d, --debug</code>	Enable debug mode with verbose output. (Includes agent <code>source</code> map in stack traces)
<code>--help</code>	Show this message and exit.

Commands:

<code>api</code>	Start the objection API server in headless mode.
<code>device-type</code>	Get information about an attached device.
<code>explore</code>	Start the objection exploration REPL.
<code>patchapk</code>	Patch an APK with the <code>frida-gadget.so</code> .
<code>patchipa</code>	Patch an IPA with the <code>FridaGadget dylib</code> .
<code>run</code>	Run a single objection command.
<code>signapk</code>	<code>Zipalign</code> and sign an APK with the objection key.
<code>version</code>	Prints the current version and exists.

Objection教程和资料

- [r0ysue/AndroidSecurityStudy: 安卓应用安全学习 \(github.com\)](#)
 - 内容很全的用法，值得参考
- [Using objection · sensepost/objection Wiki \(github.com\)](#)
 - 官网，值得继续参考试试：
 - ls
 - env
 - 等等
- [04 objection和Frida边缘化操作 - 掘金 \(juejin.cn\)](#)
 - 常用命令
- 其他：
 - [objection的基础使用 - 阿布_alone - 博客园 \(cnblogs.com\)](#)
 - [实用FRIDA进阶：内存漫游、hook anywhere、抓包-安全客 - 安全资讯平台 \(anquanke.com\)](#)

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参考资料

- 【已解决】Mac中初始化Objection逆向安卓app的环境
- 【记录】安卓保活逆向360Wallpaper：试试Objection
- 【已解决】Objection去hook安卓函数报错：Attempting to watch class and method --dump-args A Frida agent exception has occurred
- 【已解决】Objection逆向安卓时android hooking watch class_method的--dump-return等参数的子命令的help语法说明
- 【整理】Frida调试hook安卓：Objection使用案例
- 【已解决】安卓保活逆向研究：Objection去hook安卓forceStopPackage等函数
- 【未解决】安卓保活逆向研究：Objection调试system_server
-
- 逆向调试利器：Frida
-
- Screenshots · sensepost/objection Wiki (github.com)
- Features · sensepost/objection Wiki (github.com)
- Installation · sensepost/objection Wiki (github.com)
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- android逆向奇技淫巧九：frida常见java层的加密/hash算法自吐 - 第七子007 - 博客园 (cnblogs.com)
- [分享]之前大家私信我frida的一些问题，这篇文章以一些例子给大家讲一讲吧-Android安全-看雪-安全社区|安全招聘|kanxue.com
- 实用FRIDA进阶：内存漫游、hook anywhere、抓包-安全客 - 安全资讯平台 (anquanke.com)
- 实用FRIDA进阶：脱壳、自动化、高频问题-安全客 - 安全资讯平台 (anquanke.com)
- Objection使用 - 简书 (jianshu.com)
- iOS Hooking With Objection - HackTricks
- Objection Tutorial - HackTricks
- [bug] --dump-args and --dump-return not working correctly. · Issue #415 · sensepost/objection (github.com)
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