

# 目录

前言	1.1
iOS逆向概述	1.2
iOS逆向领域架构图	1.2.1
iOS逆向内容概述	1.2.2
iOS典型逆向开发流程	1.2.2.1
iOS逆向重点和难点	1.2.3
子教程	1.3
心得	1.4
附录	1.5
参考资料	1.5.1

# iOS逆向开发

- 最新版本: v0.7
- 更新时间: 20221020

## 简介

概述如何进行iOS的逆向开发，包括核心流程，即先准备iPhone越狱，再到从app中砸壳出ipa，再到静态分析ipa中二进制，以及动态调试ipa，最后才是相关的iOS逆向开发内容，包括tweak越狱插件开发等内容。

## 源码+浏览+下载

本书的各种源码、在线浏览地址、多种格式文件下载如下：

### HonKit源码

- [crifan/ios\\_reverse\\_dev: iOS逆向开发](#)

### 如何使用此HonKit源码去生成发布为电子书

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

### 在线浏览

- [iOS逆向开发 book.crifan.org](#)
- [iOS逆向开发 crifan.github.io](#)

### 离线下载阅读

- [iOS逆向开发 PDF](#)
- [iOS逆向开发 ePUB](#)
- [iOS逆向开发 MOBI](#)

## 版权说明

此电子书教程的全部内容，如无特别说明，均为本人原创和整理。其中部分内容参考自网络，均已备注了出处。如有发现侵犯您版权，请通过邮箱联系我 `admin 艾特 crifan.com`，我会尽快删除。谢谢合作。

## 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。

## 更多其他电子书

本人 `crifan` 还写了其他 100+ 本电子书教程，感兴趣可移步至：

[crifan/crifan\\_ebook\\_readme: Crifan的电子书的使用说明](#)



## 概述

---

TODO:

把之前已发布的：

GitHub - crifan/prevent\_iphone\_hacked\_ios\_security: 防止iPhone被黑：iOS安全

[https://github.com/crifan/prevent\\_iphone\\_hacked\\_ios\\_security](https://github.com/crifan/prevent_iphone_hacked_ios_security)

整合进来

---

## iOS逆向概述

为了新手对于iOS逆向开发有个更全面直观的了解，下面先对iOS逆向开发做个总体的概述

crifan.org, 使用署名4.0国际(CC BY 4.0)协议发布 all right reserved, powered by Gitbook最后更新：2022-06-11 10:50:15

# iOS逆向领域架构图

此处整理，iOS逆向所涉及到等多个领域的知识，以及每个领域之间的关系，即：

iOS逆向领域架构图

- 在线浏览（支持缩放）
  - [iOS逆向开发内容架构图 | ProcessOn免费在线作图](#)
- 离线查看

◦

crifan.org, 使用[署名4.0国际\(CC BY 4.0\)协议](#)发布 all right reserved, powered by Gitbook最后更新：2022-10-20 15:09:53

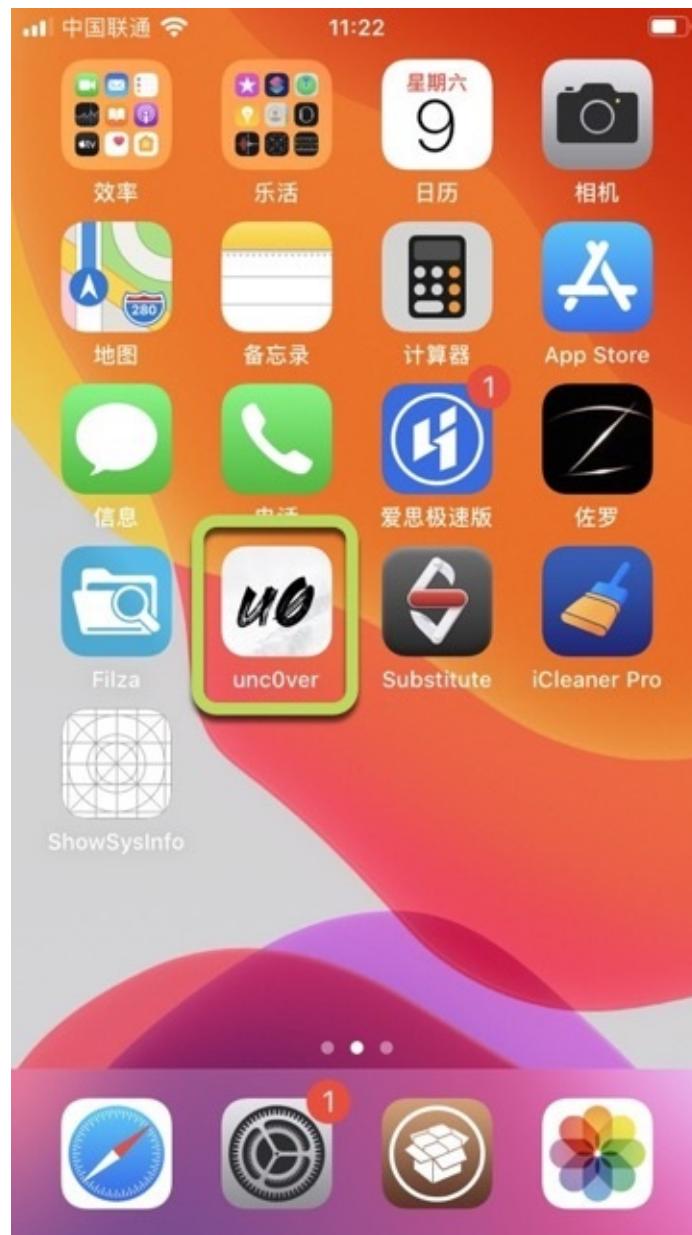
## iOS逆向内容概述

- 先准备越狱iPhone

- 越狱工具

- unc0ver

- 自己下载unc0ver到iPhone中



- 运行unc0ver去越狱

- checkra1n

- Mac中运行checkra1n，根据操作提示去越狱



- 也可以借助于 爱思助手 的 一键越狱 去越狱
  - 底层也是用unc0ver、checkra1n等工具



- 包括准备好常用越狱插件开发工具，比如
  - Filza : 文件管理
  - OpenSSH : ssh连接操作iPhone
  - AFC2 : 允许通过USB操作iPhone
  - iCleaner Pro : 临时禁止或启用插件
  - AppSync Unified : 免签名安装app
  - 等等
- 再从AppStore安装的正版app中砸壳出ipa

◦

- 常用工具

- frida-ios-dump

```
→ ~ iproxy 2222 22
Creating listening port 2222 for device port 22
waiting for connection
New connection for 2222->22, fd = 5
waiting for connection
Requesting connection to USB device handle 35 (serial: a
dab53e3250e8be1ee0db75bccdc2063df608b46), port 22
New connection for 2222->22, fd = 5
waiting for connection
Requesting connection to USB device handle 35 (serial: a
dab53e3250e8be1ee0db75bccdc2063df608b46), port 22
New connection for 2222->22, fd = 5
waiting for connection
Requesting connection to USB device handle 35 (serial: a
dab53e3250e8be1ee0db75bccdc2063df608b46), port 22
[frida-ios-dump]: Load widevine_cdm_secured_ios.framework success.
[frida-ios-dump]: Module_Framework.framework has been loaded.
start dump /private/var/containers/Bundle/Application/ECB295AB-1355-46D1-8580-273B2CE98802/
YouTube.app/YouTube
YouTube.fid: 100% [██████████] 16.3M/16.3M [00:00:00:00, 17.7MB/s]
start dump /private/var/containers/Bundle/Application/ECB295AB-1355-46D1-8580-273B2CE98802/
YouTube.app/Frameworks/widevine_cdm_secured_ios.framework/widevine_cdm_secured_ios
widevine_cdm_secured_ios.fid: 100% [██████████] 3.44M/3.44M [00:00:00:00, 24.2MB/s]
start dump /private/var/containers/Bundle/Application/ECB295AB-1355-46D1-8580-273B2CE98802/
YouTube.app/Frameworks/Module_Framework.framework/Module_Framework
Module_Framework.fid: 100% [██████████] 114M/114M [00:03:00:00, 36.6MB/s]
0.00B [00:00, 7B/s]
```

```
→ frida-ios-dump git:(master) ./dump.py com.google.ios.youtube
Start the target app com.google.ios.youtube
Dumping YouTube to /var/folders/2f/53mn2kn920dfq4ww2gdqfpvc0000gn/T
[frida-ios-dump]: Load widevine_cdm_secured_ios.framework success.
[frida-ios-dump]: Module_Framework.framework has been loaded.
start dump /private/var/containers/Bundle/Application/ECB295AB-1355-46D1-8580-273B2CE98802/
YouTube.app/YouTube
YouTube.fid: 100% [██████████] 16.3M/16.3M [00:00:00:00, 17.7MB/s]
start dump /private/var/containers/Bundle/Application/ECB295AB-1355-46D1-8580-273B2CE98802/
YouTube.app/Frameworks/widevine_cdm_secured_ios.framework/widevine_cdm_secured_ios
widevine_cdm_secured_ios.fid: 100% [██████████] 3.44M/3.44M [00:00:00:00, 24.2MB/s]
start dump /private/var/containers/Bundle/Application/ECB295AB-1355-46D1-8580-273B2CE98802/
YouTube.app/Frameworks/Module_Framework.framework/Module_Framework
Module_Framework.fid: 100% [██████████] 114M/114M [00:03:00:00, 36.6MB/s]
0.00B [00:00, 7B/s]
```

- Clutch

- dumpdecrypted

- bfinject

- 接着才是逆向开发

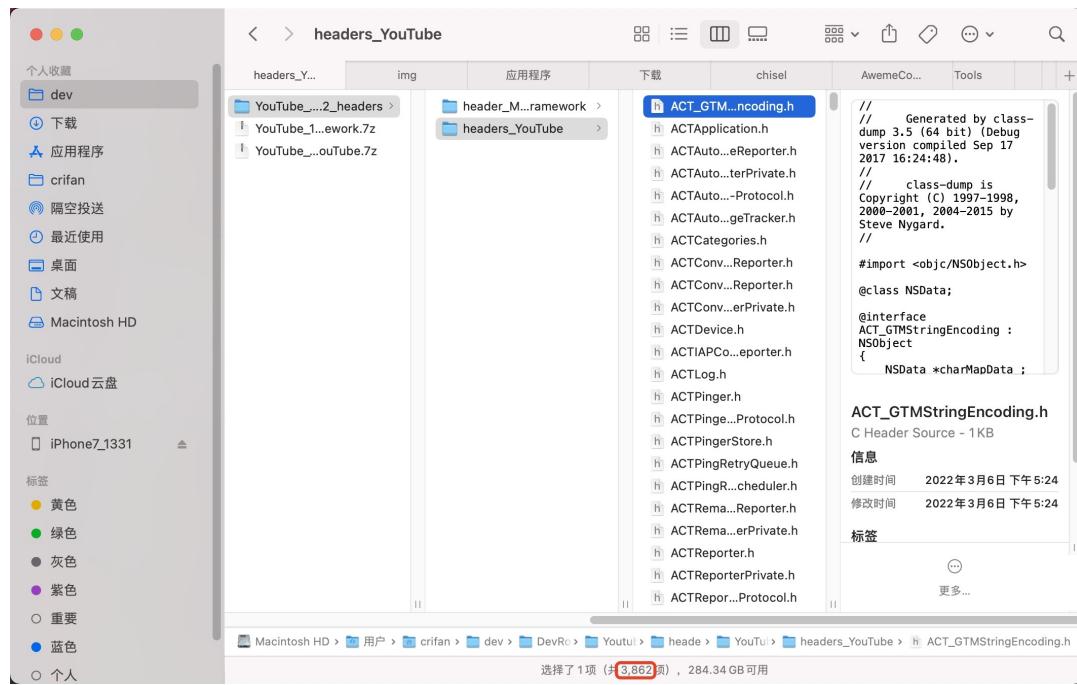
- 主要分两类

- 静态分析
- 动态调试

- 下面分别详细解释：

- 静态分析

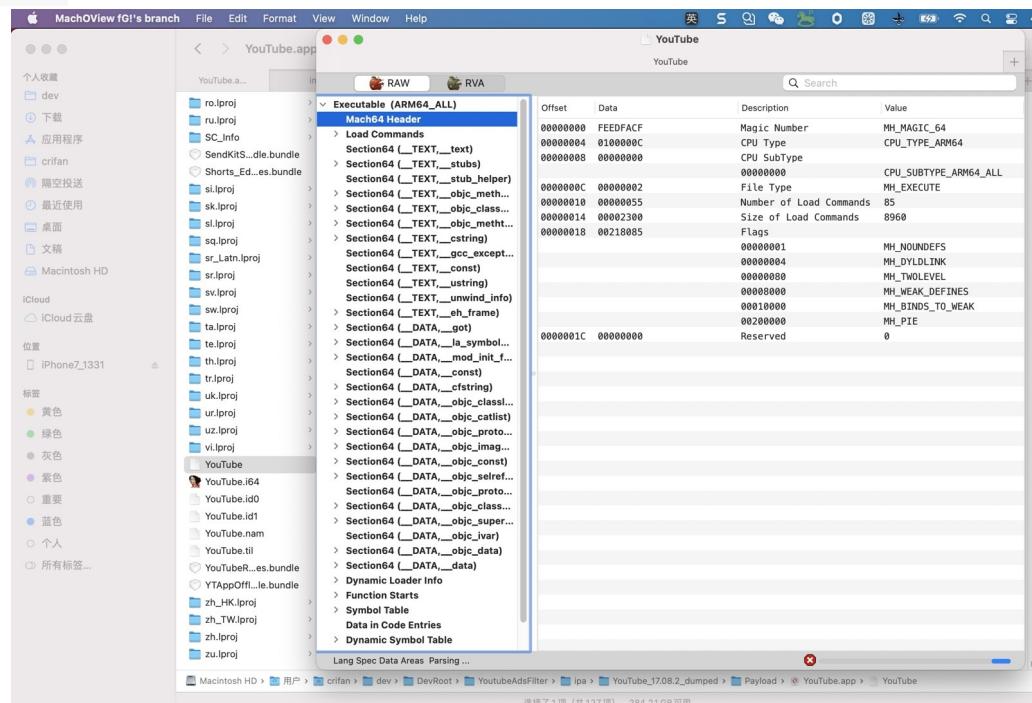
- 从脱壳ipa解压得到app包
  - 用class-dump导出头文件



### ■ 以搞懂包含哪些类

### ■ 查看二进制信息

#### ■ MachOView

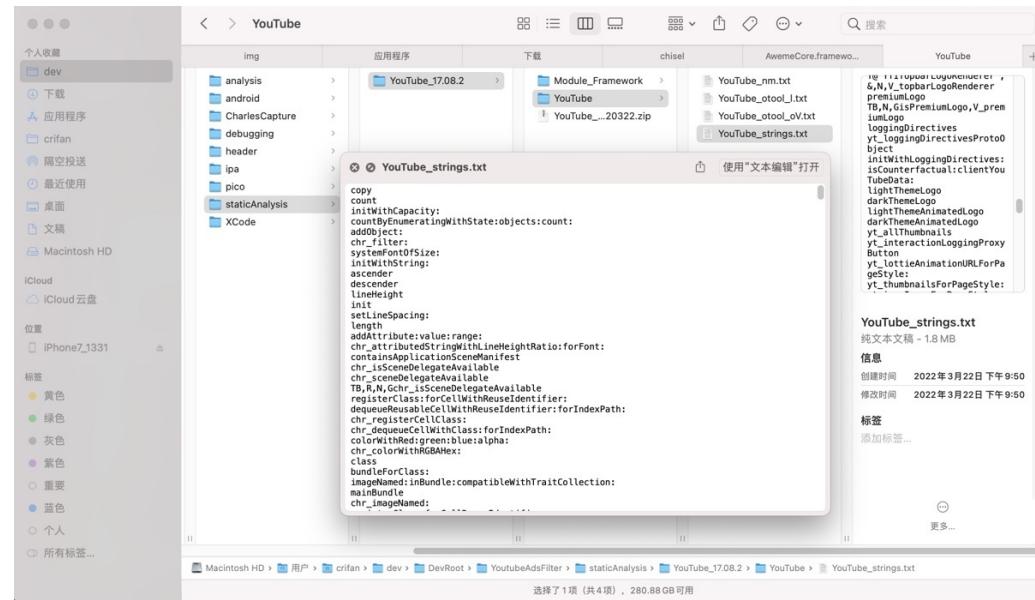


#### ■ jtool2

#### ■ rabin2

### ■ 导出字符串等资源

#### ■ strings

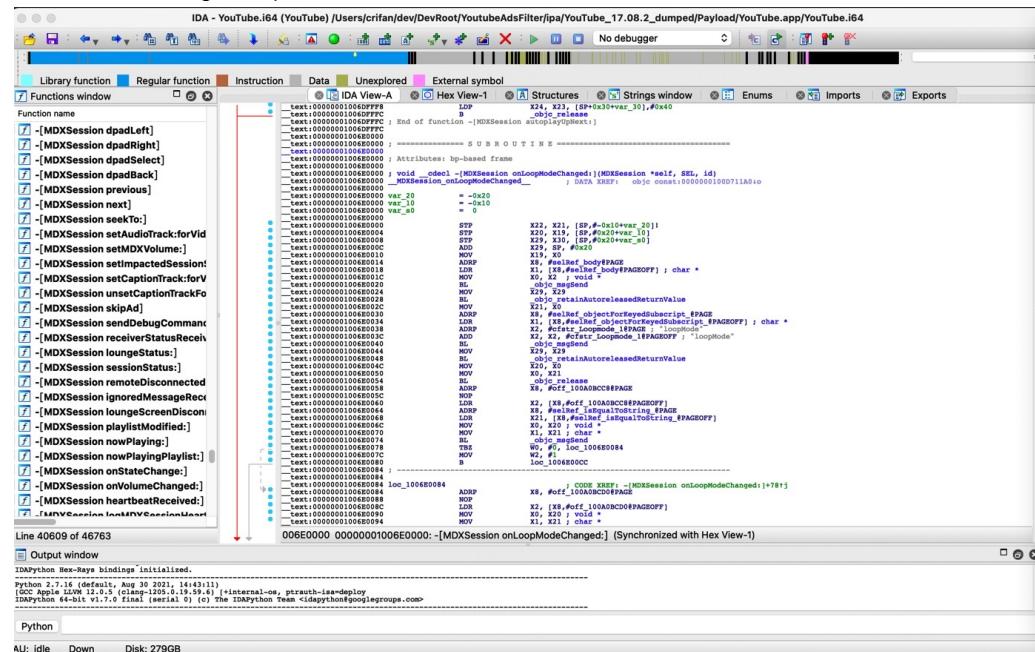


## ■ nm

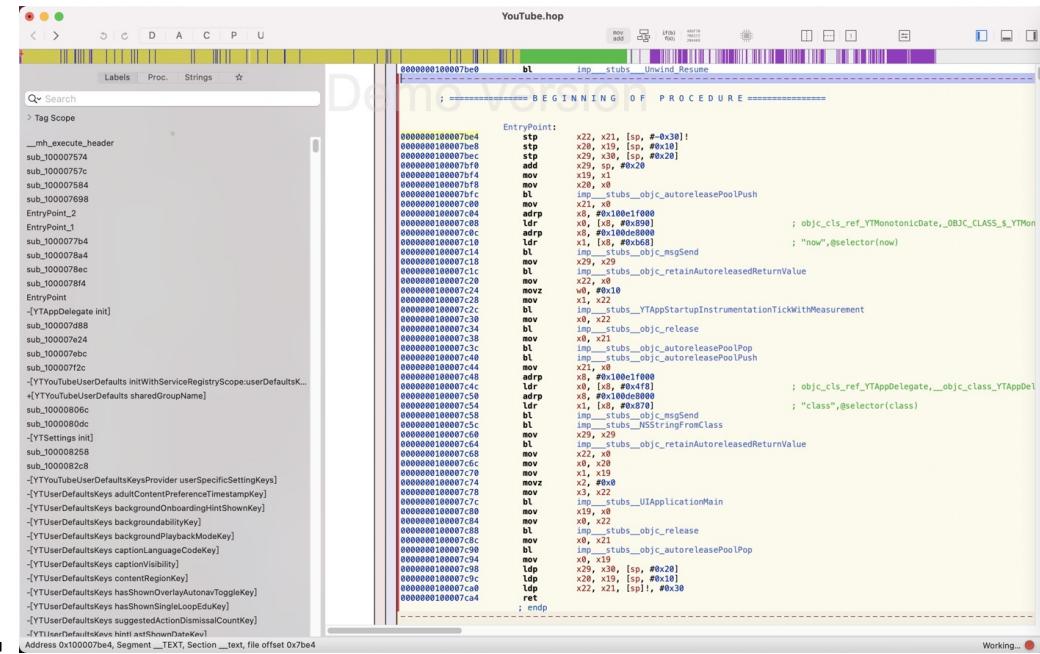
```
■ otool
■ jtool2
■ rabin2
```

## ■ 分析代码逻辑

■ IDA: Functions、Strings、Imports、F5伪代码等好用的功能模块



## ■ Hopper

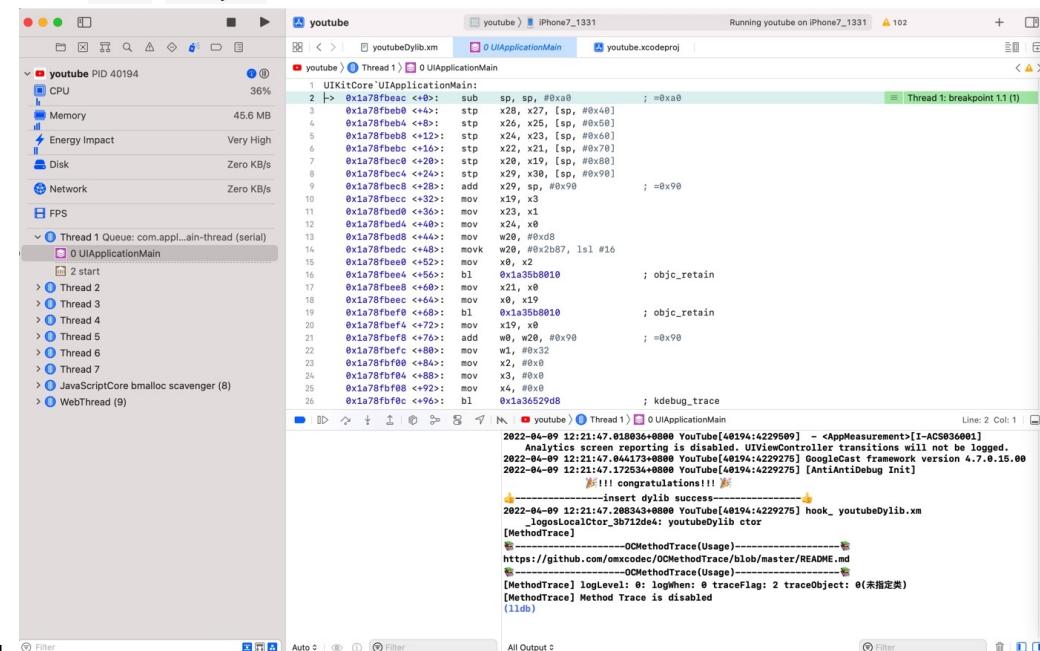


## ● 动态调试

### ○ 用各种调试方式和工具去调试app的逻辑

#### ■ 常用调试方式

##### ■ 图形界面： Xcode + MonkeyDev



#### ■ Xcode内部也有 llDb

#### ■ 命令行： debugserver + llDb

```

X root@192.168.0.58 (ssh)
1 +0.000000 sec [27ac/0303]: RNBRRunLoopAttaching Attaching to pid 10146...
2 +0.003597 sec [27ac/0303]: MachProcess::MachProcess()
3 +0.000022 sec [27ac/0303]: (DebugHub) attaching to pid 10146...
4 +0.000014 sec [27ac/0303]: MachProcess::SetState(Unloaded) ignoring redundant state
change...
5 +0.000023 sec [27ac/0303]: MachProcess::SetState(Attaching) updating state (previous
state was Unloaded), event_mask = 0x00000001
6 +0.000023 sec [27ac/0303]: MachTask::StartExceptionThread()
7 +0.000035 sec [27ac/0303]: ::task_for_pid (target_ptport = 0x0105, pid = 10146, &ta
k) => err = 0x00000000 (success) err = 0x00000000
8 +0.000029 sec [27ac/0303]: ::task_info (target_task = 0x1407, flavor = TASK_BASIC_I
NFO, task_info_out >= 0x1d855f8, task_info_outCnt >= 10 ) err = 0x00000000
9 +0.000021 sec [27ac/0303]: task_basic_info (i suspend_count = 0, virtual_size = 0x1
51a2c000, resident_size = 0x1708000, user_time = 0x64964, system_time = 4.64964 )
10 +0.000028 sec [27ac/0303]: MachException::PortInfo::Sove (task = 0x1407)
11 +0.000025 sec [27ac/0303]: ::task_get_exception_ports (task = 0x1407, mask = 0x1bf
e, maskOut >= 3, ports, behaviors, flavors) err = 0x00000000
12 +0.000026 sec [27ac/0303]: ::task_set_exception_ports (task = 0x1407, exception_ma
sk = 0x000001fe, new_port = 0x2903, behavior = 0x00000001, new_flavor = 0x00000005 ) e
rr = 0x00000000
13 +0.000023 sec [27ac/1703]: MachTask::ExceptionThread (arg = 0x10400668) starting
thread...
iPhone7P:1341:~/forDebug root# pwd
/var/root/forDebug
iPhone7P:1341:~/forDebug dbgserver -x auto 0.0.0.0:20221 /private/var/contai
ners/bundle/Application/9AB25481-0A03-435C-A02E-68F96235358B/Aweme.app/Aweme
debugserver -e #PROGRAM LLDB PROJECT:lldb-900.3.104
for arm64.
Listening to port 20221 for a connection from 0.0.0.0...
Got a connection, launched process /private/var/containers/Bundle/Application/9AB25481
-0A03-435C-A02E-68F96235358B/Aweme.app (pid = 10174).
Exiting.
iPhone7P:1341:~/forDebug root# []

```

## ■ 常用逆向工具

### ■ Frida : hook对应函数，调试输入参数和返回值

```

* ~ frida -U -f com.ss.iphone.ugc.Aweme
  _ _ _ | Frida 15.1.14 - A world-class dynamic instrumentation toolkit
| C_ | |
> _ | Commands:
/_\_| help      -> Displays the help system
... . object?    -> Display information about 'object'
... . exit/quit   -> Exit
... . .
More info at https://frida.re/docs/home/
Spawnd com.ss.iphone.ugc.Aweme . Use %resume to let the main thread start executing!
stdout> objc[20744]: Class PodsDummy_EffectPlatformSDK is implemented in both /private/var/containers/Bundle/Application/0C35E4DD-5B6B-40DE-BB14-1F1EE9266003/Aweme.app/Frameworks/byteaudio.framework/byteaudio (0x104f7f90) and /private/var/containers/Bundle/Application/0C35E4DD-5B6B-40DE-BB14-1F1EE9266003/Aweme.app/Frameworks/VoLcEngineRTC.framework/VoLcEngineRTC (0x11827cb10). One of the two will b
e used. Which one is undefined.
stdout> objc[20744]: Class IESAlgorithmModelCleaner is implemented in both /private/var/containers/Bundle/Application/0C35E4DD-5B6B-40DE-BB14-1F1EE9266003/Aweme.app/Frameworks/byteaudio.framework/byteaudio (0x104f7f90) and /private/var/containers/Bundle/Application/0C35E4DD-5B6B-40DE-BB14-1F1EE9266003/Aweme.app/Frameworks/VoLcEngineRTC.framework/VoLc
stdout> objc[20744]: Class IESAlgorithmModelConfig is implemented in both /private/var/containers/Bundle/Application/0C35E4DD-5B6B-40DE-BB14-1F1EE9266003/Aweme.app/Frameworks/byteaudio.framework/byteaudio (0x104f7800) and /private/var/containers/Bundle/Application/0C35E4DD-5B6B-40DE-BB14-1F1EE9266003/Aweme.app/Frameworks/VoLcEngineRTC.framework/VoLc
stdout> objc[20744]: Class EngineRTC (0x11827cb8). One of the two will be used. Which one is undefined.
stdout> objc[20744]: Class IESAlgorithmModelDownloadQueue is implemented in both /private/var/containers/Bundle/Application/0C35E4DD-5B6B-40DE-BB14-1F1EE9266003/Aweme.app/Frameworks/byteaudio.framework/byteaudio (0x104f7805) and /private/var/containers/Bundle/Application/0C35E4DD-5B6B-40DE-BB14-1F1EE9266003/Aweme.app/Frameworks/VoLcEngineRTC.framework/VoLcEngin
stdout> objc[20744]: Class IESAlgorithmModel by
stdout> teaudio.framework/byteaudio (0x104f7805) and /private/var/containers/Bundle/Application/0C35E4DD-5B6B-40DE-BB14-1F1EE9266003/Aweme.app/Frameworks/byteaudio.framework/byteaudio (0x104f7808) and /private/var/containers/Bundle/Application/0C35E4DD-5B6B-40DE-BB14-1F1EE9266003/Aweme.app/Frameworks/VoLcEngineRTC.framework/VoLcEngin
stdout> ob
stdout> jc[20744]: Class IESAlgorithmModelDownloadTask is implemented in both /private/var/containers/Bundle/Application/0C35E4DD-5B6B-40DE-BB14-1F1EE9266003/Aweme.app/Frameworks/byteaudio.framework/byteaudio (0x104f7808) and /private/var/containers/Bundle/Application/0C35E4DD-5B6B-40DE-BB14-1F1EE9266003/Aweme.app/Frameworks/VoLcEngineRTC.framework/VoLcEngin
stdout> ation/0C35E4DD-5B6B-40DE-BB14-1F1EE9266003/Aweme.app/Frameworks/VoLcEngineRTC.framework/VoLcEngin
stdout> objc[20744]: Class IESAlgorithmModelManager is implemented in both /private/var/cont
[iPhone:com.ss.iphone.ugc.Aweme]> stdout> iners/Bundle/Application/0C35E4DD-5B6B-40DE-BB14-1F1EE9266003/Aweme.app/Frameworks/byteaudio.framework/byteaudio (0x104f7808) and /private/var/containers/Bundle/Application/0C35E4DD-5B6B-40DE-BB14-1F1EE9266003/Aweme.app/Frameworks/VoLcEngineRTC.fr

```

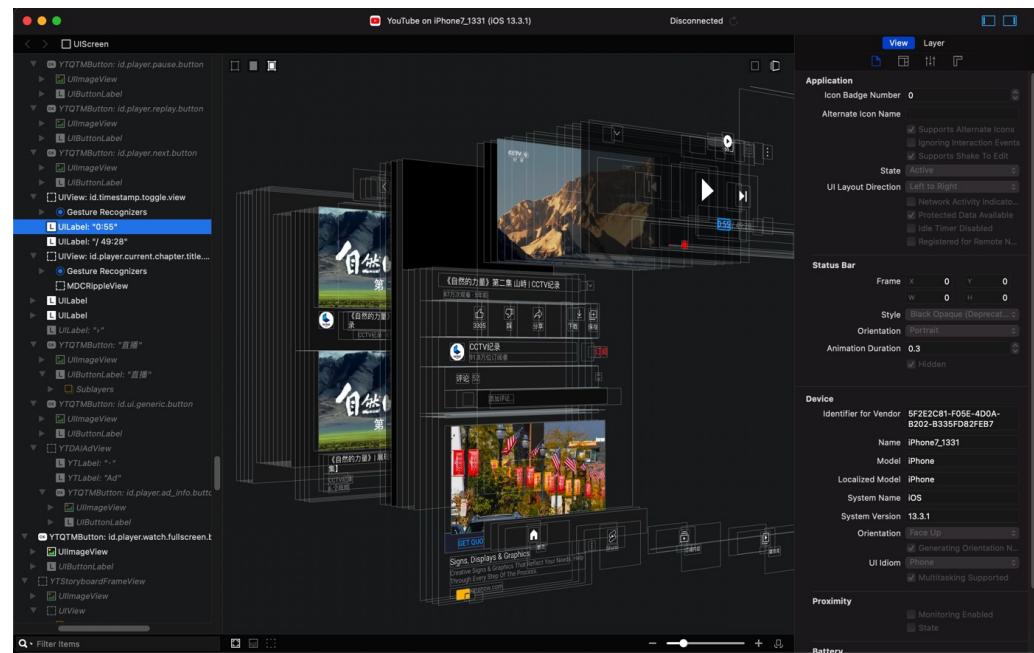
### ■ Cycript : 查看页面元素的类和属性、实时修改各种值

```

cycript -r168.192.1.12:6666
..s/2.6/usr/lib (-zsh)
cy# APPID
com.google.ios.youtube
cy# pviewsOpvcvO^c
cy# pvcvO
<YTAppViewController 0x10e02f400>, state: appeared, view: <YTAppView 0x10c3d2000>
  <YIScrollIndicatorNavigationController 0x10e06000>, state: disappeared, view: <UILayoutContainerView 0x10e3cf180> not in the window
  | <YTHeaderContentComboViewController 0x11312ce30>, state: disappeared, view: <YTHeaderContentComboView 0x10e3cf180> not in the window
  | <YTBrowserViewController 0x11d48400>, state: disappeared, view: <YTBrowserView 0x10e05000> not in the window
  | <YTRowseResponseViewController 0x10e901200>, state: disappeared, view: <YTVariableHeightHeaderView 0x10e6bd020> not in the window
  | <YTTabViewController 0x113156170>, state: disappeared, view: <YTTabView 0x113156170> not in the window
  | <YTPageViewController 0x1131784c0>, state: disappeared, view: <YTPageView 0x10f251a00> not in the window
  | <YTPageViewController 0x1131784c0>, state: disappeared, view: <YTPageView 0x10f251a00> not in the window
  | <YTSectionListListViewController 0x1131582d0>, state: disappeared, view: <YTVariableHeightHeaderView 0x10e3c6240> not in the window
  | <YTSectionListListViewController 0x1131582d0>, state: disappeared, view: <YTVariableHeightHeaderView 0x1131582d0> not in the window
  | <YTVariableHeightHeaderViewController 0x11315d000>, state: disappeared, view: <YTVariableHeightHeaderView 0x11315d000> not in the window
  | <YTAppCollectionViewController 0x10f2b6000>, state: disappeared, view: <YTAsyncCollectionView 0x10f307000> not in the window
  | <YTHeaderViewController 0x10f2a0100>, state: disappeared, view: <YTHeaderView 0x11312e40> not in the window
  | <YTHeaderContentComboViewController 0x121426030>, state: disappeared, view: <YTHeaderContentComboView 0x121426030>
  | <YTSearchResultsViewController 0x10f570000>, state: disappeared, view: <YTSearcherView 0x121426030>
  | <YTSearchResponseViewController 0x1214242d0>, state: disappeared, view: <YTSearcherView 0x12141c7d0>
  | <YTSectionListListViewController 0x111fc6500>, state: disappeared, view: <YTView 0x1214360d0>
  | <YTVariableHeightHeaderViewController 0x11f1c69b00>, state: disappeared, view: <YTVariableHeightHeaderView 0x1131e5950>
  | <TAppCollectionViewController 0x10e9b6f000>, state: disappeared, view: <YTAsyncCollectionView 0x10ecc3e00>
  | <YTHeaderViewController 0x10ec04000>, state: disappeared, view: <YTHeaderView 0x121407b80>
  <YTPlotBarViewController 0x10e0ed800>, state: appeared, view: <YTPlotBarView 0x10e0ed70>
  <YTWatchLayerViewController 0x10f23d000>, state: appeared, view: <YTWatchLayerView 0x10e3d6970>
  <YTWatchMiniBarViewController 0x10e951000>, state: appeared, view: <YTWatchMiniBarView 0x10e3d7390>
  <YTWatchViewController 0x10e0e3d3000>, state: appeared, view: <YTWatchSingleItemView 0x12557f70>
  | <YTEngagementPanelMultipleStacksContainerViewController 0x125541c00>, state: appeared, view: <YTEngagementPanelMultipleStacksContainerView 0x12559a850>
  | <YTPlayerViewController 0x10f635200>, state: appeared, view: <YTPlayerView 0x12554c00>
  | <YTMainAppVideoPlayerOverlayViewController 0x10f349800>, state: appeared, view: <YTMainAppVideoPlayerOverlayView 0x12554fe00>
  | <YTOverflowMenuViewController 0x125573460>, state: appeared, view: <YTOverflowMenuView 0x11317dd20>
  | <YTVCaptionOverlayViewController 0x127573300>, state: appeared, view: <YTVCaptionOverlayView 0x113139d90>
  | <YTCreatorEndscreenViewController 0x12719e10>, state: disappeared, view: (View not loaded)
  | <YTInfoCardDrawerViewController 0x1271d040>, state: disappeared, view: (View not loaded)
  | <YTInfoCardTeaserViewController 0x12758c00>, state: appeared, view: <YTInfoCardTeaserContainerView 0x1271d1310>
  | <YTWatchNextViewController 0x12573830>, state: appeared, view: <YTUpperView 0x12573800>
  | <YTWatchNextResponseViewController 0x125739270>, state: appeared, view: <YTWatchNextView 0x125739080>
  | <YTWatchNextViewController 0x10fbca800>, state: appeared, view: <YTAsyncCollectionView 0x10ef07000>
  | <YTInfoCardDrawerViewController 0x113148f50>, state: appeared, view: <YTInfoCardDrawerView 0x11d3c0060>
  <MDXViewController 0x11311d990>, state: appeared, view: <MDXView 0x113117780>

```

### ■ Reveal : 查看UI页面详细属性



- 目的：搞懂我们所关心的app内部相关逻辑
  - 用于后续去写hook代码去修改成我们要的逻辑和值
- 最后才是：Tweak插件开发

- 常见插件开发框架

- 基于 CydiaSubstrate

- Theos / Logos

- fishhook

- CaptainHook

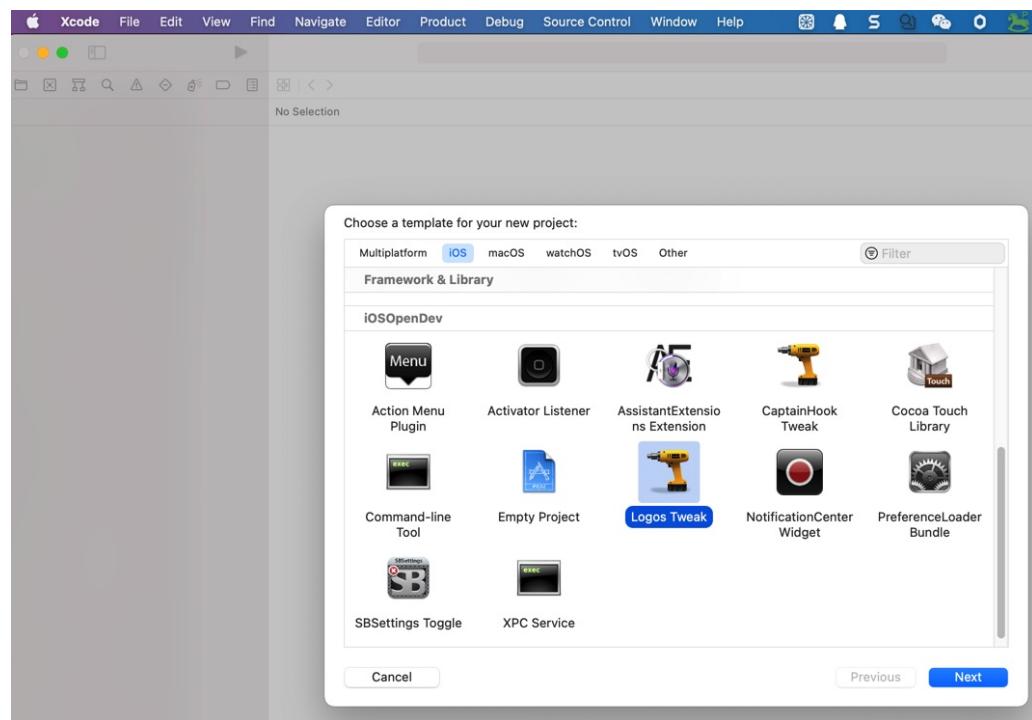
- 具体开发方式

- 命令行

- Theos / Logos : 写hook源码.xm，基于Makefile去编译

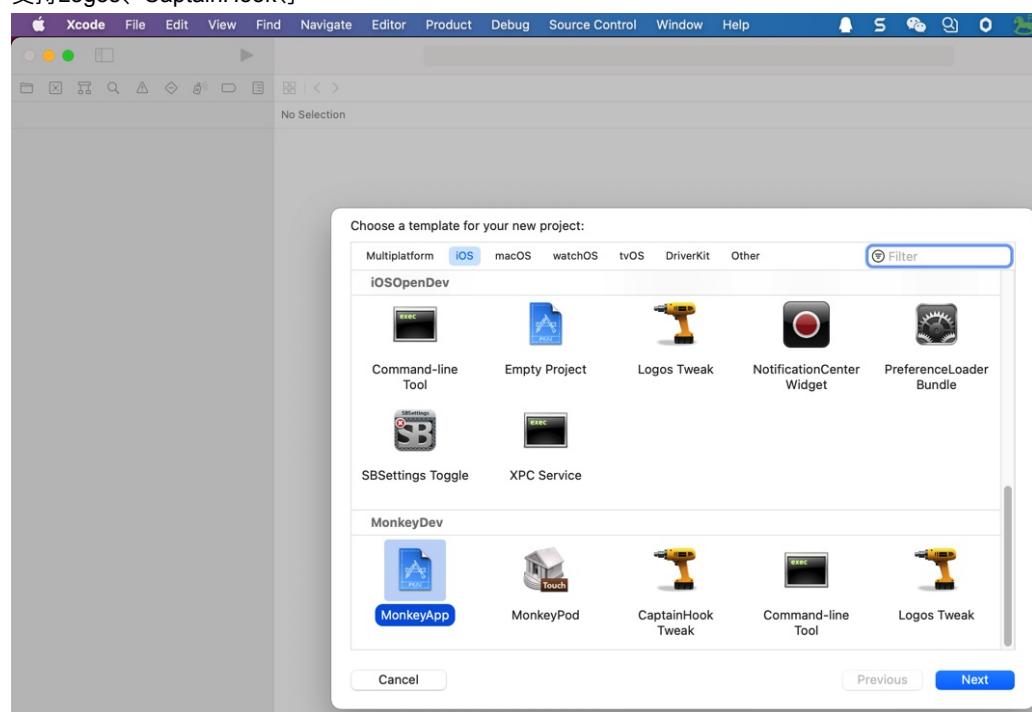
```

Tweak.x -- altsys
Tweak.x
1 #import <SpringBoard/SpringBoard.h>
2 // #import <Preferences/Preferences.h>
3 #import <cos/log.h>
4 #import <CoreTelephony/CTTelephonyNetworkInfo.h>
5 #import <CoreTelephony/CTCarrier.h>
6 #import <sys/types.h>
7 #import <sys/sysctl.h>
8 #import <sys/errno.h>
9
10 int sysctlbyname(const char *name, void *oldp, size_t *oldlenp, void *newp, size_t newlen);
11
12 // AltSys gitignore
13 // AltSys.plist
14 // control
15 // Makefile
16 // README.md
17 // Tweak.x
18
19 // NSString *returnValue = @"";
20 NSString *nsName = [NSString stringWithFormat:@"%@", name];
21
22 // NSString *fakeModel = @"Fake_hw.machine";
23 // const char fakeModel[] = "iPhone14,5"; // emulate 'iPhone 13'
24 // const char *fakeModel = "Fake_hw.machine";
25 // const char *fakeModel = "iPhone14,5"; // emulate 'iPhone 13'
26 // NSString *nsFakeModel = [NSString stringWithFormat:@"%@", fakeModel];
27 // os_log(OS_LOG_DEFAULT, "sysctlbyname: fakeModel=%s", fakeModel);
28 // os_log(OS_LOG_DEFAULT, "sysctlbyname: nsName=%s", nsName);
29
30 // AltSys gitignore
31 // AltSys.plist
32 // control
33 // Makefile
34 // README.md
35 // Tweak.x
36
37 // AltSys gitignore
38 // AltSys.plist
39 // control
40 // Makefile
41 // README.md
42 // Tweak.x
43
44 // AltSys gitignore
45 // AltSys.plist
46 // control
47 // Makefile
48 // README.md
49 // Tweak.x
50
51 // AltSys gitignore
52 // AltSys.plist
53 // control
54 // Makefile
55 // README.md
56 // Tweak.x
57
58 // AltSys gitignore
59 // AltSys.plist
60 // control
61 // Makefile
62 // README.md
63 // Tweak.x
64
65 // AltSys gitignore
66 // AltSys.plist
67 // control
68 // Makefile
69 // README.md
70 // Tweak.x
71
72 // AltSys gitignore
73 // AltSys.plist
74 // control
75 // Makefile
76 // README.md
77 // Tweak.x
78
79 // AltSys gitignore
80 // AltSys.plist
81 // control
82 // Makefile
83 // README.md
84 // Tweak.x
85
86 // AltSys gitignore
87 // AltSys.plist
88 // control
89 // Makefile
90 // README.md
91 // Tweak.x
92
93 // AltSys gitignore
94 // AltSys.plist
95 // control
96 // Makefile
97 // README.md
98 // Tweak.x
99
100 // AltSys gitignore
101 // AltSys.plist
102 // control
103 // Makefile
104 // README.md
105 // Tweak.x
106
107 // AltSys gitignore
108 // AltSys.plist
109 // control
110 // Makefile
111 // README.md
112 // Tweak.x
113
114 // AltSys gitignore
115 // AltSys.plist
116 // control
117 // Makefile
118 // README.md
119 // Tweak.x
120
121 // AltSys gitignore
122 // AltSys.plist
123 // control
124 // Makefile
125 // README.md
126 // Tweak.x
127
128 // AltSys gitignore
129 // AltSys.plist
130 // control
131 // Makefile
132 // README.md
133 // Tweak.x
134
135 // AltSys gitignore
136 // AltSys.plist
137 // control
138 // Makefile
139 // README.md
140 // Tweak.x
141
142 // AltSys gitignore
143 // AltSys.plist
144 // control
145 // Makefile
146 // README.md
147 // Tweak.x
148
149 // AltSys gitignore
150 // AltSys.plist
151 // control
152 // Makefile
153 // README.md
154 // Tweak.x
155
156 // AltSys gitignore
157 // AltSys.plist
158 // control
159 // Makefile
160 // README.md
161 // Tweak.x
162
163 // AltSys gitignore
164 // AltSys.plist
165 // control
166 // Makefile
167 // README.md
168 // Tweak.x
169
170 // AltSys gitignore
171 // AltSys.plist
172 // control
173 // Makefile
174 // README.md
175 // Tweak.x
176
177 // AltSys gitignore
178 // AltSys.plist
179 // control
180 // Makefile
181 // README.md
182 // Tweak.x
183
184 // AltSys gitignore
185 // AltSys.plist
186 // control
187 // Makefile
188 // README.md
189 // Tweak.x
190
191 // AltSys gitignore
192 // AltSys.plist
193 // control
194 // Makefile
195 // README.md
196 // Tweak.x
197
198 // AltSys gitignore
199 // AltSys.plist
200 // control
201 // Makefile
202 // README.md
203 // Tweak.x
204
205 // AltSys gitignore
206 // AltSys.plist
207 // control
208 // Makefile
209 // README.md
210 // Tweak.x
211
212 // AltSys gitignore
213 // AltSys.plist
214 // control
215 // Makefile
216 // README.md
217 // Tweak.x
218
219 // AltSys gitignore
220 // AltSys.plist
221 // control
222 // Makefile
223 // README.md
224 // Tweak.x
225
226 // AltSys gitignore
227 // AltSys.plist
228 // control
229 // Makefile
230 // README.md
231 // Tweak.x
232
233 // AltSys gitignore
234 // AltSys.plist
235 // control
236 // Makefile
237 // README.md
238 // Tweak.x
239
240 // AltSys gitignore
241 // AltSys.plist
242 // control
243 // Makefile
244 // README.md
245 // Tweak.x
246
247 // AltSys gitignore
248 // AltSys.plist
249 // control
250 // Makefile
251 // README.md
252 // Tweak.x
253
254 // AltSys gitignore
255 // AltSys.plist
256 // control
257 // Makefile
258 // README.md
259 // Tweak.x
260
261 // AltSys gitignore
262 // AltSys.plist
263 // control
264 // Makefile
265 // README.md
266 // Tweak.x
267
268 // AltSys gitignore
269 // AltSys.plist
270 // control
271 // Makefile
272 // README.md
273 // Tweak.x
274
275 // AltSys gitignore
276 // AltSys.plist
277 // control
278 // Makefile
279 // README.md
280 // Tweak.x
281
282 // AltSys gitignore
283 // AltSys.plist
284 // control
285 // Makefile
286 // README.md
287 // Tweak.x
288
289 // AltSys gitignore
290 // AltSys.plist
291 // control
292 // Makefile
293 // README.md
294 // Tweak.x
295
296 // AltSys gitignore
297 // AltSys.plist
298 // control
299 // Makefile
300 // README.md
301 // Tweak.x
302
303 // AltSys gitignore
304 // AltSys.plist
305 // control
306 // Makefile
307 // README.md
308 // Tweak.x
309
310 // AltSys gitignore
311 // AltSys.plist
312 // control
313 // Makefile
314 // README.md
315 // Tweak.x
316
317 // AltSys gitignore
318 // AltSys.plist
319 // control
320 // Makefile
321 // README.md
322 // Tweak.x
323
324 // AltSys gitignore
325 // AltSys.plist
326 // control
327 // Makefile
328 // README.md
329 // Tweak.x
330
331 // AltSys gitignore
332 // AltSys.plist
333 // control
334 // Makefile
335 // README.md
336 // Tweak.x
337
338 // AltSys gitignore
339 // AltSys.plist
340 // control
341 // Makefile
342 // README.md
343 // Tweak.x
344
345 // AltSys gitignore
346 // AltSys.plist
347 // control
348 // Makefile
349 // README.md
350 // Tweak.x
351
352 // AltSys gitignore
353 // AltSys.plist
354 // control
355 // Makefile
356 // README.md
357 // Tweak.x
358
359 // AltSys gitignore
360 // AltSys.plist
361 // control
362 // Makefile
363 // README.md
364 // Tweak.x
365
366 // AltSys gitignore
367 // AltSys.plist
368 // control
369 // Makefile
370 // README.md
371 // Tweak.x
372
373 // AltSys gitignore
374 // AltSys.plist
375 // control
376 // Makefile
377 // README.md
378 // Tweak.x
379
380 // AltSys gitignore
381 // AltSys.plist
382 // control
383 // Makefile
384 // README.md
385 // Tweak.x
386
387 // AltSys gitignore
388 // AltSys.plist
389 // control
390 // Makefile
391 // README.md
392 // Tweak.x
393
394 // AltSys gitignore
395 // AltSys.plist
396 // control
397 // Makefile
398 // README.md
399 // Tweak.x
400
401 // AltSys gitignore
402 // AltSys.plist
403 // control
404 // Makefile
405 // README.md
406 // Tweak.x
407
408 // AltSys gitignore
409 // AltSys.plist
410 // control
411 // Makefile
412 // README.md
413 // Tweak.x
414
415 // AltSys gitignore
416 // AltSys.plist
417 // control
418 // Makefile
419 // README.md
420 // Tweak.x
421
422 // AltSys gitignore
423 // AltSys.plist
424 // control
425 // Makefile
426 // README.md
427 // Tweak.x
428
429 // AltSys gitignore
430 // AltSys.plist
431 // control
432 // Makefile
433 // README.md
434 // Tweak.x
435
436 // AltSys gitignore
437 // AltSys.plist
438 // control
439 // Makefile
440 // README.md
441 // Tweak.x
442
443 // AltSys gitignore
444 // AltSys.plist
445 // control
446 // Makefile
447 // README.md
448 // Tweak.x
449
450 // AltSys gitignore
451 // AltSys.plist
452 // control
453 // Makefile
454 // README.md
455 // Tweak.x
456
457 // AltSys gitignore
458 // AltSys.plist
459 // control
460 // Makefile
461 // README.md
462 // Tweak.x
463
464 // AltSys gitignore
465 // AltSys.plist
466 // control
467 // Makefile
468 // README.md
469 // Tweak.x
470
471 // AltSys gitignore
472 // AltSys.plist
473 // control
474 // Makefile
475 // README.md
476 // Tweak.x
477
478 // AltSys gitignore
479 // AltSys.plist
480 // control
481 // Makefile
482 // README.md
483 // Tweak.x
484
485 // AltSys gitignore
486 // AltSys.plist
487 // control
488 // Makefile
489 // README.md
490 // Tweak.x
491
492 // AltSys gitignore
493 // AltSys.plist
494 // control
495 // Makefile
496 // README.md
497 // Tweak.x
498
499 // AltSys gitignore
500 // AltSys.plist
501 // control
502 // Makefile
503 // README.md
504 // Tweak.x
505
506 // AltSys gitignore
507 // AltSys.plist
508 // control
509 // Makefile
510 // README.md
511 // Tweak.x
512
513 // AltSys gitignore
514 // AltSys.plist
515 // control
516 // Makefile
517 // README.md
518 // Tweak.x
519
520 // AltSys gitignore
521 // AltSys.plist
522 // control
523 // Makefile
524 // README.md
525 // Tweak.x
526
527 // AltSys gitignore
528 // AltSys.plist
529 // control
530 // Makefile
531 // README.md
532 // Tweak.x
533
534 // AltSys gitignore
535 // AltSys.plist
536 // control
537 // Makefile
538 // README.md
539 // Tweak.x
540
541 // AltSys gitignore
542 // AltSys.plist
543 // control
544 // Makefile
545 // README.md
546 // Tweak.x
547
548 // AltSys gitignore
549 // AltSys.plist
550 // control
551 // Makefile
552 // README.md
553 // Tweak.x
554
555 // AltSys gitignore
556 // AltSys.plist
557 // control
558 // Makefile
559 // README.md
560 // Tweak.x
561
562 // AltSys gitignore
563 // AltSys.plist
564 // control
565 // Makefile
566 // README.md
567 // Tweak.x
568
569 // AltSys gitignore
570 // AltSys.plist
571 // control
572 // Makefile
573 // README.md
574 // Tweak.x
575
576 // AltSys gitignore
577 // AltSys.plist
578 // control
579 // Makefile
580 // README.md
581 // Tweak.x
582
583 // AltSys gitignore
584 // AltSys.plist
585 // control
586 // Makefile
587 // README.md
588 // Tweak.x
589
590 // AltSys gitignore
591 // AltSys.plist
592 // control
593 // Makefile
594 // README.md
595 // Tweak.x
596
597 // AltSys gitignore
598 // AltSys.plist
599 // control
600 // Makefile
601 // README.md
602 // Tweak.x
603
604 // AltSys gitignore
605 // AltSys.plist
606 // control
607 // Makefile
608 // README.md
609 // Tweak.x
610
611 // AltSys gitignore
612 // AltSys.plist
613 // control
614 // Makefile
615 // README.md
616 // Tweak.x
617
618 // AltSys gitignore
619 // AltSys.plist
620 // control
621 // Makefile
622 // README.md
623 // Tweak.x
624
625 // AltSys gitignore
626 // AltSys.plist
627 // control
628 // Makefile
629 // README.md
630 // Tweak.x
631
632 // AltSys gitignore
633 // AltSys.plist
634 // control
635 // Makefile
636 // README.md
637 // Tweak.x
638
639 // AltSys gitignore
640 // AltSys.plist
641 // control
642 // Makefile
643 // README.md
644 // Tweak.x
645
646 // AltSys gitignore
647 // AltSys.plist
648 // control
649 // Makefile
650 // README.md
651 // Tweak.x
652
653 // AltSys gitignore
654 // AltSys.plist
655 // control
656 // Makefile
657 // README.md
658 // Tweak.x
659
660 // AltSys gitignore
661 // AltSys.plist
662 // control
663 // Makefile
664 // README.md
665 // Tweak.x
666
667 // AltSys gitignore
668 // AltSys.plist
669 // control
670 // Makefile
671 // README.md
672 // Tweak.x
673
674 // AltSys gitignore
675 // AltSys.plist
676 // control
677 // Makefile
678 // README.md
679 // Tweak.x
680
681 // AltSys gitignore
682 // AltSys.plist
683 // control
684 // Makefile
685 // README.md
686 // Tweak.x
687
688 // AltSys gitignore
689 // AltSys.plist
690 // control
691 // Makefile
692 // README.md
693 // Tweak.x
694
695 // AltSys gitignore
696 // AltSys.plist
697 // control
698 // Makefile
699 // README.md
700 // Tweak.x
701
702 // AltSys gitignore
703 // AltSys.plist
704 // control
705 // Makefile
706 // README.md
707 // Tweak.x
708
709 // AltSys gitignore
710 // AltSys.plist
711 // control
712 // Makefile
713 // README.md
714 // Tweak.x
715
716 // AltSys gitignore
717 // AltSys.plist
718 // control
719 // Makefile
720 // README.md
721 // Tweak.x
722
723 // AltSys gitignore
724 // AltSys.plist
725 // control
726 // Makefile
727 // README.md
728 // Tweak.x
729
730 // AltSys gitignore
731 // AltSys.plist
732 // control
733 // Makefile
734 // README.md
735 // Tweak.x
736
737 // AltSys gitignore
738 // AltSys.plist
739 // control
740 // Makefile
741 // README.md
742 // Tweak.x
743
744 // AltSys gitignore
745 // AltSys.plist
746 // control
747 // Makefile
748 // README.md
749 // Tweak.x
750
751 // AltSys gitignore
752 // AltSys.plist
753 // control
754 // Makefile
755 // README.md
756 // Tweak.x
757
758 // AltSys gitignore
759 // AltSys.plist
760 // control
761 // Makefile
762 // README.md
763 // Tweak.x
764
765 // AltSys gitignore
766 // AltSys.plist
767 // control
768 // Makefile
769 // README.md
770 // Tweak.x
771
772 // AltSys gitignore
773 // AltSys.plist
774 // control
775 // Makefile
776 // README.md
777 // Tweak.x
778
779 // AltSys gitignore
780 // AltSys.plist
781 // control
782 // Makefile
783 // README.md
784 // Tweak.x
785
786 // AltSys gitignore
787 // AltSys.plist
788 // control
789 // Makefile
790 // README.md
791 // Tweak.x
792
793 // AltSys gitignore
794 // AltSys.plist
795 // control
796 // Makefile
797 // README.md
798 // Tweak.x
799
799 // AltSys gitignore
800 // AltSys.plist
801 // control
802 // Makefile
803 // README.md
804 // Tweak.x
805
806 // AltSys gitignore
807 // AltSys.plist
808 // control
809 // Makefile
810 // README.md
811 // Tweak.x
812
813 // AltSys gitignore
814 // AltSys.plist
815 // control
816 // Makefile
817 // README.md
818 // Tweak.x
819
819 // AltSys gitignore
820 // AltSys.plist
821 // control
822 // Makefile
823 // README.md
824 // Tweak.x
825
825 // AltSys gitignore
826 // AltSys.plist
827 // control
828 // Makefile
829 // README.md
830 // Tweak.x
831
831 // AltSys gitignore
832 // AltSys.plist
833 // control
834 // Makefile
835 // README.md
836 // Tweak.x
837
837 // AltSys gitignore
838 // AltSys.plist
839 // control
840 // Makefile
841 // README.md
842 // Tweak.x
843
843 // AltSys gitignore
844 // AltSys.plist
845 // control
846 // Makefile
847 // README.md
848 // Tweak.x
849
849 // AltSys gitignore
850 // AltSys.plist
851 // control
852 // Makefile
853 // README.md
854 // Tweak.x
855
855 // AltSys gitignore
856 // AltSys.plist
857 // control
858 // Makefile
859 // README.md
860 // Tweak.x
861
861 // AltSys gitignore
862 // AltSys.plist
863 // control
864 // Makefile
865 // README.md
866 // Tweak.x
867
867 // AltSys gitignore
868 // AltSys.plist
869 // control
870 // Makefile
871 // README.md
872 // Tweak.x
873
873 // AltSys gitignore
874 // AltSys.plist
875 // control
876 // Makefile
877 // README.md
878 // Tweak.x
879
879 // AltSys gitignore
880 // AltSys.plist
881 // control
882 // Makefile
883 // README.md
884 // Tweak.x
885
885 // AltSys gitignore
886 // AltSys.plist
887 // control
888 // Makefile
889 // README.md
890 // Tweak.x
891
891 // AltSys gitignore
892 // AltSys.plist
893 // control
894 // Makefile
895 // README.md
896 // Tweak.x
897
897 // AltSys gitignore
898 // AltSys.plist
899 // control
900 // Makefile
901 // README.md
902 // Tweak.x
903
903 // AltSys gitignore
904 // AltSys.plist
905 // control
906 // Makefile
907 // README.md
908 // Tweak.x
909
909 // AltSys gitignore
910 // AltSys.plist
911 // control
912 // Makefile
913 // README.md
914 // Tweak.x
915
915 // AltSys gitignore
916 // AltSys.plist
917 // control
918 // Makefile
919 // README.md
920 // Tweak.x
921
921 // AltSys gitignore
922 // AltSys.plist
923 // control
924 // Makefile
925 // README.md
926 // Tweak.x
927
927 // AltSys gitignore
928 // AltSys.plist
929 // control
930 // Makefile
931 // README.md
932 // Tweak.x
933
933 // AltSys gitignore
934 // AltSys.plist
935 // control
936 // Makefile
937 // README.md
938 // Tweak.x
939
939 // AltSys gitignore
940 // AltSys.plist
941 // control
942 // Makefile
943 // README.md
944 // Tweak.x
945
945 // AltSys gitignore
946 // AltSys.plist
947 // control
948 // Makefile
949 // README.md
950 // Tweak.x
951
951 // AltSys gitignore
952 // AltSys.plist
953 // control
954 // Makefile
955 // README.md
956 // Tweak.x
957
957 // AltSys gitignore
958 // AltSys.plist
959 // control
960 // Makefile
961 // README.md
962 // Tweak.x
963
963 // AltSys gitignore
964 // AltSys.plist
965 // control
966 // Makefile
967 // README.md
968 // Tweak.x
969
969 // AltSys gitignore
970 // AltSys.plist
971 // control
972 // Makefile
973 // README.md
974 // Tweak.x
975
975 // AltSys gitignore
976 // AltSys.plist
977 // control
978 // Makefile
979 // README.md
980 // Tweak.x
981
981 // AltSys gitignore
982 // AltSys.plist
983 // control
984 // Makefile
985 // README.md
986 // Tweak.x
987
987 // AltSys gitignore
988 // AltSys.plist
989 // control
990 // Makefile
991 // README.md
992 // Tweak.x
993
993 // AltSys gitignore
994 // AltSys.plist
995 // control
996 // Makefile
997 // README.md
998 // Tweak.x
999
999 // AltSys gitignore
1000 // AltSys.plist
1001 // control
1002 // Makefile
1003 // README.md
1004 // Tweak.x
1005
1005 // AltSys gitignore
1006 // AltSys.plist
1007 // control
1008 // Makefile
1009 // README.md
1010 // Tweak.x
1011
1011 // AltSys gitignore
1012 // AltSys.plist
1013 // control
1014 // Makefile
1015 // README.md
1016 // Tweak.x
1017
1017 // AltSys gitignore
1018 // AltSys.plist
1019 // control
1020 // Makefile
1021 // README.md
1022 // Tweak.x
1023
1023 // AltSys gitignore
1024 // AltSys.plist
1025 // control
1026 // Makefile
1027 // README.md
1028 // Tweak.x
1029
1029 // AltSys gitignore
1030 // AltSys.plist
1031 // control
1032 // Makefile
1033 // README.md
1034 // Tweak.x
1035
1035 // AltSys gitignore
1036 // AltSys.plist
1037 // control
1038 // Makefile
1039 // README.md
1040 // Tweak.x
1041
1041 // AltSys gitignore
1042 // AltSys.plist
1043 // control
1044 // Makefile
1045 // README.md
1046 // Tweak.x
1047
1047 // AltSys gitignore
1048 // AltSys.plist
1049 // control
1050 // Makefile
1051 // README.md
1052 // Tweak.x
1053
1053 // AltSys gitignore
1054 // AltSys.plist
1055 // control
1056 // Makefile
1057 // README.md
1058 // Tweak.x
1059
1059 // AltSys gitignore
1060 // AltSys.plist
1061 // control
1062 // Makefile
1063 // README.md
1064 // Tweak.x
1065
1065 // AltSys gitignore
1066 // AltSys.plist
1067 // control
1068 // Makefile
1069 // README.md
1070 // Tweak.x
1071
1071 // AltSys gitignore
1072 // AltSys.plist
1073 // control
1074 // Makefile
1075 // README.md
1076 // Tweak.x
1077
1077 // AltSys gitignore
1078 // AltSys.plist
1079 // control
1080 // Makefile
1081 // README.md
1082 // Tweak.x
1083
1083 // AltSys gitignore
1084 // AltSys.plist
1085 // control
1086 // Makefile
1087 // README.md
1088 // Tweak.x
1089
1089 // AltSys gitignore
1090 // AltSys.plist
1091 // control
1092 // Makefile
1093 // README.md
1094 // Tweak.x
1095
1095 // AltSys gitignore
1096 // AltSys.plist
1097 // control
1098 // Makefile
1099 // README.md
1100 // Tweak.x
1101
1101 // AltSys gitignore
1102 // AltSys.plist
1103 // control
1104 // Makefile
1105 // README.md
1106 // Tweak.x
1107
1107 // AltSys gitignore
1108 // AltSys.plist
1109 // control
1110 // Makefile
1111 // README.md
1112 // Tweak.x
1113
1113 // AltSys gitignore
1114 // AltSys.plist
1115 // control
1116 // Makefile
1117 // README.md
1118 // Tweak.x
1119
1119 // AltSys gitignore
1120 // AltSys.plist
1121 // control
1122 // Makefile
1123 // README.md
1124 // Tweak.x
1125
1125 // AltSys gitignore
1126 // AltSys.plist
1127 // control
1128 // Makefile
1129 // README.md
1130 // Tweak.x
1131
1131 // AltSys gitignore
1132 // AltSys.plist
1133 // control
1134 // Makefile
1135 // README.md
1136 // Tweak.x
1137
1137 // AltSys gitignore
1138 // AltSys.plist
1139 // control
1140 // Makefile
1141 // README.md
1142 // Tweak.x
1143
1143 // AltSys gitignore
1144 // AltSys.plist
1145 // control
1146 // Makefile
1147 // README.md
1148 // Tweak.x
1149
1149 // AltSys gitignore
1150 // AltSys.plist
1151 // control
1152 // Makefile
1153 // README.md
1154 // Tweak.x
1155
1155 // AltSys gitignore
1156 // AltSys.plist
1157 // control
1158 // Makefile
1159 // README.md
1160 // Tweak.x
1161
1161 // AltSys gitignore
1162 // AltSys.plist
1163 // control
1164 // Makefile
1165 // README.md
1166 // Tweak.x
1167
1167 // AltSys gitignore
1168 // AltSys.plist
1169 // control
1170 // Makefile
1171 // README.md
1172 // Tweak.x
1173
1173 // AltSys gitignore
1174 // AltSys.plist
1175 // control
1176 // Makefile
1177 // README.md
1178 // Tweak.x
1179
1179 // AltSys gitignore
1180 // AltSys.plist
1181 // control
1182 // Makefile
1183 // README.md
1184 // Tweak.x
1185
1185 // AltSys gitignore
1186 // AltSys.plist
1187 // control
1188 // Makefile
1189 // README.md
1190 // Tweak.x
1191
1191 // AltSys gitignore
1192 // AltSys.plist
1193 // control
1194 // Makefile
1195 // README.md
1196 // Tweak.x
1197
1197 // AltSys gitignore
1198 // AltSys.plist
1199 // control
1200 // Makefile
1201 // README.md
1202 // Tweak.x
1203
1203 // AltSys gitignore
1204 // AltSys.plist
1205 // control
1206 // Makefile
1207 // README.md
1208 // Tweak.x
1209
1209 // AltSys gitignore
1210 // AltSys.plist
1211 // control
1212 // Makefile
1213 // README.md
1214 // Tweak.x
1215
1215 // AltSys gitignore
1216 // AltSys.plist
1217 // control
1218 // Makefile
1219 // README.md
1220 // Tweak.x
1221
1221 // AltSys gitignore
1222 // AltSys.plist
1223 // control
1224 // Makefile
1225 // README.md
1226 // Tweak.x
1227
1227 // AltSys gitignore
1228 // AltSys.plist
1229 // control
1230 // Makefile
1231 // README.md
1232 // Tweak.x
1233
1233 // AltSys gitignore
1234 // AltSys.plist
1235 // control
1236 // Makefile
1237 // README.md
1238 // Tweak.x
1239
1239 // AltSys gitignore
1240 // AltSys.plist
1241 // control
1242 // Makefile
1243 // README.md
1244 // Tweak.x
1245
1245 // AltSys gitignore
1246 // AltSys.plist
1247 // control
1248 // Makefile
1249 // README.md
1250 // Tweak.x
1251
1251 // AltSys gitignore
1252 // AltSys.plist
1253 // control
1254 // Makefile
1255 // README.md
1256 // Tweak.x
1257
1257 // AltSys gitignore
1258 // AltSys.plist
1259 // control
1260 // Makefile
1261 // README.md
1262 // Tweak.x
1263
1263 // AltSys gitignore
1264 // AltSys.plist
1265 // control
1266 // Makefile
1267 // README.md
1268 // Tweak.x
1269
1269 // AltSys gitignore
1270 // AltSys.plist
1271 // control
1272 // Makefile
1273 // README.md
1274 // Tweak.x
1275
1275 // AltSys gitignore
1276 // AltSys.plist
1277 // control
1278 // Makefile
1279 // README.md
1280 // Tweak.x
1281
1281 // AltSys gitignore
1282 // AltSys.plist
1283 // control
1284 // Makefile
1285 // README.md
1286 // Tweak.x
1287
1287 // AltSys gitignore
1288 // AltSys.plist
1289 // control
1290 // Makefile
1291 // README.md
1292 // Tweak.x
1293
1293 // AltSys gitignore
1294 // AltSys.plist
1295 // control
1296 // Makefile
1297 // README.md
1298 // Tweak.x
1299
1299 // AltSys gitignore
1300 // AltSys.plist
1301 // control
1302 // Makefile
1303 // README.md
1304 // Tweak.x
1305
1305 // AltSys gitignore
1306 // AltSys.plist
1307 // control
1308 // Makefile
1309 // README.md
1310 // Tweak.x
1311
1311 // AltSys gitignore
1312 // AltSys.plist
1313 // control
1314 // Makefile
1315 // README.md
1316 // Tweak.x
1317
1317 // AltSys gitignore
1318 // AltSys.plist
1319 // control
1320 // Makefile
1321 // README.md
1322 // Tweak.x
1323
1323 // AltSys gitignore
1324 // AltSys.plist
1325 // control
1326 // Makefile
1327 // README.md
1328 // Tweak.x
1329
1329 // AltSys gitignore
1330 // AltSys.plist
1331 // control
1332 // Makefile
1333 // README.md
1334 // Tweak.x
1335
1335 // AltSys gitignore
1336 // AltSys.plist
1337 // control
1338 // Makefile
1339 // README.md
13
```



- MonkeyDev : iOSOpenDev的改进版

- 支持Logos、CaptainHook等



```

youtube
├── youtube
│   ├── result
│   │   └── youtubeCallSequence.coffee
│   ├── README.md
│   └── youtube
│       ├── icon.png
│       ├── Info.plist
│       ├── Scripts
│       ├── Config
│       └── TargetApp
│           └── YouTube_17.08.2_objcBlockSymbol.ipa
│               └── put ipa or app here
└── youtubeDylib
    ├── lib
    │   └── youtubeDylib.h
    ├── youtubeDylib.m
    └── Logos
        └── youtubeDylib.xm
            └── youtubeDylib.mm

```

```

youtube
master youtube youtubeDylib.xm iPhone7_1331 Finished running youtube on iPhone7_1331 166
311 }
312 }
313 return iwu_umet;
314 }
315 }
316 }end
317 }
318 /**
319 NSHTTPURLResponse
320 ~ (NSHTTPURLResponse*)initWithURL:(NSURL *)url
321     statusCode:(NSInteger)statusCode
322     HTTPVersion:(NSString *)HTTPVersion
323     headerFields:(NSDictionary<NSString *, NSString *> *)headerFields{
324     NSHTTPURLResponse* iwu_ushh = [orig
325 // if (isYoutubeAdsVideo(url))
326     iosLogInfo("is ads video: url=%@,statusCode=%d,HTTPVersion=%@ -> iwu_ushh=%@", url,
327     statusCode, HTTPVersion, headerFields, iwu_ushh);
328     if (isYoutubeAdsVideo_ctierA(url)){
329         iosLogInfo("is ctierA ads video: url=%@,statusCode=%d,HTTPVersion=%@ -> iwu_ushh=%@", url,
330         statusCode, HTTPVersion, headerFields, iwu_ushh);
331     }
332 }
333 // |
334 }
335 }
336 return iwu_ushh;
337 }
338 }
339 }
340 }end

```

- 去开发插件=写hook代码

- 前提：通过静态分析的头文件和动态调试，已知的app内部的类的属性和函数
- 核心逻辑：去hook对应类的函数和属性
  - 实现对应的效果，比如：
    - 调试：输出函数的输入参数和输出结果
    - 修改逻辑：屏蔽原先逻辑，重写自己想要的逻辑

- 开发出的插件常用于

- 逆向破解特定app
  - 绕过ssl证书校验，实现Charles抓包https可看到明文数据
  - 修改app原有逻辑，实现特定的功能
    - 支付宝：修改显示的余额
    - 微信：抢红包
    - 抖音：点赞关注
- 反反调试
- 反越狱检测

# iOS典型逆向开发流程

典型的iOS逆向开发的流程是：

- 先：iPhone越狱
  - 越狱工具
    - unc0ver
    - checkra1n
- 再：逆向破解某iOS的app
  - 对于要研究的某个iOS的app来说，从工作内容角度，主要分：
    - 从AppStore中搜索和安装正版app
    - 去砸壳得到ipa
      - frida-ios-dump
    - 再去研究
      - 静态分析
        - 字符串分析
          - strings
          - nm
          - otool
        - 查看详情
          - MachOView
          - jtool2
          - rabin2
        - 导出头文件
          - class-dump
        - 分析代码逻辑
          - IDA
            - 汇编代码
            - 伪代码
      - 动态调试
        - 命令行方式
          - debugserver + lldb
        - GUI图形界面方式
          - Xcode + MonkeyDev
            - lldb
      - 写hook插件
        - 再去调试和验证
          - 如此反复
    - 最后结果：得到一个插件tweak，实现了你要的目的
      - 比如反越狱检测、改机、hook某个app的某些特定功能（比如微信抢红包）等等

crifan.org, 使用署名4.0国际(CC BY 4.0)协议发布 all right reserved, powered by Gitbook最后更新：2022-10-20 22:02:13

## iOS逆向的重点和难点

对于iOS逆向开发涉及到众多方面的内容，其中属于重点和难点的是：

- 先搞懂你想要干啥
  - 比如 微信抢红包
- 重点和难点
  - 用静态分析工具和动态调试，共同配合，找出要hook的类
    - 如何用好各种静态分析工具（`otool`、`MachOView`、`IDA Pro`、`Hopper`等），如何进行动态调试（`Xcode + MonkeyDev`、`debugserver + lldb`、`frida`、`Cycript`、`Reveal`等），从而找到要分析的类和代码运行逻辑等等，才是重点和难点
    - 再去写hook代码，开发出插件，实现对应的功能

crifan.org, 使用署名4.0国际(CC BY 4.0)协议发布 all right reserved, powered by Gitbook最后更新：2022-10-20 15:15:03

## 子教程

上述所有和iOS逆向开发相关的内容，分别整理到多个独立的子教程以及相关内容：

- 系列
  - iOS逆向之前，先要给iOS设备越狱
    - [iOS逆向开发：iPhone越狱 crifan.org](#)
      - 包括iPhone管理：插件的安装和卸载、文件管理等
  - 然后再去静态分析
    - 【整理Book】iOS逆向开发：静态分析
  - 以及动态调试
    - 【整理Book】iOS逆向开发：动态调试
  - 往往涉及到如何用 Theos / iosopenDev / MonkeyDev 开发越狱插件，实现特定功能
    - [iOS逆向开发：越狱插件开发 crifan.org](#)
  - 也常涉及到正向的越狱检测和逆向的反越狱检测
    - 【整理Book】iOS逆向开发：越狱检测和反越狱检测
  - 往往涉及到iOS底层知识
    - 【整理Book】iOS逆向开发：Block的相关基础知识
    - 【整理Book】iOS逆向开发：ObjC运行时Runtime
  - 以及相关常用的资料
    - 【整理Book】iOS逆向开发：Apple苹果相关开发资料
- 相关
  - 汇编
    - 汇编通用
      - 【整理Book】底层编程语言：汇编语言asm
    - ARM汇编
      - [最流行汇编语言：ARM crifan.org](#)
  - Xcode
    - 【整理Book】Xcode内置调试器：LLDB
    - 【整理Book】Xcode开发：调试心得
  - IDA
    - 【整理Book】逆向利器：IDA Pro

crifan.org, 使用署名4.0国际(CC BY 4.0)协议发布 all right reserved, powered by Gitbook最后更新：2022-10-20 23:49:54

# iOS逆向心得

## 不同app的逆向破解出的难度不同

TODO:

- 【整理】iOS逆向心得：不同app的逆向破解出的难度不同

crifan.org, 使用[署名4.0国际\(CC BY 4.0\)协议](#)发布 all right reserved, powered by Gitbook最后更新：2022-04-09 11:19:01

## 附录

下面列出相关参考资料。

crifan.org, 使用署名4.0国际(CC BY 4.0)协议发布 all right reserved, powered by Gitbook最后更新: 2022-03-17 20:39:28

## 参考资料

- [crifan \(Crifan Li\)](#)

crifan.org, 使用[署名4.0国际\(CC BY 4.0\)协议](#)发布 all right reserved, powered by Gitbook最后更新: 2022-04-09 11:20:20