目录

苹果相关开发总结

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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。

简介

总结Apple苹果相关领域的开发经验和心得，包括常见的开发工具，比如XCode、xcodebuild、xcrun、ideviceinstaller、iproxy或mobiledevice的端口转发、libimobiledevice的idevice_id、system_profiler、instruments、security；以及移动端的iOS系统，比如自动化框架XCTest、官网文档简介、微信使用心得、真机iPhone开发心得；最后给出相关文档和参考资料。

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本书的各种源码、在线浏览地址、多种格式文件下载如下：

Gitbook源码

- crifan/apple_develop_summary: 苹果相关开发总结

如何使用此Gitbook源码去生成发布为电子书

详见：crifan/gitbook_template: demo how to use crifan gitbook template and demo

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苹果相关开发概述

此处主要整理苹果Apple相关开发资料和开发工具

- 桌面端
  - `Mac` = `macOS`
- 移动端
  - 系统
    - `iOS`
  - 设备
    - `iPhone`
  - 开发语言
    - `Swift`
    - `Objective-C`

通用

此处介绍苹果开发涉及到的通用的内容。

桌面端

苹果开发中桌面端，主要指的是：

- 物理设备：Mac电脑
  - 包括 `Mac Pro` 、 `Mac Air` 等
- 操作系统：
  - 最新叫： `macOS`
  - 之前叫： `OS X`

接下来介绍Mac中各种有用的开发工具。

XCode

XCode是Mac中用来开发应用的**IDE**。

支持各种Apple的系统：

- 桌面端：`macOS`
- 移动端：
  - iPhone类：`iOS`
  - iPad类：`ipadOS`
  - Apple TV：`tvOS`
  - Apple Watch：`watchOS`

XCode作为一个IDE之外，还内置附带（和与之相关）了其他一些**命令行工具**，下面整理如下。

xcodebuild

- `xcodebuild`
  - 是什么：XCode的命令行工具
  - 作用：用于命令行方式去编译项目
  - 好处：而无需打开XCode图形界面去操作
    - 可用于自动化部署等方面

用法举例：

```
UDID=ed94089f3e34d5538065a695bfdf03dfbb3c5579
xcodebuild -project WebDriverAgent.xcodeproj -scheme WebDr
```

xcrun

xcrun simctl list devices

```
□ xcrun simctl list devices
== Devices ==
-- iOS 13.3 --
    iPhone 8 (54589698-0C9F-407D-B21A-83432CABB681) (Shutdo
    iPhone 8 Plus (509B7103-97DB-4AB9-B829-001190ED4B7E) (S
    iPhone 11 (509BC7C7-9C0E-42FA-8AB2-F5220EBAA13B) (Shutd
    iPhone 11 Pro (3E8E7E92-66F2-4AF3-A405-23B5FB231DE7) (S
    iPhone 11 Pro Max (50C15135-1532-44C5-B82C-B327F88F2712
    iPad Pro (9.7-inch) (B11D5D40-FEA2-4114-B053-E4CFD29D12
    iPad (7th generation) (7F8EDE89-74E0-4BAB-B3CA-09E2DAE1
    iPad Pro (11-inch) (04DD3B8A-5B78-48E8-8B22-56796A9CFB7
    iPad Pro (12.9-inch) (3rd generation) (D811684E-2F3E-4E
    iPad Air (3rd generation) (BBC48526-3922-4C97-BA14-B188
-- tvOS 13.3 --
    Apple TV (6680F059-4DE1-430C-B696-228AC27CAA88) (Shutdo
    Apple TV 4K (048E58E8-6A27-4D81-BDEB-8812C610B756) (Shu
    Apple TV 4K (at 1080p) (384D5E60-B6B1-481E-BDC3-B7FF8F7
-- watchOS 6.1 --
    Apple Watch Series 4 - 40mm (1B98415B-3FDE-401B-A80C-A3
    Apple Watch Series 4 - 44mm (661838E9-B0BE-42B4-B55E-9A
    Apple Watch Series 5 - 40mm (F76D77EF-0932-4164-94BB-9E
    Apple Watch Series 5 - 44mm (D86F0BD5-4D38-4537-9C8C-2E
```

xcrun simctl list

```
□ xcrun simctl list
== Device Types ==
iPhone 4s (com.apple.CoreSimulator.SimDeviceType.iPhone-4s)
iPhone 5 (com.apple.CoreSimulator.SimDeviceType.iPhone-5)
iPhone 5s (com.apple.CoreSimulator.SimDeviceType.iPhone-5s)
iPhone 6 Plus (com.apple.CoreSimulator.SimDeviceType.iPhone
iPhone 6 (com.apple.CoreSimulator.SimDeviceType.iPhone-6)
iPhone 6s (com.apple.CoreSimulator.SimDeviceType.iPhone-6s)
iPhone 6s Plus (com.apple.CoreSimulator.SimDeviceType.iPhor
iPhone SE (com.apple.CoreSimulator.SimDeviceType.iPhone-SE)
iPhone 7 (com.apple.CoreSimulator.SimDeviceType.iPhone-7)
iPhone 7 Plus (com.apple.CoreSimulator.SimDeviceType.iPhone
iPhone 8 (com.apple.CoreSimulator.SimDeviceType.iPhone-8)
iPhone 8 Plus (com.apple.CoreSimulator.SimDeviceType.iPhone
iPhone X (com.apple.CoreSimulator.SimDeviceType.iPhone-X)
iPhone Xs (com.apple.CoreSimulator.SimDeviceType.iPhone-XS)
iPhone Xs Max (com.apple.CoreSimulator.SimDeviceType.iPhone
iPhone Xʀ (com.apple.CoreSimulator.SimDeviceType.iPhone-XR)
iPhone 11 (com.apple.CoreSimulator.SimDeviceType.iPhone-11)
iPhone 11 Pro (com.apple.CoreSimulator.SimDeviceType.iPhone
iPhone 11 Pro Max (com.apple.CoreSimulator.SimDeviceType.iP
iPad 2 (com.apple.CoreSimulator.SimDeviceType.iPad-2)
iPad Retina (com.apple.CoreSimulator.SimDeviceType.iPad-Ret
iPad Air (com.apple.CoreSimulator.SimDeviceType.iPad-Air)
iPad mini 2 (com.apple.CoreSimulator.SimDeviceType.iPad-mir
iPad mini 3 (com.apple.CoreSimulator.SimDeviceType.iPad-mir
iPad mini 4 (com.apple.CoreSimulator.SimDeviceType.iPad-mir
iPad Air 2 (com.apple.CoreSimulator.SimDeviceType.iPad-Air-
iPad Pro (9.7-inch) (com.apple.CoreSimulator.SimDeviceType.
iPad Pro (12.9-inch) (com.apple.CoreSimulator.SimDeviceType
iPad (5th generation) (com.apple.CoreSimulator.SimDeviceTyp
iPad Pro (12.9-inch) (2nd generation) (com.apple.CoreSimula
iPad Pro (10.5-inch) (com.apple.CoreSimulator.SimDeviceType
iPad (6th generation) (com.apple.CoreSimulator.SimDeviceTyp
iPad (7th generation) (com.apple.CoreSimulator.SimDeviceTyp
iPad Pro (11-inch) (com.apple.CoreSimulator.SimDeviceType.
iPad Pro (12.9-inch) (3rd generation) (com.apple.CoreSimula
iPad mini (5th generation) (com.apple.CoreSimulator.SimDevi
iPad Air (3rd generation) (com.apple.CoreSimulator.SimDevic
Apple TV (com.apple.CoreSimulator.SimDeviceType.Apple-TV-10
Apple TV 4K (com.apple.CoreSimulator.SimDeviceType.Apple-TV
Apple TV 4K (at 1080p) (com.apple.CoreSimulator.SimDeviceTy
Apple Watch - 38mm (com.apple.CoreSimulator.SimDeviceType.A
Apple Watch - 42mm (com.apple.CoreSimulator.SimDeviceType.A
Apple Watch Series 2 - 38mm (com.apple.CoreSimulator.SimDev
Apple Watch Series 2 - 42mm (com.apple.CoreSimulator.SimDev
Apple Watch Series 3 - 38mm (com.apple.CoreSimulator.SimDev
Apple Watch Series 3 - 42mm (com.apple.CoreSimulator.SimDev
Apple Watch Series 4 - 40mm (com.apple.CoreSimulator.SimDev
Apple Watch Series 4 - 44mm (com.apple.CoreSimulator.SimDev
```

```
Apple Watch Series 5 - 40mm (com.apple.CoreSimulator.SimDev
Apple Watch Series 5 - 44mm (com.apple.CoreSimulator.SimDev
== Runtimes ==
iOS 13.3 (13.3 - 17C45) - com.apple.CoreSimulator.SimRuntir
tvOS 13.3 (13.3 - 17K446) - com.apple.CoreSimulator.SimRunt
watchOS 6.1 (6.1.1 - 17S445) - com.apple.CoreSimulator.SimF
== Devices ==
-- iOS 13.3 --
    iPhone 8 (54589698-0C9F-407D-B21A-83432CABB681) (Shutdo
    iPhone 8 Plus (509B7103-97DB-4AB9-B829-001190ED4B7E) (S
    iPhone 11 (509BC7C7-9C0E-42FA-8AB2-F5220EBAA13B) (Shutd
    iPhone 11 Pro (3E8E7E92-66F2-4AF3-A405-23B5FB231DE7) (S
    iPhone 11 Pro Max (50C15135-1532-44C5-B82C-B327F88F2712
    iPad Pro (9.7-inch) (B11D5D40-FEA2-4114-B053-E4CFD29D12
    iPad (7th generation) (7F8EDE89-74E0-4BAB-B3CA-09E2DAE1
    iPad Pro (11-inch) (04DD3B8A-5B78-48E8-8B22-56796A9CFB7
    iPad Pro (12.9-inch) (3rd generation) (D811684E-2F3E-4E
    iPad Air (3rd generation) (BBC48526-3922-4C97-BA14-B188
-- tvOS 13.3 --
    Apple TV (6680F059-4DE1-430C-B696-228AC27CAA88) (Shutdo
    Apple TV 4K (048E58E8-6A27-4D81-BDEB-8812C610B756) (Shu
    Apple TV 4K (at 1080p) (384D5E60-B6B1-481E-BDC3-B7FF8F7
-- watchOS 6.1 --
    Apple Watch Series 4 - 40mm (1B98415B-3FDE-401B-A80C-A3
    Apple Watch Series 4 - 44mm (661838E9-B0BE-42B4-B55E-9A
    Apple Watch Series 5 - 40mm (F76D77EF-0932-4164-94BB-9E
    Apple Watch Series 5 - 44mm (D86F0BD5-4D38-4537-9C8C-2E
== Device Pairs ==
56795D8F-84E0-4F5A-BA60-517EF25593FF (active, disconnected)
    Watch: Apple Watch Series 5 - 40mm (F76D77EF-0932-4164-
    Phone: iPhone 11 Pro (3E8E7E92-66F2-4AF3-A405-23B5FB231
4DDF7790-928A-4D86-B2BC-213F785F5188 (active, disconnected)
    Watch: Apple Watch Series 5 - 44mm (D86F0BD5-4D38-4537-
    Phone: iPhone 11 Pro Max (50C15135-1532-44C5-B82C-B327F
```

ideviceinstaller

在Mac中，想要查看（已通过USB连接上的）iOS设备中已安装的应用信息：

- app名称
- app包名=`bundle id`
- app版本
- 等

可以用：

- ideviceinstaller
  - 作用：列出已安装的app信息

安装ideviceinstaller

```
brew install --HEAD ideviceinstaller
```

安装后就有了：

- `ideviceinstaller`
  - 内部会自动安装额外的依赖
    - `libusb`
    - `libusbmuxd`
    - `libimobiledevice`
      - 其包含多个工具：
        - `idevice_id`
        - 等
    - `libplist`
    - `libtasn1`
    - `libzip`

使用

语法：

```
ideviceinstaller -l
```

举例：

```
□ ideviceinstaller -l
Total: 37 apps
com.suiyi.foodshop1 - 食行生鲜 4911
com.cisco.anyconnect - AnyConnect 4.6.03052
com.smartisan.reader - 锤子阅读 1311
com.baidu.BaiduMobile - 百度 10.5.5.10
com.ishuyin.iShuYin - 爱书音 1.22
com.evernote.iPhone.Evernote - 印象笔记 358974
com.alipay.iphoneclient - 支付宝 10.1.2.091512
com.autonavi.amap - 高德地图 8.3.0.2104
ctrip.com - 携程旅行 8.3.0
com.Qting.QTTour - 蜻蜓FM 8.0.1.4
com.iflytek.iflyinput - 讯飞输入法 7.0.1815.9602
com.360buy.jdmobile - 京东 7.3.6
com.taobao.tmall - 手机天猫 10948419
com.crifan.voicerecorddemo - 飞语录音Demo 1
org.reactjs.native.example.AwesomeProject - AwesomeProject
com.yingwen.xqlv - 中国象棋 1.01.1
com.crifan.WebDriverAgentRunner.xctrunner - WebDriverAgentR
com.tencent.xin - 微信 6.7.4.44
com.cnvcs.xiangqi - 中国象棋 1.5.0
com.netease.cloudmusic - 网易云音乐 876
com.tencent.mqq - QQ 7.2.9.404
。。。
```

端口转发

用 `iproxy` 或 `mobiledevice`

- 如果想要用 `localhost` (或 `127.0.0.1`)去访问（已连接到Mac上的iOS设备）
  - 需要做端口转发
    - `iproxy`
      - 安装：`brew install --HEAD libimobiledevice`
      - 语法：`iproxy <local port> <remote port> [udid]`
      - 用法举例：
        - `iproxy 8100 8100`
          - 当前只连接一个iOS设备时，可以不指定，忽略 `UDID`
        - `iproxy 8100 8100 ed94089f3e34d5538065a695bfdf03dfbb3c5579`
          - 指定对应设备的UDID
            - `ed94089f3e34d5538065a695bfdf03dfbb3c5579` 是此处的iPhone的UDID
          - 可以通过 `idevice_id` 得到
            - `CUR_UDID=$(idevice_id -l | head -n1)`
    - `mobiledevice`
      - 安装：`brew install mobiledevice`
      - 用法：
        - `mobiledevice tunnel 8100 8100`
        - `mobiledevice tunnel -u ed94089f3e34d5538065a695bfdf03dfbb3c5579 8100 8100`
          - 同上，可通过 `-u ios_device_udid` ，指定对应iOS设备

iproxy

安装：

```
brew install usbmuxd
```

语法

```
~ □ iproxy --help
usage: iproxy LOCAL_TCP_PORT DEVICE_TCP_PORT [UDID]
```

mobiledevice

安装：

```
brew install mobiledevice
```

语法：

```
~ □ mobiledevice help
mobiledevice help
  Display this help screen


mobiledevice version [options]
  Display program version.
  Options:
    -r: Include revision identifier


mobiledevice list_devices [options]
  Display UDID of each connected devices.
  Options:
    -t <timeout>: Timeout (in ms) to wait for devices (defa
    -n <count> : Limit the number of devices to be printed


mobiledevice list_device_props [options]
  List all property names of device.
  Options:
    -u <udid> : Filter by device UDID (default: first detec
    -t <timeout>: Timeout (in ms) to wait for devices (defa


mobiledevice get_device_prop [options] <prop_name>
  Display value of device property with given name.
  Options:
    -u <udid> : Filter by device UDID (default: first detec
    -t <timeout>: Timeout (in ms) to wait for devices (defa


mobiledevice list_apps [options]
  Lists all apps installed on device
  Options:
    -u <udid> : Filter by device UDID (default: first detec
    -t <timeout>: Timeout (in ms) to wait for devices (defa


mobiledevice list_app_props [options] <bundle_id>
  List all property names of app with given bundle id.
  Options:
    -u <udid> : Filter by device UDID (default: first detec
    -t <timeout>: Timeout (in ms) to wait for devices (defa


mobiledevice get_app_prop [options] <bundle_id> <prop_name>
  Display value of app property with given name.
  Options:
    -u <udid> : Filter by device UDID (default: first detec
```

```
    -t <timeout>: Timeout (in ms) to wait for devices (defa


mobiledevice install_app [options] <path_to_app>
  Install app (.app folder) to device
  Options:
    -u <udid> : Filter by device UDID (default: first detec
    -t <timeout>: Timeout (in ms) to wait for devices (defa


mobiledevice uninstall_app [options] <bundle_id>
  Uninstall app with given bundle id from device
  Options:
    -u <udid> : Filter by device UDID (default: first detec
    -t <timeout>: Timeout (in ms) to wait for devices (defa


mobiledevice tunnel [options] <from_port> <to_port>
  Forward TCP connections to connected device
  Options:
    -u <udid> : Filter by device UDID (default: first detec
    -t <timeout>: Timeout (in ms) to wait for devices (defa


mobiledevice get_bundle_id <path_to_app>
  Display bundle identifier of app (.app folder)
```

idevice_id

可以用 `idevice_id` 列出当前（Mac中已）连接的（iOS）的 `设备ID = UDID`

安装

```
brew install libimobiledevice
```

安装 `libimobiledevice` 后，根据GitHub官网介绍，其会包含很多工具：

Utility	Description
idevice_id	List attached devices or print device name of given device
idevicebackup	Create or restore backup for devices (legacy)
idevicebackup2	Create or restore backups for devices running iOS 4 or later
idevicecrashreport	Retrieve crash reports from a device
idevicedate	Display the current date or set it on a device
idevicedebug	Interact with the debugserver service of a device
idevicedebugserverproxy	Proxy a debugserver connection from a device for remote debugging
idevicediagnostics	Interact with the diagnostics interface of a device
ideviceenterrecovery	Make a device enter recovery mode
ideviceimagemounter	Mount disk images on the device
ideviceinfo	Show information about a connected device
idevicename	Display or set the device name
idevicenotificationproxy	Post or observe notifications on a device
idevicepair	Manage host pairings with devices and usbmuxd
ideviceprovision	Manage provisioning profiles on a device
idevicescreenshot	Gets a screenshot from the connected device
idevicesetlocation	Simulate location on device
idevicesyslog	Relay syslog of a connected device

使用

举例：

```
> idevice_id -l
ed94089f3e34d5538065a695bfdf03dfbb3c5579
```

如果有多个设备，想要获取第一个，则可以借助 `head` ：

```
> idevice_id -l | head -n1
ed94089f3e34d5538065a695bfdf03dfbb3c5579
```

帮助和语法

```
~ □ idevice_id --help
Usage: idevice_id [OPTIONS] [UDID]
Prints device name or a list of attached devices.

  If UDID is given, the name of the connected device with t

  -l, --list      list UDIDs of all devices attached via US
  -n, --network   list UDIDs of all devices available via n
  -d, --debug     enable communication debugging
  -h, --help      prints usage information

Homepage: <http://libimobiledevice.org>
```

system_profiler

system_profiler：获取系统信息

举例：

从输出中解析出：

真机设备ID

```
system_profiler SPUSBDataType
```

注：

此处输出的是很多非常多的全部的信息：

```
~ □ system_profiler SPUSBDataType
2020-04-29 14:50:16.086 system_profiler[46290:995081] SPUSB
2020-04-29 14:50:16.086 system_profiler[46290:995081] SPUSB
2020-04-29 14:50:16.087 system_profiler[46290:995081] SPUSB
2020-04-29 14:50:16.087 system_profiler[46290:995081] SPUSB
2020-04-29 14:50:16.088 system_profiler[46290:995081] SPUSB
2020-04-29 14:50:16.089 system_profiler[46290:995081] SPUSB
USB:

    USB 3.1 Bus:

      Host Controller Driver: AppleIntelCNLUSBXHCI
      PCI Device ID: 0x9ded
      PCI Revision ID: 0x0030
      PCI Vendor ID: 0x8086

        USB2.1 Hub:

          Product ID: 0x0610
          Vendor ID: 0x05e3  (Genesys Logic, Inc.)
          Version: 6.53
          Speed: Up to 480 Mb/sec
          Manufacturer: GenesysLogic
          Location ID: 0x14200000 / 1
          Current Available (mA): 500
          Current Required (mA): 100
          Extra Operating Current (mA): 0

            iPhone:

              Product ID: 0x12a8
              Vendor ID: 0x05ac (Apple Inc.)
              Version: 7.02
              Serial Number: ed94089f3e34d5538065a695bfdf03
              Speed: Up to 480 Mb/sec
              Manufacturer: Apple Inc.
              Location ID: 0x14230000 / 16
              Current Available (mA): 500
              Current Required (mA): 500
              Extra Operating Current (mA): 0
              Sleep current (mA): 500

            USB Composite Device:

              Product ID: 0x0002
              Vendor ID: 0x0603  (Novatek Microelectronics
              Version: 16.12
              Speed: Up to 1.5 Mb/sec
              Manufacturer: SINO WEALTH
              Location ID: 0x14220000 / 8
```

```
            Current Available (mA): 500
            Current Required (mA): 100
            Extra Operating Current (mA): 0

    USB 3.1 Bus:

      Host Controller Driver: AppleUSBXHCITR
      PCI Device ID: 0x15ec
      PCI Revision ID: 0x0006
      PCI Vendor ID: 0x8086
      Bus Number: 0x00

    USB 3.1 Bus:

      Host Controller Driver: AppleUSBXHCITR
      PCI Device ID: 0x15ec
      PCI Revision ID: 0x0006
      PCI Vendor ID: 0x8086
      Bus Number: 0x01

        USB3.1 Hub:

          Product ID: 0x0626
          Vendor ID: 0x05e3  (Genesys Logic, Inc.)
          Version: 6.53
          Speed: Up to 5 Gb/sec
          Manufacturer: GenesysLogic
          Location ID: 0x01100000 / 1
          Current Available (mA): 900
          Current Required (mA): 0
          Extra Operating Current (mA): 0

    iBridge Bus:

      Host Controller Driver: AppleUSBVHCIBCE

        Touch Bar Backlight:

          Product ID: 0x8102
          Vendor ID: 0x05ac (Apple Inc.)
          Version: 2.01
          Serial Number: 0000000000000000
          Manufacturer: Apple Inc.
          Location ID: 0x80700000

        Touch Bar Display:

          Product ID: 0x8302
          Vendor ID: 0x05ac (Apple Inc.)
          Version: 2.01
          Serial Number: 0000000000000000
```

```
          Manufacturer: Apple Inc.
          Location ID: 0x80600000

        Apple Internal Keyboard / Trackpad:

          Product ID: 0x027b
          Vendor ID: 0x05ac (Apple Inc.)
          Version: 9.27
          Serial Number: FM7845603R8J3VXAH+TVZ
          Speed: Up to 480 Mb/sec
          Manufacturer: Apple Inc.
          Location ID: 0x80500000 / 8
          Current Available (mA): 500
          Current Required (mA): 500
          Extra Operating Current (mA): 0
          Built-In: Yes


        Headset:


          Product ID: 0x8103
          Vendor ID: 0x05ac (Apple Inc.)
          Version: 2.04
          Serial Number: 000000000000
          Manufacturer: Apple
          Location ID: 0x80400000


        Ambient Light Sensor:


          Product ID: 0x8262
          Vendor ID: 0x05ac (Apple Inc.)
          Version: 2.01
          Serial Number: 000000000000
          Manufacturer: Apple Inc.
          Location ID: 0x80300000


        FaceTime HD Camera (Built-in):


          Product ID: 0x8514
          Vendor ID: 0x05ac (Apple Inc.)
          Version: 2.01
          Serial Number: CC28493XQ52J3Y324
          Manufacturer: Apple Inc.
          Location ID: 0x80200000
```

```
        Apple T2 Controller:


          Product ID: 0x8233
          Vendor ID: 0x05ac (Apple Inc.)
          Version: 2.01
          Serial Number: 0000000000000000
          Manufacturer: Apple Inc.
          Location ID: 0x80100000
```

屏幕（宽度和高度等）信息

```
□ system_profiler SPDisplaysDataType
Graphics/Displays:

    Intel Iris Plus Graphics 655:

      Chipset Model: Intel Iris Plus Graphics 655
      Type: GPU
      Bus: Built-In
      VRAM (Dynamic, Max): 1536 MB
      Vendor: Intel
      Device ID: 0x3ea5
      Revision ID: 0x0001
      Metal: Supported, feature set macOS GPUFamily2 v1
      Displays:
        Color LCD:
          Display Type: Built-In Retina LCD
          Resolution: 2560 x 1600 Retina
          Framebuffer Depth: 24-Bit Color (ARGB8888)
          Main Display: Yes
          Mirror: Off
          Online: Yes
          Rotation: Supported
          Automatically Adjust Brightness: No
```

详见：

【已解决】Mac中获取iPhone的分辨率宽高等屏幕信息

获取Mac的序列号

```
□ system_profiler SPHardwareDataType | grep Serial
      Serial Number (system): C02Y3N10JHC8
```

详见：

【已解决】Mac中如何获取笔记本的序列号

instruments

可以用 `instruments` 列出当前所有苹果的设备

举例：

```
~ □ instruments -s
CoreData: annotation:  Failed to load optimized model at pa
Known Devices:
limao的MacBook Pro [F9089371-1060-5CE3-99BB-81741693BE80]
Crifan iPhone6 (12.4.5) [ed94089f3e34d5538065a695bfdf03dfbb
Apple TV (13.3) [6680F059-4DE1-430C-B696-228AC27CAA88] (Sir
Apple TV 4K (13.3) [048E58E8-6A27-4D81-BDEB-8812C610B756] (
Apple TV 4K (at 1080p) (13.3) [384D5E60-B6B1-481E-BDC3-B7FF
Apple Watch Series 4 - 40mm (6.1.1) [1B98415B-3FDE-401B-A80
Apple Watch Series 4 - 44mm (6.1.1) [661838E9-B0BE-42B4-B55
iPad (7th generation) (13.3) [7F8EDE89-74E0-4BAB-B3CA-09E2D
iPad Air (3rd generation) (13.3) [BBC48526-3922-4C97-BA14-B
iPad Pro (11-inch) (13.3) [04DD3B8A-5B78-48E8-8B22-56796A90
iPad Pro (12.9-inch) (3rd generation) (13.3) [D811684E-2F3B
iPad Pro (9.7-inch) (13.3) [B11D5D40-FEA2-4114-B053-E4CFD29
iPhone 11 (13.3) [509BC7C7-9C0E-42FA-8AB2-F5220EBAA13B] (Si
iPhone 11 Pro (13.3) [3E8E7E92-66F2-4AF3-A405-23B5FB231DE7]
iPhone 11 Pro (13.3) + Apple Watch Series 5 - 40mm (6.1.1)
iPhone 11 Pro Max (13.3) [50C15135-1532-44C5-B82C-B327F88F2
iPhone 11 Pro Max (13.3) + Apple Watch Series 5 - 44mm (6.1
iPhone 8 (13.3) [54589698-0C9F-407D-B21A-83432CABB681] (Sir
iPhone 8 Plus (13.3) [509B7103-97DB-4AB9-B829-001190ED4B7E]
Known Templates:
"Activity Monitor"
"Allocations"
"App Launch"
"Blank"
"Core Animation"
"Core Data"
"Counters"
"Energy Log"
"File Activity"
"Game Performance"
"Leaks"
"Metal System Trace"
"Network"
"SceneKit"
"SwiftUI"
"System Trace"
"Time Profiler"
"Zombies"
```

security

举例：

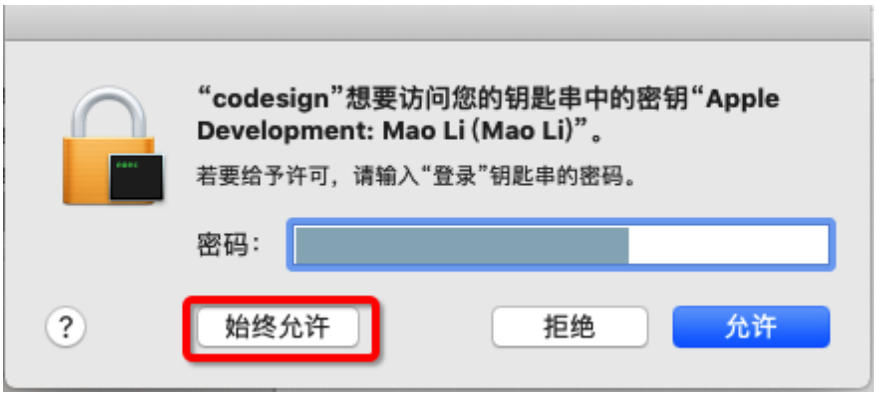
```
security unlock-keychain -p xxx ~/Library/Keychains/login.k
```

暂时无效，有待后续深入研究

之前用：

```
# 解锁keychain，以便可以正常的签名应用，
PASSWORD="replace-with-your-password"
security unlock-keychain -p $PASSWORD ~/Library/Keychains/
# 获取设备的UDID
CUR_UDID=$(idevice_id -l | head -n1)
# 运行测试
xcodebuild -project WebDriverAgent.xcodeproj -scheme WebDr
```

实现自动化测试，结果却还会弹框让输入密码：



-》说明之前的：`security unlock-keychain` 并没有起效果

-》具体原因，有待深究。

移动端

iOS

iOS自动化

详见完整教程：

移动端自动化测试概览

中的

iOS自动化测试利器：facebook-wda

XCTest

- iOS最新测试框架是：`XCTest`
  - 别称：`XCUITest`

下面列出一些常用的部分：

- 用户界面
  - User Interface Tests | Apple Developer Documentation
    - 其中常用的部分是：
      - `XCUIScreen`
        - A physical screen attached to a device
      - `XCUIScreenshot`
        - A captured image of a screen, app, or UI element state.
      - `XCUIDevice`
        - Simulates physical buttons, device orientation, and Siri interaction for an iOS device.
      - `XCUISiriService`
        - Simulates a device’s Siri interface.
      - `XCUIRemote`
        - Simulates interaction with a physical remote control.

关于具体细节如下：

- 设备
  - XCUIDevice - XCTest | Apple Developer Documentation
    - sharedDevice
      - The current device.
- 远程
  - XCUIRemote - XCTest | Apple Developer Documentation
    - `pressButton`：

    - Sends a momentary press of a button on a physical remote control.

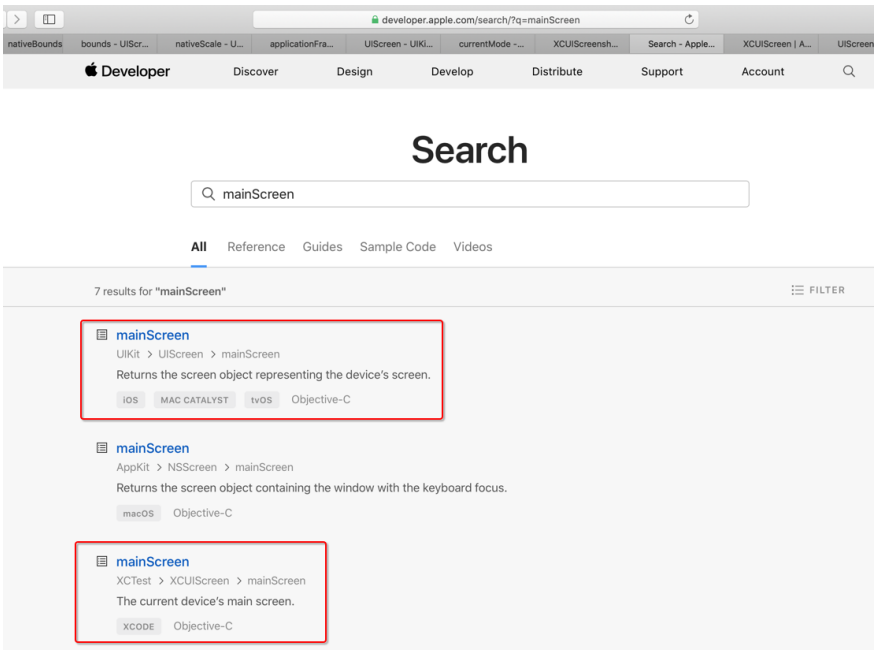
一些心得

找接口和函数时，可以充分利用官网自带的搜索

比如想要找哪些类中有mainScreen，可以搜：

mainScreen

https://developer.apple.com/search/?q=mainScreen



可以看到我们希望找的有2处：

- `mainScreen`
    - `UIKit` -> `UIScreen` -> `mainScreen`
        - Returns the screen object representing the device's screen.
- `mainScreen`
    - `XCTest` -> `XCUIScreen` -> `mainScreen`
        - The current device's main screen.

官网文档分语言的 -》 Swift和Objective-C 接口略有不同的

- XCUIScreen
    - Swift
        - XCUIScreen - XCTest | Apple Developer Documentation

        - https://developer.apple.com/documentation/xctest/xcuiscreen
    - Objective-C
        - XCUIScreen - XCTest | Apple Developer Documentation
            - https://developer.apple.com/documentation/xctest/xcuiscreen?language=objc

不过，总体上内容是一致的：

- mainScreen
    - The current device's main screen.
- screens
    - The current device's active screens.

只不过Swift和OC的写法不太一样而已。

注：之前见过个别函数和接口好像功能上略有不同。

目前没找到。等找到了。再补充。

总之：注意看文档时所选择的语言，是Swift还是ObjC，不要搞错就好。

测试Screen相关内容：XCUIScreen和UIScreen

- XCUIScreen
    - 文档
        - XCUIScreen - XCTest | Apple Developer Documentation
            - https://developer.apple.com/documentation/xctest/xcuiscreen?language=objc
- UIScreen
    - 文档
        - UIScreen - UIKit | Apple Developer Documentation
            - https://developer.apple.com/documentation/uikit/uiscreen?language=objc

之所以要注意此处有2个Screen的原因是：

之前想要找，除了scale之外的bounds属性，最后发现：XCUIScreen是没有的

所以代码：

```
return [XCUIScreen.mainScreen nativeScale];
return [XCUIScreen.mainScreen bounds];
return [XCUIScreen.mainScreen nativeBounds];
```

会报错。要改为：

```
return [UIScreen.mainScreen nativeScale];
return [UIScreen.mainScreen bounds];
return [UIScreen.mainScreen nativeBounds];
```

才可以。

微信

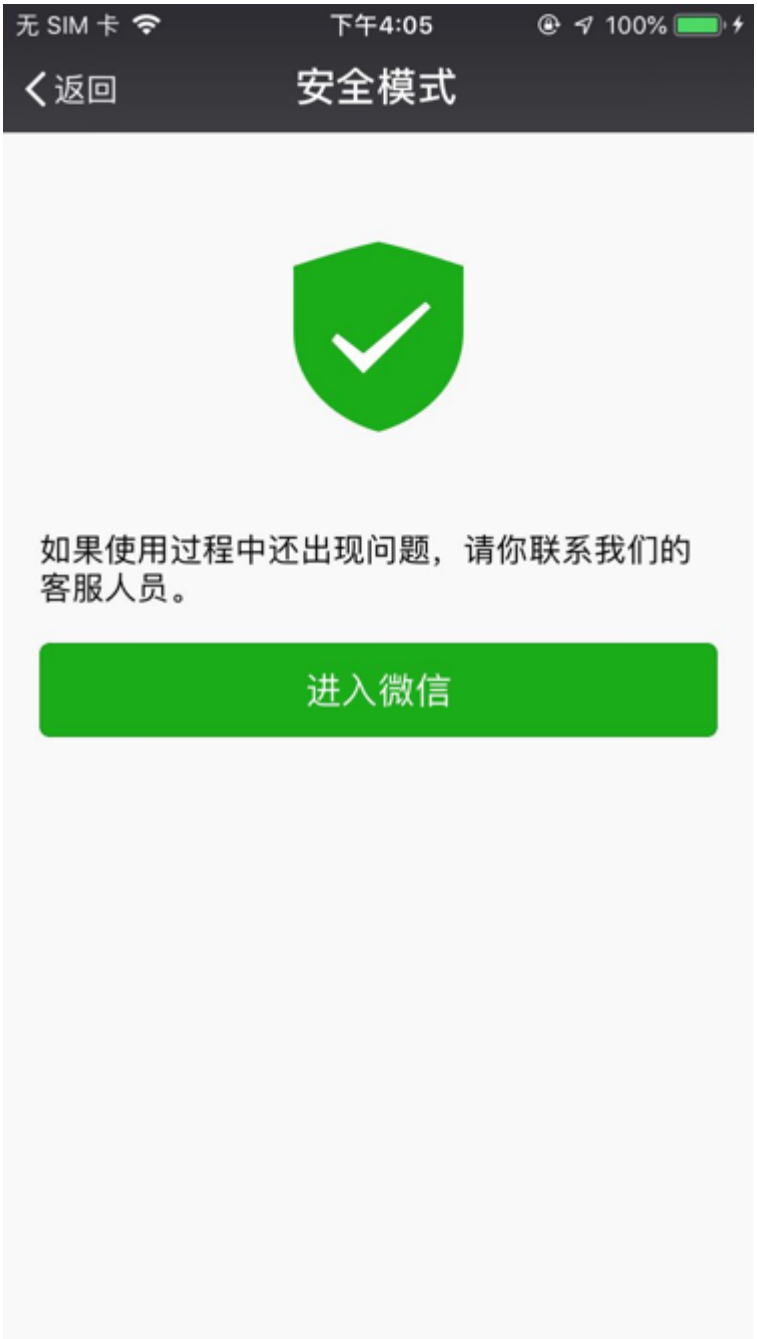
连续多次崩溃会进入安全模式

iOS中微信如果检测到连续崩溃了多次后，会进入**安全模式**：


无 SIM 卡
下午4:04
100%
安全模式
当前检测出微信连续异常，你可以尝试以下方法修复：
下一步

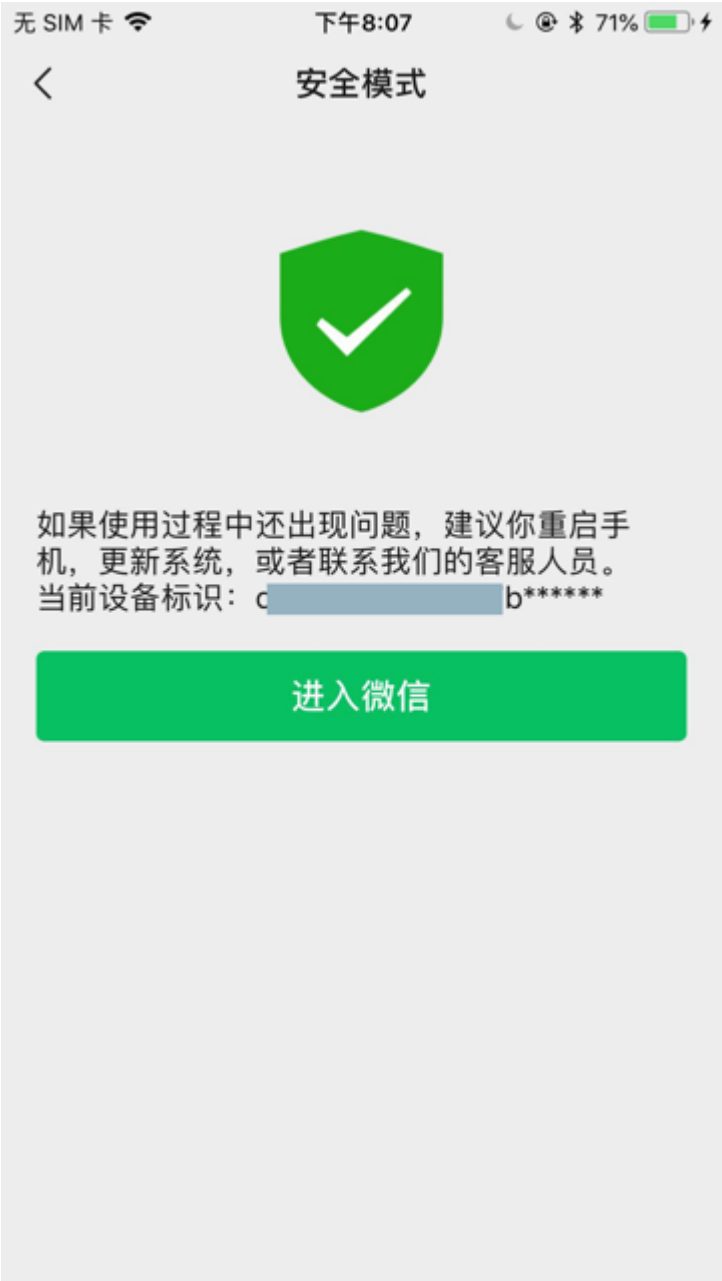

无 SIM 卡
下午4:04
100%
返回
安全模式
清理缓存会清理你的手机本地缓存文件，但不会清理你的消息数据，使用后需要重新登录微信
清理缓存
不清理缓存，进入下一步
下一步


无 SIM 卡
下午4:05
100%
返回
安全模式
如果问题还没解决，你可以上传手机日志文件，协助技术人员解决问题。所上传的文件不会包含聊天记录等私人内容，且不会被对外传播
上传文件
显示上传文件列表
不上传文件，进入下一步
下一步



然后才会恢复正常微信界面。

后来，换了iPhone 6P，多次调试期间，虽然微信没怎么崩溃，但是也遇到类似的问题：



如果要用代码自动化操作实现上述步骤，则可以参考：

安全模式 · iOS自动化测试利器：facebook-wda

iPhone

`iOS` 设备中普通用户接触最多的就是 `iPhone` 了。

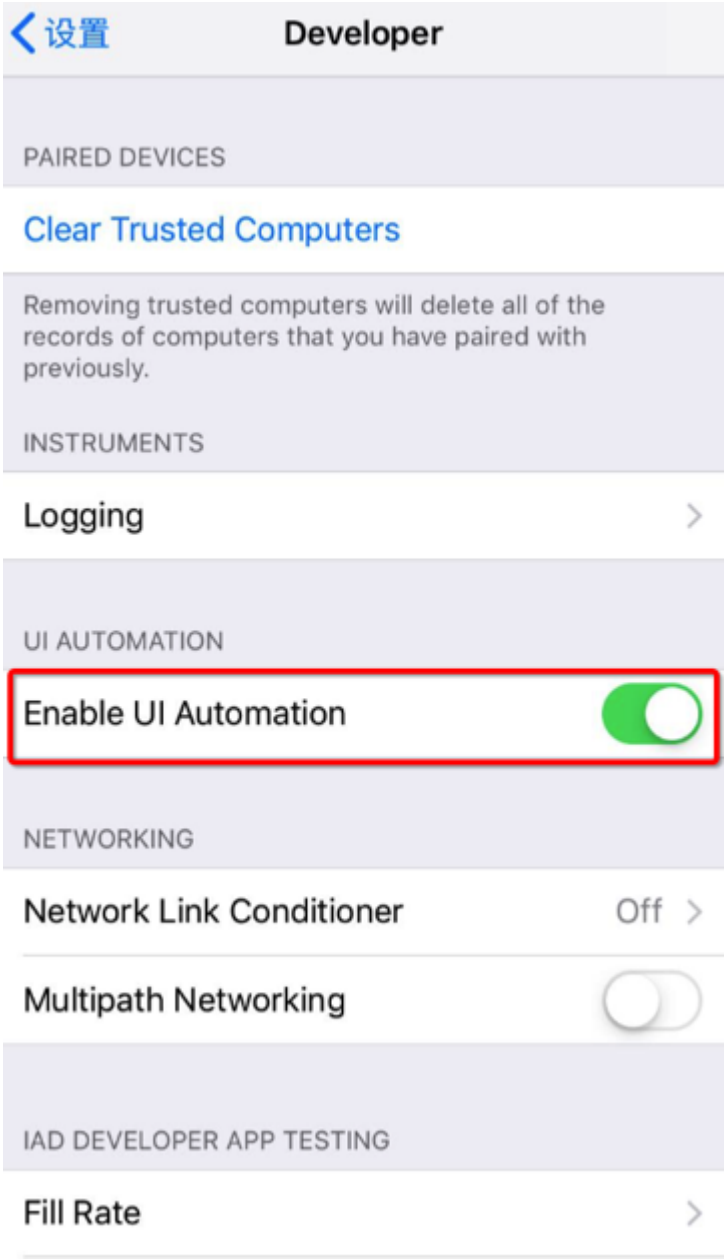
此处整理相关开发心得。

开发相关设置

新版iPhone中的设置中有个 `开发者` ，有很多开发相关的设置。

其中和自动化测试有关的是：

`设置` -> `开发者` -> `Enable UI Automation`



对于后续自动化测试，或许有用。

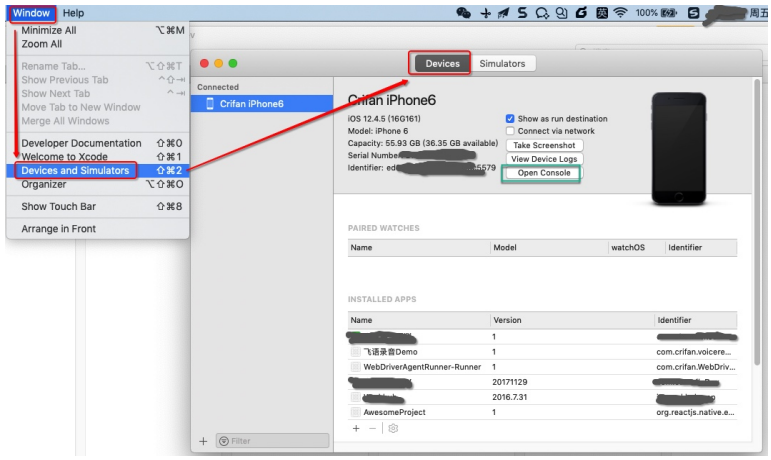
iPhone真机的log日志查看

可以通过 控制台 查看iPhone真机的Log日志

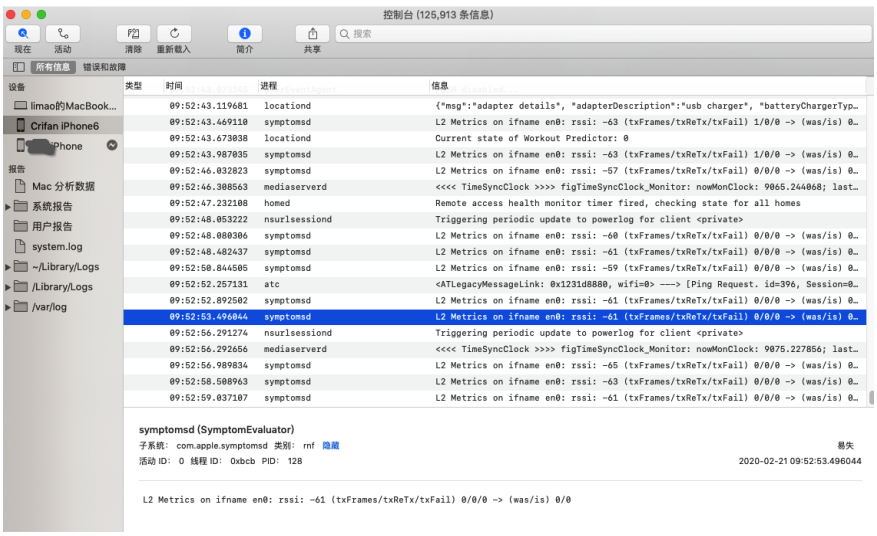
如何打开控制台：

- 启动台Launch Pad -> 其他 -> 控制台

- XCode->Window->Devices and Simulators->Devices

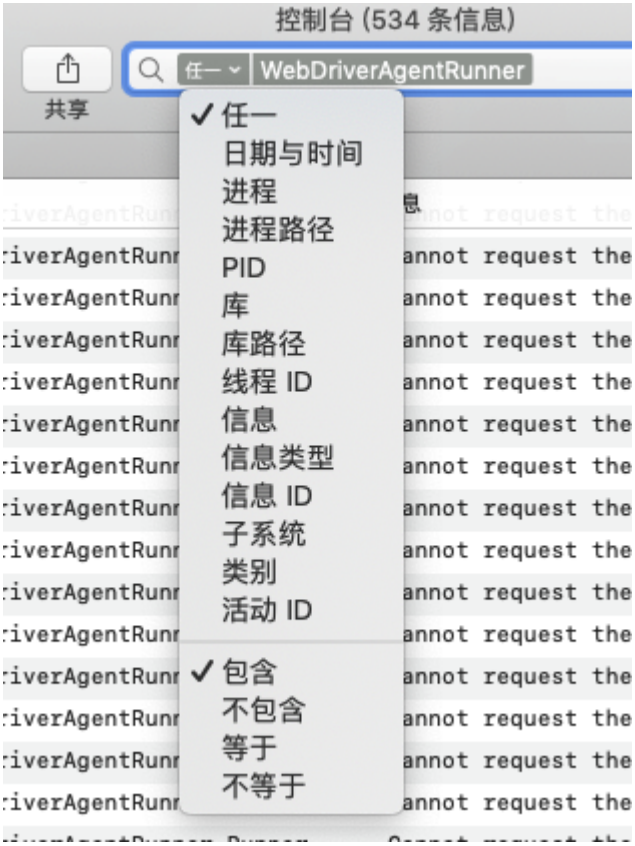


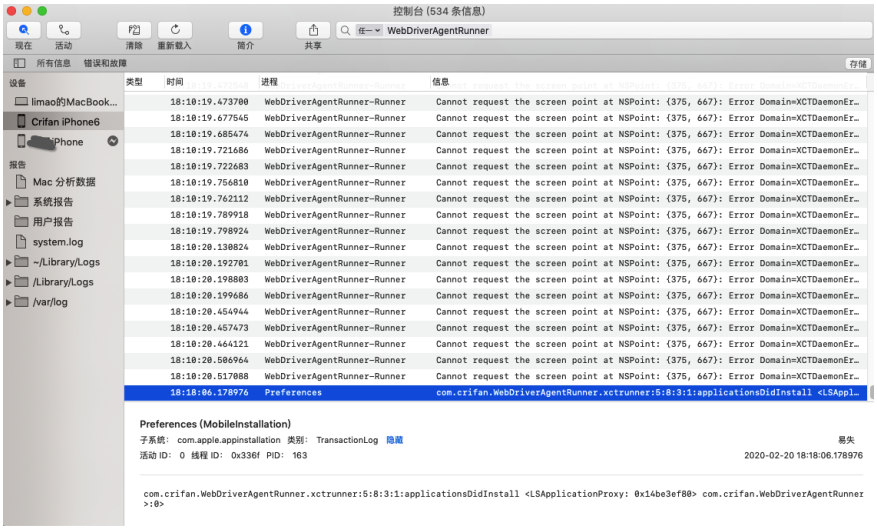
启动后，即可看到iPhone真机的log日志了：



也支持条件过滤，比如：

任一 包含： `WebDriverAgentRunner`





关闭悬浮球

iOS自动化测试期间，记得要关闭：悬浮球

【已解决】iPhone中关闭全屏显示的悬浮球

否则有时候会误触发，影响自动化测试

附录

下面列出相关参考资料。

文档

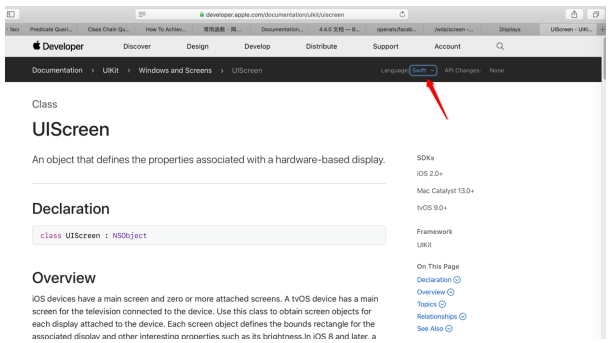
此处整理出有用的苹果相关开发文档，供需要时查阅。

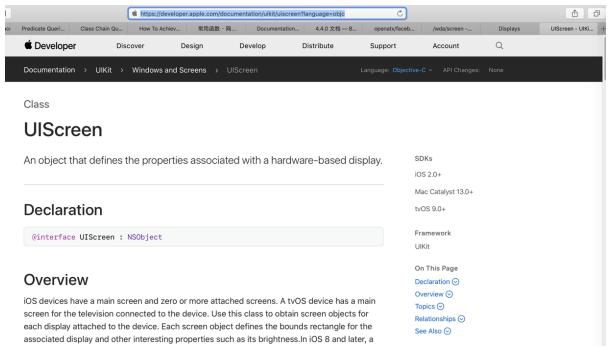
iOS 旧文档

- 举例
  - Displays - iOS Device Compatibility Reference

iOS 新文档

统一后的 = 新的

- 举例
  - UIScreen - UIKit | Apple Developer Documentation
- 且还分2种语言
  - `Swift`
    - https://developer.apple.com/documentation/uikit/uiscreen
      - 截图
        

  - `Objective-C`
    - https://developer.apple.com/documentation/uikit/uiscreen?language=objc
      - 截图
        

- 说明
  - 其中内容大体类似，主要是语法不同

        - 不过有时候细节也不太一样
- 举例
    - `Objective-C` 中 `UIDeviceBatteryState` 中，找不到枚举值的常量值定义

UIDeviceBatteryState - UIKit | Apple Developer Documentation

```
typedef enum UIDeviceBatteryState : NSInteger {
    ...
} UIDeviceBatteryState;
```

- Constants
    - UIDeviceBatteryStateUnknown
        - The battery state for the device cannot be determined.
    - UIDeviceBatteryStateUnplugged
        - The device is not plugged into power; the battery is discharging.
    - UIDeviceBatteryStateCharging
        - The device is plugged into power and the battery is less than 100% charged.
    - UIDeviceBatteryStateFull
        - The device is plugged into power and the battery is 100% charged.

-》想要知道对应的枚举值定义的int值

-》

UIDeviceBatteryStateUnknown - UIDeviceBatteryState | Apple Developer Documentation

> The battery state for the device cannot be determined.
>
> UIDeviceBatteryStateUnknown

-》没看到定义的值

-》无意间发现，换Swift语言后：

UIDevice.BatteryState - UIDevice | Apple Developer Documentation

-》点击具体的某个定义，都可以看到具体常量枚举值定义：

- case unknown
    - The battery state for the device cannot be determined.
        - UIDevice.BatteryState.unknown - UIDevice.BatteryState | Apple Developer Documentation
        - https://developer.apple.com/documentation/uikit/uidevice/batterystate/unknown

        - case unknown = 0
- case unplugged
    - The device is not plugged into power; the battery is discharging.
        - UIDevice.BatteryState.unplugged - UIDevice.BatteryState | Apple Developer Documentation
        - https://developer.apple.com/documentation/uikit/uidevice/batterystate/unplugged
        - case unplugged = 1
- case charging
    - The device is plugged into power and the battery is less than 100% charged.
        - UIDevice.BatteryState.charging - UIDevice.BatteryState | Apple Developer Documentation
        - https://developer.apple.com/documentation/uikit/uidevice/batterystate/charging
        - case charging = 2
- case full
    - The device is plugged into power and the battery is 100% charged.
        - UIDevice.BatteryState.full - UIDevice.BatteryState | Apple Developer Documentation
        - https://developer.apple.com/documentation/uikit/uidevice/batterystate/full
        - case full = 3

-》总结来说：

此处是 `ObjC` 中看不到 `UIDeviceBatteryState` 的细节的枚举值的定义

而换成 `Swift` 的 `UIDevice.BatteryState`，就可以看到具体的枚举的定义的常量的值了

参考资料

- 【已解决】Mac中获取iPhone的分辨率宽高等屏幕信息
- 【已解决】Mac中如何获取笔记本的序列号
- 【已解决】扩展Python的facebook-wda源码以返回更新屏幕相关信息
- 【已解决】Python中wda代码报错：Invalid type in JSON write NSConcreteValue
- 【已解决】iOS中ObjC中如何使用CGRect类型的变量
- 【已解决】XCode中wda代码报错：No visible interface for XCUIScreen declares the selector bounds
- 【已解决】Mac中用brew安装最新的libimobiledevice
- 【已解决】Mac中brew install usbmuxd期间./autogen.sh出错：./configure syntax error near unexpected token libplist
- 【已解决】Mac中找不到idevice_id即idevice_id not found
- 【无需解决】Mac中iproxy端口转发连接iPhone6真机失败：Error connecting to device!
- 【未解决】Mac中用facebook-wda操作iOS真机iPhone6
- 【已解决】iPhone中关闭全屏显示的悬浮球
-
- 移动端自动化测试概览
- iOS自动化测试利器：facebook-wda
-
- 使用自定义 WDA 服务器 - Appium
- 使用 Python 库 facebook-wda 完成网易云音乐 iOS 客户端的自动化测试 (示例) · TesterHome
- Displays - iOS Device Compatibility Reference
- UIScreen - UIKit | Apple Developer Documentation
- UIDeviceBatteryState - UIKit | Apple Developer Documentation
- UIDeviceBatteryStateUnknown - UIDeviceBatteryState | Apple Developer Documentation
- UIDevice.BatteryState - UIDevice | Apple Developer Documentation
- iOS真机安装WebDriverAgent | Vicの博客
- libimobiledevice/libimobiledevice: A cross-platform protocol library to communicate with iOS devices
- idevice_id command man page - libimobiledevice-utils
- Appium for mac iOS环境配置 - 简书
- ios - How to check device id of iPhone simulator? - Stack Overflow
- Xcode 工具链 - 简书
-