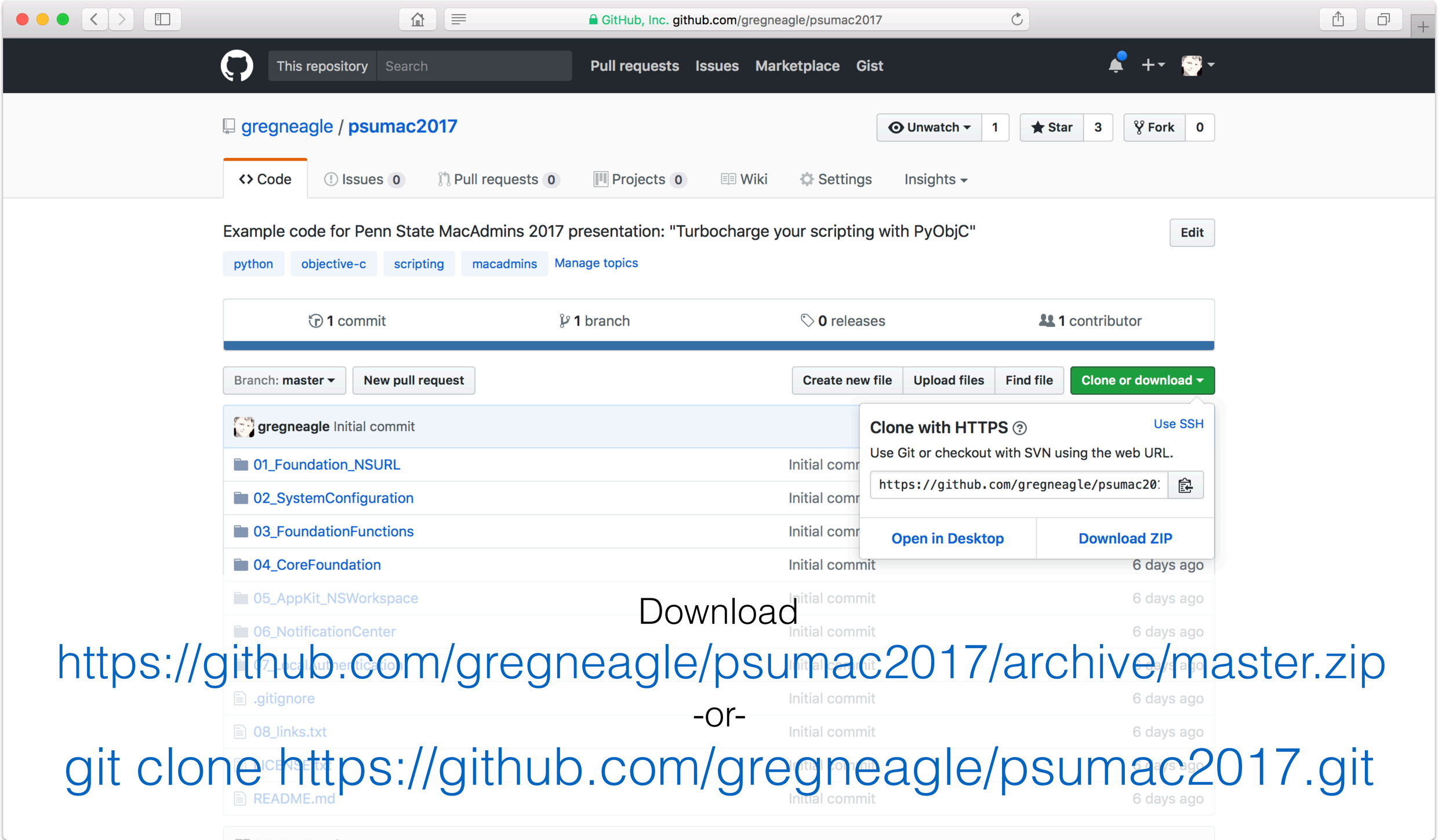
Turbocharge your scripting with PyObjC

Greg Neagle, Disney Animation Studios

https://github.com/gregneagle/psumac2017



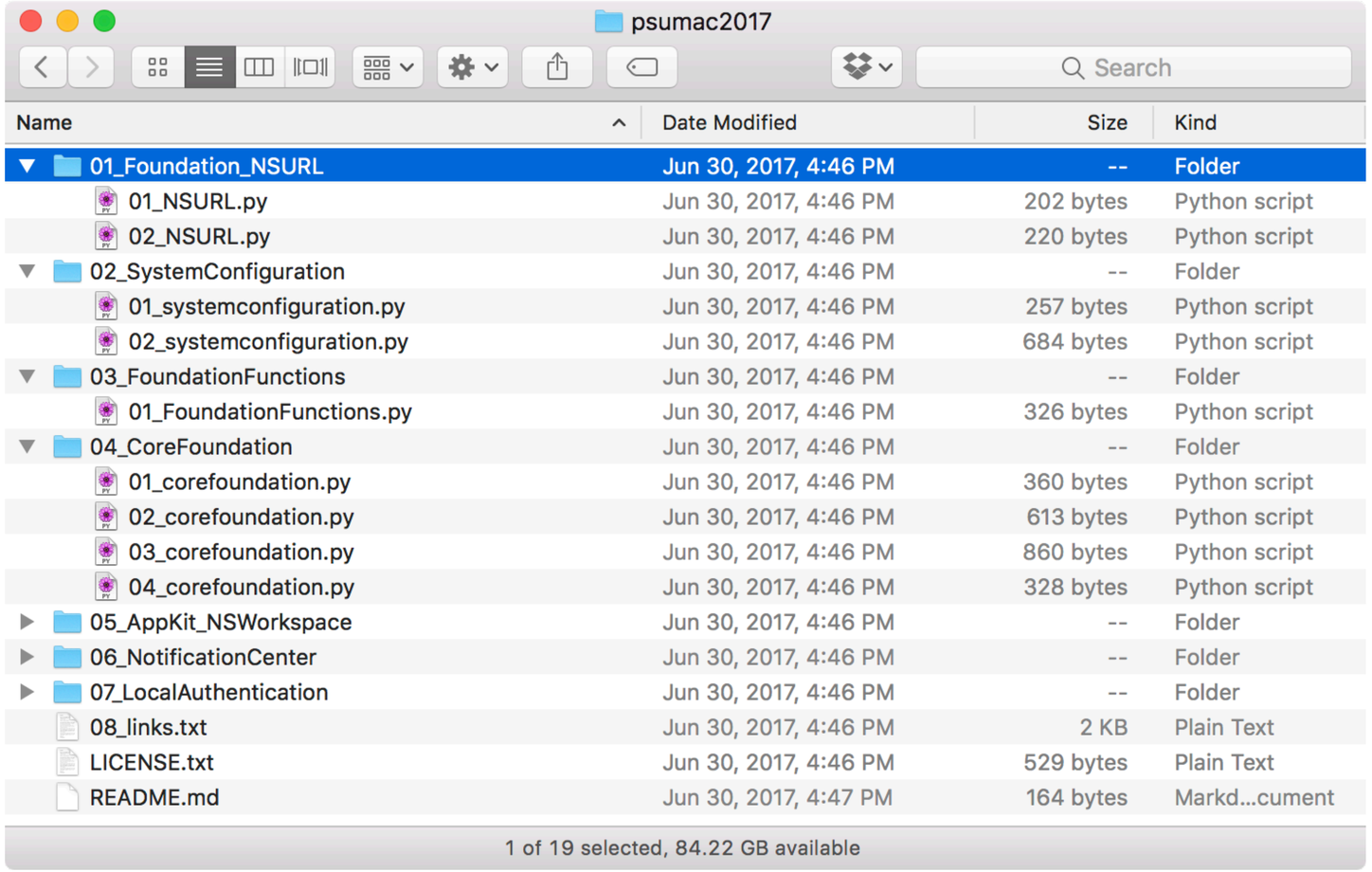
Download

https://github.com/gregneagle/psumac2017/archive/master.zip

-or-

git clone https://github.com/gregneagle/psumac2017.git

https://github.com/gregneagle/psumac2017



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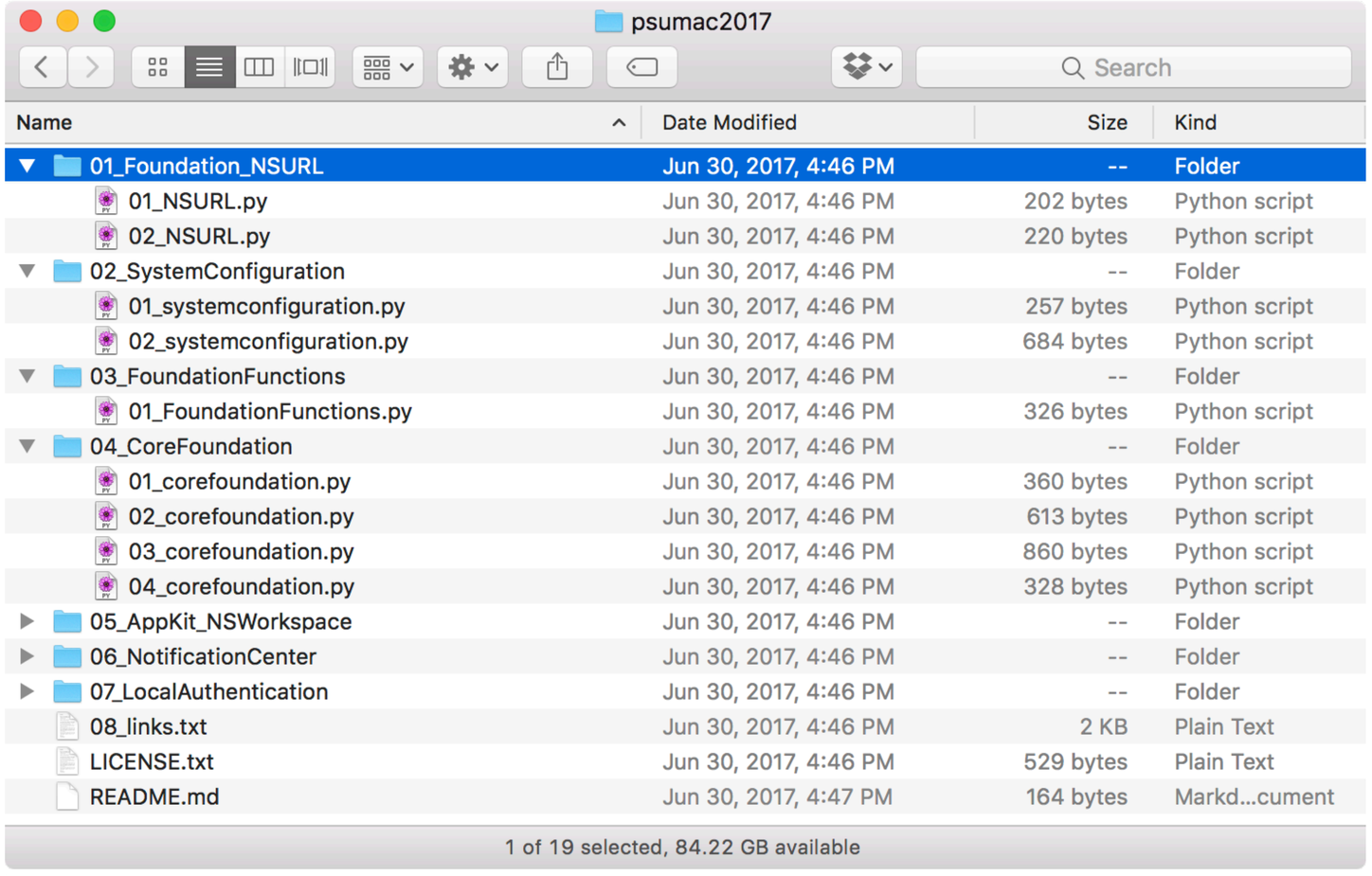
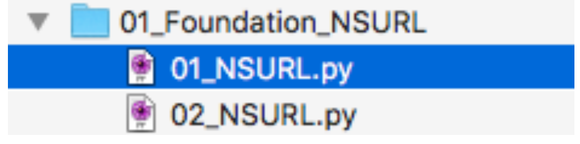



```
from Foundation import NSURL

print NSURL.fileURLWithPath_('/Users/Shared/foo')
```



https://github.com/gregneagle/psumac2017

StackOverflow: why-is-the-pyobjc-documentation-so-bad:
http://stackoverflow.com/questions/14422/why-is-the-pyobjc-documentation-so-bad

LoginLog:
https://github.com/MagerValp/LoginLog

AutoDMG:
https://github.com/MagerValp/AutoDMG

Imagr:
https://github.com/grahamgilbert/imagr

Munki:
https://github.com/munki/munki

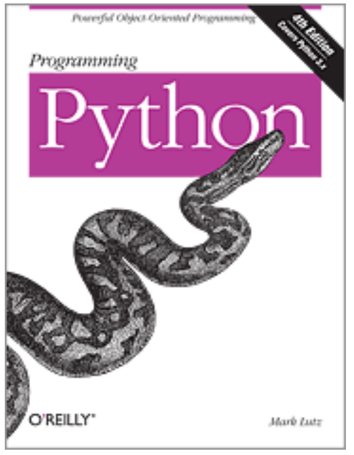
NSURL:
https://developer.apple.com/reference/foundation/nsurl?language=objc
https://developer.apple.com/reference/foundation/nsurl/1410828-fileurlwithpath?language=objc
https://developer.apple.com/reference/foundation/nsurl/1414650-fileurlwithpath?language=objc

TechNote Q&A QA1133 - Determining console user login status:
https://developer.apple.com/library/content/qa/qa1133/_index.html

SystemConfiguration:
https://developer.apple.com/reference/systemconfiguration?language=objc
https://developer.apple.com/reference/systemconfiguration/1517123-scdynamicstorecopyconsoleuser?language=objc

Foundation file path functions:
https://developer.apple.com/documentation/foundation/nsfilemanager?language=objc

CFPreferences Utilities:
https://developer.apple.com/reference/corefoundation/1666648-preferences_utilities?language=objc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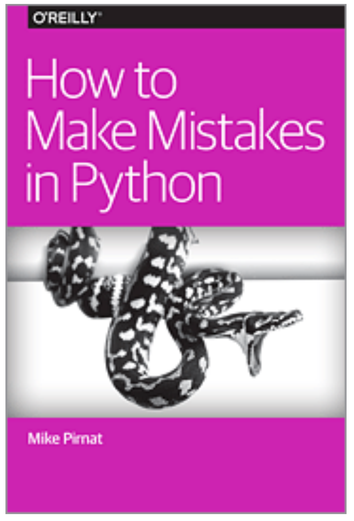
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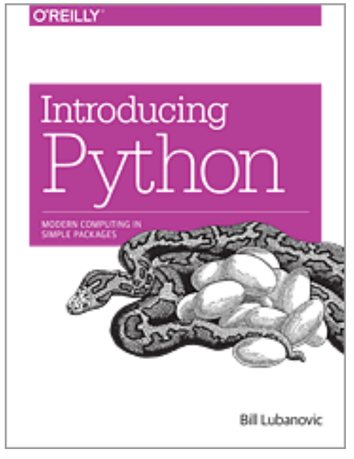
How to
Make Mistakes
in Python
Mike Pirnat


How to Think Like a Computer Scientist
Think
Python
O'REILLY
Allen B. Downey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MODERN COMPUTING IN
SIMPLE PACKAGES
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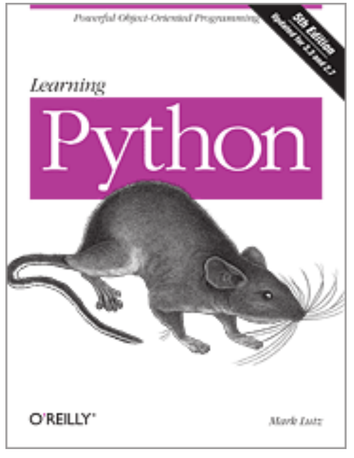
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Mark Lutz


O'REILLY
Fluent
Python
CLEAR, CONCISE, AND EFFECTIVE PROGRAMMING
Luciano Ramalho

Why is the PyObjC documentation so bad? [closed]

asked 8 years ago

viewed 3777 times

active 3 years ago

16

4

For example, http://developer.apple.com/cocoa/pyobjc.html is still for OS X 10.4 Tiger, not 10.5 Leopard.. And that's the official Apple documentation for it..

The official PyObjC page is equally bad, http://pyobjc.sourceforge.net/

It's so bad it's baffling.. I'm considering learning Ruby primarily because the RubyCocoa stuff is so much better documented, and there's lots of decent tutorials (http://www.rubycocoa.com/ for example), and because of the Shoes GUI toolkit..

Even this badly-auto-translated Japanese tutorial is more useful than the rest of the documentation I could find..

All I want to do is create fairly simple Python applications with Cocoa GUI's..
Can anyone shed light on the horrible documentation, or point me at some tutorials that don't just give you huge blocks of code and assume you know what `NSThread.detachNewThreadSelector_toTarget_withObject_("queryController", self, None)` does..?

python osx cocoa pyobjc

share improve this question

edited Aug 20 '13 at 12:56

Will

98.4k ● 41 ● 245 ● 342

asked Aug 18 '08 at 10:23

dbr

96.4k ● 48 ● 229 ● 298

closed as primarily opinion-based by Will, ale, SheetJS, Jave, smerny Aug 20 '13 at 14:46

Many good questions generate some degree of opinion based on expert experience, but answers to this question will tend to be almost entirely based on opinions, rather than facts, references, or specific expertise.

If this question can be reworded to fit the rules in the help center, please edit the question.

The first PyObjC tutorial you link to is an article by Jonathan Rentzsch (you can hear his voice in the videos, and you may recognize it from the C4 videos). Even though it's on Apple's site without a by-line, it's not "Apple

BLOG

- Stack Overflow Podcast #100 - Jeff Atwood Is Back! (For Today)
- Developers without Borders: The Global Stack Overflow Network

stackoverflow.com/questions/14422/why-is-the-pyobjc-docu

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stackoverflow.com/questions/14422/why-is-the-pyobjc-docu

Why is the PyObjC documentation so bad? [closed]

asked 8 years ago

20

I agree that that tutorial is flawed, throwing random, unexplained code right in front of your eyes. It introduces concepts such as the autorelease pool and user defaults without explaining why you would want them ("Autorelease pool for memory management" is hardly an explanation).

That said…

> basically all I want to do is write Cocoa applications without having to learn ObjC.

I'm afraid that for the time being, you *will* need a basic grasp of ObjC in order to benefit from any language that uses Cocoa. PyObjC, RubyCocoa, Nu and others are niches at best, and all of them were developed by people intimately familiar with the ins and outs of ObjC *and* Cocoa.

For now, you will benefit the most if you realistically see those bridges as useful where scripting languages truly shine, rather than trying to build a whole application with them. While this *has* been done (with LimeChat, I'm using a RubyCocoa-written app right now), it is rare and likely will be for a while.

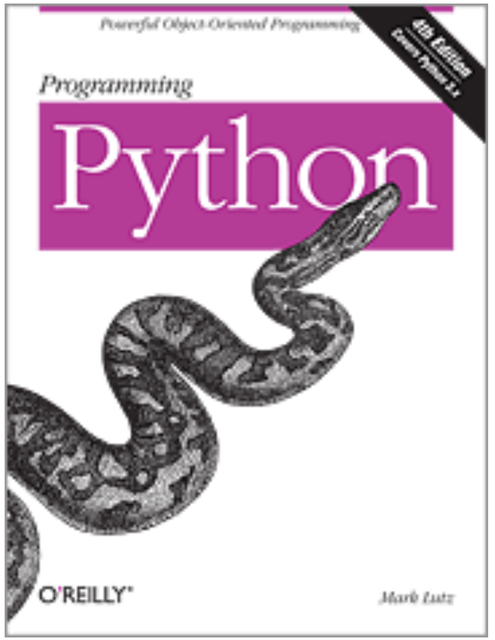
share improve this answer

answered Aug 18 '08 at 12:18

Sören Kuklau

12.4k ● 3 ● 33 ● 69

The first PyObjC tutorial you link to is an article by Jonathan Rentzsch (you can hear his voice in the videos, and you may recognize it from the C4 videos). Even though it's on Apple's site without a by-line, it's not "Apple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Covers Python 3.x
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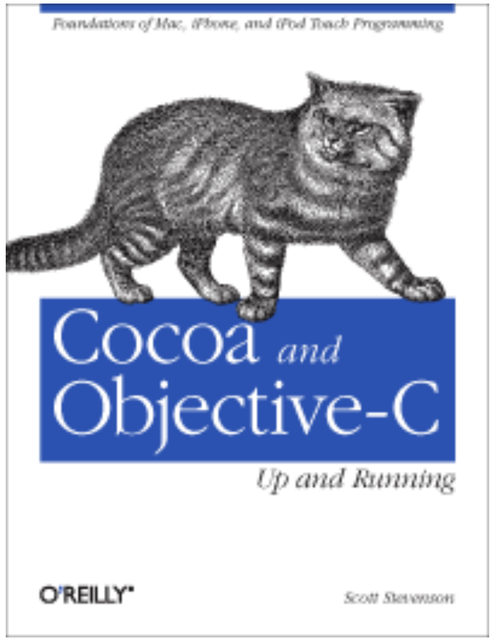
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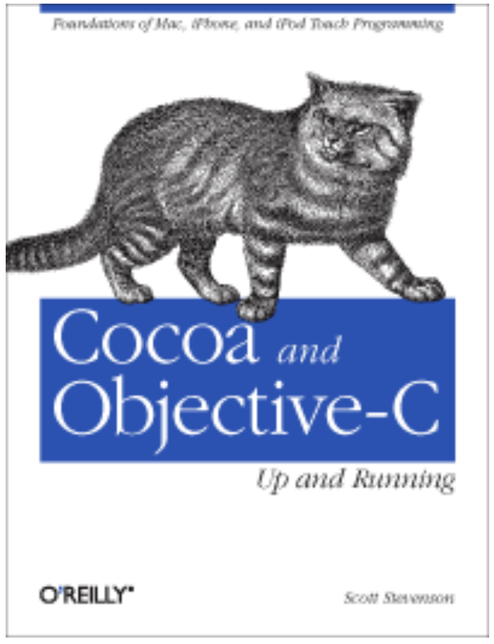
Cocoa and
Objective-C
Up and Running
O'REILLY
Scott Stevenson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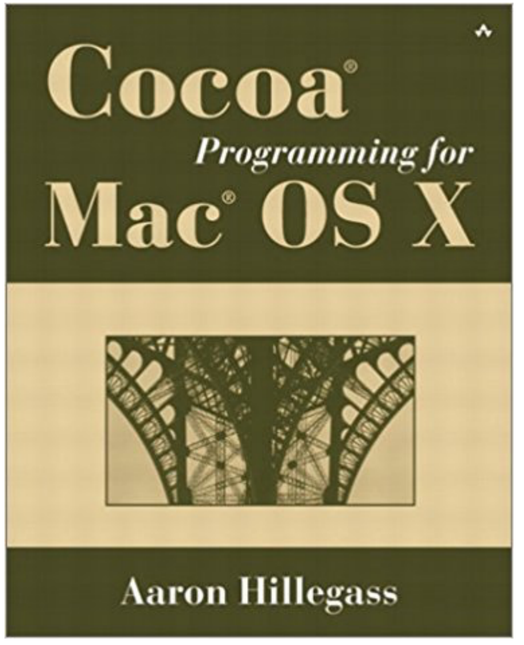
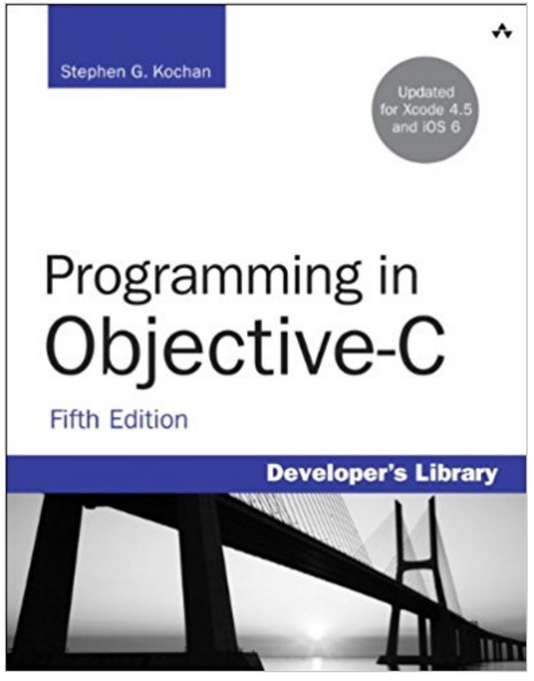
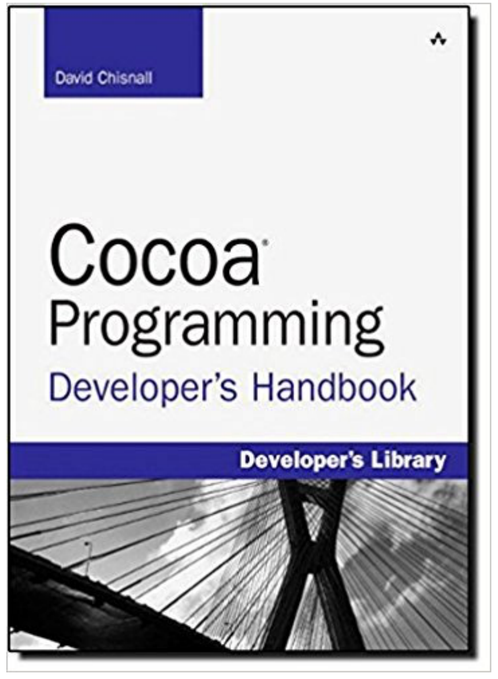

Cocoa
Programming for
Mac OS X
Aaron Hillegass


Stephen G. Kochan
Updated for Xcode 4.5 and iOS 6
Programming in
Objective-C
Fifth Edition
Developer's Library

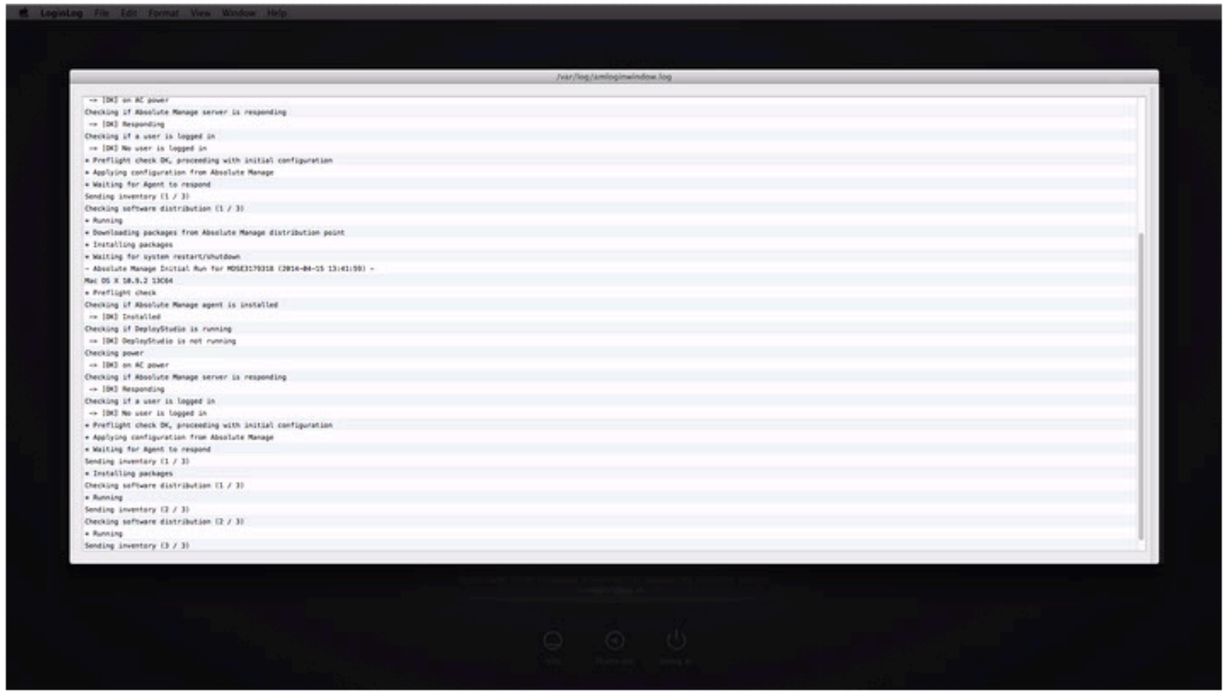

David Chisnall
Cocoa
Programming
Developer's Handbook
Developer's Library

GitHub, Inc. github.com/MagerValp/LoginLog

LoginLog

https://github.com/MagerValp/LoginLog

Dim the login window and display a log file of your choice over it.



How to use it

- Build LoginLog.app.
- Copy it to a test machine as /Library/PrivilegedHelperTools/LoginLog.app
- Configure the logfile argument in se.gu.it.LoginLog.plist and copy it to /Library/LaunchAgents on the test machine.
- launchctl load -S loginwindow /Library/LaunchAgents/se.gu.it.LoginLog.plist
- launchctl unload -S loginwindow /Library/LaunchAgents/se.gu.it.LoginLog.plist

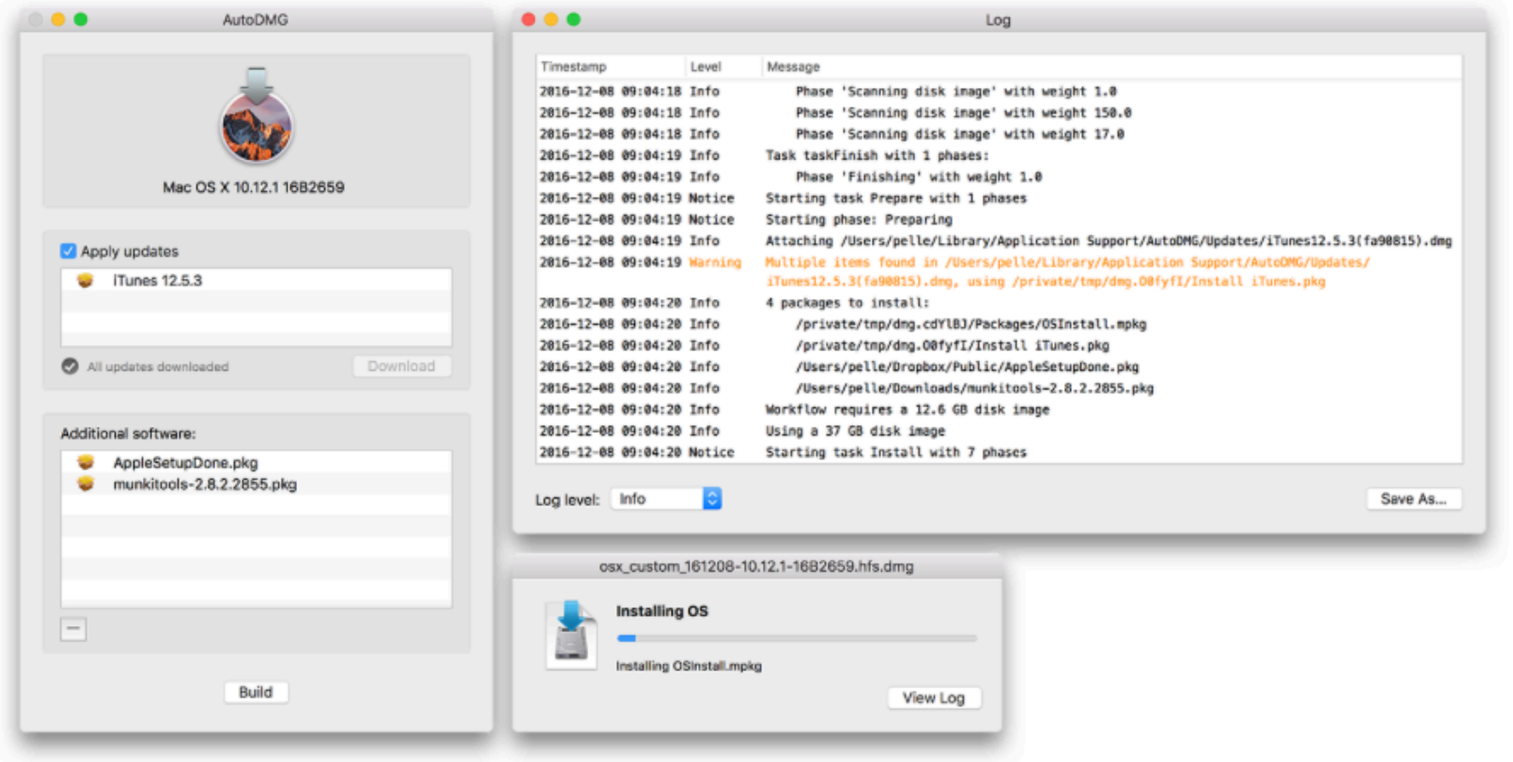
Credits

GitHub, Inc. github.com/MagerValp/AutoDMG

AutoDMG

https://github.com/MagerValp/AutoDMG

The award winning AutoDMG takes a macOS installer (10.9 or newer) and builds a system image suitable for deployment with Imagr, DeployStudio, LANrev, Jamf Pro, and other asr-based imaging tools.



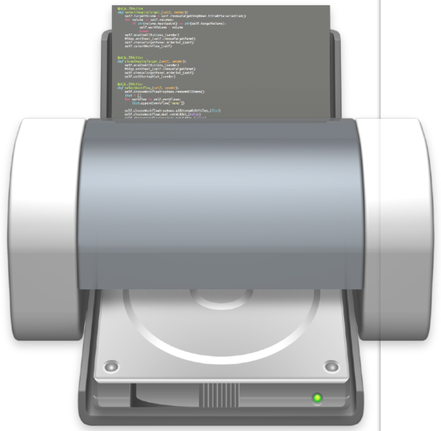
Documentation

Documentation and help is in the AutoDMG wiki.

Presentation

For a great overview of modular imaging and a demonstration of some of AutoDMG's features, watch Anthony Reimer's

https://github.com/grahamgilbert/imagr



GitHub, Inc. github.com/grahamgilbert/imagr

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Code Issues 13 Pull requests 2 Projects 0 Wiki Pulse Graphs

http://imagr.io

455 commits 1 branch 31 releases 20 contributors

Branch: master New pull request Create new file Upload files Find file Clone or download

grahamgilbert committed on GitHub Merge pull request #171 from 0xcedb/master ... Latest commit a3b39a6 11 days ago

.github	Update ISSUE_TEMPLATE.md	8 months ago
Imagr.xcodeproj	Make sure loginlog shows all the time	4 months ago
Imagr	Fixed call to urlopen	12 days ago
img	update wiki images for NBICreator	8 months ago
.gitignore	Ignore rc.netboot	8 months ago
LICENSE	Resolves issue #20	2 years ago
Makefile	Show old error if scripts don't output anything	2 months ago
Readme.md	Potential fix for #119	a year ago
get_locale	Add back omitted localize.sh and get_locale.	9 months ago
validateplist	Movable restart actions	2 months ago

Readme.md

Imagr

Managed Software Center

Software Categories My Items Updates Search

Managed Software Center

Your source for software for your Mac.

All items

Adobe Acrobat Reader DC
Uncategorized
INSTALL

Adobe Reader
Productivity - Adobe
INSTALL

Aspera Connect
Utilities - Aspera
INSTALL

Atom
Text Editors - GitHub, Inc.
INSTALL

Bluejeans Application
Communications - Bluejeans
INSTALL

Box Sync
Cloud Storage - Box
INSTALL

bugreport-2.0.5.0
Utilities - Disney Animation
INSTALL

cineSync
Uncategorized
INSTALL

Citrix Receiver
Virtualization - Citrix Systems, Inc.
INSTALL

Command Line Tools (macOS Si...
Developer - Apple
Installed
REMOVE

Docker for Mac
Virtualization - Docker Inc
Installed
REMOVE

EasyFind
Utilities - DEVONtechnologies
INSTALL

GLC_Player
Graphics - glc-player.net
INSTALL

Google Chrome
Internet - Google
Installed
REMOVE

Google Earth
Internet - Google
INSTALL

Quick Links

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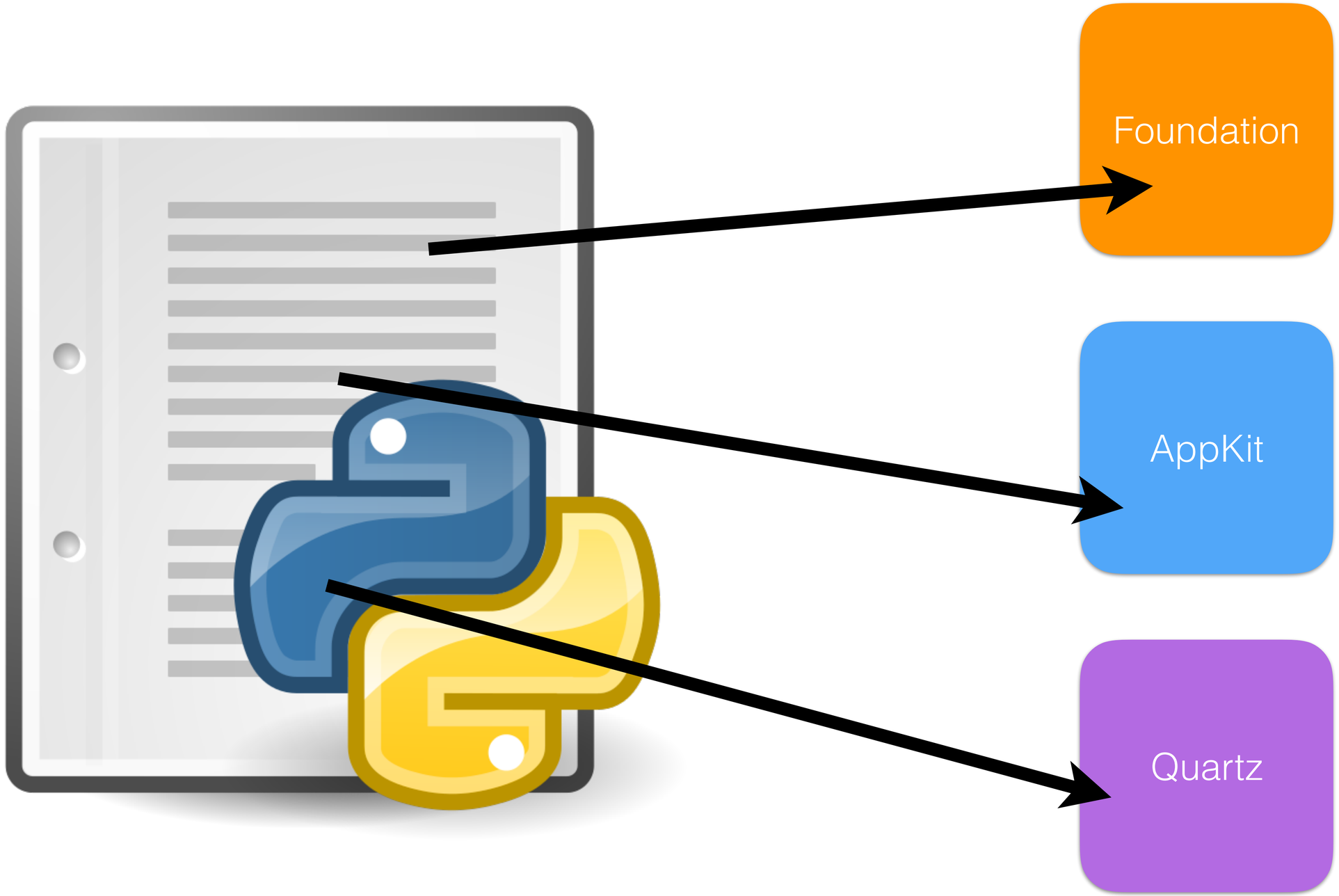
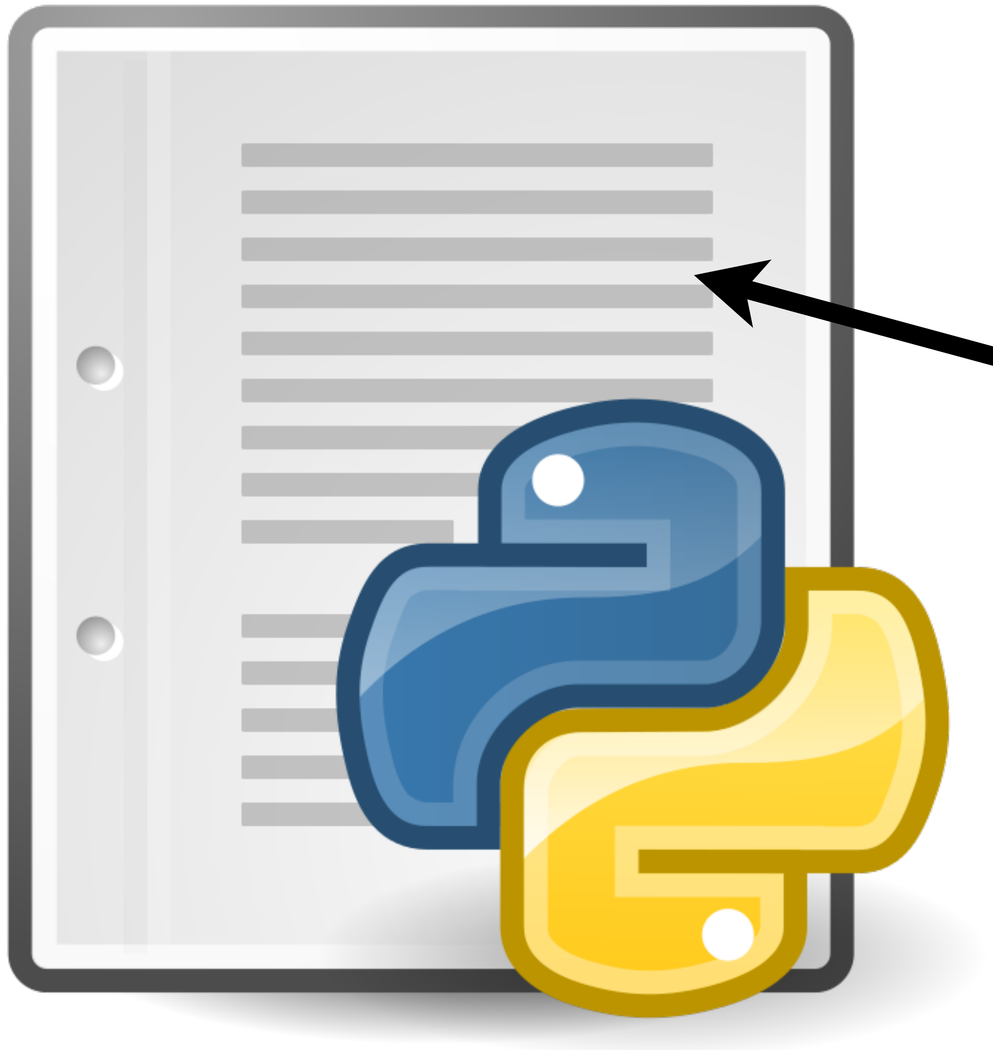
All Categories

What's new in OS X
Apple
Disney Animation Web
Change your passwords


Foundation
AppKit
Quartz



Foundation

AppKit

Quartz

Basic conversion rules

aka I hope you like underscores

Cocoa

```
[someObject doSomething: arg1 withAdditionalData: arg2];
```

Cocoa

```
[someObject doSomething: arg1 withAdditionalData: arg2];
```

Cocoa

```
[someObject doSomething: arg1 withAdditionalData: arg2];
```

Python+PyObjC

```
someObject.
```

Cocoa

```
[someObject doSomething: arg1 withAdditionalData: arg2];
```

Python+PyObjC

```
someObject.doSomething:withAdditionalData:(          )
```

Cocoa

```
[someObject doSomething: arg1 withAdditionalData: arg2];
```

Python+PyObjC

```
someObject.doSomething_withAdditionalData_(          )
```

Cocoa

```
[someObject doSomething: arg1 withAdditionalData: arg2];
```

Python+PyObjC

```
someObject.doSomething_withAdditionalData_(arg1, arg2)
```

Cocoa

```
[sharedWorkspace openFile:@"/Users/Shared/README" withApplication:@"TextEdit"];
```

Cocoa

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```

Cocoa

```
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```

Python+PyObjC

```
sharedWorkspace.openFile_withApplication_(                    )
```

Cocoa

```
[sharedWorkspace openFile:@"/Users/Shared/README" withApplication:@"TextEdit"];
```

Python+PyObjC

```
sharedWorkspace.openFile_withApplication_("/Users/Shared/README", "TextEdit")
```

Class

NSWorkspace

A workspace that can launch other apps and perform a variety of file-handling services.

SDK

macOS 10.0+

Framework

AppKit

On This Page

Overview

There is one shared `NSWorkspace` object per app. You use the class method `sharedWorkspace` to access it. For example, the following statement uses an `NSWorkspace` object to request that a file be opened in the TextEdit app:

```
[[NSWorkspace sharedWorkspace] openFile:@"/Myfiles/README"
    withApplication:@"TextEdit"];
```

You can use the workspace object to:

- Open, manipulate, and get information about files and devices
- Track changes to the file system, devices, and the user database
- Get and set Finder information for files
- Launch apps

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```
[[NSWorkspace sharedWorkspace] openFile:@"/Myfiles/README" withApplication:@"TextEdit"];
```

```
[[NSWorkspace sharedWorkspace] openFile:@"/Myfiles/README" withApplication:@"TextEdit"];
```

```
[[NSWorkspace sharedWorkspace] openFile:@"/Myfiles/README" withApplication:@"TextEdit"];
```

```
[NSWorkspace sharedWorkspace]
```

```objc
[[NSWorkspace sharedWorkspace] openFile:@"/Myfiles/README" withApplication:@"TextEdit"];
```

```swift
NSWorkspace.sharedWorkspace()
```

```objc
[[NSWorkspace sharedWorkspace] openFile:@"/Myfiles/README" withApplication:@"TextEdit"];
```

```swift
NSWorkspace.sharedWorkspace().openFile_withApplication_(
```

```objc
[[NSWorkspace sharedWorkspace] openFile:@"/Myfiles/README" withApplication:@"TextEdit"];
```

```swift
NSWorkspace.sharedWorkspace().openFile_withApplication_("/Myfiles/README", "TextEdit")
```

Cocoa

```
[sharedWorkspace launchApplication:@"TextEdit"];
```

Cocoa

```
[sharedWorkspace launchApplication:@"TextEdit"];
```

Python+PyObjC

```
sharedWorkspace.launchApplication_("TextEdit")
```

Another example

Type Method

fileURL(withPath:)

Initializes and returns a newly created NSURL object as a file URL with a specified path.

Declaration

```
class func fileURL(withPath path: String) -> URL
```

Parameters

path

The path that the NSURL object will represent. `path` should be a valid system path, and must not be an empty path. If `path` begins with a tilde, it must first be expanded with `expandingTildeInPath`. If `path` is a relative path, it is treated as being relative to the current working directory.

SDKs

iOS 2.0+

macOS 10.0+

tvOS 9.0+

watchOS 2.0+

Framework

Foundation

On This Page

Type Method

fileURLWithPath:

Initializes and returns a newly created NSURL object as a file URL with a specified path.

Declaration

```
+ (NSURL *)fileURLWithPath:(NSString *)path;
```

Parameters

path

The path that the NSURL object will represent. `path` should be a valid system path, and must not be an empty path. If `path` begins with a tilde, it must first be expanded with `stringByExpandingTildeInPath`. If `path` is a relative path, it is treated as being relative to the current working directory.

SDKs

iOS 2.0+

macOS 10.0+

tvOS 9.0+

watchOS 2.0+

Framework

Foundation

On This Page

https://developer.apple.com/reference/foundation/nsurl?language=objc

Type Method

fileURLWithPath:

Initializes and returns a newly created NSURL object as a file URL with a specified path.

Declaration

```
+ (NSURL *)fileURLWithPath:(NSString *)path;
```

Parameters

path

The path that the NSURL object will represent. `path` should be a valid system path, and must not be an empty path. If `path` begins with a tilde, it must first be expanded with `stringByExpandingTildeInPath`. If `path` is a relative path, it is treated as being relative to the current working directory.

https://developer.apple.com/reference/foundation/nsurl?language=objc

Type Method

fileURLWithPath:

Initializes and returns a newly created NSURL object as a file URL with a specified path.

Declaration

```
+ (NSURL *)fileURLWithPath:(NSString *)path;
```

Parameters

path

The path that the NSURL object will represent. `path` should be a valid system path, and must not be an empty path. If `path` begins with a tilde, it must first be expanded with `stringByExpandingTildeInPath`. If `path` is a relative path, it is treated as being relative to the current working directory.

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Type Method

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Initializes and returns a newly created NSURL object as a file URL with a specified path.

SDKs

iOS 2.0+

macOS 10.0+

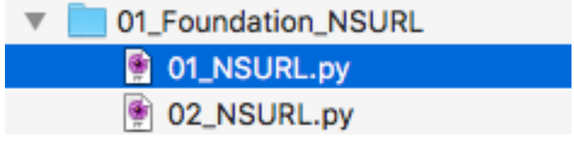
tvOS 9.0+

watchOS 2.0+

Framework

Declaration

```
from Foundation import NSURL
```



Declaration

```
+ (NSURL *)fileURLWithPath:(NSString *)path;
```

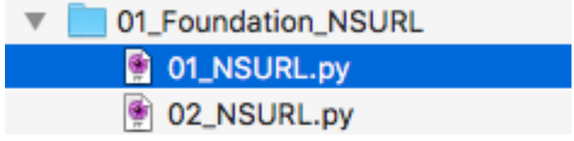
Parameters

path

The path that the NSURL object will represent. `path` should be a valid system path, and must not be an empty path. If `path` begins with a tilde, it must first be expanded with `stringByExpandingTildeInPath`. If `path` is a relative path, it is treated as being relative to the current working directory.


```
from Foundation import NSURL

print NSURL.fileURLWithPath_('/Users/Shared/foo')
```



watchOS 2.0+

Framework

Foundation

On This Page

Declaration

```
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```

Parameters

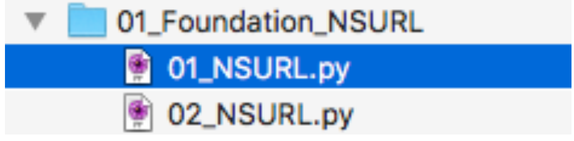
path

The path that the NSURL object will represent. `path` should be a valid system path, and must not be an empty path. If `path` begins with a tilde, it must first be expanded with `stringByExpandingTildeInPath`. If `path` is a relative path, it is treated as being relative to the current working directory.

```
from Foundation import NSURL

print NSURL.fileURLWithPath_('/Users/Shared/foo')
```

```
file:///Users/Shared/foo
```



Type Method

fileURLWithPath:isDirectory:

Initializes and returns a newly created NSURL object as a file URL with a specified path.

Declaration

```
+ (NSURL *)fileURLWithPath:(NSString *)path
               isDirectory:(BOOL)isDir;
```

Parameters

path

The path that the NSURL object will represent. `path` should be a valid system path, and must not be an empty path. If `path` begins with a tilde, it must first be expanded with `stringByExpandingTildeInPath`. If `path` is a relative path, it is treated as being relative to the current working directory.

isDir

A Boolean value that specifies whether `path` is treated as a directory path when resolving against relative path components. Pass YES if the `path` indicates a directory, NO otherwise.

Return Value

An NSURL object initialized with `path`.

SDKs
iOS 2.0+
macOS 10.5+
tvOS 9.0+
watchOS 2.0+

Framework
Foundation

On This Page
Declaration
Parameters
Return Value
See Also

Type Method

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The path that the NSURL object will represent. `path` should be a valid system path, and must

SDKs

iOS 2.0+

macOS 10.5+

tvOS 9.0+

watchOS 2.0+

Framework

Foundation

On This Page


```
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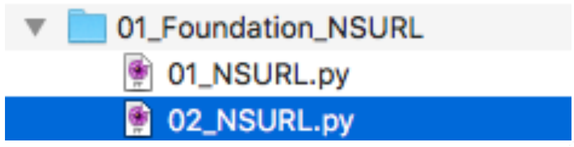
```



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SDKs

iOS 2.0+

macOS 10.5+

tvOS 9.0+

watchOS 2.0+

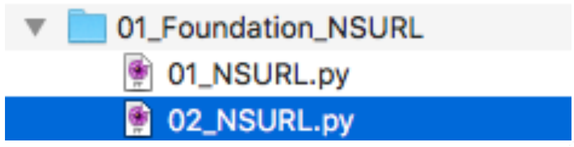
Framework

Foundation

On This Page


```
from Foundation import NSURL

print NSURL.fileURLWithPath_isDirectory_('/Users/Shared/foo', True)
```



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SDKs
iOS 2.0+
macOS 10.5+
tvOS 9.0+
watchOS 2.0+

Framework
Foundation

On This Page
Declaration
Parameters
Return Value
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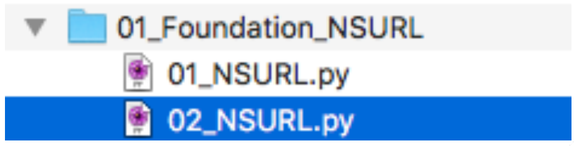

Advanced conversion rules

out and in/out parameters

Technical Q&A QA1133

Determining console user login status

Q: How do I tell whether a console user is currently logged in?

A: How do I tell whether a console user is currently logged in?

It really depends on what you mean by "currently logged in". With the introduction of fast user switching in Mac OS X 10.3, multiple users can be logged into the system at the same time. So, you have to split the question in two:

1. How do I get a list of GUI login sessions?
2. Which GUI login session, if any, is currently using the console?

These are clear questions with clear answers (see below). However, it's likely that, if you're asking these questions, you need to rethink your architecture.

One of the fundamental design principles of the Mac OS X is that high-level services can depend on low-level services, but not the other way around. For example, it's fine for an application to depend on the kernel, but it's a problem if the kernel depends on an application.

The question of determining the current console user typically arises when you break this design principle. Only application-level services should care whether a user's session is currently active on the console, and it's easy for such services to determine that. On the other hand, a daemon should not be concerned about whether a user is logged in on the console, and thus it's tricky to get this information from that context.

This issue is discussed in great depth in Technical Note TN2083, 'Daemons and Agents' and, specifically, in the "Design Considerations" section of that technote. So, before you read the rest of this document, I strongly recommend that you read that technote and think about how you can align your architecture with the overall Mac OS X architecture.

https://developer.apple.com/library/content/qa/qa1133/_index.html

'UTXplorer'.

Prior to Mac OS X 10.5 there was no supported way to get this information directly. Technical Note TN2083, 'Daemons and Agents' suggests an indirect way to do it, based a central daemon with a set of cooperating agents. This design will work on all versions of Mac OS X and is generally aligned with the overall Mac OS X design principle described earlier.

2. Which GUI login session, if any, is currently using the console? — This is answered below.

You can get the user name of the current console user by calling the `SCDynamicStoreCopyConsoleUser` function (from the System Configuration framework). Listing 1 shows how to do this.

Listing 1: Getting the current console user

```
static CFStringRef CopyCurrentConsoleUsername(SCDynamicStoreRef store)
    // Returns the name of the current console user, or NULL if there is
    // none. store may be NULL, in which case a transient dynamic store
    // session is used.
{
    CFStringRef result;

    result = SCDynamicStoreCopyConsoleUser(store, NULL, NULL);

    // If the current console user is "loginwindow", treat that as equivalent
    // to none.

    if ( (result != NULL) && CFEqual(result, CFSTR("loginwindow")) ) {
        CFRelease(result);
        result = NULL;
    }

    return result;
}
```

The System Configuration framework also makes it easy to be notified when this setting changes. Listing 2 shows how to do that.

https://developer.apple.com/library/content/qa/qa1133/_index.html

Listing 2: Discovering when that setting changes

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Listing 2: Discovering when that setting changes

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    return result;
}
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        CFRelease(result);
        result = NULL;
    }

    return result;
}
```

Function

SCDynamicStoreCopyConsoleUser

Returns information about the user currently logged into the system.

SDK

macOS 10.1+

Framework

SystemConfiguration

On This Page

Declaration

```
CFStringRef SCDynamicStoreCopyConsoleUser(SCDynamicStoreRef store, uid_t *uid, g
```

Parameters

store
The dynamic store session that should be used for communication with the server. Pass NULL to use a temporary session.

uid
A pointer to memory that, on output, is filled with the user ID of the currently logged-in user. If NULL, this value is not returned.

gid
A pointer to memory that, on output, is filled with the group ID of the currently logged-in user. If NULL, this value is not returned.

https://developer.apple.com/reference/systemconfiguration/1517123-scdynamicstorecopyconsoleuser?language=objc

Return Value

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Declaration

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gid
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Return Value

Returns the name, user ID, and group ID of the user currently logged into the system, or NULL if no user is logged in or if an error occurred. You must release the returned values.

SDK
macOS 10.1+

Framework
SystemConfiguration

On This Page

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macOS 10.1+

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SCDynamicStoreCopyConsoleUser

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SDK

macOS 10.1+

Framework

SystemConfiguration

On This Page

Declaration

```
from SystemConfiguration import SCDynamicStoreCopyConsoleUser
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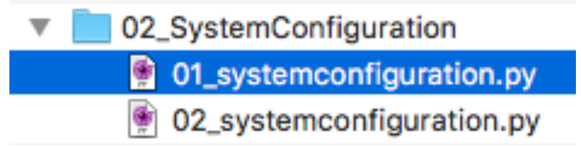


Declaration

```
CFStringRef SCDynamicStoreCopyConsoleUser(SCDynamicStoreRef store, uid_t *uid, g
```

Parameters

store

The dynamic store session that should be used for communication with the server. Pass NULL to use a temporary session.

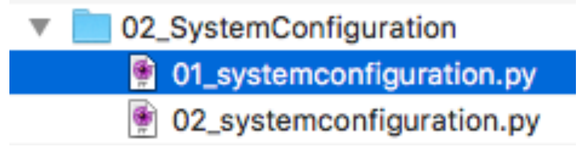
Framework

SystemConfiguration

On This Page


```
from SystemConfiguration import SCDynamicStoreCopyConsoleUser

print SCDynamicStoreCopyConsoleUser(None, None, None)
```



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Framework

SystemConfiguration

On This Page


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```

```
(u'gneagle', 1234, 5678)
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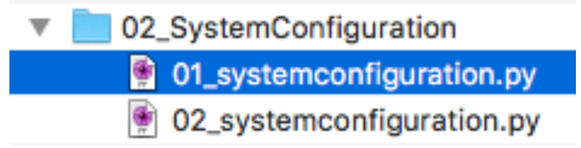

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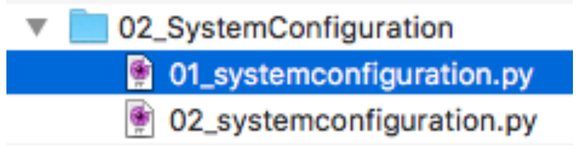

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macOS 10.1+

Framework

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SDK
macOS 10.1+

Framework
SystemConfiguration

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SDK
macOS 10.1+

Framework
SystemConfiguration

On This Page

C/Objective-C

```
name = SCDynamicStoreCopyConsoleUser(store, &uid, &gid);
```

Python+PyObjC

```
name, uid, gid = SCDynamicStoreCopyConsoleUser(store, None, None);
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C/Objective-C

(**&** indicates a pointer)

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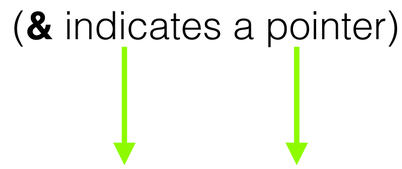


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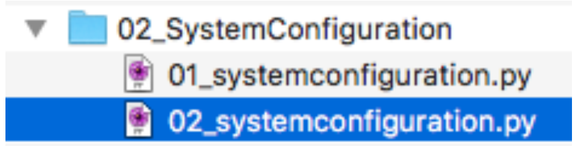
```
(u'gneagle', 1234, 5678)
```

```
from SystemConfiguration import SCDynamicStoreCopyConsoleUser

name, uid, gid = SCDynamicStoreCopyConsoleUser(None, None, None)

print 'Name: %s' % name
print 'uid: %s' % uid
print 'gid: %s' % gid
```



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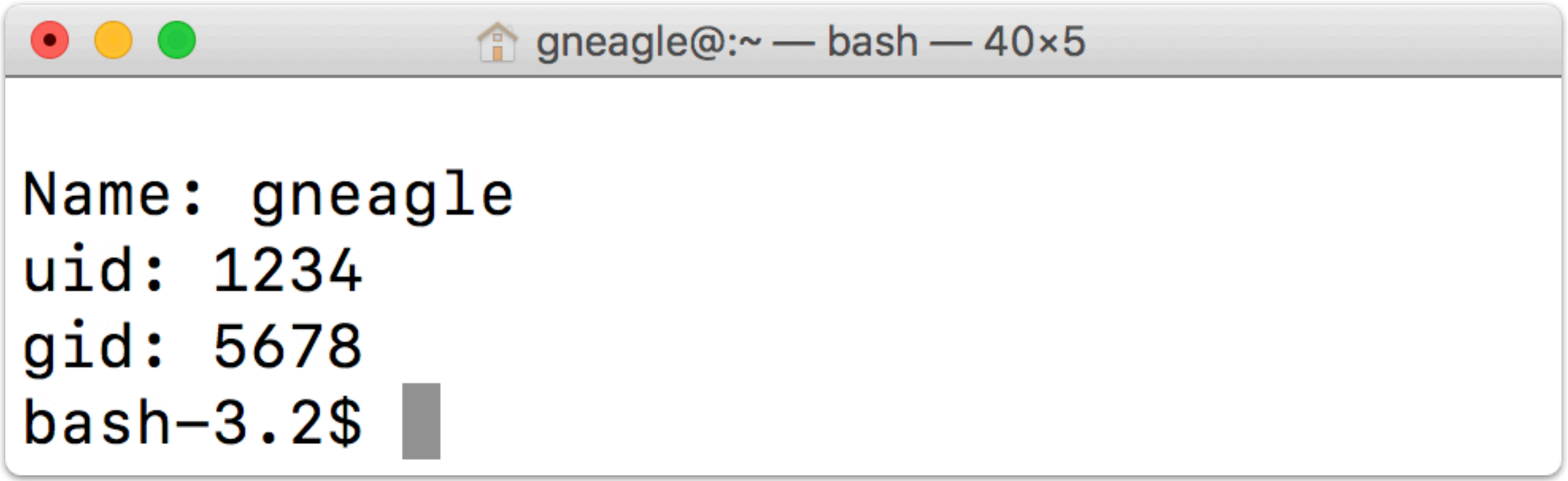
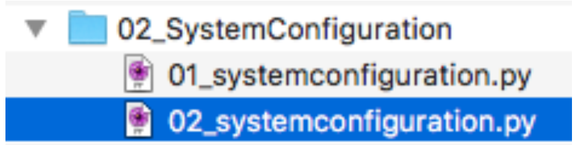
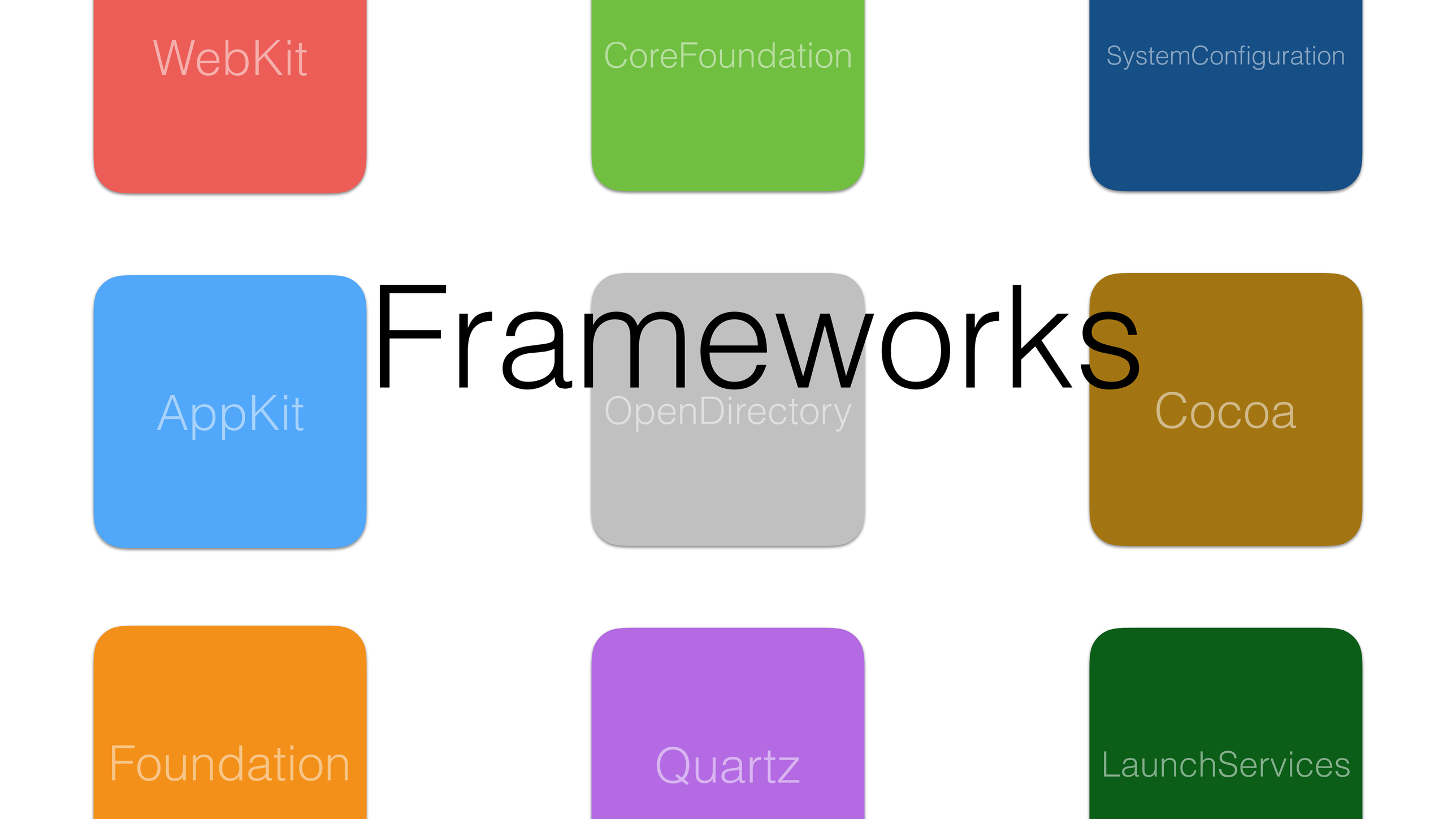





WebKit
CoreFoundation
SystemConfiguration
Frameworks
AppKit
OpenDirectory
Cocoa
Foundation
Quartz
LaunchServices

/System/Library/Frameworks/Python.framework/Versions/Current/Extras/lib/python/PyObjC

```
/System/Library/Frameworks/Python.framework/Versions/Current/Extras/lib/python/PyObjC
```

AVFoundation
Accounts
AddressBook
AppKit
AppleScriptKit
AppleScriptObjC
Automator
CFNetwork
CFOpenDirectory
Cocoa
Collaboration
CoreData
CoreFoundation
CoreLocation
CoreText
DictionaryServices
EventKit
ExceptionHandling
FSEvents
Foundation
InputMethodKit
InstallerPlugins
InstantMessage
JavaScriptCore
LatentSemanticMapping
LaunchServices
Message
OpenDirectory
PreferencePanes
PubSub
PyObjCTools
QTKit
Quartz
ScreenSaver
ScriptingBridge
SearchKit
ServiceManagement
Social
SyncServices
SystemConfiguration
WebKit

Foundation types

and their Python mappings

Foundation type	Python type
NSNumber	int, float, long
NSString	unicode, str
NSDictionary/NSMutableDictionary	dict
NSArray/NSMutableArray	list, tuple
NSData	buffer
NULL	None

Useful(?) examples


Foundation

File Path Functions

`NSFullUserName`

Returns a string containing the full name of the current user.

`NSHomeDirectory`

Returns the path to either the user's or application's home directory, depending on the platform.

`NSHomeDirectoryForUser`

Returns the path to a given user's home directory.

`NSOpenStepRootDirectory`

Returns the root directory of the user's system.

`NSSearchPathForDirectoriesInDomains`

Creates a list of directory search paths.

`NSTemporaryDirectory`

Returns the path of the temporary directory for the current user.

`NSUserName`

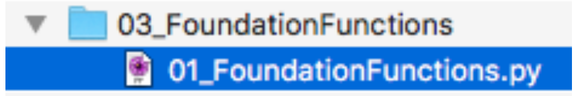
Returns the logon name of the current user.

https://developer.apple.com/documentation/foundation/nsfilemanager?language=objc

https://developer.apple.com/documentation/foundation/nsfilemanager?language=objc

```
import Foundation

print Foundation.NSUserName()
print Foundation.NSFullUserName()
print Foundation.NSHomeDirectory()
print Foundation.NSHomeDirectoryForUser('root')
print Foundation.NSTemporaryDirectory()
```



https://developer.apple.com/documentation/foundation/nsfilemanager?language=objc

```
import Foundation

print Foundation.NSUserName()
print Foundation.NSFullUserName()
print Foundation.NSHomeDirectory()
print Foundation.NSHomeDirectoryForUser('root')
print Foundation.NSTemporaryDirectory()
```

```
gneagle
Greg Neagle
/Users/gneagle
/var/root
/var/folders/tc/sd4_mtvj14jdy7cg21m2gmcw000495/T/
```

(CFPreferences)

Topics

Getting Preference Values

`CFPreferencesCopyAppValue`
Obtains a preference value for the specified key and application.

`CFPreferencesCopyKeyList`
Constructs and returns the list of all keys set in the specified domain.

`CFPreferencesCopyMultiple`
Returns a dictionary containing preference values for multiple keys.

`CFPreferencesCopyValue`
Returns a preference value for a given domain.

`CFPreferencesGetAppBooleanValue`
Convenience function that directly obtains a boolean preference value for the specified key.

`CFPreferencesGetAppIntegerValue`
Convenience function that directly obtains an integer preference value for the specified key.

Setting Preference Values

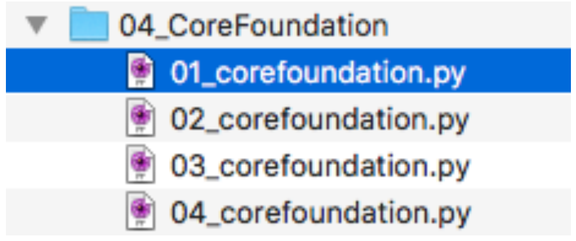
`CFPreferencesSetAppValue`
Adds, modifies, or removes a preference.

`CFPreferencesSetMultiple`
Convenience function that allows you to set and remove multiple preference values.

https://developer.apple.com/reference/corefoundation/1666648-preferences_utilities?language=objc

```
import CoreFoundation

# similar to `defaults read com.apple.Finder ShowHardDrivesOnDesktop`
print CoreFoundation.CFPreferencesCopyAppValue("ShowHardDrivesOnDesktop", "com.apple.Finder")
```

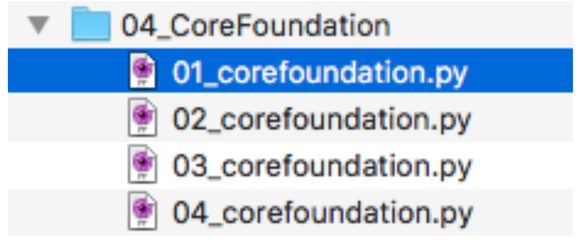


https://developer.apple.com/reference/corefoundation/1666648-preferences_utilities?language=objc

```
import CoreFoundation

# similar to `defaults read com.apple.Finder ShowHardDrivesOnDesktop`
print CoreFoundation.CFPreferencesCopyAppValue("ShowHardDrivesOnDesktop", "com.apple.Finder")
```

```
True
```



```
defaults read com.apple.Finder ShowHardDrivesOnDesktop
```

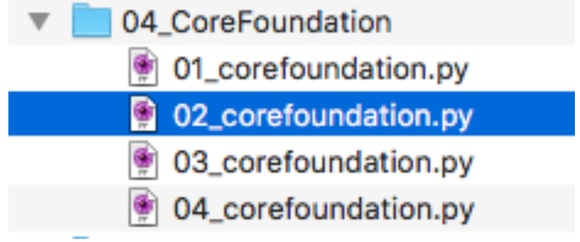
```
defaults read com.apple.Finder ShowHardDrivesOnDesktop
```

```
1
```

```
import subprocess
import CoreFoundation

# get the value using defaults
value = subprocess.check_output(
    ['/usr/bin/defaults', 'read', 'com.apple.Finder', 'ShowHardDrivesOnDesktop']
)
print 'Value is %s and is type %s' % (repr(value), type(value))

# get the value using CFPreferences
value = CoreFoundation.CFPreferencesCopyAppValue(‘ShowHardDrivesOnDesktop’, 'com.apple.Finder')
print 'Value is %s and is type %s' % (repr(value), type(value))
```



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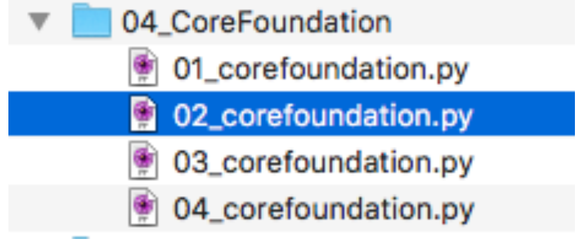

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value = CoreFoundation.CFPreferencesCopyAppValue('ShowHardDrivesOnDesktop', 'com.apple.Finder')
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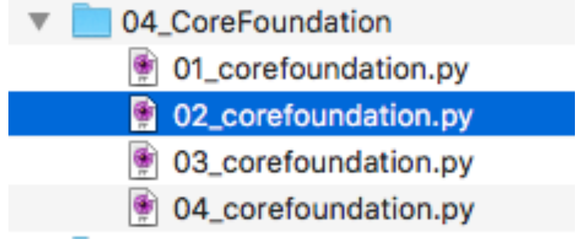
```

```
Value is '1\n' and is type <type 'str'>
Value is True and is type <type 'bool'>
```

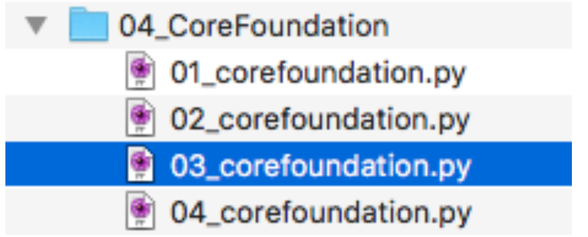


```
import subprocess
import CoreFoundation

# get the value using defaults
print 'Running defaults...'
value = subprocess.check_output(
    ['/usr/bin/defaults', 'read', 'com.apple.Finder', 'StandardViewSettings']
)
print 'Type returned from defaults is %s' % type(value)
print value

# get the value using CFPreferences
print 'Calling CFPreferencesCopyAppValue...'
value = CoreFoundation.CFPreferencesCopyAppValue(‘StandardViewSettings', 'com.apple.Finder')
print 'Type returned from CFPreferencesCopyAppValue is %s' % type(value)

print ("StandardViewSettings['ExtendedListViewSettings']['calculateAllSizes'] "
       "is: %s" % value['ExtendedListViewSettings']['calculateAllSizes'])
```



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value = subprocess.check_output(
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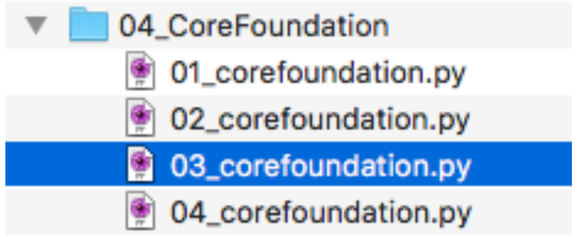

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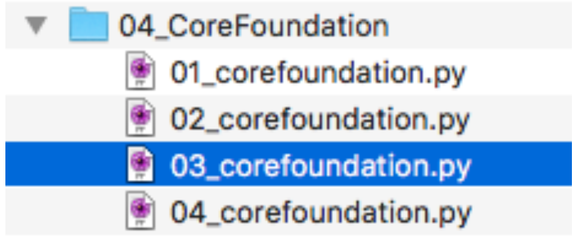
```



```
Running defaults...
Type returned from defaults is <type 'str'>
{
    ExtendedListViewSettings =     {
        calculateAllSizes = 0;
        columns =         (
                        {
                ascending = 1;
                identifier = name;
                visible = 1;
                width = 300;
            },
 <snip>

        textSize = 12;
        useRelativeDates = 1;
        viewOptionsVersion = 0;
    };
    SettingsType = StandardViewSettings;
}
```

```
Running defaults...
Type returned from defaults is <type 'str'>
{
    ExtendedListViewSettings =     {
        calculateAllSizes = 0;
        columns =         (
                        {
                ascending = 1;
                identifier = name;
                visible = 1;
                width = 300;
            },
 <snip>

        textSize = 12;
        useRelativeDates = 1;
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Type returned from defaults is <type 'str'>
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        columns =         (
                        {
                ascending = 1;
                identifier = name;
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                width = 300;
            },
 <snip>

        textSize = 12;
        useRelativeDates = 1;
        viewOptionsVersion = 0;
    };
    SettingsType = StandardViewSettings;
}
```

```
Calling CFPreferencesCopyAppValue...
Type returned from CFPreferencesCopyAppValue is <objective-c class __NSCFDictionary at 0x7fff9c3262f0>
StandardViewSettings['ExtendedListViewSettings']['calculateAllSizes'] is: False
```

```
Running defaults...
Type returned from defaults is <type 'str'>
{
    ExtendedListViewSettings =     {
        calculateAllSizes = 0;
        columns =         (
                        {
                ascending = 1;
                identifier = name;
                visible = 1;
                width = 300;
            },
 <snip>

        textSize = 12;
        useRelativeDates = 1;
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}


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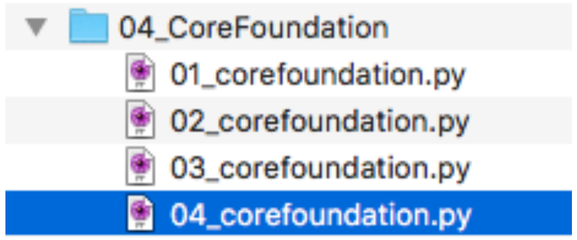
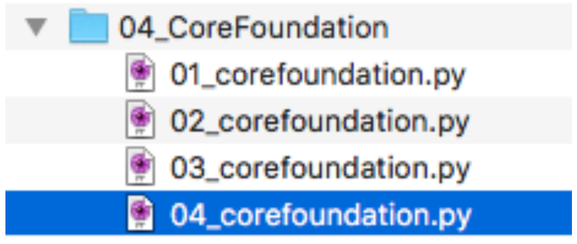
Type returned from CFPreferencesCopyAppValue is <objective-c class __NSCFDictionary at 0x7fff9c3262f0>
StandardViewSettings['ExtendedListViewSettings']['calculateAllSizes'] is: False
```

```python
import CoreFoundation

# similar to `defaults write com.apple.Finder ShowHardDrivesOnDesktop -bool NO`
CoreFoundation.CFPreferencesSetAppValue("ShowHardDrivesOnDesktop", False, "com.apple.Finder")
```



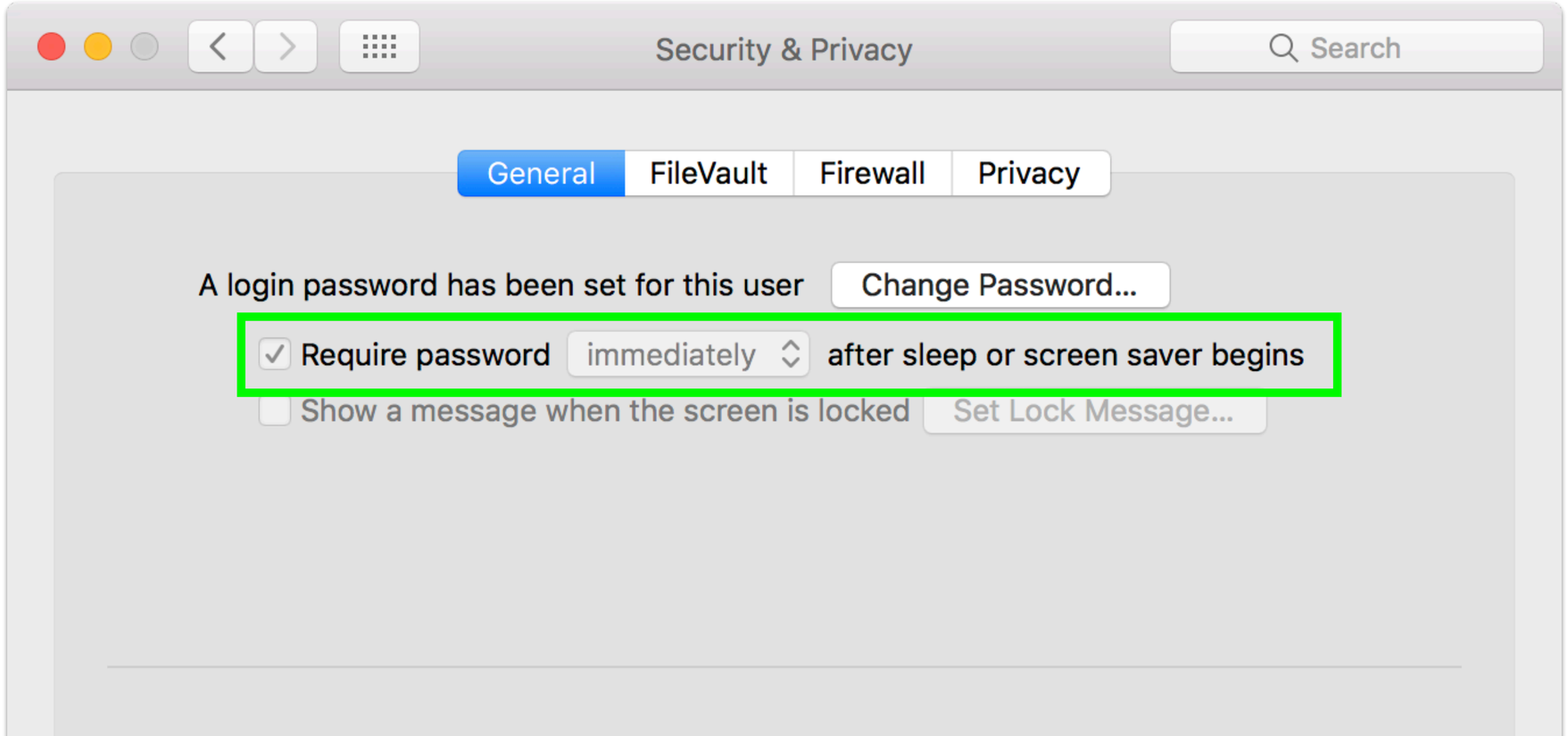
```python
import CoreFoundation

# similar to `defaults write com.apple.Finder ShowHardDrivesOnDesktop -bool NO`
CoreFoundation.CFPreferencesSetAppValue("ShowHardDrivesOnDesktop", False, "com.apple.Finder")
```



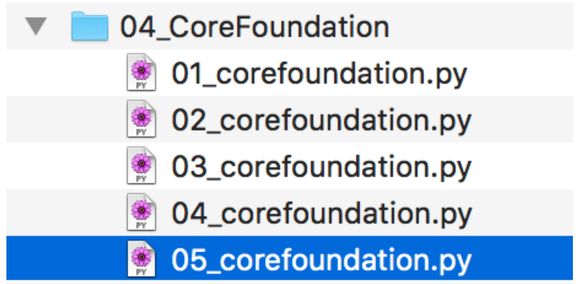
```
$ defaults read com.apple.screensaver askForPassword
```

```
$ defaults read com.apple.screensaver askForPassword
0
```

```
$ defaults read com.apple.screensaver askForPassword
0
```



```
import CoreFoundation

# get effective preference
askForPassword = CoreFoundation.CFPreferencesCopyAppValue(
    "askForPassword", "com.apple.screensaver")

# find out if it's 'forced' AKA managed always by MCX or config profile
valueIsManaged = CoreFoundation.CFPreferencesAppValueIsForced(
    "askForPassword", "com.apple.screensaver")

print "Screensaver ask for password: %s" % askForPassword
print "Screensaver ask for password value is managed: %s" % valueIsManaged
```



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    "askForPassword", "com.apple.screensaver")

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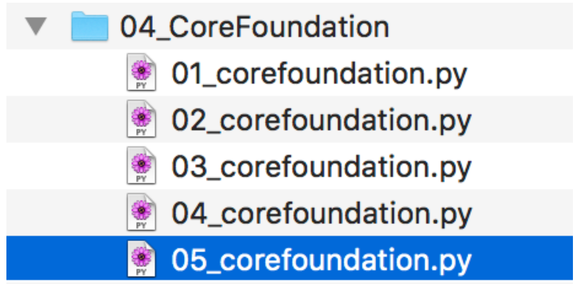
print "Screensaver ask for password value is managed: %s" % valueIsManaged
```



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print "Screensaver ask for password: %s" % askForPassword
print "Screensaver ask for password value is managed: %s" % valueIsManaged
```

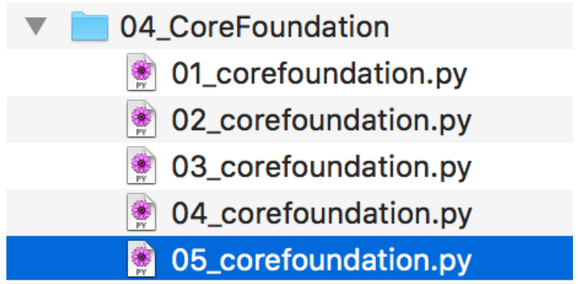

```
import CoreFoundation

# get effective preference
askForPassword = CoreFoundation.CFPreferencesCopyAppValue(
    "askForPassword", "com.apple.screensaver")

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valueIsManaged = CoreFoundation.CFPreferencesAppValueIsForced(
    "askForPassword", "com.apple.screensaver")

print "Screensaver ask for password: %s" % askForPassword
print "Screensaver ask for password value is managed: %s" % valueIsManaged
```
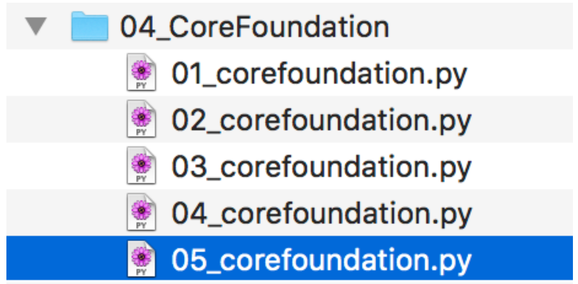

```
Screensaver ask for password: True
Screensaver ask for password value is managed: True
```



(well, a tiny part)

Class

NSWorkspace

A workspace that can launch other apps and perform a variety of file-handling services.

SDK

macOS 10.0+

Framework

AppKit

On This Page

Overview

There is one shared `NSWorkspace` object per app. You use the class method `sharedWorkspace` to access it. For example, the following statement uses an `NSWorkspace` object to request that a file be opened in the TextEdit app:

```
[[NSWorkspace sharedWorkspace] openFile:@"/Myfiles/README"
    withApplication:@"TextEdit"];
```

You can use the workspace object to:

- Open, manipulate, and get information about files and devices
- Track changes to the file system, devices, and the user database
- Get and set Finder information for files
- Launch apps

https://developer.apple.com/reference/appkit/nsworkspace?language=objc

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There is one shared `NSWorkspace` object per app. You use the class method `sharedWorkspace` to access it. For example, the following statement uses an `NSWorkspace` object to request that a file be opened in the TextEdit app:

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    withApplication:@"TextEdit"];
```

You can use the workspace object to:

- Open, manipulate, and get information about files and devices
- Track changes to the file system, devices, and the user database
- Get and set Finder information for files
- Launch apps

Legacy Constants

Table 1 describes keys for an `NSDictionary` object containing information about an app. This dictionary is returned by `activeApplication` and `launchedApplications`, and is also provided in the `userInfo` of `NSWorkspace` notifications for app launch and termination.

Note that these constants are considered legacy.

Note

https://developer.apple.com/reference/appkit/nsworkspace?language=objc

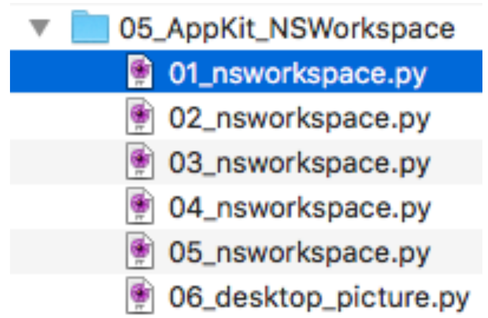
```
from AppKit import NSWorkspace

# get the shared workspace
workspace = NSWorkspace.sharedWorkspace()

app_name = 'Microsoft Word'

# find the full path for an application
print workspace.fullPathForApplication_(app_name)

# launch an application
workspace.launchApplication_(app_name)
```



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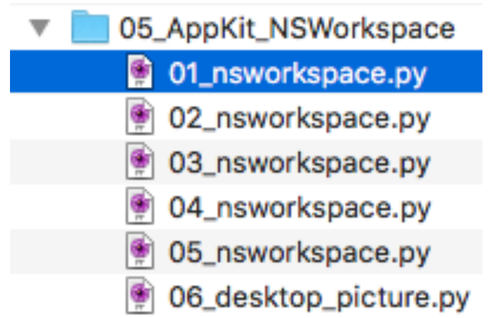

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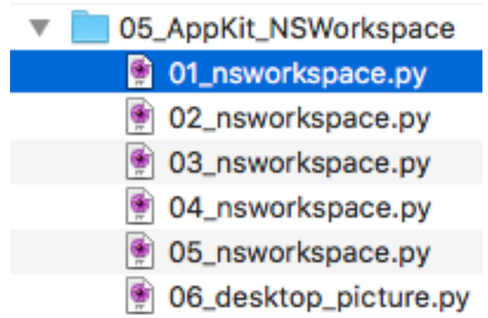

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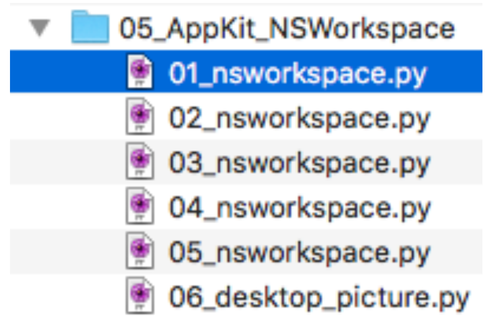

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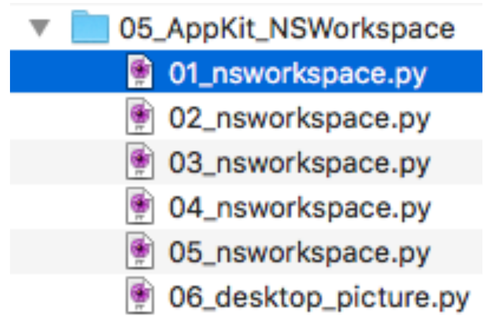

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# launch an application
workspace.launchApplication_(app_name)
```
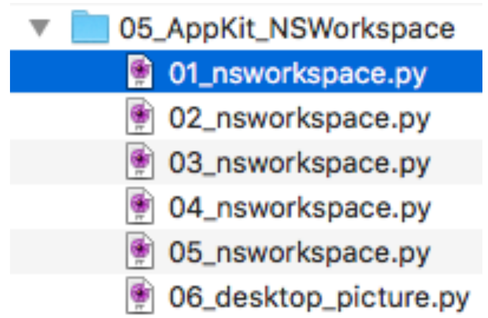
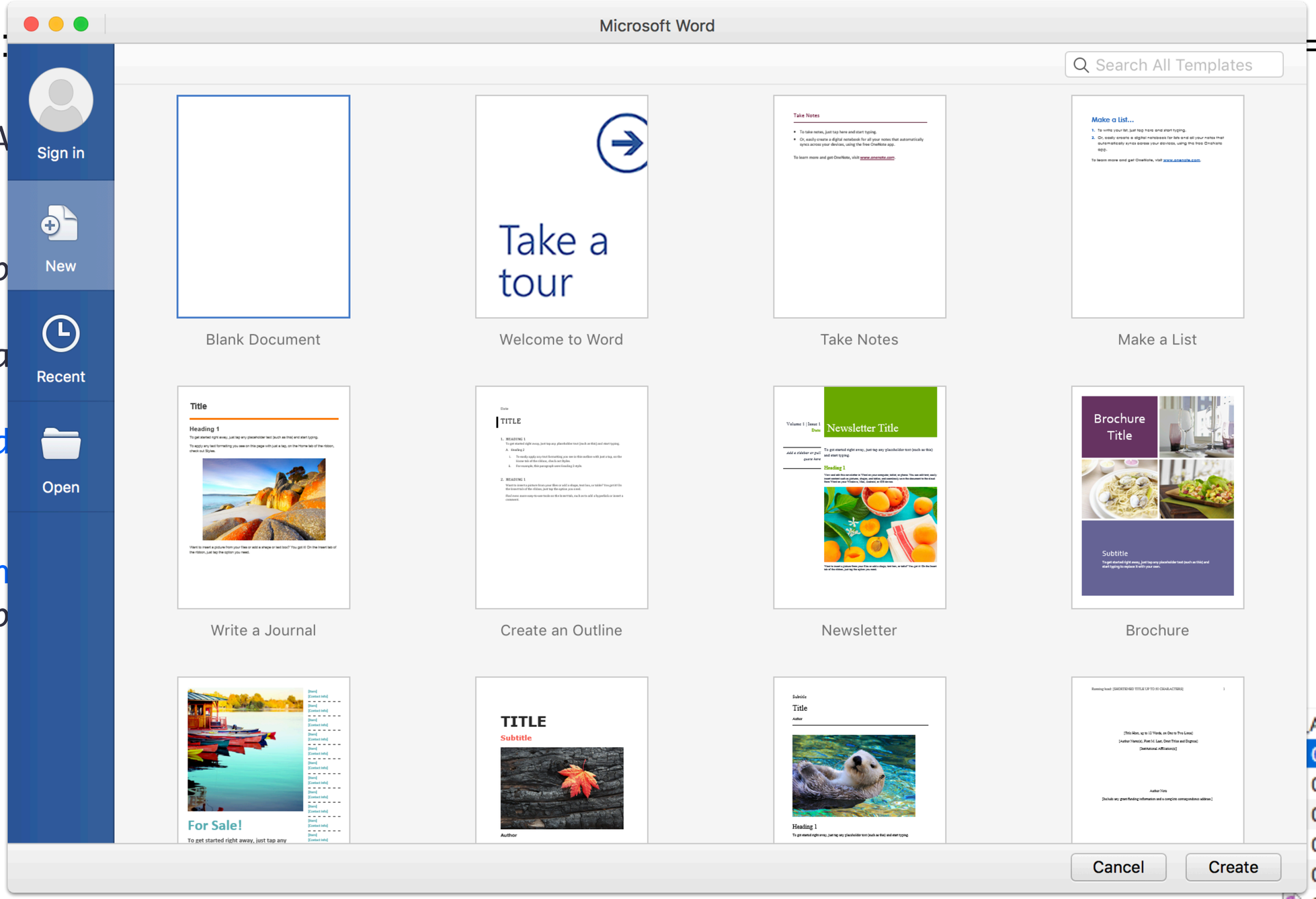

/Applications/Microsoft Word.app



https: =objc

```
from A

# get
worksp

app_na

# find
print

# laun
worksp
```



AppKit_NSWorkspace
01_nsworkspace.py
02_nsworkspace.py
03_nsworkspace.py
04_nsworkspace.py
05_nsworkspace.py
06_desktop_picture.py

https://developer.apple.com/reference/appkit/nsworkspace?language=objc

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# get the shared workspace
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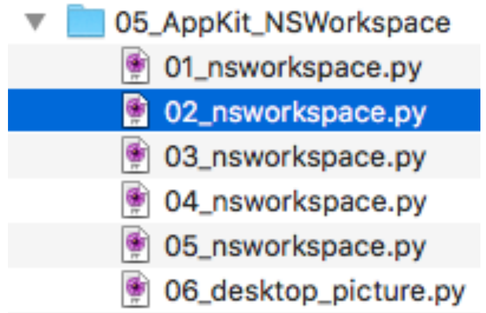

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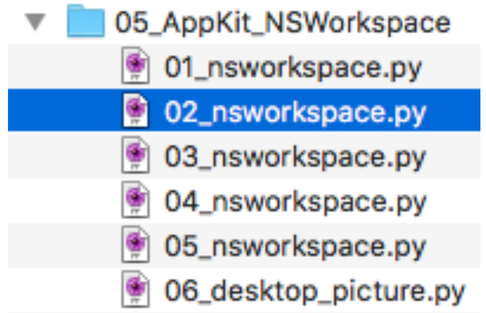

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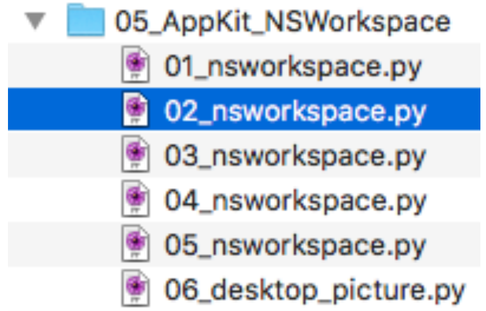
```

```
(
    "<NSRunningApplication: 0x7fc83f47e300 (com.apple.loginwindow - 37803)>",
    "<NSRunningApplication: 0x7fc83f48e760 ((null) - 37864)>",
    "<NSRunningApplication: 0x7fc83f461a00 (com.apple.touchbar.agent - 37865)>",
    "<NSRunningApplication: 0x7fc83f461b00 (com.apple.controlstrip - 37870)>",
    "<NSRunningApplication: 0x7fc83f483010 (com.apple.Terminal - 37872)>",
    "<NSRunningApplication: 0x7fc83f483110 (com.macromates.TextMate - 37880)>",
    "<NSRunningApplication: 0x7fc83f486be0 (com.apple.Safari - 37881)>",
    "<NSRunningApplication: 0x7fc83f486ce0 (com.apple.mail - 37882)>",
    "<NSRunningApplication: 0x7fc83f484da0 (com.apple.Preview - 37883)>",
    "<NSRunningApplication: 0x7fc83f484e30 (com.apple.iCal - 37885)>",
    "<NSRunningApplication: 0x7fc83f484f30 (com.apple.iChat - 37889)>",
    "<NSRunningApplication: 0x7fc83f488ad0 (com.apple.systemuiserver - 37894)>",
```



Class

NSRunningApplication

An object that can manipulate and provide information for a single instance of an app.

SDK

macOS 10.6+

Framework

AppKit

Overview

Some properties of an app are fixed, such as the bundle identifier. Other properties may vary over time, such as whether the app is hidden. Properties that vary can be observed with key-value observing, in which case the description comment for the method notes this capability.

Properties that vary over time are inherently race-prone. For example, a hidden app may unhide itself at any time. To ameliorate this, properties persist until the next turn of the main run loop in a common mode. For example, if you repeatedly poll an unhidden app for its hidden property without allowing the run loop to run, it will continue to return NO, even if the app hides, until the next turn of the run loop.

`NSRunningApplication` is thread safe, in that its properties are returned atomically. However, it is still subject to the main run loop policy described above. If you access an instance of `NSRunningApplication` from a background thread, be aware that its time-varying properties may change from under you as the main run loop runs (or not).

An `NSRunningApplication` instance remains valid after the app exits. However, most properties lose their significance, and some properties may not be available for a terminated application.

https://developer.apple.com/reference/appkit/nsrunningapplication?language=objc

Application Information

`localizedName`

Indicates the localized name of the application.

`icon`

Returns the icon for the receiver’s application.

`bundleIdentifier`

Indicates the `CFBundleIdentifier` of the application.

`bundleURL`

Indicates the URL to the application's bundle.

`executableArchitecture`

Indicates the executing processor architecture for the application.

`executableURL`

Indicates the URL to the application's executable.

`launchDate`

Indicates the date when the application was launched.

`finishedLaunching`

Indicates whether the receiver’s process has finished launching,

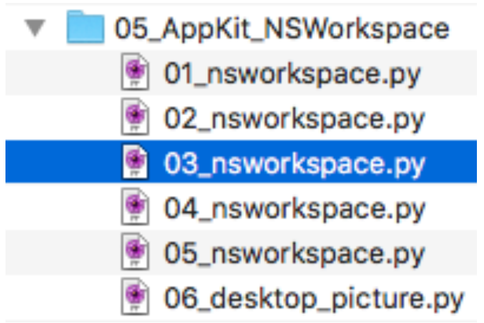
https://developer.apple.com/reference/appkit/nsrunningapplication?language=objc

```
from AppKit import NSWorkspace

workspace = NSWorkspace.sharedWorkspace()

running_apps = workspace.runningApplications()

for app in running_apps:
    print app.localizedName()
```



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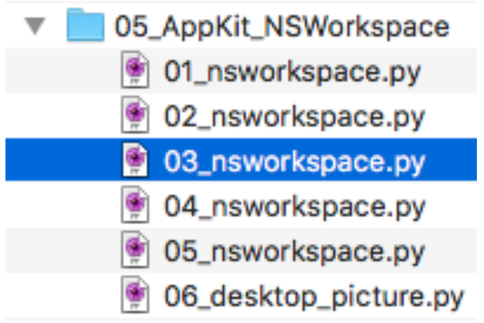

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```
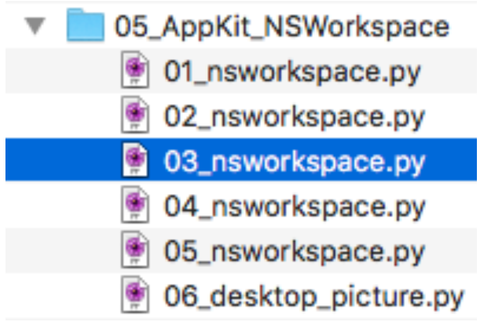
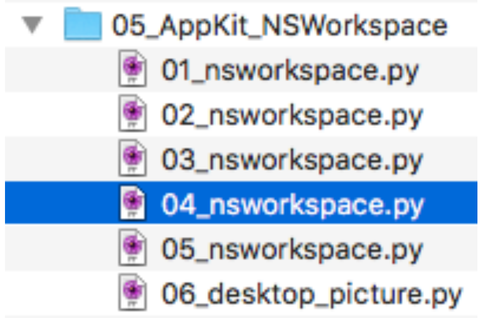

```
loginwindow
universalaccessd
Touch Bar agent
Control Strip
Terminal
TextMate
Safari
Mail
Preview
```



https://developer.apple.com/reference/appkit/nsrunningapplication?language=objc

```
from AppKit import NSWorkspace

workspace = NSWorkspace.sharedWorkspace()

running_apps = workspace.runningApplications()

# iterate through the list looking for bundleIdentifier of com.apple.Terminal
for app in running_apps:
    if app.bundleIdentifier() == 'com.apple.Terminal':
        print 'Localized name: %s' % app.localizedName()
        print 'Bundle URL: %s' % app.bundleURL()
        print 'Launch date: %s' % app.launchDate()
        print 'Currently hidden: %s' % app.isHidden()
```



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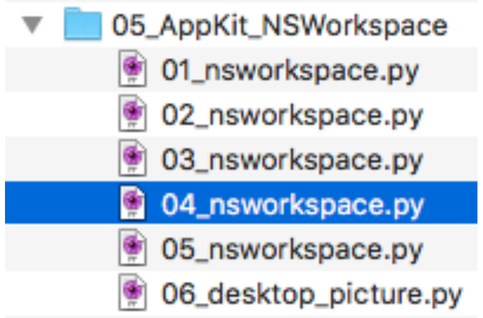

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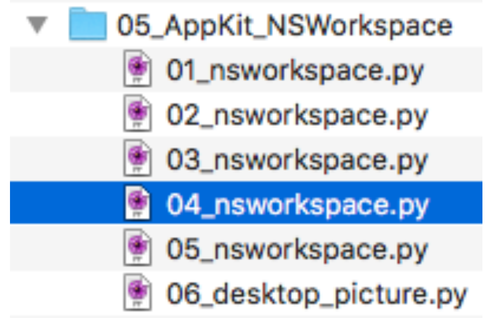
        print 'Bundle URL: %s' % app.bundleURL()
        print 'Launch date: %s' % app.launchDate()
        print 'Currently hidden: %s' % app.isHidden()
```

```
Localized name: Terminal
Bundle URL: file:///Applications/Utilities/Terminal.app
Launch date: 2017-07-13 16:13:30 +0000
Currently hidden: False
```



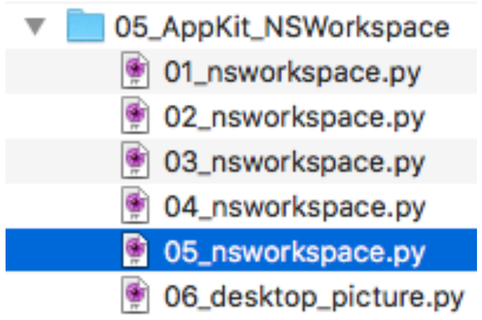
https://developer.apple.com/reference/appkit/nsapplicationactivationoptions?language=objc

```
from AppKit import NSWorkspace, NSApplicationActivateIgnoringOtherApps

# get the shared workspace object
workspace = NSWorkspace.sharedWorkspace()

# get the list of running applications
running_apps = workspace.runningApplications()

# iterate through the list looking for bundleIdentifier of com.apple.Finder
for app in running_apps:
    if app.bundleIdentifier() == 'com.apple.Finder':
        app.activateWithOptions_(NSApplicationActivateIgnoringOtherApps)
```



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```

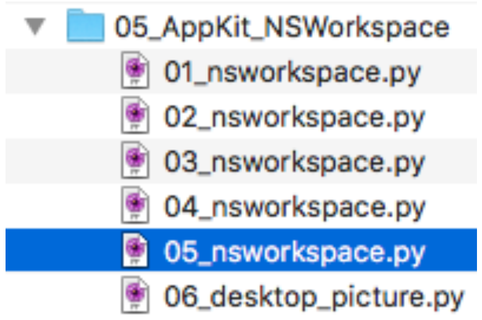

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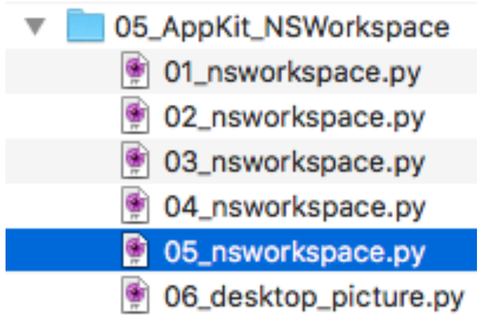

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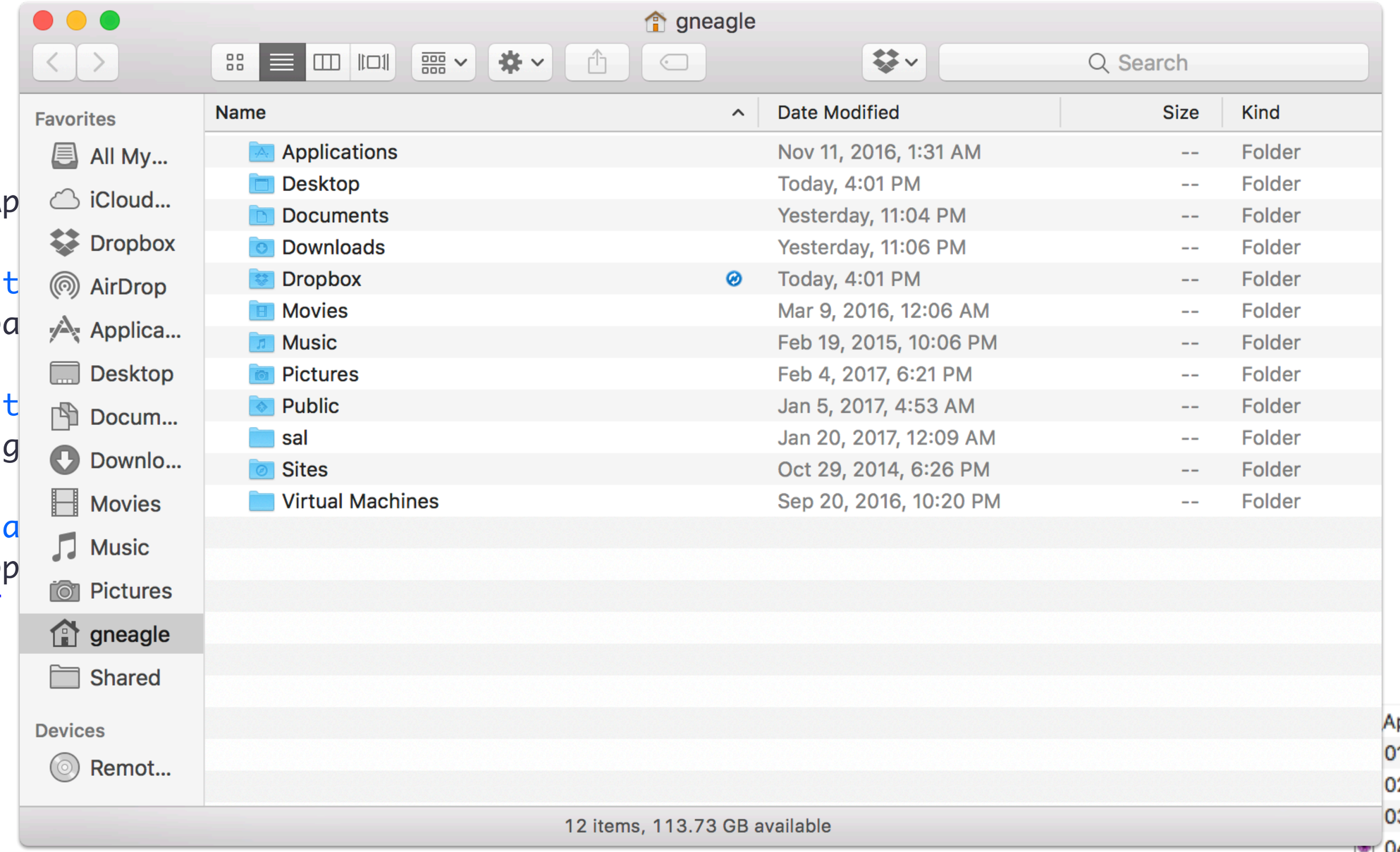
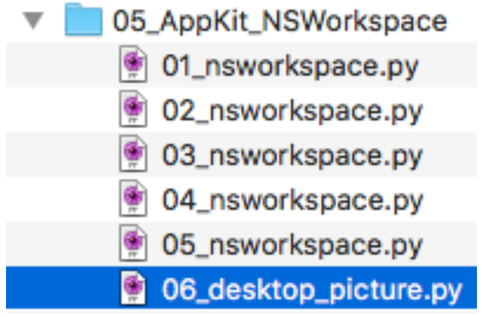
```
from Ap

# get t
workspa

# get t
running

# itera
for app
    if
```



AppKit_NSWorkspace
01_nsworkspace.py
02_nsworkspace.py
03_nsworkspace.py
04_nsworkspace.py
05_nsworkspace.py
06_desktop_picture.py

```
import glob
import random

from AppKit import NSWorkspace, NSScreen
from Foundation import NSURL

# pick a picture at random from our folder of pictures
pictures_glob = glob.glob("/Library/Desktop Pictures/*.jpg")
picture_path = random.choice(pictures_glob)

# convert the desktop picture path to an NSURL object
# https://developer.apple.com/reference/foundation/nsurl?language=objc
file_url = NSURL.fileURLWithPath_(picture_path)

# get shared workspace
# https://developer.apple.com/reference/appkit/nsworkspace?language=objc
workspace = NSWorkspace.sharedWorkspace()

# iterate over all screens
# https://developer.apple.com/reference/appkit/nsscreen?language=objc
for screen in NSScreen.screens():
    # tell the workspace to set the desktop picture
    (result, error) = workspace.setDesktopImageURL_forScreen_options_error_(
        file_url, screen, None, None)
```



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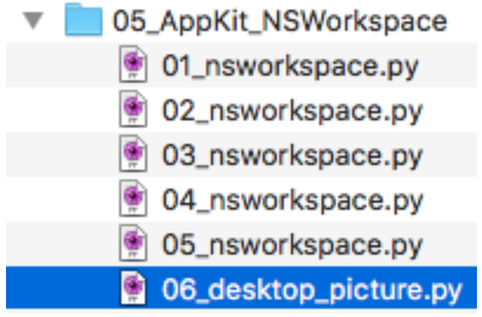

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# iterate over all screens
# https://developer.apple.com/reference/appkit/nsscreen?language=objc
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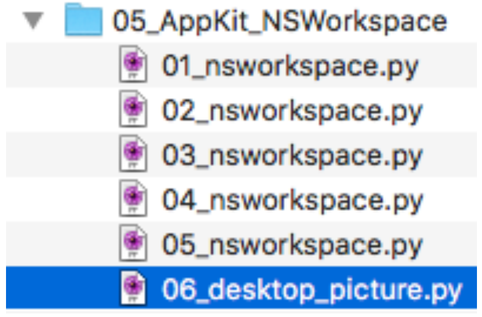

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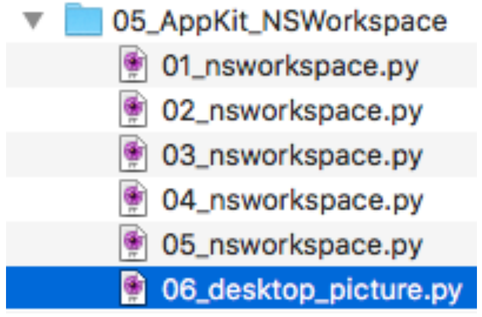

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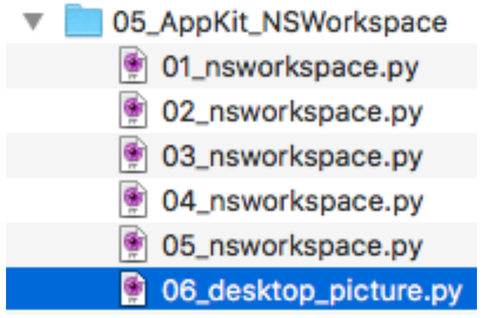

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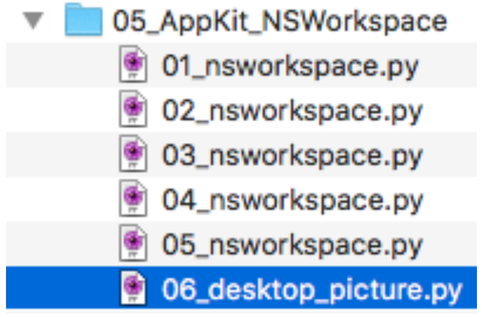


Demo


Notifications

Class

NSUserNotificationCenter

An object that delivers notifications from apps to the user.

SDK

macOS 10.8+

Framework

Foundation

On This Page

Overview

When a user notification's delivery date has been reached, or it is manually delivered, the notification center may display the notification to the user. The user notification center reserves the right to decide if a delivered user notification is presented to the user. For example, it may suppress the notification if the application is already frontmost (the delegate can override this action). The application can check the result of this decision by examining the `presented` property of a delivered user notification.

`NSUserNotification` instances the `NSUserNotificationCenter` are tracking will be in one of two states: scheduled or delivered. A scheduled user notification has a `deliveryDate`. On that delivery date, the notification will move from being scheduled to being delivered. Note that the user notification may be displayed later than the delivery date depending on a number of factors.

A delivered user notification has an `actualDeliveryDate`. That is the date when it moved from being scheduled to delivered, or when it was manually delivered using the `deliverNotification:` method.

The application and the user notification center are both ultimately subject to the user's preferences. If the user decides to hide all alerts from your application, the `presented`

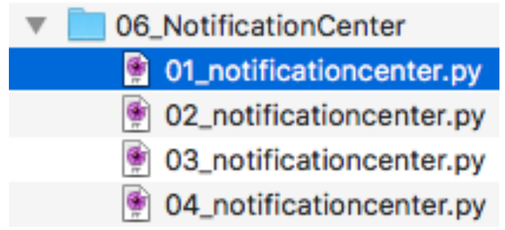
```
from Foundation import NSUserNotificationCenter
from Foundation import NSUserNotification

def notify(title, subtitle, text):
    # create a user notification
    notification = NSUserNotification.alloc().init()
    notification.setTitle_(title)
    notification.setSubtitle_(subtitle)
    notification.setInformativeText_(text)

    # get the default User Notification Center
    nc = NSUserNotificationCenter.defaultUserNotificationCenter()

    # tell the notification center to deliver the user notification
    nc.deliverNotification_(notification)


notify(u'Updates available', u'', u'Software updates are available.')
```



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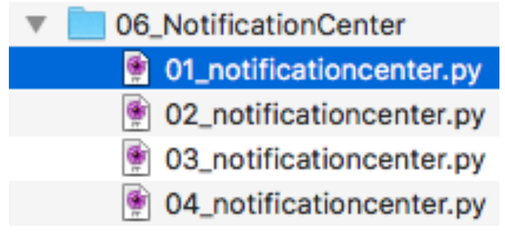

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    nc = NSUserNotificationCenter.defaultUserNotificationCenter()

    # tell the notification center to deliver the user notification
    nc.deliverNotification_(notification)


notify(u'Updates available', u'', u'Software updates are available.')
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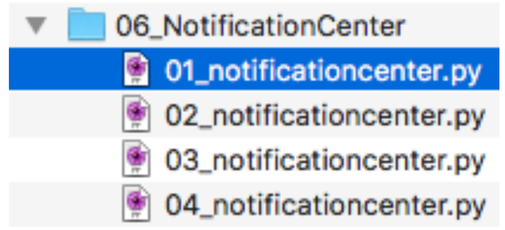

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from Foundation import NSUserNotificationCenter
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def notify(title, subtitle, text):
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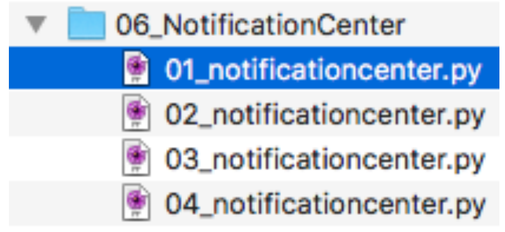

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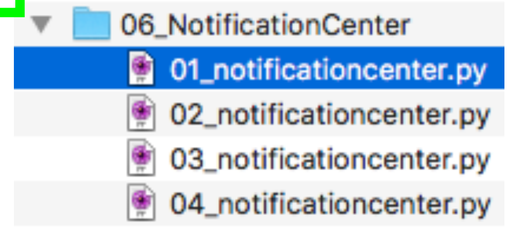

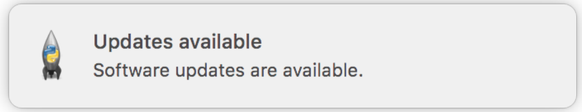


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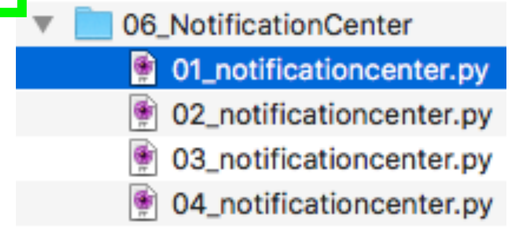

```
from Foundation import NSBundle
from Foundation import NSUserNotificationCenter
from Foundation import NSUserNotification

def set_fake_bundleid(bundleid):
    # disturbing hack warning! Thank you, @frogor
    bundle = NSBundle.mainBundle()
    info = bundle.localizedInfoDictionary() or bundle.infoDictionary()
    # override the bundleid with the one we want
    info['CFBundleIdentifier'] = bundleid

def notify(title, subtitle, text, bundleid=None):
    if bundleid:
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notify(u'Updates available', u'', u'Software updates are available.',
       bundleid='com.googlecode.munki.ManagedSoftwareCenter')
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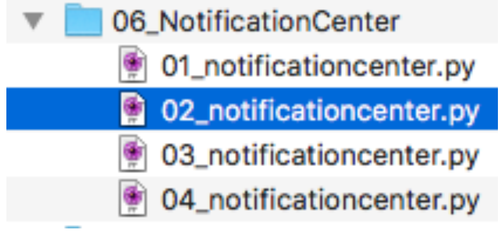

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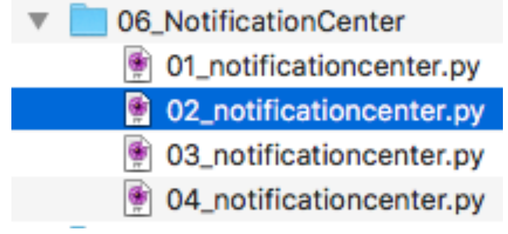

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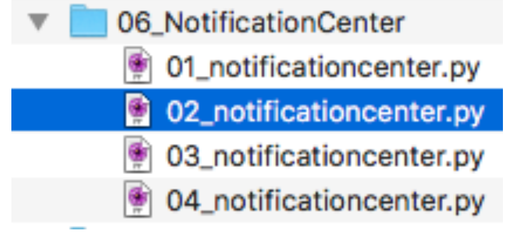

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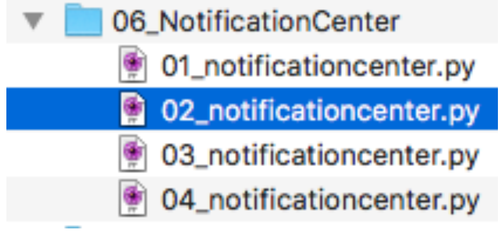

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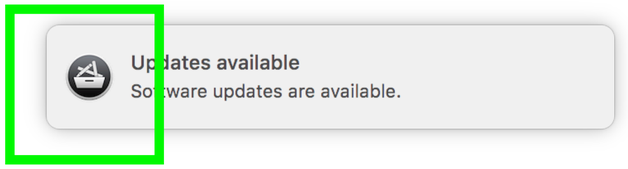
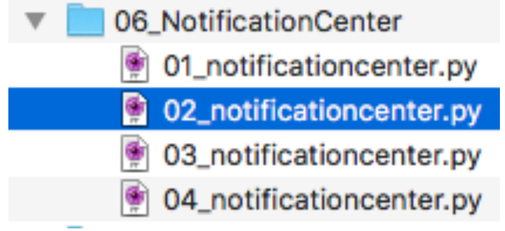




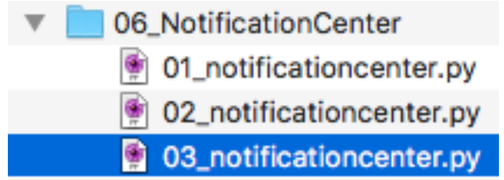
```
class NotificationCenterDelegate(NSObject):
    '''Class to implement required NSUserNotificationCenterDelegate
       methods'''
    # See https://developer.apple.com/reference/foundation/
    #         nsusernotificationcenterdelegate?language=objc

    keepRunning = True

    def userNotificationCenter_didActivateNotification_(
            self, center, userNotification):
        print "Got userNotificationCenter:didActivateNotification:"
        launch_app_by_bundleid(get_fake_bundleid())
        self.keepRunning = False

    def userNotificationCenter_shouldPresentNotification_(
            self, center, userNotification):
        print "Got userNotificationCenter:shouldPresentNotification:"
        return True

    def userNotificationCenter_didDeliverNotification_(
            self, center, notification):
        print "Got userNotificationCenter:didDeliverNotification:"
```



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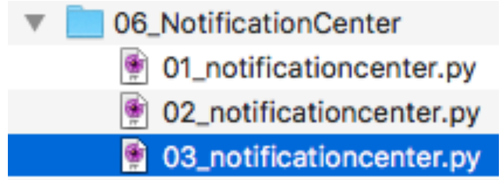

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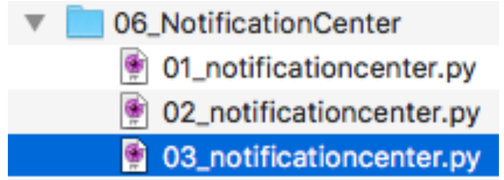

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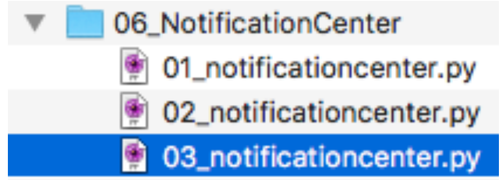
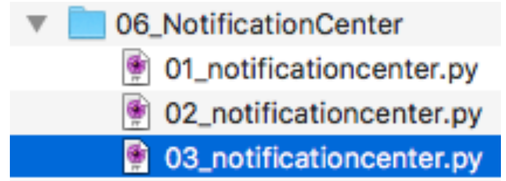


```
def get_fake_bundleid():
    # get the current bundleid (which might have been overridden)
    bundle = NSBundle.mainBundle()
    info = bundle.localizedInfoDictionary() or bundle.infoDictionary()
    return info['CFBundleIdentifier']


def launch_app_by_bundleid(bundleid):
    # We really should use NSWorkspace methods but we'll be lazy
    subprocess.call(['/usr/bin/open', '-b', bundleid])
```



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def notify(title, subtitle, text, bundleid=None):
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    # get the default User Notification Center
    nc = NSUserNotificationCenter.defaultUserNotificationCenter()

    # create a delegate object that implements our delegate methods
    my_delegate = NotificationCenterDelegate.alloc().init()
    nc.setDelegate_(my_delegate)

    # deliver the notification
    nc.deliverNotification_(notification)

    # keep running until the notification is activated
    while (nc_delegate.keepRunning):
       NSRunLoop.currentRunLoop().runUntilDate_(
           NSDate.dateWithTimeIntervalSinceNow_(0.1))
```

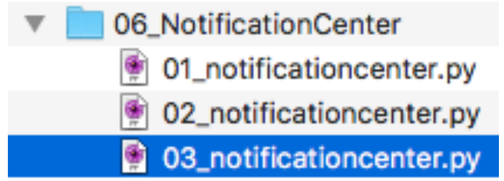

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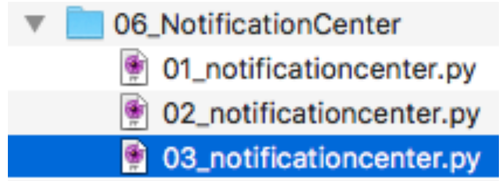


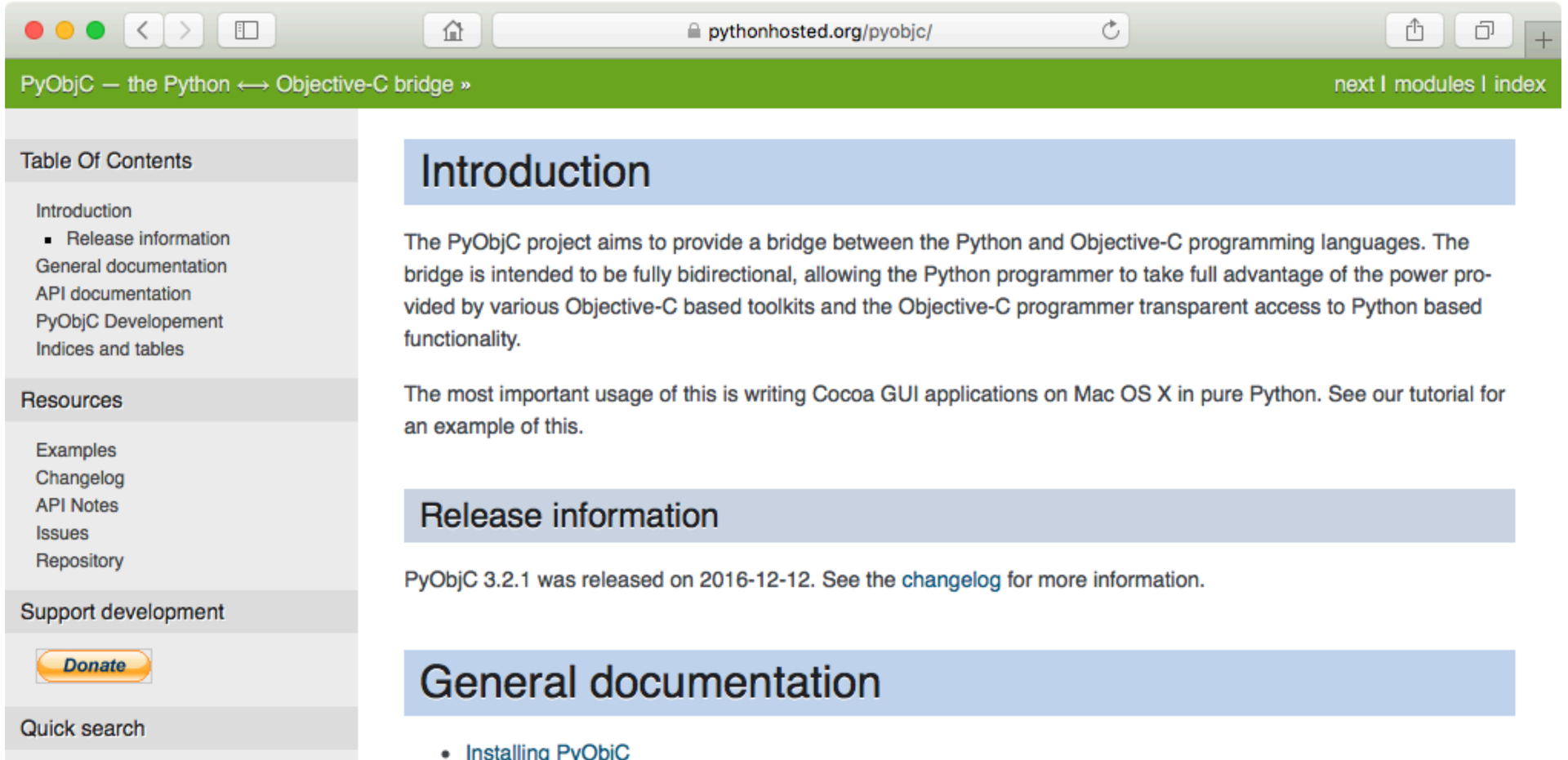
Demo

Links

https://github.com/gregneagle/psumac2017

Official PyObjC documentation

https://pythonhosted.org/pyobjc/



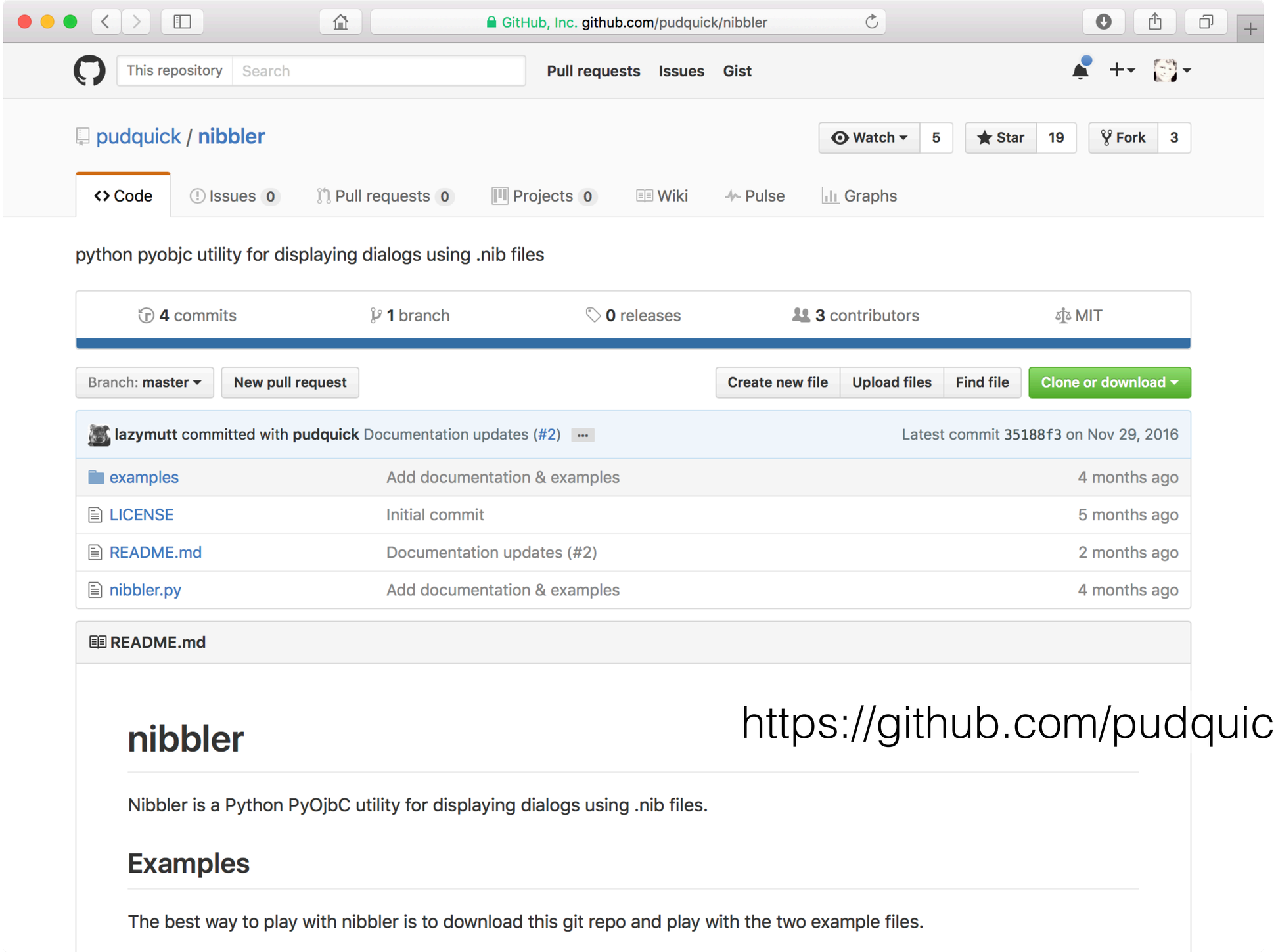
https://gist.github.com/pudquick
aka @frogor on Slack
aka @Mikeymikey on Twitter
aka Michael Lynn

Bridging more Python and Cocoa:
http://michaellynn.github.io/2015/08/08/learn-you-a-better-pyobjc-bridgesupport-signature/

Battery status:
https://gist.github.com/pudquick/134acb5f7423312effcc98ec56679136

Timezone autodiscovery:
https://gist.github.com/pudquick/ba235b7e90aafb9986158697a457a0d0

Locking the screen:
https://gist.github.com/pudquick/097f97f4cb67c554f04dba6b5a09a506



https://github.com/pudquick/nibbler

More

http://www.mactech.com/articles/mactech/Vol.25/25.08/2508MacEnterprise-SystemFrameworkScripting/index.html

https://managingosx.wordpress.com/2015/02/02/command-line-tools-via-python-and-cocoa/

https://managingosx.wordpress.com/2015/02/05/accessing-more-frameworks-with-python-2/

Feedback: https://bit.ly/psumac2017-190