Creating Your First CocoaPod

by Andy Obusek 3 Aug 2015 Difficulty: Intermediate Length: Long Languages: English

CocoaPods iOS SDK iOS Xcode IDEs Swift Mobile Development

Introduction

CocoaPods is a great tool to help with dependency management when building

iOS or OS X applications. Having been around and well supported for years, CocoaPods' maturity is evident. While it's very common to use CocoaPods in your iOS or OS X software projects, it's less common to actually create a pod others to use. This tutorial will walk you through creating your first pod and it will give you some tips on what characterizes a great pod.

1. Install CocoaPods

Obviously, to create a pod, you need to install CocoaPods. It's available as a Ruby gem from RubyGems. To install CocoaPods, execute the following commands from the command line:

```
gem install cocoapods
```

This tutorial was written against CocoaPods 0.37.2.

2. Step by Step Overview

From a high level, there are five steps involved to create your first pod:

1. Determine the idea for your first pod.
2. Use the `pod lib` command to create the skeleton directory structure and associated files for your pod.
3. Update the metadata of your pod, such as its license and version information.
4. Add the code for your pod. This includes both the code for the pod itself as well as any code that would be needed for an example project.
5. Make the pod publicly available.

3. Podstorming

Podstorming isn't actually a word, but it's time to brainstorm the functionality for your first pod. There are over 10,000 publicly available pods indexed in the official Specs repository. People have found all sorts of things to make available as a pod. Here are some suggestions to help you start podstorming, err, I mean brainstorming:

- **Utility Code:** Do you have a unique take on how to perform certain string manipulations? Do you have a favorite subclass that you wrote for performing a slick animation on a `UIView`? Specific utility code like this is a great example of what can be turned into a pod. It's often already well-factored and decoupled from other existing code bases.
- **Third Party Packages:** Have you created a wrapper around another third party API? Do you have an app for which you'd like to provide hooks for other apps to integrate with, such as for authentication? Does your company provide a web API for web based resources that would be useful for other iOS apps to easily integrate with? If so, then a pod makes sense since it's an easy way for other iOS applications to easily integrate with these packages.
- **UI Components:** Did you create a buttery-smooth UI widget that you'd like other applications to be able to use? These are my favorite pods. It's great to be able to add a complicated and delightful UI component to an application by simply including a pod dependency.
- Anything that you'd like others to be able to use. Did you create something that you think others would find useful? If so, turn it into a pod so others can easily use it.

This tutorial will walk you through creating a pod that allows you to create a `UILabel` that blinks. We'll call it **BlinkingLabel**.

4. Create the Project

Time to dig in. Now that you know the functionality that your pod is going to provide, it's time to create it. The `pod lib` command is an important tool that we'll use for two purposes during the creation process.

1. `pod lib lint` will validate that everything is okay with your pod and that it's ready to use by CocoaPods.
2. `pod lib create` will actually help give you a jump start by providing a standard directory structure with a bunch of boilerplate files necessary for a high quality pod. `pod lib create` isn't the only way to create your pod, but it is the easiest.

Open a Terminal window, navigate to a working directory, and execute the following command:

```
pod lib create BlinkingLabel
```

- When you're asked what language you want to use, answer **Swift**.
- When asked if you'd like to include a demo application, answer **Yes**.
- When determining whether to create a sample project or not, the CocoaPods team suggests asking yourself "Should this Pod include a screenshot?" If so, then it's a good idea to include a sample project.
- When asked which testing framework to use, answer **None**.
- Answer **No** to the prompt regarding view based testing.

Testing is outside the scope of this tutorial, but don't let it stop you from investigating this further after this tutorial. The ratio of tests to lines of code is a factor that is considered by the CocoaPods Quality Index.

When the scaffolding for your pod is set up, Xcode will open your brand new project ready for you to work on your pod.

5. Updating Your Pod's Metadata

There are three main pieces of metadata that need to be included with your pod:

- **.podspec:** This file describes information about this specific version of your pod. Your pod's, version number, homepage, and author names are some examples of what's included. Check the official reference page for more information.
- **README:** If you've used GitHub before, you know how important a README is. A project's README, written in Markdown, is displayed on the homepage of a project on GitHub. A proper README can be the difference between someone using your project or not. Additionally, it's a factor contributing to a high **CocoaPods Quality Index** as well.
- **LICENSE:** To have your pod accepted in the Spec repository, your pod needs to include a license. The `pod lib create` command automatically populates the LICENSE file with the MIT License and that's what we're going to use for this tutorial.

To get the **.podspec** in shape, open it in Xcode. You'll find it under **BlinkingLabel/Podspec Metadata/BlinkingLabel.podspec**. Luckily, CocoaPods has created a well populated template for us when we executed the `pod lib create` command. You're about to love that tool even more. The `pod lib lint` command will automatically validate the **.podspec** file to ensure it complies with best practices. Or, if you're lazy, you can also use it figure out the bare minimum you need to do to create a proper **.podspec** file.

From the command line, in the root of the BlinkingLabel project, execute the following command:

```
pod lib lint BlinkingLabel.podspec
```

This should output the following:

```
> pod lib lint BlinkingLabel.podspec

 -> BlinkingLabel (0.1.0)
    - WARN  | The summary is not meaningful.
    - WARN  | The description is not meaningful.
    - WARN  | There was a problem validating the URL https://github.cc

[!] BlinkingLabel did not pass validation.
You can use the `--no-clean` option to inspect any issue.
```

The tool tells you that there are three things that need to be fixed in the **.podspec** file:

- add more information to the summary
- add a proper description
- specify a URL for the pod's homepage

Here are some suggested values for these fields:

- **s.summary:** A subclass on `UILabel` that provides a blink.
- **s.description:** This CocoaPod provides the ability to use a `UILabel` that may be started and stopped blinking.
- **s.homepage:** https://github.com/obuseme/BlinkingLabel (replace **obuseme** with your GitHub username)

But wait, if you've been following the instructions step by step, technically there isn't a project at that URL yet. It's time to push your project to a public repository on GitHub. While there are other options for hosting your pods, GitHub is by far the most common.

To push your project to GitHub, browse to GitHub, login or create an account, and create a **New Repository** called **BlinkingLabel**. Then, from the command line, execute the following commands:

```
git add .
git commit -m “Initial Commit"
git remote add origin https://github.com/<GITHUB_USERNAME>/BlinkingLab
git push -u origin master
```

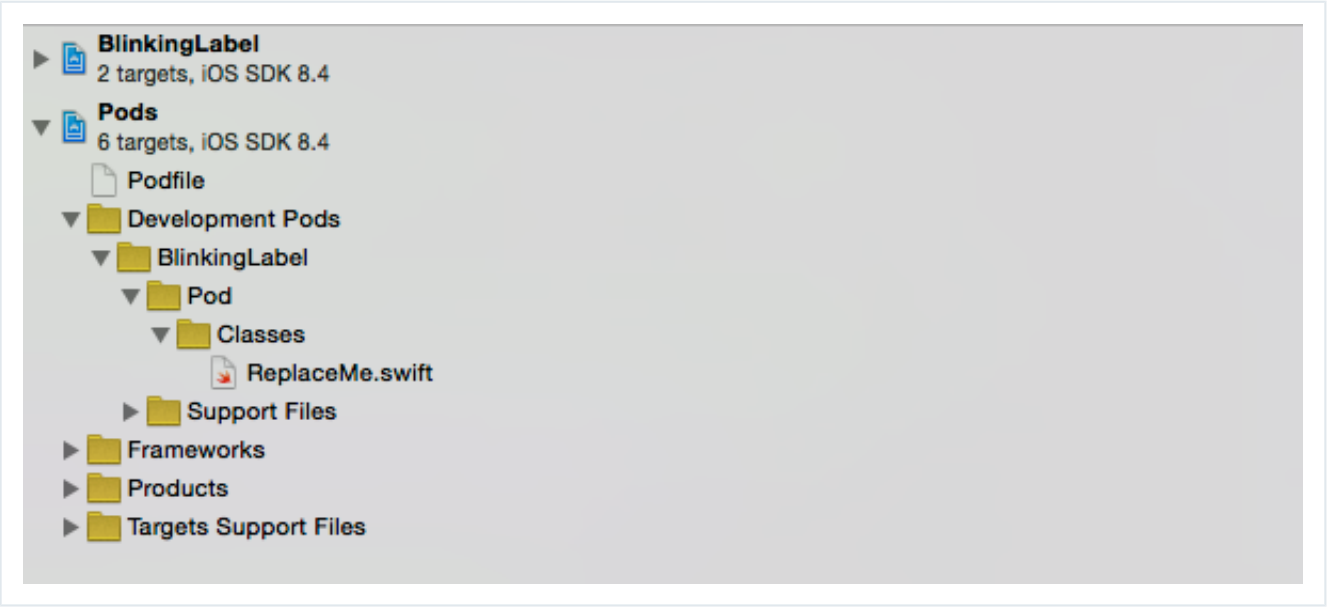
At this point, if you’ve done everything correctly and lint the **.podspec** file again, it should pass validation.

```
> pod lib lint BlinkingLabel.podspec

 -> BlinkingLabel (0.1.0)

BlinkingLabel passed validation.
```

6. Adding Code

You now have the basic shell of a pod, but it doesn’t do anything. It’s time to add some functionality. The nifty thing about the sample project that CocoaPods created for you is that you can simultaneously write code for both the pod and the example project.

First, find the file **ReplaceMe.swift** under **Pods/Development Pods/BlinkingLabel/Pod/Classes/** and delete it.



Next, create a new Swift file in the same directory and name it **BlinkingLabel.swift**. Replace the contents of the new file with the following:

```
01 public class BlinkingLabel : UILabel {
02     public func startBlinking() {
03         let options : UIViewAnimationOptions = .Repeat | .Autoreverse
04         UIView.animateWithDuration(0.25, delay:0.0, options:options,
05             self.alpha = 0
06             }, completion: nil)
07     }
08
09     public func stopBlinking() {
10         alpha = 1
11         layer.removeAllAnimations()
12     }
13 }
```

You just added functionality to your first pod, a subclass on `UILabel`. The subclass provides a method to make the label blink and another method to stop it from blinking.

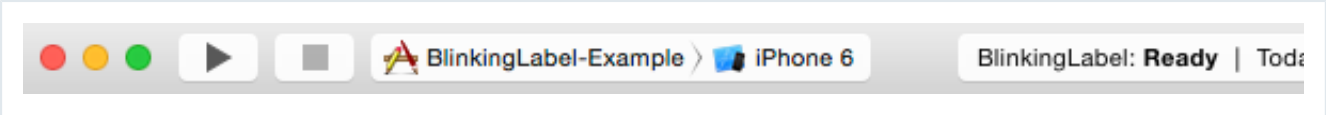
To ensure it's easy for other developers to understand how to use `BlinkingLabel`, add some sample code to the example project. Open **BlinkingLabel/Example for BlinkingLabel/ViewController.swift** and make it look like this:

```swift
import UIKit
import BlinkingLabel

class ViewController: UIViewController {

    var isBlinking = false
    let blinkingLabel = BlinkingLabel(frame: CGRectMake(10, 20, 200,

    override func viewDidLoad() {
        super.viewDidLoad()

        // Setup the BlinkingLabel
        blinkingLabel.text = "I blink!"
        blinkingLabel.font = UIFont.systemFontOfSize(20)
        view.addSubview(blinkingLabel)
        blinkingLabel.startBlinking()
        isBlinking = true

        // Create a UIButton to toggle the blinking
        let toggleButton = UIButton(frame: CGRectMake(10, 60, 125, 3(
        toggleButton.setTitle("Toggle Blinking", forState: .Normal)
        toggleButton.setTitleColor(UIColor.redColor(), forState: .Nor
        toggleButton.addTarget(self, action: "toggleBlinking", forCor
        view.addSubview(toggleButton)
    }

    func toggleBlinking() {
        if (isBlinking) {
            blinkingLabel.stopBlinking()
        } else {
            blinkingLabel.startBlinking()
        }
        isBlinking = !isBlinking
    }

}
```

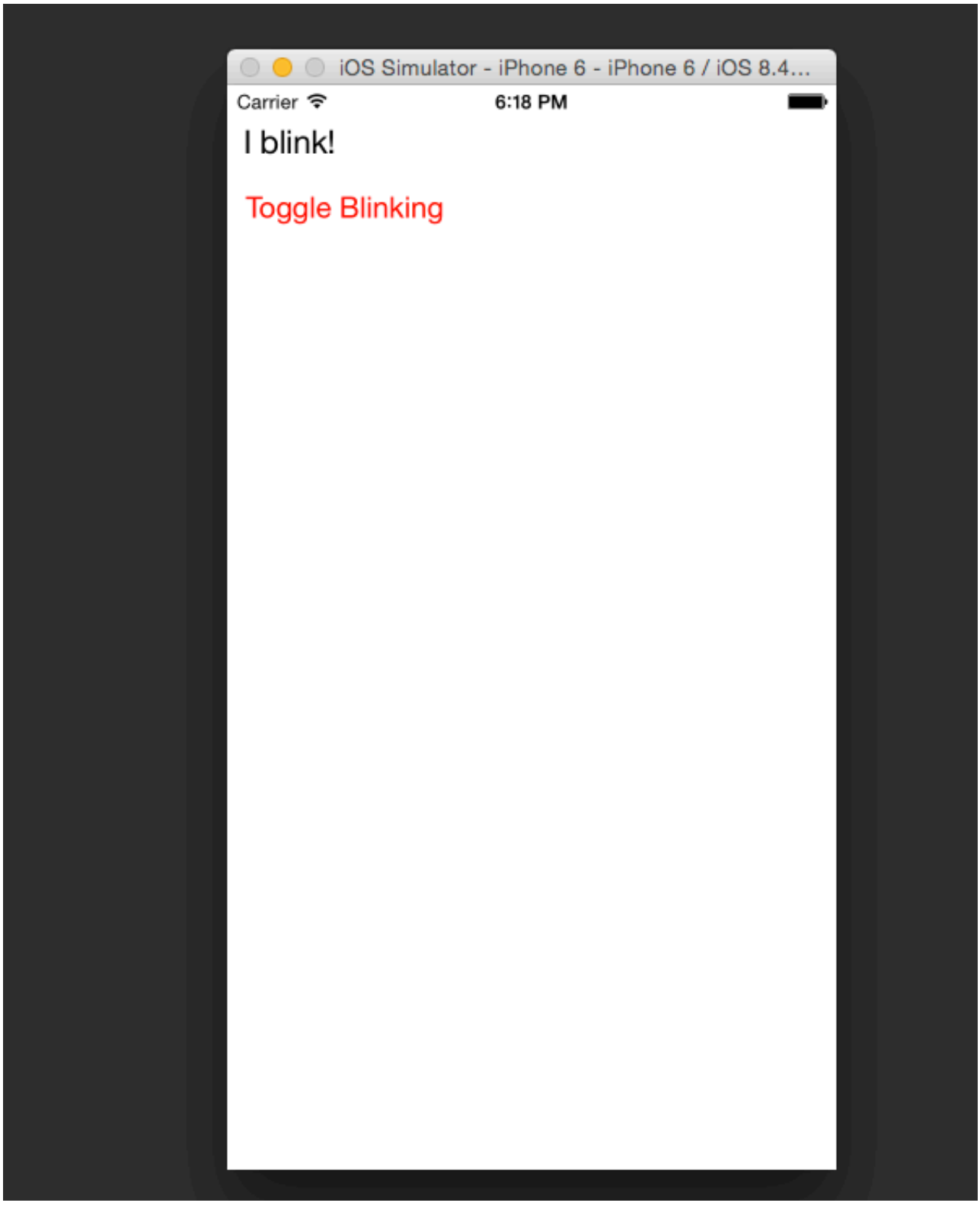
At this point, you'll see Xcode complaining with a lot of errors in **ViewController.swift**. This is because the pod for `BlinkingLabel` isn't installed on the example project yet. To do that, switch to the command line and from the root of the **BlinkingLabel** directory execute the following command:

```
> cd Example
> pod install
Analyzing dependencies
Fetching podspec for `BlinkingLabel` from `../`
Downloading dependencies
Installing BlinkingLabel 0.1.0 (was 0.1.0)
Generating Pods project
Integrating client project
```

Next, switch back to Xcode and select the **BlinkingLabel-Example** target and click the **Run** button.



You should see something like this:



Tap **Toggle Blinking** to try out your new pod. The final step in creating your pod is to update the README.md. In Xcode, open **README.md** under **BlinkingLabel/Podspec Metadata/README.md**. You'll see that CocoaPods added some default documentation for you. Don't stop there,

you can make it better. Add some documentation about the pod and include a screenshot. Remember that a README is often the first thing that someone will see when looking at your pod. It's important that it is of high quality. Take a look at mine for some inspiration.

7. Making Your Pod Available

Now that you have a fully functional pod running on your local machine, it's time to make **BlinkingLabel** available to others for inclusion in their projects. At a high level, this is accomplished by getting your new pod into the public Specs repository.

The **Specs** repository is the public place on GitHub where all public pods are indexed. You actually aren't forced to use GitHub to host your pod's source code. You can also use BitBucket for example. Your pod's spec will be stored in the Specs repository on GitHub though.

It's very simple to have your pod added to the Specs repository. There are three steps involved for submitting your pod. *Don't try these steps as I've already made BlinkingLabel public. They are only here to serve as a reference.*

As a prerequisite, make sure your local changes to the **BlinkingLabel** project directory are added to git and pushed to the remote.

Step 1: Tagging

Tag your most recent commit and push it to the remote.

```
> git tag 0.1.0
> git push origin 0.1.0
Total 0 (delta 0), reused 0 (delta 0)
To https://github.com/obuseme/BlinkingLabel.git
 * [new tag]         0.1.0 -> 0.1.0
```

This step indicates that you are marking this commit as a specific release of your pod. The name of the tag should match **s.version** in your **.podspec** file. The next step will validate this.

Step 2: Validation

Next, run the following command from the command line to verify that everything is configured correctly between where your source code is stored and your **.podspec** file:

```
pod spec lint BlinkingLabel.podspec
```

This should output the following:

```
> pod spec lint BlinkingLabel.podspec
 -> BlinkingLabel (0.1.0)
Analyzed 1 podspec.
BlinkingLabel.podspec passed validation.
```

Step 3: Pushing to Specs Repository

Finally, push the spec to the **Specs** repository by executing the following command:

```
pod trunk push BlinkingLabel.podspec
```

This should output the following:

```
> pod trunk push BlinkingLabel.podspec
Updating spec repo `master`

Validating podspec
 -> BlinkingLabel (0.1.0)

Updating spec repo `master`

  - Data URL: https://raw.githubusercontent.com/CocoaPods/Specs/f7fb5
  - Log messages:
```

```
    - June 29th, 20:40: Push for `BlinkingLabel 0.1.0' initiated.
    - June 29th, 20:40: Push for `BlinkingLabel 0.1.0' has been pushe
```


8. What Makes a Great Pod?

There are literally thousands of pods available in the **Specs** repository. When browsing for a pod, it’s not easy to determine a pod's quality. When bringing in third party code into your project, you want to have a high level of confidence in the code that you will be shipping to customers. Historically, a developer had to make their own interpretation of the quality of a random pod that they found.

As of June 2015, CocoaPods has provided a tool called the Quality Index that provides a summarized judgement on the quality of a given pod based on certain metrics. The comprehensive and most up to date metrics can be found on GitHub.

In summary, here are things that can help improve the **Quality Index** of your pod:

- project popularity as measured by stars, forks, subscribers, and

contributors
- code documentation
- high quality README
- written in Swift
- use of the GPL license
- not many open issues
- code quality ensured through automated tests
- lean install size by minimizing included assets
- smaller, well composed, classes

The **Quality Index** of a pod may either go up or down based on how well a given project conforms to these metrics.

Conclusion

Creating pods for others to use is fun and a good way to contribute back to the community. This tutorial has shown you what pieces of code make for good pods, how to create your first pod, how to make it publicly available, and what techniques can make for a great pod.

You now have the knowledge to create your first pod. I'd love to hear what pods you have in mind to build. Please come back and drop a link to your pod once it's created.

Andy Obusek

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iOS Engineer since iOS 3.0 with professional experience as an independent as well as in the enterprise. I'm co-host of the podcast Brotherly Mobile. We talk about technology and software development with a loose focus on mobile devices. I also have spent significant time coding in the J2EE world.

obusek

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Name

earthabbey • a year ago

It seems pod lib create is not set up for Swift 3. When I do it XCode wants to convert the project when it opens. Do you happen to know when it will be converted to work with the new swift version?

1 • Reply • Share ›

Thiago Rossener • 2 years ago

Very nice post!

I just made my first pod, and I would like to share it with you.

CocoaPods
https://cocoapods.org/pods/...

GitHub (I improved the documentation)
https://github.com/thiagoro...

1 • Reply • Share ›

Andy from cleanswifter.com Thiago Rossener • 2 years ago

Nice! Currency input into a textfield is definitely a problem in need of a common solution!

common solution!

• Reply • Share ›

hulke • 13 days ago

Great and clear !
Thanks a lot ;)

• Reply • Share ›

Rohit Singh • 6 months ago

Hi I have create a pod with github link "https://cocoapods.org/pods/...". However when I try to install it in any project it gives the error that unable to find the pod. Can you please help me in this ?

• Reply • Share ›

Viktor Semenyuk ➚ Rohit Singh • 14 days ago

go to the pod directory and run: pod repo update

• Reply • Share ›

Alex Borodulin • 7 months ago

Who knows how to change language from objective-c to swift in my cocoapod page?

• Reply • Share ›

dvi • 10 months ago

Thank for this great tutorial.

I just mad my first pod. Check it out
https://github.com/iDhaval/...

• Reply • Share ›

Олександр Гончаренко • a year ago

thanks for tutorial. Please help, how correctly to update version of pod. Verson 1.0.0 has already pushed successfully.

• Reply • Share ›

rahul gupta • a year ago

In step 3 of publishing pod : while using command
pod trunk push PodName.podspec

I am receiving error like this: The `source_files` pattern did not match any file.
Also in my podspec the source file path is as follows:
s.source_files = 'PodName/Classes/**/*'

Please help me out for this issue. Thanks in advance

Please help me out for this issue, Thanks in advance

Reply • Share ›

Rajan • a year ago

This is what I was looking for from past 1 and 1/2 year. Thanks Andy.

Reply • Share ›

Cruz Valerie • a year ago

Hi! I tried to do something like this but I'm stuck with loads of lint error similar to this one:
error: use of undeclared type 'UIView'
What's happening? Would appreciate any help.

Reply • Share ›

Luda Fux • a year ago

Hi, thanks for the awesome post!
How do I update existing branch (tag)? I am trying to "pod trunk push MyPodName.podspec"
But I get the following:
-> MyPodName (0.1.0)
- ERROR | [iOS] unknown: Encountered an unknown error ([!] /usr/bin/git clone https://github.com/LudaFuxP...
/var/folders/h0/knhpn8z16n3cz6tkny5rmtn00000gn/T/d20161228-47834-nli8c4 --template= --single-branch --depth 1 --branch v0.1.0
Cloning into '/var/folders/h0/knhpn8z16n3cz6tkny5rmtn00000gn/T/d20161228-47834-nli8c4'...
warning: Could not find remote branch v0.1.0 to clone.
fatal: Remote branch v0.1.0 not found in upstream origin
) during validation.

Reply • Share ›

chengfei heng • a year ago

$ pod trunk push CFExtension.podspec
....
CFExtension.podspec passed validation.
...

but search no result.

$ pod search CFExtension
[!] Unable to find a pod with name, author, summary, or description matching `CFExtension`

Reply • Share ›

Jim Hessin • a year ago

I'm trying to build a pod that depends on another pod - how do I do this? I need access to the Firebase/Database pod in my pod code.

• Reply • Share ›

chengfei heng ↗ Jim Hessin • a year ago

xx.podspec

s.dependency 'ObjectMapper'

• Reply • Share ›

Matthew Rigdon • a year ago

Thanks for the tutorial! Just created my first pod: https://github.com/mrigdon/....

Also, does anyone know a good way of making noise for my pod? How do I blow this thing up?

• Reply • Share ›

Rowan G1 • a year ago

Finally, I understand something about Cocoapods!

• Reply • Share ›

Agus Cahyono • 2 years ago

Thanks for your tutorials, i have been create my own pod,

https://github.com/balitax/...

• Reply • Share ›

Scott Gardner • 2 years ago

Great post, thanks!

• Reply • Share ›

Martin Prot • 2 years ago

"What Makes a Great Pod?
> Written in Swift"

Not so agree with this. Swift is a new language, but Objective-C is not - and will not be - an outdated one.
It's like to say "please use these new kind of javascript framework instead old using old PHP to create your server".
Okay, I'm just trolling a bit, but this point shouldn't be in the list.

EDIT : Ok, I just misread that part. This point belongs to an automated Quality Index. I found this really strange (and sad) from cocoapods team to make this point part of

the metric. I really like Swift, but I don't want to see Objective-C decline over and over.

Reply • Share ›

Dave Kliman • 2 years ago

this version didn't have errors:

```
import UIKit
public class BlinkingLabel : UILabel {
    public func startBlinking() {
        let options: UIViewAnimationOptions = [.Repeat, .Autoreverse]
        UIView.animateWithDuration(0.25, delay:0.0, options:options, animati
            self.alpha = 0
            }, completion: nil)
    }
    public func stopBlinking() {
        alpha = 1
        layer.removeAllAnimations()
    }
}
```

Reply • Share ›

Vineeth Vijayan • 2 years ago

Thanks a lot great post :), helped a lot

Reply • Share ›

Jatiender Kumar • 2 years ago

hello

i amm follow your tutorial for making pod but error will shown when validating pod with the

command :-pod lib lint JKTable.podspec

-> JKTable.podspec

- ERROR | spec: The specification defined in `JKTable.podspec` could not be loaded.

[!] No podspec exists at path `JKTable.podspec`.

[!] JKTable.podspec did not pass validation, due to 1 error.

You can use the `--no-clean` option to inspect any issue.

Reply • Share ›

Alex Hsieh • 2 years ago

Thanks for tutorial. I made one too! :)
https://github.com/AlexHsie...

Reply • Share ›

Graham Perks • 2 years ago

Correction for the Quality Index section: *NOT* using the GPL will improve your quality index.

Reply • Share ›

dasdom • 2 years ago

Thank! This help me to implement my last pod.

Reply • Share ›

Klein Mioke • 2 years ago

When I use `pod trunk push KMCache.podspec` it shows an error:

`[!] You need to register a session first.`

OK, I got it...Use `$ pod trunk register` first.

Reply • Share ›

Chanchal Raj ↗ Klein Mioke • 5 months ago

Yes, trunk register should work:
pod trunk register name@example.org 'Your Name' --description='macbook pro'

8 Reply • Share ›

kamarshad • 2 years ago

Wonderful tutorial it helped me a lot created my own pod in very short time.
Many thanks to you for such a nice tutorial !!

Reply • Share ›

Luk • 2 years ago

I'm going nuts over this => How can I create a set of classes? I want to create a module called ModuleX that has the classes Class1, Class2. (in Swift!)

In this case the class matches the file and the module (BlinkingLabel)

Reply • Share ›

Gastón Antonio Montes • 2 years ago

Thanks!

I'm creating a Javascript-Swift bridge. I will copy the link here.
Regards from Argentina.
Gastón Montes.

Reply • Share ›

Andrey Ufimtsev • 2 years ago

Keep in mind that in order for the Example project to see the library classes you have to make them public. Same goes for methods, functions, etc. It's obvious, but I've spent a lot of time struggling with it.

Excellent post though! Extremely helpful.

Reply • Share ›

kaushal elsewhere Andrey Ufimtsev • a year ago

Hey Andrey, is there any way where I can access those classes in project without changing them to public in pod.?

Reply • Share ›

Andy from cleanswifter.com Andrey Ufimtsev • 2 years ago

Thanks Andrey! I'm glad you liked.

Reply • Share ›

Alan Jeferson • 2 years ago

It does not work.
No such module 'BlinkingLabel'
Can someone please help?
No matter what I try, I always got the same error

Reply • Share ›

Bart Jacobs Mod Alan Jeferson • 2 years ago

If you are using Swift, then make sure you add `use_frameworks!` to your project's Podfile. Could that be the problem?

Reply • Share ›

Alan Jeferson Bart Jacobs • 2 years ago

I did that. I just updated my Cocoapods and it worked out!
But thanks

Reply • Share ›

nferocious76 • 2 years ago

Thanks. I learned many. 👍

Reply • Share ›

Andy from cleanswifter.com nferocious76 • 2 years ago

Thanks!

Reply • Share ›

From $4

From $1

JavaScript

From $2