

Fixing the Swift Tooling Problem

JP Simard, @simjp, realm.io



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295

Realm is a mobile database: a replacement for Core Data & SQLite <http://realm.io>

5,742 commits

109 branches

81 releases

45 contributors



branch: master ▾

realm-cocoa / +



Merge pull request #1929 from ShingoFukuyama/patch-1 ...

segiddins authored 2 days ago

latest commit 0ecff0b939

	Realm.xcodeproj	[Tests] Make it possible and easy to test exception messages	10 days ago
	Realm	Merge pull request #1929 from ShingoFukuyama/patch-1	2 days ago
	RealmSwift.xcodeproj	Generate unique object IDs for objects in the RealmSwift Xcode project.	12 days ago
	RealmSwift	[List] Add invalidated property	6 days ago
	docs	fix dash & xcode icons in html docs (fixes #1189)	5 months ago
	examples	Run the strip frameworks script for the swift examples	6 days ago
	plugin	[XcodePlugIn] Update UUIDs and only install file templates (not class...	24 days ago
	scripts	[Docs] use https for author_url	8 days ago
	tools/RealmBrowser	Set version to 0.92.3	4 days ago
	.dir-locals.el	Project specific Emacs settings updated: Always show trailing white-s...	2 years ago
	.gitignore	[build.sh] Run jazzy to generate RealmSwift docs	18 days ago
	CHANGELOG.md	[CHANGELOG] Add entry for RLMCollection KVC operations	12 days ago

Code

Issues 117

Pull requests 7

Wiki

Pulse

Graphs

HTTPS clone URL

<https://github.com/> You can clone with [HTTPS](#) or [Subversion](#).

Clone in Desktop

Download ZIP



Functional patterns Protocols and extensions on structs

Concise syntax Closures

Native collections

Operator overloading

Namespaces Tuples

Clear mutability syntax

Interactive playground



Multiple return types

Patterns

Generics

Fa

Opti

Object

Type

Read-Eval-Print-L

Compile to n

```
myDelegate != nil) {  
([myDelegate respondsToSelector:  
@selector(scrollViewDidScroll:)]) {  
[myDelegate scrollViewDidScroll:myScrollView];
```



```
myDelegate?.scrollViewDidScroll?(myScrollView)
```





Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help

Balloons Ready | Today at 11:00 AM

```
func didMoveToView(scene : SKScene, delegate : SKPhysicsContactDelegate) {  
    // Blimp Control  
    yOffsetForTime = { i in  
        return 80 * sin(i / 10.0)  
    }  
    // Scene Configuration  
    // Set up balloon lighting and per-pixel collisions.  
    balloonConfigurator = { b in  
        b.physicsBody.categoryBitMask = BALLOON_CONTACT_CATEGORY  
        b.physicsBody.fieldBitMask = WIND_FIELD_CATEGORY  
        b.lightingBitMask = BALLOON_LIGHTING_CATEGORY  
    }  
    // Load images for balloon explosion.  
    balloonPop = (Int[](1...4)).map {  
        SKTexture(imageNamed: "explode_0\($0)")  
    }  
    // Install turbulent field forces.  
    var turbulence =  
        SKFieldNode.noiseFieldWithSmoothness(0.7, animationSpeed:0.0)  
    turbulence.categoryBitMask = WIND_FIELD_CATEGORY  
    turbulence.strength = 0.21  
    scene.addChild(turbulence)  
    cannonStrength = 210.0  
  
    // Scene Initialization  
    // Do the rest of the setup and start the scene.  
    setupHero(scene, delegate)  
    setupFan(scene, delegate)  
    setupCannons(scene, delegate)  
  
    func handleContact(bodyA : SKSpriteNode, bodyB : SKSpriteNode) {  
        if (bodyA == hero) {  
            bodyB.normalTexture = nil  
            bodyB.runAction(removeBalloonAction)  
        }  
    }  
}
```

(Function)
(505 times)

(Function)
(21 times)

[SKTexture, SKTextu...
(4 times)

SKNoiseFieldNode

SKNoiseFieldNode
SKNoiseFieldNode
(GameScene (Funct...
210.0

Timeline Balloons playground (Timeline)

let y = yOffsetForTime(t: elapsedTime*20)

Balloons

6

```
ViewController = segue!.destinationViewController
```

```
s String SourceKitService  
s String Terminated
```

Editor functionality
temporarily limited.

You selected cell #01

A photograph of a snowy winter landscape. A snow-covered path or road curves through the center of the frame, flanked by numerous bare deciduous trees. The ground is a uniform white, and the sky is overcast with a light blue-grey hue.

What's the Problem?

Tangible Problems

- Missing Tools
- Incomplete Tools
- Buggy Tools

Apple is *very* private.

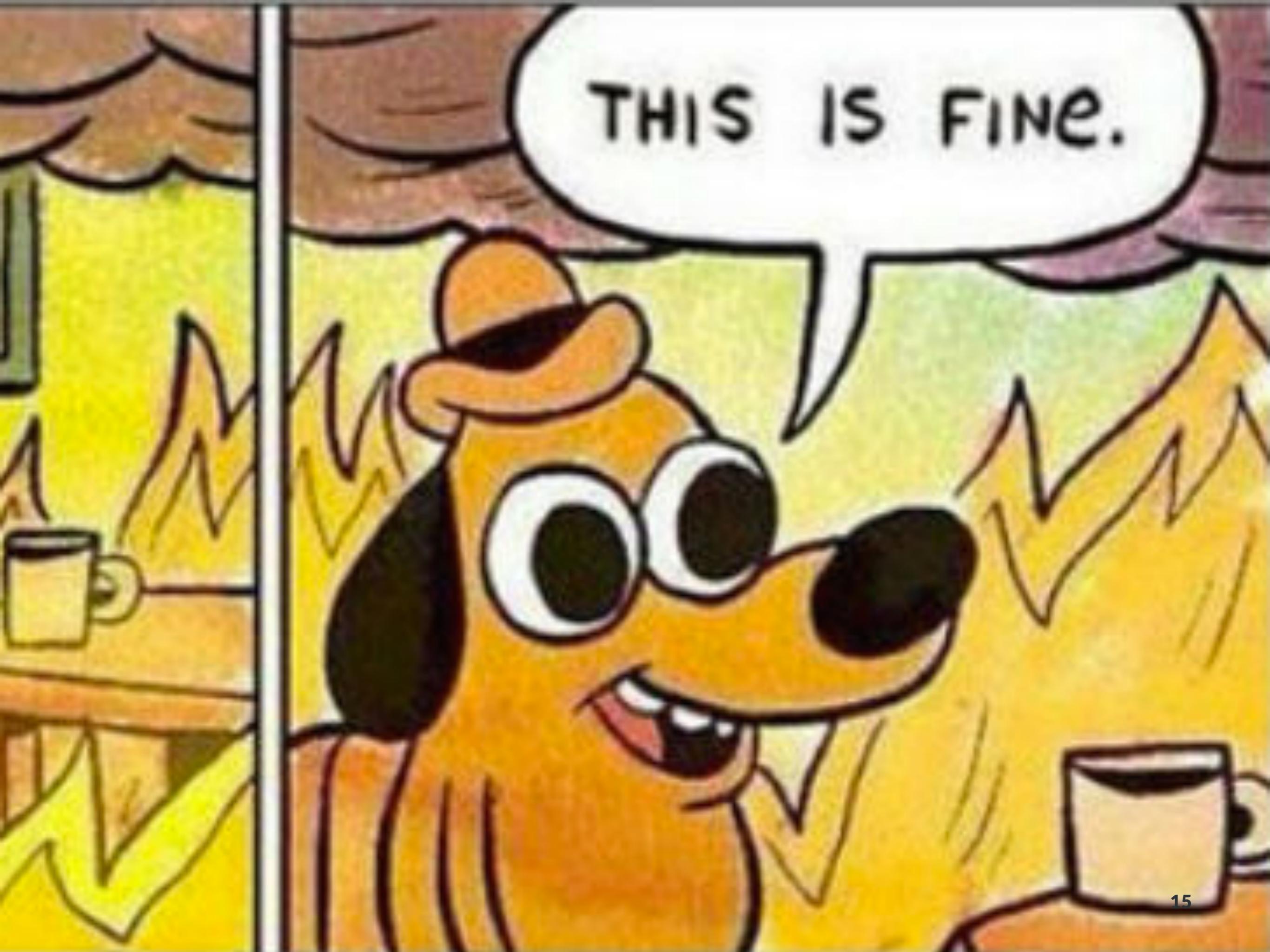
Apple is too private.

Apple releases new tools *yearly*.

Apple is focused on *different* things.

"Only Apple can do this"

- The Lazy Developer



THIS IS FINE.

A wide-angle photograph of a mountain range. The peaks in the background are covered in snow, while the lower slopes and valleys are densely forested with dark evergreen trees. The sky is a clear, pale blue.

What do other communities do?

A: Mix of vendor-provided
tools and community
projects

What's Missing in Swift?

lots!

What Tools are Missing in Swift?

- Package Manager
- Refactoring Tools
- Automatic Code Style Detection & Enforcement
- Documentation Generator
- Version Manager
- Fuzzy Testing

Thanks {\$COMMUNITY}!

- Package Manager (**CocoaPods & Carthage**)
- Refactoring Tools (**AppCode**)
- Automatic Code Style Detection & Enforcement (**SwiftLint**)
- Documentation Generator (**jazzy**)
- Version Manager (**chswift**)
- Fuzzy Testing (**SwiftCheck**)

Opportunities

- Code Generation (???)
- Test Coverage Generation (???)
- Static Code Analysis (???)
- Instrumentation (???)
- LLVM IR Manipulation (???)

A scenic view of a winding road through a mountain range under a blue sky with clouds.

How can we add it back in?

L**O****T****S**

of Reverse Engineering

Hopper.app

class-dump

Xcode Plugins

clang

```
ViewController = segue!.destinationViewController
```

```
s String SourceKitService  
s String Terminated
```

SourceKit

Editor functionality temporarily limited.

You selected cell #0!

AppCode

Supported Plugin Architecture

A dense forest scene with tall evergreen trees and snow-covered ground.

Apples' No
different
than us!

A photograph of a forest with tall, thin trees, likely pines or firs, standing in a dense cluster. The ground is covered with patches of snow and some green vegetation. The lighting suggests a bright day with some haze or fog in the background.

Weill...

A photograph of a forest floor covered in patches of snow and low-lying green vegetation. In the background, a dense stand of tall, thin evergreen trees rises against a bright, overcast sky.

Risk





I sense a faint smell of danger.

We can help Apple



practicalswift
@practicalswift

Follow

Wow, just wow! 6.1b3 fixed 66 % (!) of reported crashes (27 of 41):
github.com/practicalswift... I <3
@clattner_llvm @gparker @jckarter @jopamer



...

RETWEETS

19

FAVORITES

26



7:12 AM - 30 Sep 2014



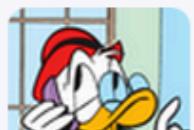
Joseph Lord @jl_hfl · Sep 30

@practicalswift @clattner_llvm @gparker @jckarter @jopamer Excellent work!
This still crashes: github.com/josephlord/Asy... rdar://18143223



1

...



Klaas @klaasmer · Sep 30

@practicalswift @clattner_llvm @gparker @jckarter @jopamer Awesome! Really



Brian Gesiak (もどかしい) @modocache · Feb 28

@joar_at_work @jspahrsummers @rob_rix Awesome. I have more ideas than can fit in 140 characters. I'll try to write them up this weekend!



...



Joar Wingfors

@joar_at_work

+ Follow

@modocache We have a small dedicated team doing our best to make it better. We much appreciate thoughtful community feedback. @rob_rix



...

FAVORITES

4



9:19 PM - 28 Feb 2015



PaulSolt @PaulSolt · Mar 3

@joar_at_work @modocache @rob_rix I would love to see better testing

What The Community Has Done

```
ec:Int, min:Int, hour:Int, day:Int)  
Tuple] = []  
imeTuple) {  
(res)  
Files  
sages)  
2 usages)  
ar resultSet: [timeTuple] = []  
inc addResult(res:timeTuple) {  
usage)  
inc getLastTime() -> timeTuple! {  
Save As... Delete  
Font  
Foreground  
Background  
Error Stripe Mark  
Effects  
Underscored  
Inherit Attributes From:  
Enum constant (C/C++)  
0"  
  
class Results {  
    var resultSet: [timeTuple] = []  
  
    func addResult(res:timeTuple) {  
        resultSet.append(res)  
    }  
  
    func size() -> Int {  
        return resultSet.count  
    }  
  
    func getResult(index:Int) -> timeTuple {  
        if resultSet.count > index {  
            let timeVal = resultSet[index]  
            let timeStr = NSTimeFormatter.stringFromTimeInterval(timeVal)  
            return timeStr  
        }  
    }  
}
```

Rename variable resultSet a

resultRecord

Search in comments and code

Cancel Help

AppCode

Done: 5 of 5 Failed: 1

Test

- testPerformance
- testSeveralTimerTicks
- testStartTimer
- testTickTimer
- testWrongTimerTick

Parameter

```
let e = EnumName.Foo;  
switch e {  
case .Foo: println("foo")
```

40

SwiftDoc.org

Auto-generated documentation for Swift. Command-click no more.

Search



InsafeMutablePointer
verseView

cer
er

ne
ay

ObjectIdentifier
Optional
PermutationGenerator
Process
QuickLookObject
RandomAccessReverseView
Range
RangeGenerator
RawByte
Repeat
ReverseBidirectionalIndex
ReverseRandomAccessIndex
SequenceOf
Set

CocoaPods 0.36 - Framework and Swift Support



TL;DR: *CocoaPods 0.36* has been released, with the long-awaited support for Frameworks and Swift.

Marius Rackwitz

11 March 2015

 Follow @mrackwitz

CocoaPods 0.36 adds support for dynamic frameworks, and with that it also brings enhanced support for dependencies using Apple's new programming language, Swift. This has been one of the largest singular changes in CocoaPods, affecting almost all of CocoaPods' subsystems such as [Xcodeproj](#).

And there were Swift & Dynamic Frameworks on iOS

Dynamic frameworks have always been available on OS X. That's different for iOS. Apple's mobile platform introduced third-party dynamic framework support in iOS 8. So the least common denominator was found before with using static libraries, which have always been supported on both platforms.

Carthage



SourceKitten

```
"key.substructure" : [
    {
        "key.kind" : "source.lang.swift.decl.struct",
        "key.offset" : 0,
        "key.nameoffset" : 7,
        "key.namelength" : 1,
        "key.bodyoffset" : 10,
        "key.bodylength" : 13,
        "key.accessibility" : "source.lang.swift.accessibility.internal",
        "key.substructure" : [
            {
                "key.kind" : "source.lang.swift.decl.function.method.instance",
                "key.offset" : 11,
                "key.nameoffset" : 16,
                "key.namelength" : 3,
                "key.bodyoffset" : 24,
                "key.bodylength" : 9,
                "key.accessibility" : "source.lang.swift.accessibility.internal",
                "key.substructure" : [
                    ],
                    "key.name" : "b()",  
                    "key.length" : 11
                }
            ],
            "key.name" : "A",
            "key.length" : 24
        }
    ],
    "key.offset" : 0,
    "key.diagnostic_stage" : "source.diagnostic.stage.swift.parse",
    "key.length" : 24
]
```



\$ jazzy♪

Soulful docs for Swift & Objective-C

[RealmSwift Reference](#) > [Realm Class Reference](#)

Classes

[DynamicObject](#)[List](#)[Migration](#)[Object](#)[ObjectSchema](#)[Property](#)[Realm](#)[Results](#)[Schema](#)

Enums

[Notification](#)

Extensions

[Double](#)[Float](#)[Int](#)[Int16](#)[Int32](#)[Int64](#)[List](#)[NSDate](#)[ObjectSchema](#)[write\(_:\)](#)

Helper to perform actions contained within the given block inside a write transaction.

Declaration

SWIFT

public func write(block: () -> Void)

Parameters

<i>block</i>	The block to be executed inside a write transaction.
--------------	--

[Show on GitHub](#)[beginWrite\(\)](#)[commitWrite\(\)](#)[cancelWrite\(\)](#)[inWriteTransaction](#)

Adding and Creating objects

[add\(_:update:\)](#)[add\(_:update:\)](#)[create\(_:value:update:\)](#)

Deleting objects

SwiftLint

```
func swiftLintTest() {
    let someForceCast = NSNumber() as! Int
    let colonOnWrongSide :Int = 0
    // Force Cast Violation (High Severity): Force casts should be avoided
    // Colon Violation (Low Severity): When specifying a type, always associate the colon with the identifier
    // SwiftLint is smart enough to ignore comments and strings
    // NSNumber() as! Int
    "let colonOnWrongSide :Int = 0"
    // Except when necessary
    // FIXME: Remove this FIXME.
    // TODO or FIXME Violation (Low Severity): TODOs and FIXMEs should be avoided
    // Enforce appropriate type naming
    struct lowercase {}
    // Name Format Violation (High Severity): Type name should start with an uppercase character: 'lowercase'
    // Catch over-nesting
    func func1() {
        func func2() {
            func func3() {
                func func4() {
                    func func5() {
                        func func6() {
                            // Nesting Violation (Low Severity): Statements should be nested at most 5 levels
                        }
                    }
                }
            }
        }
    }
}
```

A wide-angle photograph of a mountain range. The foreground shows rugged peaks with patches of snow and exposed rock. The middle ground features more snow-covered slopes and ridges. The background consists of a range of mountains under a clear, pale blue sky.

Leverage the community

Resources (1/2)

- Swift Compiler Crashes: github.com/practicalswift/swift-compiler-crashes
- Carthage: github.com/Carthage/Carthage
- CocoaPods: cocoapods.org
- SwiftCheck: github.com/typelift/SwiftCheck

Resources (2/2)

- AppCode: jetbrains.com/objc
- chswift: github.com/neonichu/chswift
- SwiftDoc: swiftdoc.org
- jazzy♫♪: github.com/realm/jazzy
- SwiftLint: github.com/realm/SwiftLint

A scenic view of snow-capped mountains under a clear blue sky. The mountains are rugged, with patches of snow and rocky terrain. The foreground shows some sparse vegetation and rocks. The overall atmosphere is inspiring and motivational.

**Go Forth
and
Build!**

A scenic landscape featuring a calm lake in the foreground, a range of mountains with snow-capped peaks in the middle ground, and a bright blue sky with wispy white clouds above.

UIKonf().questions.ask()!
JP Simard, @simjp, realm.io