© Developer Q Distribute News Discover Design Develop Support Account **Developer Forums** Q Search by keywords or tags

Running a Child Process with Standard Input and Output

This thread has been locked by a moderator.

Running a child process using Process (or NSTask in Objective-C) is easy, but piping data to and from the child's stdin and stdout is surprisingly tricky. I regularly see folks confused by this. Moreover, it's easy to come up with a solution that works most of the time, but suffers from weird problems that only show up in the field [1].

② 2.3k

of that effort, namely, a single function that will start a child process, pass it some data on stdin, read the data from the child's stdout, and call a completion handler when everything is done.

I recently had a couple of DTS incidents from folks struggling with this, so I sat down and worked through the details. Pasted below is the results

There are some things to note here, some obvious, some not so much: • I've included Swift and Objective-C versions of the code. Both versions work the same way. The Swift version has all the comments. If you

- decide to base your code on the Objective-C version, copy the comments from there. • I didn't bother collecting stderr. That's not necessary in many cases and, if you need it, it's not hard to extend the code to handle that
- case. • I use Dispatch I/O rather than FileHandle to manage the I/O channels. Dispatch I/O is well suited to this task. In contrast, FileHandle
- has numerous problems working with pipes. For the details, see Whither FileHandle?. • This single function is way longer than I'd normally tolerate. This is partly due to the extensive comments and party due to my desire to
- maintain focus. When wrapping Process it's very easy to run afoul of architecture astronaut-ism. Indeed, I have a much more fullfeatured Process wrapper sitting on my hard disk, but that's going to stay there in favour of this approach (-: • Handling a child process correctly involves some gnarly race conditions. The code has extensive comments explaining how I deal with those.
- If you have any questions or comments about this, put them in a new thread. Make sure to tag that thread with Foundation and Inter-process communication so that I see it.

Share and Enjoy

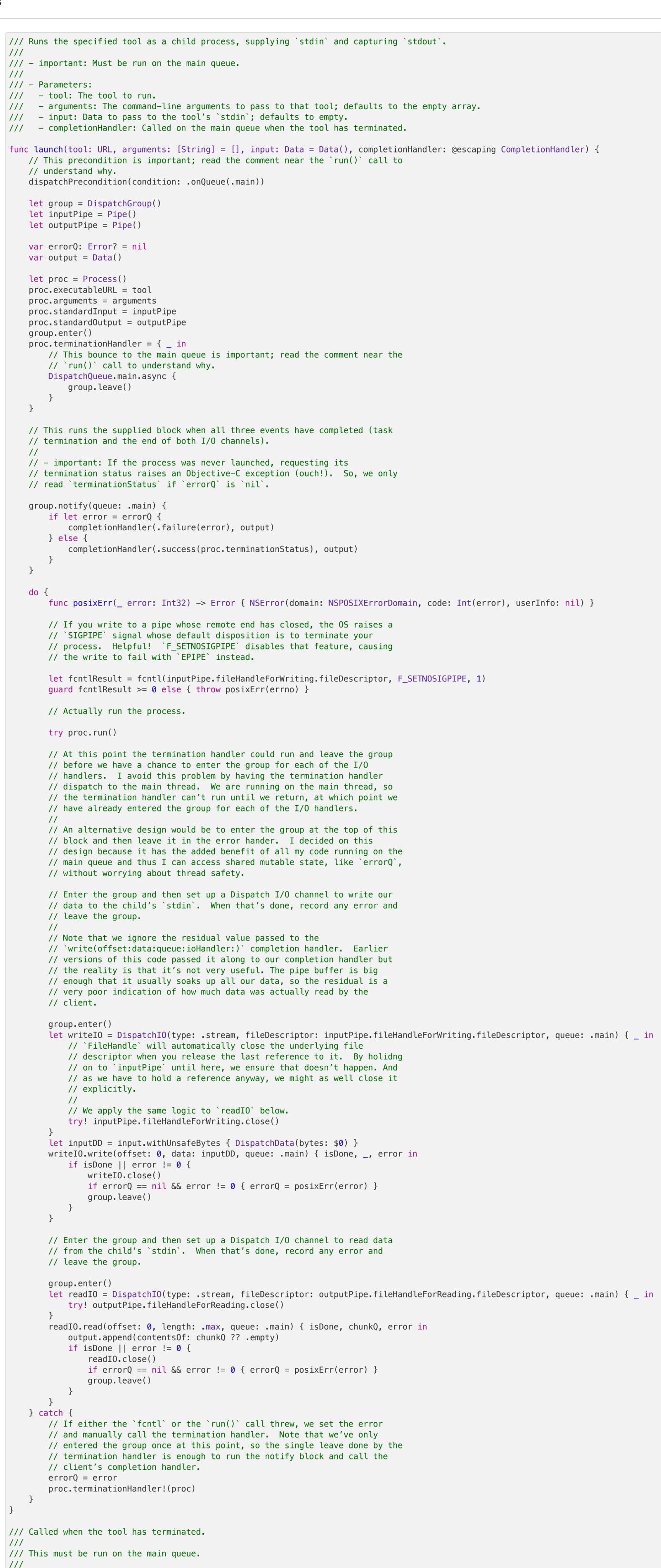
Quinn "The Eskimo!" @ Developer Technical Support @ Apple let myEmail = "eskimo" + "1" + "@" + "apple.com" [1] Indeed, this post shows that I've made this sort of mistake myself)-:

Inter-process communication Foundation

Add a Comment

Posted 1 year ago by (*) eskimo (†)

Replies



Posted 1 year ago by (2) eskimo (1)

extern void launchToolWithArgumentsAndInput(

Add a Comment

/// - Parameters:

NSURL * toolURL,

/// - result: Either the tool's termination status or, if something went

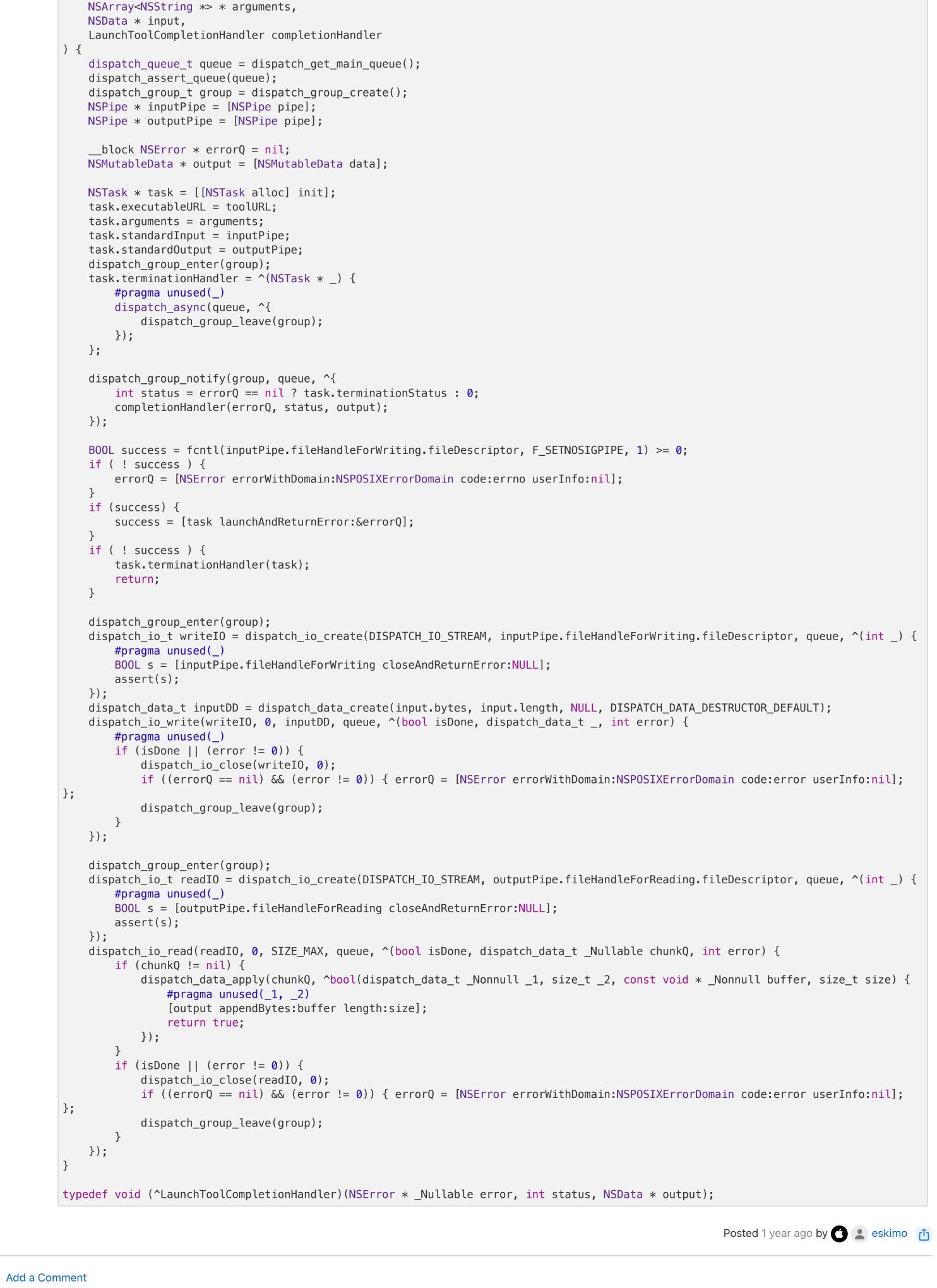
// IMPORTANT: This is a line-for-line port of the Swift code, so see that code

typealias CompletionHandler = (_ result: Result<Int32, Error>, _ output: Data) -> Void

/// wrong, an error indicating what that was.

// for comments explaining what's going on here.

/// - output: Data captured from the tool's `stdout`.



This site contains user submitted content, comments and opinions and is for informational purposes only. Apple disclaims any and all liability for the acts, omissions and conduct of any third parties in connection with or related to your use of the site. All postings and use of the content on this site are subject to the Apple Developer Forums Participation

Agreement.

Developer Forums

		Resources	Programs
iOS	Accessibility	Documentation	Apple Developer Program
iPadOS	Accessories	Curriculum	Apple Developer Enterprise Progran
macOS	App Extensions	Downloads	App Store Small Business Program
tvOS	App Store	Forums	MFi Program
watchOS	Audio & Video	Videos	News Partner Program
Tools Swift SwiftUI SF Symbols Swift Playgrounds TestFlight Xcode Xcode Cloud	Augmented Reality	Support Support Articles Contact Us Bug Reporting System Status Account Apple Developer App Store Connect Certificates, IDs, & Profiles Feedback Assistant	Video Partner Program
	Business		Security Bounty Program
	Design		Security Research Device Program
	Distribution		Cuente
	Education		Events
	Fonts		App Accelerators
	Games		App Store Awards
	Health & Fitness		Apple Design Awards
	In-App Purchase		Apple Developer Academies
	Localization		Entrepreneur Camp Tech Talks
	Maps & Location		
	Machine Learning		WWDC
	Security		
	Safari & Web		