

Mastering Swift for Scripting and Tooling

Natan Rolnik @ SwiftHeroes 24



Hi, I'm Natan

iOS @ monday.com

- iPhone OS 3, Objective C was my 1st language ❤️
- Passion for beautiful UI and animations
- Interested in web, server and tooling technologies
- I **love** coding in Swift 
- kodoco.com & SwiftToolkit.dev



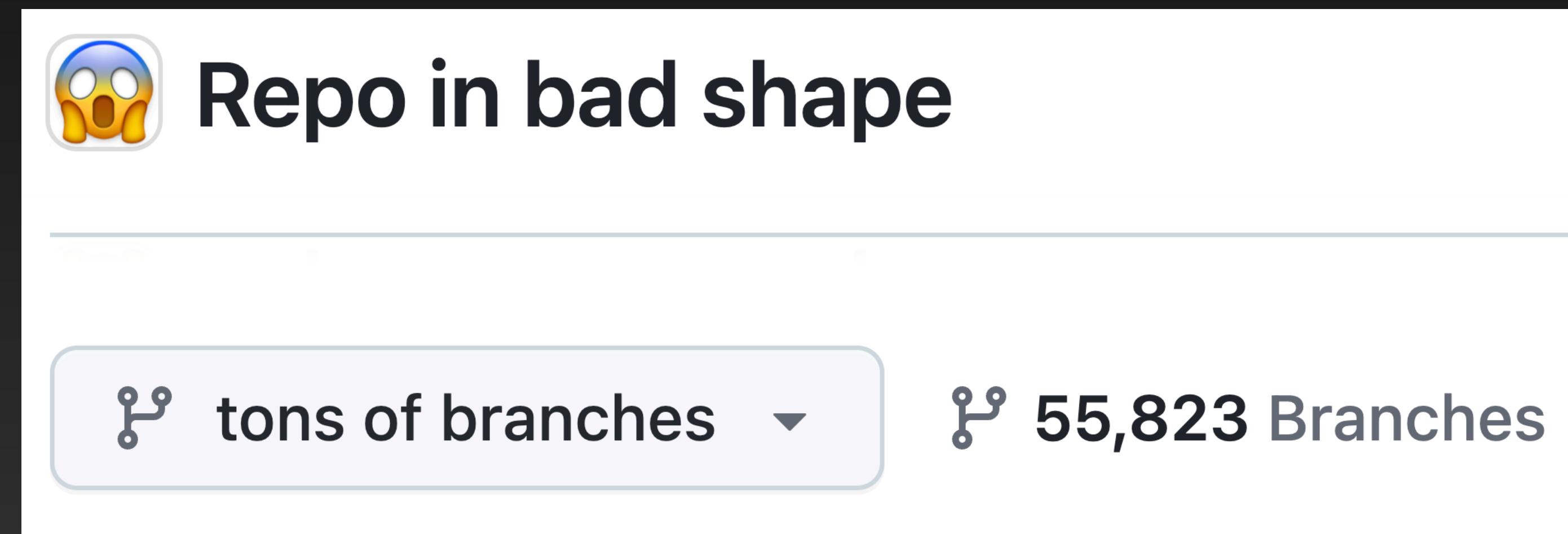
@natanrolnik



What is Tooling?

*The use of **specialized** software programs that **help developers** in various tasks. These tools **improve efficiency, collaboration, and the overall development process.***

How I Got Into It?



How I Got Into It?



**DRAWING JSON
AS LISTS FOR
ANOTHER YEAR**



**LEARNING NEW
AREAS AND
EMPOWERING MY
TEAM**

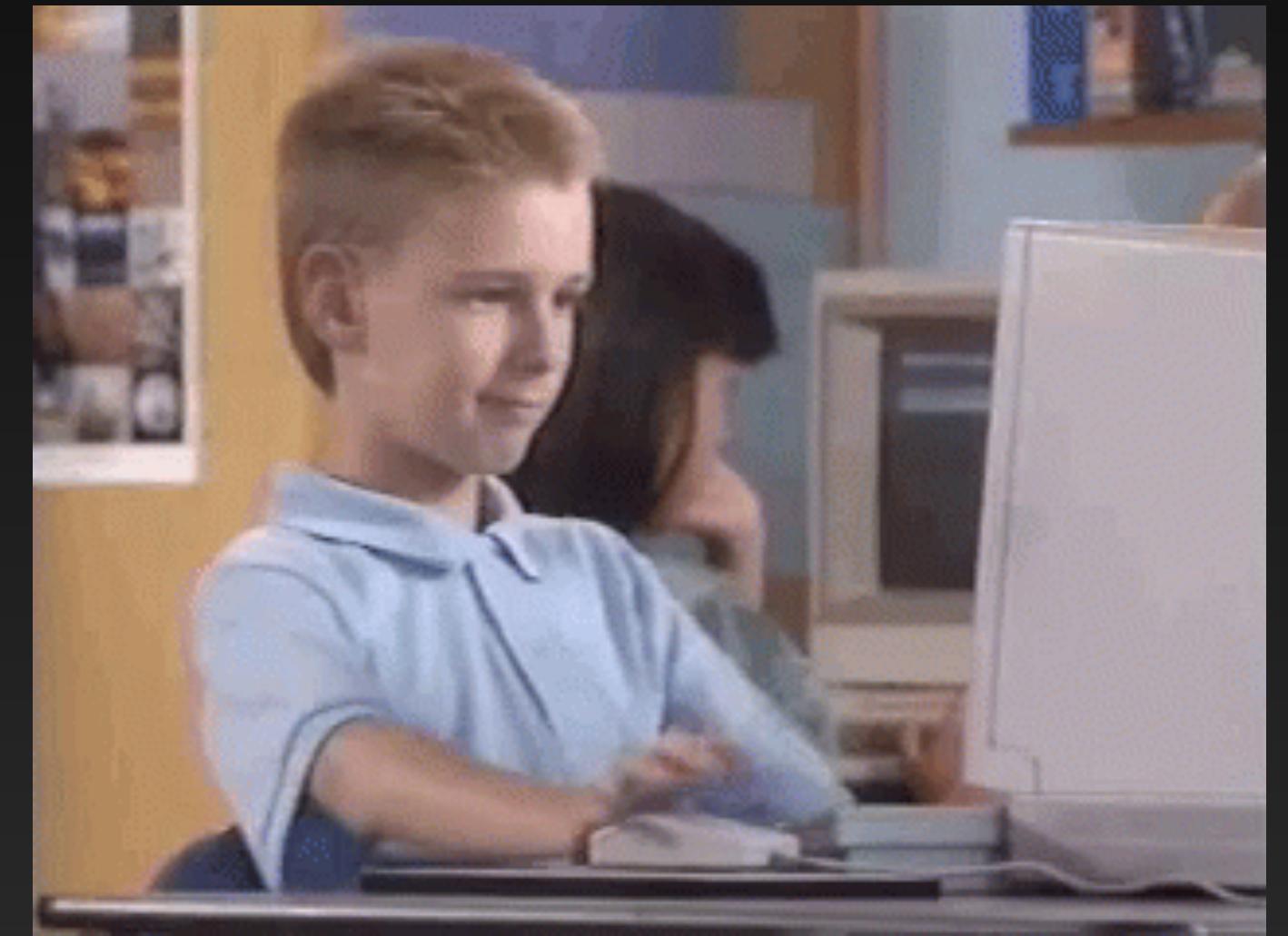
Goals



Learn different
approaches when
building tools



Meet common
building blocks
and tools



Inspire & have **fun!**

Agenda



Why Swift for Scripting?

Agenda



We'll start with a short script...

Agenda



We'll learn how to make it a bit more complex

Agenda



We'll build a code generation tool with
Stencil and the Swift Argument Parser

Agenda



We'll build a code generation tool with
Stencil and the Swift Argument Parser



Agenda



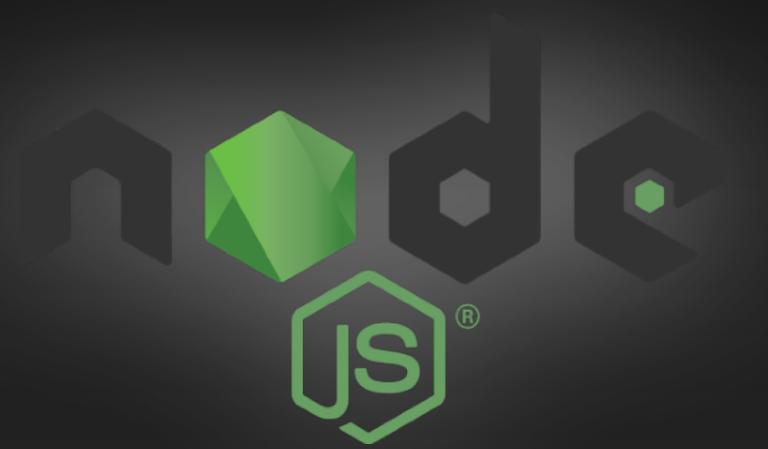
We'll deploy a serverless function

Agenda

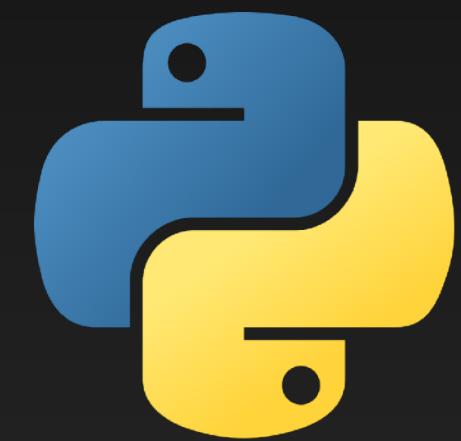


Why Swift for Scripting & Tooling?

Only Swift?



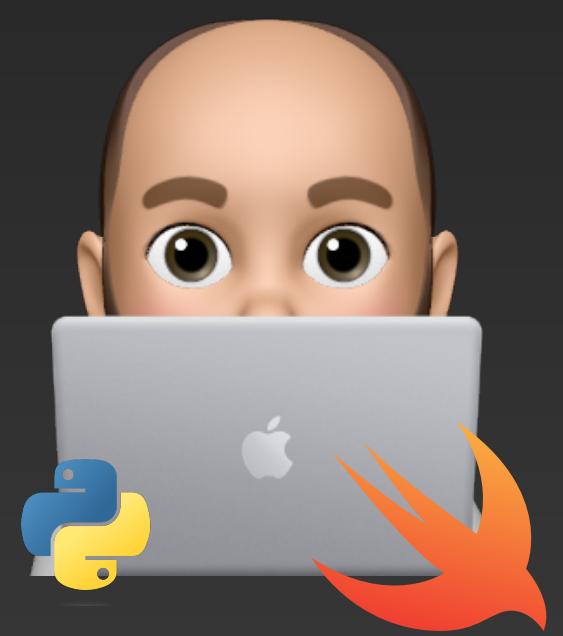
Only Swift?



Only Swift?



Only Swift?



Advantages

Memory &
Type Safety

Foundation

Property
Wrappers

async
await

SPM
Plugins

Macros

It's Swift ❤️

MyScript.swift

```
import AppKit
```

Tool.app

```
import SwiftUI
```

It feels at home



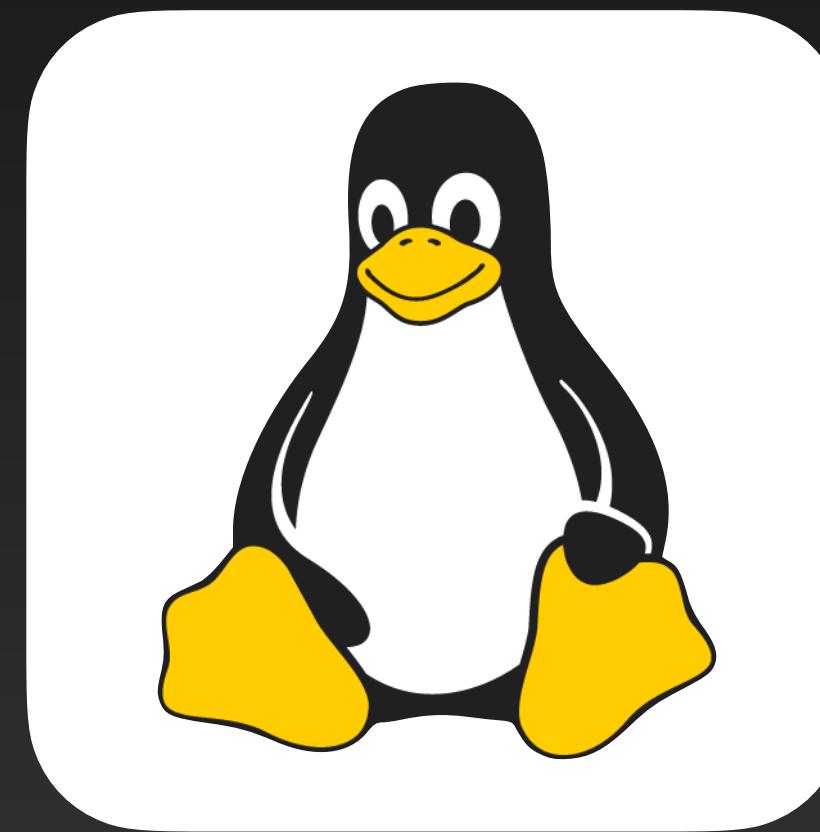
Code Sharing &
Ecosystem

The Great Change

Objective-C



Swift



1: Scripting

What We'll Build?



Swift Heroes 24

What We'll Build?



Swift Heroes 24



Swift Heroes 24



swift sh

Use dependencies “without” SPM

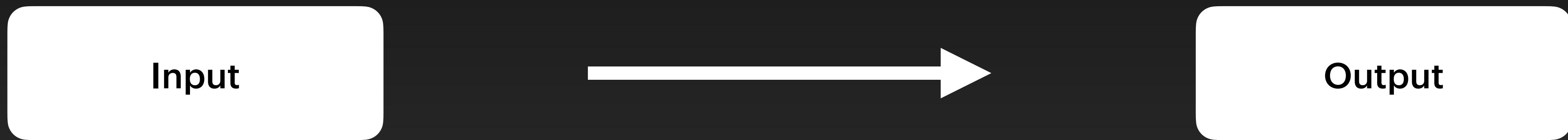
```
#!/usr/bin/swift sh

import Path // mxcl/Path.swift
import XcodeProj // @tuist ~> 8.20
```

2: A CLI Tool

What We'll Build?

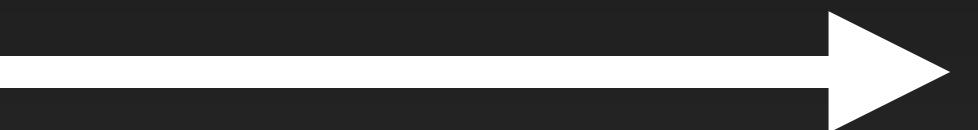
Analytic Events



What We'll Build?

Analytic Events

Event Name	Description	Fields
StartedPlayback	Started watching a talk video	talkId
...
...

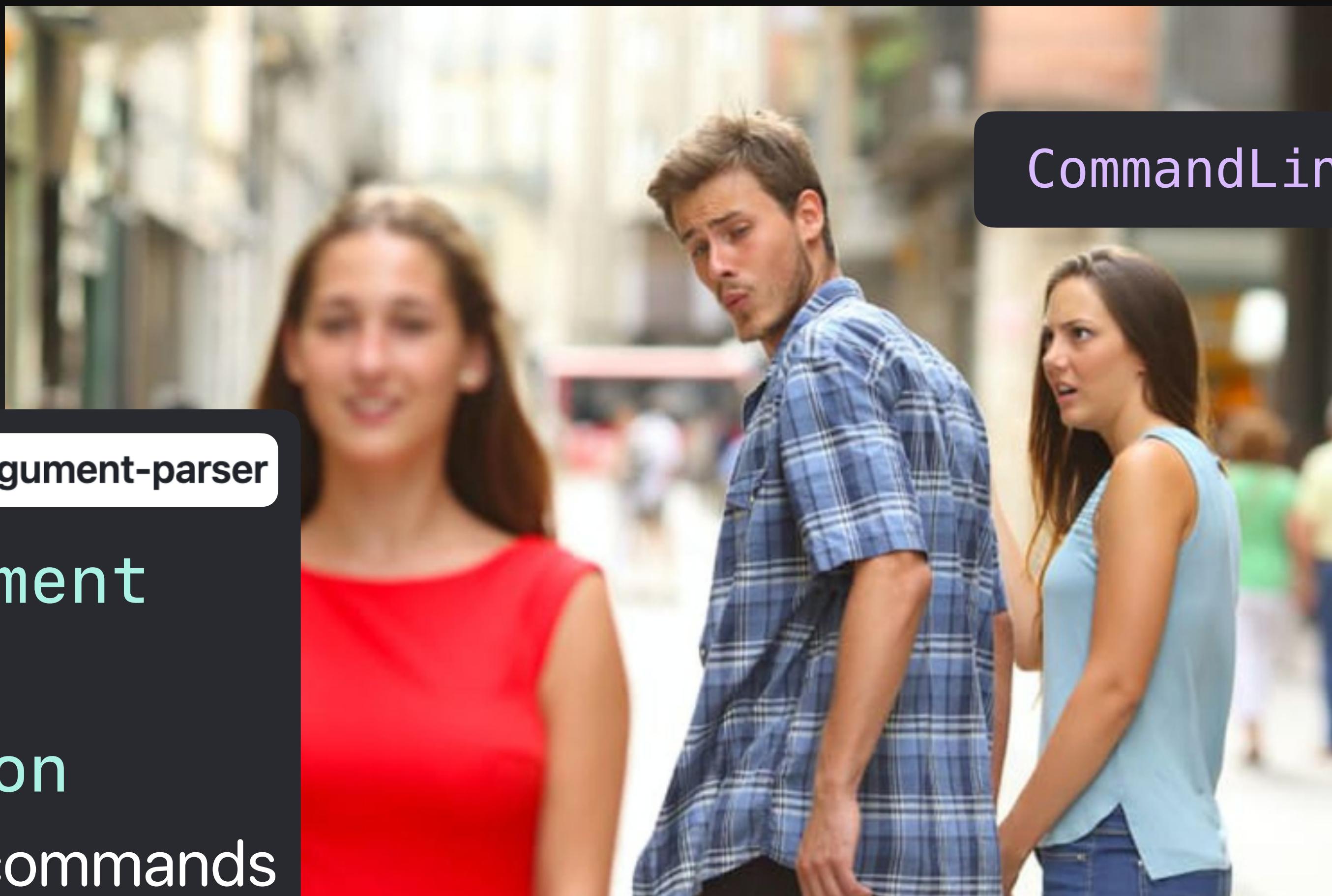


```
/// Started watching a talk video
struct StartedPlaybackEvent {
    let name = "StartedPlayback"
    let talkId: String
    var data: [String: String] {
        "talkId": talkId,
    }
}
```

Swift Argument Parser

CommandLine.arguments

Swift Argument Parser



swift-argument-parser

@Argument

@Flag

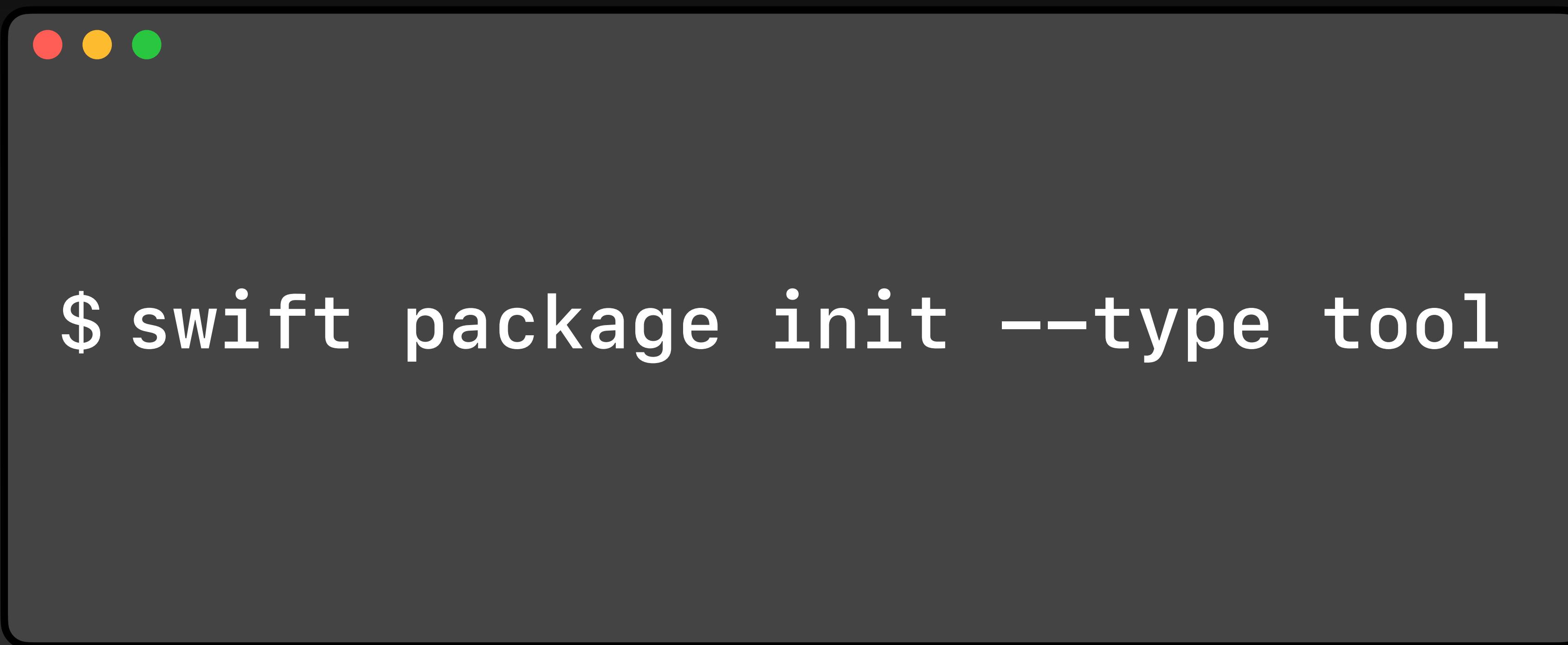
@Option

Async commands

Subcommands

CommandLine.arguments

Swift Argument Parser



Stencil

*Stencil is a simple and powerful
template language for Swift.*

Stencil

There are {{ articles.count }} articles.

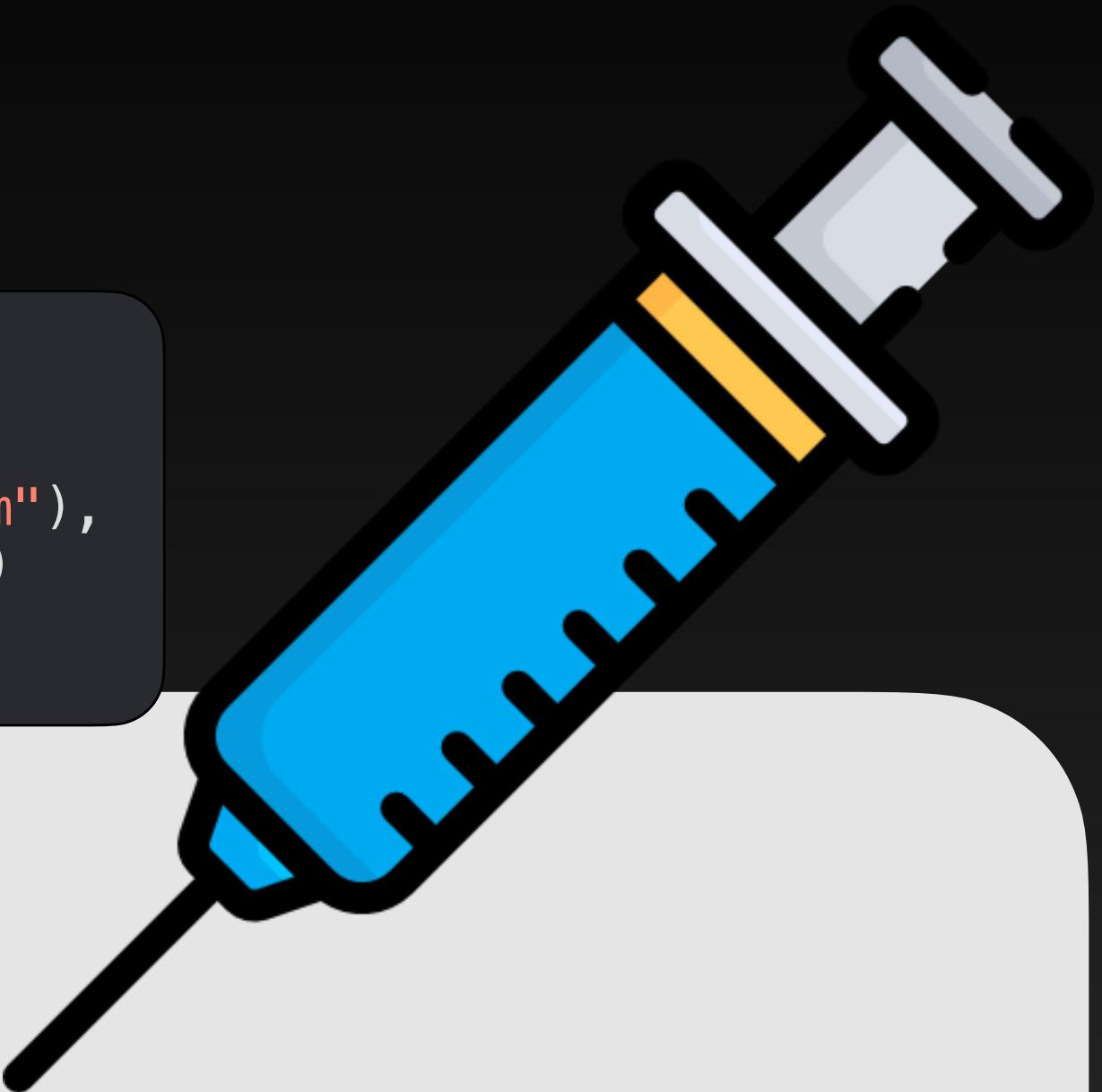
```
<ul>
  {% for article in articles %}
    <li>{{ article.title }} by {{ article.author }}</li>
  {% endfor %}
</ul>
```

Stencil

```
let articles = [  
    Article(title: "Debugging Soccer", author: "Rafa"),  
    Article(title: "The Algorithm Adventure", author: "Liam"),  
    Article(title: "Baby Steps in Swift", author: "Ariela")  
]
```

There are {{ articles.count }} articles.

```
<ul>  
    {% for article in articles %}  
        <li>{{ article.title }} by {{ article.author }}</li>  
    {% endfor %}  
</ul>
```



Stencil

There are 3 articles.

```
<ul>
  <li>Debugging Soccer by Rafa</li>
  <li>The Algorithm Adventure by Liam</li>
  <li>Swift for Babies by Ariela</li>
</ul>
```



Improving Times on GitHub Actions

actions/cache@v3

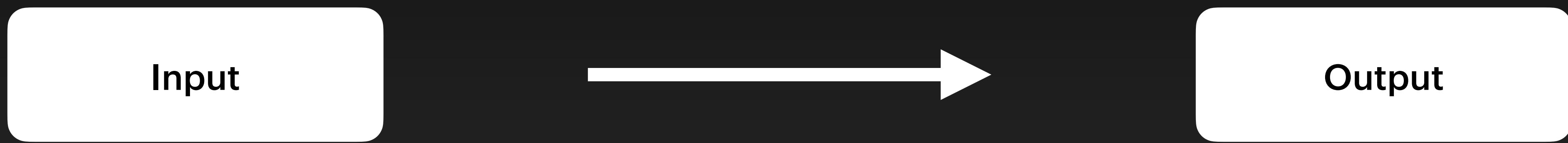


Precompile
binaries

swift build -c release

3: Serverless Vapor

What We'll Build?



What We'll Build?

Europe/Rome			
Thu	18. Apr		
8:30 AM	8:30 AM 45min	Registration & Networking	8:30 AM 45min
9:00 AM	9:15 AM 15min	Welcome	Registration & Networking
9:30 AM	9:30 AM 50min	Building Swift CLIs that your users and contributors love  Pedro Buendia	
10:00 AM	10:20 AM 40min	Macro Polo: A new generation of code generation  Shai Mishali	
11:00 AM	11:00 AM 30min	Coffee Break & Networking	11:00 AM 30min
11:30 AM	11:30 AM 40min	Inclusive design: crafting Accessible apps for all of us  Davide Balistreri	Mastering Swift for Scripting & Tooling  Natan Rolnik
12:00 PM	12:10 PM 40min	Typestate - the new Design Pattern in Swift 5.9  Alex Ozun	12:10 PM 40min
12:30 PM	12:50 PM 40min	Your big head component spoils your code  Gyuree Kim	A Tale of Modular Architecture with SPM  Libranner Santos
1:00 PM	1:30 PM 60min	Lunch & Networking	1:30 PM 60min
1:30 PM	1:30 PM 60min	Lunch & Networking	Lunch & Networking



Title	Time	Author
...
...
...

How?



△ Vercel

swift-cloud / Vercel Public

swift-server / swift-aws-lambda-runtime Public



Explore Further

- Sample Code
 - <https://github.com/natanrolnik/SwiftHeroes24>
- Projects used or mentioned in this talk
 - [Swift Argument Parser](#), [Stencil](#)
 - [Swift on Vercel](#) (& [Swift AWS Lambda Runtime](#))
 - [SwiftTUI](#) (not SwiftUI 😊)
 - [Path.swift](#), [PathKit](#)
 - [swift sh](#)



Explore Further

- Content on tooling:
 - [SwiftToolkit.dev](#)
 - [PolPiella.dev](#)
 - [SwiftyStack.com](#)
- SPM Plugins
- Projects to learn from:
 - [Tuist](#), [XcodeProj](#)
 - [XcodeGen](#)
 - [SwiftGen](#)
 - [Swift Tools Support Core](#) (⚠ Deprecated, but interesting)

Hope You Enjoyed!



Grazie Mille

