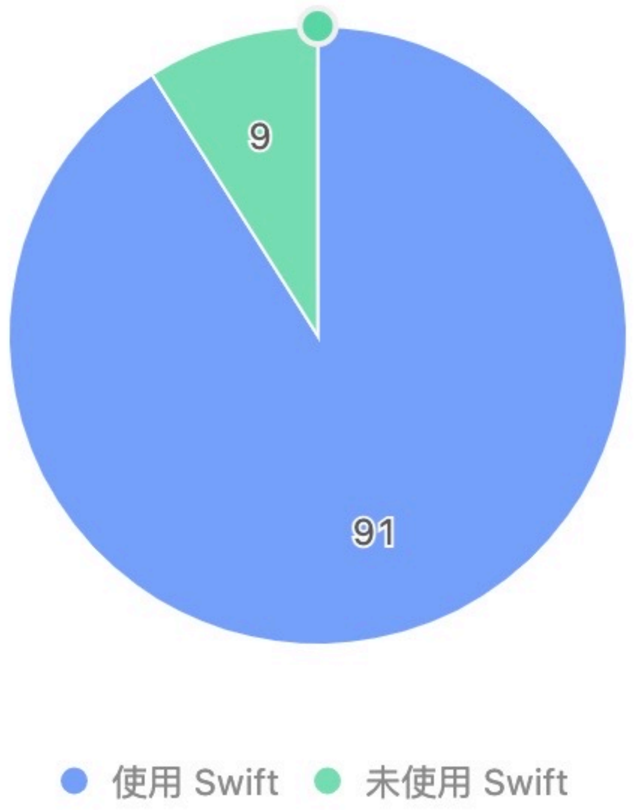
基于 Swift 编写严肃脚本工具

微信 mango（方秋枋）

Swift In Top 100 App

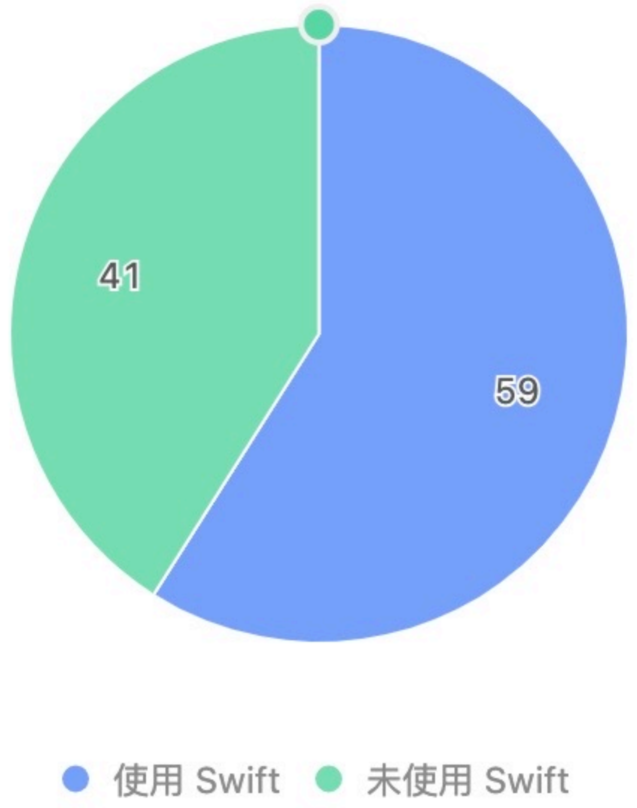
国外情况

使用 Swift 语言的 App 占比



国内情况

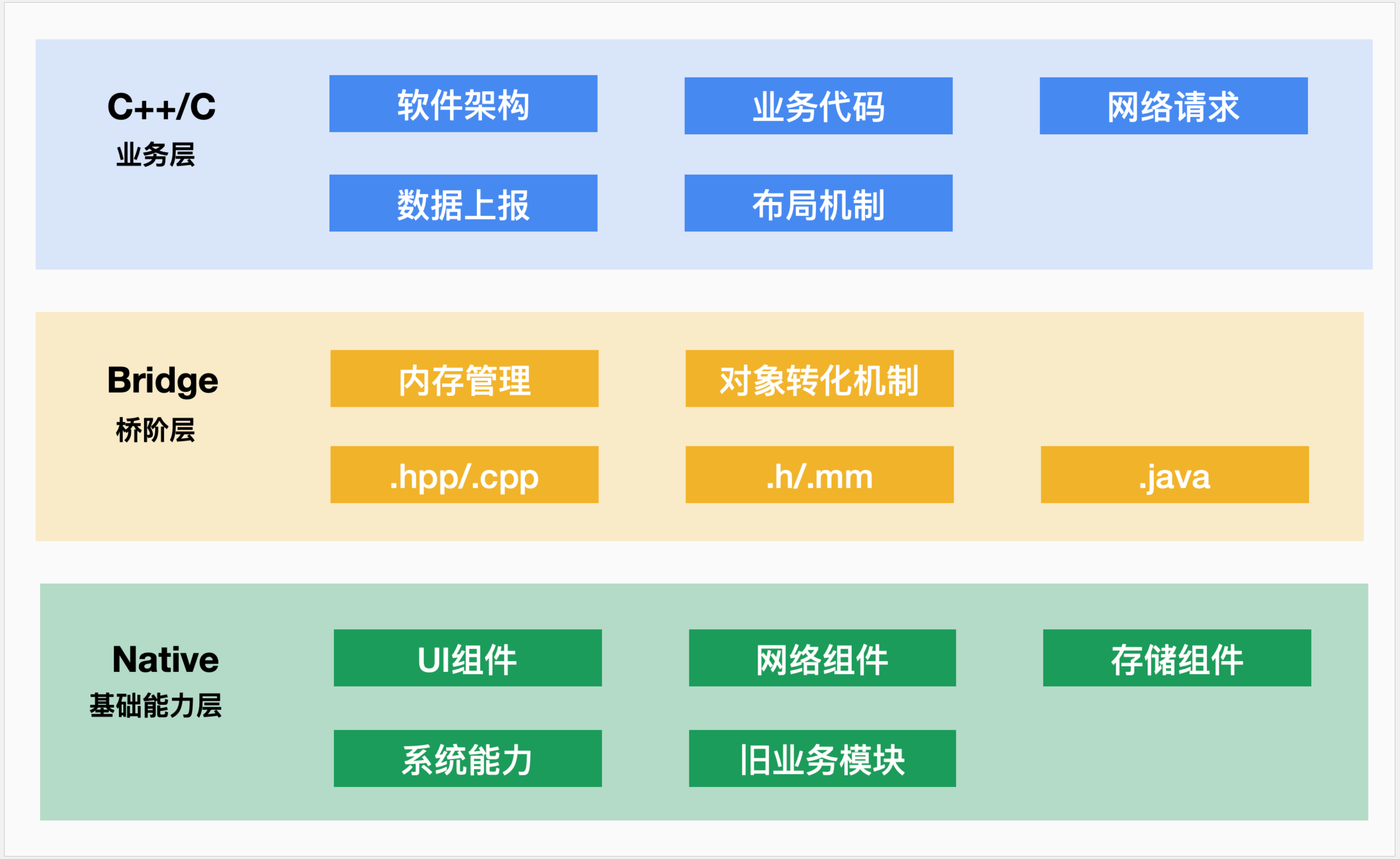
使用 Swift 语言的 App 占比



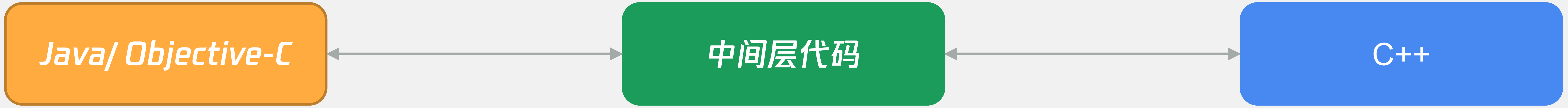
Swift In WeChat

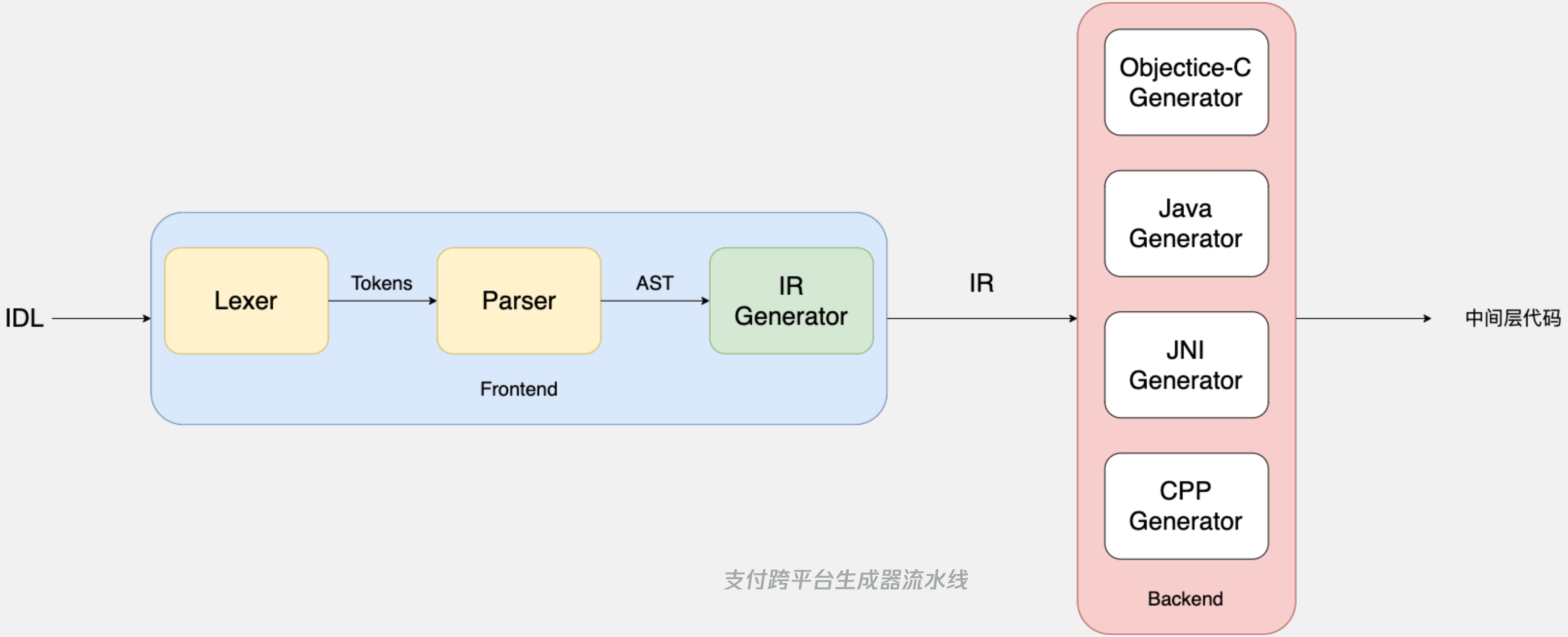
1. 微信 Apple Watch 端
2. 订阅号助手
3. 部分机器学习逻辑
4. 脚本工具

微信支付跨平台


C++/C
业务层
软件架构
业务代码
网络请求
数据上报
布局机制
Bridge
桥阶层
内存管理
对象转化机制
.hpp/.cpp
.h/.mm
.java
Native
基础能力层
UI组件
网络组件
存储组件
系统能力
旧业务模块

微信支付跨平台代码生成器



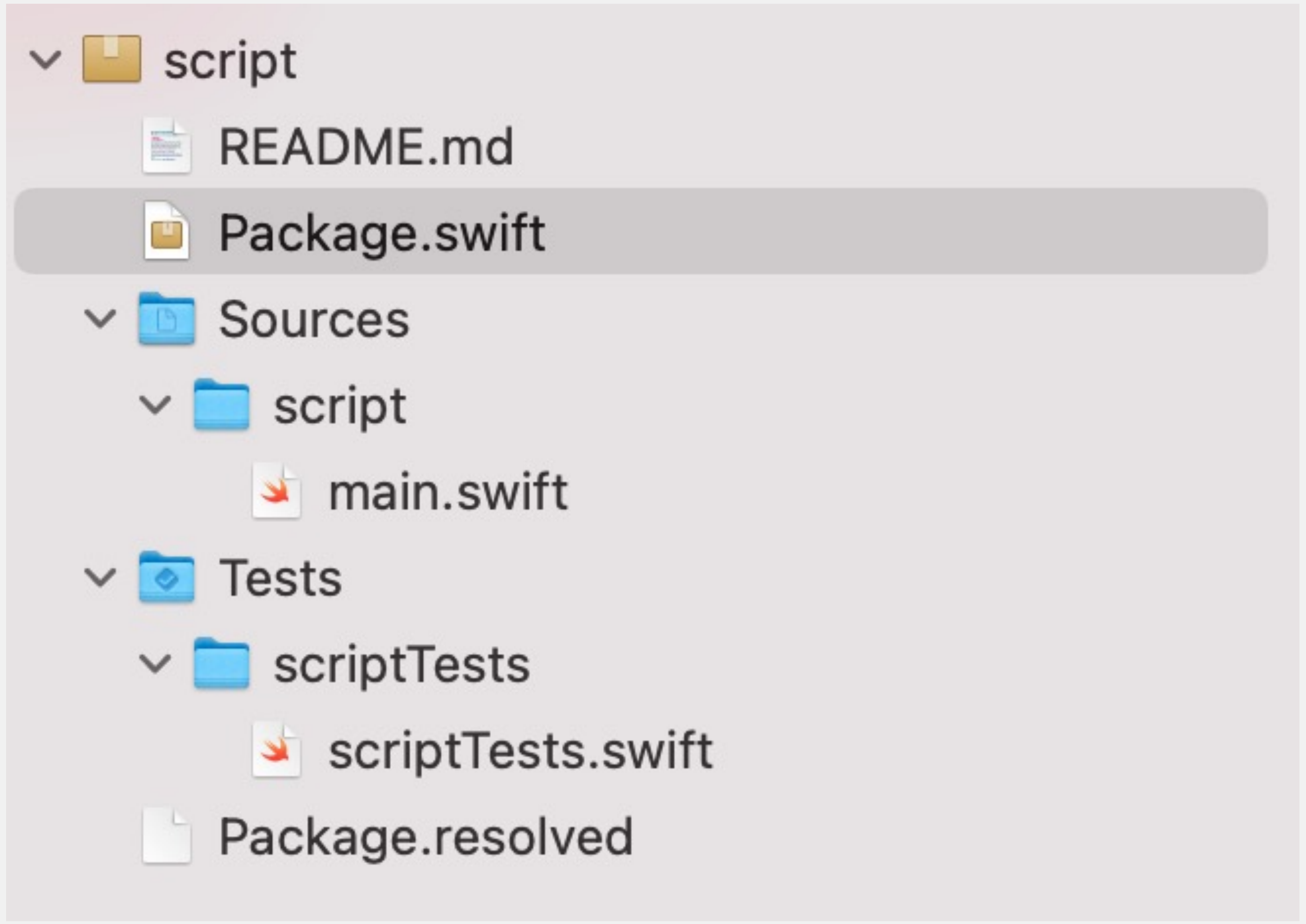


支付跨平台生成器流水线

大纲

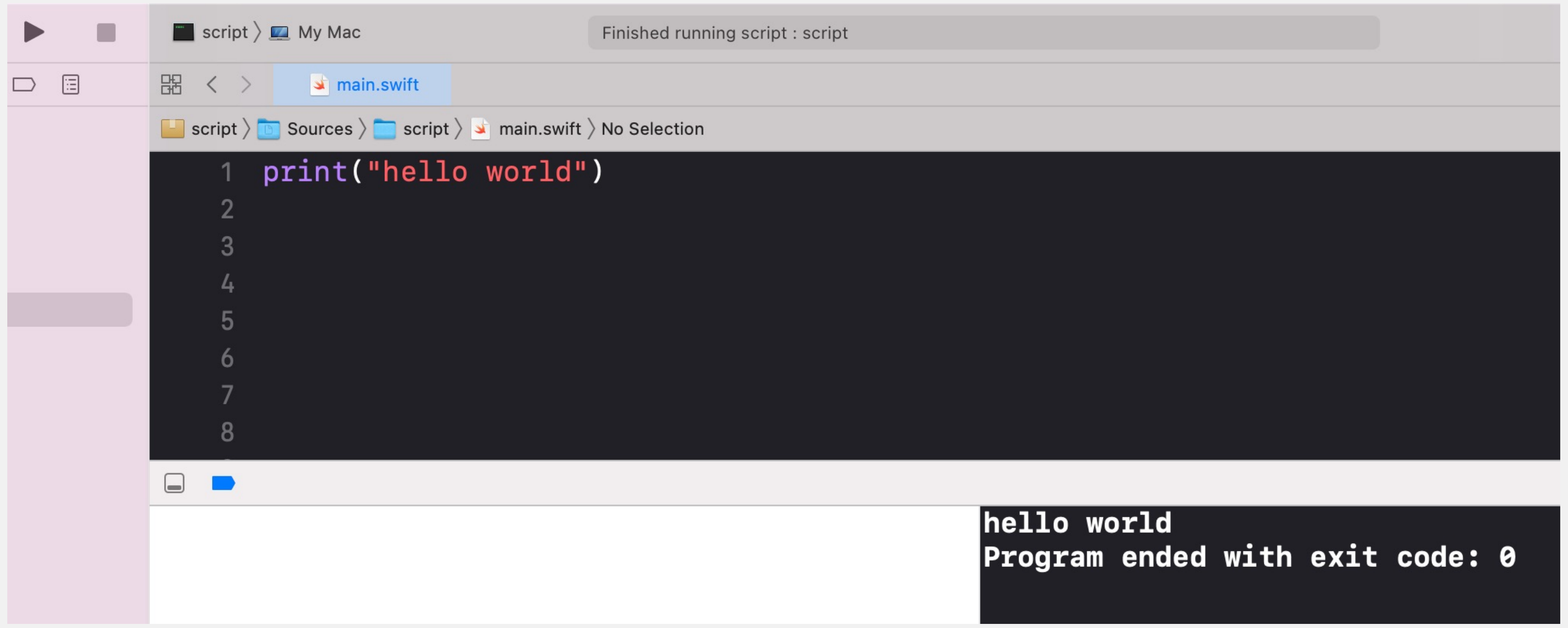
创建工程

```
$ mkdir script
$ cd script
$ swift package init --type executable
```



```
script
    README.md
    Package.swift
  Sources
    script
      main.swift
  Tests
    scriptTests
      scriptTests.swift
    Package.resolved
```

目录结构


script 〉 My Mac
Finished running script : script
main.swift
script 〉 Sources 〉 script 〉 main.swift 〉 No Selection

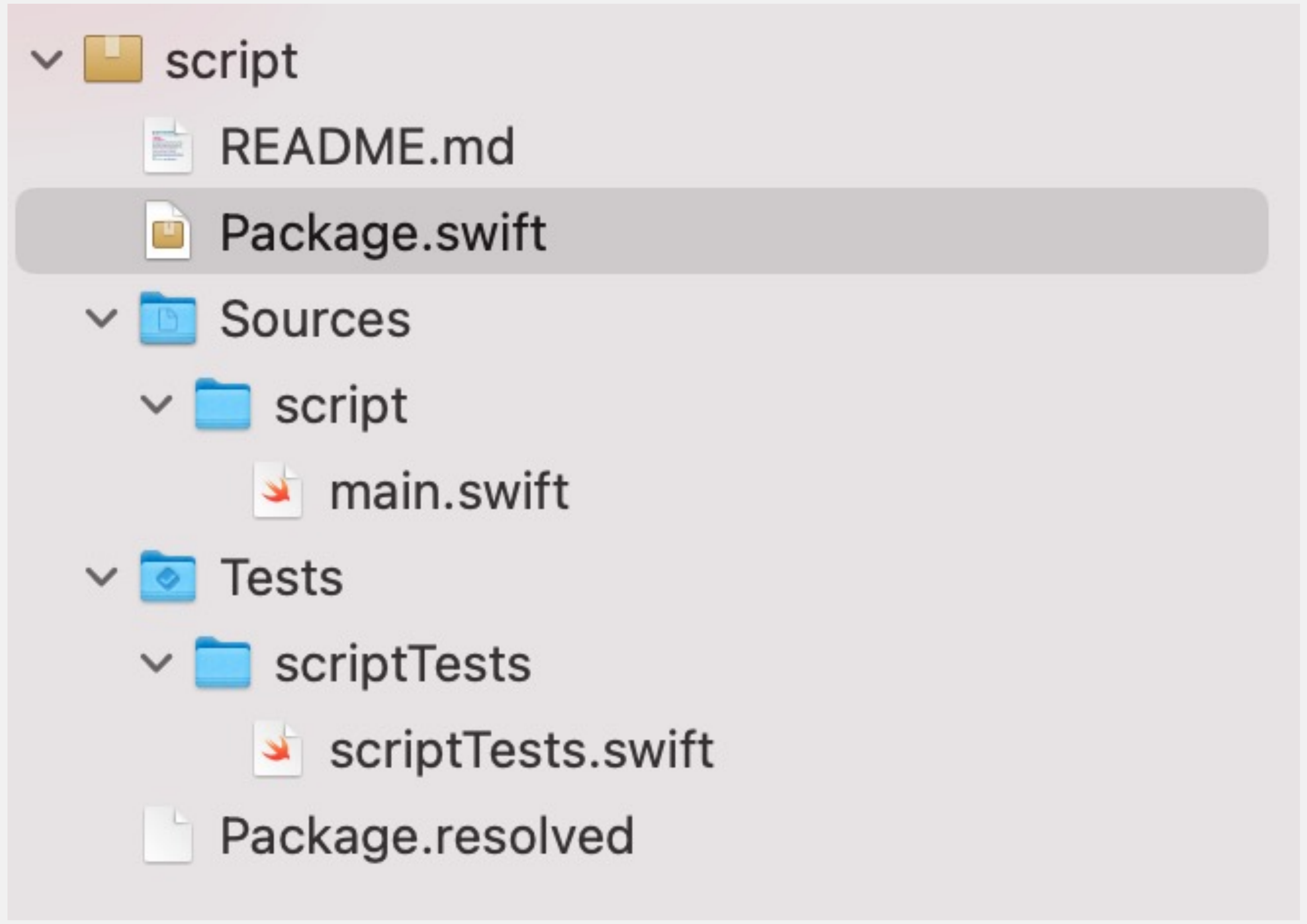
```swift
print("hello world")
```

```
hello world
Program ended with exit code: 0
```

main.swift

工程结构与依赖管理

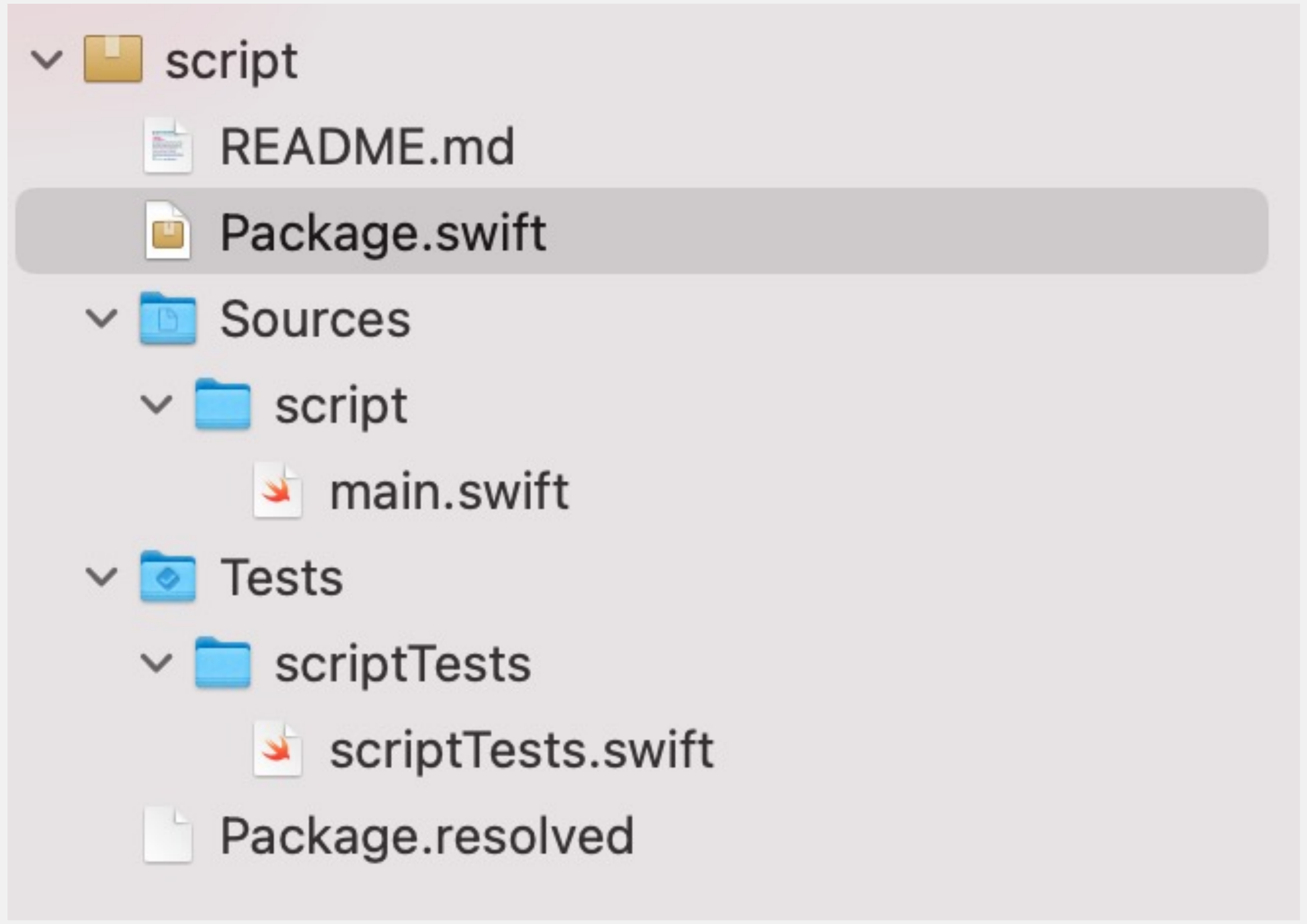
```
let package = Package(
    name: "script",
    dependencies: [],
    targets: [
        .target(
            name: "script",
            dependencies: []),
        .testTarget(
            name: "scriptTests",
            dependencies: ["script"]),
    ]
)
```



```
script
    README.md
    Package.swift
    Sources
        script
            main.swift
    Tests
        scriptTests
            scriptTests.swift
    Package.resolved
```

工程结构与依赖管理

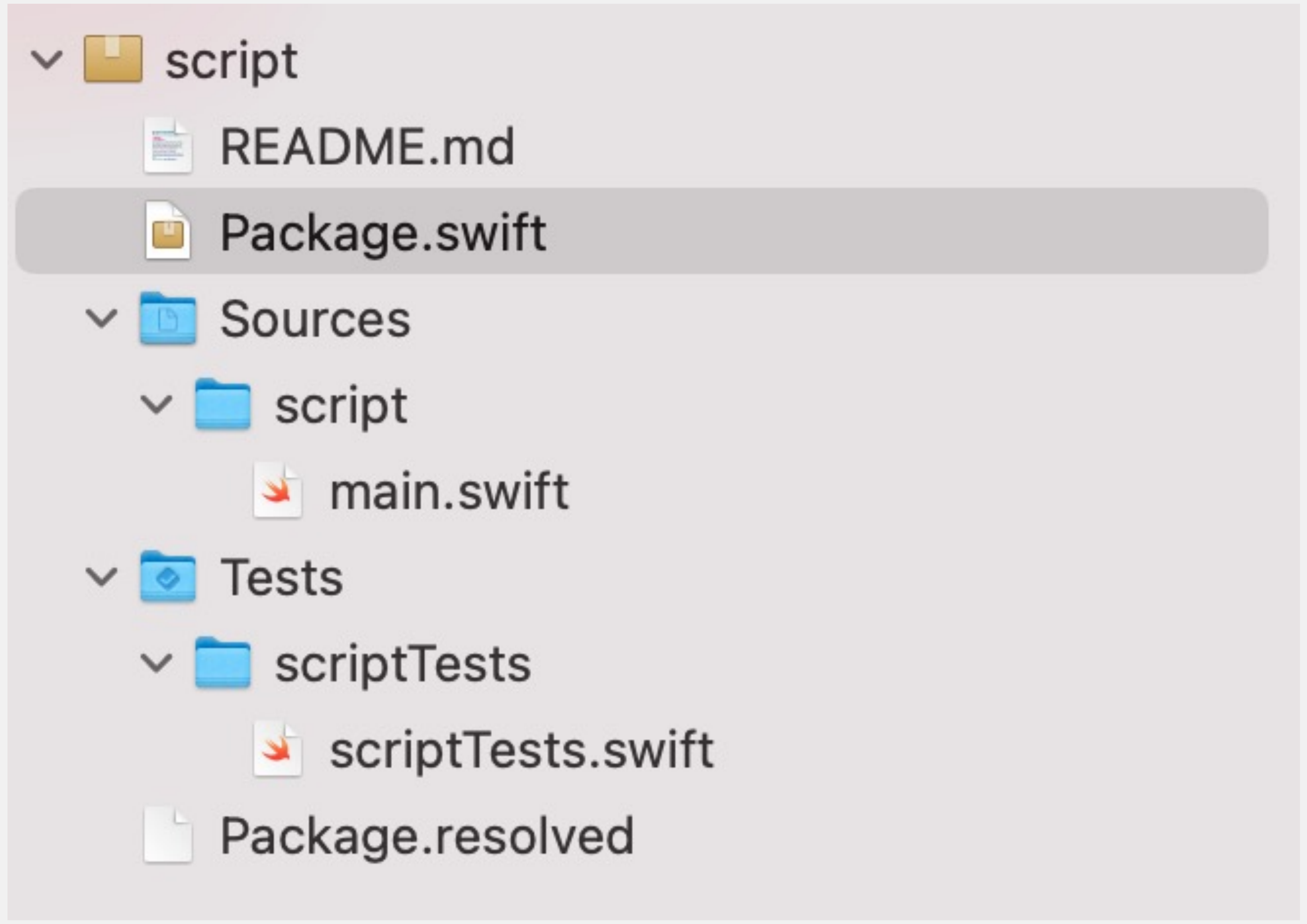
```
let package = Package(
    name: "script",
    dependencies: [],
    targets: [
        .target(
            name: "script",
            dependencies: [],
            path:"./Sources/script"),
        .testTarget(
            name: "scriptTests",
            dependencies: ["script"]),
    ]
)
```



```
script
    README.md
    Package.swift
    Sources
        script
            main.swift
    Tests
        scriptTests
            scriptTests.swift
    Package.resolved
```

工程结构与依赖管理

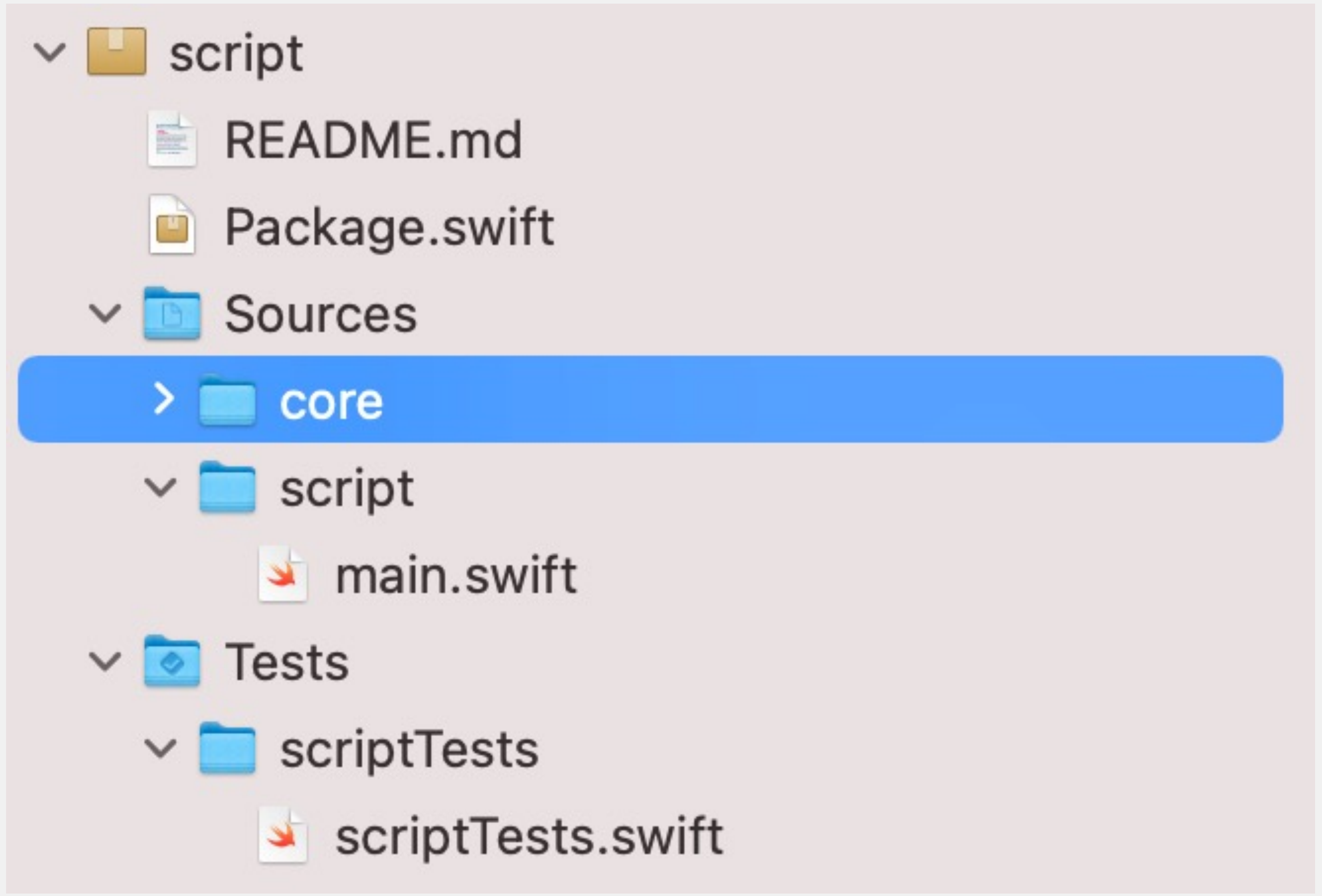
```
let package = Package(
    name: "script",
    dependencies: [],
    targets: [
        .executableTarget(
            name: "script",
            dependencies: []),
        .testTarget(
            name: "scriptTests",
            dependencies: ["script"]),
    ]
)
```



```
script
    README.md
    Package.swift
    Sources
        script
            main.swift
    Tests
        scriptTests
            scriptTests.swift
    Package.resolved
```

工程结构与依赖管理

```
let package = Package(
    name: "script",
    dependencies: [],
    targets: [
        .executableTarget(
            name: "script",
            dependencies: ["core"]),
        .target(
            name: "core",
            dependencies: []),
        .testTarget(
            name: "scriptTests",
            dependencies: ["script"]),
    ]
)
```



```
script
    README.md
    Package.swift
    Sources
        core
        script
            main.swift
    Tests
        scriptTests
            scriptTests.swift
```

小结

1. 基于 Swift Package manager 搭建基础框架
2. 显式声明 executable target
3. 拆分核心逻辑模块和命令行模块

大纲

2

编写代码： 生成随机数

```
import Darwin

let arguments: [String] = Array(CommandLine.arguments.dropFirst())

guard let numberString = arguments.first else {
    print("no argument")
    exit(1)
}

guard let number = Int(numberString) else {
    print("not number")
    exit(1)
}

print(Int.random(in: Int.min...number))
exit(0)
```

手动解析参数的模式

1. 没有 --help 方法， 没有使用说明
2. 一个复杂的命令行工具，参数会有很多，还有可选参数，flag, Option 等类型的参数。
3. 除此之外还有参数校验等需要。

编写代码

引入 Argument Parser

```
let package = Package(
    name: "script",
    dependencies: [],
    targets: [
        .executableTarget(
            name: "script",
            dependencies: ["core"]),
        .target(
            name: "core",
            dependencies: []),
        .testTarget(
            name: "scriptTests",
            dependencies: ["script"]),
    ]
)
```

引入 Argument Parser

```
let package = Package(
    name: "script",
    dependencies: [
        .package(url: "https://github.com/apple/swift-argument-parser", from: "0.4.0")
    ],
    targets: [
        .executableTarget(
            name: "script",
            dependencies: ["core",
                           .product(name: "ArgumentParser", package: "swift-argument-parser")]),
        .target(
            name: "core",
            dependencies: []),
        .testTarget(
            name: "scriptTests",
            dependencies: ["script"]),
    ]
)
```

重写生成随机数

```swift
import ArgumentParser

struct Random: ParsableCommand {
    @Argument(help: "unsigned number")
    var highValue: UInt

    func run() {
        print(UInt.random(in: 0...highValue))
    }
}

Random.main()
```

自带参数检测和Help

参数校验:

```
Error: Missing expected argument '<high-value>'
Usage: random <high-value>
  See 'random --help' for more information.
```

使用说明

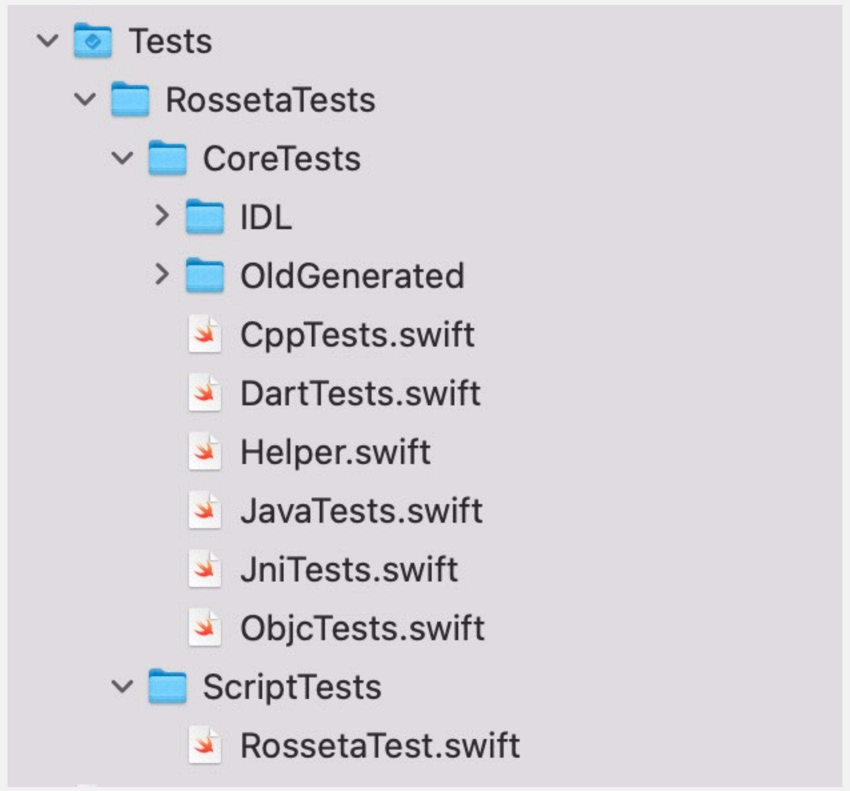
```
USAGE: random <high-value>

ARGUMENTS:
  <high-value>            unsigned number

OPTIONS:
  -h, --help              Show help information
```

小结

1. 通过一个生成随机数工具感受 Swift 编写命令行工具
2. 命令行工具的参数解析非常繁琐，我们引入 Argument Parser 库

大纲

测试



```
Tests
  RossetaTests
    CoreTests
      IDL
      OldGenerated
      CppTests.swift
      DartTests.swift
      Helper.swift
      JavaTests.swift
      JniTests.swift
      ObjcTests.swift
    ScriptTests
      RossetaTest.swift
```

核心逻辑 和 命令行API 测试解耦

CoreTests负责核心逻辑测试， ScriptTests 负责命令行 API 测试

测试命令行API

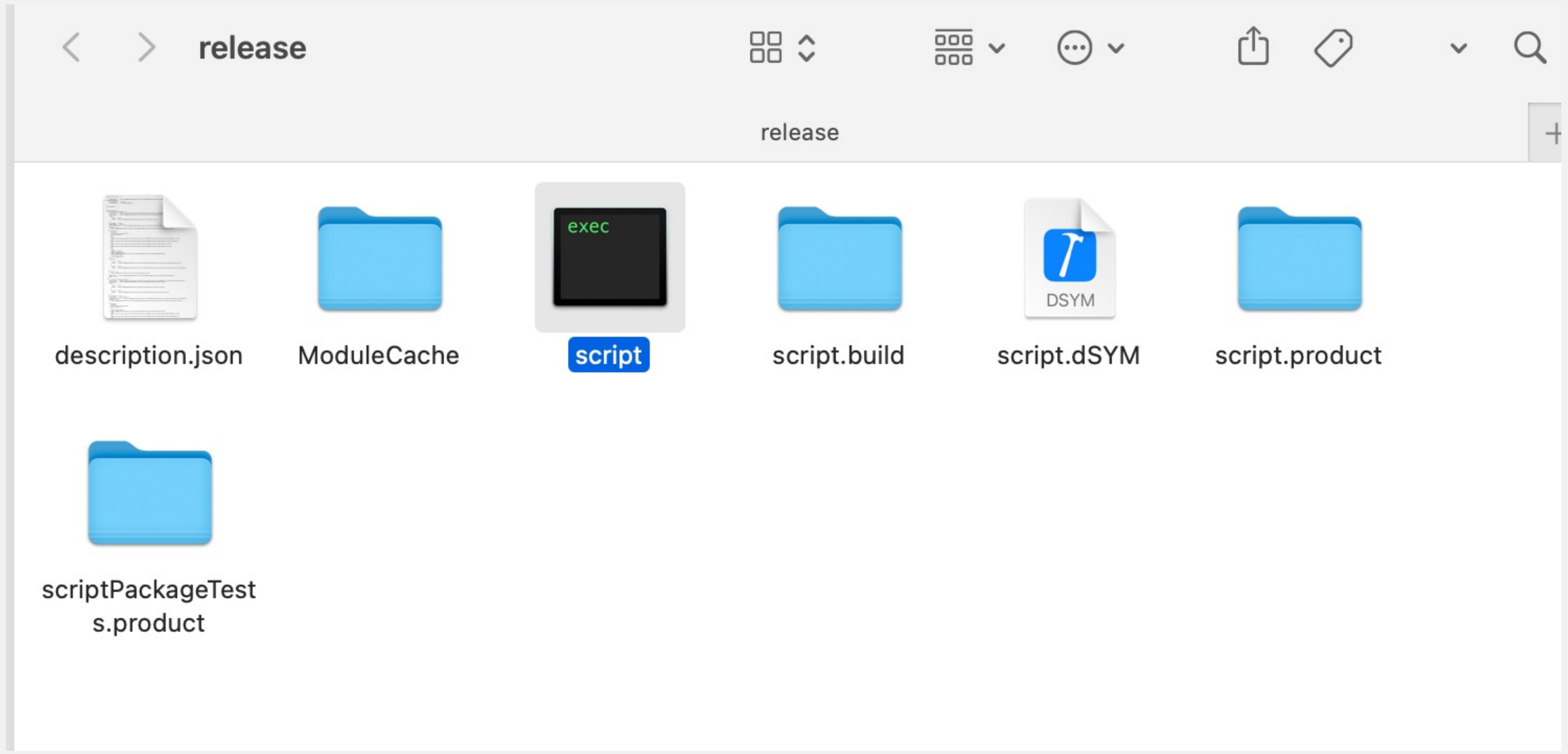
```
func testRosseta() throws {
    //1. 创建进程
    let process = Process()
    //2. 设置可执行文件位置，这里我们设置的是 Xcode 编出来的可执行文件路径
    process.executableURL = Bundle.allBundles.first { $0.bundlePath.hasSuffix(".xctest") }!
        .bundleURL.deletingLastPathComponent().appendingPathComponent("Rosseta")
    //3. 设置参数
    process.arguments = [
        "--objc-path","~/Desktop/RossetaGenerated",
        "--cpp-path","~/Desktop/RossetaGenerated",
        ]
    //4. 设置Pipe, 用于获取打印内容
    let pipe = Pipe()
    process.standardOutput = pipe
    //5. 启动进程
    try process.run()
    process.waitUntilExit()
    //6. 读取命令行工具输出内容，判断是否符合预期
    let data = pipe.fileHandleForReading.readDataToEndOfFile()
    let output = String(data: data, encoding: .utf8)
    XCTAssertEqual(output, "success")
  }
```

大纲

发布

swift build --configuration release

生成的可执行文件位于 .build/release/ 目录下



大纲

异步

```
URLSession.shared.dataTask(with: url, completionHandler: { _, response, _ in
    print(response)
}).resume()
```

进阶操作 / 异步

```
URLSession.shared.dataTask(with: url, completionHandler: { _, response, _ in
    print(response)
    //退出
    exit(EXIT_SUCCESS)
}).resume()

//启动RunLoop
RunLoop.main.run()
```

Demo: 与 Appkit / SwiftUI 交互

与 Appkit 交互

```
NSApplication.shared.setActivationPolicy(.accessory)



func selectFile() -> URL? {
    let dialog = NSOpenPanel()
    dialog.allowedFileTypes = ["jpg", "png"]
    guard dialog.runModal() == .OK else { return nil }
    return dialog.url
}

print(selectFile()?.absoluteString ?? "")
```

与 SwiftUI 交互

```
import Foundation
import SwiftUI

struct App: SwiftUI.App {
    @State var fileUrl: URL?
    @State var showFileChooser = false

  var body: some Scene {
    WindowGroup {
        HStack {
            Button("select File")
            {
                let panel = NSOpenPanel()
                panel.allowsMultipleSelection = false
                panel.canChooseDirectories = false
                if panel.runModal() == .OK {
                    self.fileUrl = panel.url
                }
            }
            if let url = fileUrl, let nsImage = NSImage(contentsOf: url) {
                Image(nsImage: nsImage)
            }
        }
        .frame(maxWidth: .infinity, maxHeight: .infinity)
    }
      .windowStyle(HiddenTitleBarWindowStyle())
  }
}
App.main()
```

总结

01 创建工程

02 编写代码

03 测试

04 发布

05 进阶操作