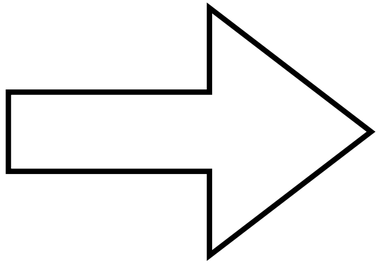
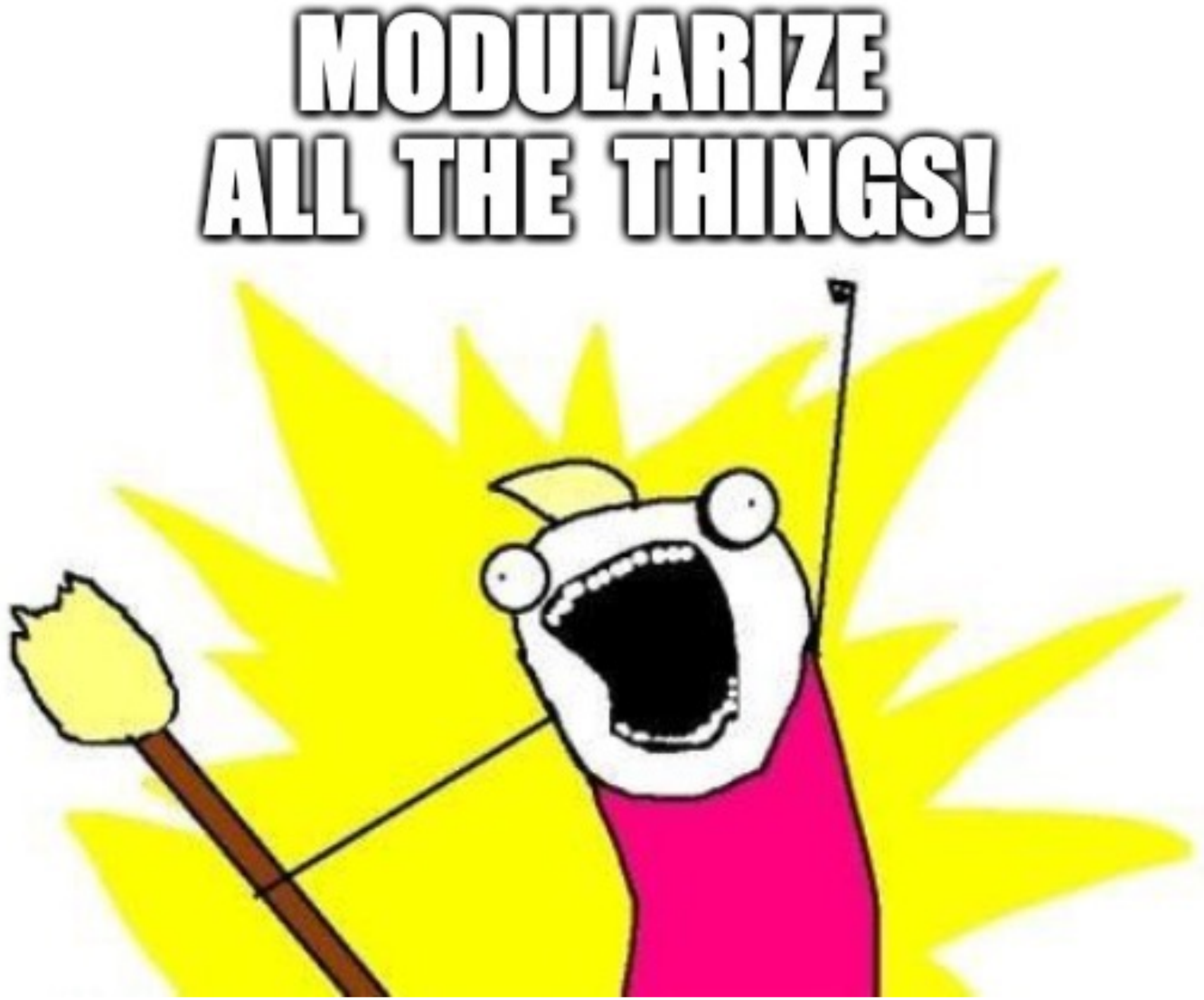
# my name is

# Abbey Jackson



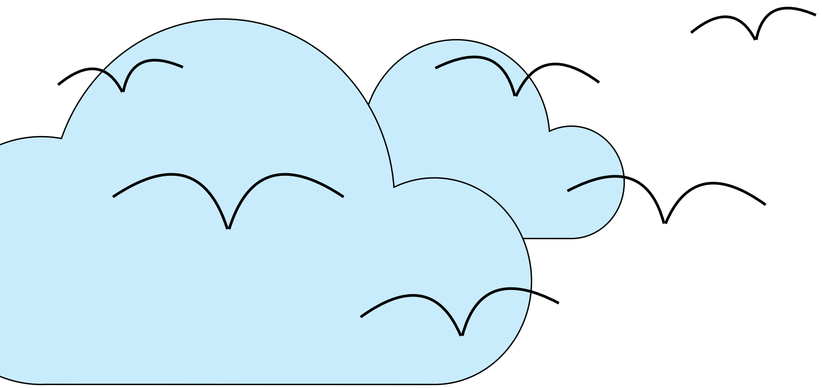
2015

2019




@earthabbey

@abbeyjackson



1
Description

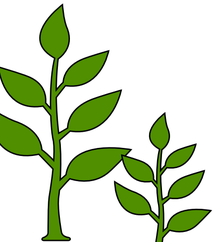
2 - Demo

3
Gotchas

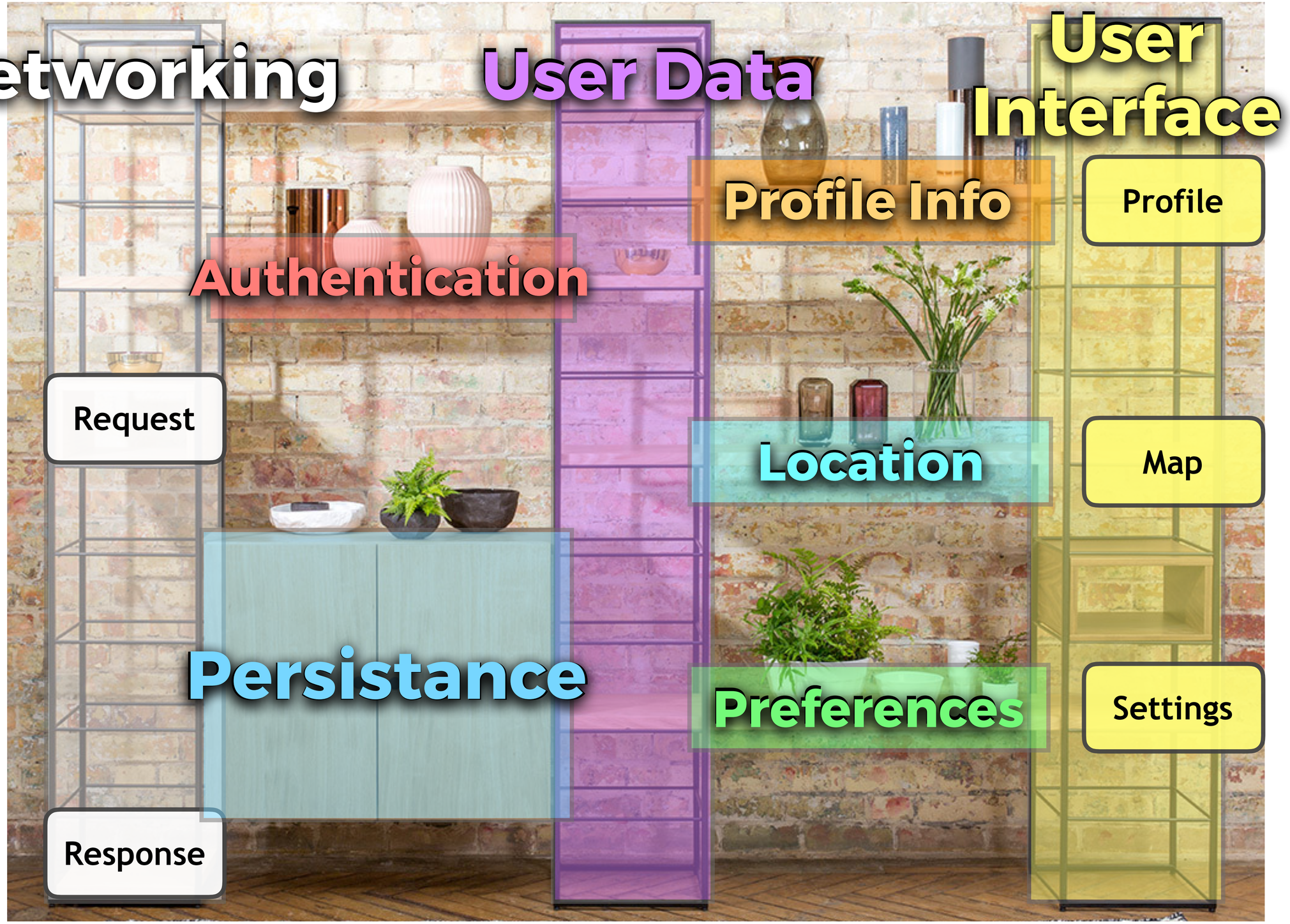
4 - Positives

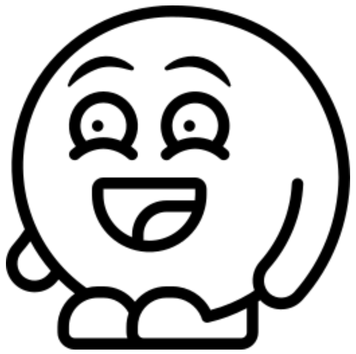
5
Negatives

6
Resources



# What is Modular App Development?


Networking
User Data
User Interface
Authentication
Profile Info
Profile
Request
Location
Map
Persistance
Preferences
Settings
Response



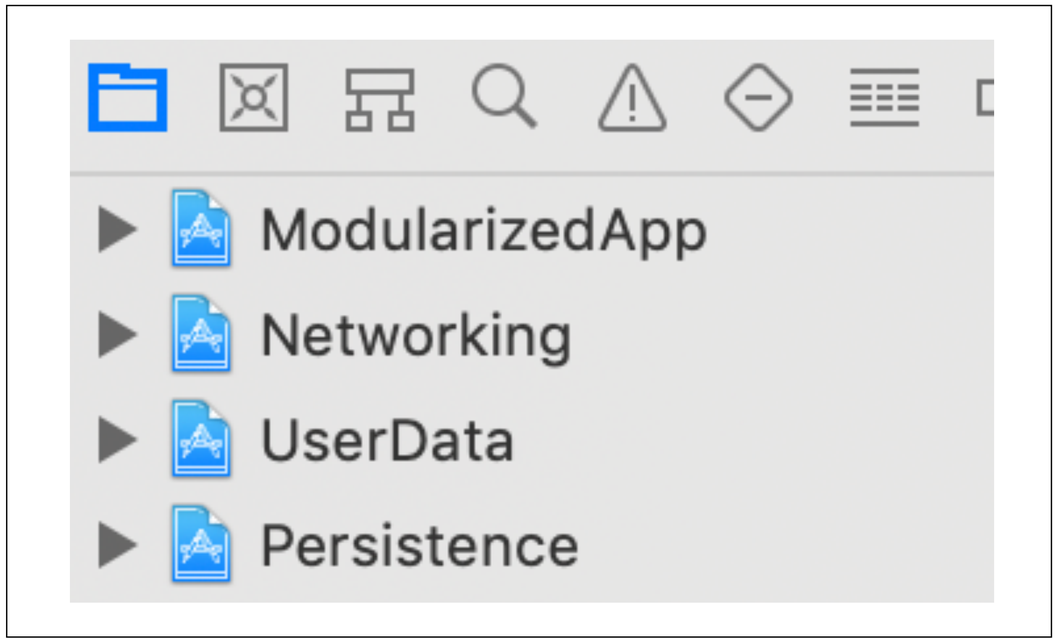
# How to modularize your projects

# Dynamic or Static?

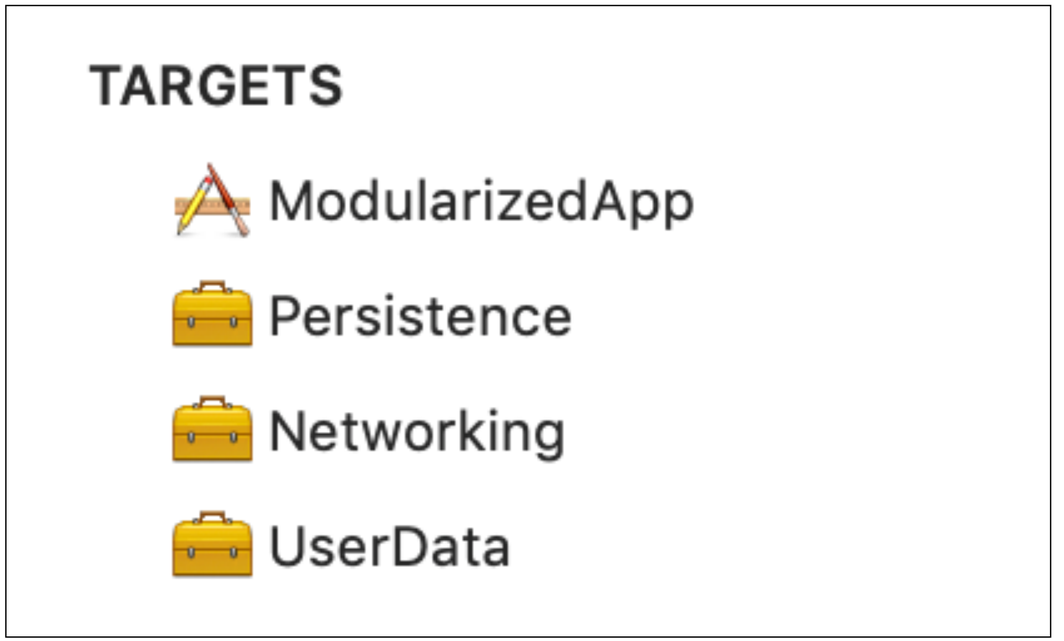
# Set Up Multiple...

There are two different approaches you can take

## ... projects?




## ... targets?



| … projects? | | … targets? |
| --- | --- | --- |
| Can open separately | → | Can not open separately |
| Files can only belong to one project | → | Files can belong to multiple targets |
| Visual separation in filetree is automatic | → | Visual separation has to be maintained manually |
| Build settings are not related to parent app | → | Build settings can be affected by inheritance |

# Demo - A working project

1. Set up your workspace
2. Link your frameworks
3. Use your frameworks
4. Add a new framework
5. Use that framework

# Example: Passing Data
## (protocol method)

Persistence

```
public protocol DataObjectProtocol {
    var objectId: String {get}
    var objectData: Data? {get}
}

public struct DataObject: DataObjectProtocol { … }

public class Database {
    public func store(_ object: DataObject) {
        objects[object.objectId] = object
    }
    public func get(_ objectId: String) -> DataObjectProtocol? {
        return objects[objectId]
    }
}
```

# Example: Passing Data
## (protocol method)

Modularized App

```
import Persistence
import UserData

extension User: DataObjectProtocol {
    public var objectId: String { … }
    public var objectData: Data? { … }
}

let user = User( … )
let userDataObject = DataObject(objectId: user.objectId,
                                objectData: user.objectData)
let database = Database( … )
database.store(userDataObject)
```

# Example: Passing Data

Protocols

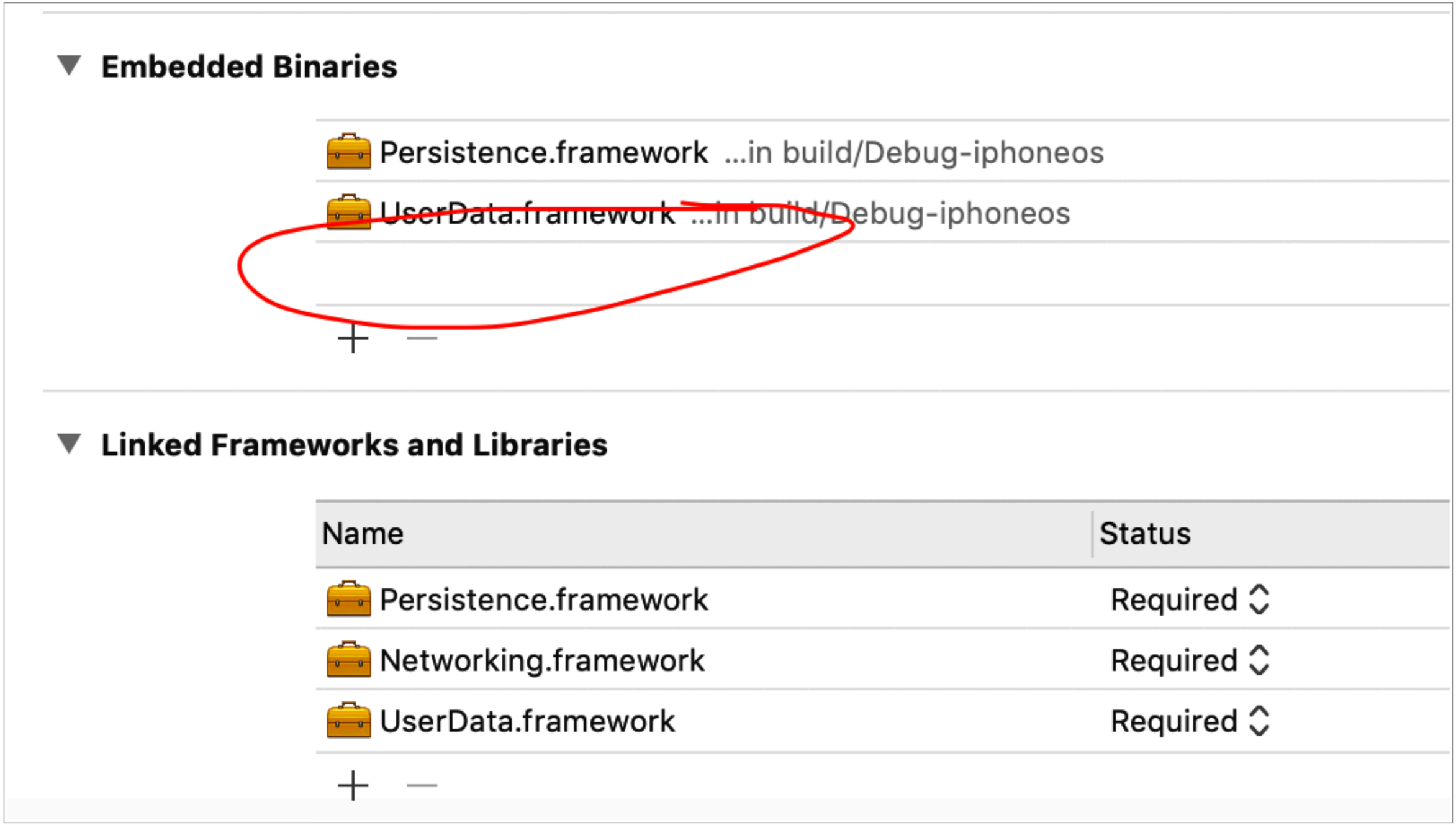
Delegates

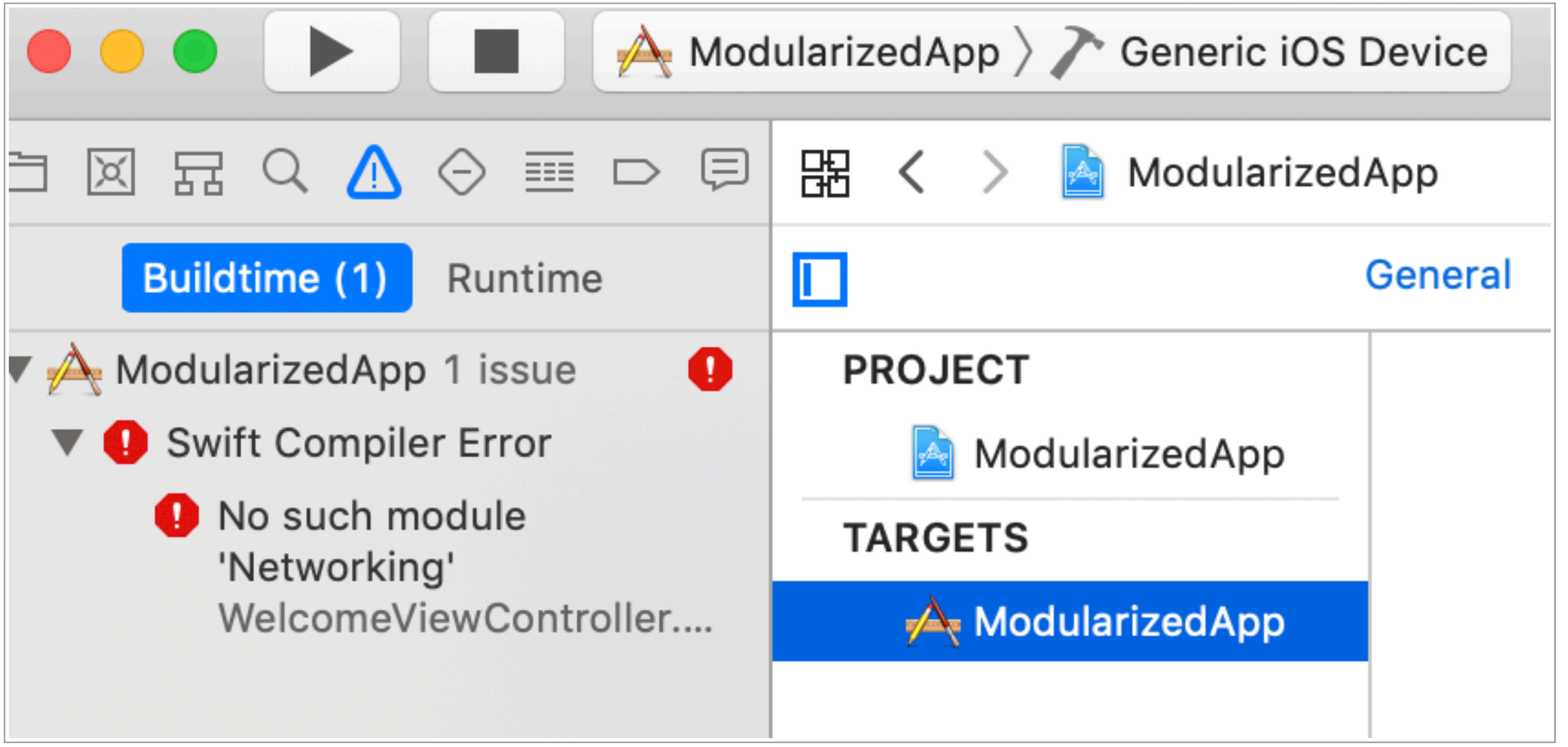
Reactive Programming

Property Observers


# Where to look to avoid moments like this

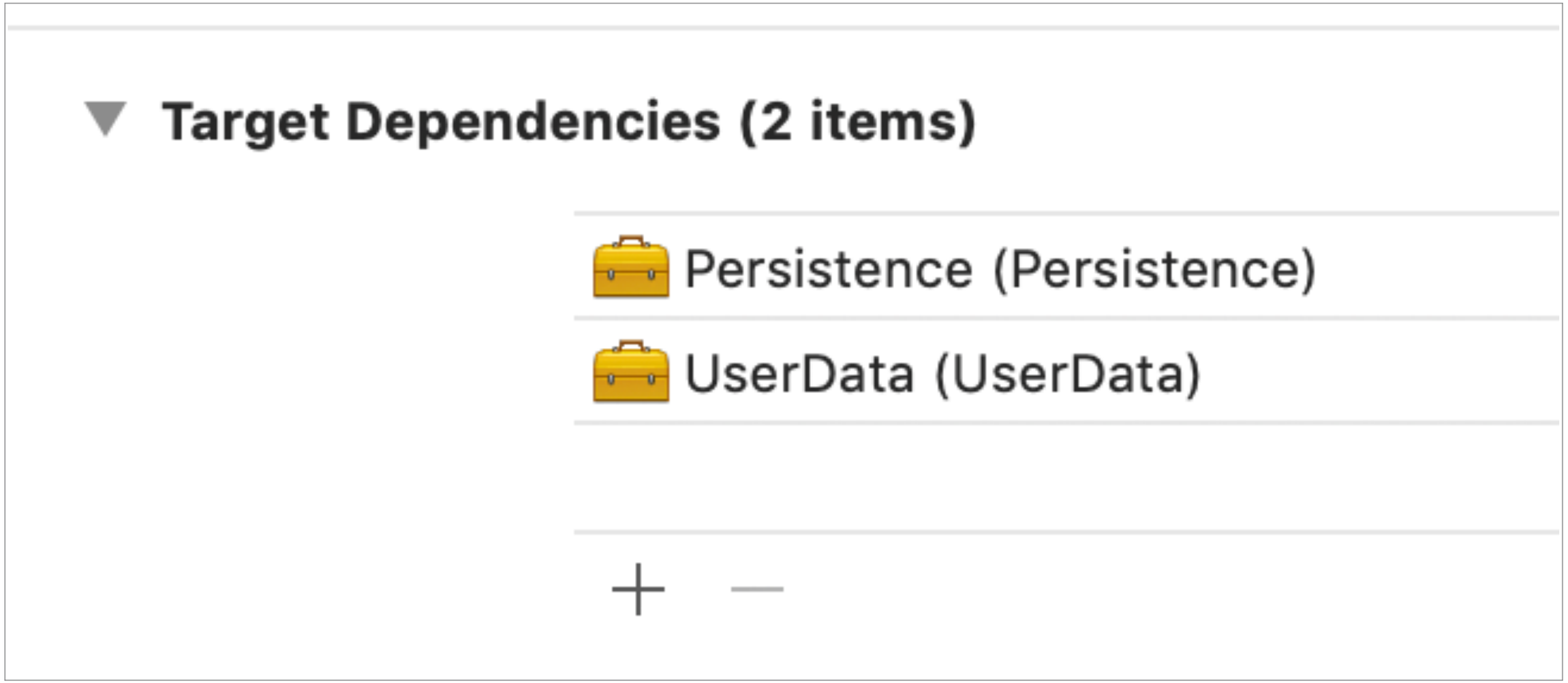
# Not Embedding the Binary


Embedded Binaries
Persistence.framework ...in build/Debug-iphoneos
UserData.framework ...in build/Debug-iphoneos
Linked Frameworks and Libraries
Name
Status
Persistence.framework
Required
Networking.framework
Required
UserData.framework
Required


ModularizedApp
Generic iOS Device
ModularizedApp
Buildtime (1)
Runtime
General
ModularizedApp 1 issue
Swift Compiler Error
No such module 'Networking'
WelcomeViewController....
PROJECT
ModularizedApp
TARGETS
ModularizedApp

Not Embedding the Binary

Not Linking in Target Dependencies

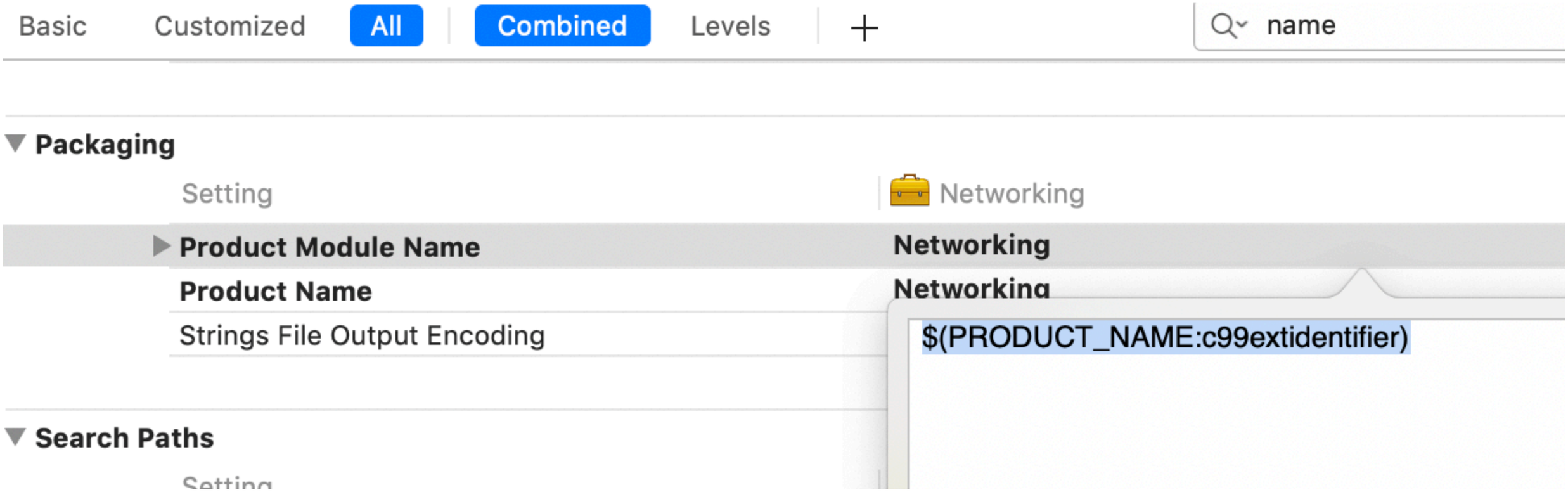

Target Dependencies (2 items)
Persistence (Persistence)
UserData (UserData)

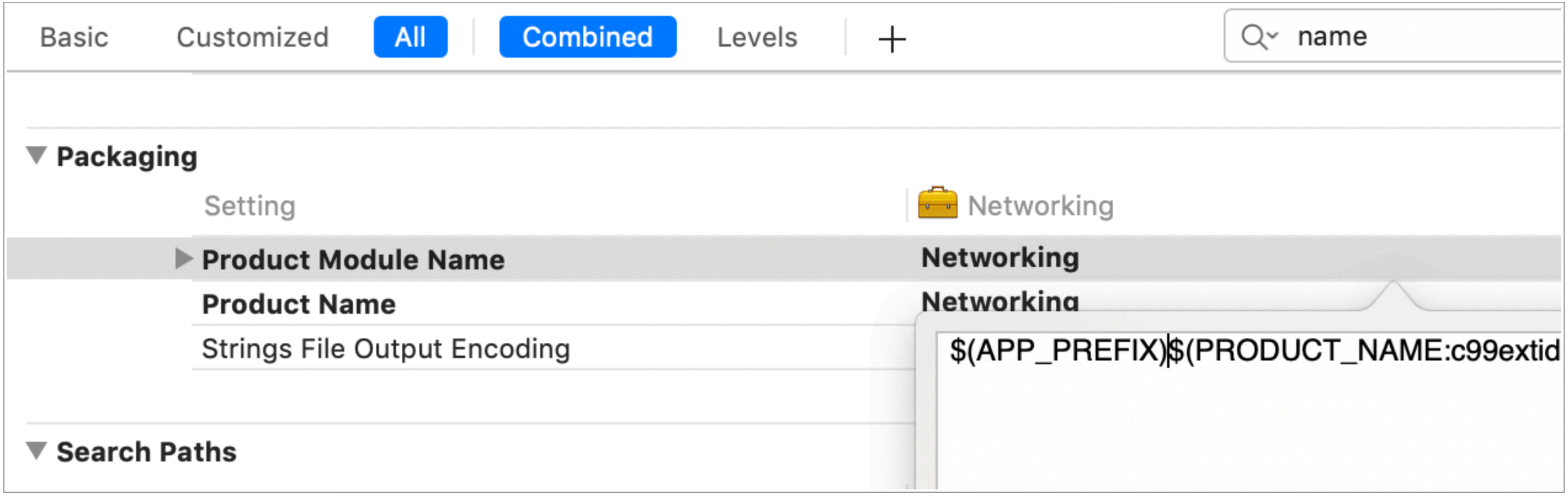

Running ModularizedApp on iPhone XR
etworking 〉 Networking.swift 〉 M getUserResponse()
.vate func getUserResponse() ->
UserResponseData? {
let profileDictionary: [String: Any
"firstName": "Abbey" as AnyObjec
"lastName": "Bob" as AnyObject,
"email": "billy@bob.com" as AnyO
]
let locationDictionary: [String: Any
"address": "123 Smith Street" as
"city": "Toronto" as AnyObject,
12:42
Back
Billy Bob
123 Smith

Not Embedding the Binary

Not Linking in Target Dependencies

Using Common Module Name


Basic
Customized
All
Combined
Levels
name
Packaging
Setting
Networking
Product Module Name
Networking
Product Name
Networking
Strings File Output Encoding
$(PRODUCT_NAME:c99extidentifier)
Search Paths
Setting

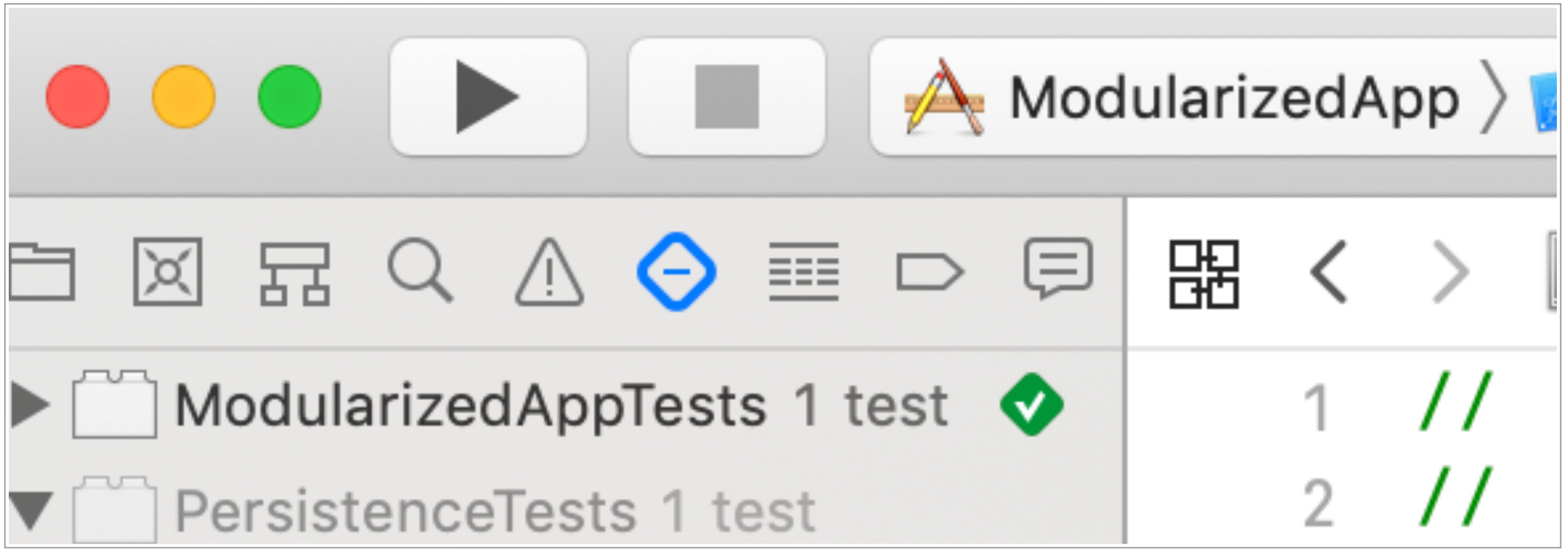

Basic
Customized
All
Combined
Levels
name
Packaging
Setting
Networking
Product Module Name
Networking
Product Name
Networking
Strings File Output Encoding
$(APP_PREFIX)$(PRODUCT_NAME:c99extid
Search Paths

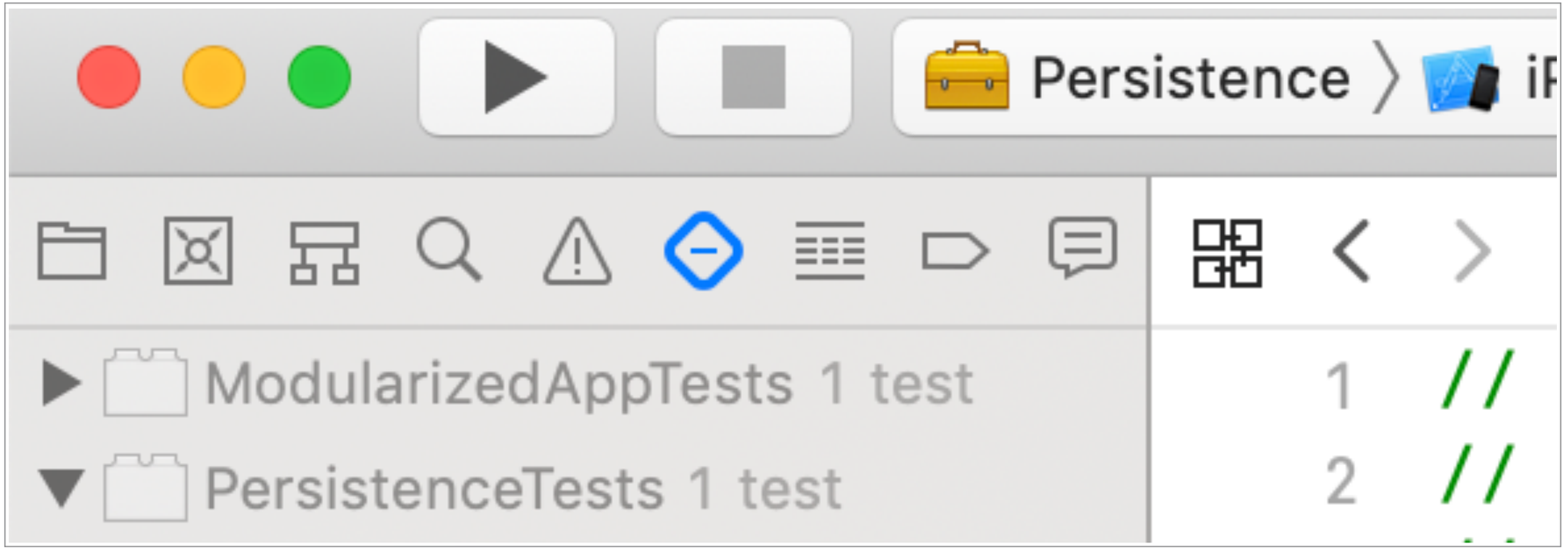
Not Embedding the Binary

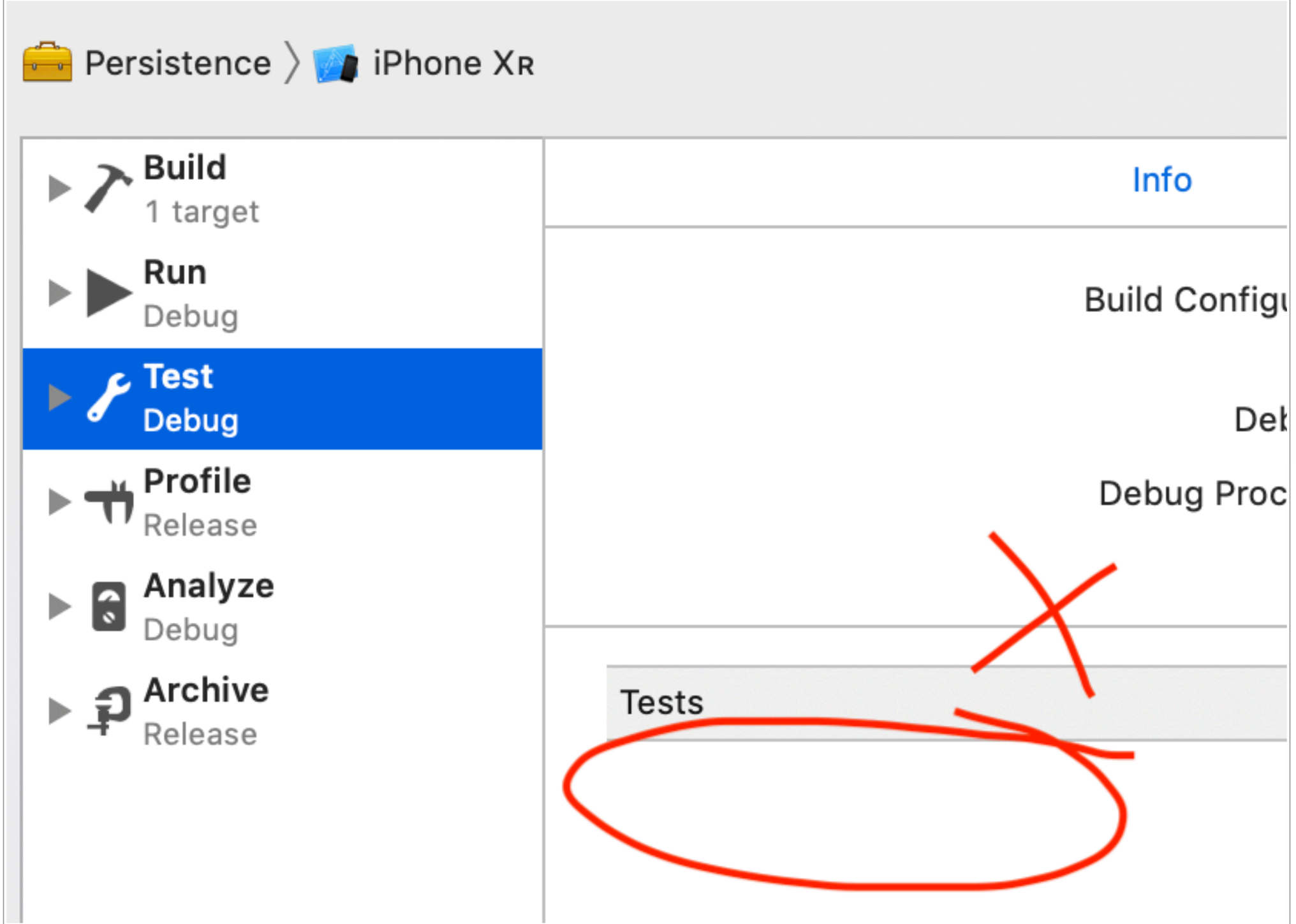
Not Linking in Target Dependencies

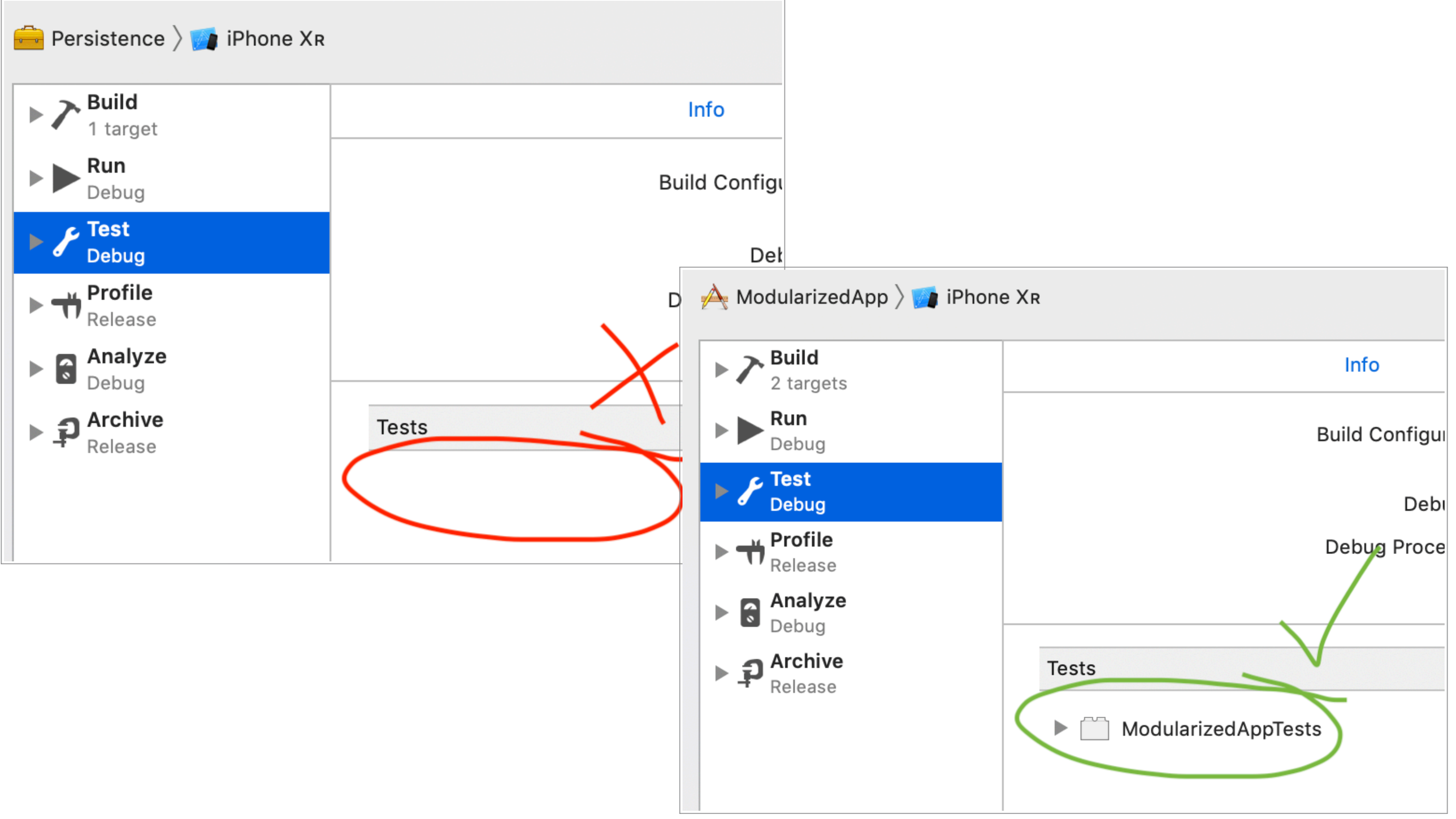
Using Common Module Name

Test Target Greyed Out


ModularizedApp
ModularizedAppTests 1 test
PersistenceTests 1 test
1 //
2 //


Persistence
ModularizedAppTests 1 test
PersistenceTests 1 test
1 //
2 //


Persistence
iPhone XR
Build
1 target
Run
Debug
Test
Debug
Profile
Release
Analyze
Debug
Archive
Release
Info
Build Configu
Deb
Debug Proc
Tests


Persistence
iPhone XR
Build
1 target
Run
Debug
Test
Debug
Profile
Release
Analyze
Debug
Archive
Release
Info
Build Config
Tests
ModularizedApp
iPhone XR
Build
2 targets
Run
Debug
Test
Debug
Profile
Release
Analyze
Debug
Archive
Release
Info
Build Configu
Debug Proce
Tests
ModularizedAppTests

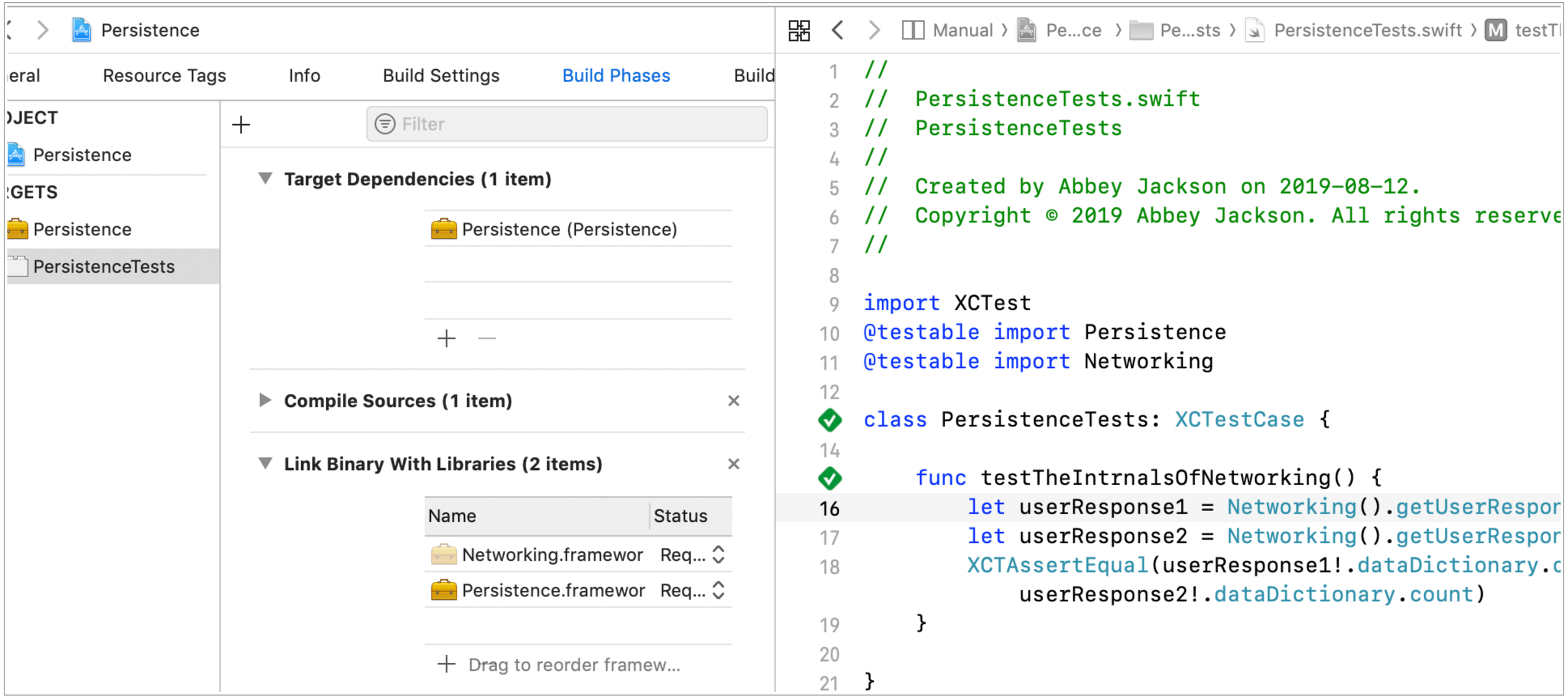
Not Embedding the Binary

Not Linking in Target Dependencies

Using Common Module Name

Test Target Greyed Out

Violating Proper Unit Testing Principles


Persistence
eral
Resource Tags
Info
Build Settings
Build Phases
Build
JECT
Persistence
GETS
Persistence
PersistenceTests
Filter
Target Dependencies (1 item)
Persistence (Persistence)
Compile Sources (1 item)
Link Binary With Libraries (2 items)
Name
Status
Networking.framewor
Req...
Persistence.framewor
Req...
Drag to reorder framew...
Manual
Pe...ce
Pe...sts
PersistenceTests.swift
testTI
1 //
2 // PersistenceTests.swift
3 // PersistenceTests
4 //
5 // Created by Abbey Jackson on 2019-08-12.
6 // Copyright © 2019 Abbey Jackson. All rights reserve
7 //
8
9 import XCTest
10 @testable import Persistence
11 @testable import Networking
12
13 class PersistenceTests: XCTestCase {
14
15 func testTheIntrnalsOfNetworking() {
16 let userResponse1 = Networking().getUserRespor
17 let userResponse2 = Networking().getUserRespor
18 XCTAssertEqual(userResponse1!.dataDictionary.c
userResponse2!.dataDictionary.count)
19 }
20
21 }

Not Embedding the Binary

Not Linking in Target Dependencies

Using Common Module Name

Test Target Greyed Out

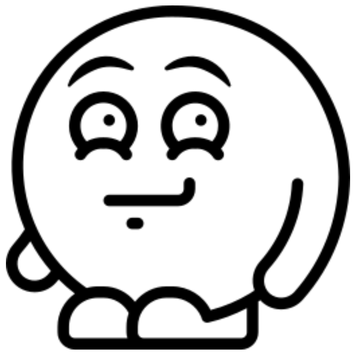
Violating Proper Unit Testing Principles

Inconsistency Between Targets

iOS Deployment Target

Swift Version (if < 5.0)

Active Architectures



# Why might you want to modularize?

# Wide-Spread Benefits

Modularizing your app can affect more than just your developers

## Business

## Product

## Development

Lower Tooling Costs

Less Developer Resourcing

Faster Releases

Happier Clients

Improved Communication

# Wide-Spread Benefits

Modularizing your app can affect more than just your developers

## Business

## Product

## Development

Better
Reviews

Improved
Communication

Less Bugs

Less Support
Resourcing

Faster
Fixes

Fewer
Regressions

Happier
Clients

# Wide-Spread Benefits

Modularizing your app can affect more than just your developers

## Business

## Product

## Development

Increased
Code Integrity

Code
Reuse

Better
Sense of
Ownership

Uncoupled
Dependencies

Easier
Debugging

Pipeline
Improvements

Enforce
Best Practices

Improved
Testing

Better
Metrics

Faster
Buildtimes


ALL THE THINGS!

# Wide-Spread Benefits

Modularizing your app can affect more than just your developers

## Business

## Product

## Development

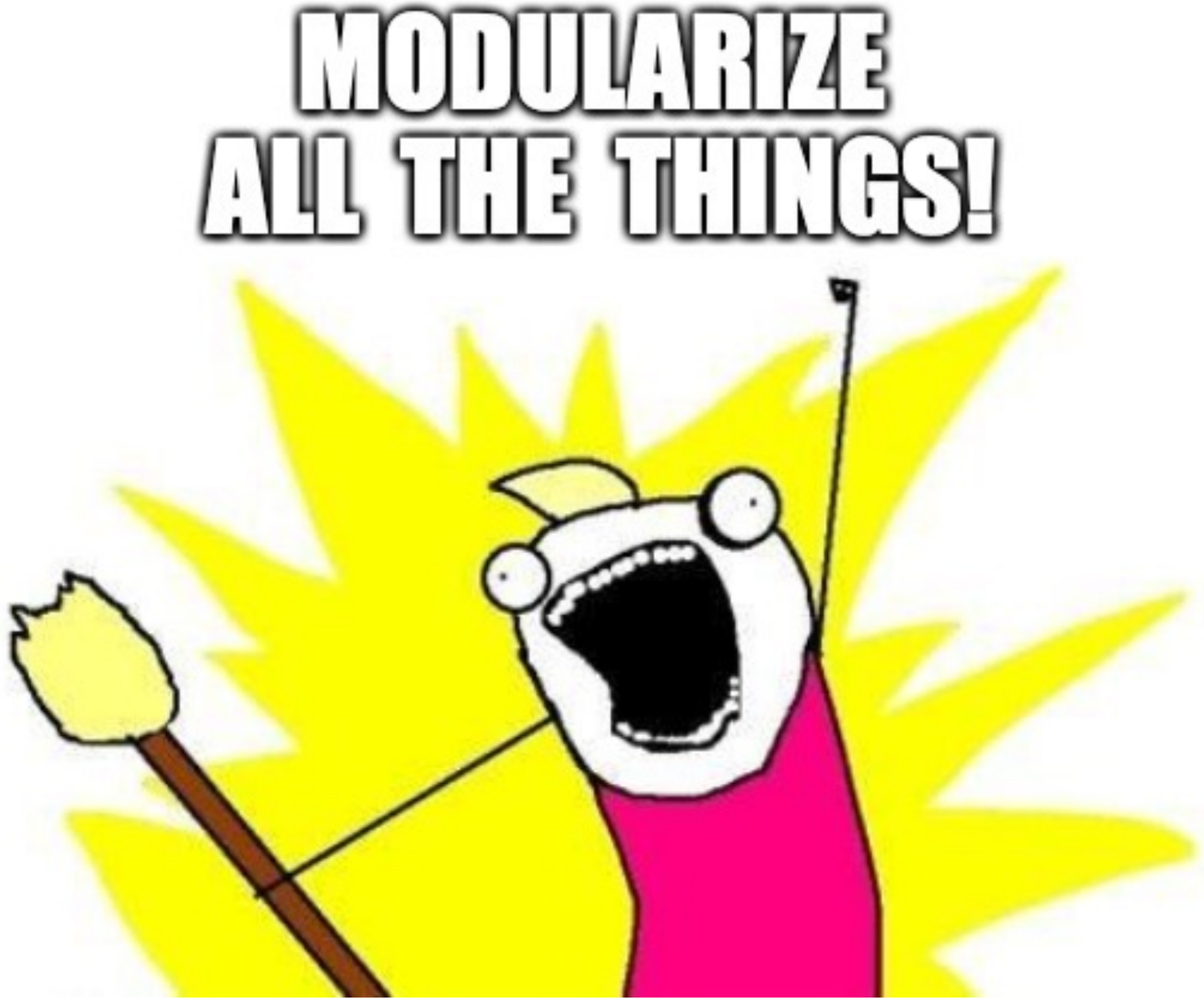
# When is modularization not so great?

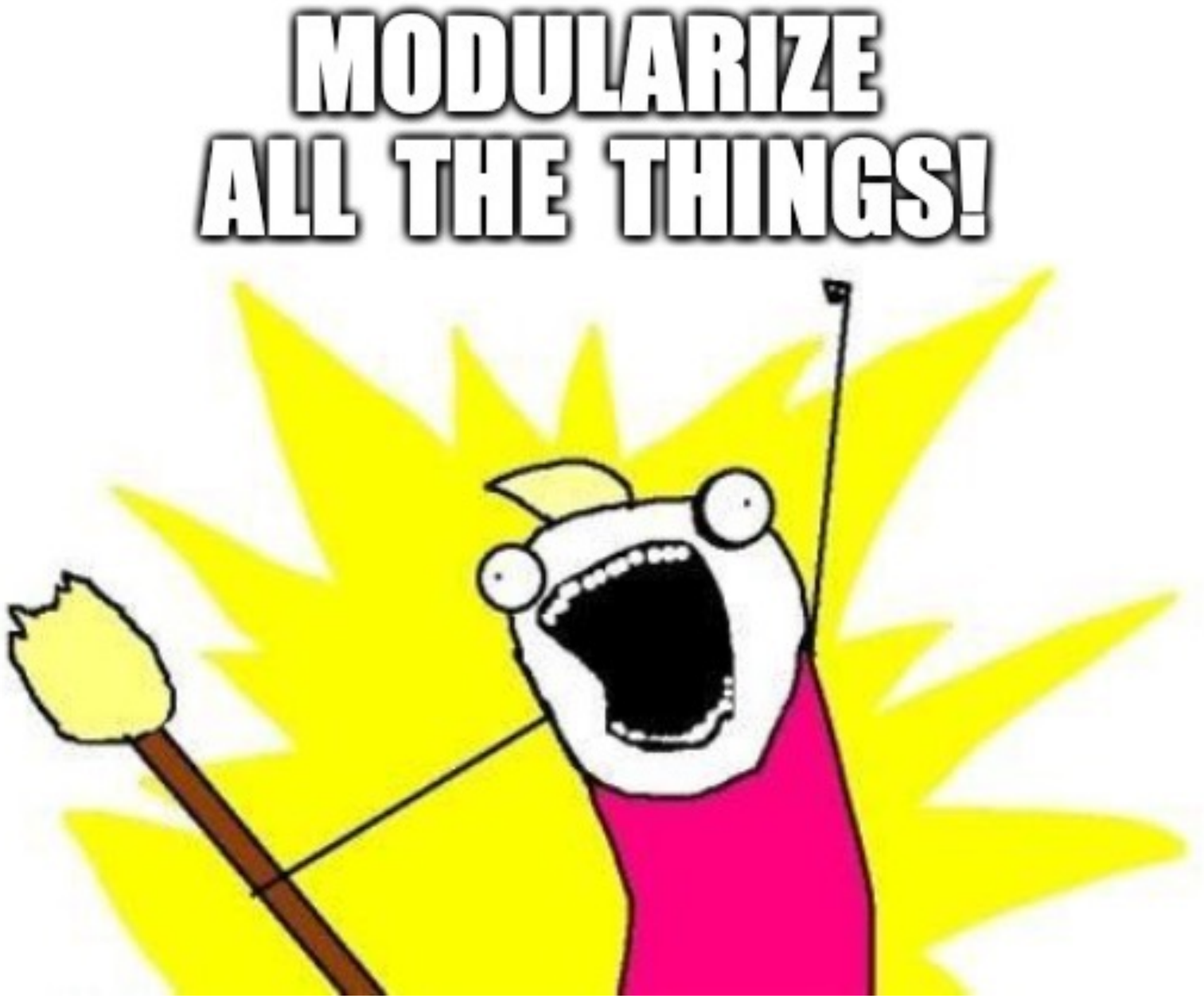
Handling Assets

Where to put stuff

Separate Project Settings

Sharing UI


MODULARIZE
ALL THE THINGS!




## Sample Code

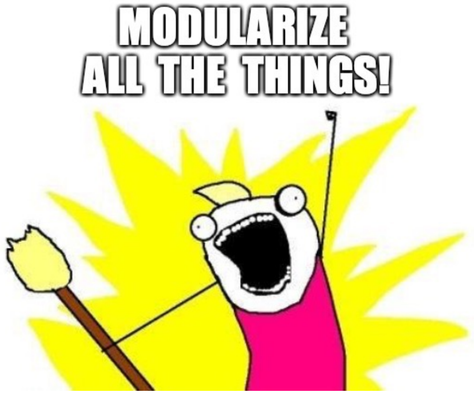
Modularized Workspace (abgl.ca/mod-basic)

## Recordings

All Available On My Website (abgl.ca/talks)

@earthabbey

@abbeyjackson




@earthabbey

@abbeyjackson

# Further Reading

It's always a good idea to learn from those who have come before you, even if everything is working out great and you feel confident about your set up!

- Modularising iOS apps into powerful reusable kits, from *Zomato* (abgl.ca/mod-1)
- Modular iOS Part 1: Strangling the Monolith, from *Sam Dods* (abgl.ca/mod-2)
  - Modular iOS Part 2: Splitting a Workspace Into Modules, from *Sam Dods* (abgl.ca/mod-3)
  - Modular iOS Part 3: Configuration & Testing of Modules, from *Sam Dods* (abgl.ca/mod-4)
  - Modular iOS Part 4: Sharing Configuration Between Modules, from *Sam Dods* (abgl.ca/mod-5)
- Our iOS modularization story, from *wehkamp* (abgl.ca/mod-6)
- Using CocoaPods to Modularize a Big iOS App), from *Hubspot* (abgl.ca/mod-7)
  - Update: How We're Building iOS Apps Today), from *Hubspot* (abgl.ca/mod-8)
- iOS at Scale: Modularization of the Wayfair App, from Wayfair (abgl.ca/mod-9)
- Building a Composable, Flexible, and Functional Layout in our iOS App, from *Wayfair* (abgl.ca/mod-10)
- How to create bridges between frameworks in an iOS app, from Rayane Kurrimboccus (abgl.ca/mod-11)
- And this SO post which shows the kinds of confusing troubles you can get into (abgl.ca/mod-12)