

Intro to iOS Unit Testing

Or how to pour code into your code so you can code your way out of incorrect code

by Fernando Olivares






Agenda

1-hour session

- Author Introduction
- Also why we're here: What is Unit Testing?
- Live coding
- Conclusion & Where to go from here
- Q&A

Author Introduction

Fernando

- ~10 years of experience
- Worked at small startups ( 1SecondEveryday) to publicly traded companies ( J2 Global Inc.)
- Instructor at  Big Nerd Ranch,  bloc.io,  Lambda School
- Won a few awards: The Storyteller Within (Apple), ERA Accelerator Top 10 (ERA NY)
- Product and Project experience
- iOS-only, bought the first iPhone without knowing if he'd be able to use it
- @fromJrToSr

What is Unit Testing?

In theory they're amazing

- A unit test is a function that tests other functions.
- Automated tests that validate the logic and/or performance of one or more functions.
- Allow you to continuously test a wide range of scenarios.
- Protect against regressions and reduce the need for manual testing.
- Opens up the possibility of Test Driven Development

What is Unit Testing?

In practice they are constrained by reality

- Code that tests other code.
- Provide incredible value when they catch bugs.
- You can spend an afternoon creating unit tests for a feature and they will catch *any* changes to the tested function.
- It is very satisfying to know that part of your software is covered from a lot of scenarios you can think of.
- They are very expensive and are usually either the last part of a feature being built or are ignored altogether.

What is Unit Testing?

Assertions

How does XCTest work?

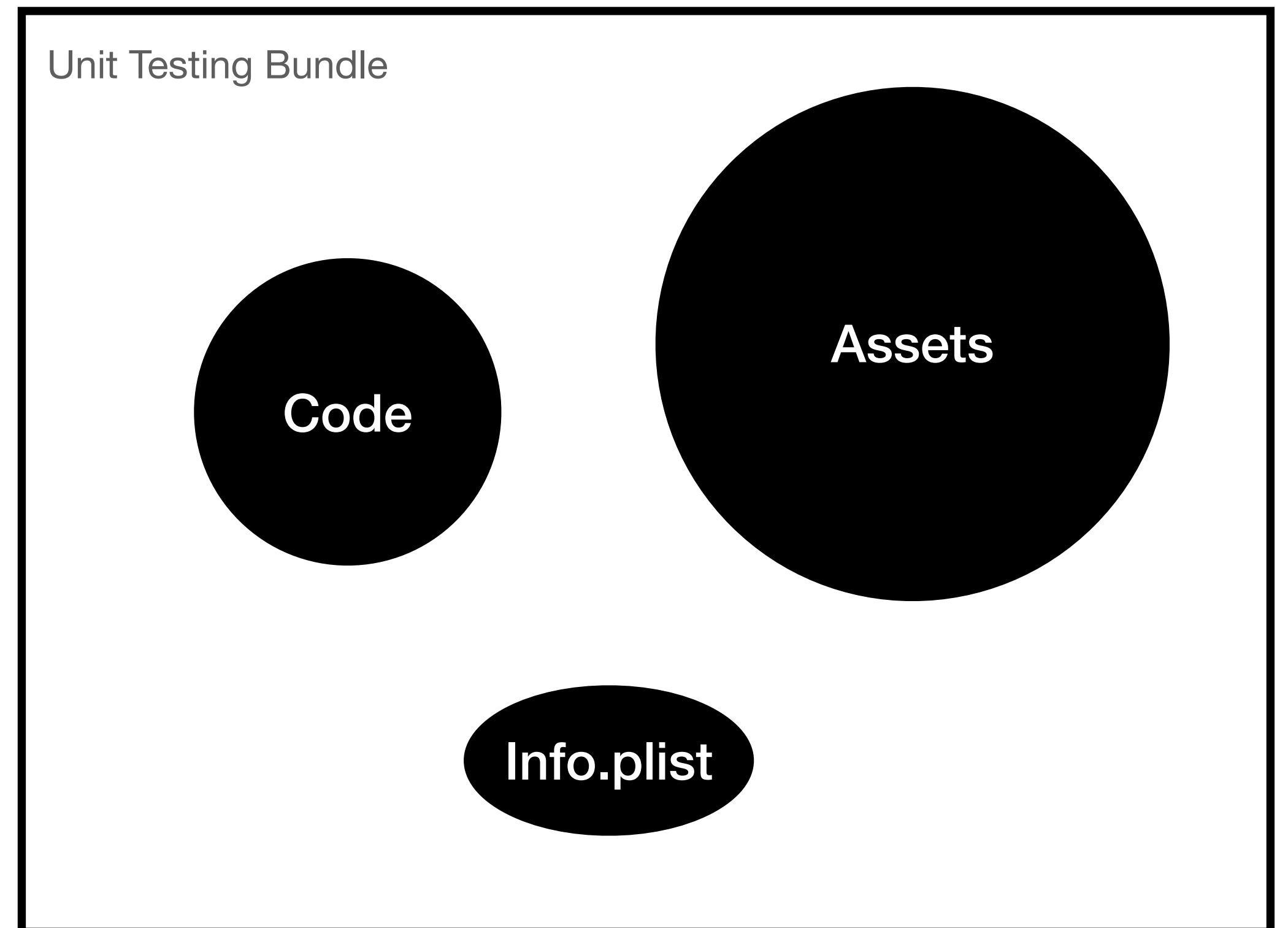
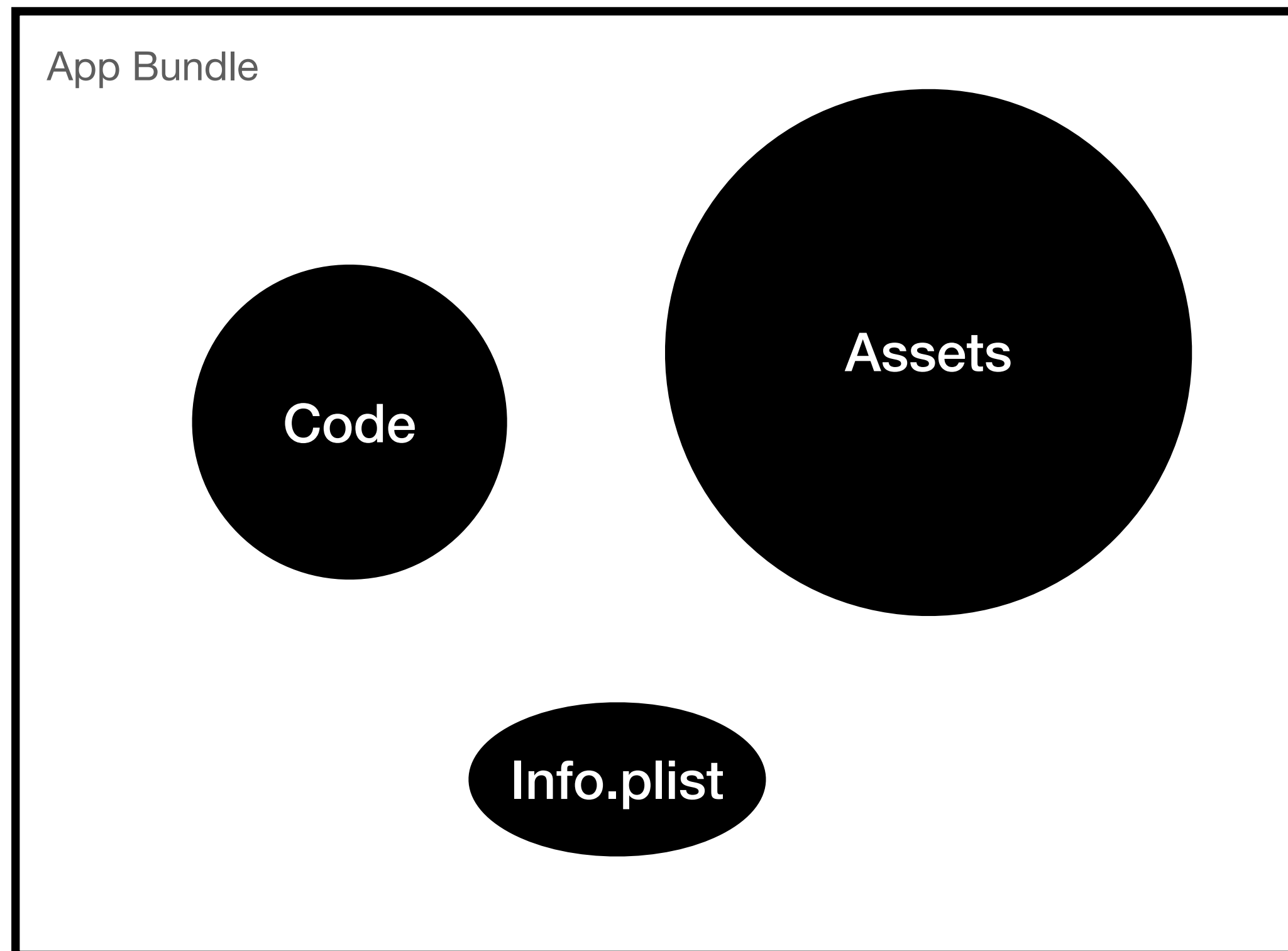
- all functions prefixed with `test` will be run as unit tests
- any function that does not finish execution is considered failed
 - the purpose is to validate each "logical" step **using XCTAssert**
- any function that finishes execution is considered successful

Live Demo

Add our unit test bundle

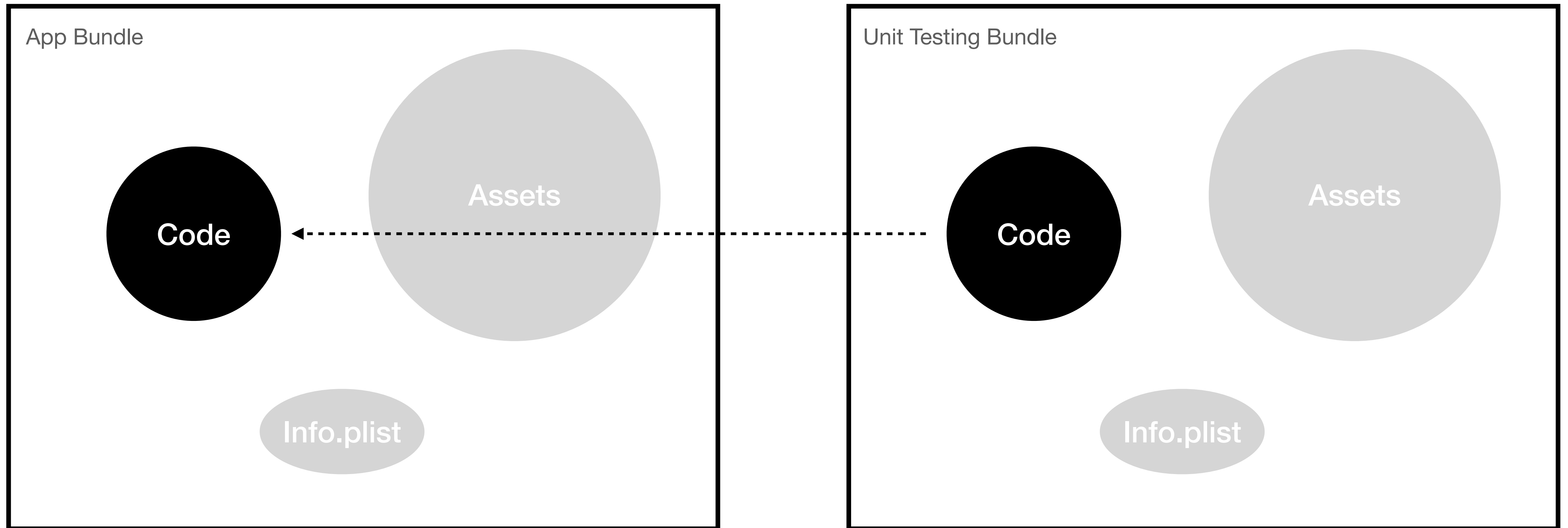
What is unit testing?

It's in a separate bundle



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What is Unit Testing?

It's in a separate bundle

Access Modifiers

- open - all bundles can access and subclass
- public - all bundles can access
- **internal - single-bundle access**
- fileprivate - single-file access
- private - single class/struct access

What is Unit Testing?

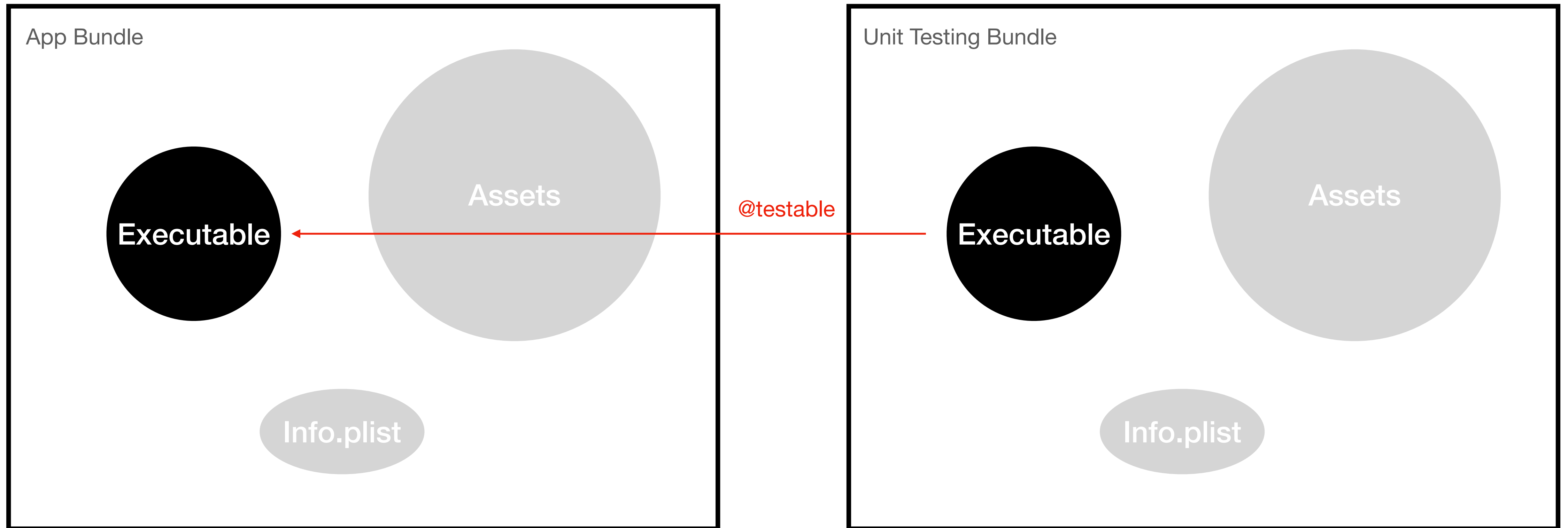
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Access Modifiers **with @testable**

- **open** - all bundles can access and subclass
- **public** - all bundles can access
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What is unit testing?

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Live Demo

Test `fetchPlanets`

What is Unit Testing?

Synchronicity

How does XCTest work?

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What is Unit Testing?

Synchronicity

```
override func viewDidLoad() {
    super.viewDidLoad()

    let networkController = NetworkController()
    networkController.fetchPlanets { result in

        switch result {
        case .failure:
            DispatchQueue.main.async {
                let alertController = UIAlertController(title: NSLocalizedString("Impossible...",
                                                                                   comment: ""),
                                                       message: NSLocalizedString("Perhaps the
                                                                                   archives are incomplete",
                                                                                   comment: ""),
                                                       preferredStyle: .alert)
                alertController.addAction(.init(title: NSLocalizedString("OK", comment: ""),
                                              style: .cancel,
                                              handler: nil))
                self.present(alertController, animated: true, completion: nil)
            }

        case .success(let planets):
            DispatchQueue.main.async {
                self.planets = planets
                self.tableView.reloadData()
            }
        }
    }
}
```

Main
Queue

Not Main
Queue

Time



What is Unit Testing?

Synchronicity



Main
Queue

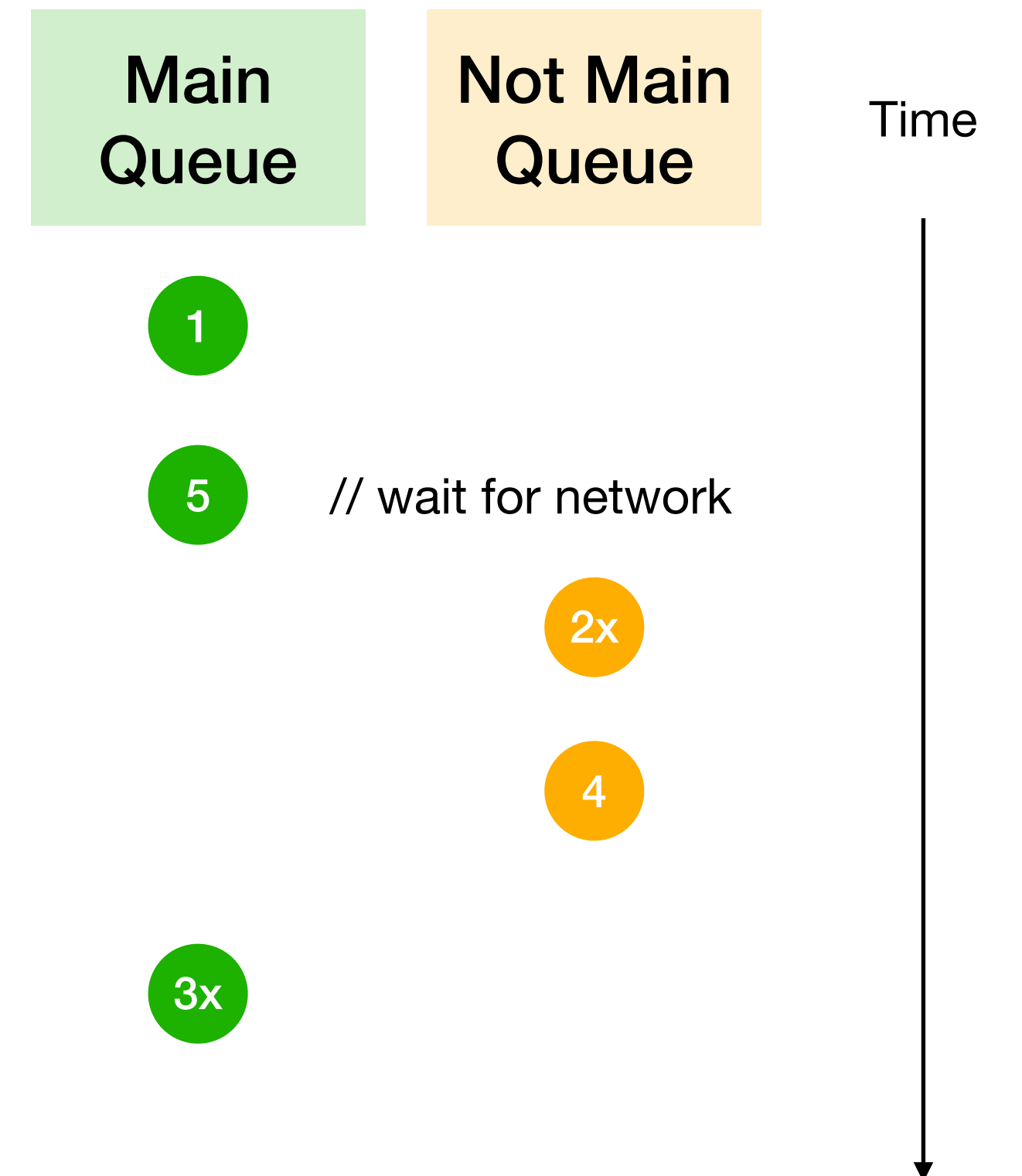
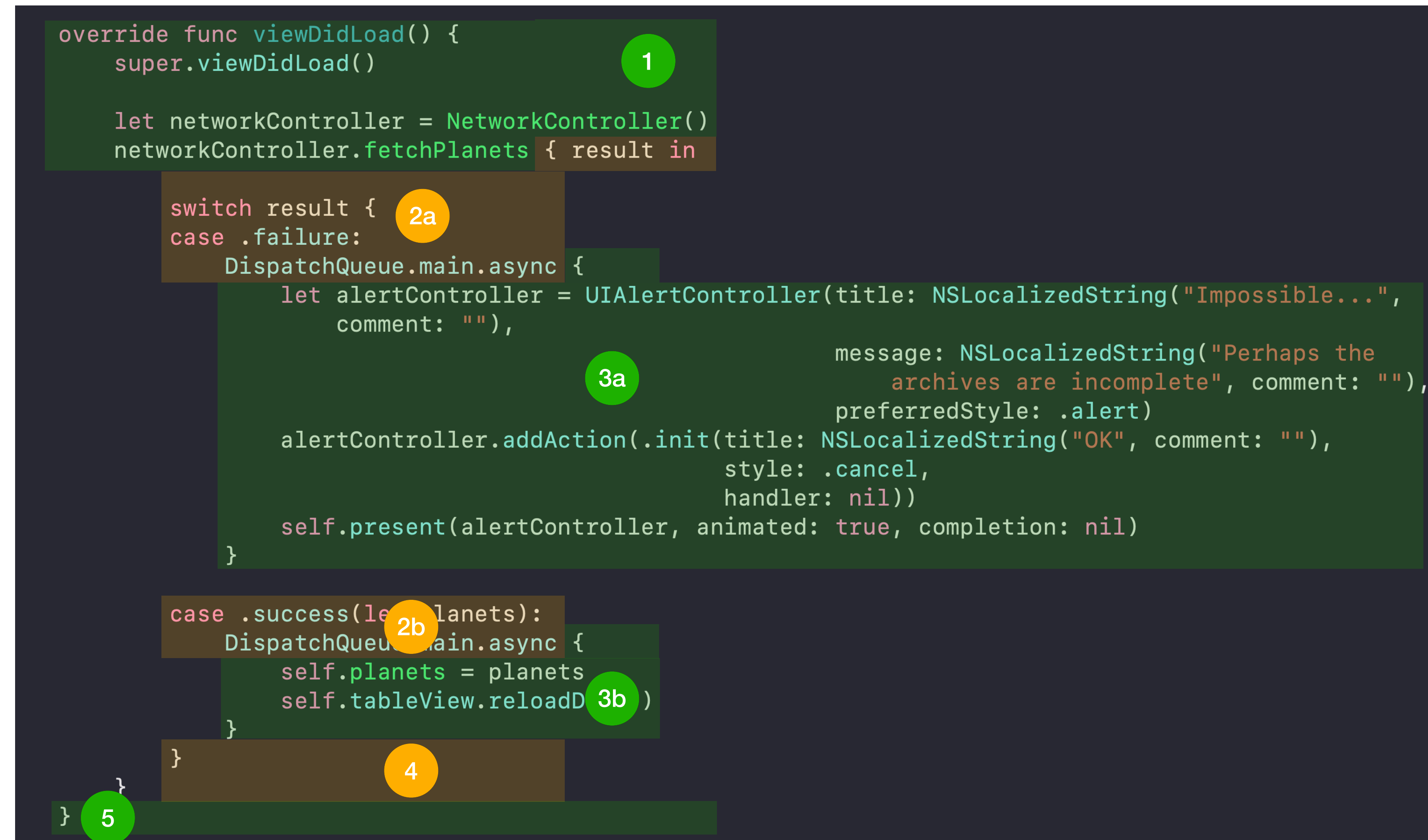
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What is Unit Testing?

Synchronicity



What is Unit Testing?

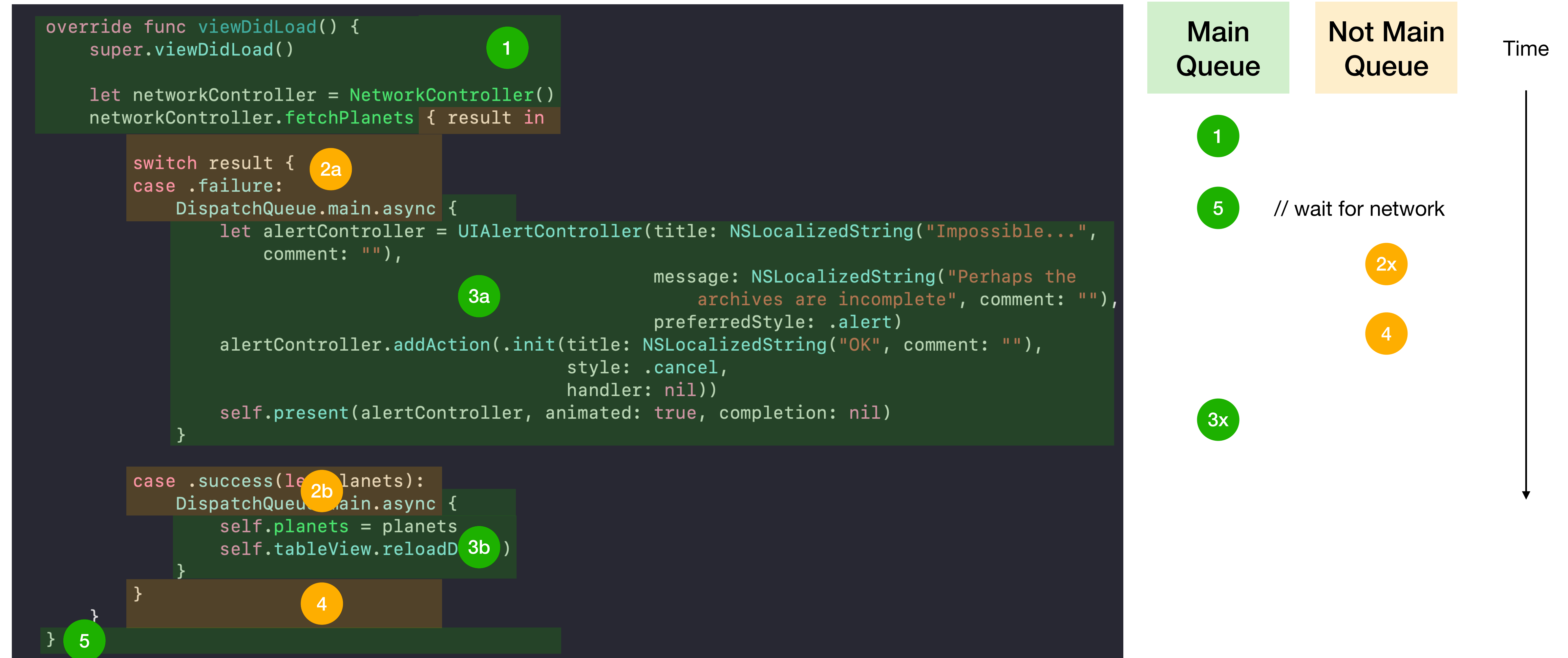
Synchronicity

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What is Unit Testing?

When does `func viewDidLoad` end?



Live Demo

Test `fetchPlanets` asynchronously

What is Unit Testing?

Dependency Injection

- Using separation of concerns, a function should be connecting other behaviors or it should be processing, not both.
- Currently, fetchPlanets is doing three things:
 - Building a request based on inputs
 - Handing over the request so it goes to the network
 - Handing over the response data to Codable so it is parsed

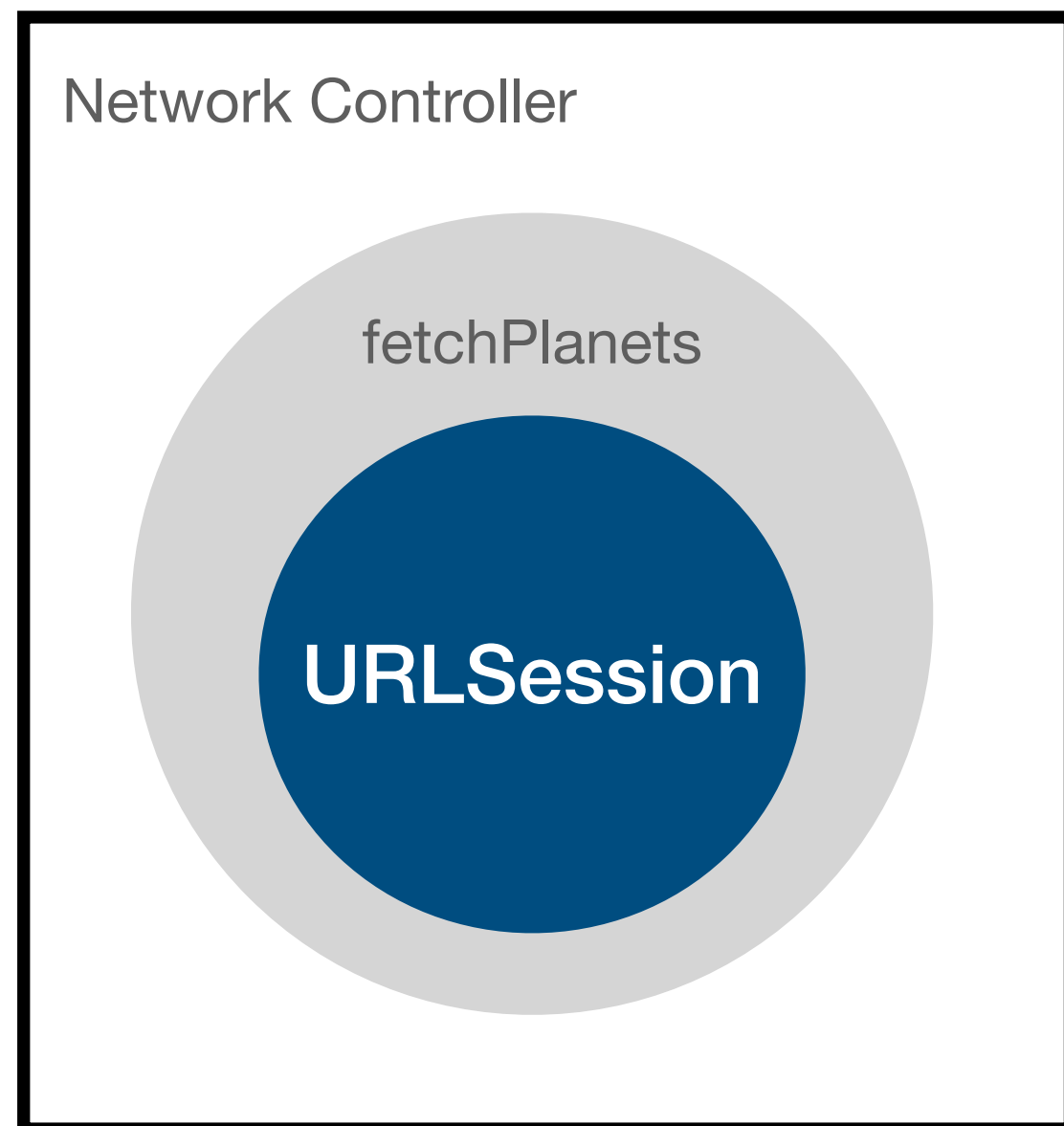
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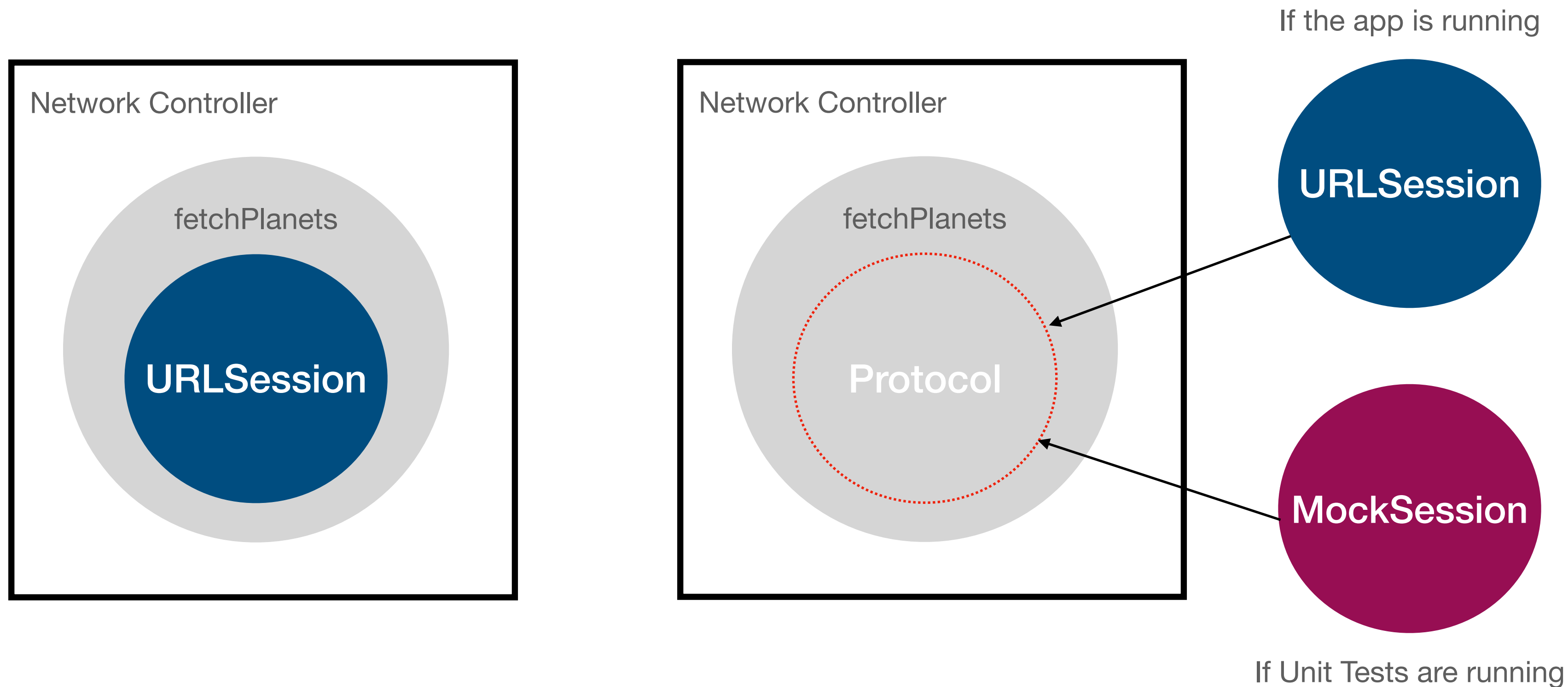
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Next class

Use protocols to inject behavior

What is Unit Testing?

Where to go from here?

- Will be uploaded to https://github.com/olivaresf/unit_testing
- You can reach me @fromJrToSr
- Additional info
 - <https://www.swiftbysundell.com/basics/unit-testing/>
 - <https://www.avanderlee.com/swift/unit-tests-best-practices/>
 - <http://blog.wilshiple.com/2005/09/unit-testing-is-teh-suck-urr.html>
 - https://developer.apple.com/library/archive/documentation/ToolsLanguages/Conceptual/Xcode_Overview/UnitTesting.html

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- **Practice Swift weekly with a 15-minute exercise.**

<https://mailchi.mp/hey/weekly-swift-exercise-signup>

- **Donations are welcome and include the recorded session.**

<https://paypal.me/fromjuniortosenior>

- **Quiz: iOS Networking is a 1-hour exercise** based on my experience as a team lead, as well as the many interviews I've aced throughout the years.

<https://gum.co/wbyeU>

Supporting me helps me [keep classes free.](#)

Q&A