Tamkang University

Social Media Apps Programming

Developing iPhone / iPad Native Apps with Swift (XCode)

1061SMAP04
TLMXM1A (8648) (M2143) (Fall 2017)
(MIS MBA) (2 Credits, Elective) [Full English Course]
Fri 8,9 (15:10-17:00) B206

Min-Yuh Day, Ph.D.
Assistant Professor
Department of Information Management
Tamkang University

http://mail.tku.edu.tw/myday

2017-10-13

Course Schedule (1/2)

Tamkang University

Week	Date	Subject/Topics
1	2017/09/22	Course Orientation and Introduction to Social Media and Mobile Apps Programming
2	2017/09/29	Introduction to Android / iOS Apps Programming
3	2017/10/06	Developing Android Native Apps with Java (Android Studio)
4	2017/10/13	Developing iPhone / iPad Native Apps with Swift (XCode)
5	2017/10/20	Mobile Apps using HTML5/CSS3/JavaScript
6	2017/10/27	jQuery Mobile
7	2017/11/03	Create Hybrid Apps with Phonegap
8	2017/11/10	jQuery Mobile/Phonegap
9	2017/11/17	jQuery Mobile/Phonegap

Course Schedule (2/2)

Tamkang University

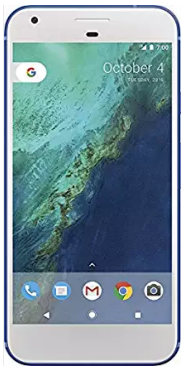
Week	Date	Subject/Topics
10	2017/11/24	Midterm Project Report
11	2017/12/01	Case Study on Social Media Apps Programming and Marketing in Google Play and App Store
12	2017/12/08	Google Cloud Platform
13	2017/12/15	Google App Engine
14	2017/12/22	Google Map API
15	2017/12/29	Facebook API (Facebook JavaScript SDK) (Integrate Facebook with iOS/Android Apps)
16	2018/01/05	Twitter API
17	2018/01/12	Final Project Presentation
18	2018/01/19	Final Exam Week (Final Project Presentation)

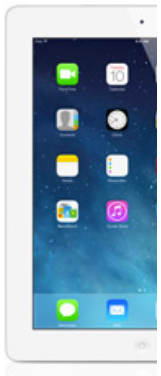
Android /iOS Apps Programming

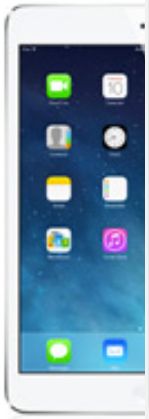
Native Apps

Hybrid Apps

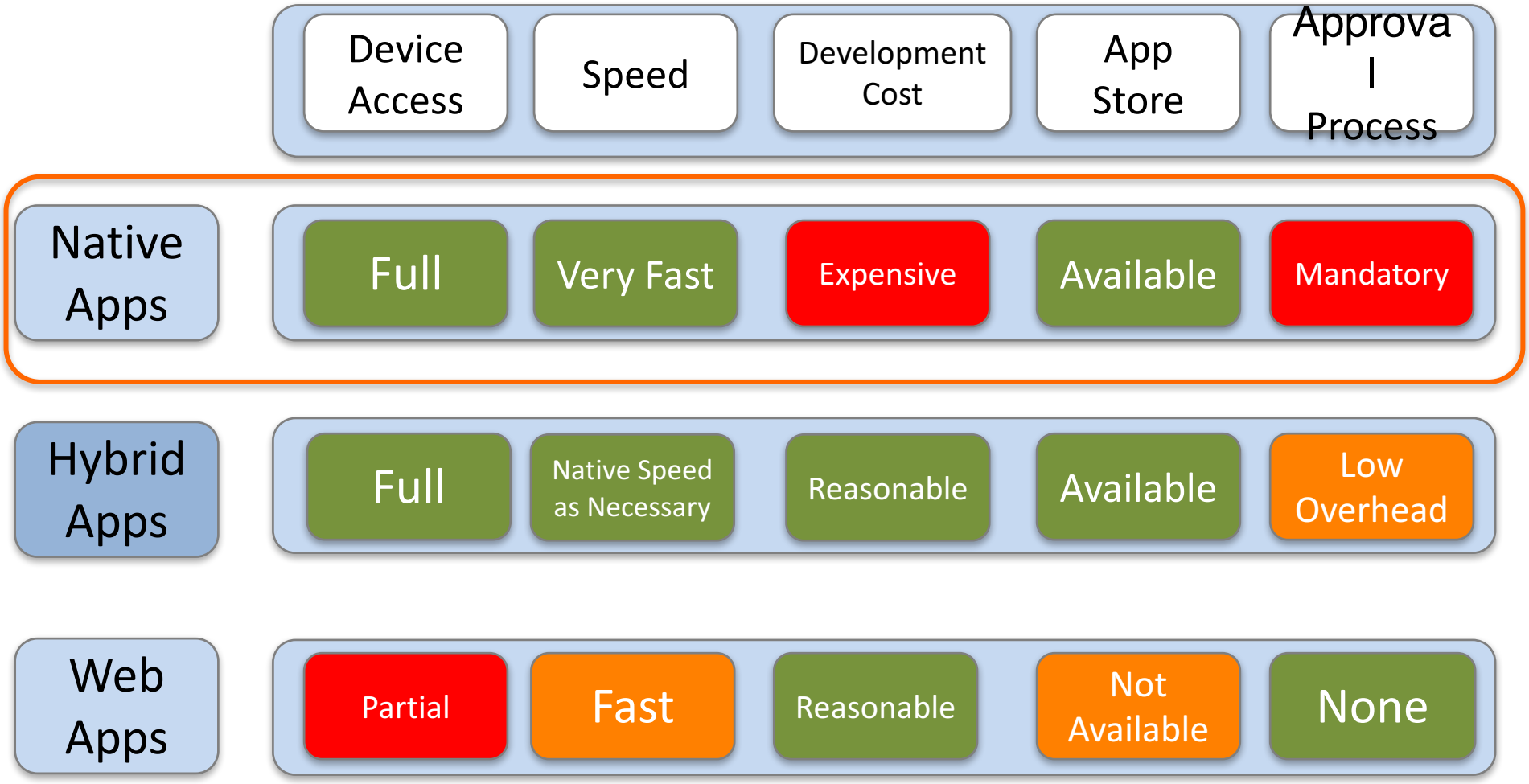
Mobile Web Apps







App Development Comparison



Source: http://www.scribd.com/doc/50805466/Native-Web-or-Hybrid-Mobile-App-Development

Outline

- **Developing iPhone / iPad Native Apps with Swift 4 (Xcode 9)**
  - **Mac OS X 10.8, 10.9, 10.10, 10.11, 10.12, 10.13**
  - **Xcode 6, Xcode 7, Xcode 8, Xcode 9**
  - **iOS 8, iOS 9, iOS 10, iOS 11**
- **Building Your First iOS App with Xcode 9**

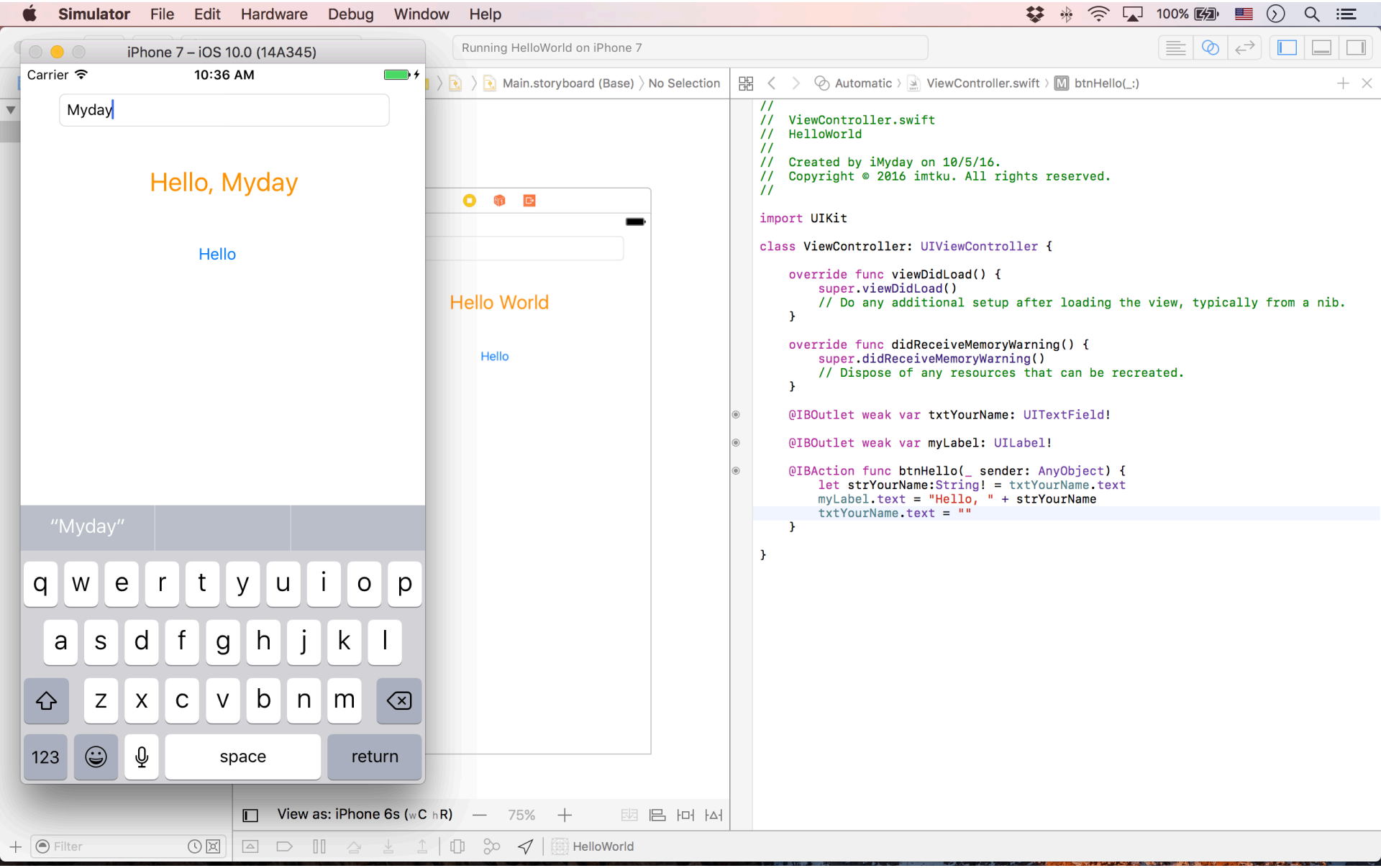
Xcode 8

Swift 3

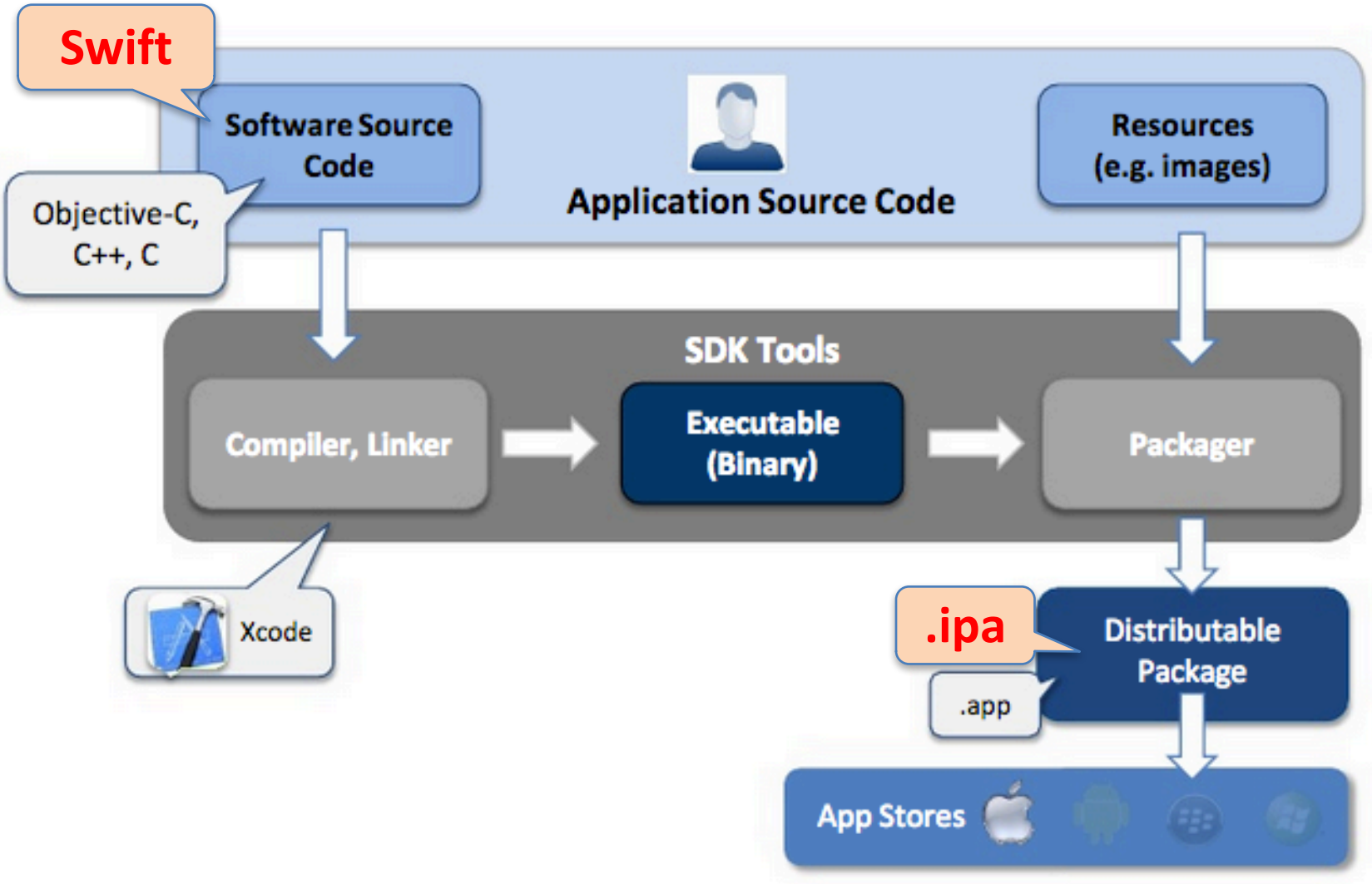
Xcode 9

Swift 4

Building Your First iOS App with Xcode 9

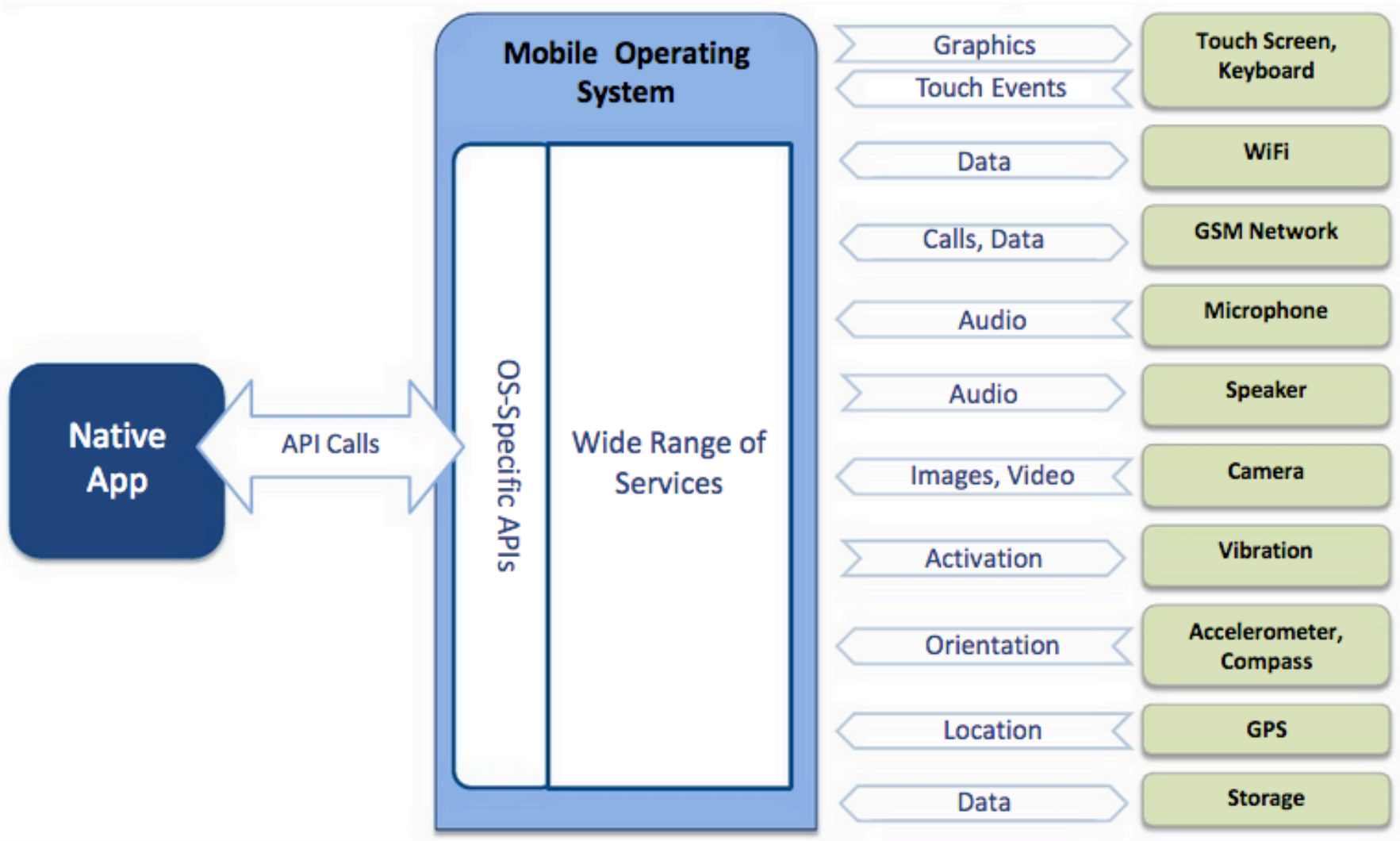


iOS - Native App Development



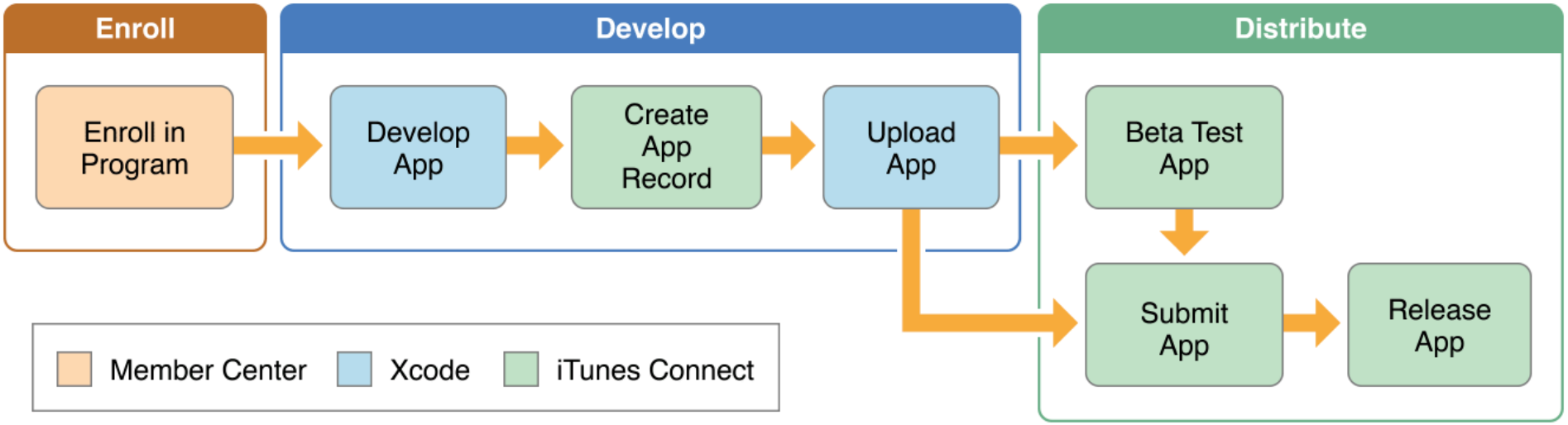
Source: http://www.scribd.com/doc/50805466/Native-Web-or-Hybrid-Mobile-App-Development

Native App – Interaction with Mobile Device



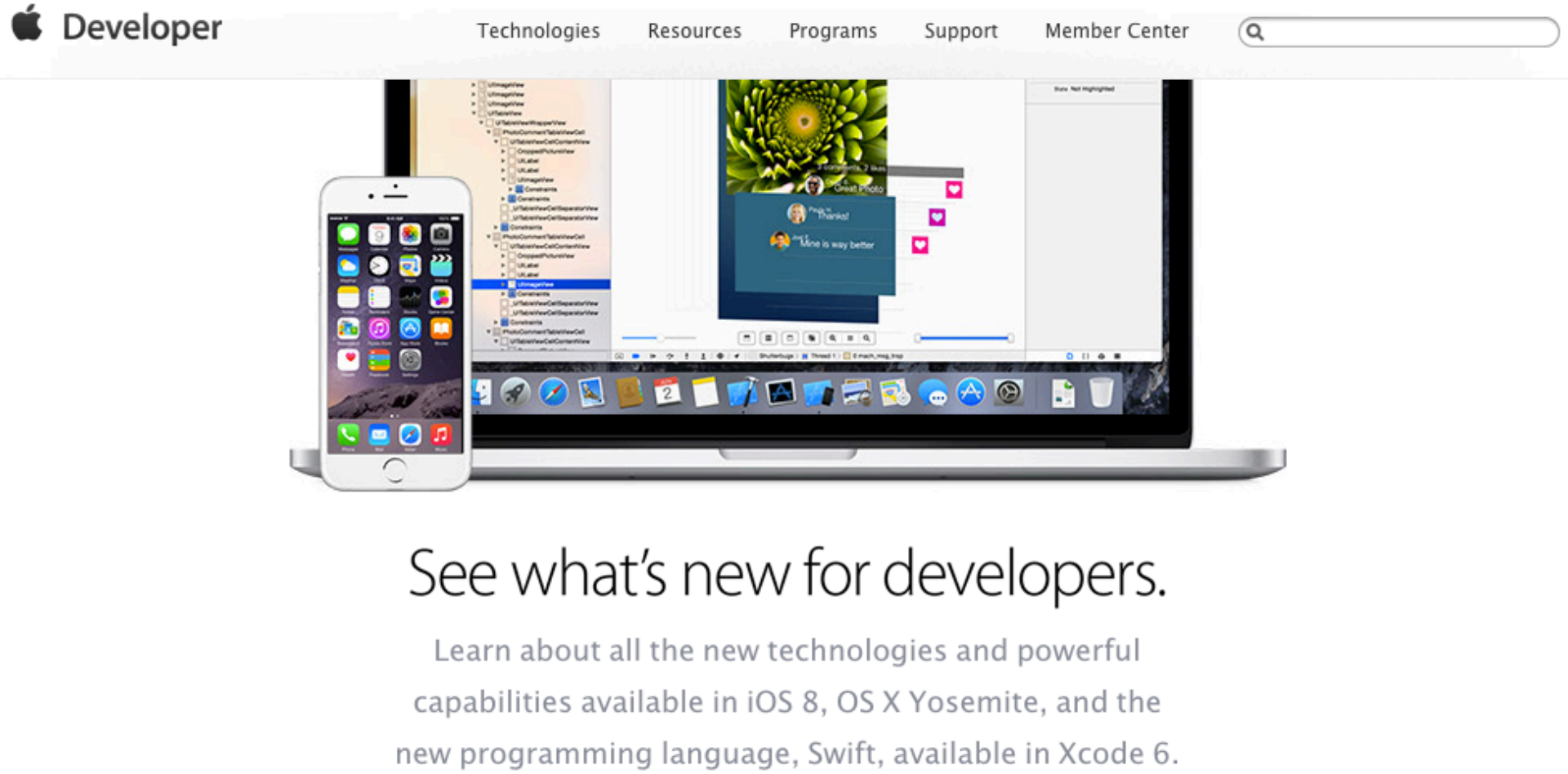
Source: http://www.scribd.com/doc/50805466/Native-Web-or-Hybrid-Mobile-App-Development

Apple App Distribution Workflows



Source: https://developer.apple.com/library/ios/documentation/IDEs/Conceptual/AppDistributionGuide/Introduction/Introduction.html#//apple_ref/doc/uid/TP40012582

developer.apple.com



Source: https://developer.apple.com/

developer.apple.com

Download the latest development tools and SDKs.

iOS Apps

Mac Apps

Xcode

Source: https://developer.apple.com/

developer.apple.com

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Enroll in an Apple Developer Program and get everything you need to develop and distribute your apps.

Learn more ›

Source: https://developer.apple.com/

Rory Lewis and Laurence Moroney, **iPhone and iPad Apps for Absolute Beginners**, 4th Edition, Apress, 2013

http://www.apress.com/9781430263616

Start Developing iOS Apps Today

Start Developing iOS Apps

Apple Inc. [US] https://developer.apple.com/library/ios/referencelibrary/GettingStarted/RoadMapiOS/index.html

iOS Developer Library | Developer

Start Developing iOS Apps Today | Download PDF | Search all documents

Introduction
- Setup
- Tutorial: Basics

Structuring an App
- App Development Process
- Designing a User Interface
- Defining the Interaction
- Tutorial: Storyboards

Implementing an App
- Incorporating the Data
- Using Design Patterns
- Working with Foundation
- Writing a Custom Class
- Tutorial: Add Data

Next Steps
- iOS Technologies
- Finding Information
- Where to Go from Here

Setup

Start Developing iOS Apps Today provides the perfect starting point for iOS development. On your Mac, you can create iOS apps that run on iPad, iPhone, and iPod touch. View this guide's four short modules as a gentle introduction to building your first app—including the tools you need and the major concepts and best practices that will ease your path.

The first three modules each end with a tutorial, where you'll implement what you've learned. At the end of the last tutorial, you'll have created a simple to-do list app.

Provide Feedback

Source: https://developer.apple.com/library/ios/referencelibrary/GettingStarted/RoadMapiOS/index.html

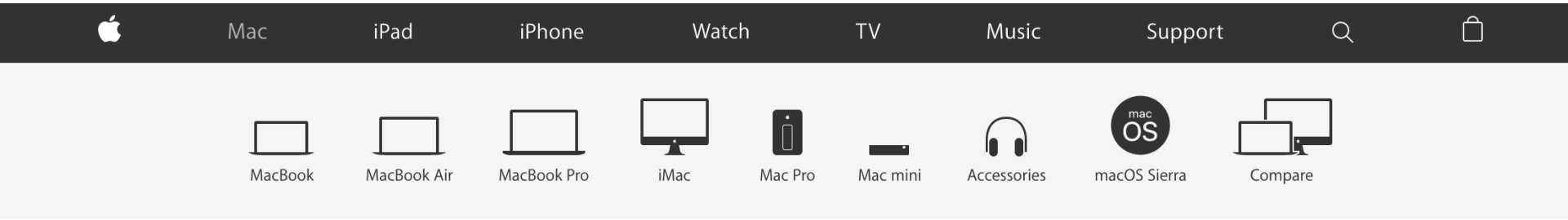
Start Developing iOS Apps Today

Source: https://developer.apple.com/library/ios/referencelibrary/GettingStarted/RoadMapiOS/index.html

To develop iOS apps, you need:

- A Mac computer running OS X 10.8 or later
  - Mac OS X 10.8 (Mountain Lion)
  - Mac OS X 10.9 (Mavericks)
  - Mac OS X 10.10 (Yosemite)
  - Mac OS X 10.11 (El Capitan)
  - **macOS Sierra (10.12)**
  - **macOS High Sierra (10.13)**
- Xcode
  - Xcode 6
  - Xcode 7
  - **Xcode 8**
  - **Xcode 9**
- iOS SDK

Source: https://developer.apple.com/library/ios/referencelibrary/GettingStarted/RoadMapiOS/index.html



New

MacBook

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Source: https://www.apple.com/mac/

Store Mac iPhone Watch iPad iPod iTunes Support

MacBook Air MacBook Pro Mac mini iMac Mac Pro OS X Mavericks

Mac Apps Pro Apps Accessories Server

The notebook people love.

MacBook Air

Source: https://www.apple.com/mac/

MacBook and MacBook Air

New

MacBook

from $1299

- 12-inch (diagonal) LED-backlit Retina display
- 1.2GHz dual-core Intel Core m3, 1.3GHz dual-core Intel Core i5, or 1.4GHz dual-core Intel Core i7 processor
  Turbo Boost up to 3.6GHz
- Up to 10 hours battery life[1]
- Up to 512GB SSD[2]
- Force Touch trackpad
- 2.03 pounds[3]

MacBook Air 13-inch

from $999

- 13.3-inch (diagonal) LED-backlit widescreen display
- 1.8GHz dual-core Intel Core i5 or 2.2GHz dual-core Intel Core i7 processor
  Turbo Boost up to 3.2GHz
- Up to 12 hours battery life[1]
- Up to 512GB SSD[2]
- Multi-Touch trackpad
- 2.96 pounds[3]

MacBook Pro 15-inch

from $1999

- 15.4-inch (diagonal) LED-backlit Retina display
- 2.2GHz, 2.5GHz, or 2.8GHz quad-core Intel Core i7 processor
  Turbo Boost up to 4.0GHz
- Up to 9 hours battery life[1]
- Up to 1TB SSD[2]
- Force Touch trackpad
- 4.49 pounds[3]

Source: http://www.apple.com/mac/compare/

MacBook Pro

New

MacBook Pro 13-inch

from $1299

- 13.3-inch (diagonal) LED-backlit Retina display
- 2.3GHz dual-core Intel Core i5 or 2.5GHz dual-core Intel Core i7 processor
  Turbo Boost up to 4.0GHz
- Up to 10 hours battery life[1]
- Up to 1TB SSD[2]
- Force Touch trackpad
- 3.02 pounds[3]

New

MacBook Pro 13-inch

from $1799

- Touch Bar and Touch ID
- 13.3-inch (diagonal) LED-backlit Retina display
- 3.1GHz or 3.3GHz dual-core Intel Core i5 or 3.5GHz dual-core Intel Core i7 processor
  Turbo Boost up to 4.0GHz
- Up to 10 hours battery life[1]
- Up to 1TB SSD[2]
- Force Touch trackpad
- 3.02 pounds[3]

New

MacBook Pro 15-inch

from $2399

- Touch Bar and Touch ID
- 15.4-inch (diagonal) LED-backlit Retina display
- 2.8GHz, 2.9GHz, or 3.1GHz quad-core Intel Core i7 processor
  Turbo Boost up to 4.1GHz
- Up to 10 hours battery life[1]
- Up to 2TB SSD[2]
- Force Touch trackpad
- 4.02 pounds[3]

Source: http://www.apple.com/mac/compare/

iMac

New

iMac 21.5-inch

from $1099

- 21.5-inch (diagonal) LED-backlit display
- 2.3GHz dual-core Intel Core i5 processor
  Turbo Boost up to 3.6GHz
- 1TB 5400-rpm hard drive; 1TB Fusion Drive; or 256GB SSD[2]
- Magic Keyboard and

New

iMac 21.5-inch

from $1299

- 21.5-inch (diagonal) LED-backlit Retina 4K display
- 3.0GHz or 3.4GHz quad-core Intel Core i5 or 3.6GHz quad-core Intel Core i7 processor
  Turbo Boost up to 4.2GHz
- 1TB 5400-rpm hard drive; 1TB Fusion Drive; or up to 1TB SSD[2]

New

iMac 27-inch

from $1799

- 27-inch (diagonal) LED-backlit Retina 5K display
- 3.4GHz, 3.5GHz, or 3.8GHz quad-core Intel Core i5 or 4.2GHz quad-core Intel Core i7 processor
  Turbo Boost up to 4.5GHz
- 1TB, 2TB, or 3TB Fusion Drive; or u to 2TB SSD[2]

Source: http://www.apple.com/mac/compare/

Mac mini

Mac mini

from $499

- Highly energy efficient[4]
- Up to 3.0GHz dual-core Intel Core i7 processor Turbo Boost up to 3.5GHz
- Up to 1TB hard drive; 256GB, 512GB, or 1TB SSD; or 1TB or 2TB Fusion Drive[2]

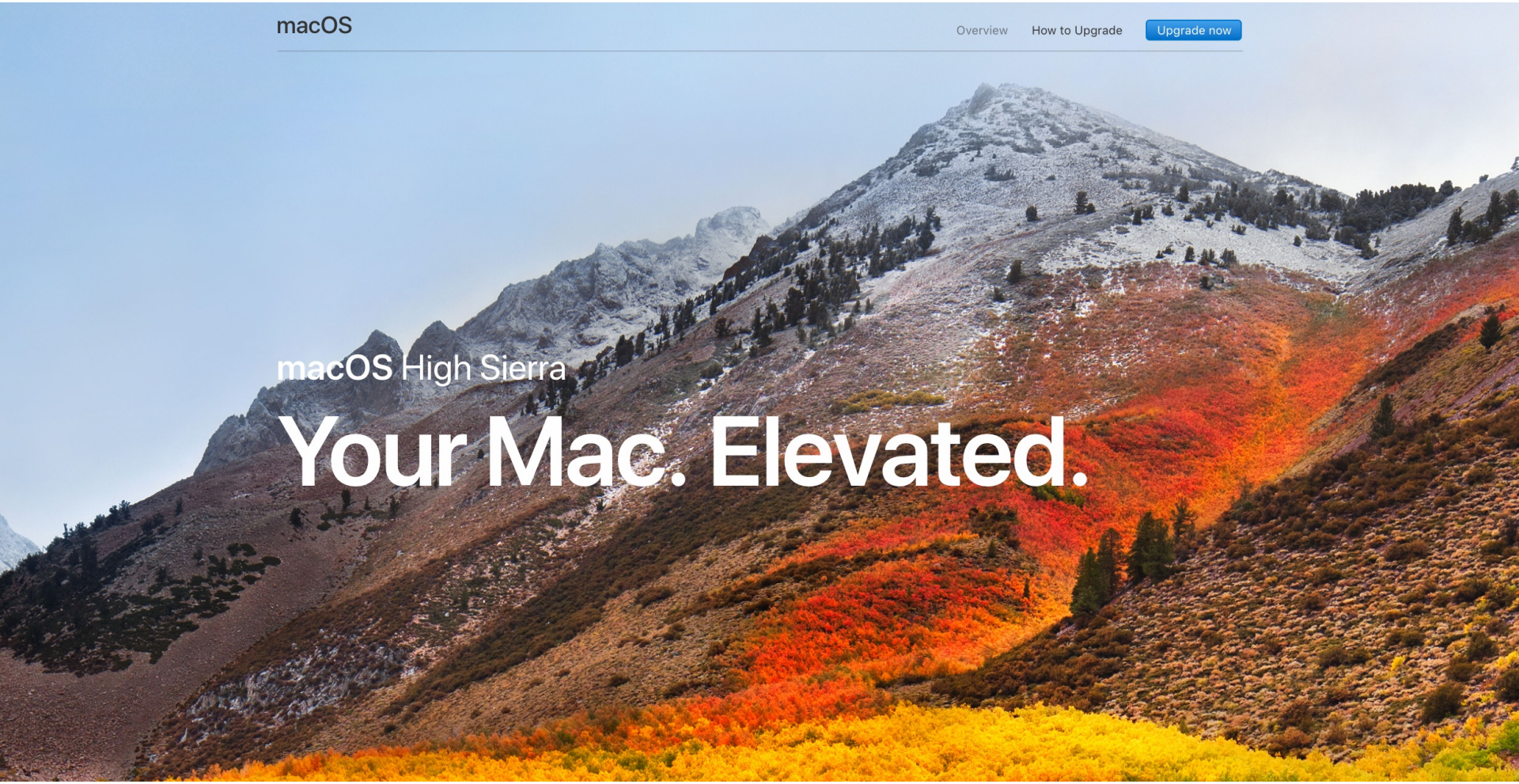
Mac Pro

from $2999

- 3.5GHz 6-core, 3.0GHz 8-core, or 2.7GHz 12-core Intel Xeon E5 processor
  Up to 30MB of L3 cache
- Up to 1TB SSD[2]

Source: http://www.apple.com/mac/compare/

macOS High Sierra



Source: http://www.apple.com/osx/

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OS X El Capitan
Utilities
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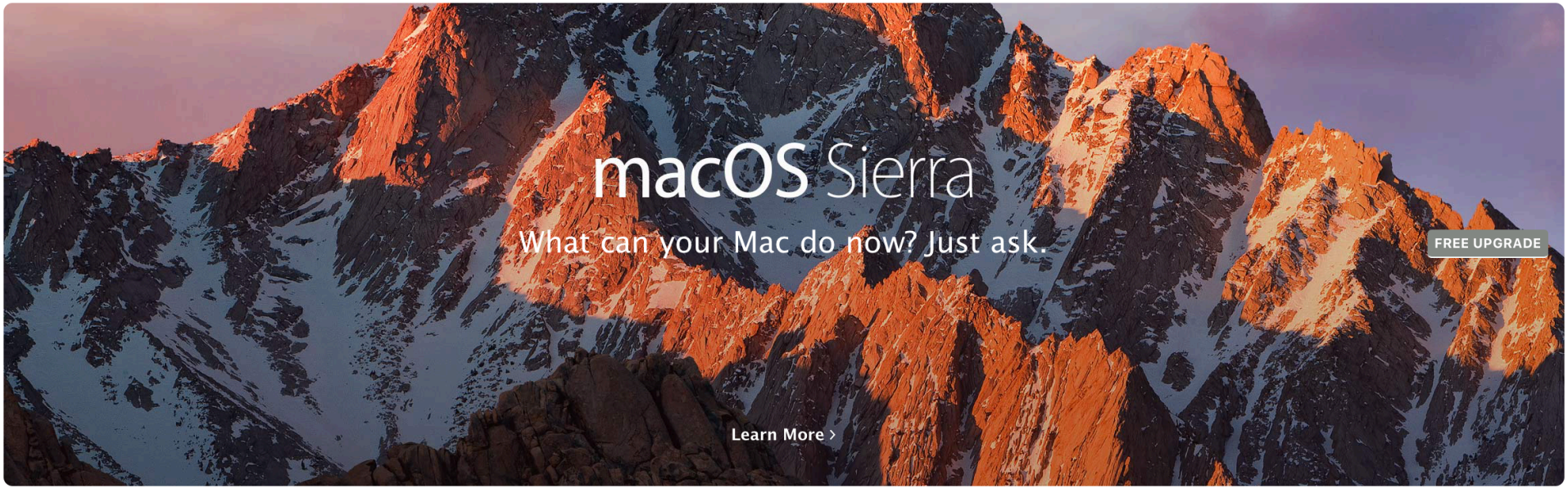
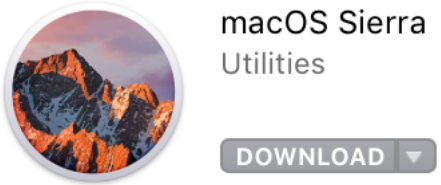
GET

macOS Sierra





macOS Sierra

macOS Sierra

By Apple

Open the Mac App Store to buy and download apps.

View in Mac App Store

Free

Category: Utilities
Updated: Sep 20, 2016
Version: 10.12
Size: 4.77 GB
Languages: English, Arabic, Catalan, Croatian, Czech, Danish, Dutch, Finnish, French, German, Greek, Hebrew, Hungarian, Indonesian, Italian, Japanese, Korean, Malay, Norwegian, Polish, Portuguese, Romanian, Russian, Simplified Chinese, Slovak, Spanish, Swedish, Thai, Traditional Chinese, Turkish, Ukrainian, Vietnamese
Seller: Apple Inc.

Rated 4+

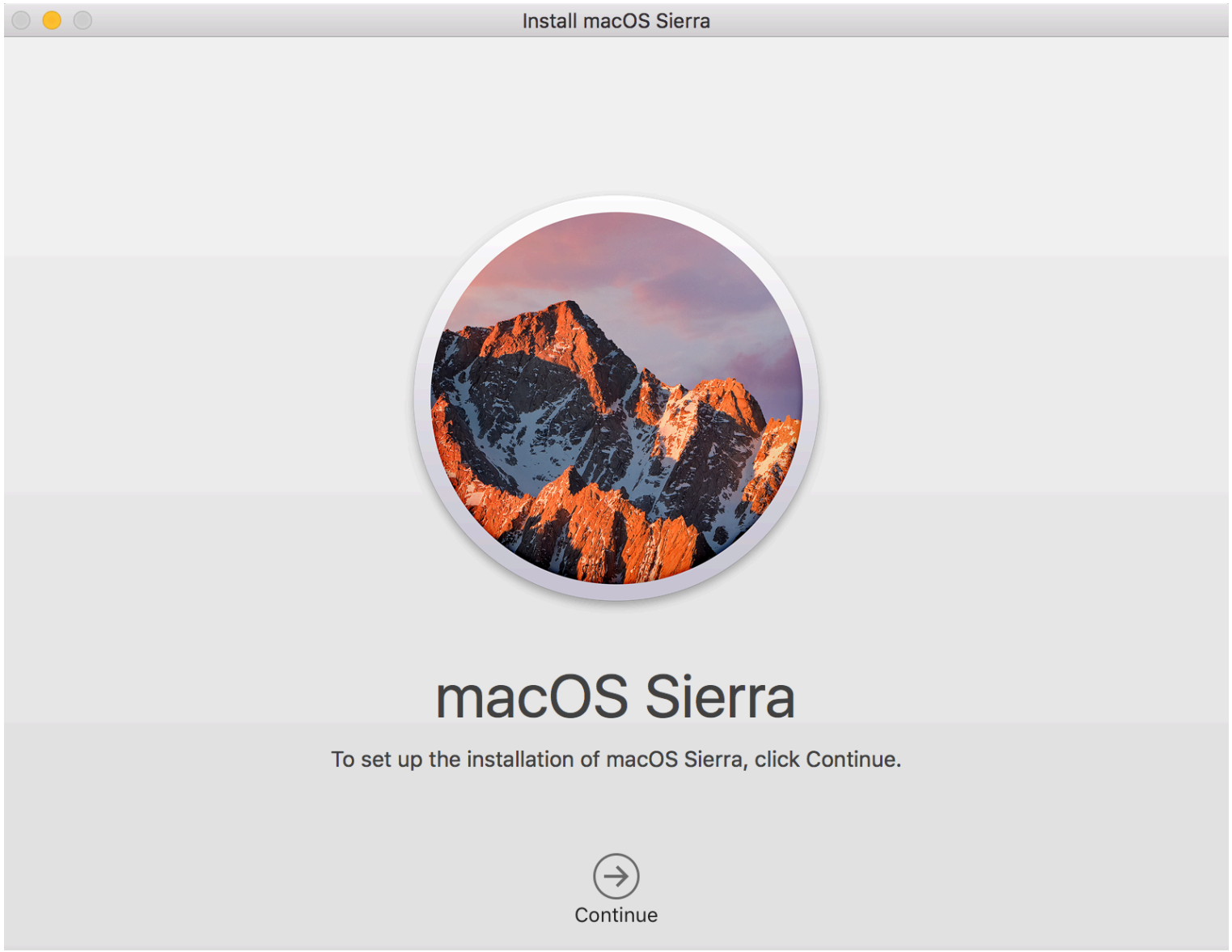
Description

Siri makes its debut on Mac, with new features designed just for the desktop. Your Mac works with iCloud and your Apple devices in smart new ways, and intelligent capabilities make your photos, music, and messaging even more enjoyable.

Apple Web Site ▸ macOS Sierra Support ▸ ...More

Screenshots

Source: https://itunes.apple.com/us/app/macos-sierra/id1127487414


Install macOS Sierra
macOS Sierra
To set up the installation of macOS Sierra, click Continue.
Continue

macOS High Sierra

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macOS High Sierra 4+

New technologies at the heart of the system make your Mac more reliable, capable and responsive — and lay the foundation for future innovations. macOS High Sierra also refines the features and apps you use every day. It's macOS at its highest level yet.

Easily organise, edit and view your photos in Photos.
• Make short videos from your Live Photos using new Loop and Bounce effects.
• Easily locate and organise your content with the new sidebar.
• Conveniently access all of your editing tools in the redesigned Edit View.
• Fine-tune colour and contrast in your photos with new Curves and Selective Color tools.
• Access third-party apps directly from Photos and save the edited images back to your Photos library. ...

...More

Apple Web Site
macOS High Sierra Support
App License Agreement
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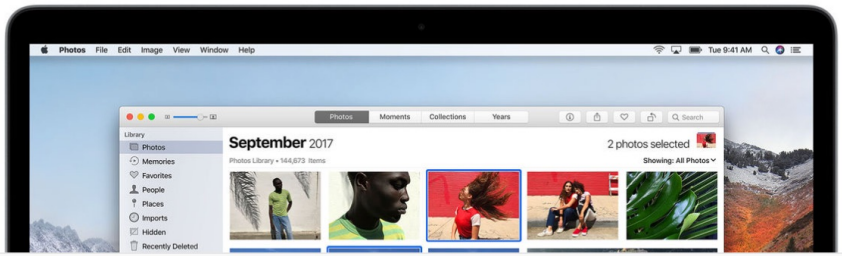
Information

Category: Utilities
Updated: 12 October 2017
Version: 10.13
Price: Free
Size: 4.80 GB
Family Sharing: Yes
Languages: English, Arabic, Catalan, Croatian, Czech, Danish, Dutch, Finnish, French, German, Greek, Hebrew, Hindi, Hungarian, Indonesian, Italian, Japanese, Korean, Malay, Norwegian, Polish, Portuguese, Romanian, Russian, Simplified Chinese, Slovak, Spanish, Swedish, Thai, Traditional Chinese, Turkish, Ukrainian, Vietnamese



Xcode 6

Xcode

The complete toolset for building great apps.

Source: https://developer.apple.com/xcode/

Xcode 7

Xcode

The complete toolset for building great apps.

Swift 2

Source: https://developer.apple.com/xcode/

Xcode 8

Xcode

The complete toolset for building great apps.

Swift 3

Source: https://developer.apple.com/xcode/

Xcode 9

Xcode

The complete toolset for building great apps.

Swift 4

Source: https://developer.apple.com/xcode/

iOS 9
for Developers

Developing for iOS 9

iOS 9 SDK includes new APIs and services that enable new categories of apps and features. Multitasking and gaming APIs help enhance app functionality and create immersive games. Expanded search capabilities, and new support for CloudKit, HomeKit, HealthKit, and MapKit extend iOS to more places than ever before.

Source: https://developer.apple.com/ios/

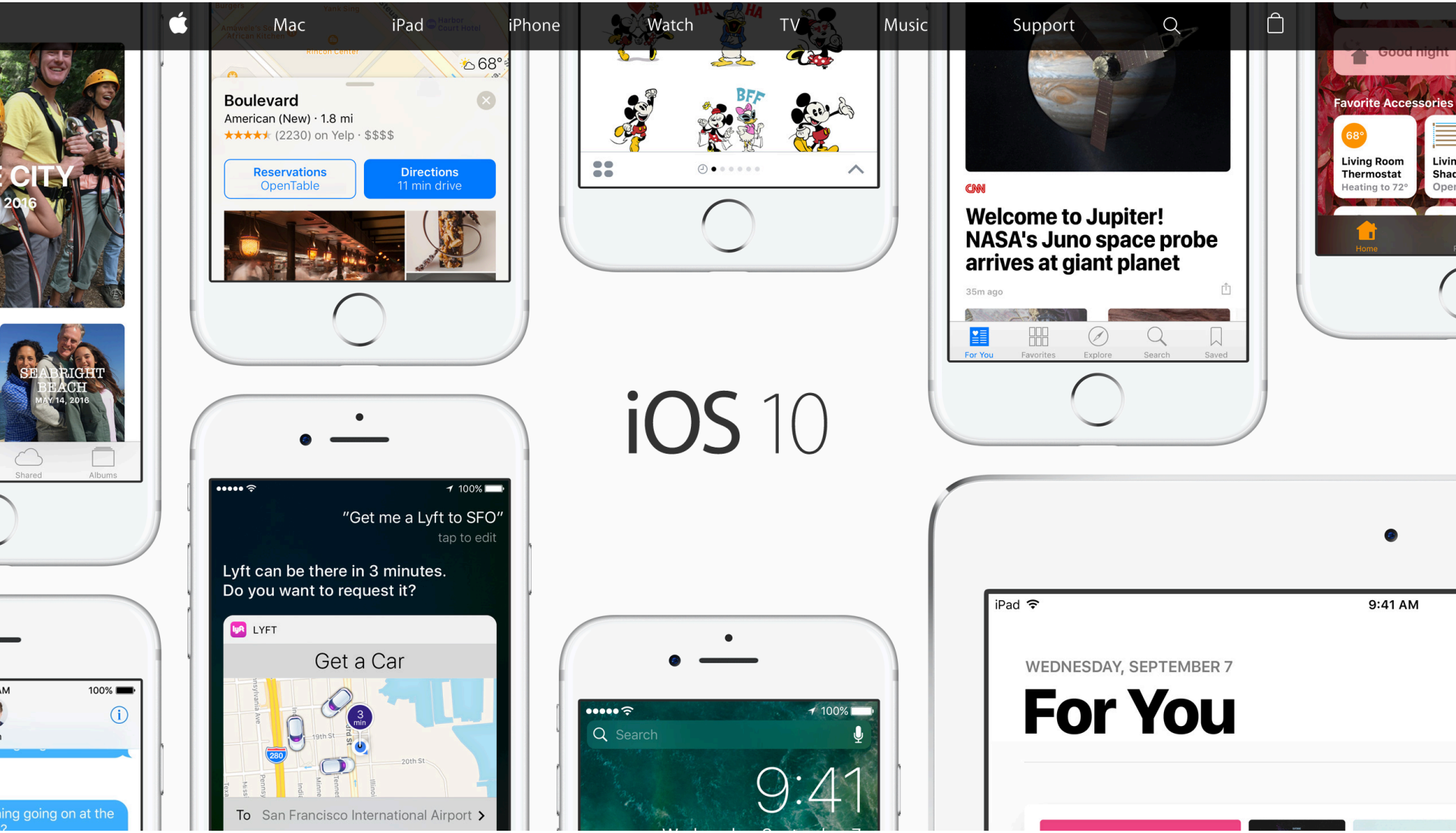
iOS 10
for Developers

Developing for iOS 10

The iOS 10 SDK includes new APIs and services that enable new categories of apps and features. Your apps can now extend to Messages, Siri, Phone, and Maps to provide more engaging functionality like never before.

Source: https://developer.apple.com/ios/

iOS 10



Source: http://www.apple.com/ios/ios-10/

iOS 10

The world's most advanced mobile operating system.

iOS 10 is compatible with these devices.

iPhone

- iPhone 7
- iPhone 7 Plus
- iPhone 6s
- iPhone 6s Plus
- iPhone 6
- iPhone 6 Plus
- iPhone SE
- iPhone 5s
- iPhone 5c
- iPhone 5

iPad

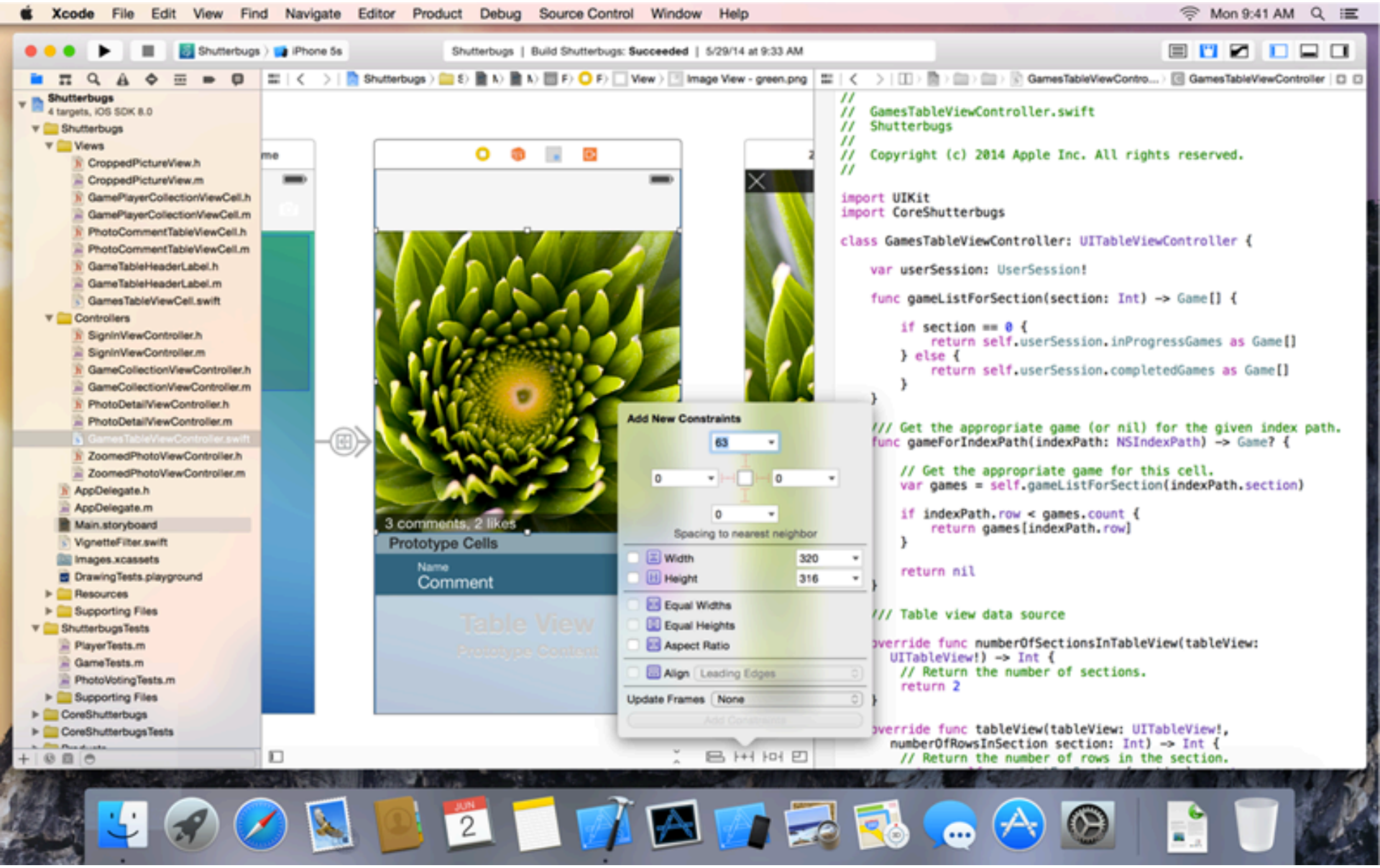
- iPad Pro 12.9-inch
- iPad Pro 9.7-inch
- iPad Air 2
- iPad Air
- iPad 4th generation
- iPad mini 4
- iPad mini 3
- iPad mini 2

iPod

- iPod touch 6th generation

Source: http://www.apple.com/ios/ios-10/

Xcode 6



Source: https://developer.apple.com/xcode/

Get the Tools

Source: https://developer.apple.com/library/ios/referencelibrary/GettingStarted/RoadMapiOS/index.html

Xcode 7

Xcode 7
This release includes the Xcode IDE, Swift 2 compiler, Instruments, Simulator, and latest SDKs for OS X, iOS, and watchOS.

Build
7A220
Posted Date
Sep 16, 2015
SDK
iOS 9
OS X v10.11
watchOS 2

Source: https://developer.apple.com/xcode/download/

Xcode 8

Xcode 8
requires a Mac running
macOS Sierra 10.12 or OS X
El Capitan 10.11.5 or later.
Xcode 8 includes SDKs for
iOS 10.0, watchOS 3.0,
macOS Sierra 10.12, and tvOS
10.0.

Build
8A218a
Posted Date
Sep 13, 2016
SDKs
iOS 10
macOS 10.12
watchOS 3
tvOS 10

Source: https://developer.apple.com/xcode/download/

Xcode 8

Apple Inc. [US] | https://developer.apple.com/download/

Get the latest beta releases of Xcode, iOS, macOS, watchOS, tvOS, and more.

Xcode 8.1 beta 2

Download Xcode 8.1

Release Notes

Build
8T46g

Posted Date
Oct 04, 2016

SDKs
iOS 10.1
macOS 10.12.1
watchOS 3.1
tvOS 10.0.1

Xcode 8

Download Xcode 8

Release Notes

Build
8A218a

Posted Date
Sep 13, 2016

SDKs
iOS 10
macOS 10.12
watchOS 3
tvOS 10

Source: https://developer.apple.com/xcode/download/

Xcode 8

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Xcode

Install

Xcode 4+

Essentials

Xcode includes everything developers need to create great applications for Mac, iPhone, iPad, Apple TV, and Apple Watch. Xcode provides developers a unified workflow for user interface design, coding, testing, and debugging. The Xcode IDE combined with the Swift programming language make developing apps easier and more fun than ever before.

...

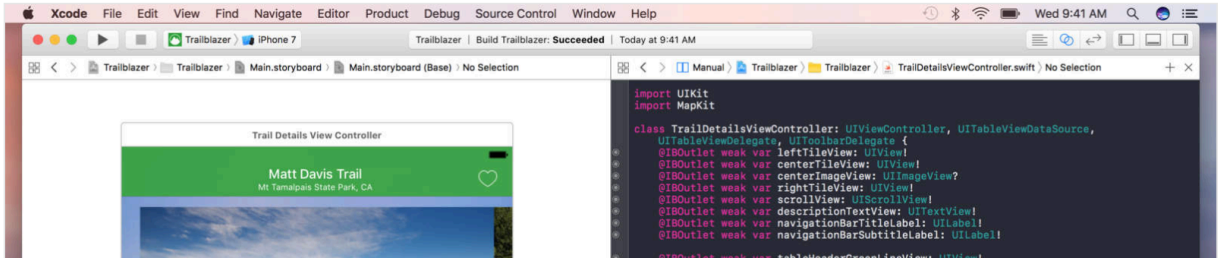
...More

What's New in Version 8.0

Xcode 8 includes Swift 3, and SDKs for iOS 10, watchOS 3, tvOS 10, and macOS Sierra.

...

...More



Apple Web Site

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Information

Category: Developer Tools
Updated: 13 September 2016
Version: 8.0
Price: Free
Size: 4.43 GB
Family Sharing: Yes
Language: English
Developer: iTunes S.a.r.l.

Rated 4+

Compatibility:
OS X 10.11.5 or later

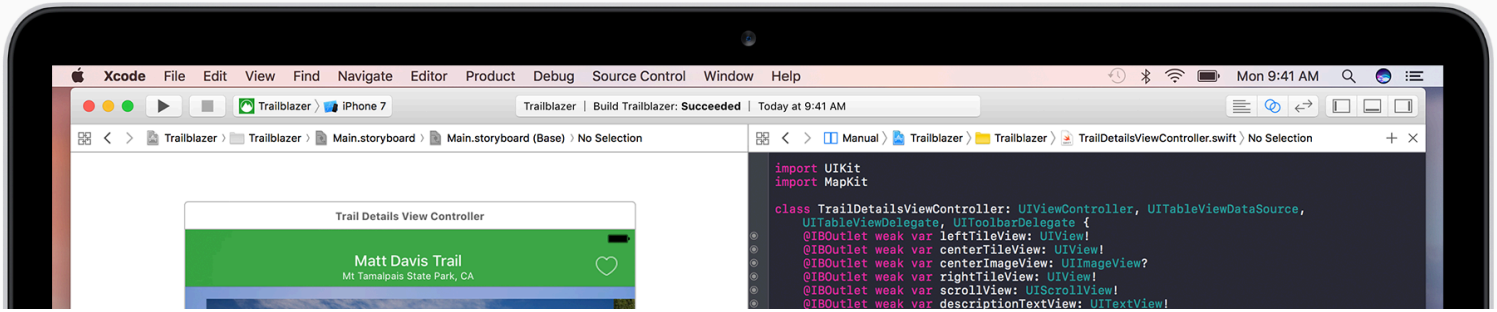
Xcode 8

Developer Discover Design Develop Distribute Support Account

Xcode Xcode IDE Interface Builder Features Download

Xcode 8

Xcode 8 includes everything you need to create amazing apps for iPhone, iPad, Mac, Apple Watch, and Apple TV. This radically faster version of the IDE features new editor extensions that you can use to completely customize your coding experience. New runtime issues alert you to hidden bugs by pointing out memory leaks, and a new Memory Debugger dives deep into your object graph. Swift 3 includes more natural and consistent API naming, which you can experiment with in the new Swift Playgrounds app for iPad.



Source: https://developer.apple.com/xcode/

Xcode 9

Xcode

Open

Xcode 4+

Essentials

Xcode includes everything developers need to create great applications for Mac, iPhone, iPad, Apple TV, and Apple Watch. Xcode provides developers a unified workflow for user interface design, coding, testing, and debugging. The Xcode IDE combined with the Swift programming language make developing apps easier and more fun than ever before.

...

...More

What's New in Version 9.0

Xcode 9 includes Swift 4 and SDKs for iOS 11, watchOS 4, tvOS 11, and macOS High Sierra 10.13

...

...More

Apple Web Site

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Information

Category: Developer Tools
Updated: 19 September 2017
Version: 9.0
Price: Free
Size: 5.39 GB
Family Sharing: Yes
Language: English
Developer: Apple Distribution International
© 1999–2017 Apple Inc.

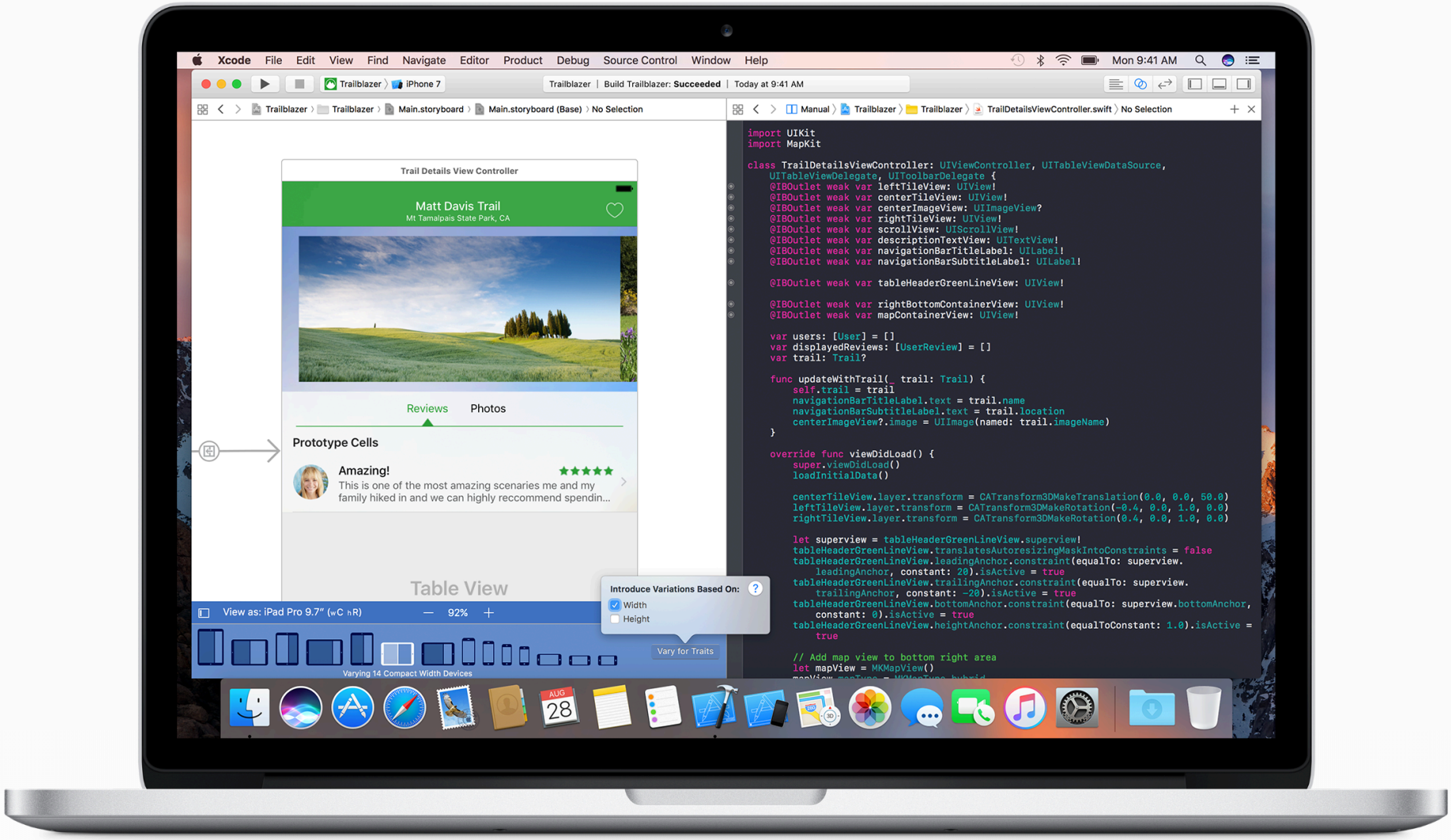
Rated 4+

Compatibility:
macOS 10.12.6 or later

Xcode 8

Xcode

Xcode IDE Interface Builder Features Download



Source: https://developer.apple.com/xcode/

Swift 3

Swift 3 is the first major release of the innovative programming language built completely in the open with the community of developers at Swift.org.
This release unifies core API naming rules under a new public API Naming Guidelines document that makes writing Swift code feel even more natural.
You can also experiment with Swift 3 in the new Swift Playgrounds app for iPad.

Source: https://developer.apple.com/xcode/

Swift 3

Swift

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  - Previews
  - Snapshots
  - Using Downloads
- GETTING STARTED
- DOCUMENTATION
- MIGRATING TO SWIFT 3
- SOURCE CODE
- COMMUNITY
- CONTRIBUTING
- CONTINUOUS INTEGRATION

PROJECTS

Download Swift

Releases

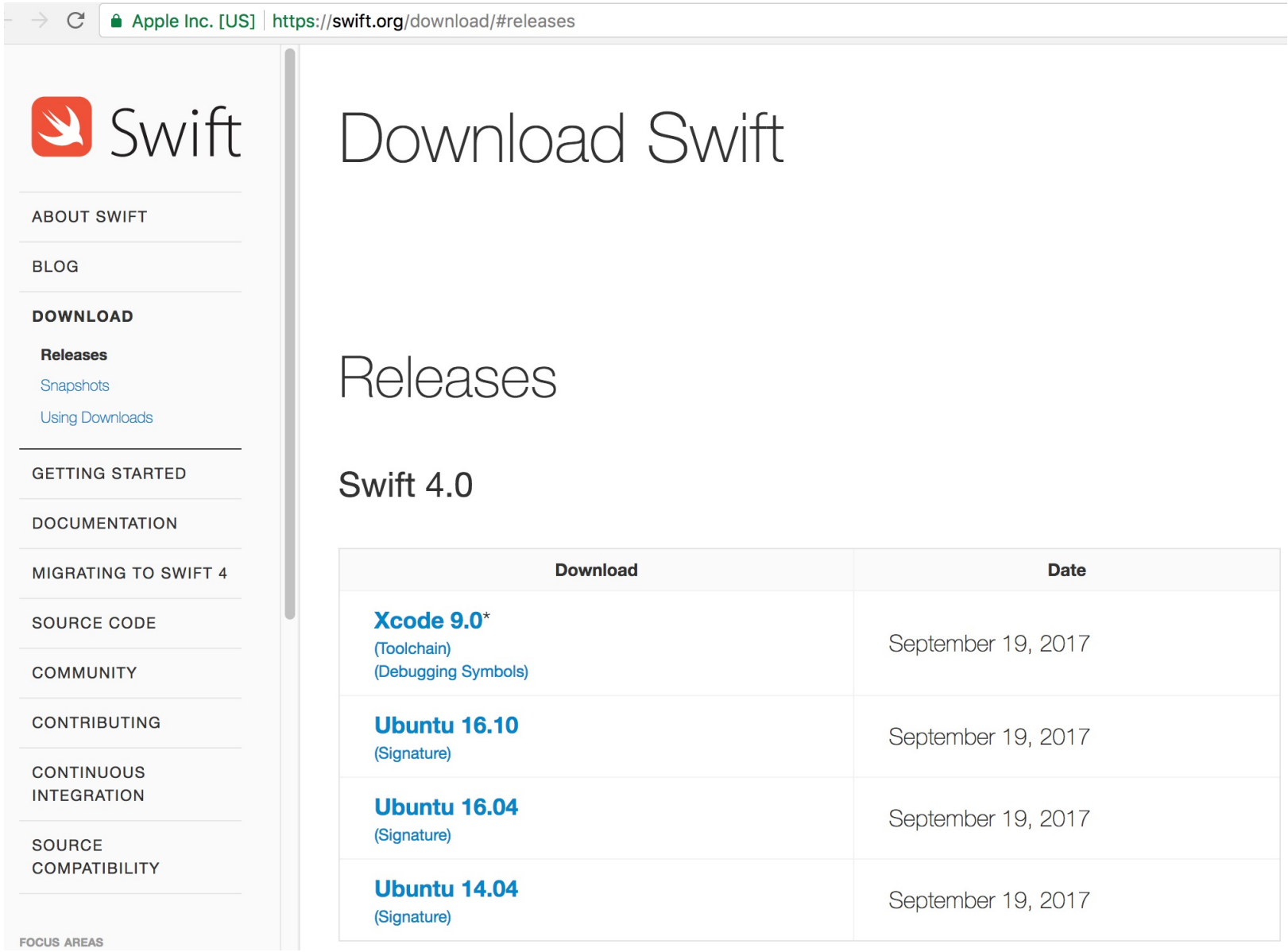
Swift 3.0

Download	Date
Xcode 8* (Toolchain) (Debugging Symbols)	September 13, 2016
Ubuntu 15.10 (Signature)	September 13, 2016
Ubuntu 14.04 (Signature)	September 13, 2016

*Swift 3.0 is available as part of Xcode 8.

Source: https://swift.org/download/#releases

Swift 4



Source: https://swift.org/download/#releases

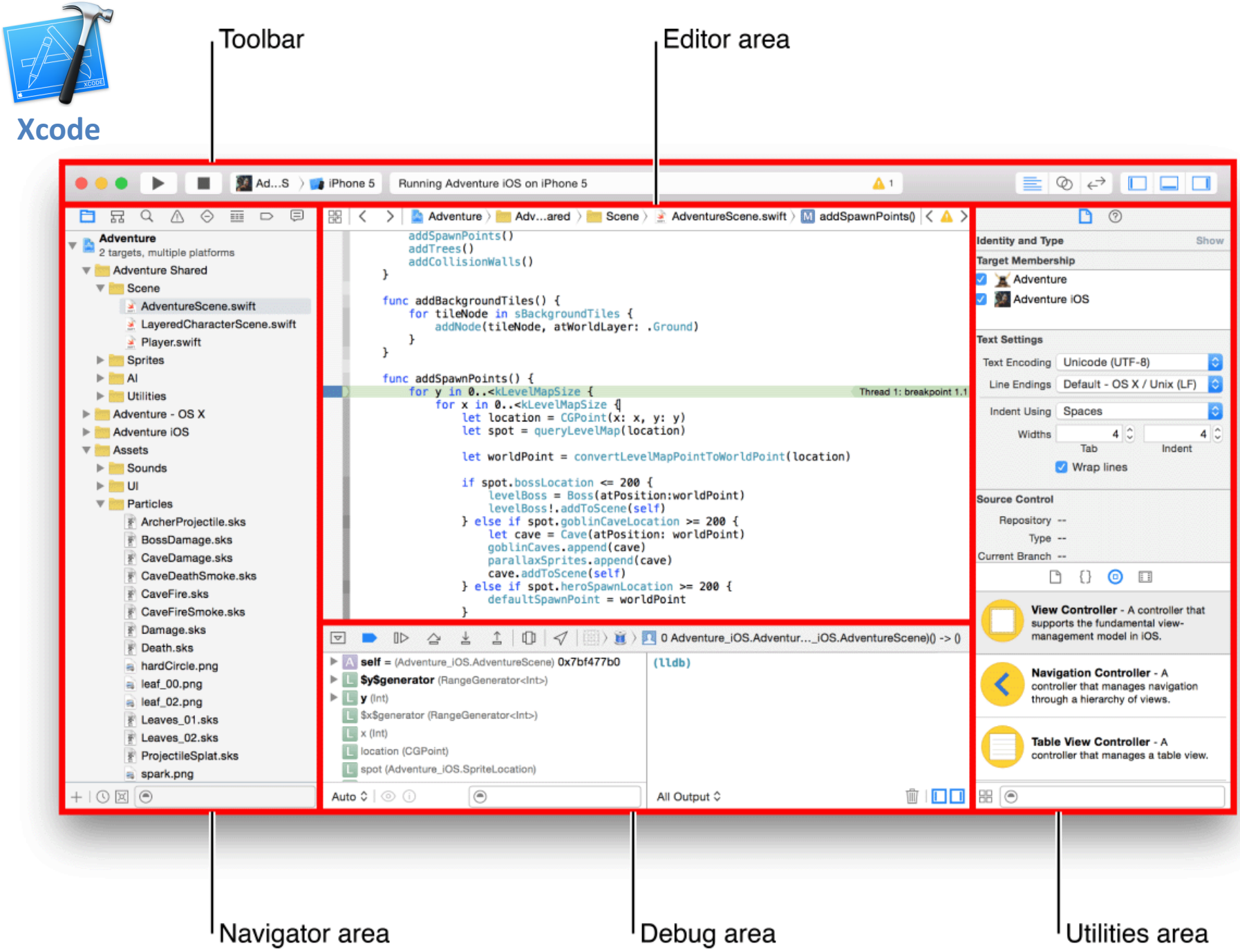
Apple Inc. [US] https://developer.apple.com/xcode/

Developer Platforms Resources Program Support Member Center

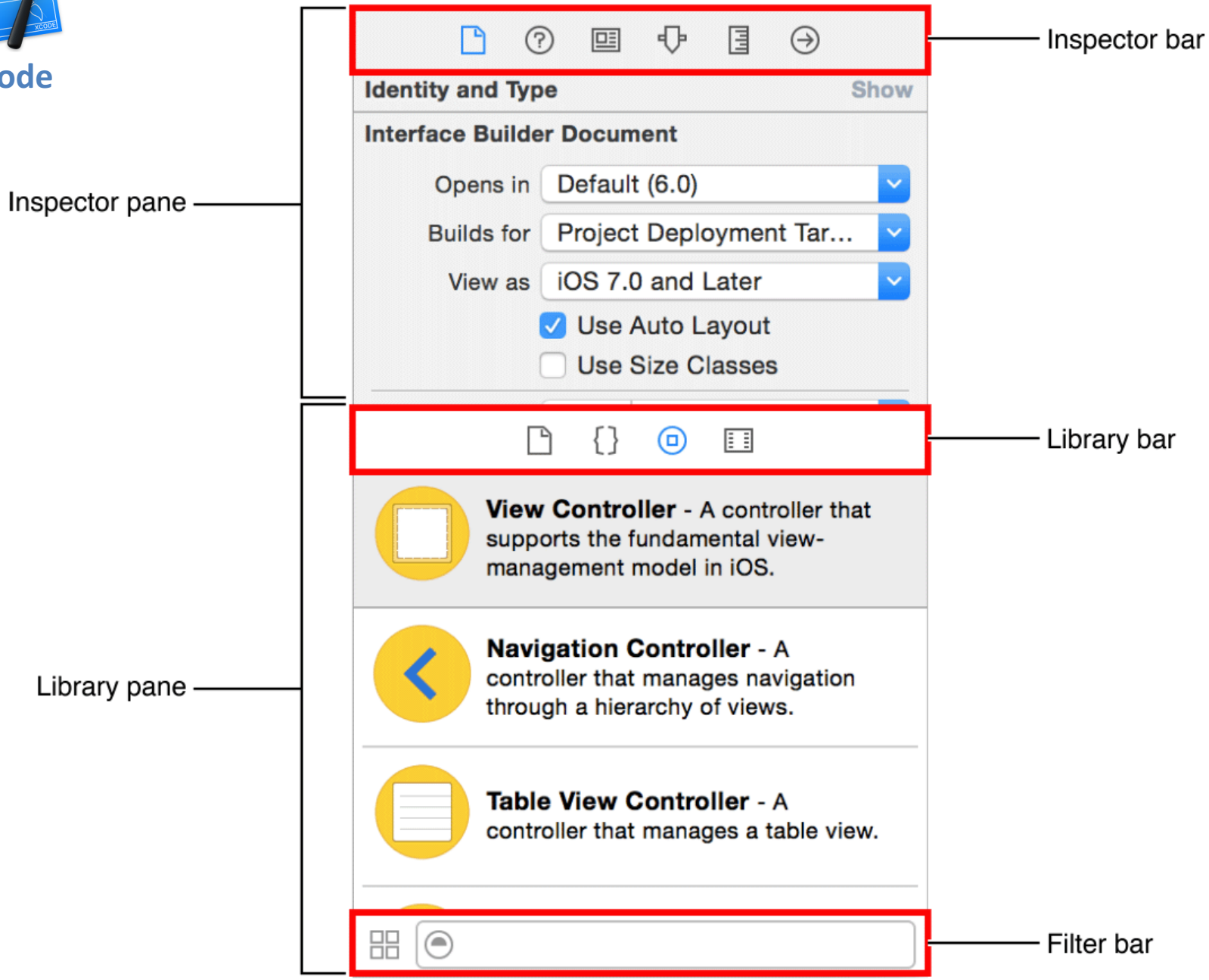
Xcode

What's New Xcode IDE Interface Builder Features Download

Xcode



Source: Xcode 6 Documentation



Source: Xcode 6 Documentation

Getting Started with Xcode 9 Development

1. Get a Mac
2. Register as an Apple Developer
3. Install Xcode
4. Enroll in the Apple Developer Program (Optional)

http://www.appcoda.com/learnswift/get-started.html

Swift.

A modern programming language that is safe, fast, and interactive.

https://developer.apple.com/swift/

Swift

- Swift is a powerful and intuitive programming language for iOS, OS X, and watchOS.
- Writing Swift code is interactive and fun, the syntax is concise yet expressive, and apps run lightning-fast.
- Swift is ready for your next project — or addition into your current app — because Swift code works side-by-side with Objective-C.

Source: https://developer.apple.com/swift/

Swift Language

- Swift is a
  new object-oriented programming language
  for iOS and OS X development.
- Swift is
  modern, powerful, expressive,
  and easy to use.

Source: https://developer.apple.com/swift/

Swift Language

- **Unified**
  A complete replacement for both the C and Objective-C languages.
  - Swift provides full object-oriented features, and includes low-level language primitives such as types, flow control, and operators.
- **Fast**
- **Complete platform**
- **Safe by design**
- **Modern**
- **Interactive**

Source: https://developer.apple.com/swift/


```
print("Hello world")
```


println("Hello world")
println("Hello World")
println("Hello World")
'println' has been renamed to 'print'
Fix-it Replace "print" with "print"
print("Hello world")
Swift 2

Swift


```
let count = 10
var price = 23.55

let firstMessage = "Swift is awesome. "
let secondMessage = "What do you think?"
var message = firstMessage + secondMessage

print(message)
```

Objective-C

```
const int count = 10;
double price = 23.55;

NSString *firstMessage = @"Swift is awesome. ";
NSString *secondMessage = @"What do you think?";
NSString *message = [NSString stringWithFormat:@"%@%@",
firstMessage, secondMessage];

NSLog(@"%@", message);
```

http://www.appcoda.com/learnswift/playgrounds.html


```
var s = "Hello" + " World"
```


```
var myVariable = 82
myVariable = 90
let myConstant = 82
```


```
let individualScores = [75, 43, 93, 87, 12]
var teamScore = 0
for score in individualScores {
    if score > 60 {
        teamScore += 3
    } else {
        teamScore += 1
    }
}
print(teamScore)
```


```swift
let individualScores = [75, 43, 93, 87, 12]
var teamScore = 0
for score in individualScores {
    if score > 60 {
        teamScore += 3
    } else {
        teamScore += 1
    }
}
print(teamScore)
```

```
[75, 43, 93, 87, 12]
0


(3 times)

(2 times)


"11\n"
```

The Swift Programming Language (Swift 4)

```
print("Hello, world!")
```

Source: https://developer.apple.com/library/content/documentation/Swift/Conceptual/Swift_Programming_Language/GuidedTour.html

Xcode 9

Welcome to Xcode

Version 9.0 (9A235)

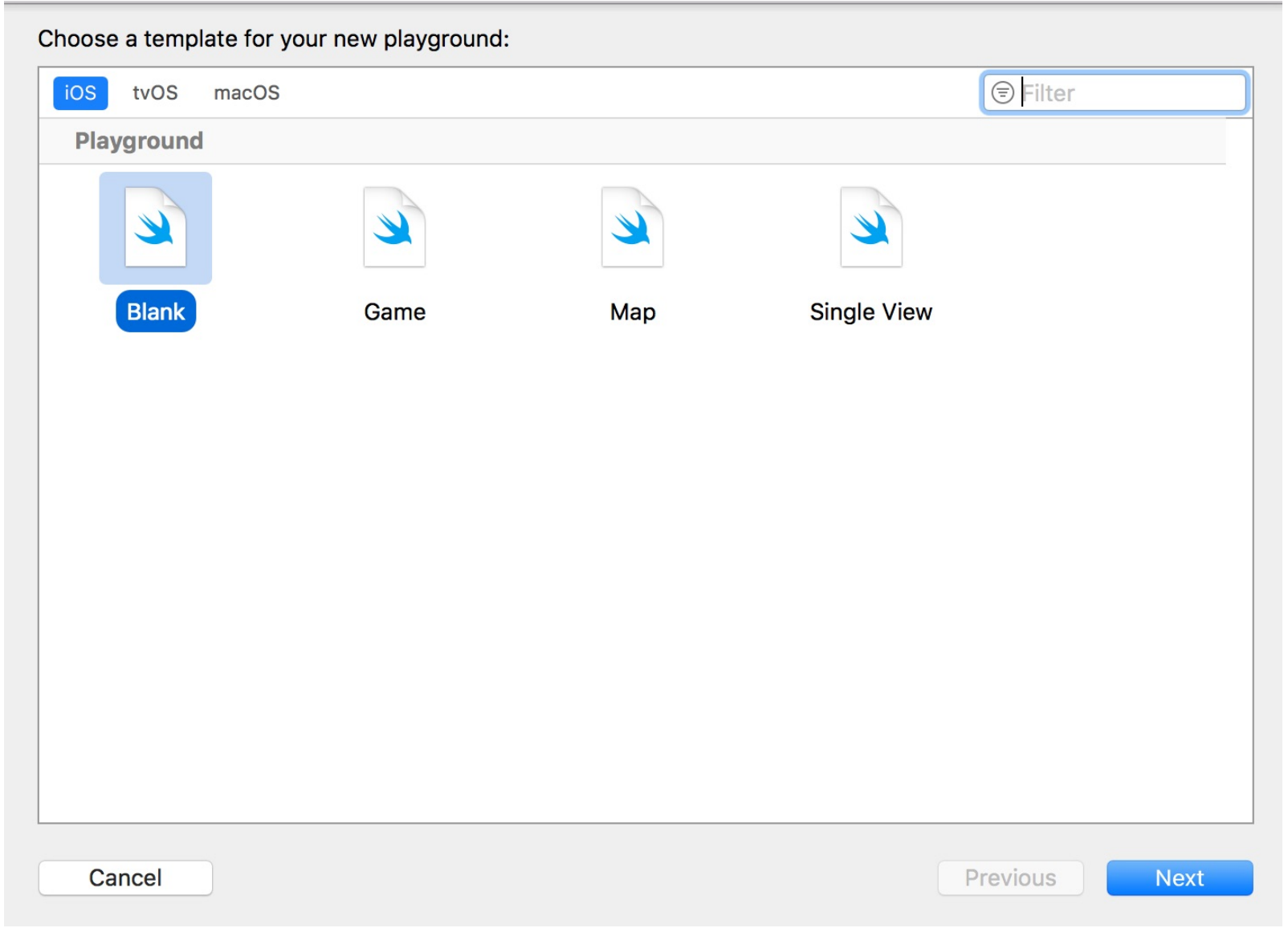
Get started with a playground
Explore new ideas quickly and easily.

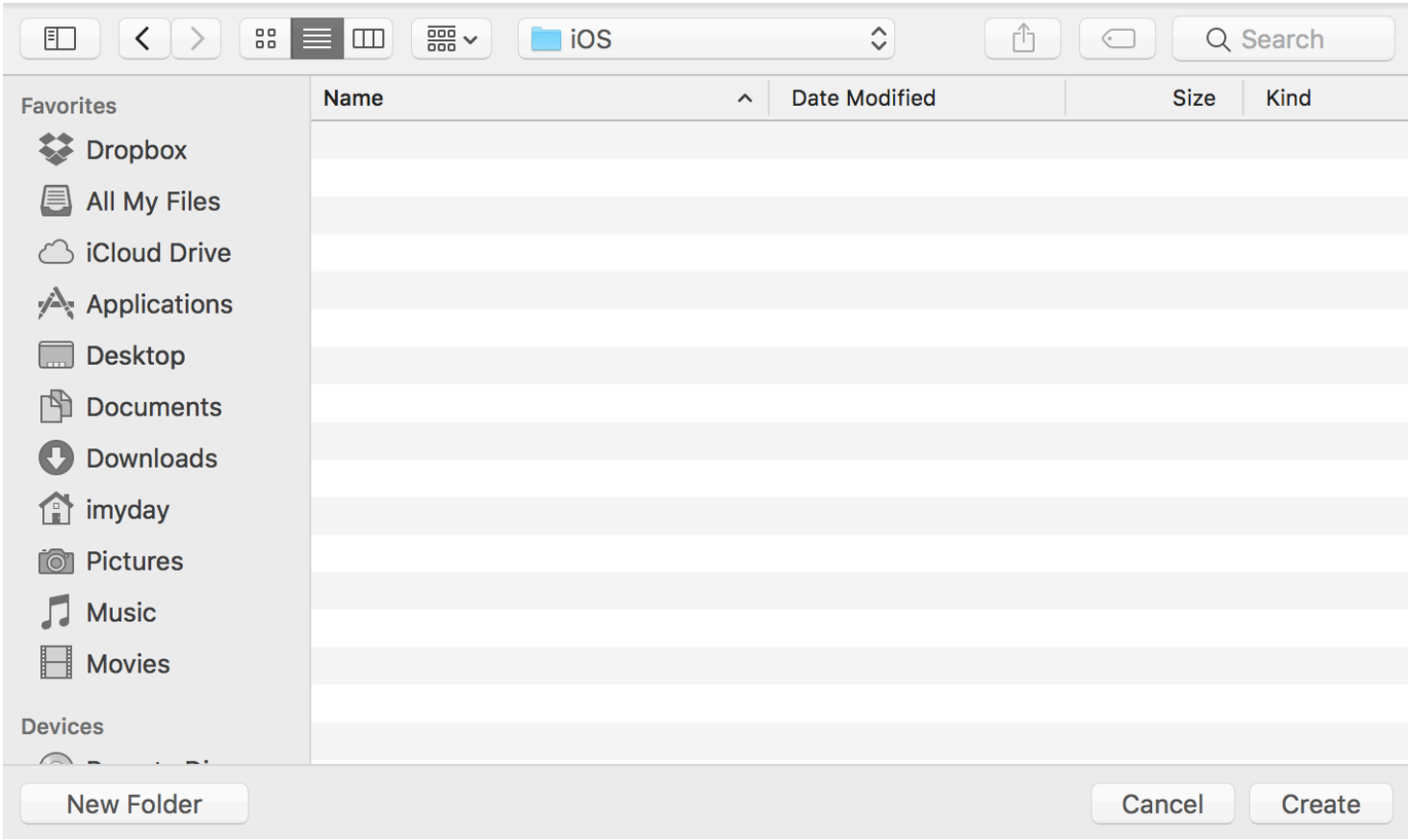
Create a new Xcode project
Create an app for iPhone, iPad, Mac, Apple Watch or Apple TV.

Clone an existing project
Start working on something from an SCM repository.

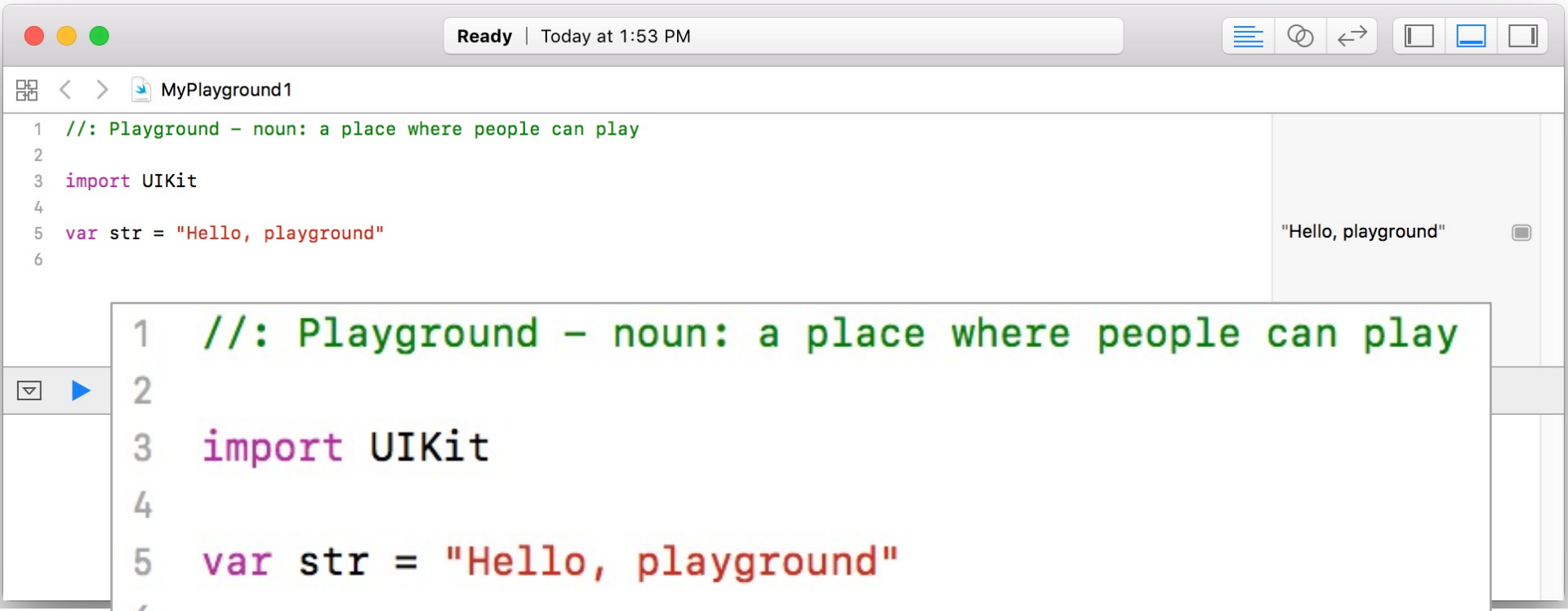
Show this window when Xcode launches

Xcode 9 Playground



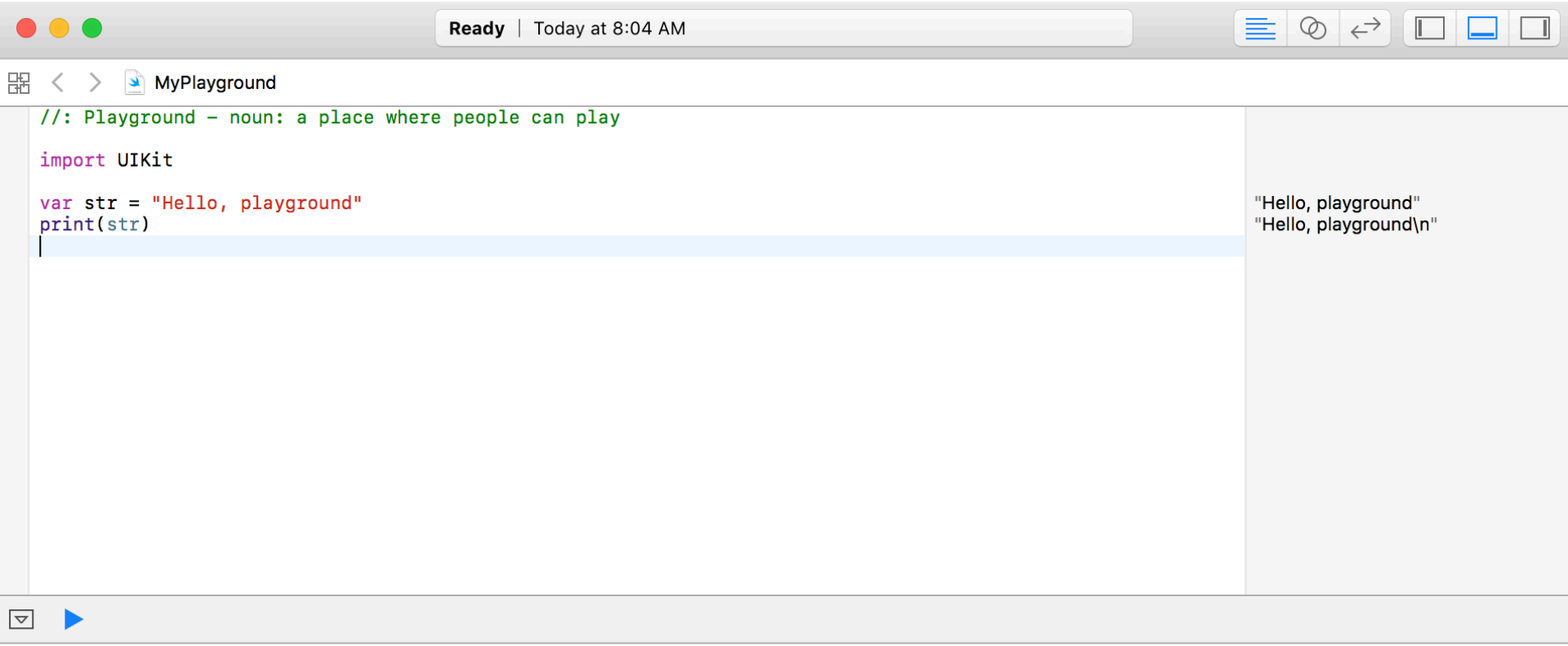

iOS
Search
Favorites
Dropbox
All My Files
iCloud Drive
Applications
Desktop
Documents
Downloads
imyday
Pictures
Music
Movies
Devices
Name
Date Modified
Size
Kind
New Folder
Cancel
Create

Swift 4 in Xcode 9 Playground




```
1  //: Playground - noun: a place where people can play
2
3  import UIKit
4
5  var str = "Hello, playground"
6
```

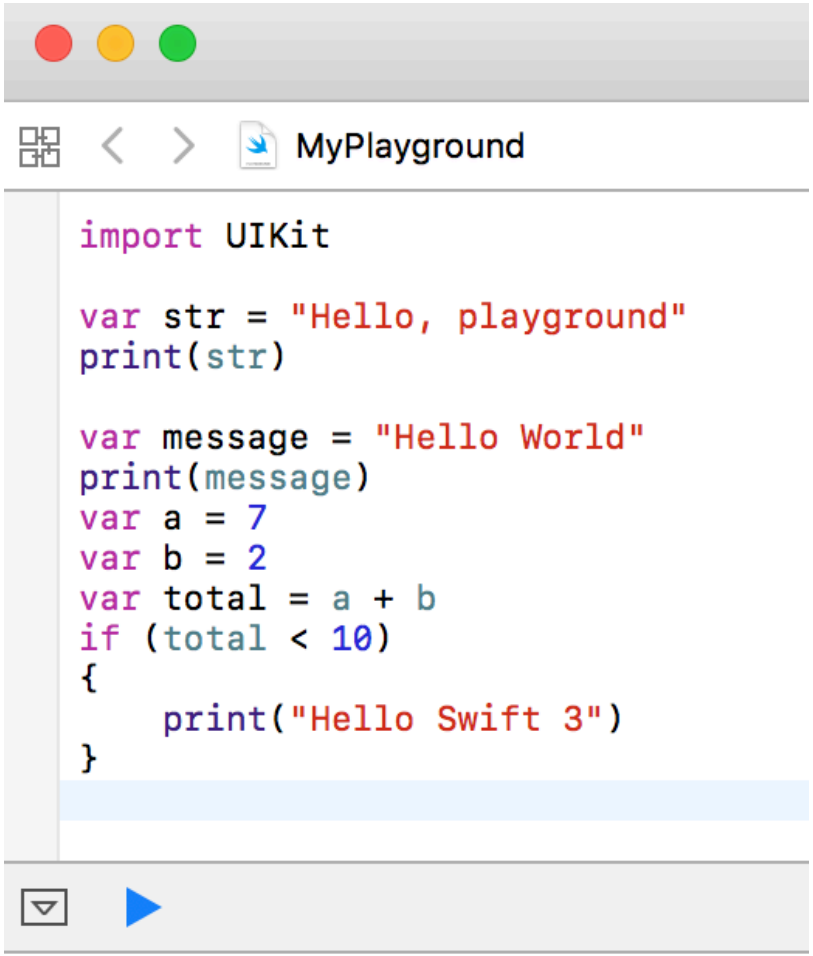
Swift 4 in Xcode 9 Playground



Swift 4 in Xcode 9 Playground


```
var message = "Hello World"
print(message)
var a = 7
var b = 2
var total = a + b
if (total < 10)
{
    print("Hello Swift 3")
}
```

Swift 4 in Xcode 9 Playground




```
Hello, playground
Hello World
Hello Swift 3
```

Swift 4 in Xcode 9 Playground


```
var strS = "Your score is "
var score = 90
var yourScore = strS + String(score)
print(yourScore)
if (score >= 60) {
    print("Pass")
}
else {
    print("Fail")
}
```

Swift 4 in Xcode 9 Playground

MyPlayground

```
//: Playground - noun: a place where people can play

import UIKit

var str = "Hello, playground"

var strS = "Your score is "
var score = 90
var yourScore = strS + String(score)
print(yourScore)

if (score >= 60) {
    print("Pass")
}
else {
    print("Fail")
}
```

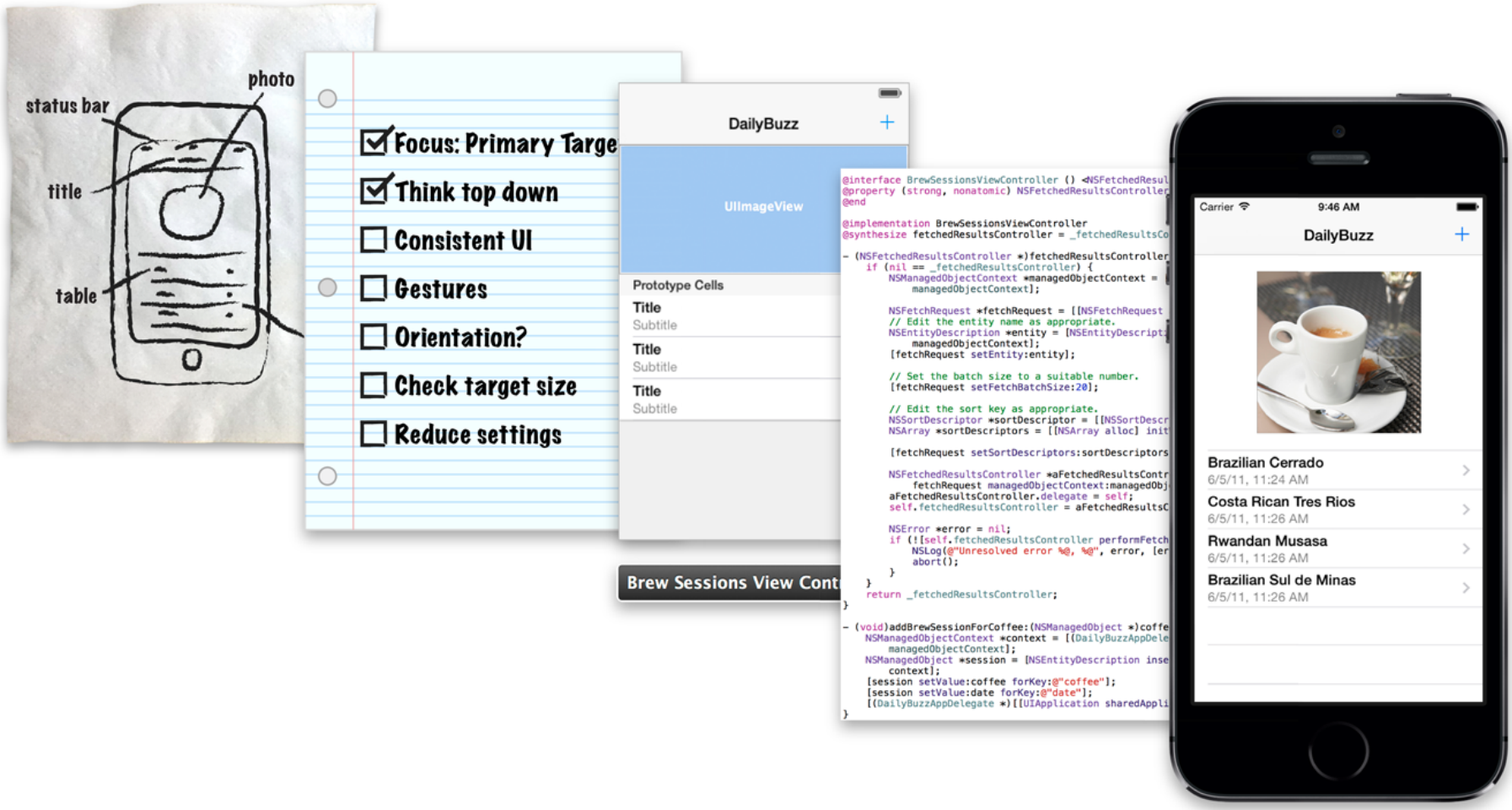
```
"Hello, playground"

"Your score is "
90
"Your score is 90"
"Your score is 90\n"


"Pass\n"
```

```
Your score is 90
Pass
```

iOS App Development Process



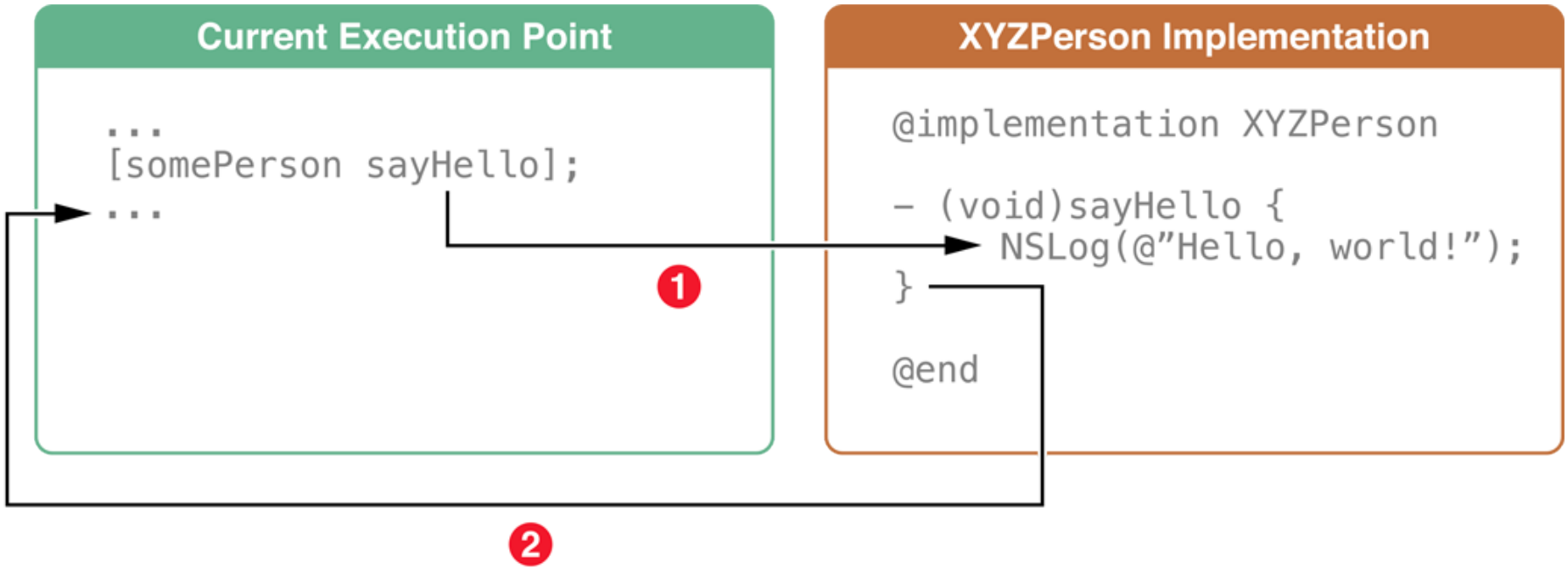
Source: https://developer.apple.com/library/ios/referencelibrary/GettingStarted/RoadMapiOS/AppDevelopmentProcess.htm

iOS App Development Process

- Defining the Concept
- Designing a User Interface
- Defining the Interaction
- Implementing the Behavior

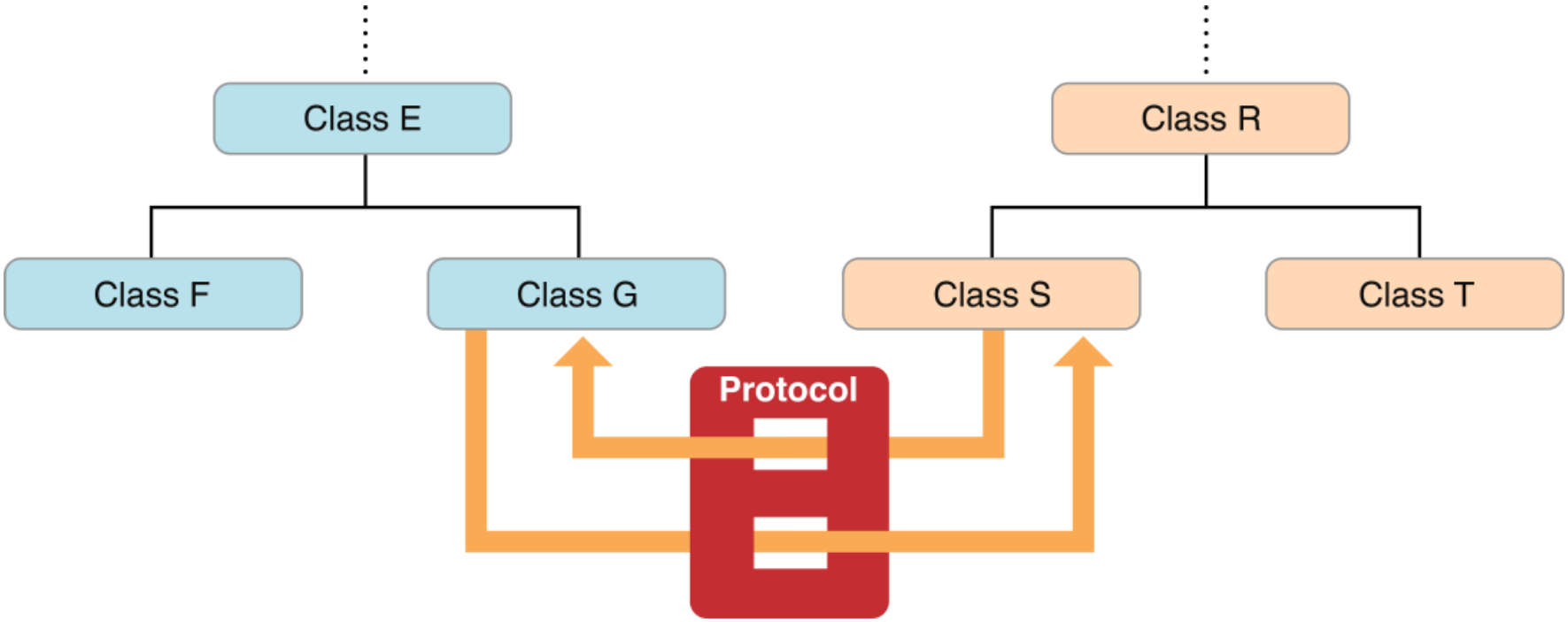
Source: https://developer.apple.com/library/ios/referencelibrary/GettingStarted/RoadMapiOS/AppDevelopmentProcess.htm

Objects Communicate Through Messages



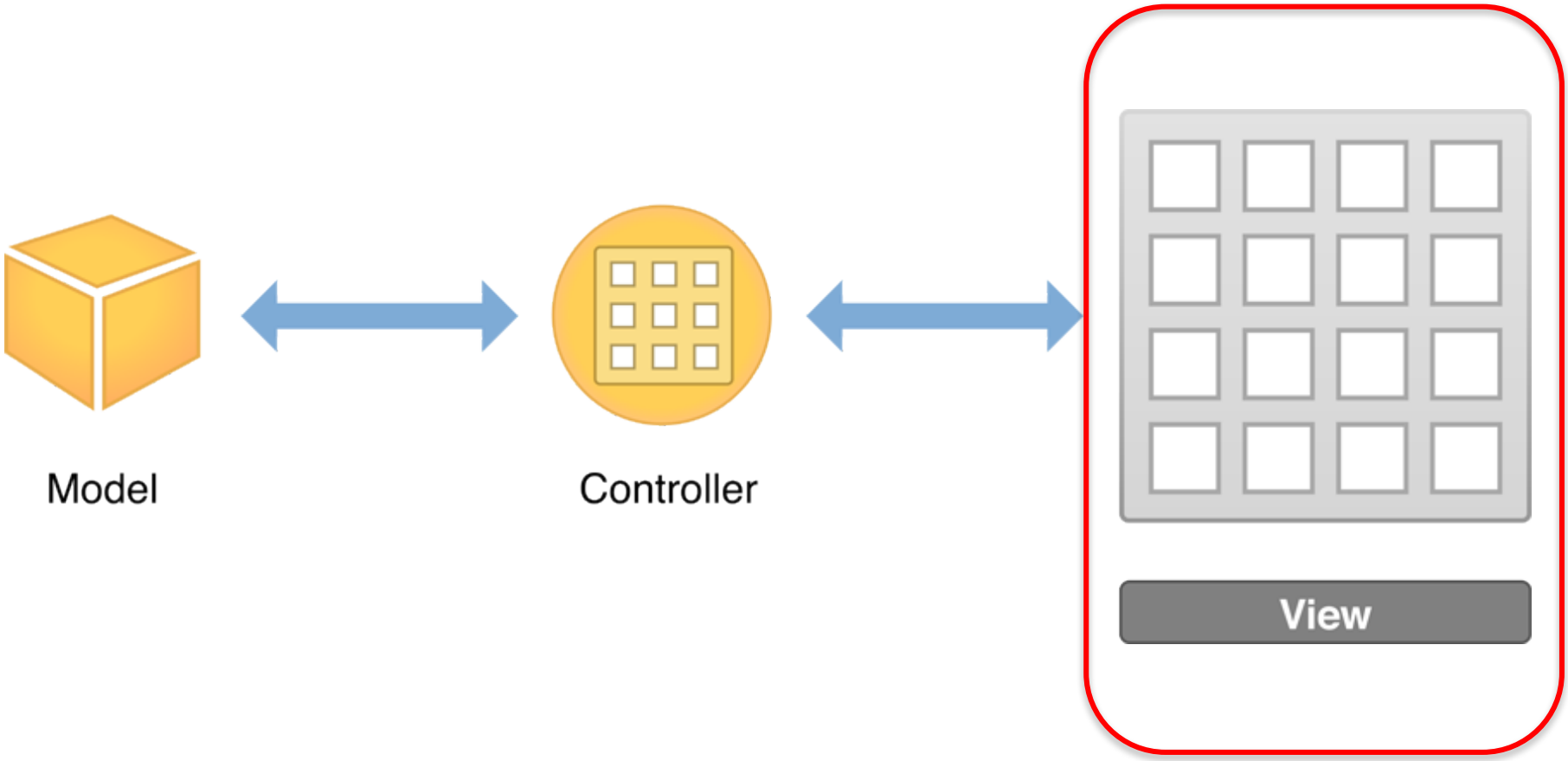
Source: https://developer.apple.com/library/ios/referencelibrary/GettingStarted/RoadMapiOS/AppDevelopmentProcess.htm

Protocols Define Messaging Contracts



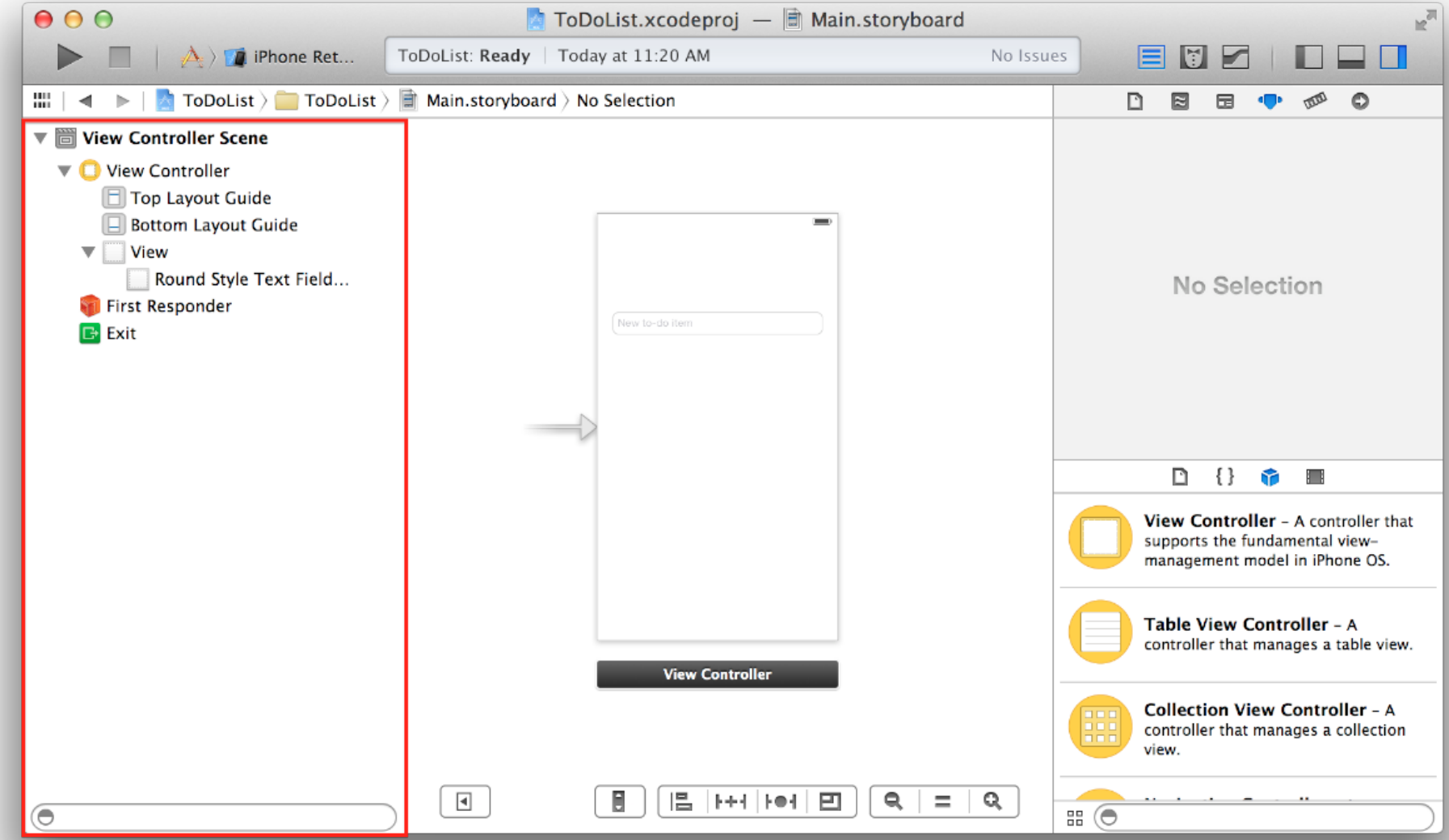
Source: https://developer.apple.com/library/ios/referencelibrary/GettingStarted/RoadMapiOS/AppDevelopmentProcess.htm

Designing a User Interface



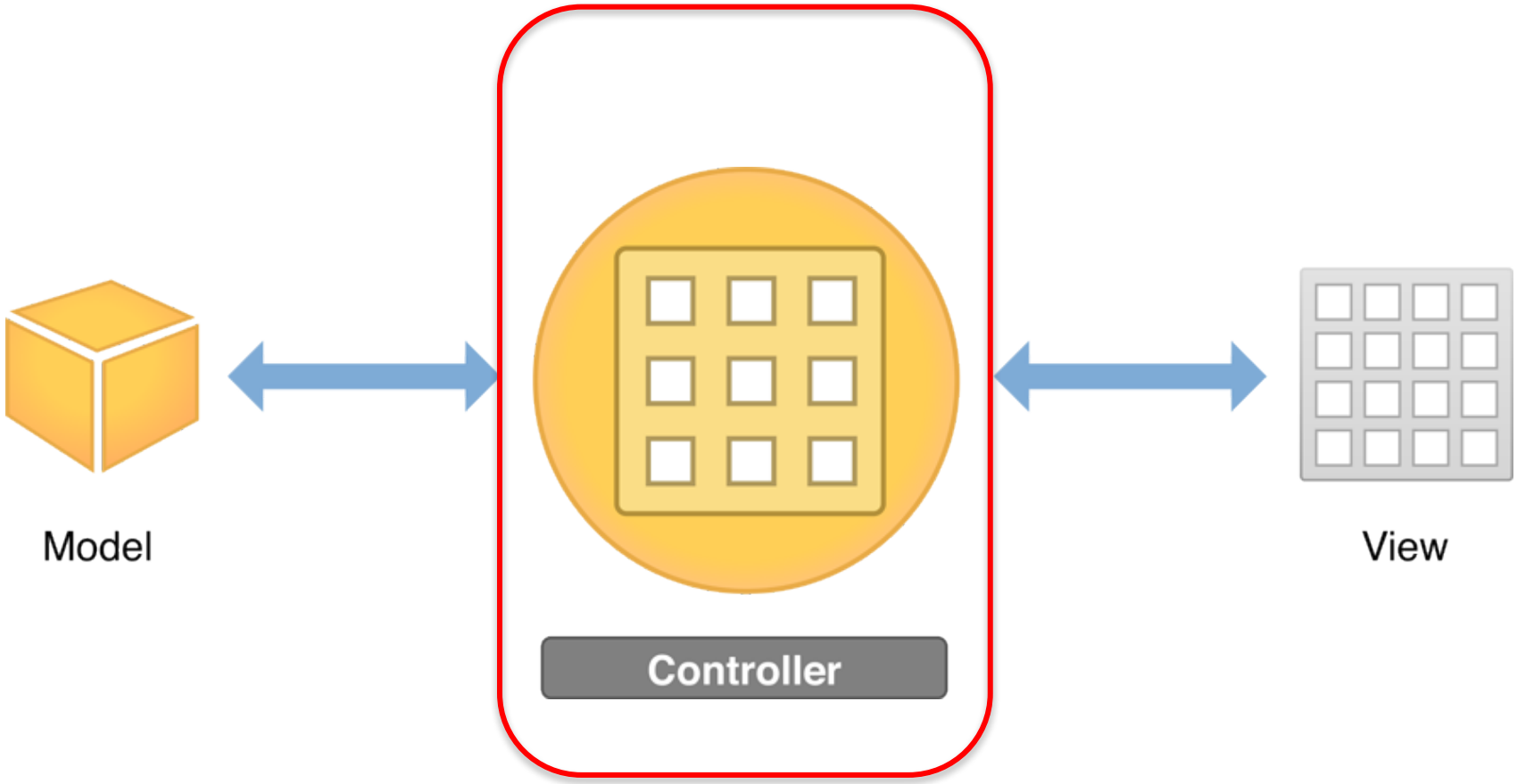
Source: https://developer.apple.com/library/ios/referencelibrary/GettingStarted/RoadMapiOS/DesigningaUserInterface.html

Use Storyboards to Lay Out Views



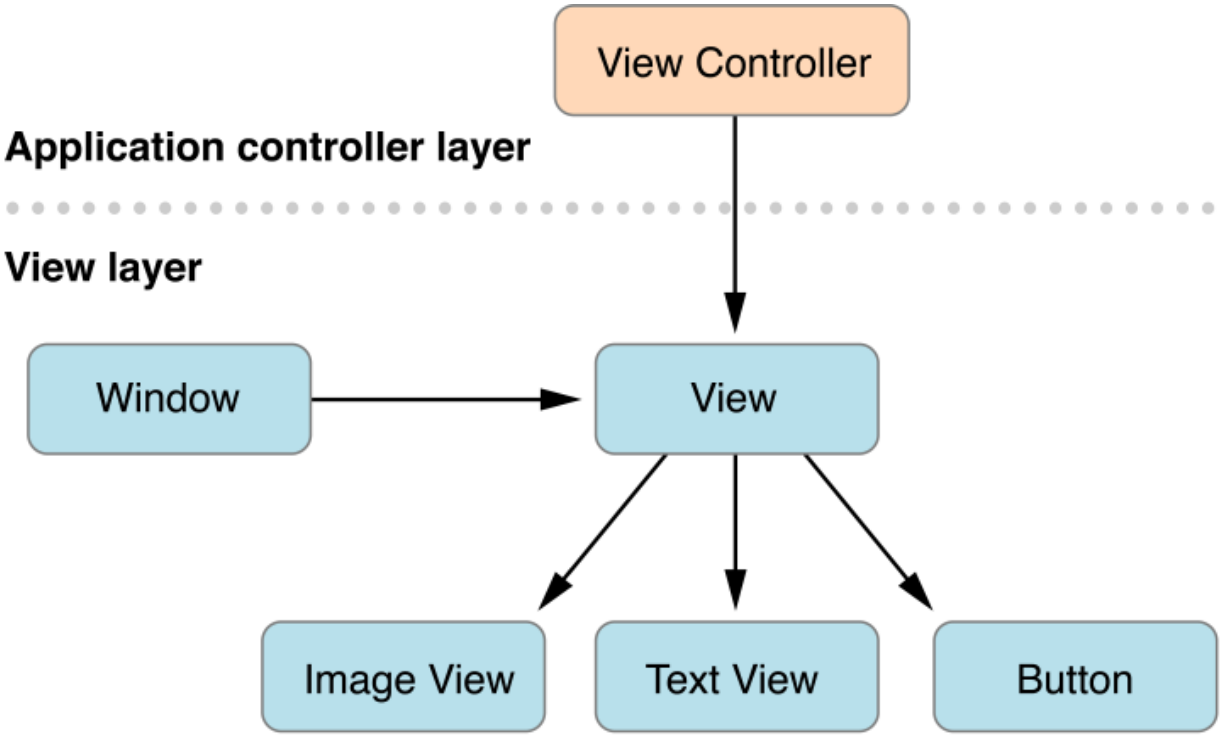
Source: https://developer.apple.com/library/ios/referencelibrary/GettingStarted/RoadMapiOS/DesigningaUserInterface.html

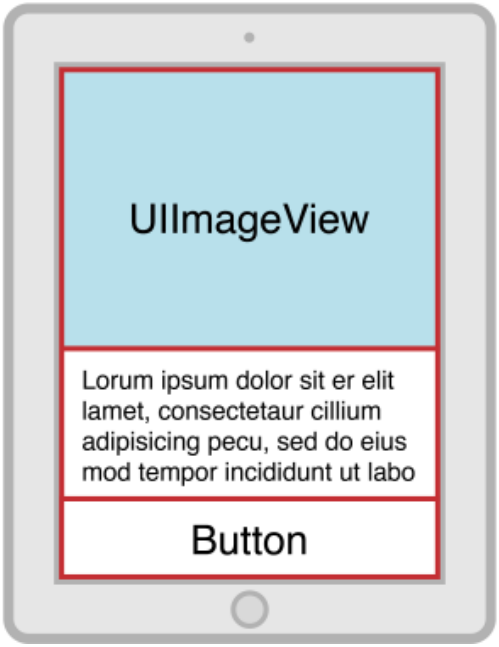
Defining the Interaction



Source: https://developer.apple.com/library/ios/referencelibrary/GettingStarted/RoadMapiOS/DefiningtheInteraction.html

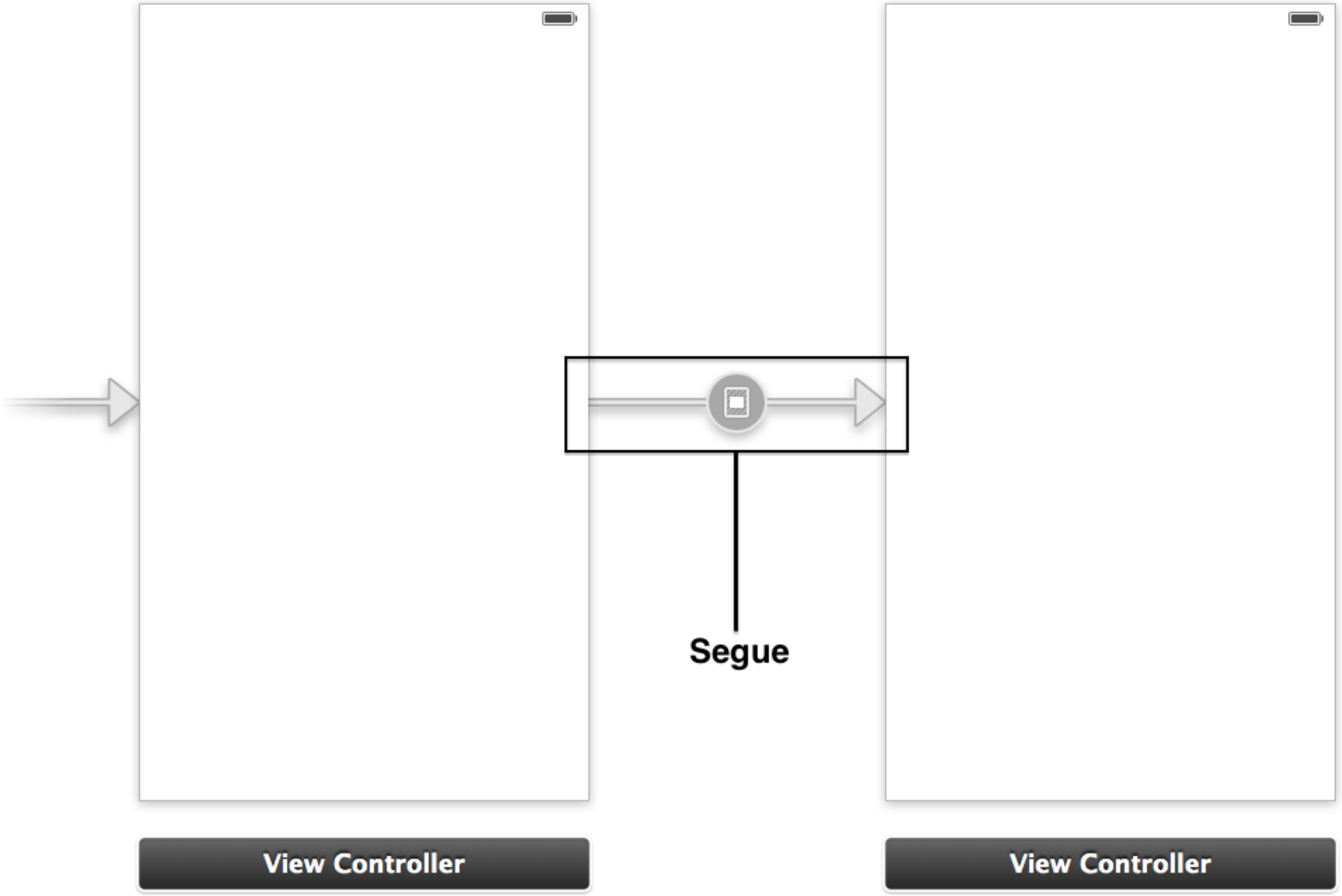
View Controllers





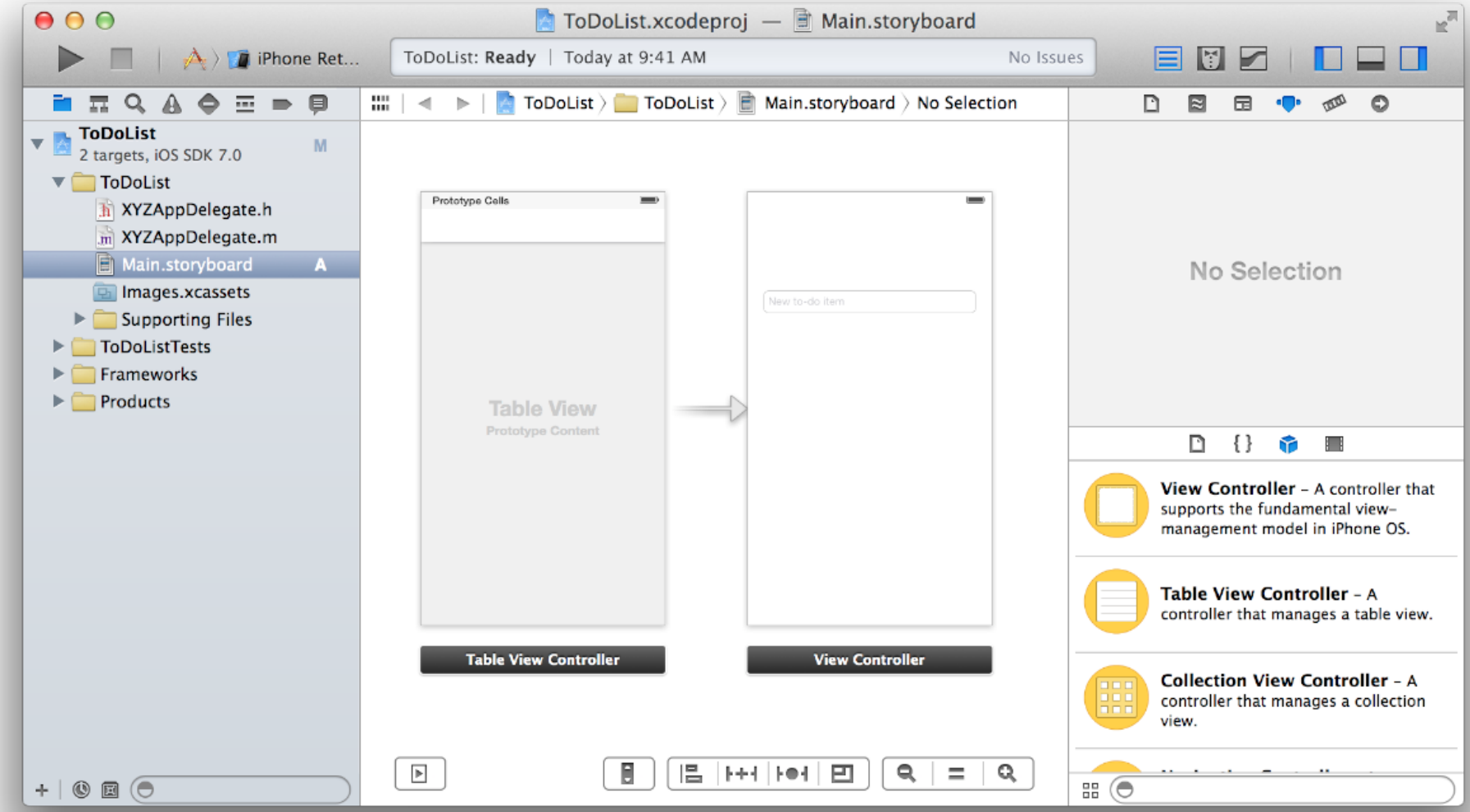
Source: https://developer.apple.com/library/ios/referencelibrary/GettingStarted/RoadMapiOS/DesigningaUserInterface.html

Use Storyboards to Define Navigation



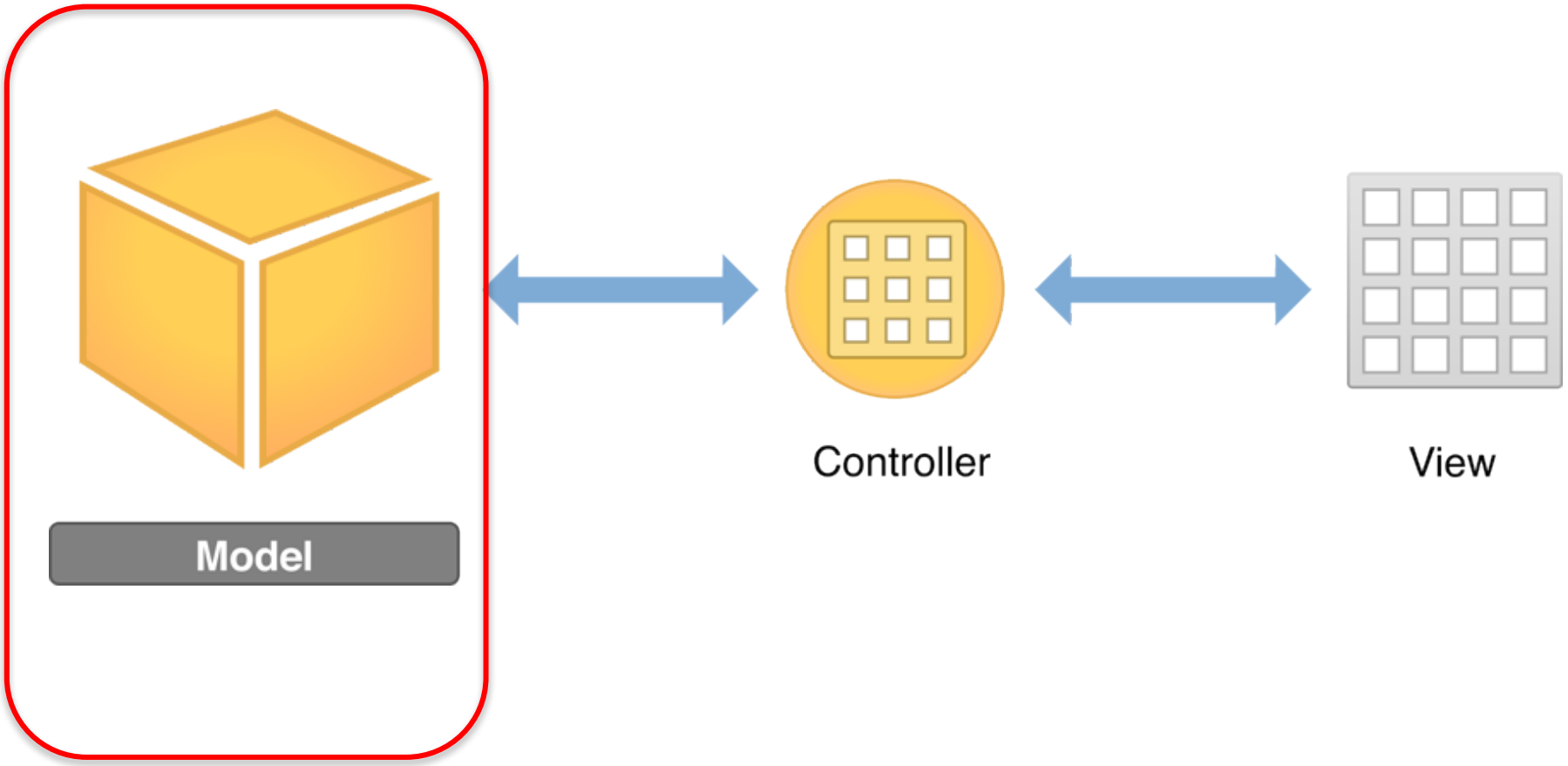
Source: https://developer.apple.com/library/ios/referencelibrary/GettingStarted/RoadMapiOS/DesigningaUserInterface.html

Storyboards



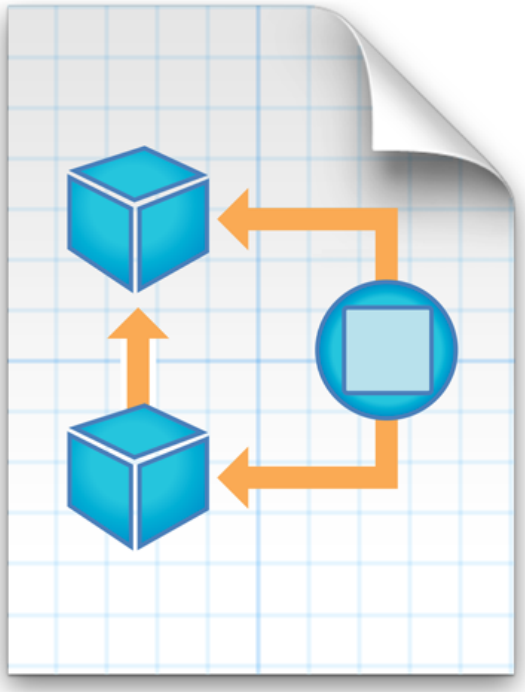
Source: https://developer.apple.com/library/ios/referencelibrary/GettingStarted/RoadMapiOS/DesigningaUserInterface.html

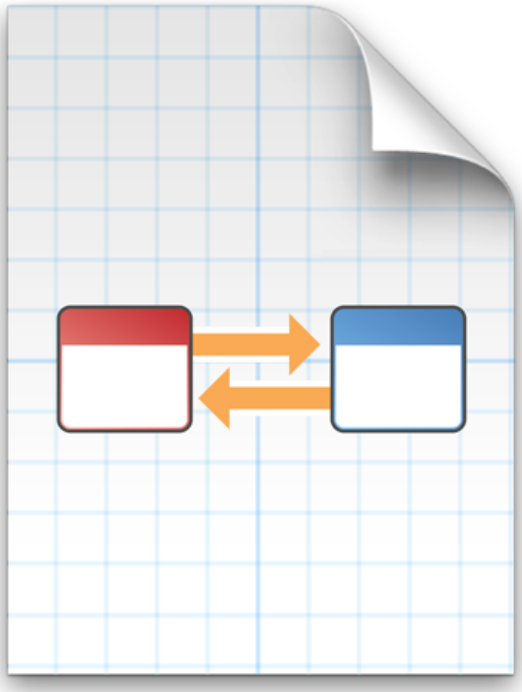
Incorporating the Data

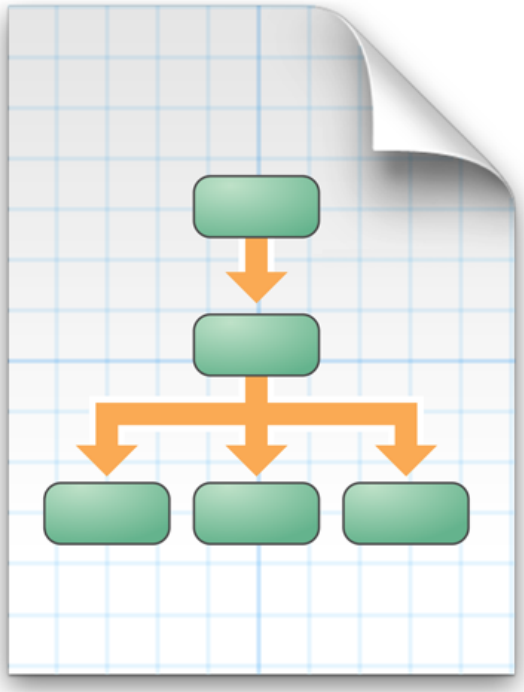


Source: https://developer.apple.com/library/ios/referencelibrary/GettingStarted/RoadMapiOS/IncorporatingtheData.html

Using Design Patterns

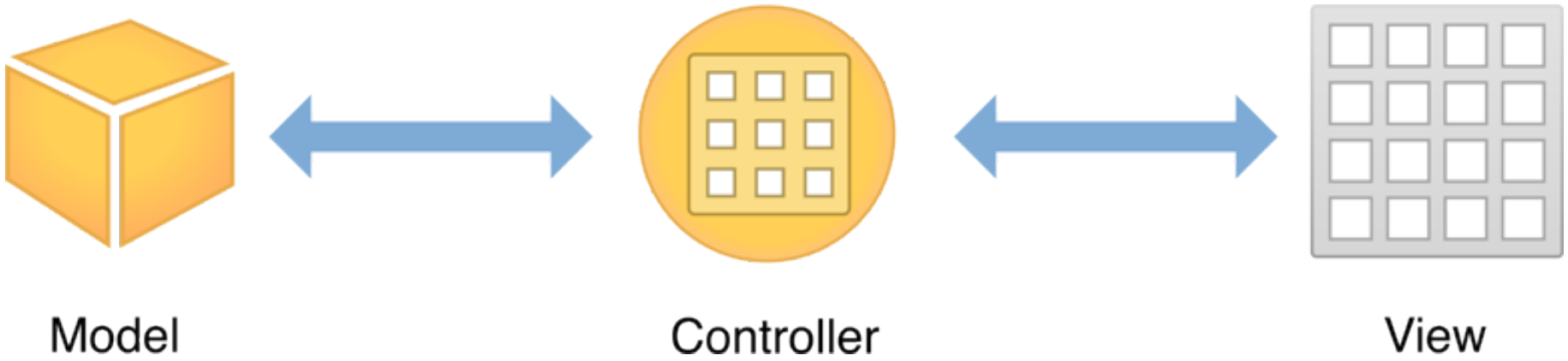






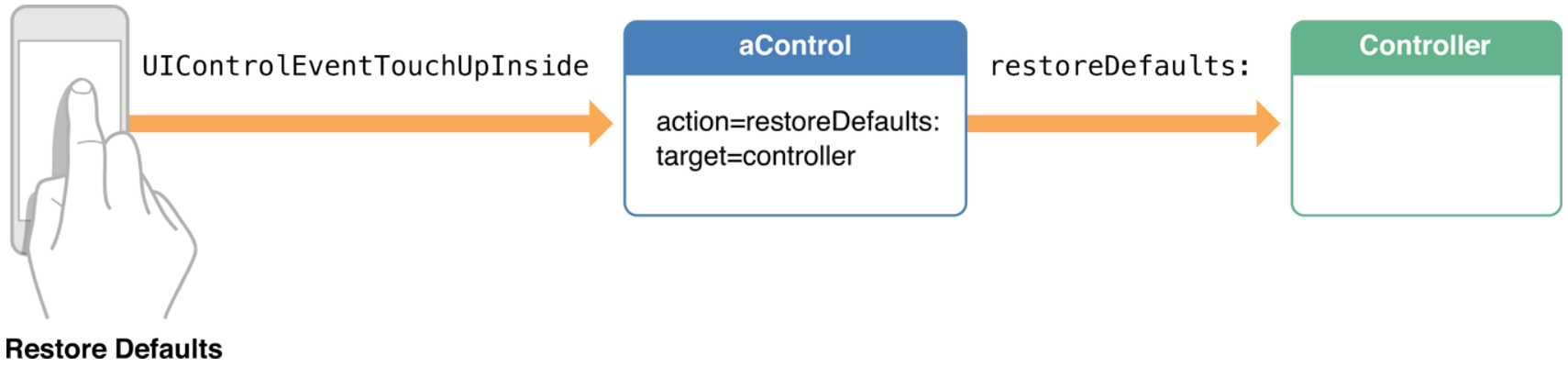
Source: https://developer.apple.com/library/ios/referencelibrary/GettingStarted/RoadMapiOS/DesignPatterns.html

Model-View-Controller (MVC)



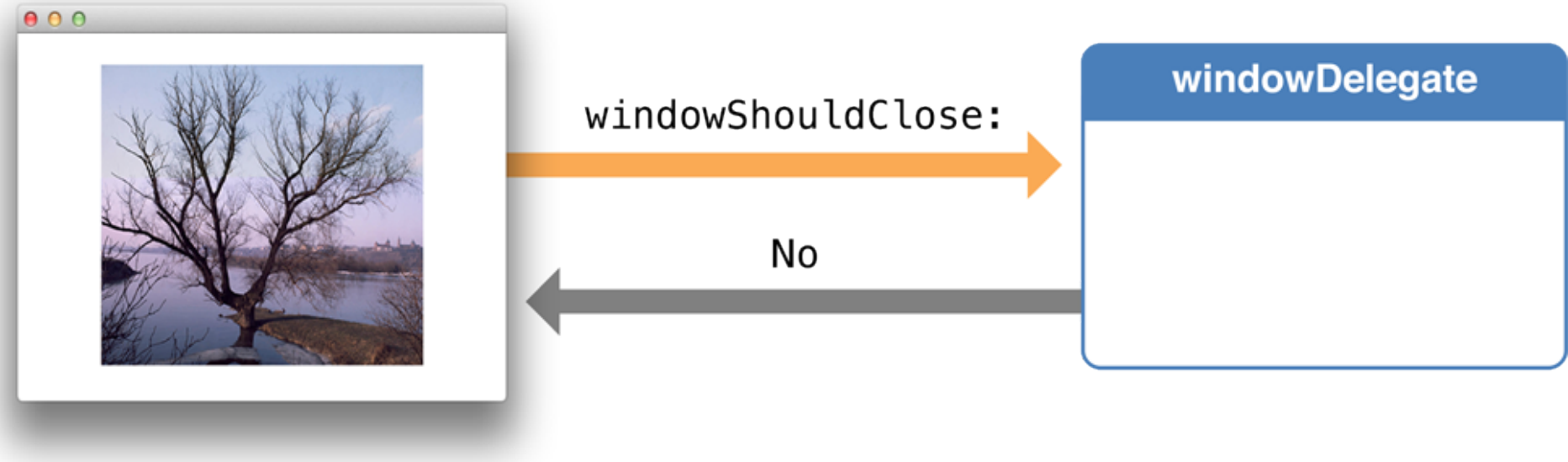
Source: https://developer.apple.com/library/ios/referencelibrary/GettingStarted/RoadMapiOS/DesignPatterns.html

Target-Action



Source: https://developer.apple.com/library/ios/referencelibrary/GettingStarted/RoadMapiOS/DesignPatterns.html

Delegation



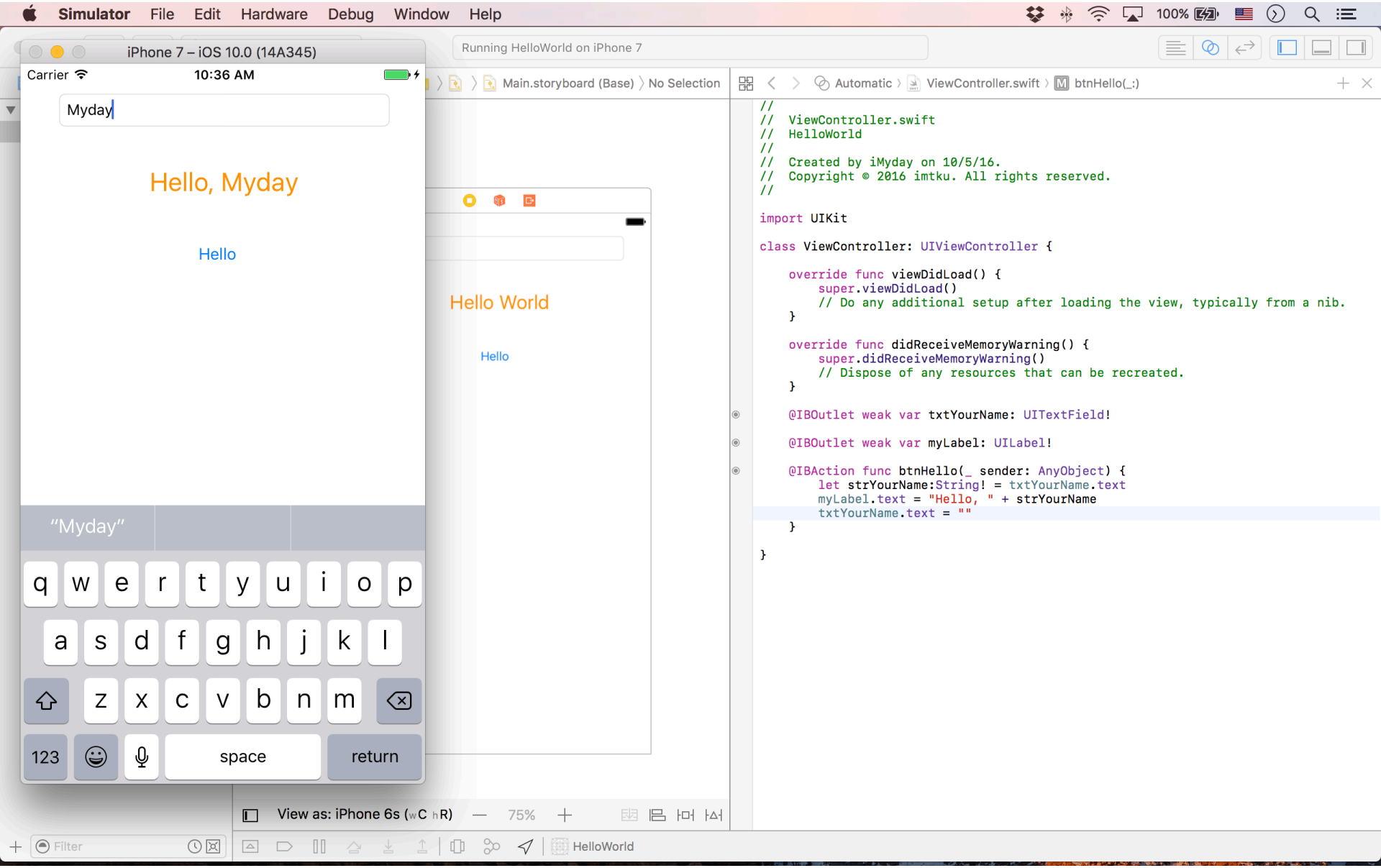
Source: https://developer.apple.com/library/ios/referencelibrary/GettingStarted/RoadMapiOS/DesignPatterns.html

IBOutlet and IBAction

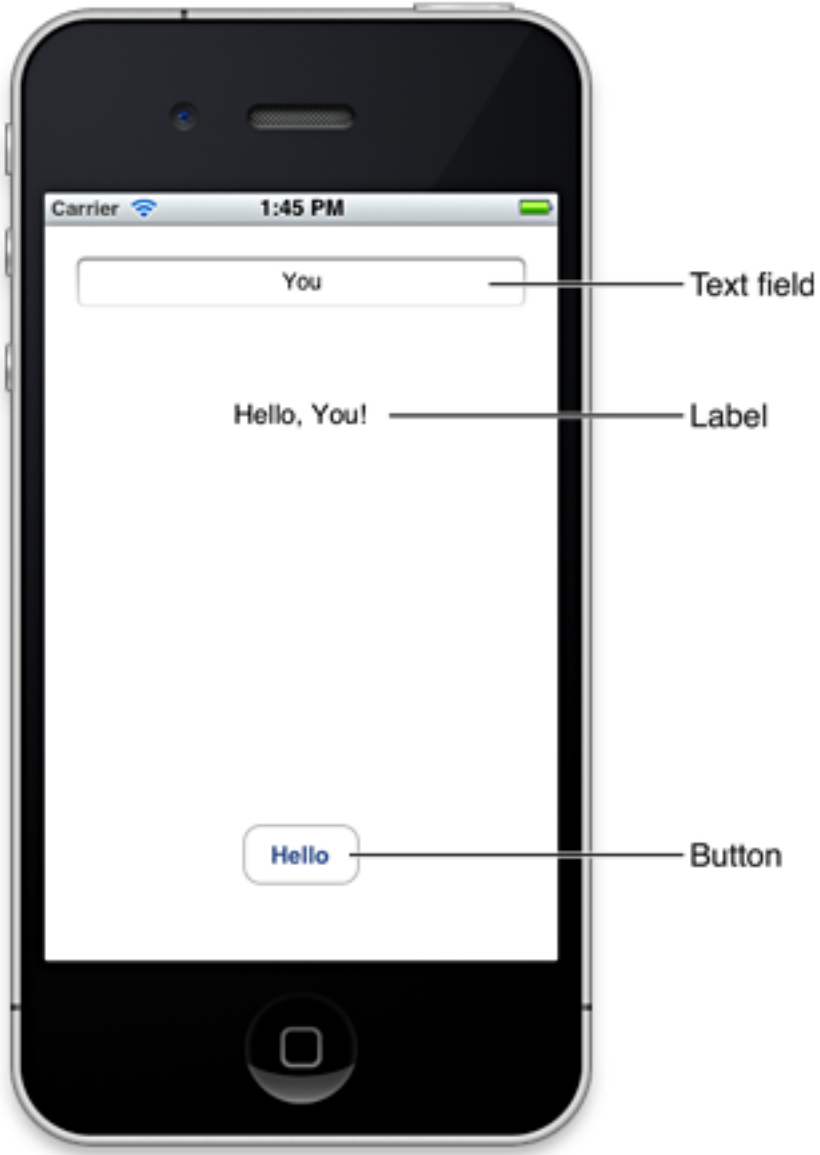
- IBOutlet
  - Interface Builder Outlet
- IBAction
  - Interface Builder Action

Demo:
Building Your First iOS App with Xcode 9 (Swift 4)

Building Your First iOS App with Xcode 9



Your First iOS App



https://developer.apple.com/library/ios/documentation/iphone/conceptual/iphone101/Articles/00_Introduction.html

Xcode 8 with Swift 3

Xcode 8 **Swift 3**

Xcode 9 with Swift 4

Xcode 9 Swift 4

Launchpad → Xcode

Xcode 9

Welcome to Xcode

Version 9.0 (9A235)

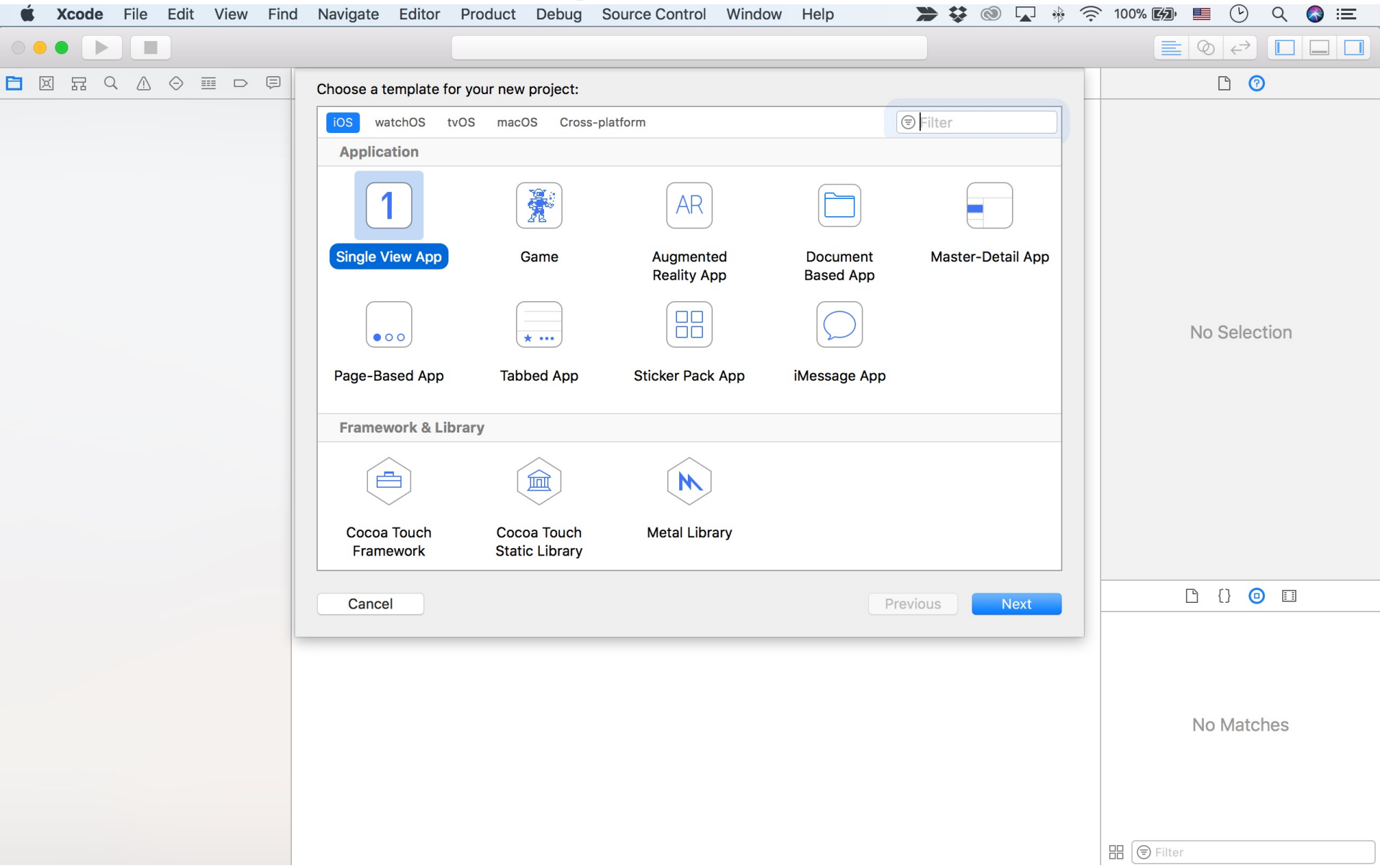
Get started with a playground
Explore new ideas quickly and easily.

Create a new Xcode project
Create an app for iPhone, iPad, Mac, Apple Watch or Apple TV.

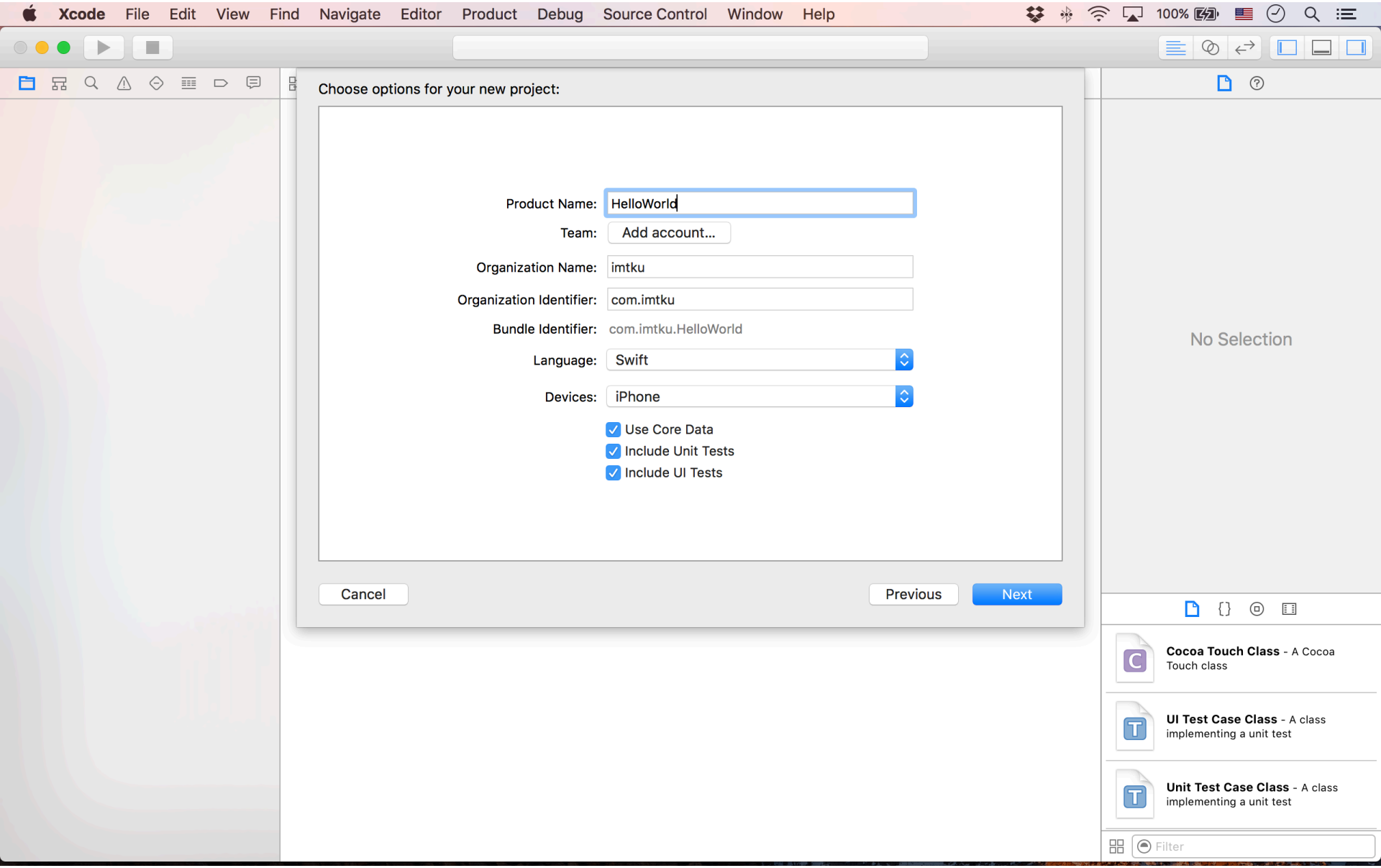
Clone an existing project
Start working on something from an SCM repository.

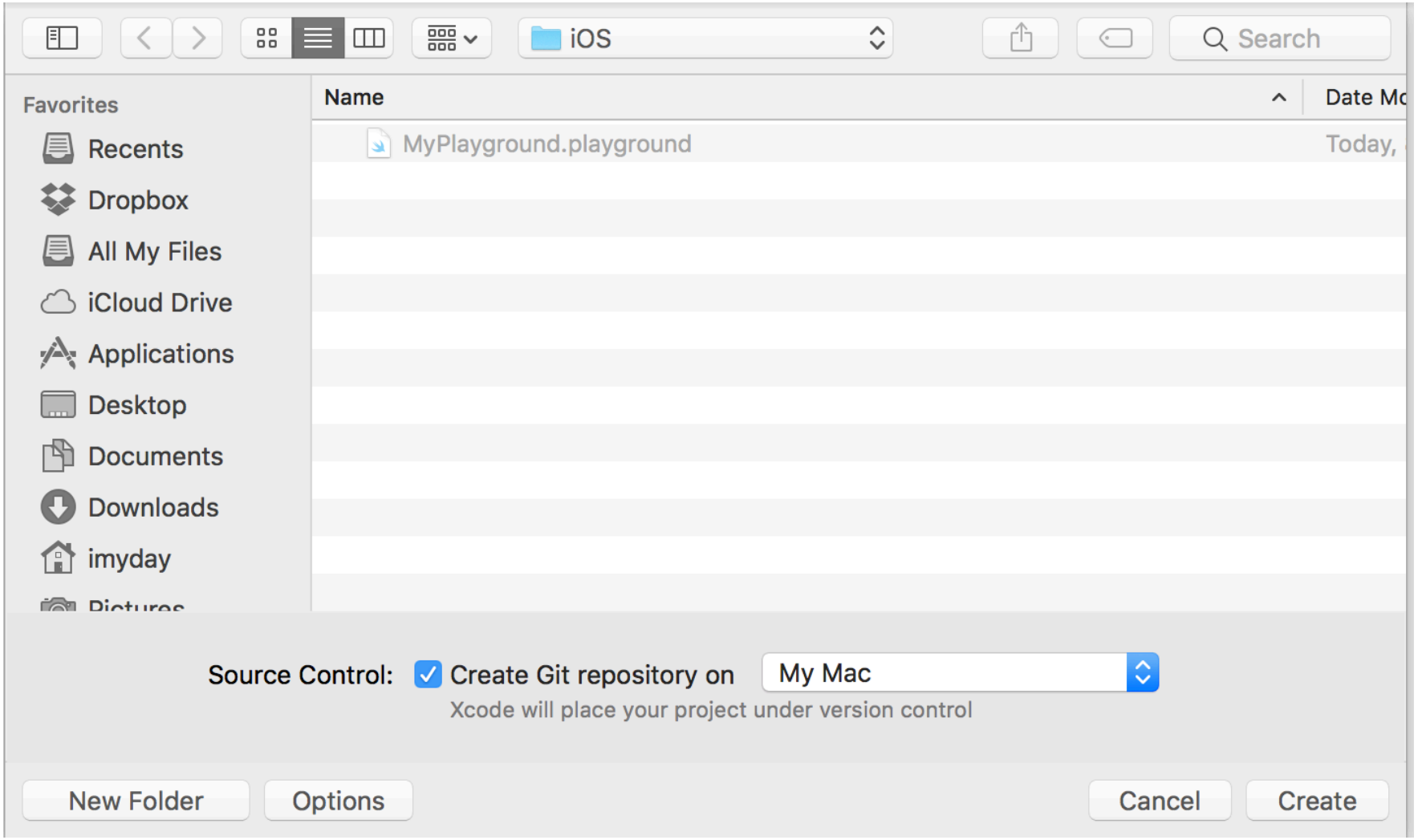
Show this window when Xcode launches

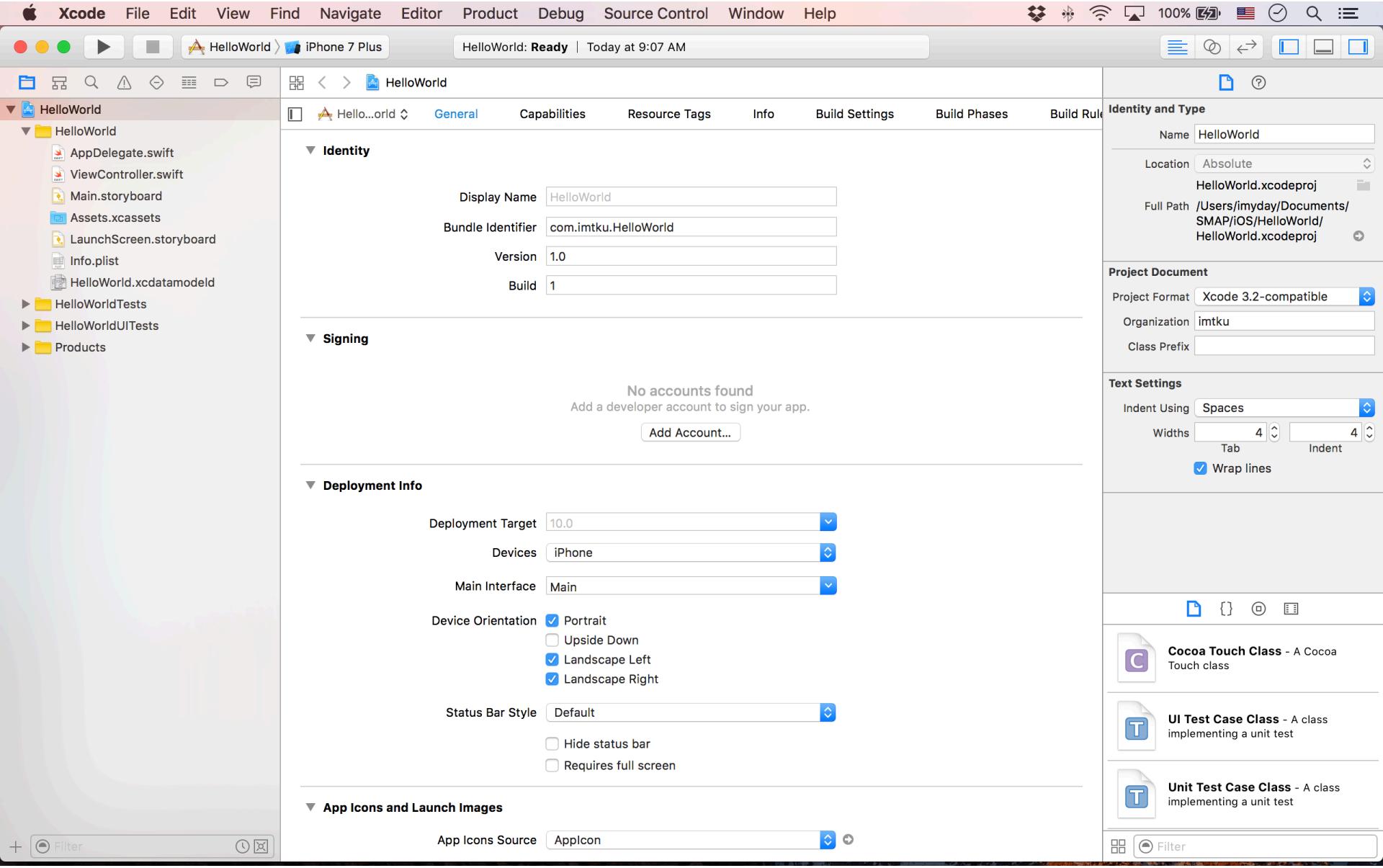
Xcode Single View App

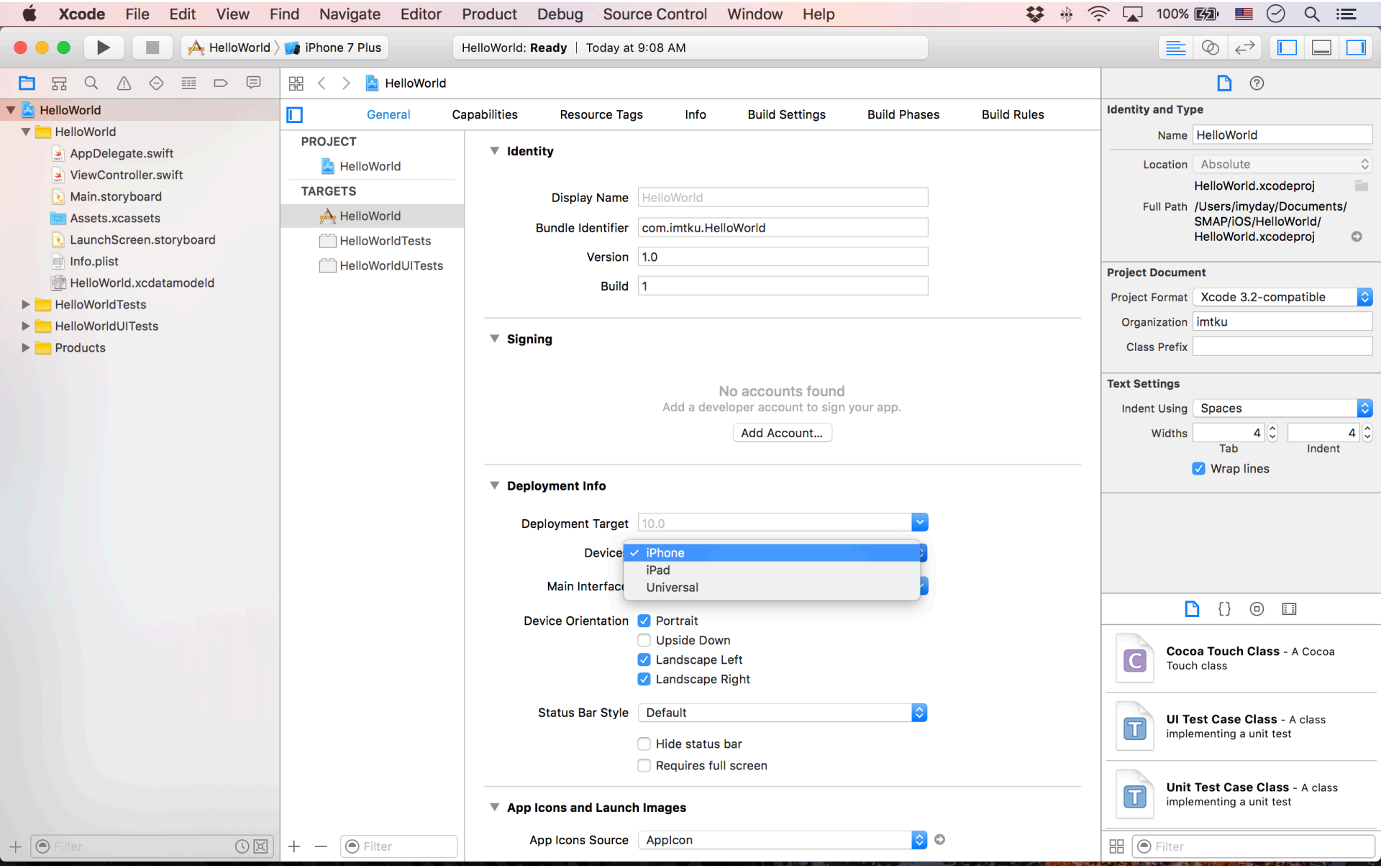


Swift Language

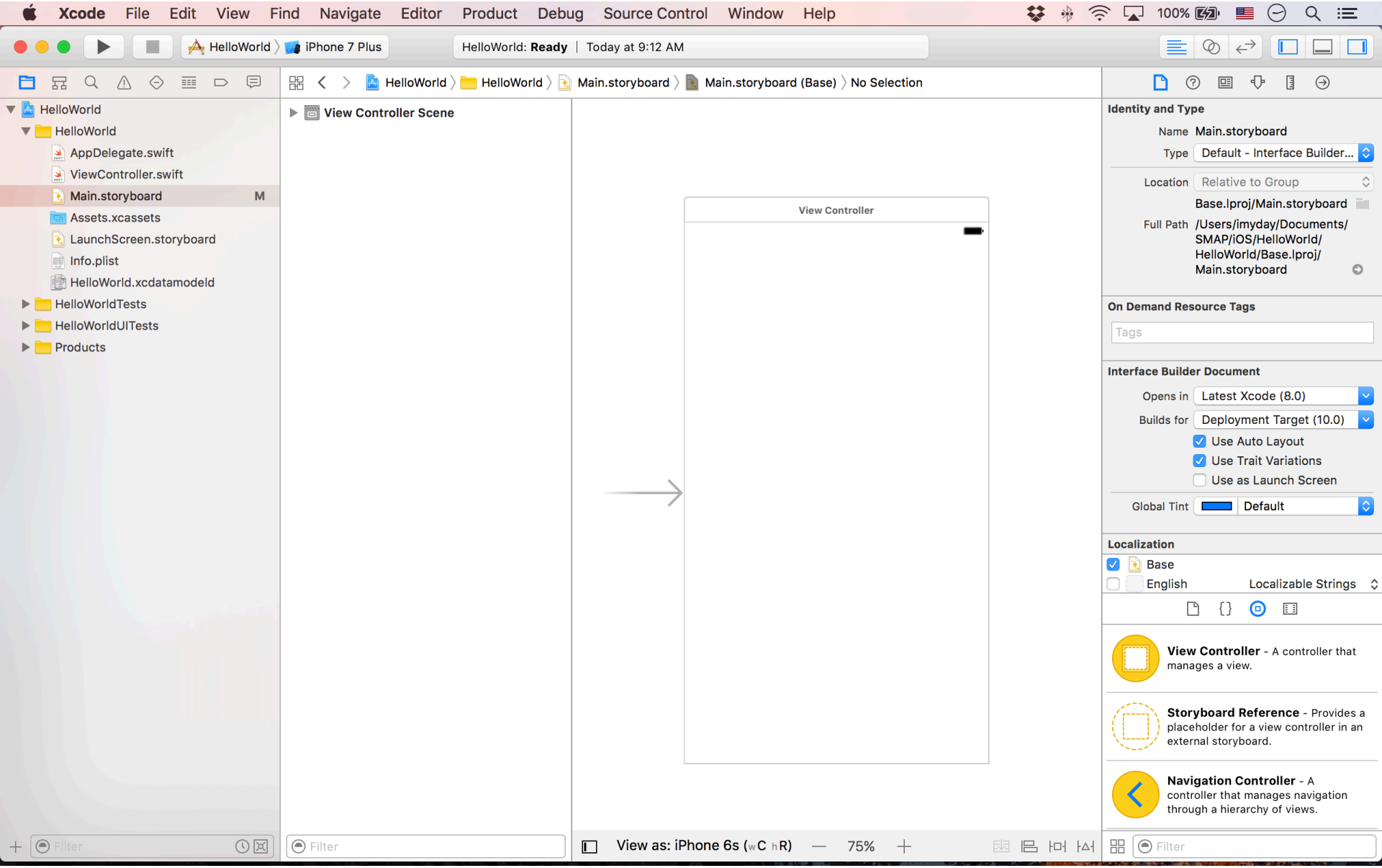



iOS
Search
Favorites
Recents
Dropbox
All My Files
iCloud Drive
Applications
Desktop
Documents
Downloads
imyday
Name
Date Mc
MyPlayground.playground
Today,
Source Control:
Create Git repository on
My Mac
Xcode will place your project under version control
New Folder
Options
Cancel
Create

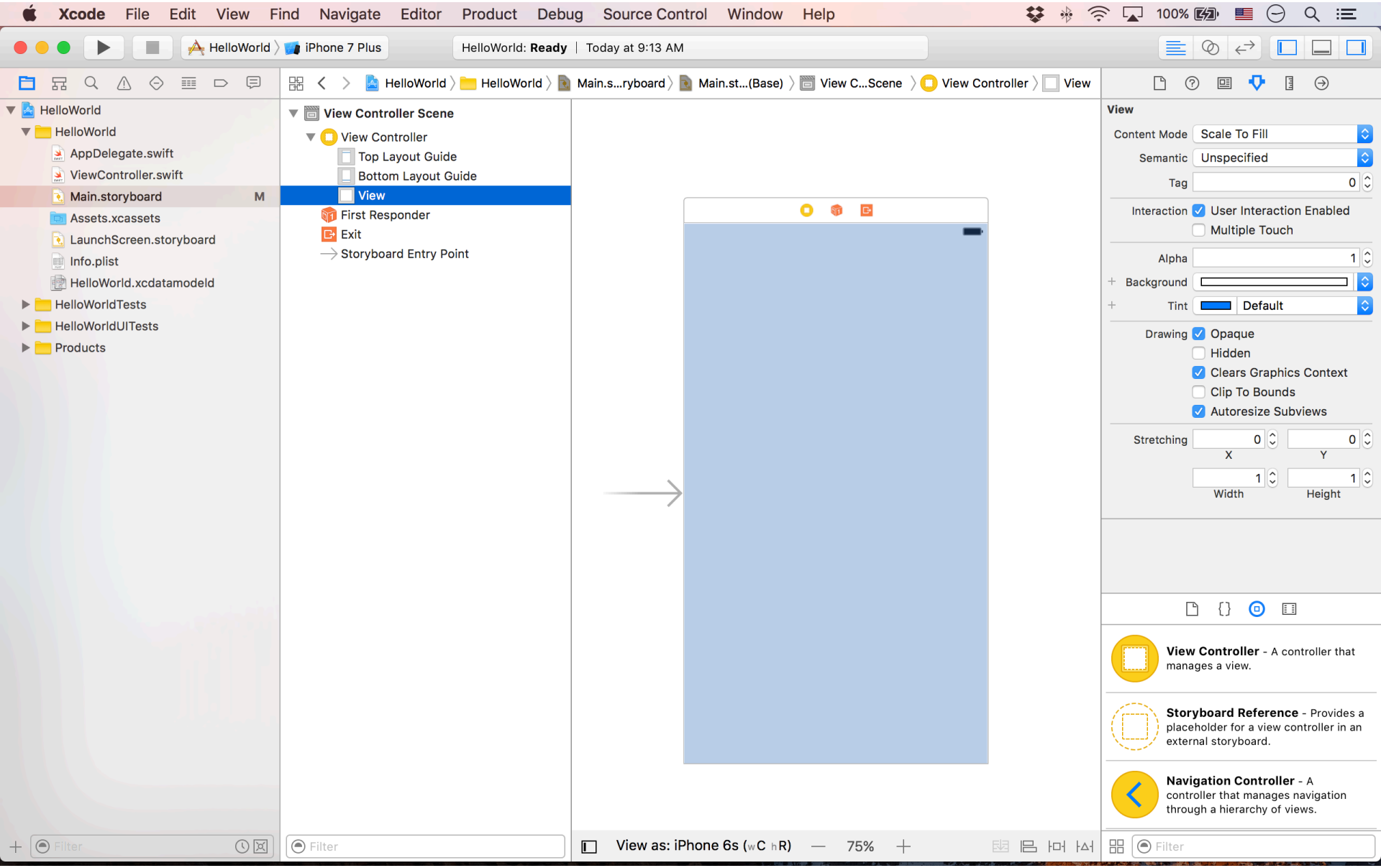

Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7 Plus
HelloWorld: Ready | Today at 9:07 AM
HelloWorld
HelloWorld
AppDelegate.swift
ViewController.swift
Main.storyboard
Assets.xcassets
LaunchScreen.storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
Hello...orld
General
Capabilities
Resource Tags
Info
Build Settings
Build Phases
Identity
Display Name HelloWorld
Bundle Identifier com.imtku.HelloWorld
Version 1.0
Build 1
Signing
No accounts found
Add a developer account to sign your app.
Add Account...
Deployment Info
Deployment Target 10.0
Devices iPhone
Main Interface Main
Device Orientation
Portrait
Upside Down
Landscape Left
Landscape Right
Status Bar Style Default
Hide status bar
Requires full screen
App Icons and Launch Images
App Icons Source AppIcon
Identity and Type
Name HelloWorld
Location Absolute
HelloWorld.xcodeproj
Full Path /Users/imyday/Documents/SMAP/iOS/HelloWorld/HelloWorld.xcodeproj
Project Document
Project Format Xcode 3.2-compatible
Organization imtku
Class Prefix
Text Settings
Indent Using Spaces
Widths 4 4
Tab Indent
Wrap lines
Cocoa Touch Class - A Cocoa Touch class
UI Test Case Class - A class implementing a unit test
Unit Test Case Class - A class implementing a unit test


Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7 Plus
HelloWorld: Ready | Today at 9:08 AM
HelloWorld
HelloWorld
AppDelegate.swift
ViewController.swift
Main.storyboard
Assets.xcassets
LaunchScreen.storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
General Capabilities Resource Tags Info Build Settings Build Phases Build Rules
PROJECT
HelloWorld
TARGETS
HelloWorld
HelloWorldTests
HelloWorldUITests
Identity
Display Name HelloWorld
Bundle Identifier com.imtku.HelloWorld
Version 1.0
Build 1
Signing
No accounts found
Add a developer account to sign your app.
Add Account...
Deployment Info
Deployment Target 10.0
Device iPhone
iPad
Universal
Main Interface
Device Orientation Portrait
Upside Down
Landscape Left
Landscape Right
Status Bar Style Default
Hide status bar
Requires full screen
App Icons and Launch Images
App Icons Source AppIcon
Identity and Type
Name HelloWorld
Location Absolute
HelloWorld.xcodeproj
Full Path /Users/imyday/Documents/SMAP/iOS/HelloWorld/HelloWorld.xcodeproj
Project Document
Project Format Xcode 3.2-compatible
Organization imtku
Class Prefix
Text Settings
Indent Using Spaces
Widths 4 4
Tab Indent
Wrap lines
Cocoa Touch Class - A Cocoa Touch class
UI Test Case Class - A class implementing a unit test
Unit Test Case Class - A class implementing a unit test

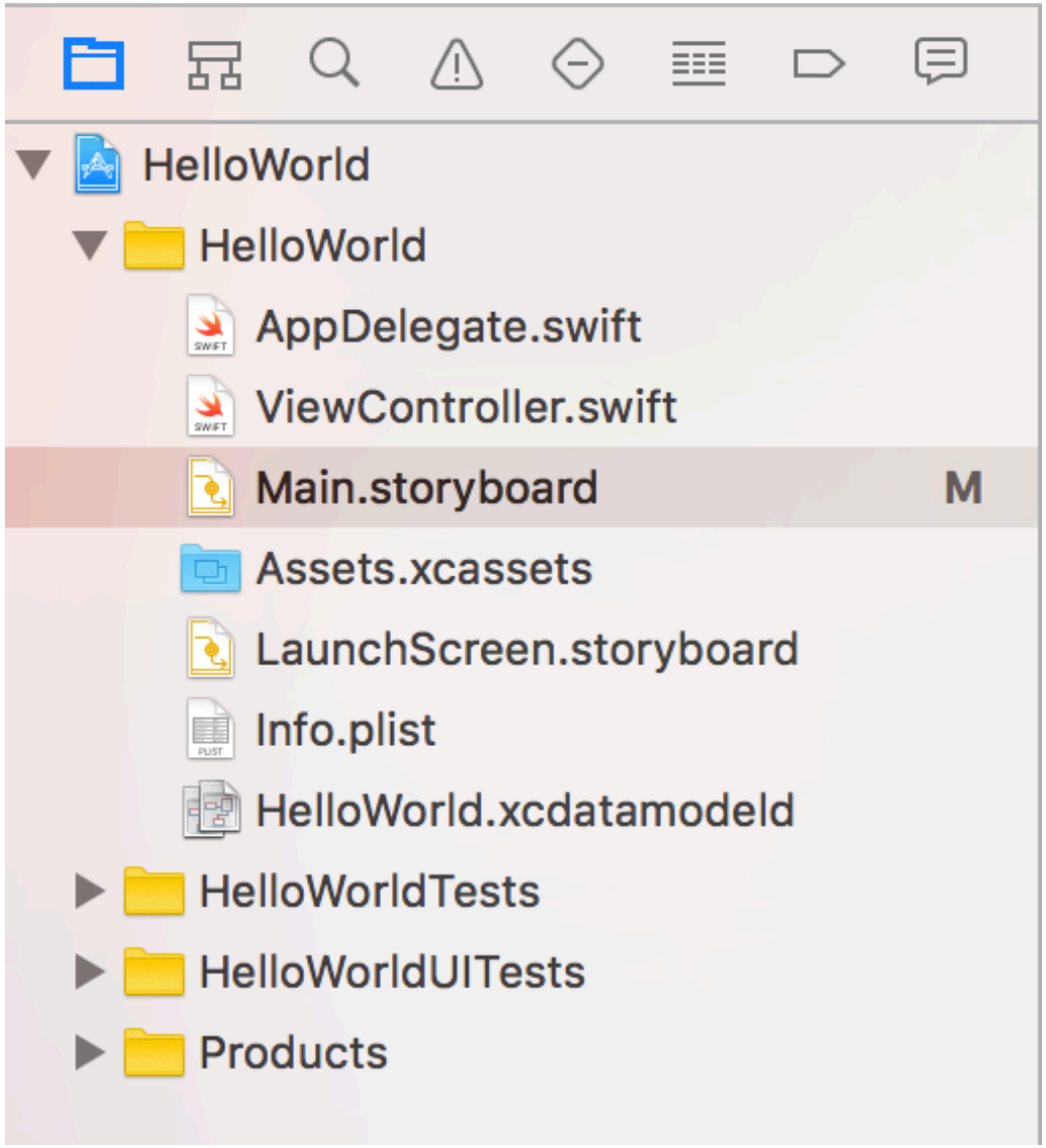
Main.storyboard (UI)



Main.storyboard (UI)

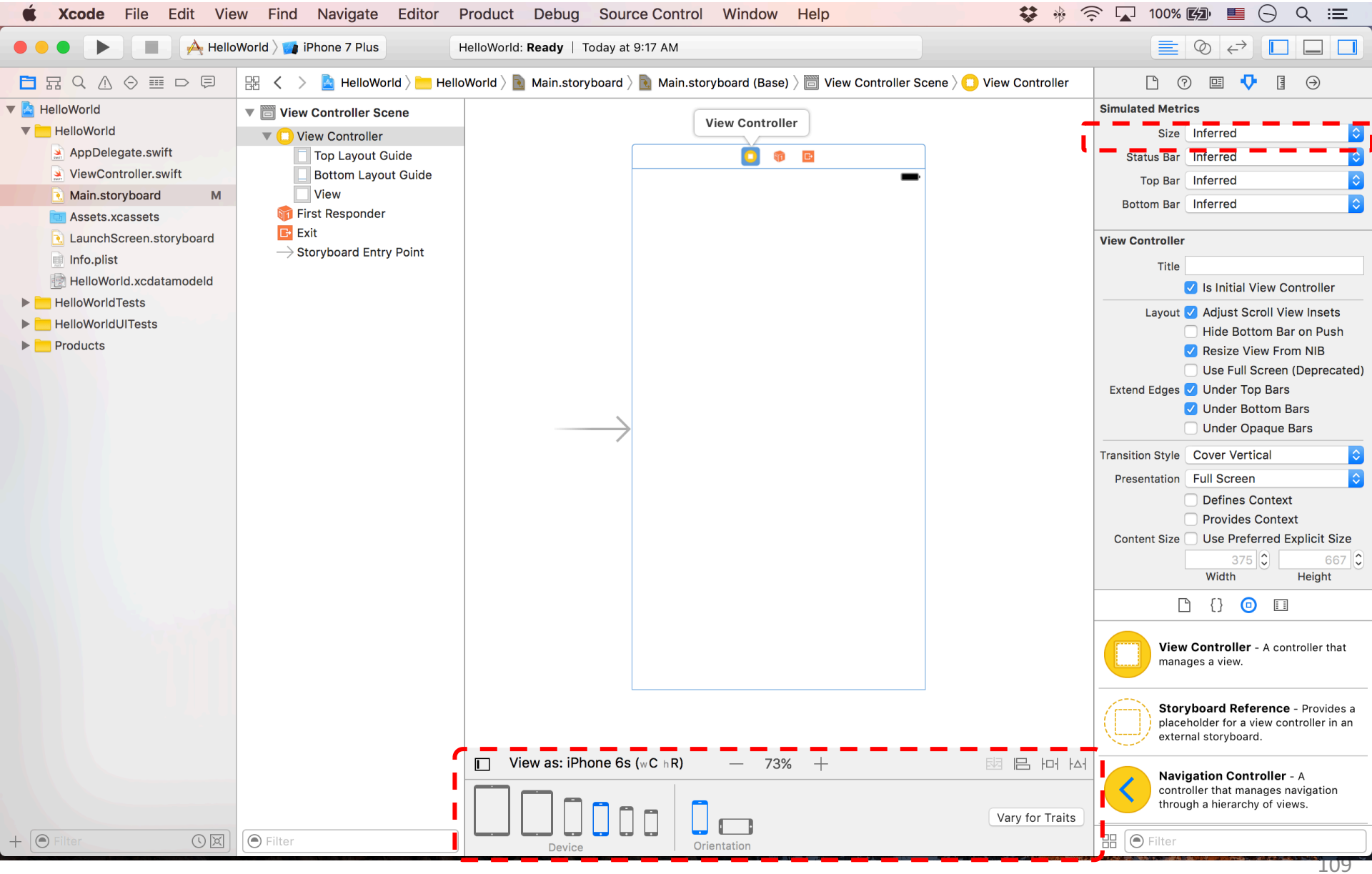


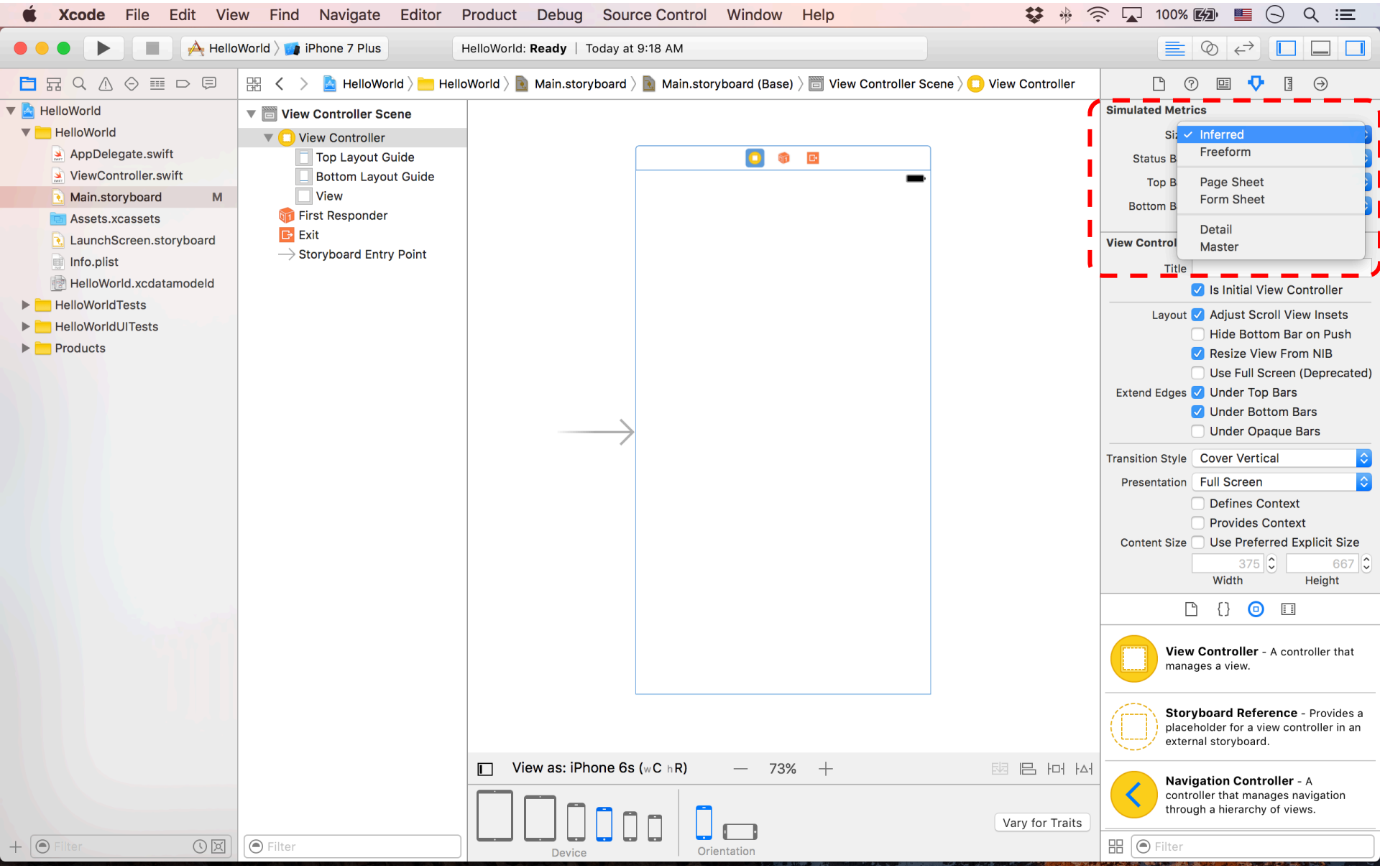
Main.storyboard (UI)
ViewController.swift (Code)



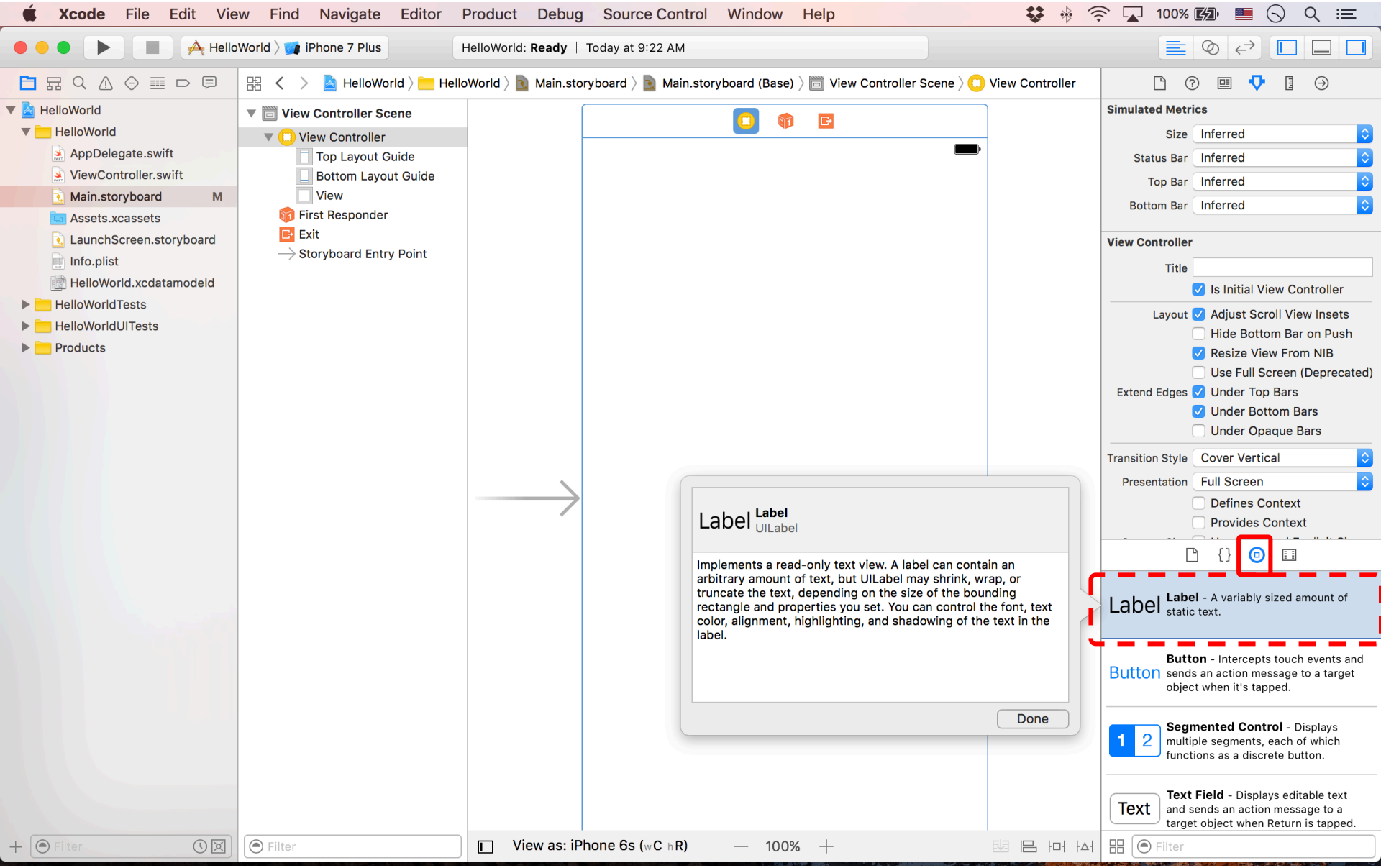
Main.storyboard (UI)

ViewController.swift (Code)

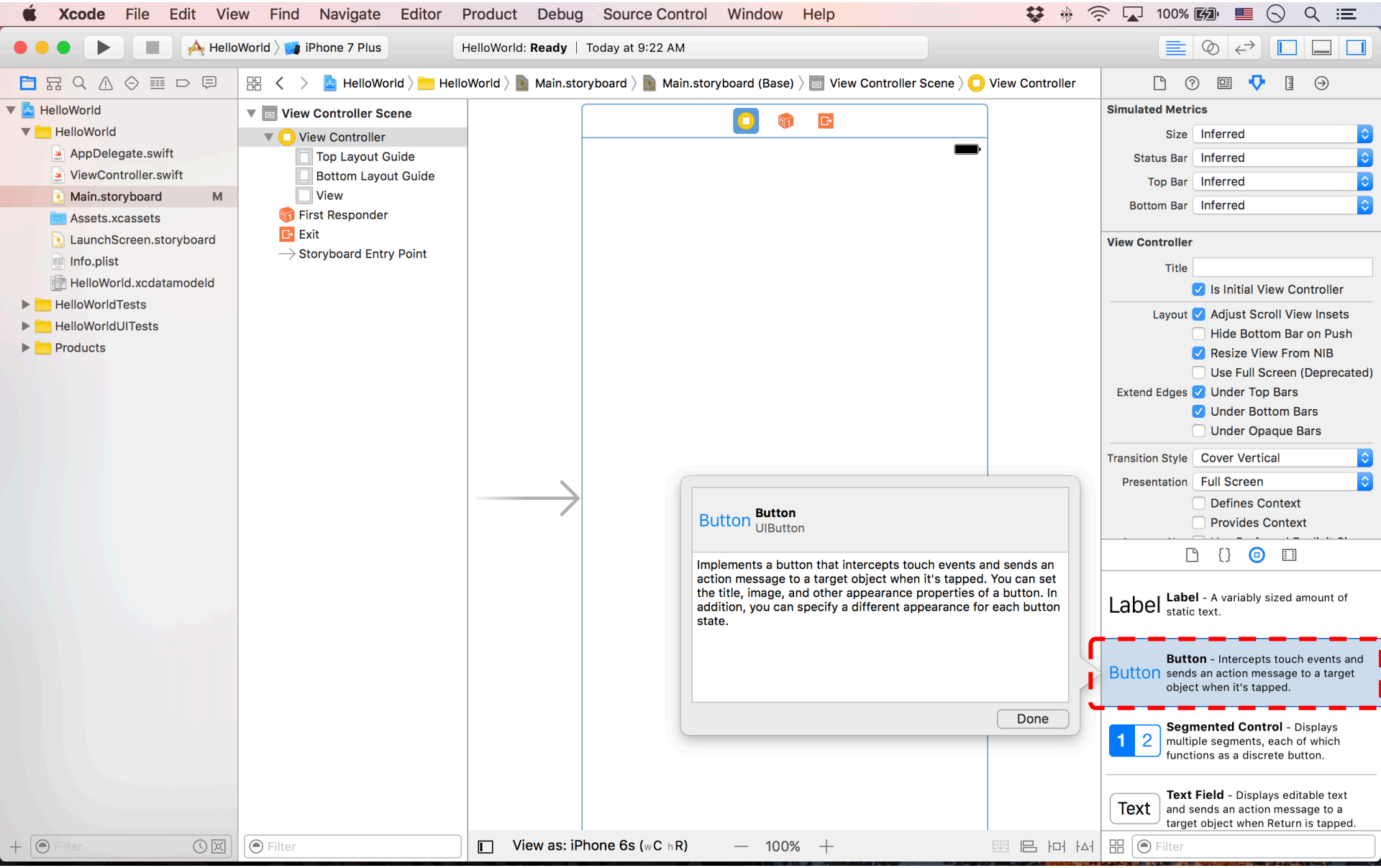



Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7 Plus
HelloWorld: Ready | Today at 9:18 AM
HelloWorld HelloWorld Main.storyboard Main.storyboard (Base) View Controller Scene View Controller
HelloWorld
HelloWorld
AppDelegate.swift
ViewController.swift
Main.storyboard M
Assets.xcassets
LaunchScreen.storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
View Controller Scene
View Controller
Top Layout Guide
Bottom Layout Guide
View
First Responder
Exit
Storyboard Entry Point
Simulated Metrics
Inferred
Freeform
Page Sheet
Form Sheet
Detail
Master
Title
Is Initial View Controller
Layout
Adjust Scroll View Insets
Hide Bottom Bar on Push
Resize View From NIB
Use Full Screen (Deprecated)
Extend Edges
Under Top Bars
Under Bottom Bars
Under Opaque Bars
Transition Style
Cover Vertical
Presentation
Full Screen
Defines Context
Provides Context
Content Size
Use Preferred Explicit Size
375
667
Width
Height
View Controller - A controller that manages a view.
Storyboard Reference - Provides a placeholder for a view controller in an external storyboard.
Navigation Controller - A controller that manages navigation through a hierarchy of views.
View as: iPhone 6s (wC hR)
73%
Device
Orientation
Vary for Traits
Filter

Label


Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7 Plus
HelloWorld: Ready | Today at 9:22 AM
HelloWorld HelloWorld Main.storyboard Main.storyboard (Base) View Controller Scene View Controller
HelloWorld
HelloWorld
AppDelegate.swift
ViewController.swift
Main.storyboard M
Assets.xcassets
LaunchScreen.storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
View Controller Scene
View Controller
Top Layout Guide
Bottom Layout Guide
View
First Responder
Exit
Storyboard Entry Point
Label Label UILabel
Implements a read-only text view. A label can contain an arbitrary amount of text, but UILabel may shrink, wrap, or truncate the text, depending on the size of the bounding rectangle and properties you set. You can control the font, text color, alignment, highlighting, and shadowing of the text in the label.
Done
Simulated Metrics
Size Inferred
Status Bar Inferred
Top Bar Inferred
Bottom Bar Inferred
View Controller
Title
Is Initial View Controller
Layout Adjust Scroll View Insets
Hide Bottom Bar on Push
Resize View From NIB
Use Full Screen (Deprecated)
Extend Edges Under Top Bars
Under Bottom Bars
Under Opaque Bars
Transition Style Cover Vertical
Presentation Full Screen
Defines Context
Provides Context
Label Label - A variably sized amount of static text.
Button Button - Intercepts touch events and sends an action message to a target object when it's tapped.
1 2 Segmented Control - Displays multiple segments, each of which functions as a discrete button.
Text Text Field - Displays editable text and sends an action message to a target object when Return is tapped.
View as: iPhone 6s (wC hR) 100%

Button


Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld: Ready | Today at 9:22 AM
HelloWorld
HelloWorld
AppDelegate.swift
ViewController.swift
Main.storyboard M
Assets.xcassets
LaunchScreen.storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
View Controller Scene
View Controller
Top Layout Guide
Bottom Layout Guide
View
First Responder
Exit
Storyboard Entry Point
Button Button
UIButton
Implements a button that intercepts touch events and sends an action message to a target object when it's tapped. You can set the title, image, and other appearance properties of a button. In addition, you can specify a different appearance for each button state.
Done
Simulated Metrics
Size Inferred
Status Bar Inferred
Top Bar Inferred
Bottom Bar Inferred
View Controller
Title
Is Initial View Controller
Layout Adjust Scroll View Insets
Hide Bottom Bar on Push
Resize View From NIB
Use Full Screen (Deprecated)
Extend Edges Under Top Bars
Under Bottom Bars
Under Opaque Bars
Transition Style Cover Vertical
Presentation Full Screen
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Provides Context
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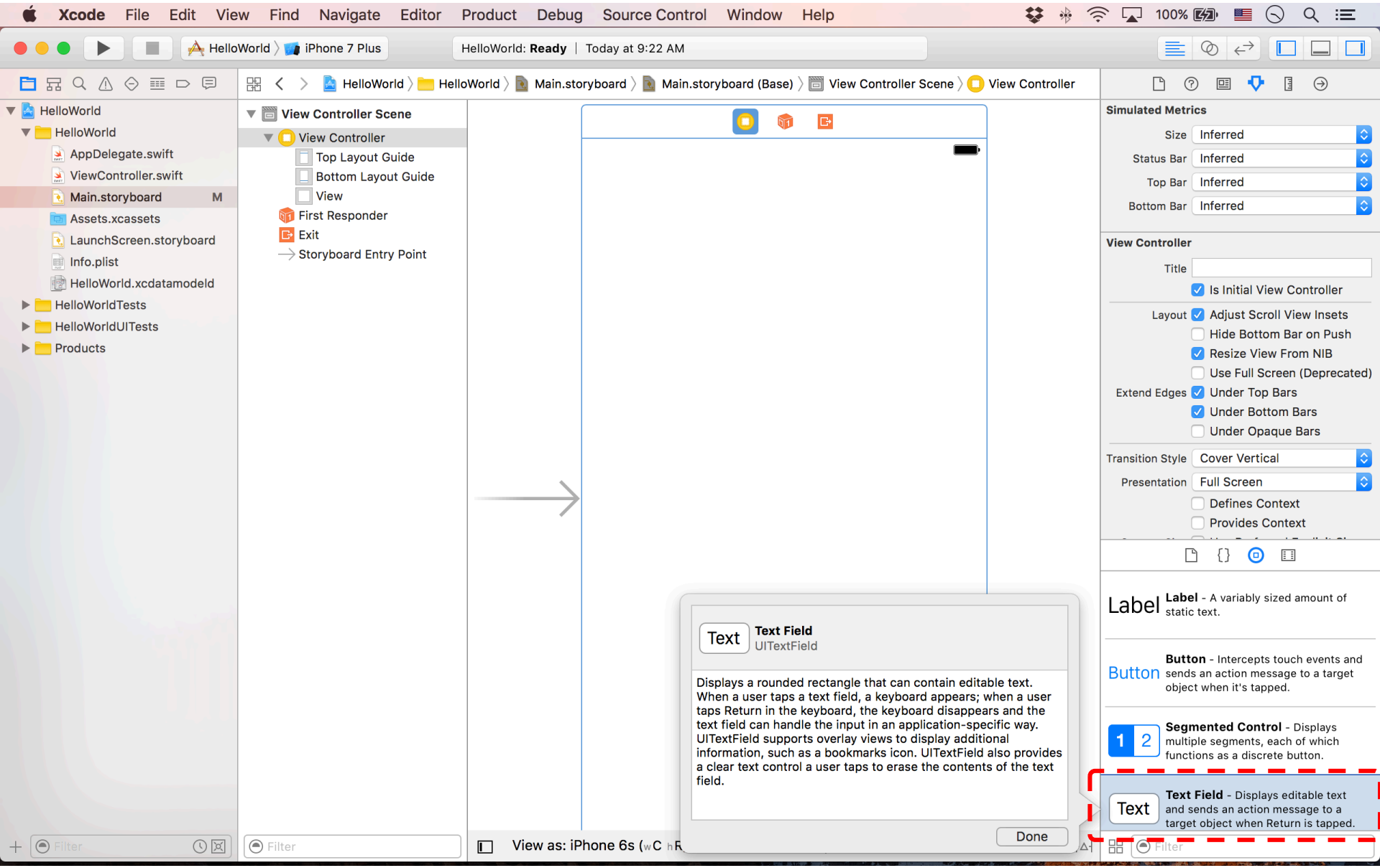
Text Text Field - Displays editable text and sends an action message to a target object when Return is tapped.
View as: iPhone 6s (wC hR) 100%

Text Field


Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld: Ready | Today at 9:22 AM
HelloWorld
HelloWorld
AppDelegate.swift
ViewController.swift
Main.storyboard
Assets.xcassets
LaunchScreen.storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
View Controller Scene
View Controller
Top Layout Guide
Bottom Layout Guide
View
First Responder
Exit
Storyboard Entry Point
Simulated Metrics
Size Inferred
Status Bar Inferred
Top Bar Inferred
Bottom Bar Inferred
View Controller
Title
Is Initial View Controller
Layout Adjust Scroll View Insets
Hide Bottom Bar on Push
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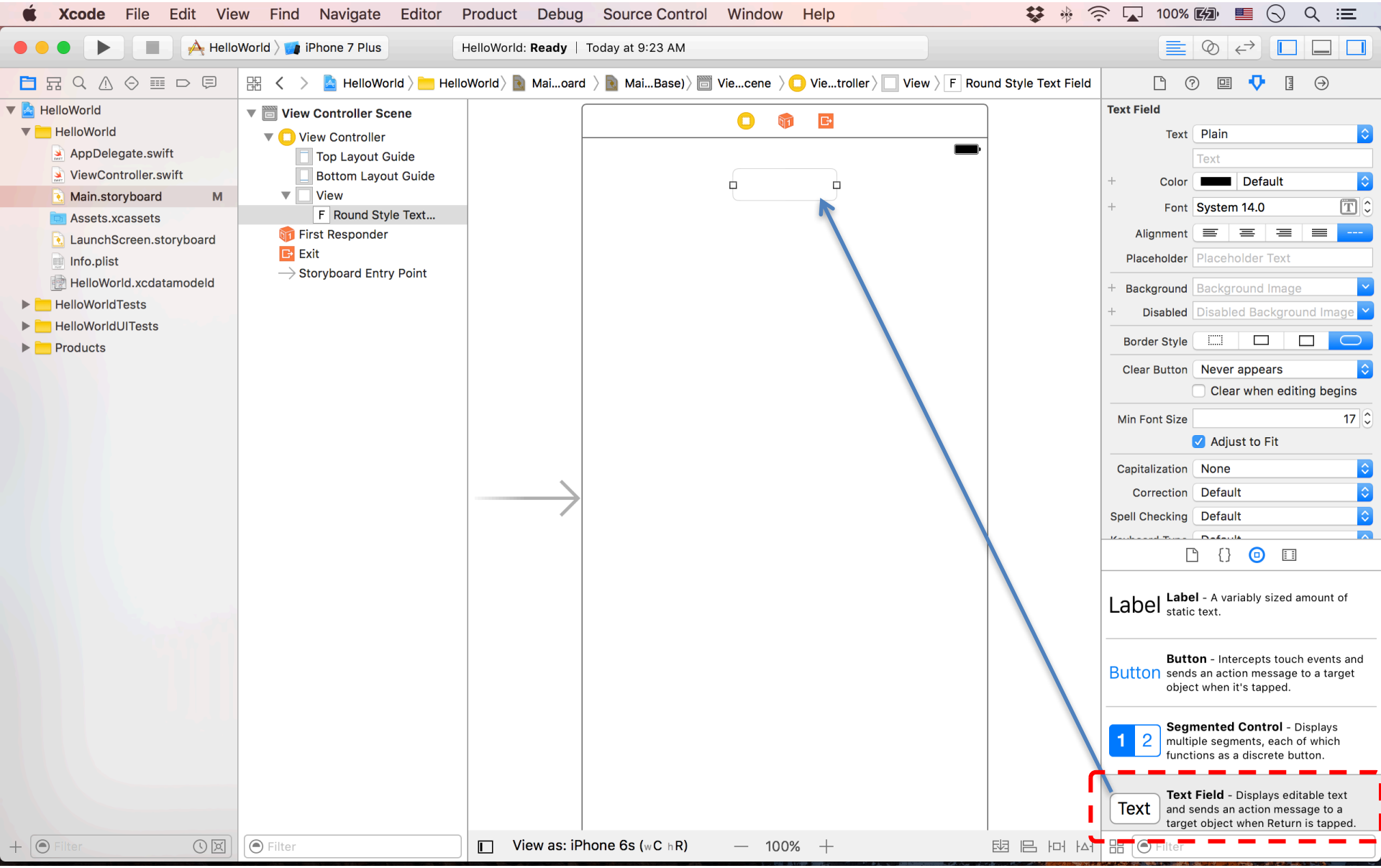
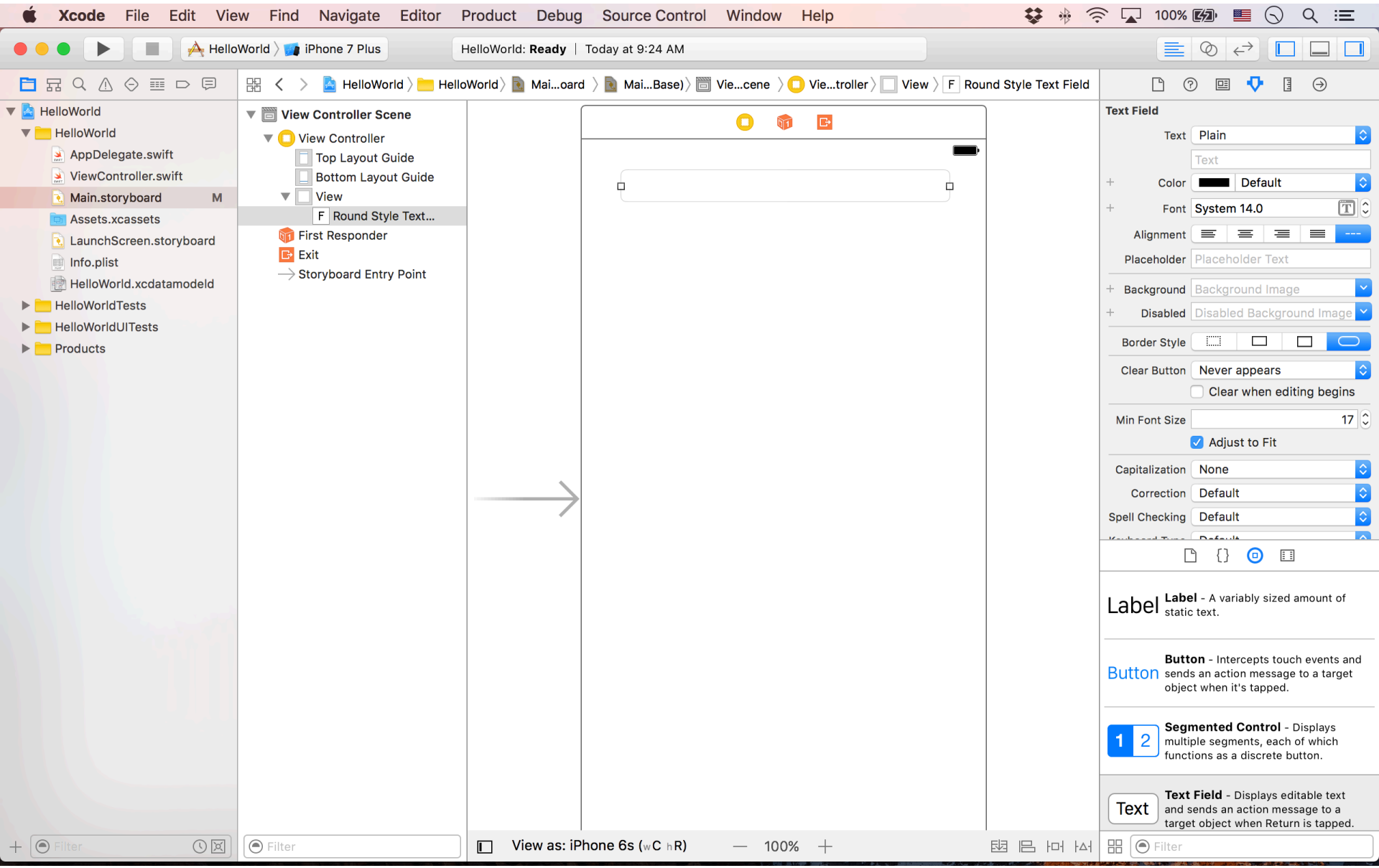
Under Bottom Bars
Under Opaque Bars
Transition Style Cover Vertical
Presentation Full Screen
Defines Context
Provides Context
Label Label - A variably sized amount of static text.
Button Button - Intercepts touch events and sends an action message to a target object when it's tapped.
Segmented Control - Displays multiple segments, each of which functions as a discrete button.
Text Text Field - Displays editable text and sends an action message to a target object when Return is tapped.
Text Text Field UITextField
Displays a rounded rectangle that can contain editable text. When a user taps a text field, a keyboard appears; when a user taps Return in the keyboard, the keyboard disappears and the text field can handle the input in an application-specific way. UITextField supports overlay views to display additional information, such as a bookmarks icon. UITextField also provides a clear text control a user taps to erase the contents of the text field.
Done
View as: iPhone 6s

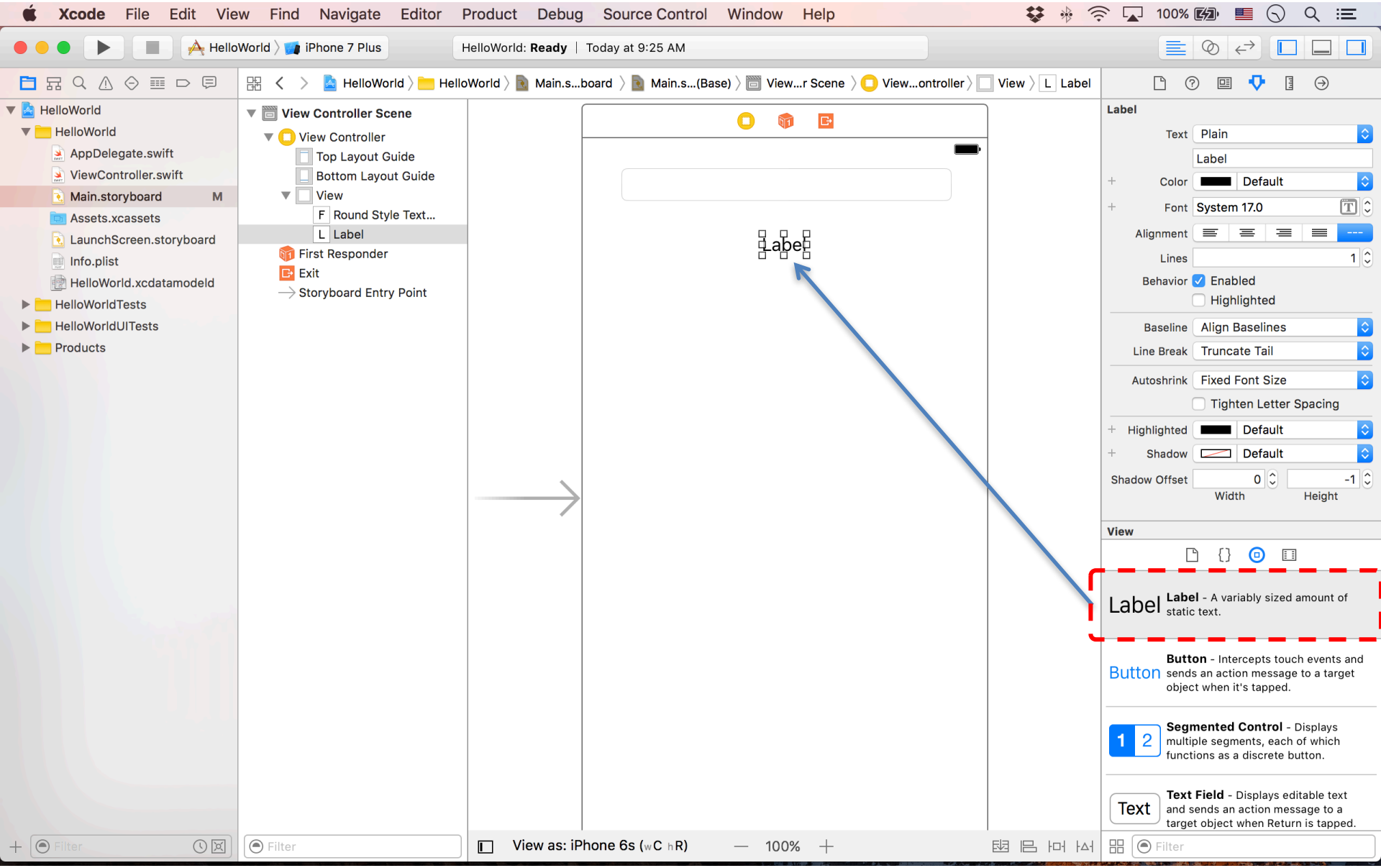
Text Field


Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld: Ready | Today at 9:23 AM
HelloWorld
HelloWorld
AppDelegate.swift
ViewController.swift
Main.storyboard
Assets.xcassets
LaunchScreen.storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
View Controller Scene
View Controller
Top Layout Guide
Bottom Layout Guide
View
Round Style Text...
First Responder
Exit
Storyboard Entry Point
Round Style Text Field
Text Field
Text Plain
Color Default
Font System 14.0
Alignment
Placeholder Placeholder Text
Background Background Image
Disabled Disabled Background Image
Border Style
Clear Button Never appears
Clear when editing begins
Min Font Size 17
Adjust to Fit
Capitalization None
Correction Default
Spell Checking Default
Label Label - A variably sized amount of static text.
Button Button - Intercepts touch events and sends an action message to a target object when it's tapped.
Segmented Control - Displays multiple segments, each of which functions as a discrete button.
Text Text Field - Displays editable text and sends an action message to a target object when Return is tapped.
View as: iPhone 6s (wC hR)
100%

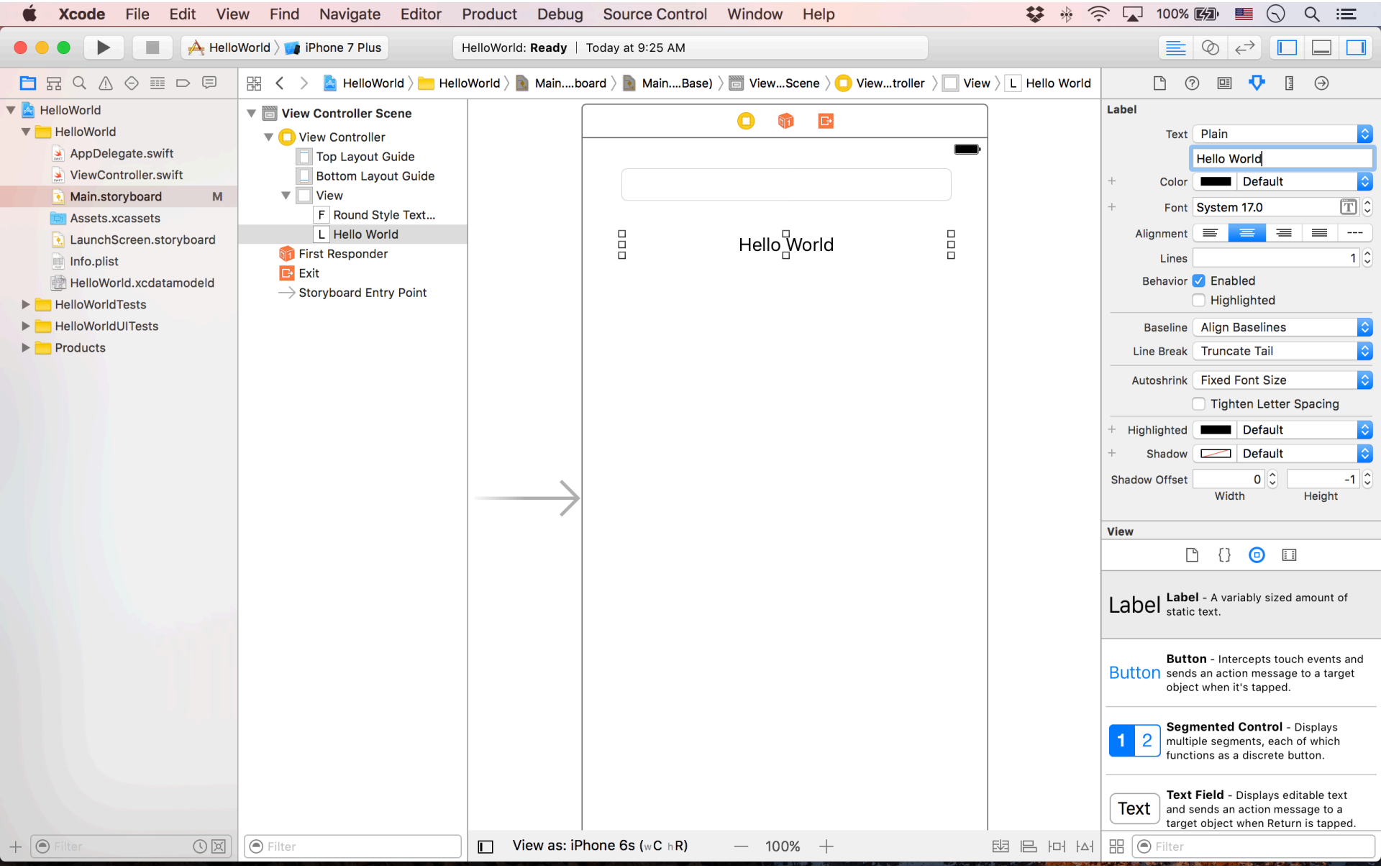
Text Field

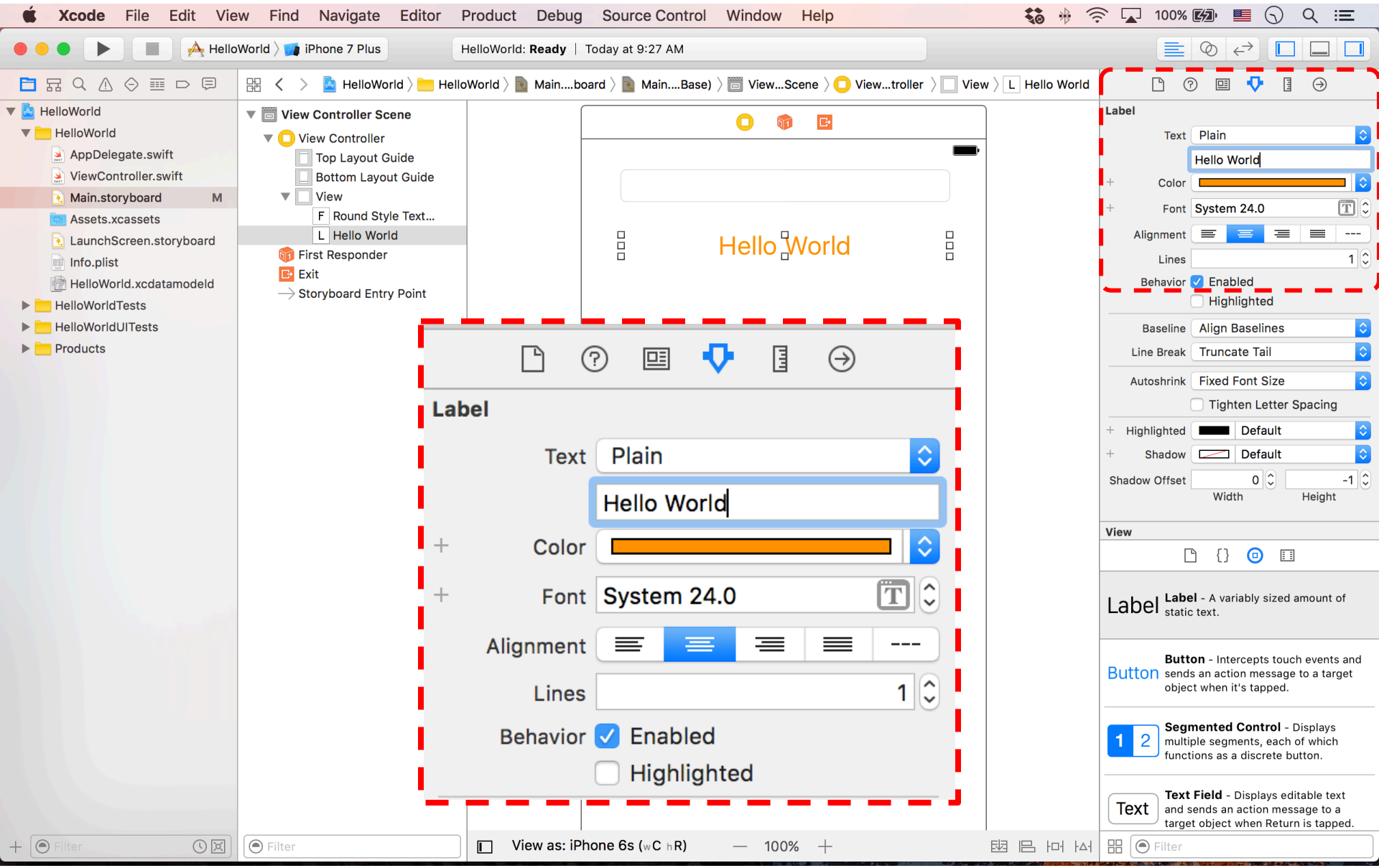

Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7 Plus
HelloWorld: Ready | Today at 9:24 AM
HelloWorld
HelloWorld
AppDelegate.swift
ViewController.swift
Main.storyboard M
Assets.xcassets
LaunchScreen.storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
View Controller Scene
View Controller
Top Layout Guide
Bottom Layout Guide
View
Round Style Text...
First Responder
Exit
Storyboard Entry Point
Round Style Text Field
Text Field
Text Plain
Color Default
Font System 14.0
Alignment
Placeholder Placeholder Text
Background Background Image
Disabled Disabled Background Image
Border Style
Clear Button Never appears
Clear when editing begins
Min Font Size 17
Adjust to Fit
Capitalization None
Correction Default
Spell Checking Default
Label Label - A variably sized amount of static text.
Button Button - Intercepts touch events and sends an action message to a target object when it's tapped.
Segmented Control - Displays multiple segments, each of which functions as a discrete button.
Text Text Field - Displays editable text and sends an action message to a target object when Return is tapped.
View as: iPhone 6s (wC hR)
100%

Label

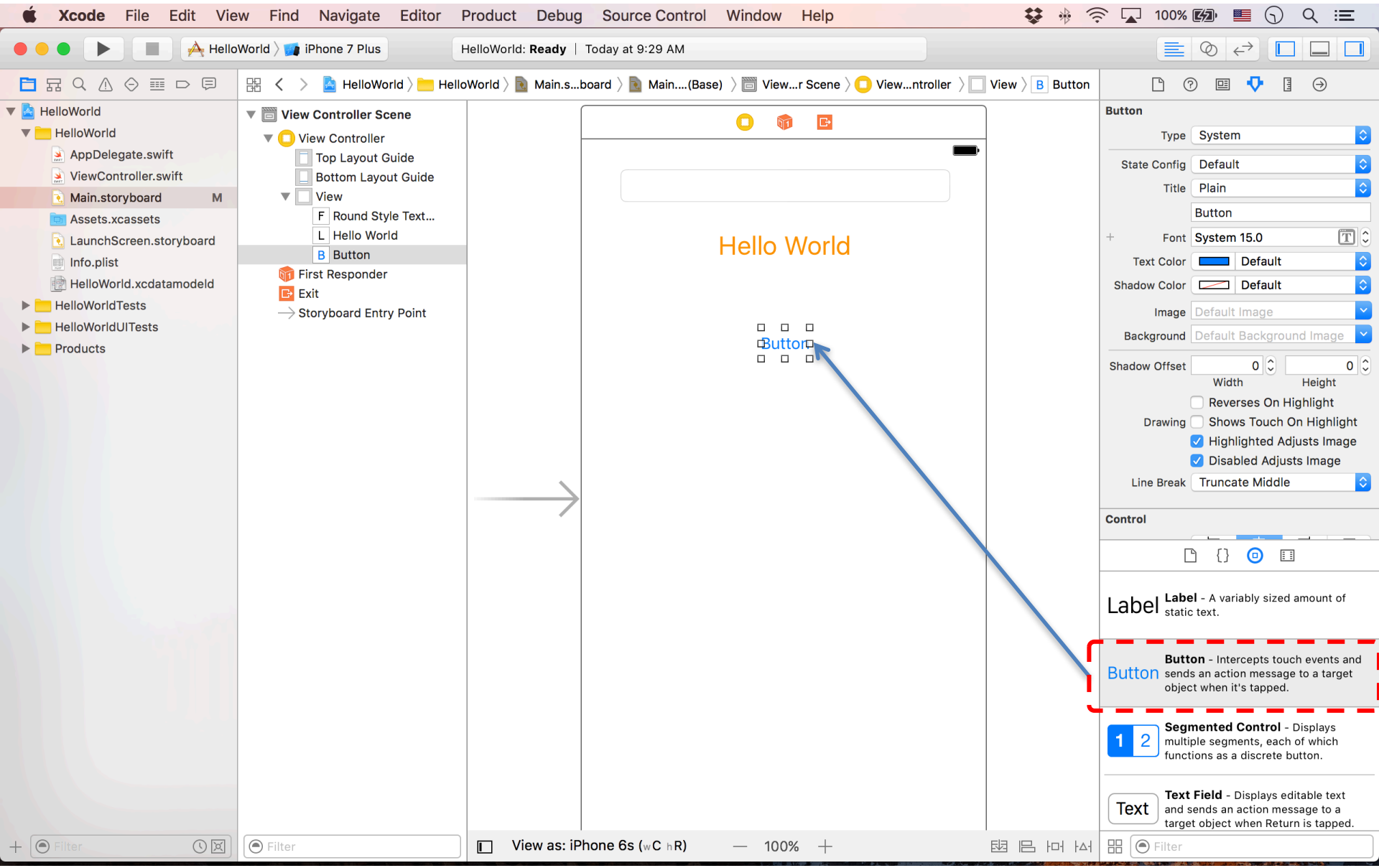

Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7 Plus
HelloWorld: Ready | Today at 9:25 AM
HelloWorld
HelloWorld
AppDelegate.swift
ViewController.swift
Main.storyboard M
Assets.xcassets
LaunchScreen.storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
View Controller Scene
View Controller
Top Layout Guide
Bottom Layout Guide
View
Round Style Text...
Label
First Responder
Exit
Storyboard Entry Point
Label
View as: iPhone 6s (wC hR)
100%
Label
Text Plain
Label
Color Default
Font System 17.0
Alignment
Lines 1
Behavior Enabled
Highlighted
Baseline Align Baselines
Line Break Truncate Tail
Autoshrink Fixed Font Size
Tighten Letter Spacing
Highlighted Default
Shadow Default
Shadow Offset 0 -1
Width Height
View
Label Label - A variably sized amount of static text.
Button Button - Intercepts touch events and sends an action message to a target object when it's tapped.
1 2 Segmented Control - Displays multiple segments, each of which functions as a discrete button.
Text Text Field - Displays editable text and sends an action message to a target object when Return is tapped.

Label

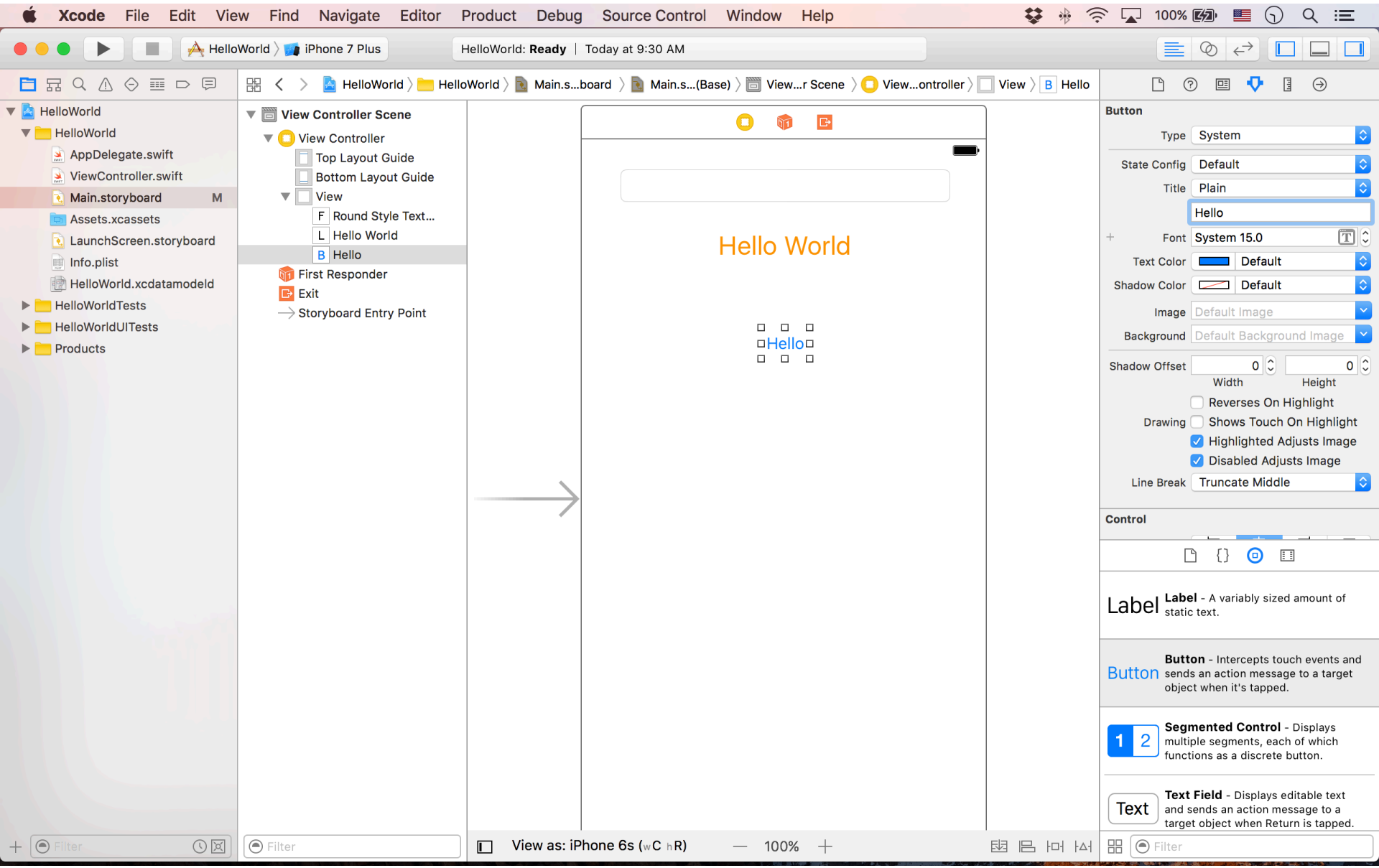

Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7 Plus
HelloWorld: Ready | Today at 9:25 AM
HelloWorld
HelloWorld
AppDelegate.swift
ViewController.swift
Main.storyboard M
Assets.xcassets
LaunchScreen.storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
View Controller Scene
View Controller
Top Layout Guide
Bottom Layout Guide
View
Round Style Text...
Hello World
First Responder
Exit
Storyboard Entry Point
Hello World
View as: iPhone 6s (wC hR)
100%
Label
Text Plain
Hello World
Color Default
Font System 17.0
Alignment
Lines 1
Behavior Enabled
Highlighted
Baseline Align Baselines
Line Break Truncate Tail
Autoshrink Fixed Font Size
Tighten Letter Spacing
Highlighted Default
Shadow Default
Shadow Offset 0 -1
Width Height
View
Label Label - A variably sized amount of static text.
Button Button - Intercepts touch events and sends an action message to a target object when it's tapped.
1 2 Segmented Control - Displays multiple segments, each of which functions as a discrete button.
Text Text Field - Displays editable text and sends an action message to a target object when Return is tapped.


Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld: Ready | Today at 9:27 AM
HelloWorld
AppDelegate.swift
ViewController.swift
Main.storyboard
Assets.xcassets
LaunchScreen.storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
View Controller Scene
View Controller
Top Layout Guide
Bottom Layout Guide
View
Round Style Text...
Hello World
First Responder
Exit
Storyboard Entry Point
Hello World
Label
Text
Plain
Hello World
Color
Font
System 24.0
Alignment
Lines
1
Behavior
Enabled
Highlighted
Baseline
Align Baselines
Line Break
Truncate Tail
Autoshrink
Fixed Font Size
Tighten Letter Spacing
Highlighted
Default
Shadow
Default
Shadow Offset
Width
Height
View
Label - A variably sized amount of static text.
Button - Intercepts touch events and sends an action message to a target object when it's tapped.
Segmented Control - Displays multiple segments, each of which functions as a discrete button.
Text Field - Displays editable text and sends an action message to a target object when Return is tapped.
View as: iPhone 6s (wC hR)
100%

Button

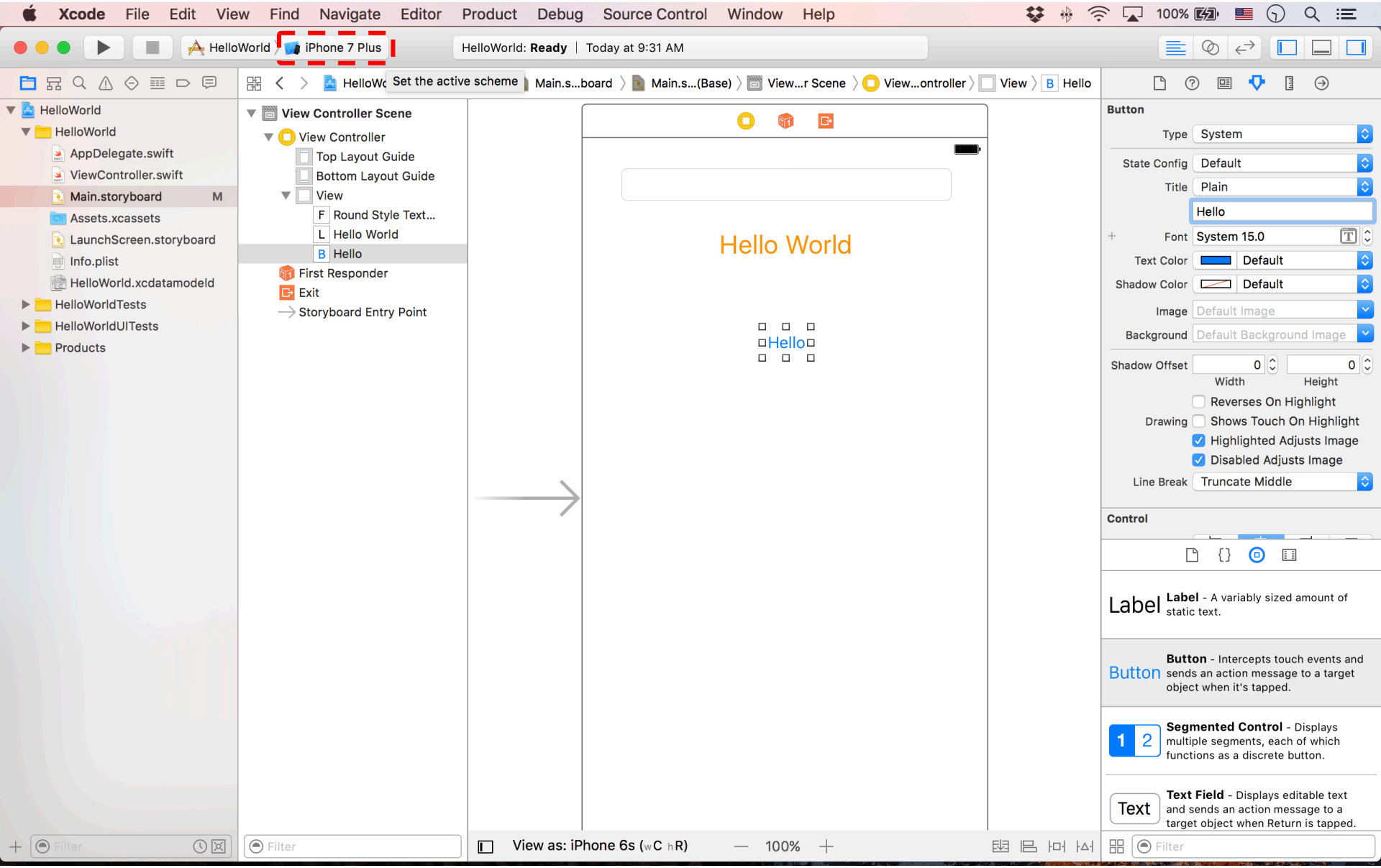

Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld: Ready | Today at 9:29 AM
HelloWorld
HelloWorld
AppDelegate.swift
ViewController.swift
Main.storyboard
Assets.xcassets
LaunchScreen.storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
View Controller Scene
View Controller
Top Layout Guide
Bottom Layout Guide
View
Round Style Text...
Hello World
Button
First Responder
Exit
Storyboard Entry Point
Hello World
Button
View as: iPhone 6s (wC hR)
100%
Button
Type System
State Config Default
Title Plain
Button
Font System 15.0
Text Color Default
Shadow Color Default
Image Default Image
Background Default Background Image
Shadow Offset
Width
Height
Reverses On Highlight
Drawing
Shows Touch On Highlight
Highlighted Adjusts Image
Disabled Adjusts Image
Line Break Truncate Middle
Control
Label
Label - A variably sized amount of static text.
Button
Button - Intercepts touch events and sends an action message to a target object when it's tapped.
1 2
Segmented Control - Displays multiple segments, each of which functions as a discrete button.
Text
Text Field - Displays editable text and sends an action message to a target object when Return is tapped.

Button

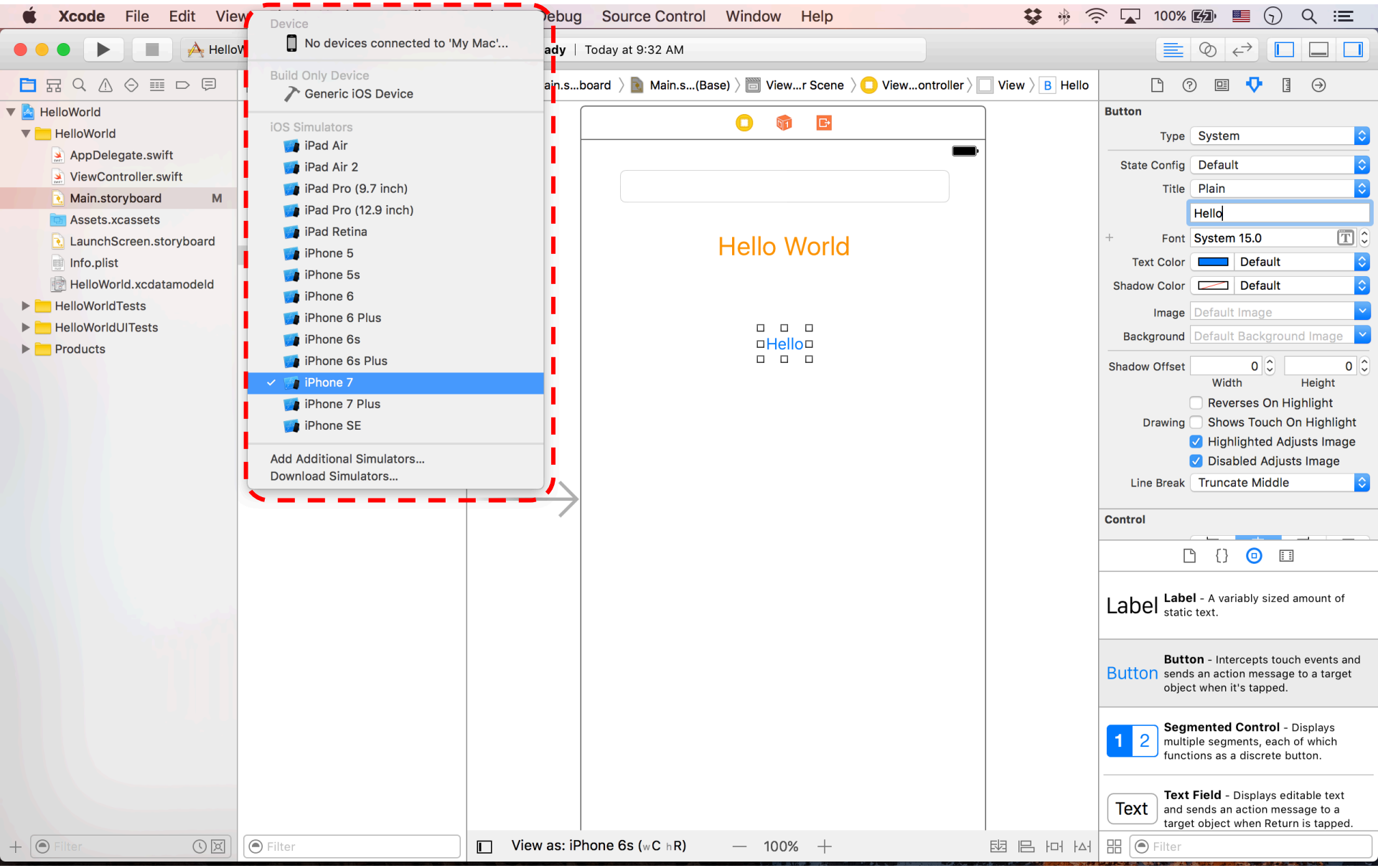

Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7 Plus
HelloWorld: Ready | Today at 9:30 AM
HelloWorld
HelloWorld
AppDelegate.swift
ViewController.swift
Main.storyboard M
Assets.xcassets
LaunchScreen.storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
View Controller Scene
View Controller
Top Layout Guide
Bottom Layout Guide
View
Round Style Text...
Hello World
Hello
First Responder
Exit
Storyboard Entry Point
Hello World
Hello
Button
Type System
State Config Default
Title Plain
Hello
Font System 15.0
Text Color Default
Shadow Color Default
Image Default Image
Background Default Background Image
Shadow Offset 0 0
Width Height
Reverses On Highlight
Drawing Shows Touch On Highlight
Highlighted Adjusts Image
Disabled Adjusts Image
Line Break Truncate Middle
Control
Label Label - A variably sized amount of static text.
Button Button - Intercepts touch events and sends an action message to a target object when it's tapped.
1 2 Segmented Control - Displays multiple segments, each of which functions as a discrete button.
Text Text Field - Displays editable text and sends an action message to a target object when Return is tapped.
View as: iPhone 6s (wC hR) 100%

Set the active scheme

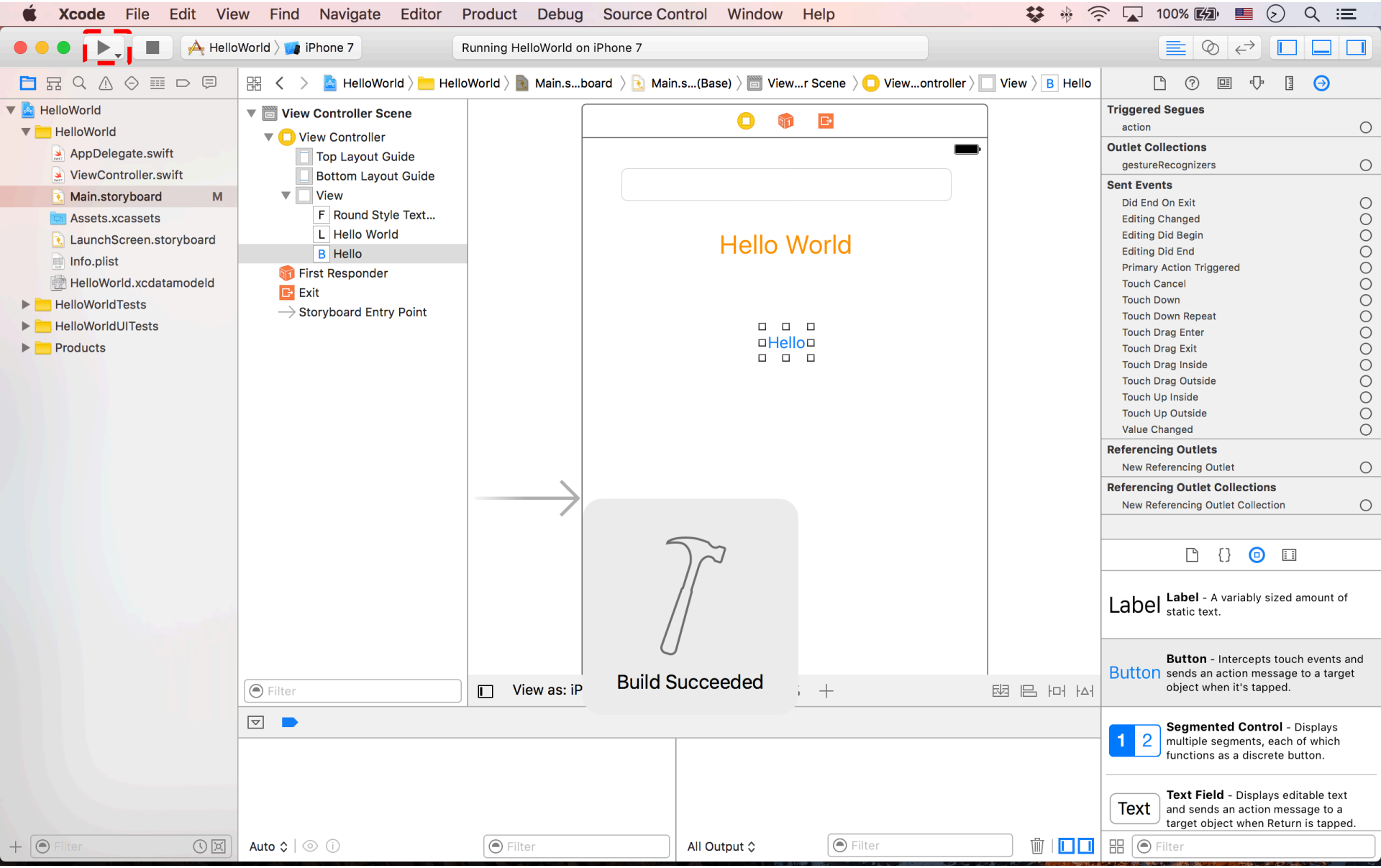
iOS Simulator: iPhone



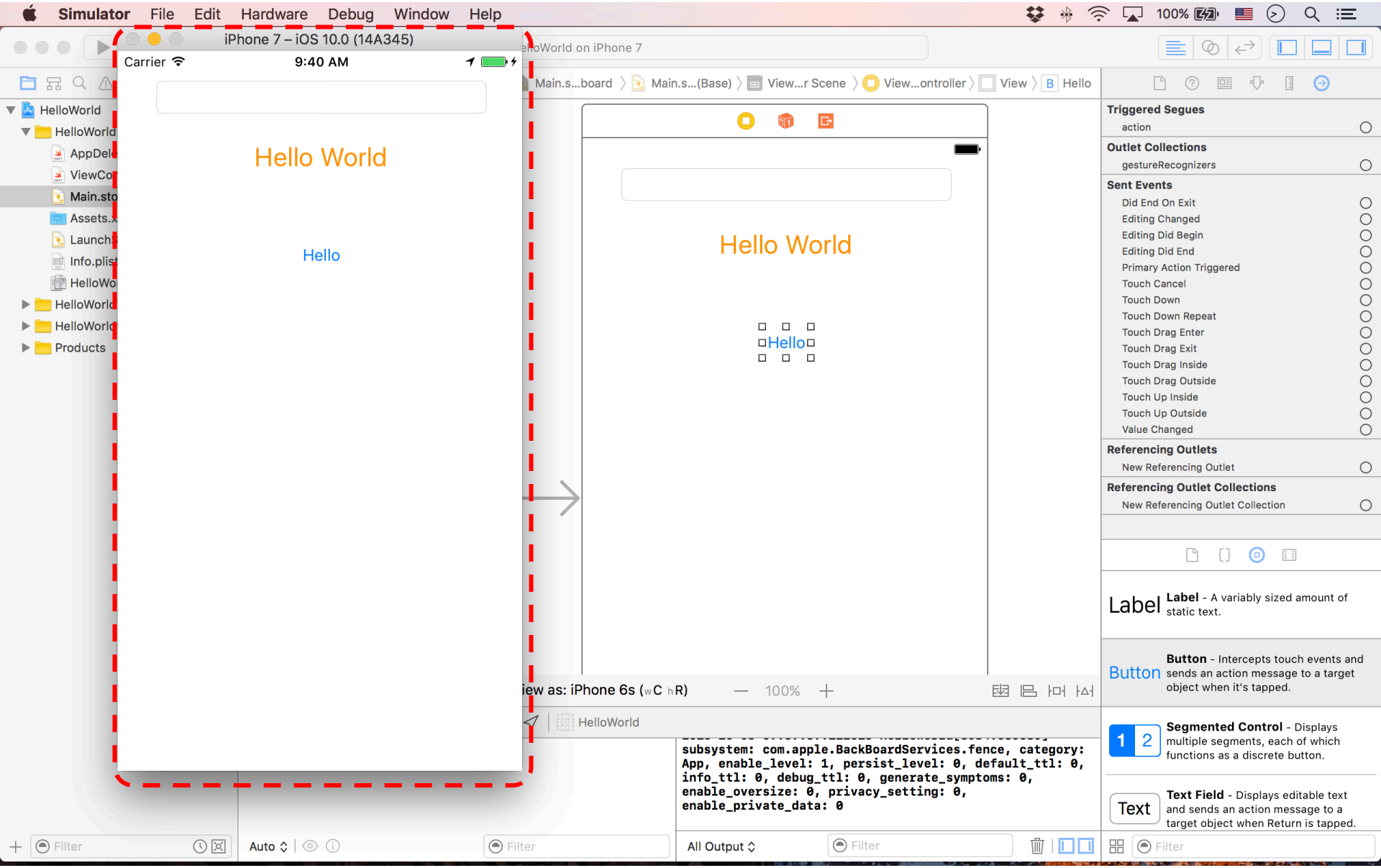
iOS Simulators: iPhone 7



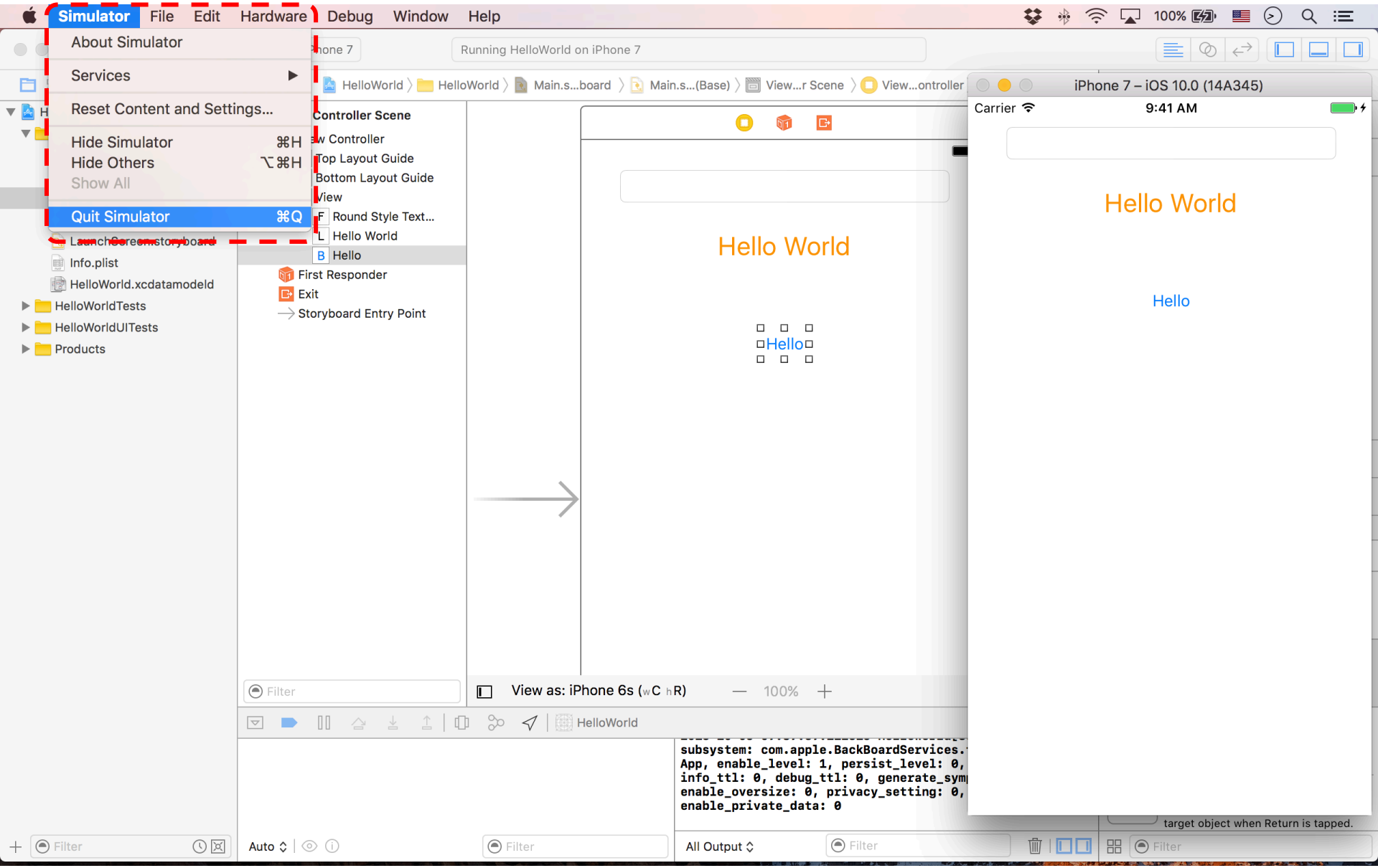
Build and Run



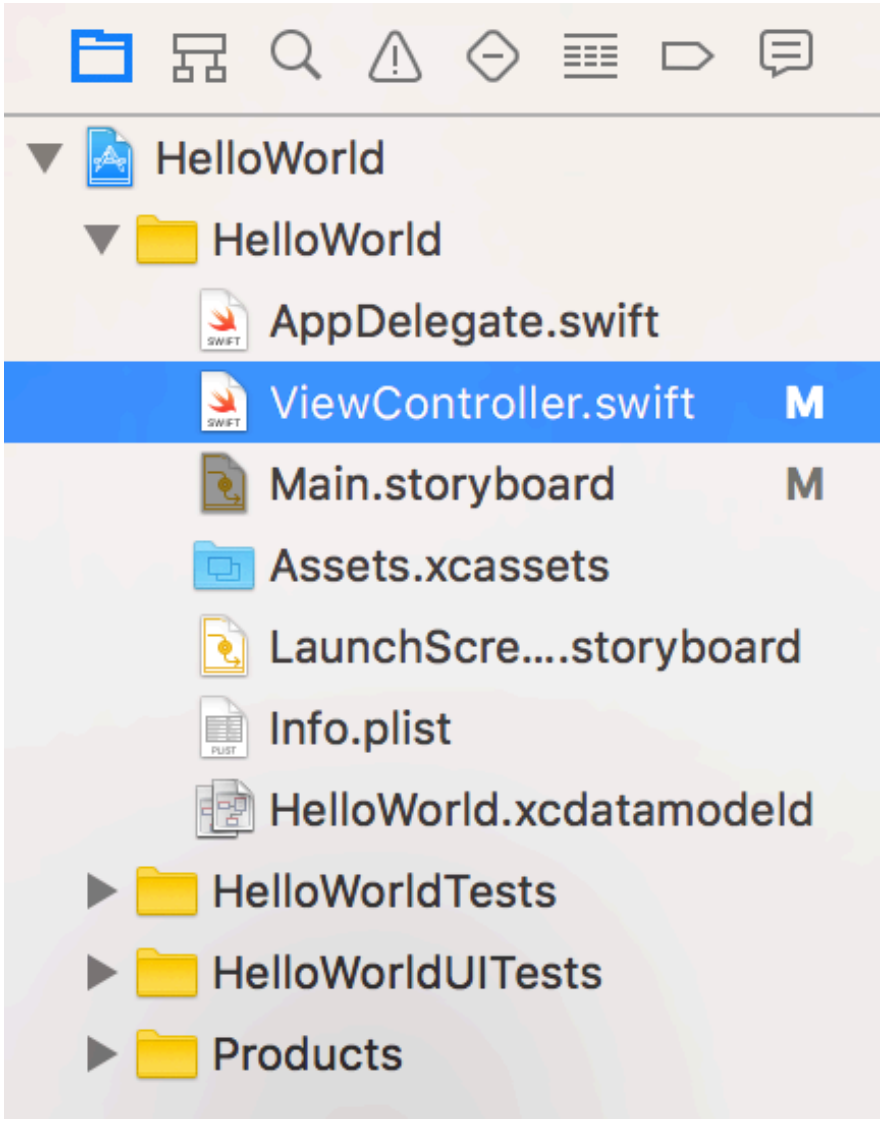
iOS Simulator: iPhone 7 - iOS 10



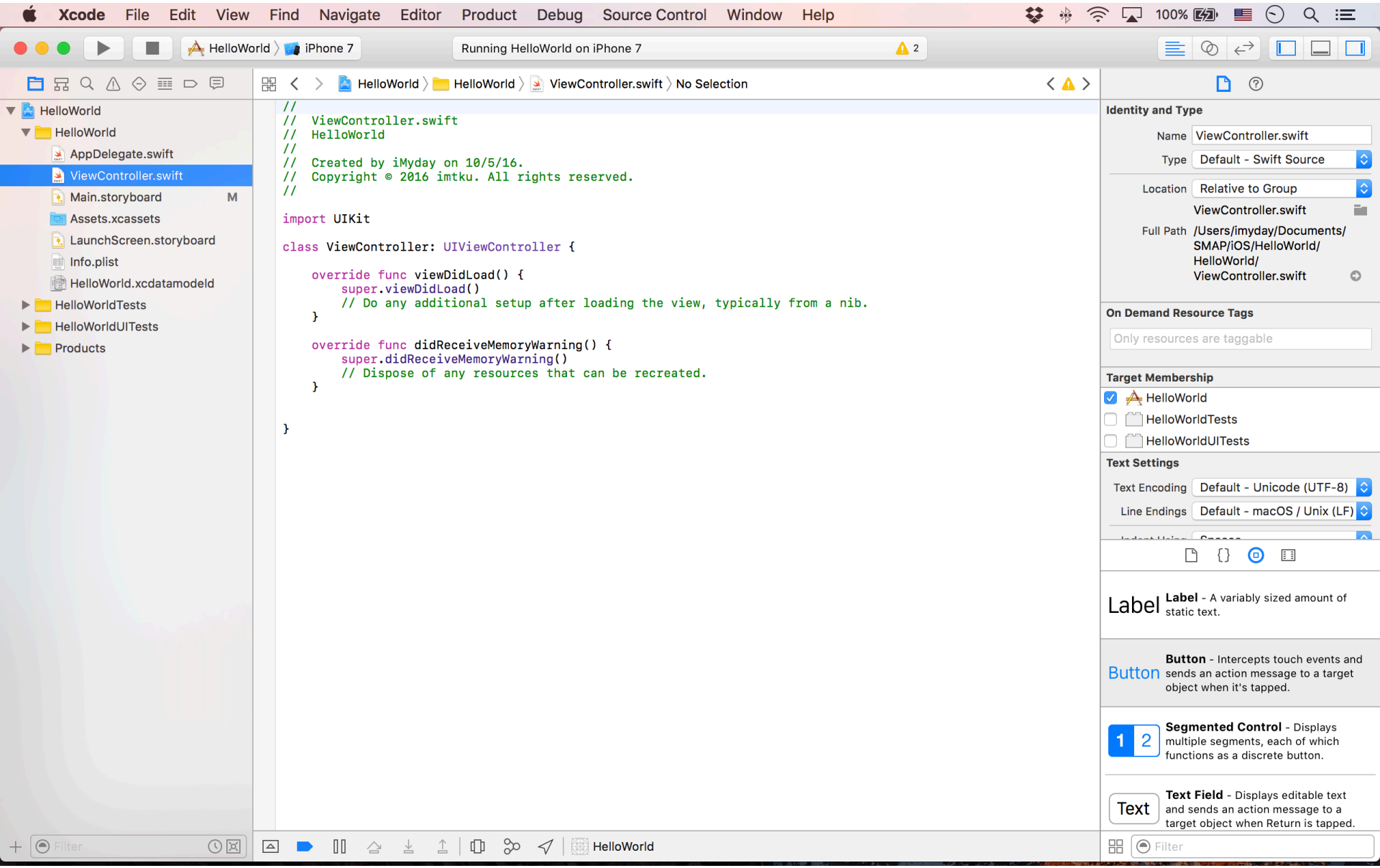
Simulator: Quit Simulator



Main.storyboard (UI)
ViewController.swift (Code)

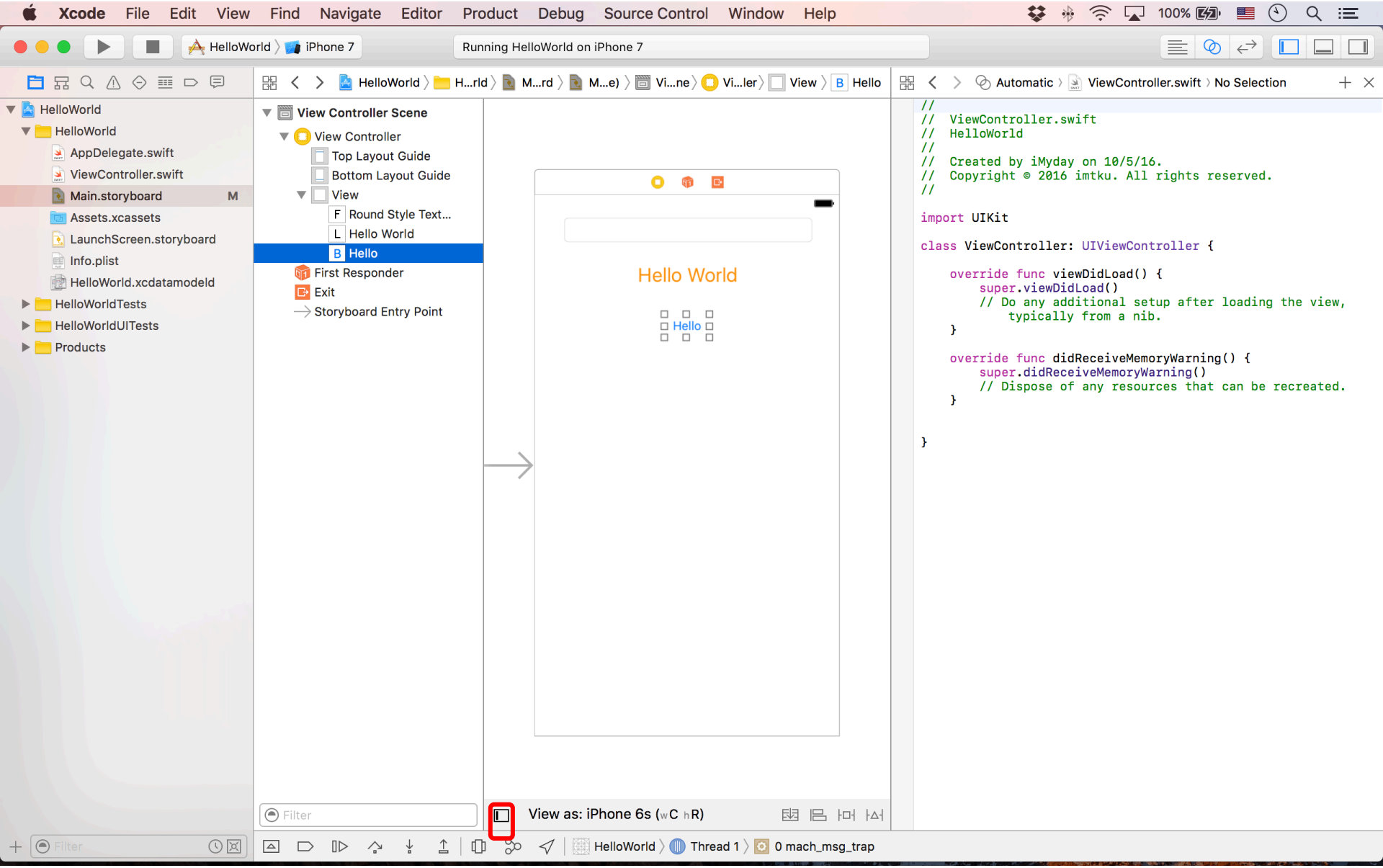


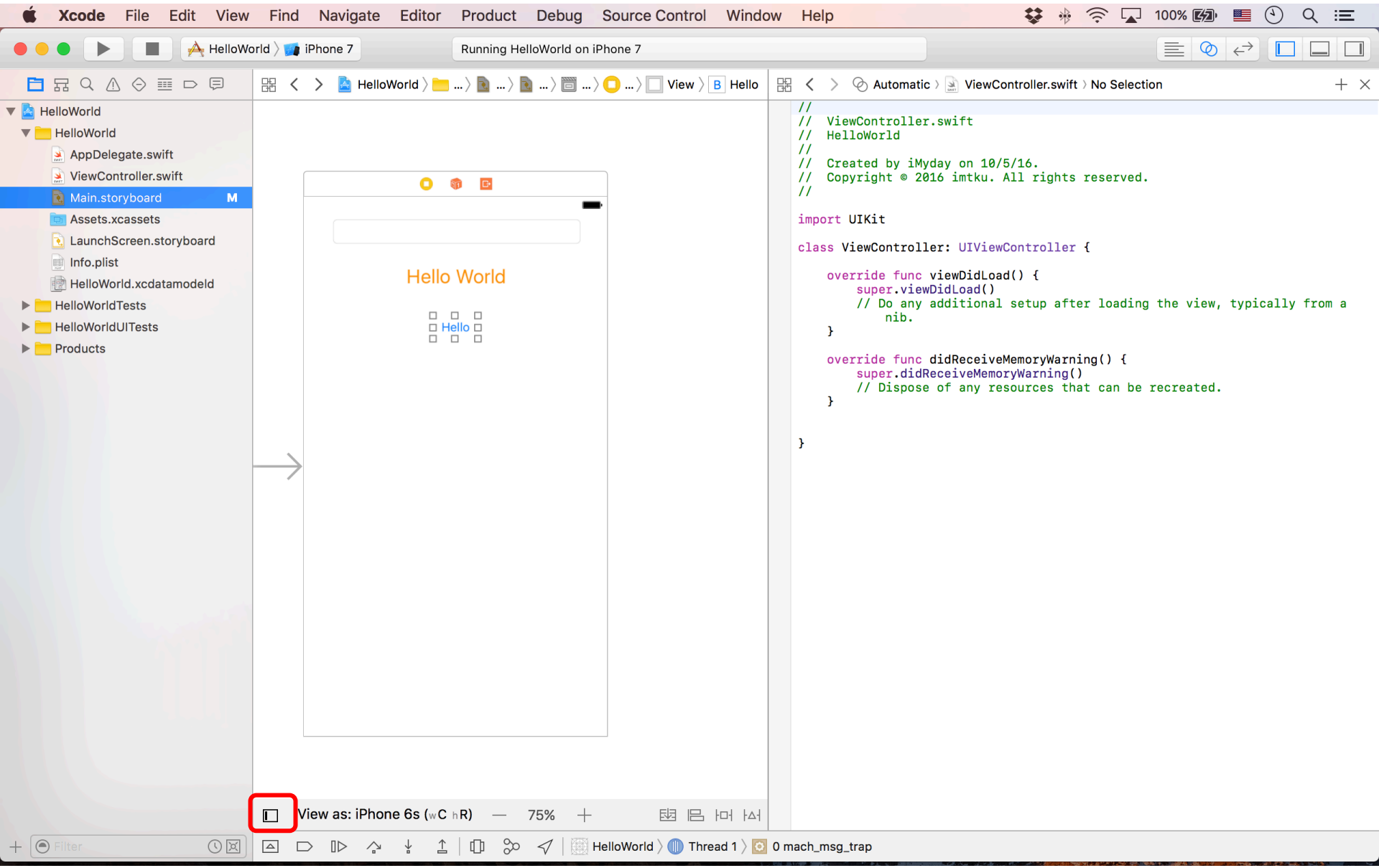
ViewController.swift (Code)

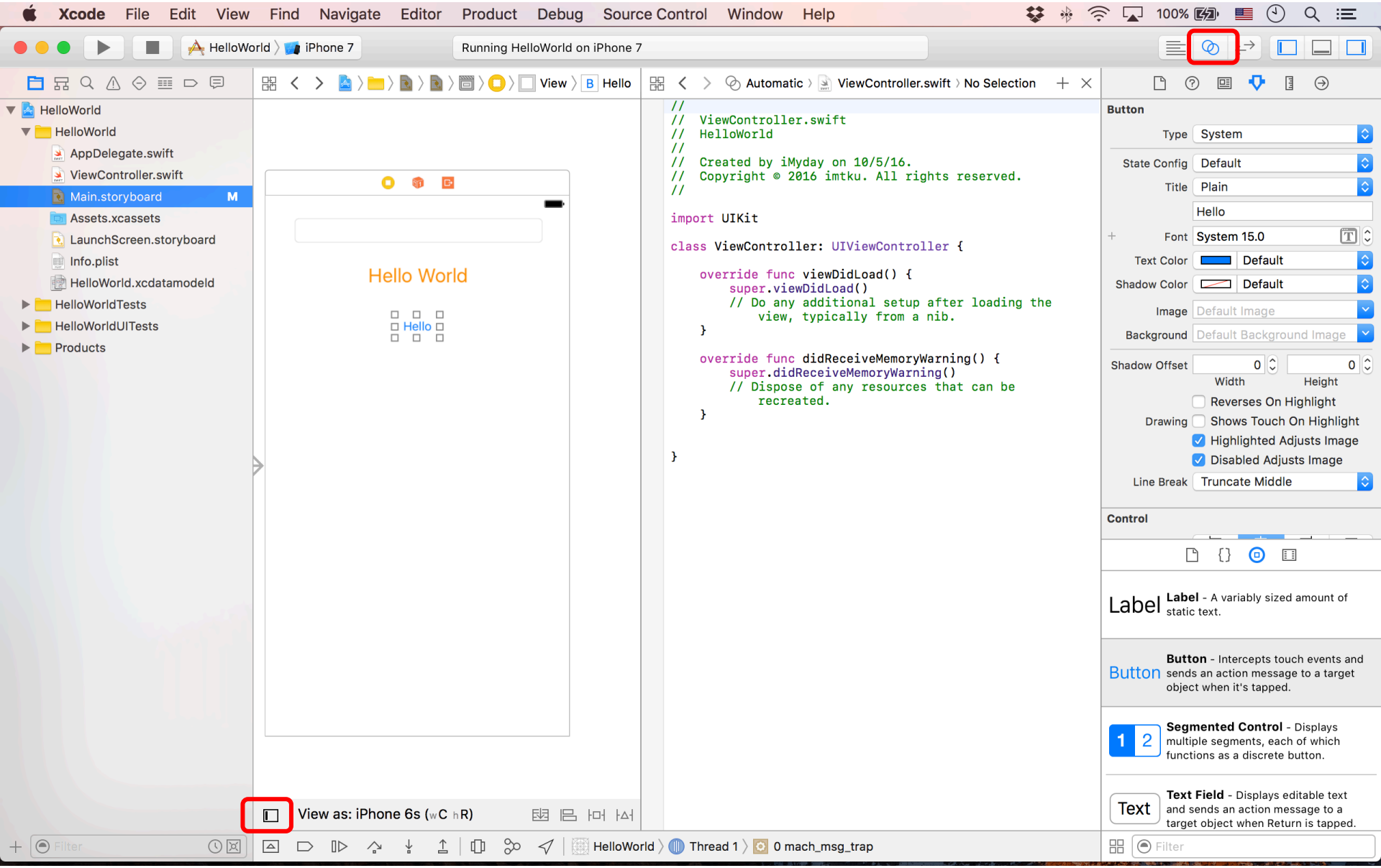


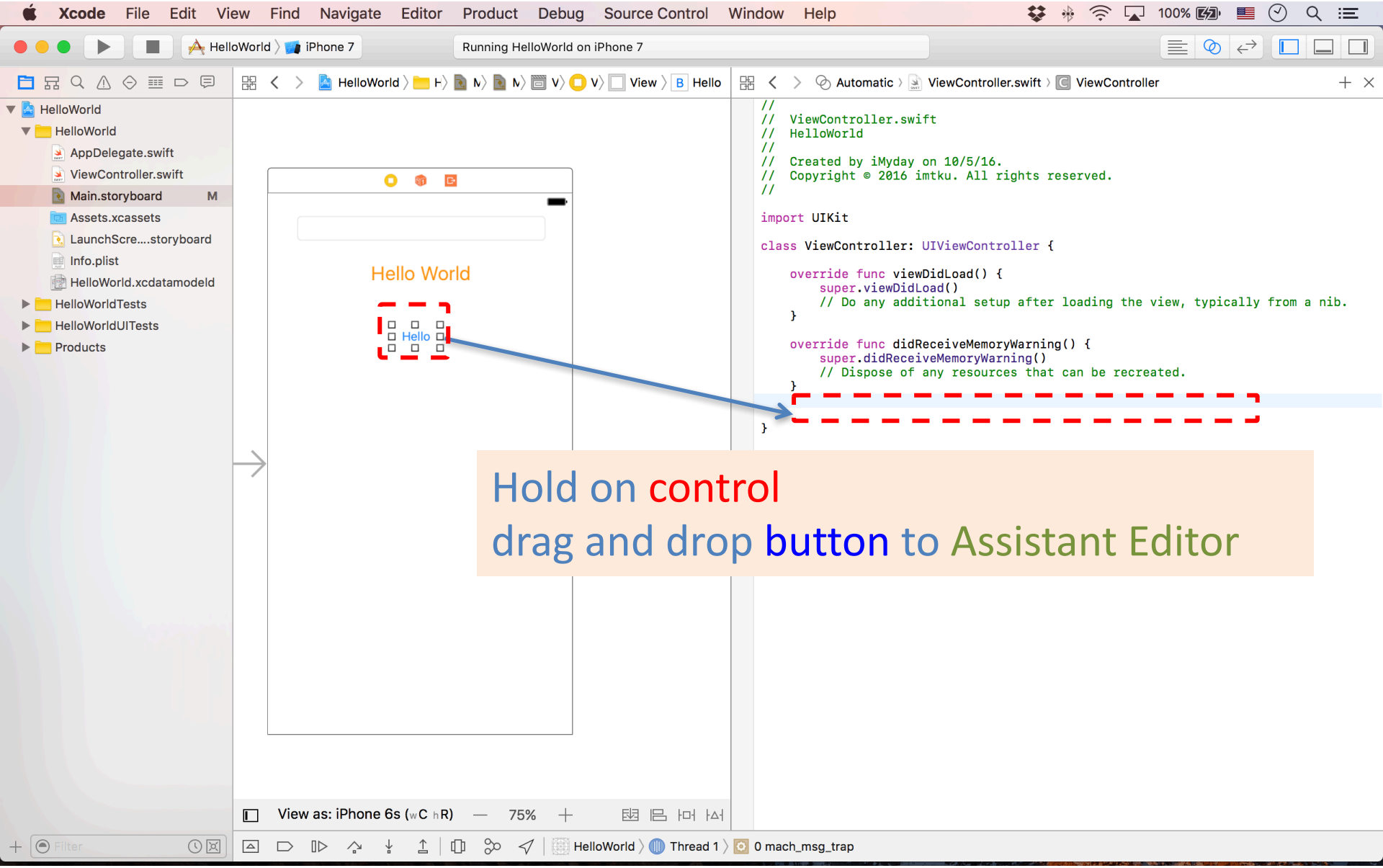
IBOutlet and IBAction

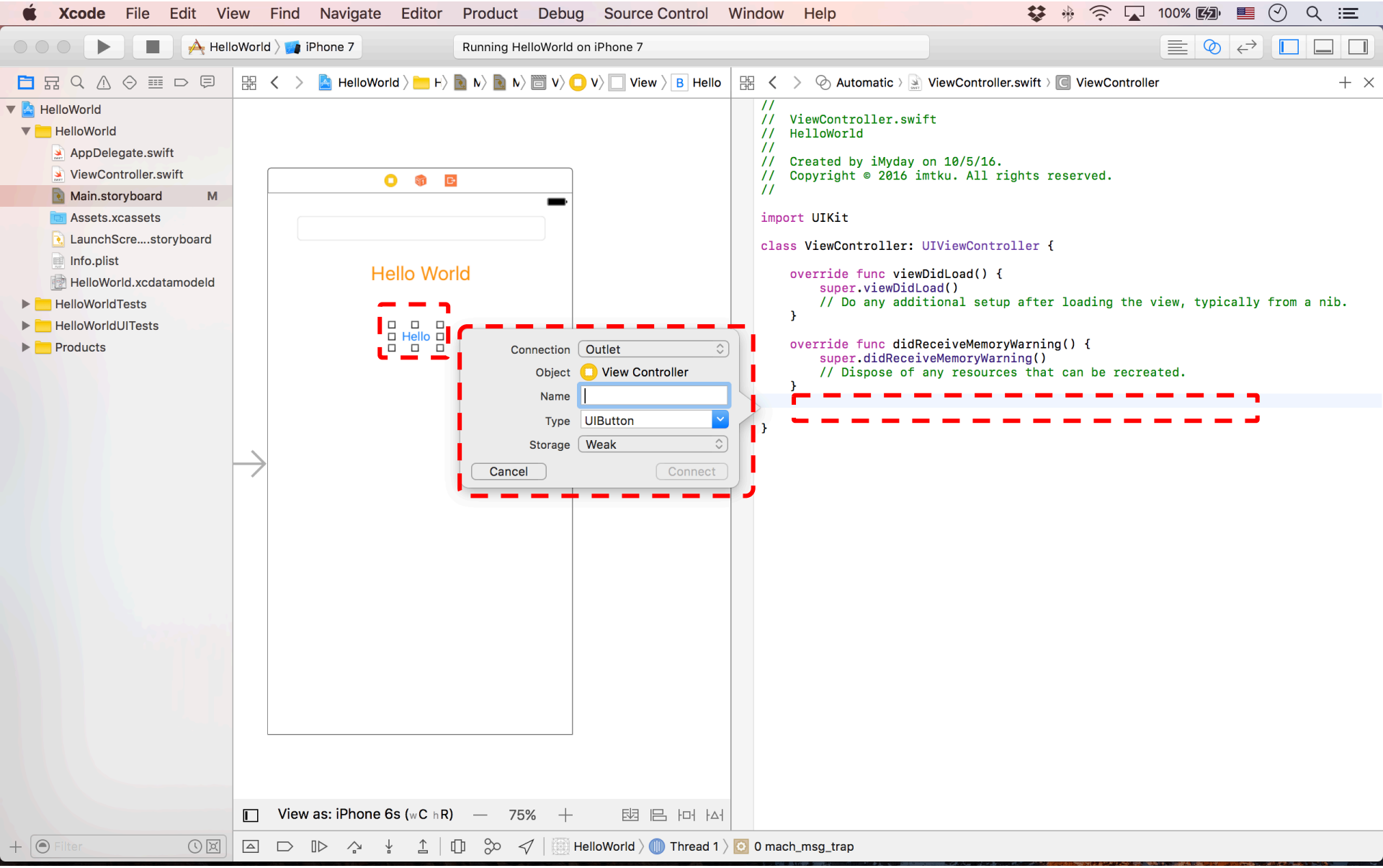
- IBOutlet
  - Interface Builder Outlet
- IBAction
  - Interface Builder Action


Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7
Running HelloWorld on iPhone 7
HelloWorld
HelloWorld
AppDelegate.swift
ViewController.swift
Main.storyboard M
Assets.xcassets
LaunchScreen.storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
View Controller Scene
View Controller
Top Layout Guide
Bottom Layout Guide
View
Round Style Text...
Hello World
Hello
First Responder
Exit
Storyboard Entry Point
Hello World
Hello
View as: iPhone 6s (wC hR)
Automatic ViewController.swift No Selection
//
// ViewController.swift
// HelloWorld
//
// Created by iMyday on 10/5/16.
// Copyright © 2016 imtku. All rights reserved.
//
import UIKit
class ViewController: UIViewController {
override func viewDidLoad() {
super.viewDidLoad()
// Do any additional setup after loading the view,
typically from a nib.
}
override func didReceiveMemoryWarning() {
super.didReceiveMemoryWarning()
// Dispose of any resources that can be recreated.
}
}
HelloWorld Thread 1 0 mach_msg_trap


Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7
Running HelloWorld on iPhone 7
HelloWorld
HelloWorld
AppDelegate.swift
ViewController.swift
Main.storyboard M
Assets.xcassets
LaunchScreen.storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
Hello World
Hello
View as: iPhone 6s (wC hR)
75%
Automatic ViewController.swift No Selection
// ViewController.swift // HelloWorld // Created by iMyday on 10/5/16. // Copyright © 2016 imtku. All rights reserved. //
import UIKit
class ViewController: UIViewController {
override func viewDidLoad() { super.viewDidLoad() // Do any additional setup after loading the view, typically from a nib. }
override func didReceiveMemoryWarning() { super.didReceiveMemoryWarning() // Dispose of any resources that can be recreated. }
}
HelloWorld Thread 1 0 mach_msg_trap


Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7
Running HelloWorld on iPhone 7
HelloWorld
HelloWorld
AppDelegate.swift
ViewController.swift
Main.storyboard M
Assets.xcassets
LaunchScreen.storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
View Hello
Hello World
Hello
View as: iPhone 6s (wC hR)
Automatic ViewController.swift No Selection
//
// ViewController.swift
// HelloWorld
//
// Created by iMyday on 10/5/16.
// Copyright © 2016 imtku. All rights reserved.
//
import UIKit
class ViewController: UIViewController {
override func viewDidLoad() {
super.viewDidLoad()
// Do any additional setup after loading the
view, typically from a nib.
}
override func didReceiveMemoryWarning() {
super.didReceiveMemoryWarning()
// Dispose of any resources that can be
recreated.
}
}
Button
Type System
State Config Default
Title Plain
Hello
Font System 15.0
Text Color Default
Shadow Color Default
Image Default Image
Background Default Background Image
Shadow Offset 0 0
Width Height
Reverses On Highlight
Drawing Shows Touch On Highlight
Highlighted Adjusts Image
Disabled Adjusts Image
Line Break Truncate Middle
Control
Label Label - A variably sized amount of static text.
Button Button - Intercepts touch events and sends an action message to a target object when it's tapped.
1 2 Segmented Control - Displays multiple segments, each of which functions as a discrete button.
Text Text Field - Displays editable text and sends an action message to a target object when Return is tapped.
HelloWorld Thread 1 0 mach_msg_trap


Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7
Running HelloWorld on iPhone 7
HelloWorld
HelloWorld
AppDelegate.swift
ViewController.swift
Main.storyboard M
Assets.xcassets
LaunchScre....storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
Hello World
Hello
View as: iPhone 6s (wC hR) 75%
Automatic ViewController.swift ViewController
//
// ViewController.swift
// HelloWorld
//
// Created by iMyday on 10/5/16.
// Copyright © 2016 imtku. All rights reserved.
//
import UIKit
class ViewController: UIViewController {
override func viewDidLoad() {
super.viewDidLoad()
// Do any additional setup after loading the view, typically from a nib.
}
override func didReceiveMemoryWarning() {
super.didReceiveMemoryWarning()
// Dispose of any resources that can be recreated.
}
}
Hold on control
drag and drop button to Assistant Editor
HelloWorld Thread 1 0 mach_msg_trap


Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7
Running HelloWorld on iPhone 7
HelloWorld
HelloWorld
AppDelegate.swift
ViewController.swift
Main.storyboard M
Assets.xcassets
LaunchScre....storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
Hello World
Hello
Connection Outlet
Object View Controller
Name
Type UIButton
Storage Weak
Cancel
Connect
View as: iPhone 6s (wC hR)
75%
Automatic ViewController.swift ViewController
//
// ViewController.swift
// HelloWorld
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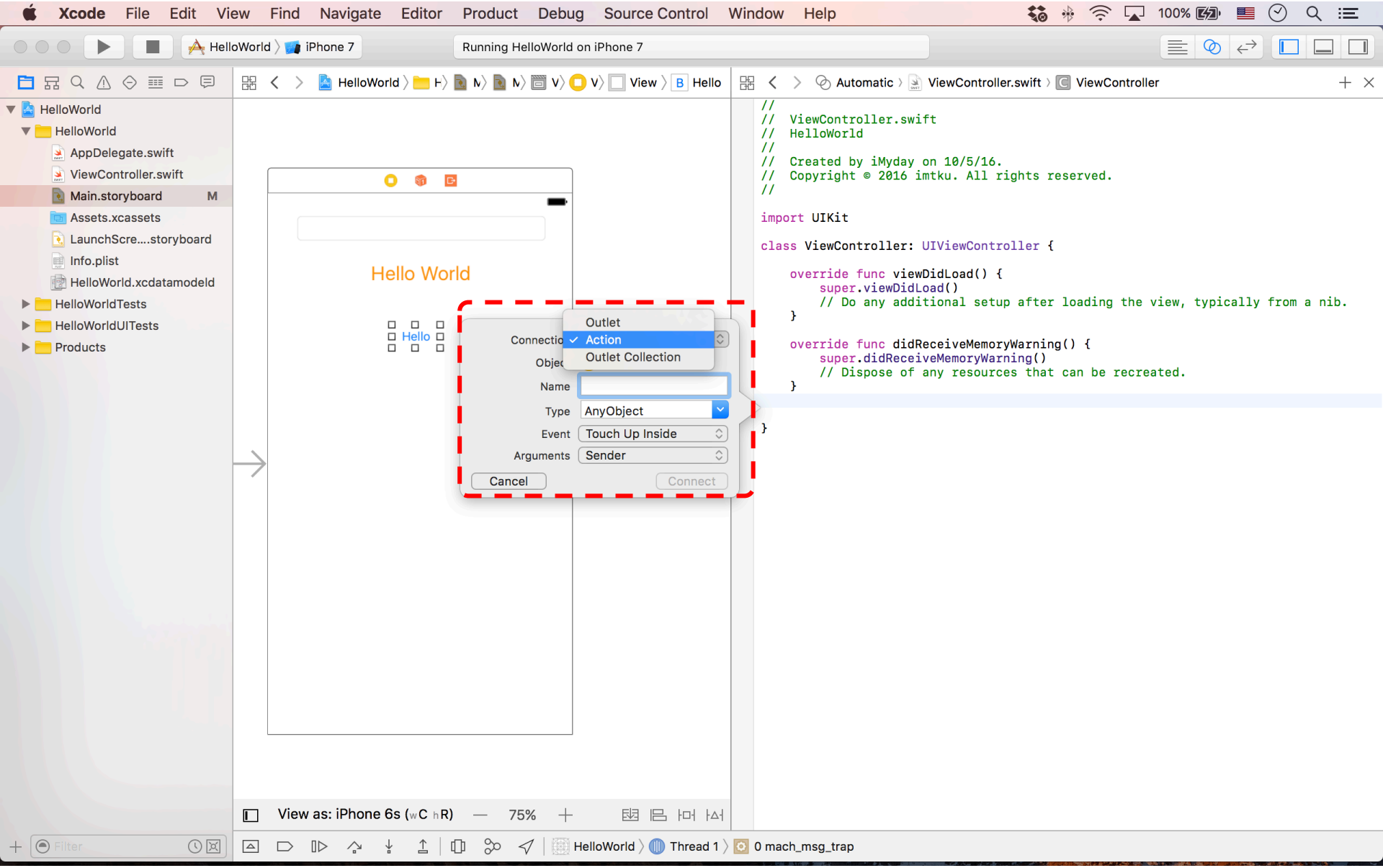
// Dispose of any resources that can be recreated.
}
}
HelloWorld Thread 1 0 mach_msg_trap


Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7
Running HelloWorld on iPhone 7
HelloWorld
HelloWorld
AppDelegate.swift
ViewController.swift
Main.storyboard M
Assets.xcassets
LaunchScre....storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
Hello World
Hello
Outlet
Action
Outlet Collection
Name
Type AnyObject
Event Touch Up Inside
Arguments Sender
Cancel
Connect
View as: iPhone 6s
75%
Automatic
ViewController.swift
ViewController
// ViewController.swift
// HelloWorld
// Created by iMyday on 10/5/16.
// Copyright © 2016 imtku. All rights reserved.
import UIKit
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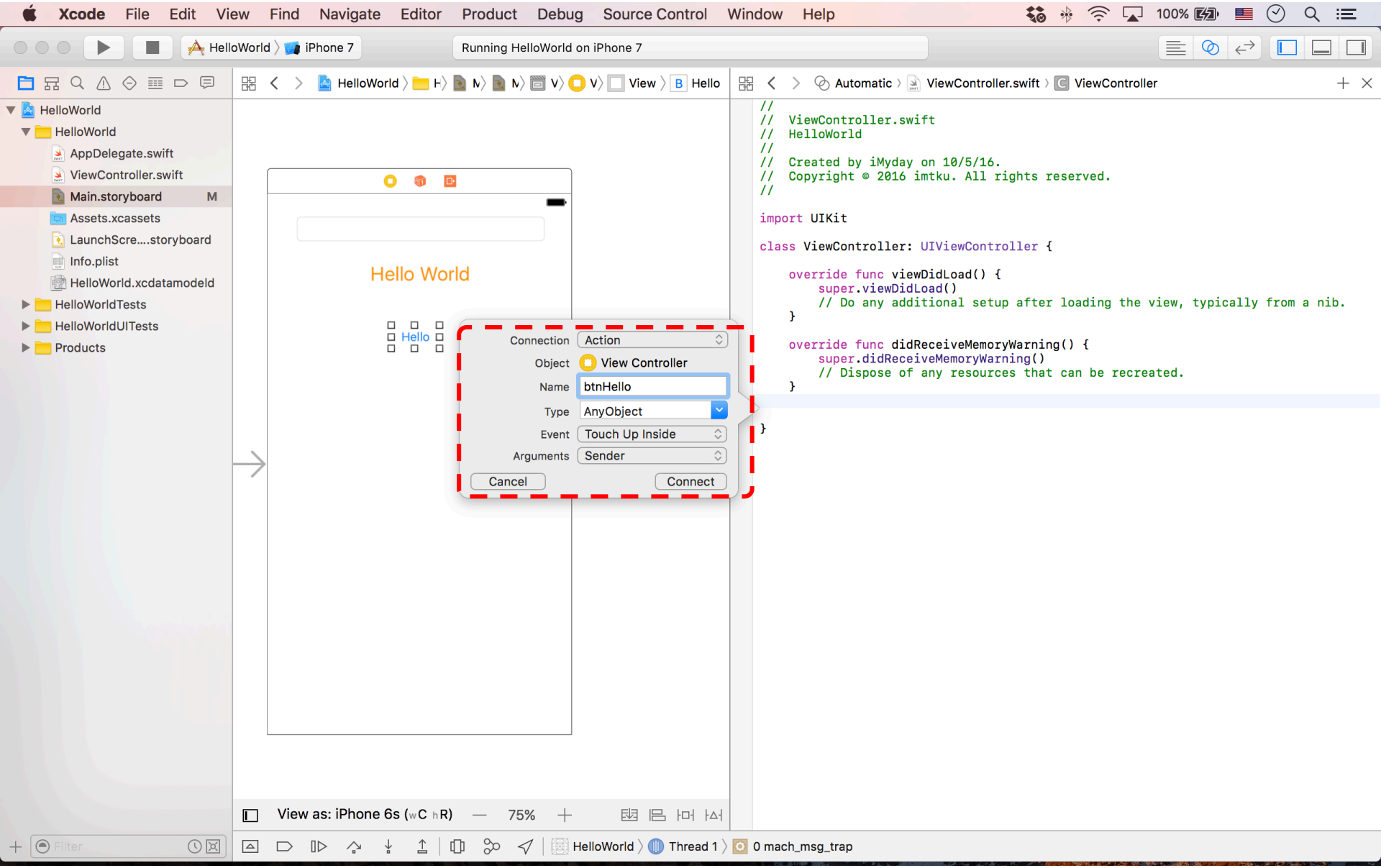
override func didReceiveMemoryWarning() {
super.didReceiveMemoryWarning()
// Dispose of any resources that can be recreated.
}
}
HelloWorld Thread 1 0 mach_msg_trap

btnHello


Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7
Running HelloWorld on iPhone 7
HelloWorld
HelloWorld
AppDelegate.swift
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Main.storyboard M
Assets.xcassets
LaunchScre....storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
Hello World
Hello
Connection Action
Object View Controller
Name btnHello
Type AnyObject
Event Touch Up Inside
Arguments Sender
Cancel
Connect
View as: iPhone 6s (wC hR)
75%
Automatic ViewController.swift ViewController
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// ViewController.swift
// HelloWorld
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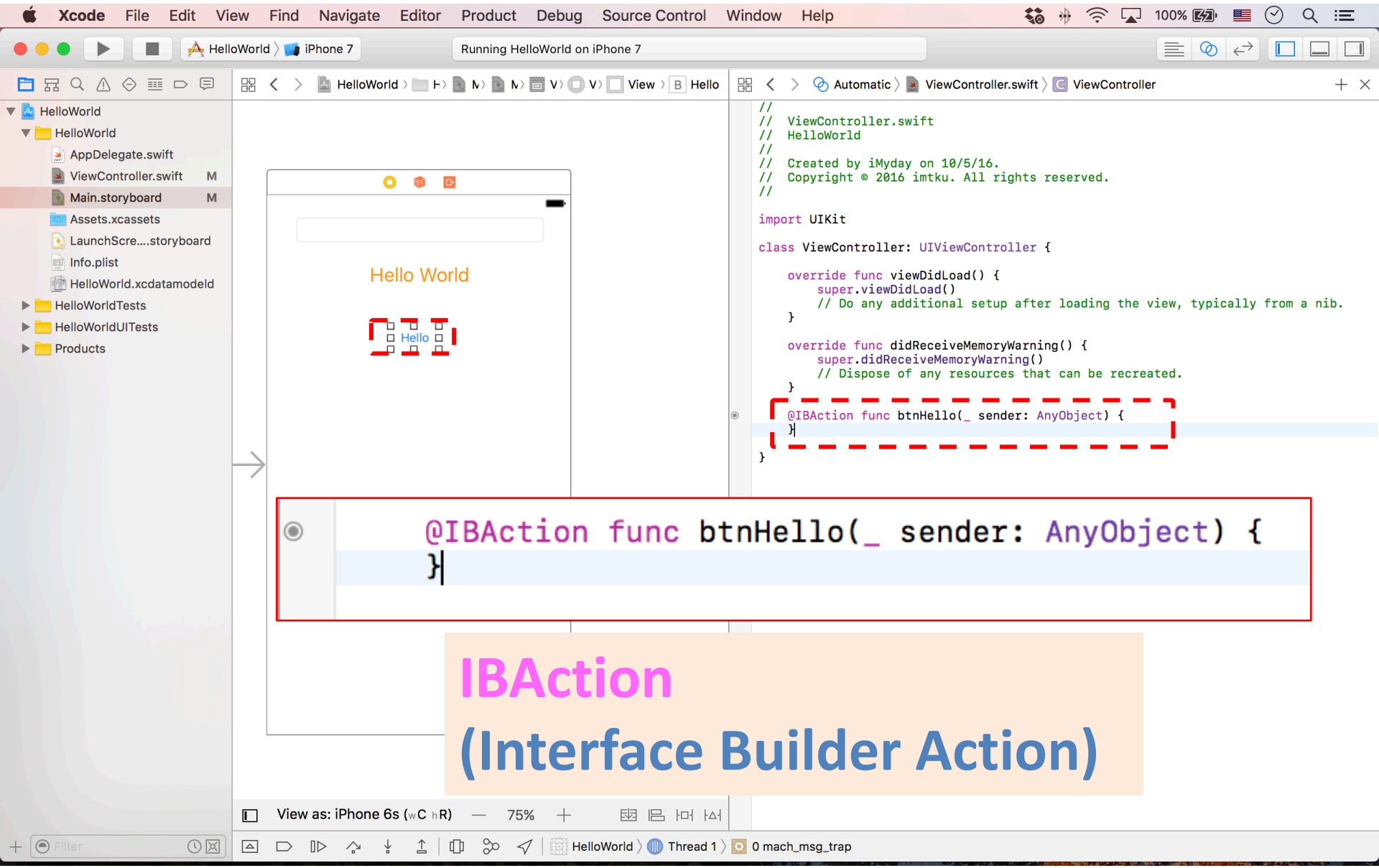
}
HelloWorld Thread 1 0 mach_msg_trap

btnHello


Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7
Running HelloWorld on iPhone 7
HelloWorld
HelloWorld
AppDelegate.swift
ViewController.swift M
Main.storyboard M
Assets.xcassets
LaunchScre....storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
Hello World
Hello
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}
override func didReceiveMemoryWarning() {
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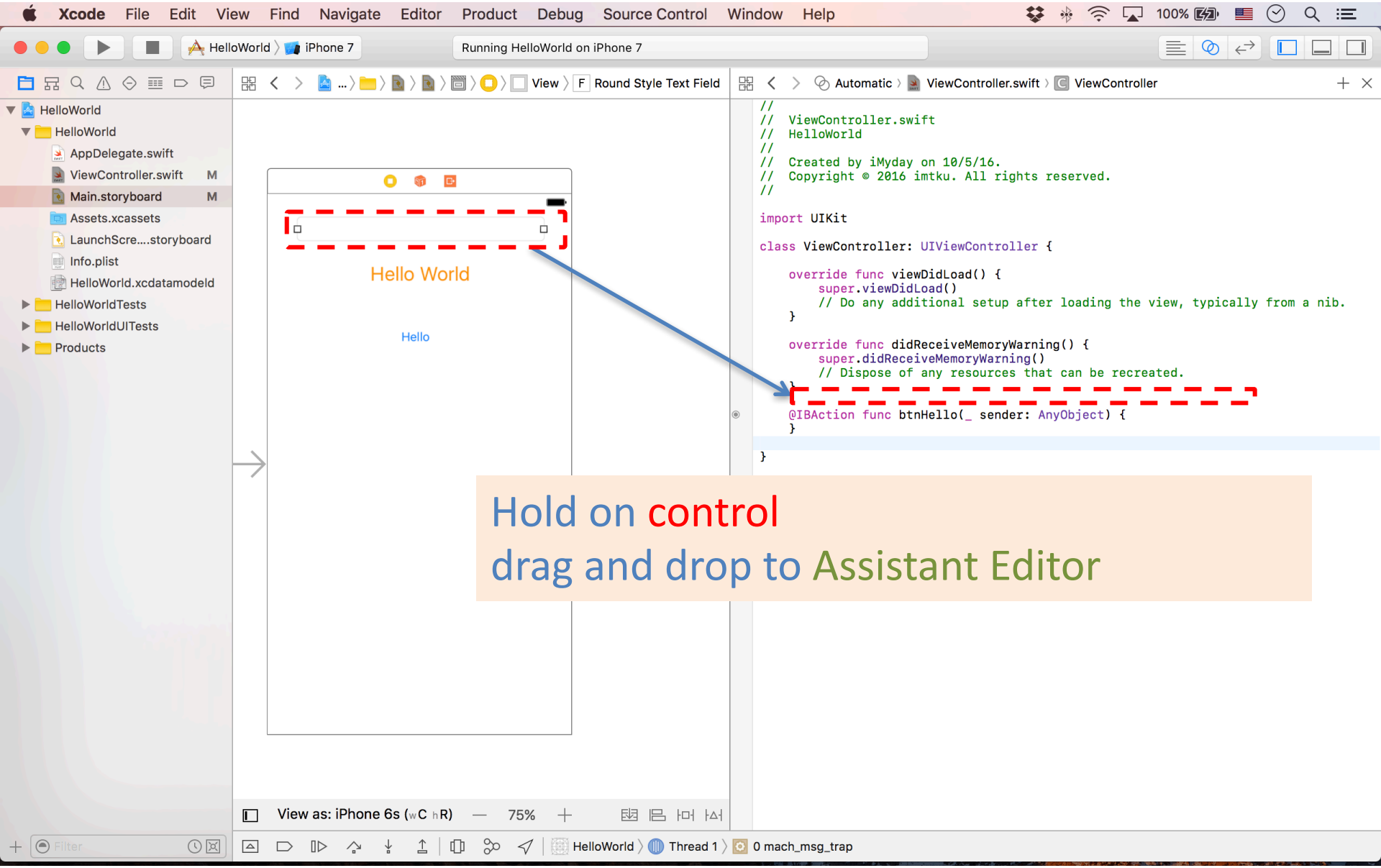
// Dispose of any resources that can be recreated.
}
@IBAction func btnHello(_ sender: AnyObject) {
}
}
@IBAction func btnHello(_ sender: AnyObject) {
}
IBAction
(Interface Builder Action)
View as: iPhone 6s (wC hR)
75%
HelloWorld Thread 1 0 mach_msg_trap


Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7
Running HelloWorld on iPhone 7
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AppDelegate.swift
ViewController.swift M
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HelloWorldTests
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Products
View F Round Style Text Field
Hello World
Hello
Automatic ViewController.swift ViewController
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// HelloWorld
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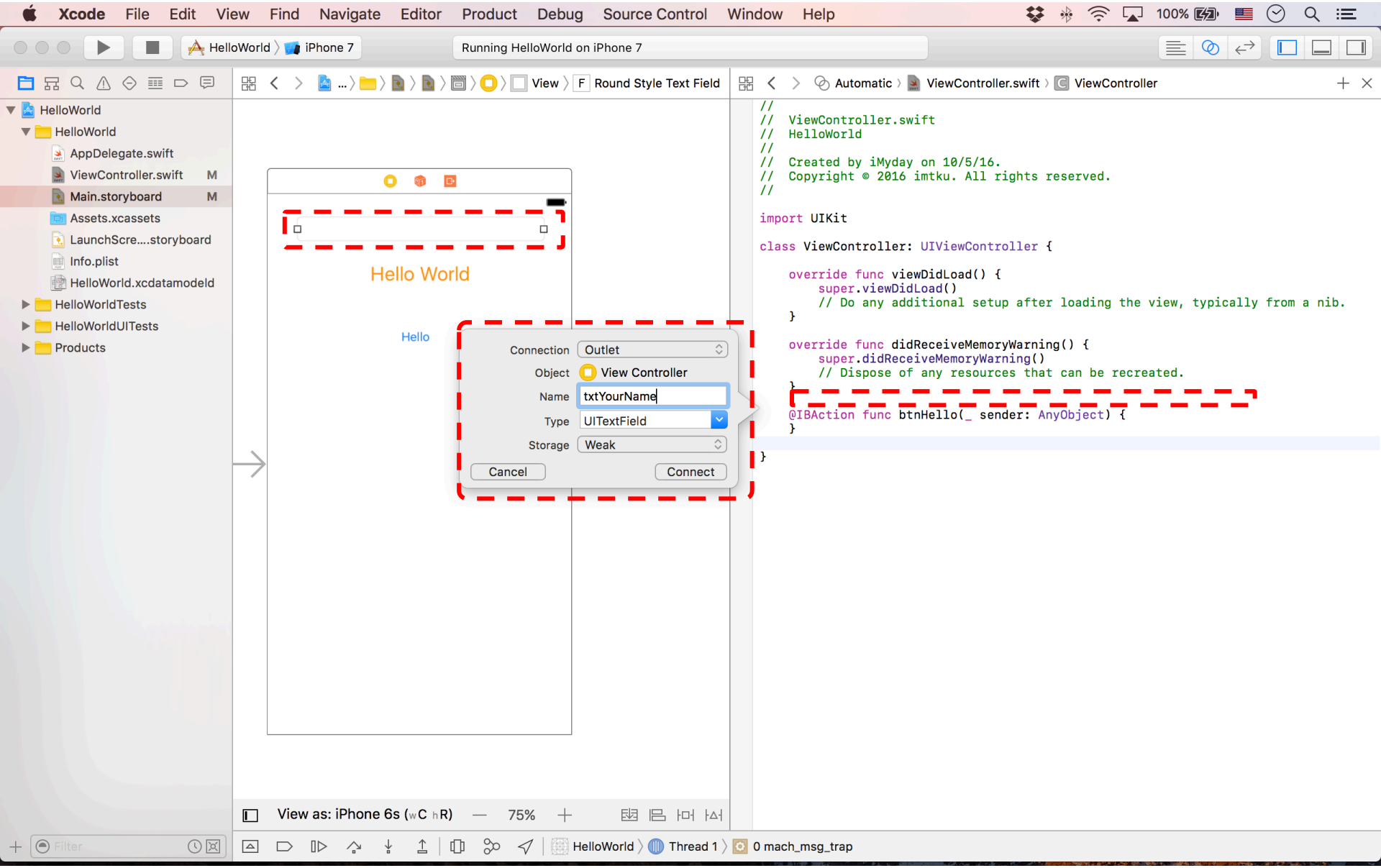
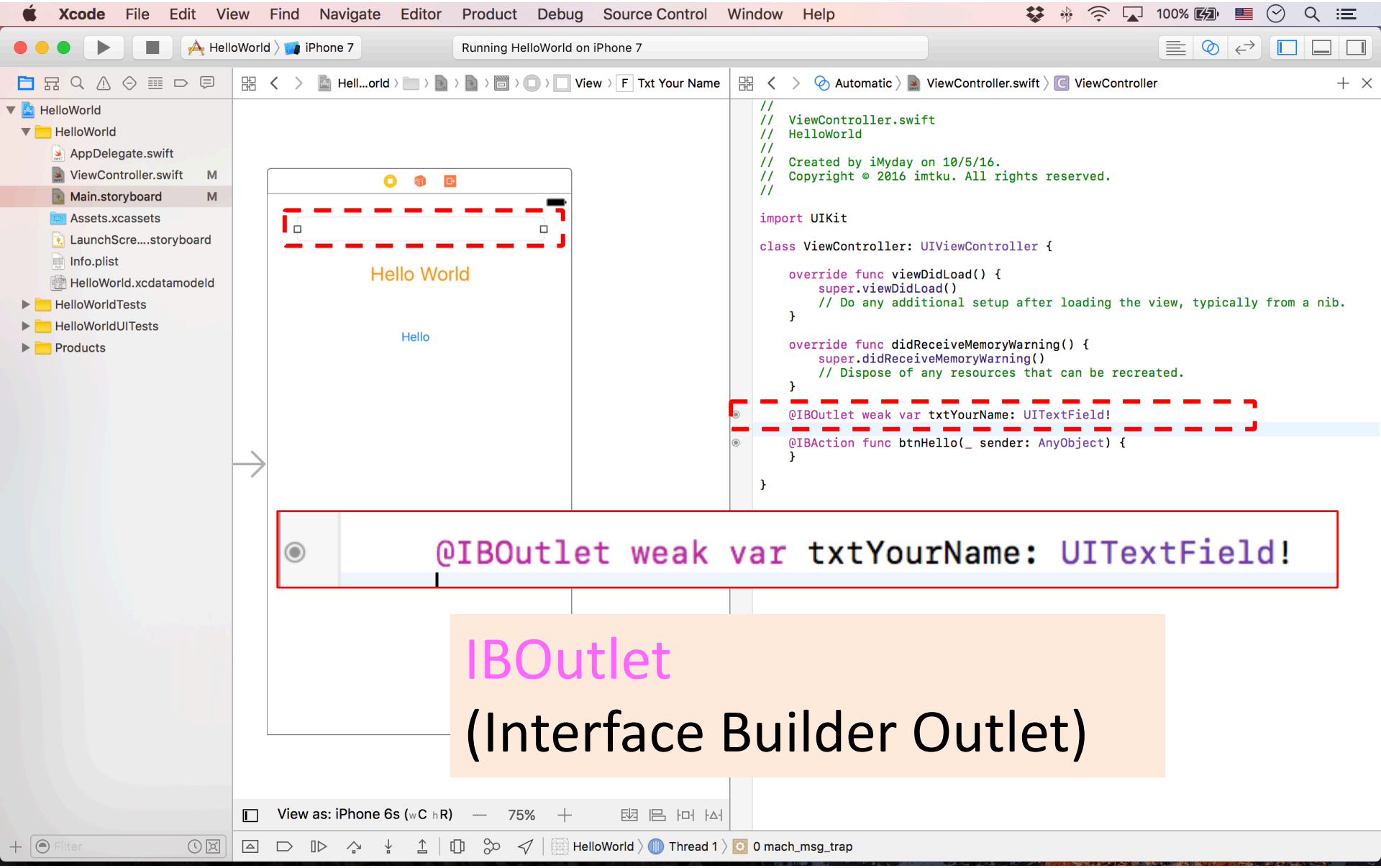
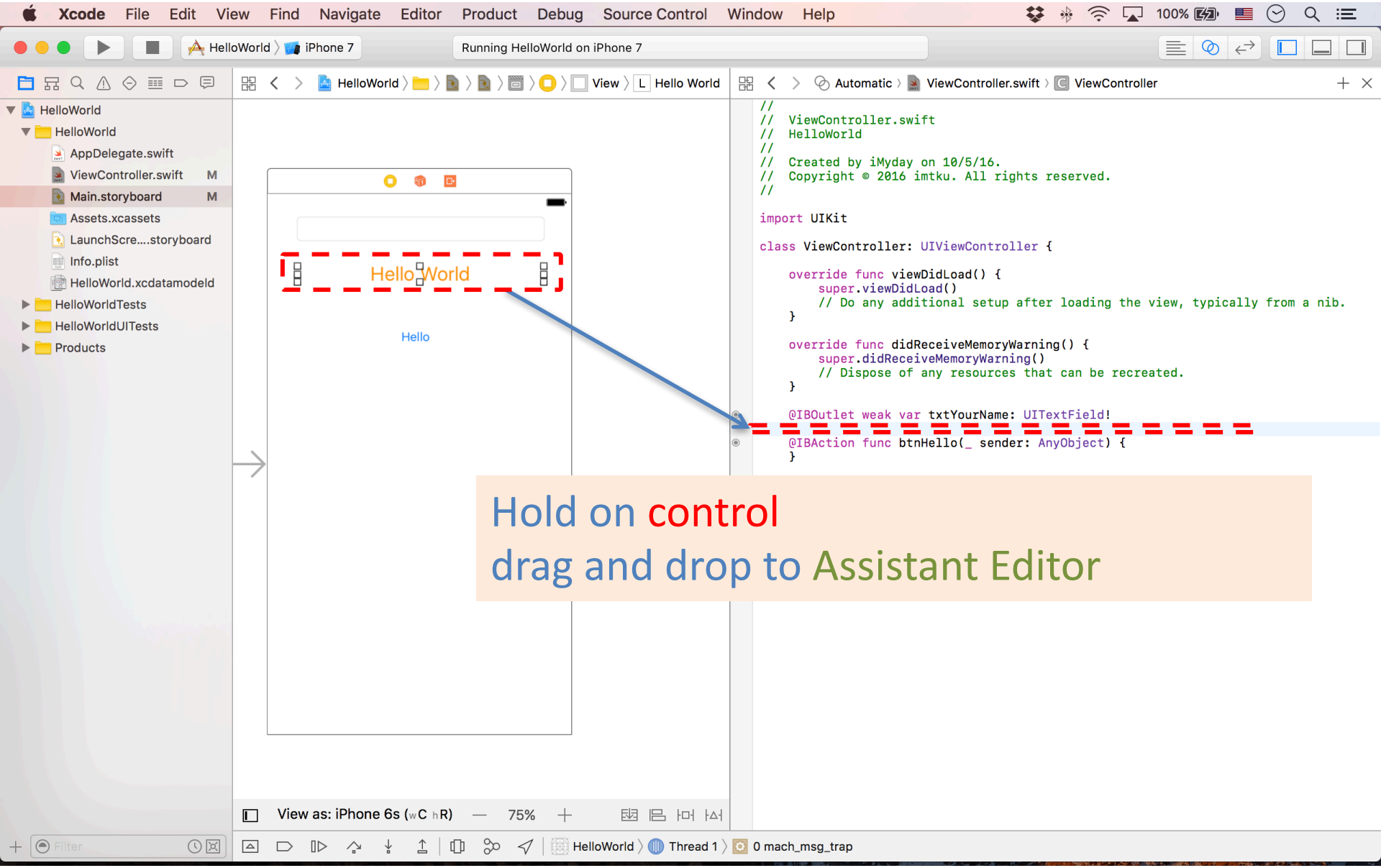
}
@IBAction func btnHello(_ sender: AnyObject) {
}
}
Hold on control
drag and drop to Assistant Editor
View as: iPhone 6s (wC hR) 75%
HelloWorld Thread 1 0 mach_msg_trap

txtYourName



txtYourName




Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7
Running HelloWorld on iPhone 7
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HelloWorldTests
HelloWorldUITests
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HelloWorld View Hello World
Hello World
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Automatic ViewController.swift ViewController
//
// ViewController.swift
// HelloWorld
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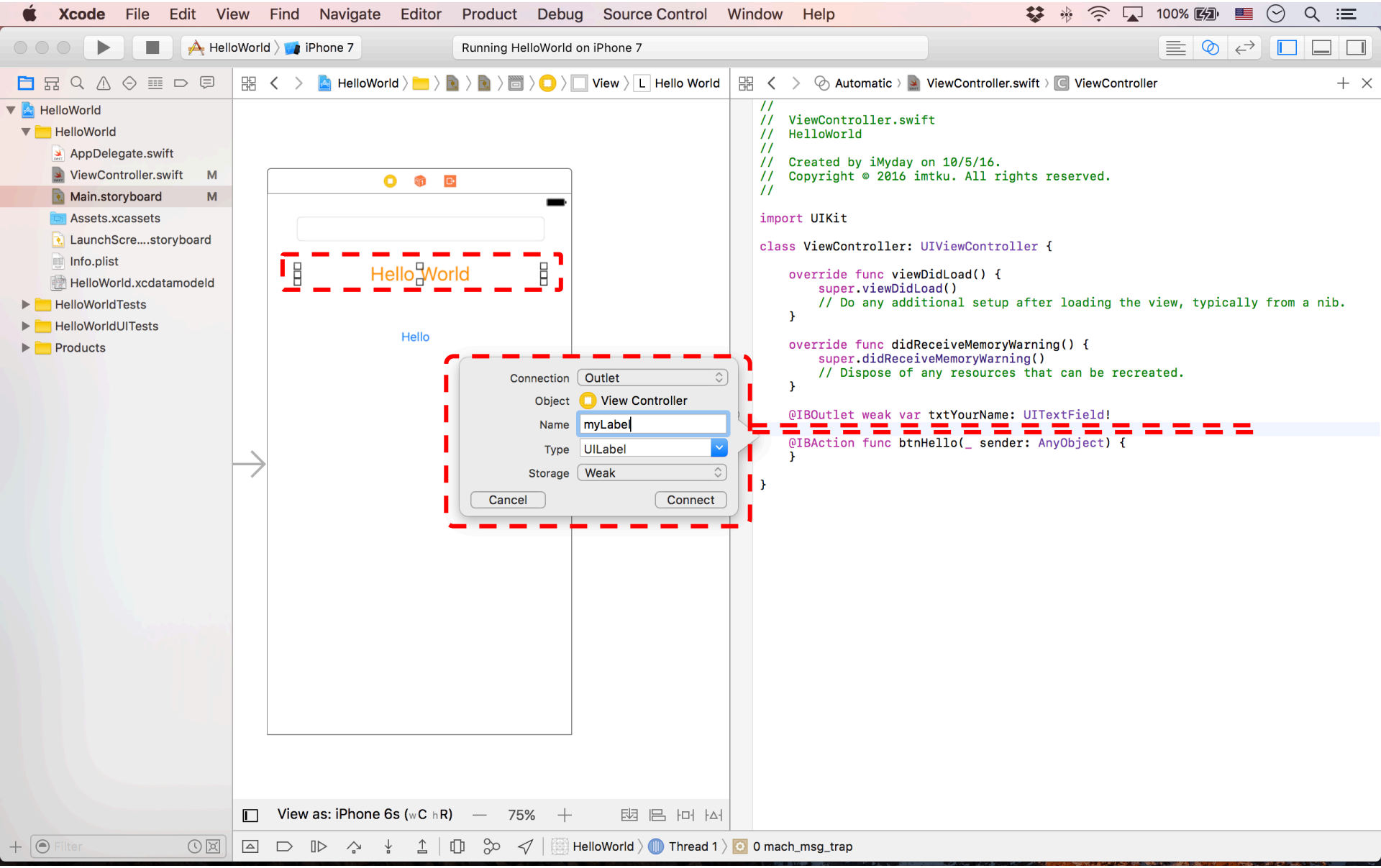
@IBOutlet weak var txtYourName: UITextField!
@IBAction func btnHello(_ sender: AnyObject) {
}
Hold on control
drag and drop to Assistant Editor
View as: iPhone 6s (wC hR) 75%
HelloWorld Thread 1 0 mach_msg_trap

myLabel


Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7
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Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
HelloWorld View Hello World
Hello World
Hello
Connection Outlet
Object View Controller
Name myLabel
Type UILabel
Storage Weak
Cancel
Connect
Automatic ViewController.swift ViewController
//
// ViewController.swift
// HelloWorld
//
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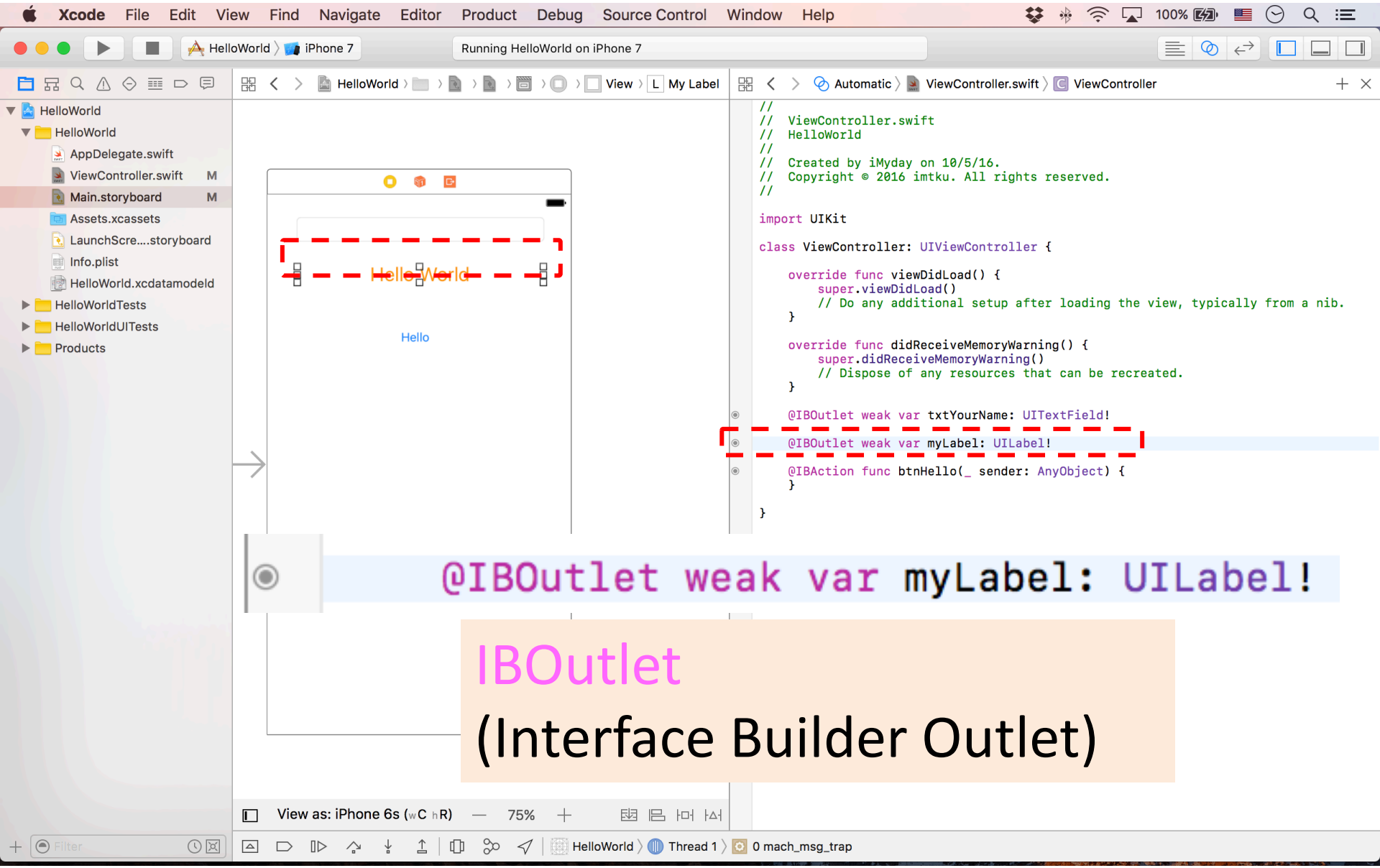
}
View as: iPhone 6s (wC hR) 75%
HelloWorld Thread 1 0 mach_msg_trap

myLabel


Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7
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HelloWorld.xcdatamodeld
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HelloWorldUITests
Products
HelloWorld View My Label
Automatic ViewController.swift ViewController
Hello World
Hello
//
// ViewController.swift
// HelloWorld
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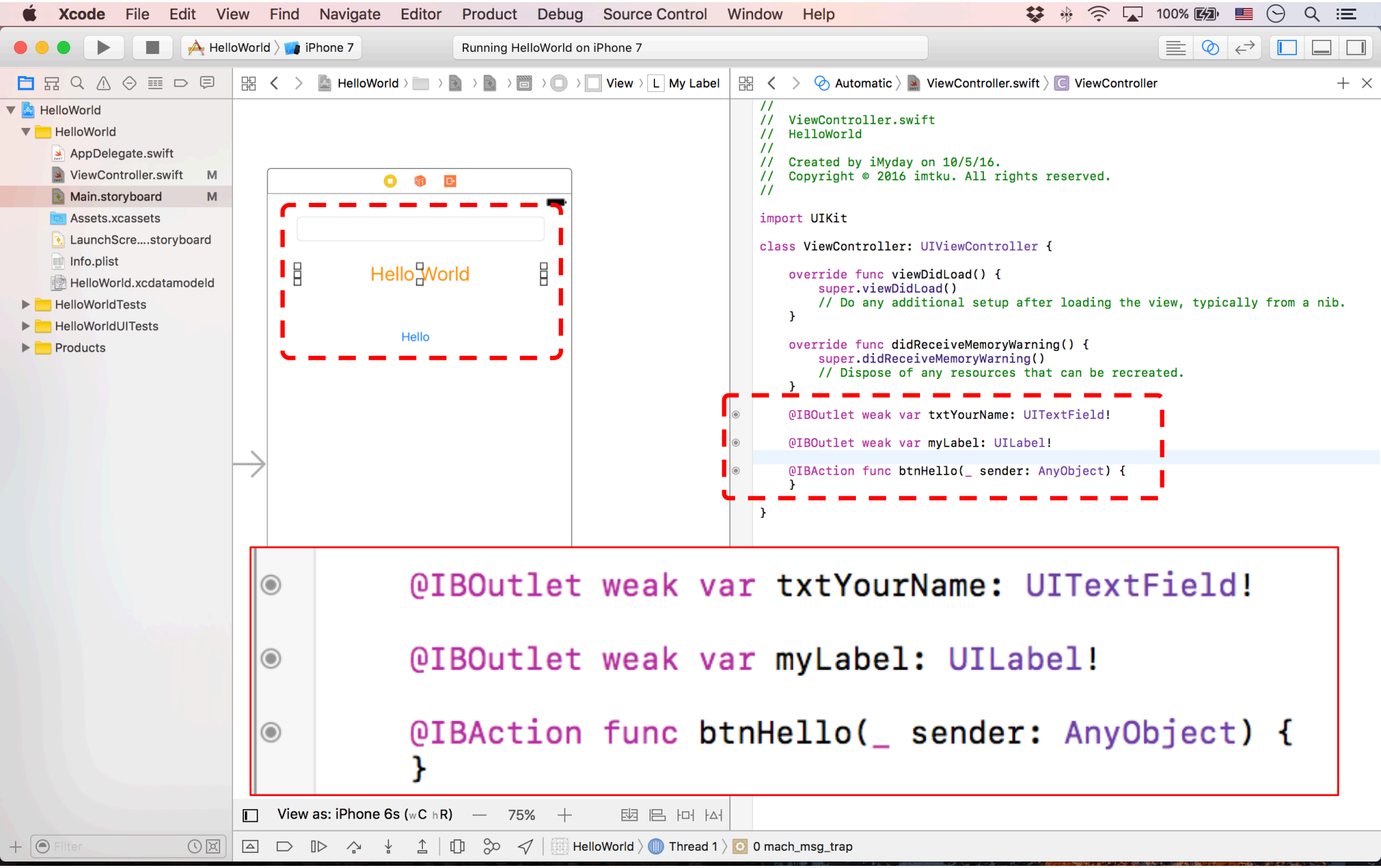
@IBOutlet weak var myLabel: UILabel!
@IBAction func btnHello(_ sender: AnyObject) {
}
}
@IBOutlet weak var myLabel: UILabel!
IBOutlet
(Interface Builder Outlet)
View as: iPhone 6s (wC hR) 75%
HelloWorld Thread 1 0 mach_msg_trap


Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7
Running HelloWorld on iPhone 7
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Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
HelloWorld View My Label
Hello World
Hello
Automatic ViewController.swift ViewController
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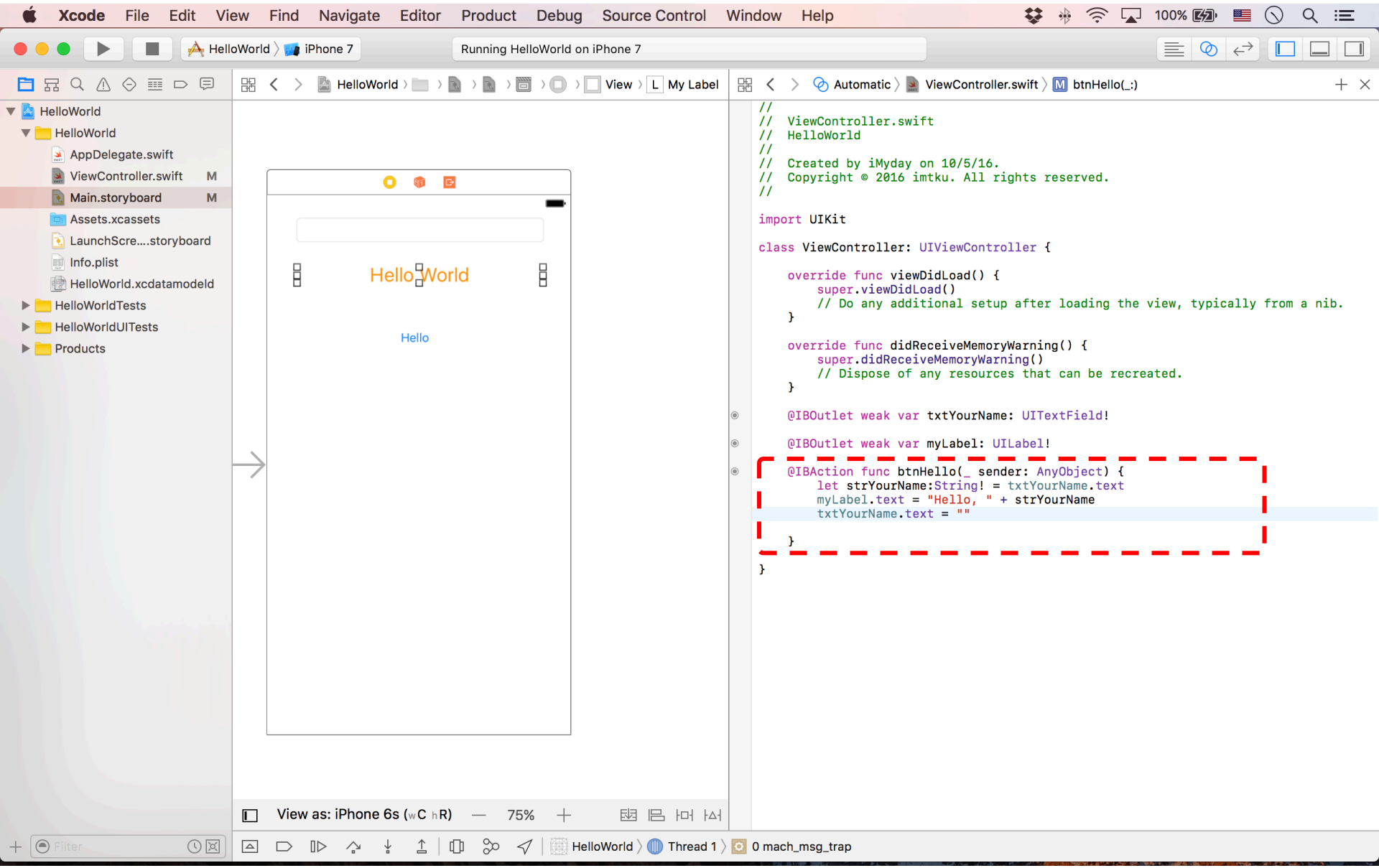
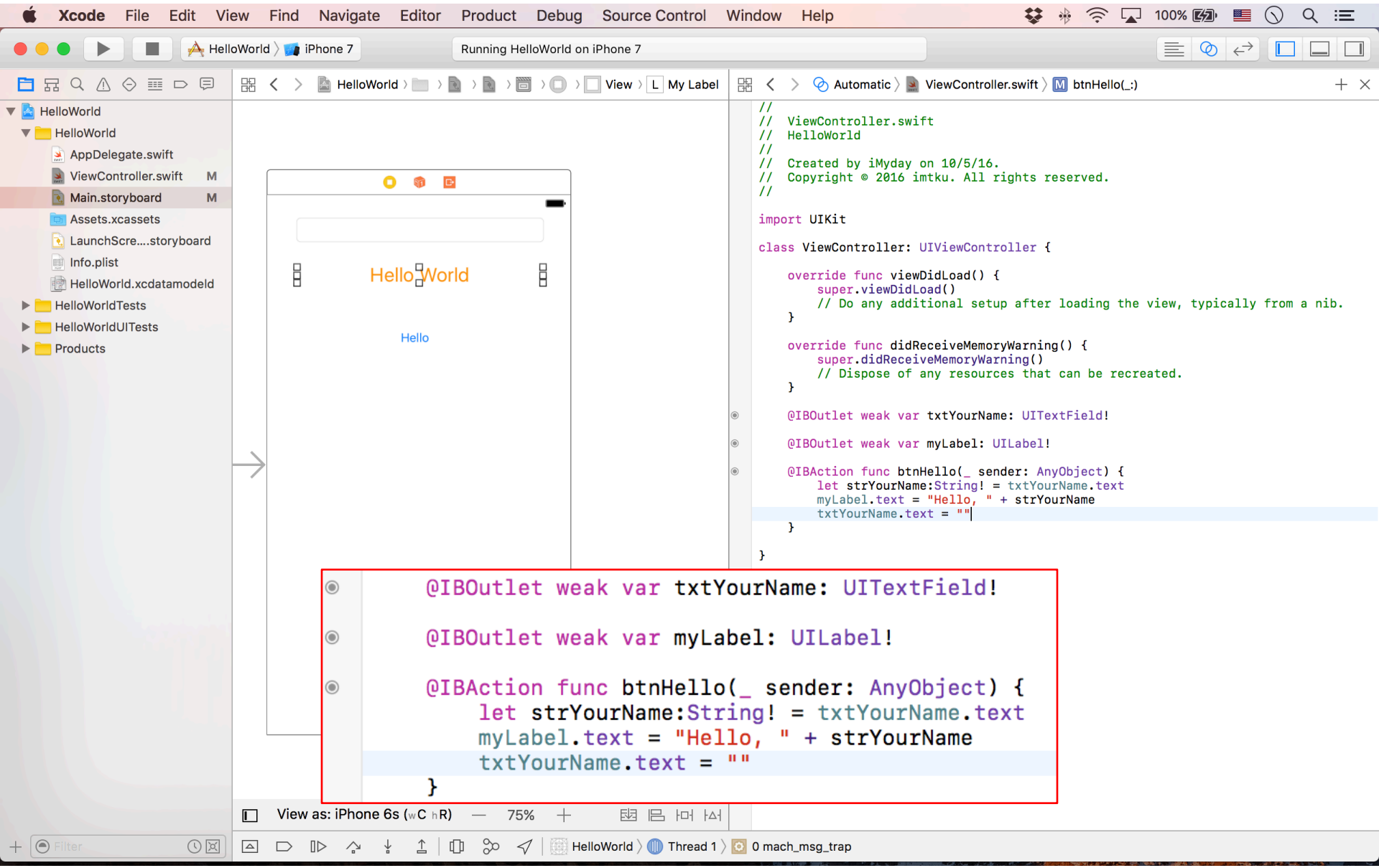
View as: iPhone 6s (wC hR) 75%
HelloWorld Thread 1 0 mach_msg_trap

@IBAction func btnHello()



@IBAction func btnHello()



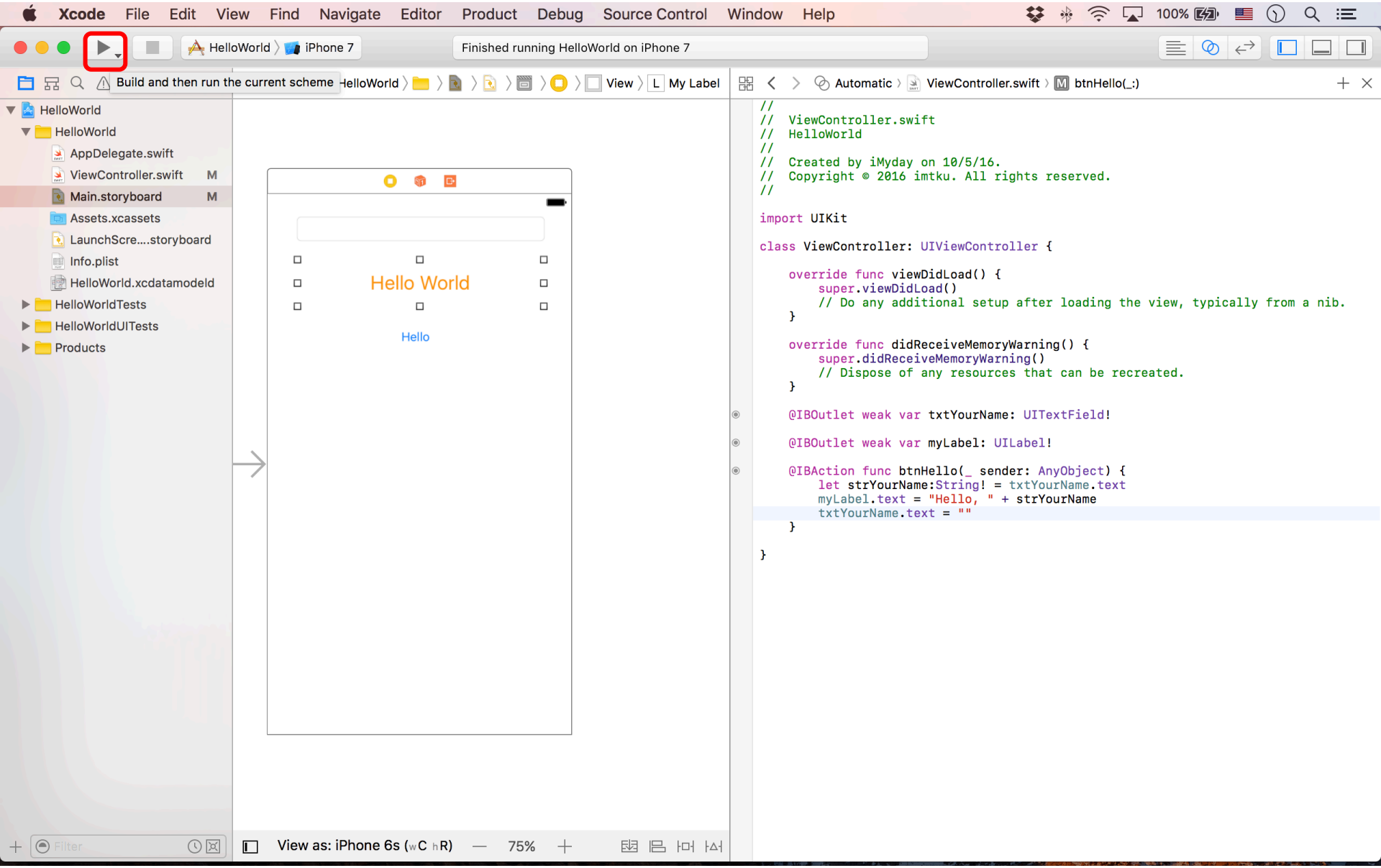
@IBAction func btnHello()

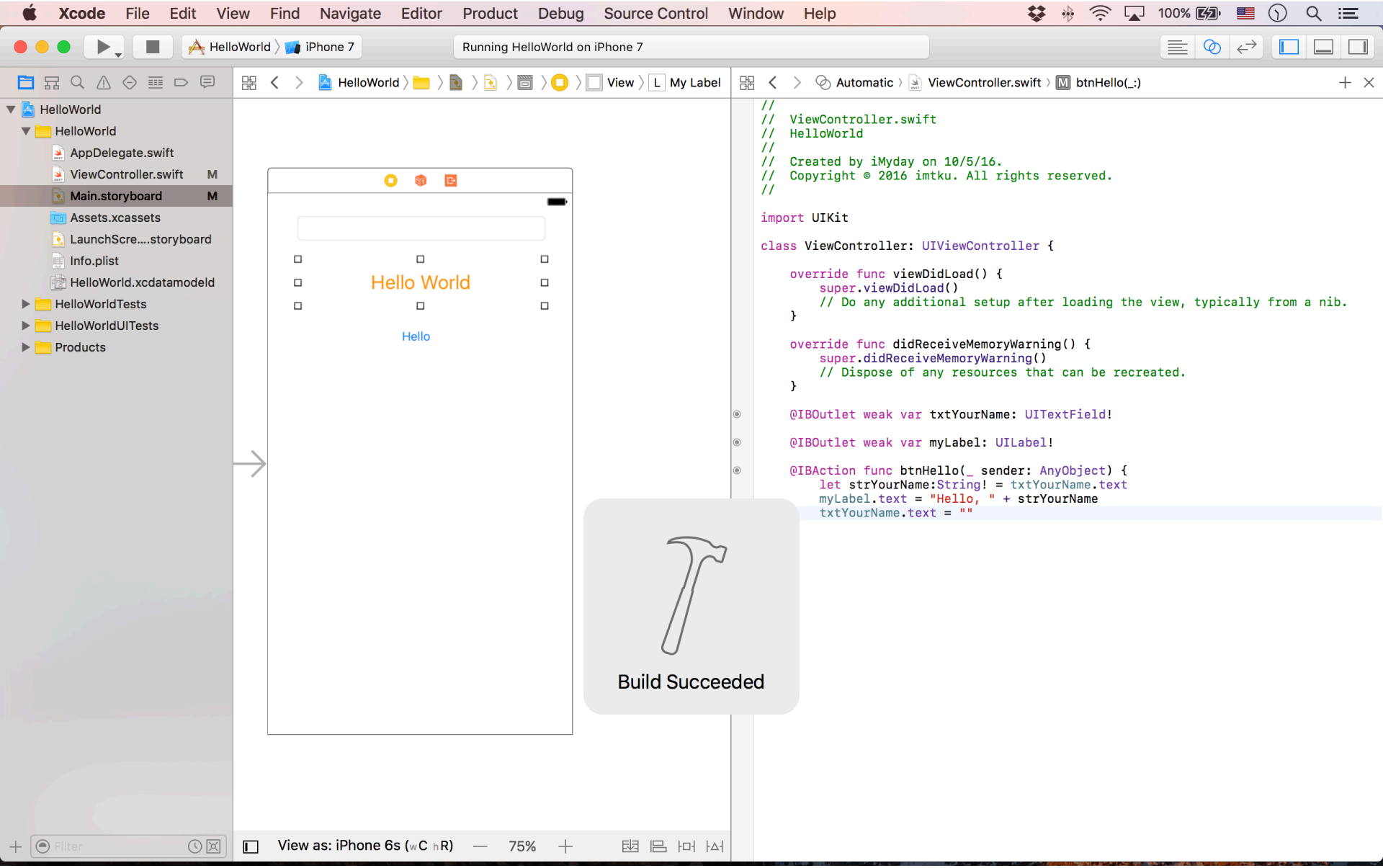
```
    @IBOutlet weak var txtYourName: UITextField!

    @IBOutlet weak var myLabel: UILabel!

    @IBAction func btnHello(_ sender: AnyObject) {
        let strYourName:String! = txtYourName.text
        myLabel.text = "Hello, " + strYourName
        txtYourName.text = ""
    }
```

Build and Run




Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
HelloWorld iPhone 7
Running HelloWorld on iPhone 7
HelloWorld
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AppDelegate.swift
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Main.storyboard M
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Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
Hello World
Hello
View as: iPhone 6s (wC hR) 75%
Automatic ViewController.swift btnHello(_:)
//
// ViewController.swift
// HelloWorld
//
// Created by iMyday on 10/5/16.
// Copyright © 2016 imtku. All rights reserved.
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import UIKit
class ViewController: UIViewController {
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@IBOutlet weak var txtYourName: UITextField!
@IBOutlet weak var myLabel: UILabel!
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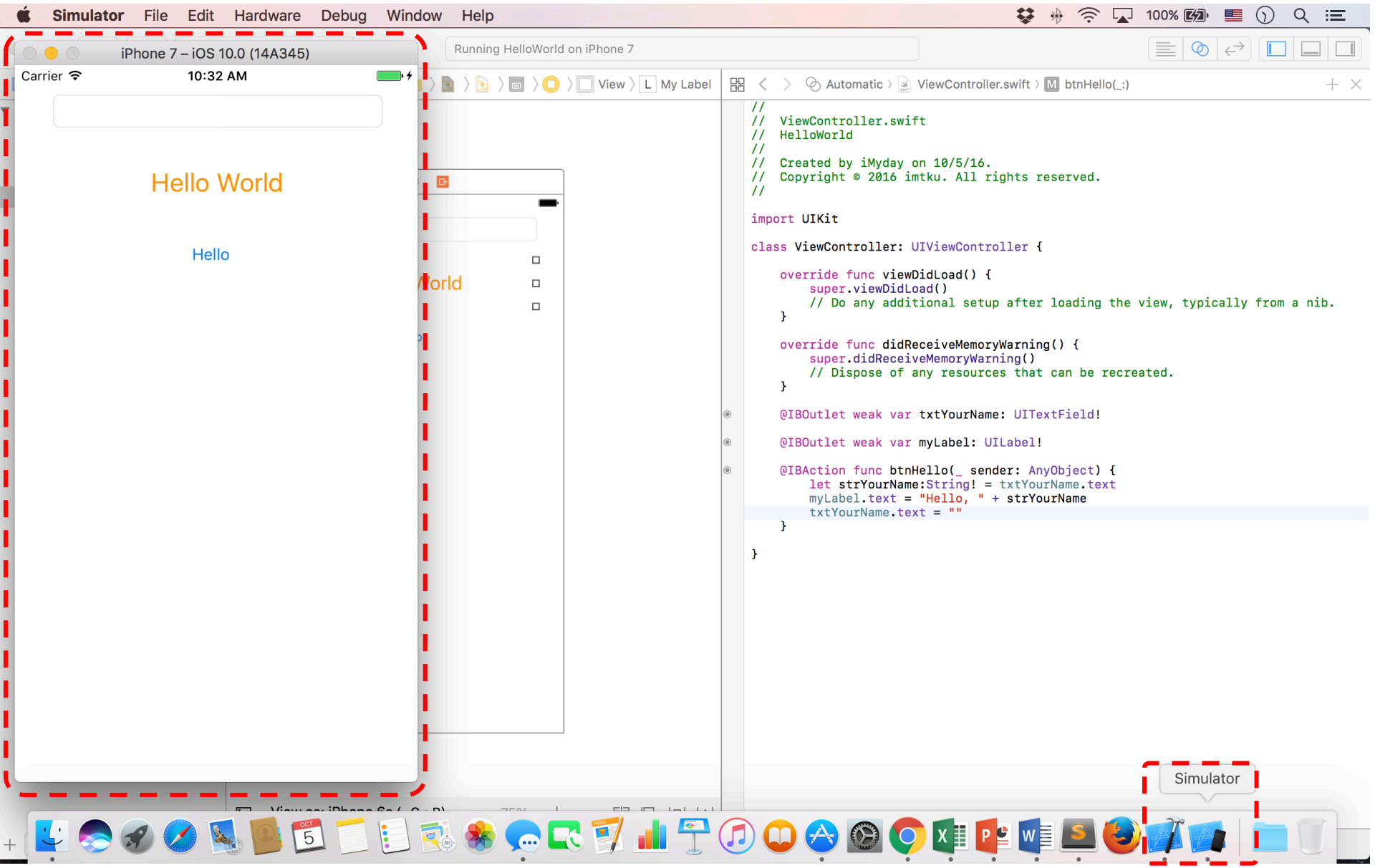
let strYourName:String! = txtYourName.text
myLabel.text = "Hello, " + strYourName
txtYourName.text = ""
Build Succeeded


Simulator File Edit Hardware Debug Window Help
iPhone 7 – iOS 10.0 (14A345)
Carrier
10:32 AM
Hello World
Hello
Running HelloWorld on iPhone 7
View
My Label
Automatic
ViewController.swift
btnHello(_:)
//
// ViewController.swift
// HelloWorld
//
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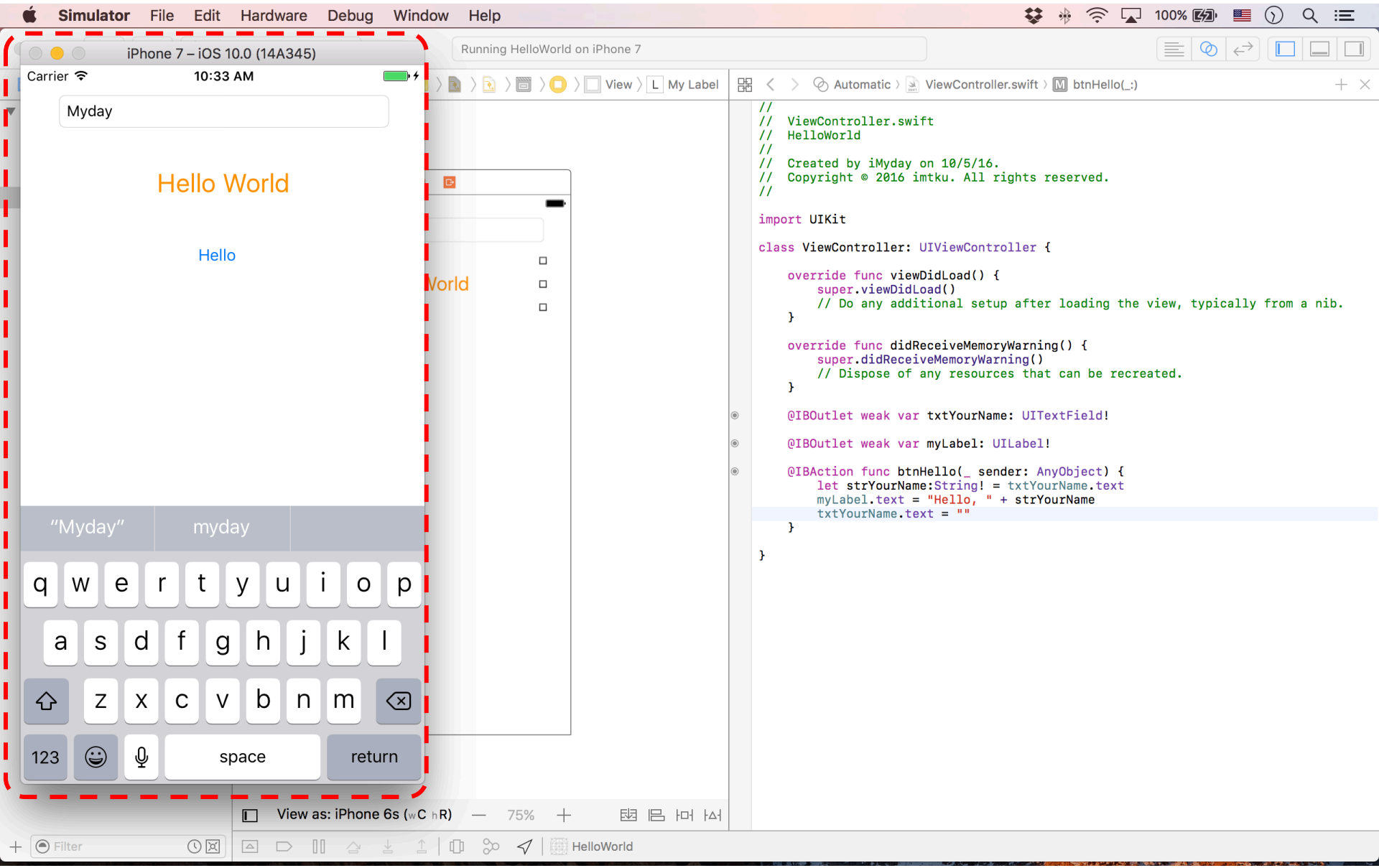
@IBAction func btnHello(_ sender: AnyObject) {
let strYourName:String! = txtYourName.text
myLabel.text = "Hello, " + strYourName
txtYourName.text = ""
}
}
Simulator


Simulator File Edit Hardware Debug Window Help
iPhone 7 – iOS 10.0 (14A345)
Carrier
10:33 AM
Myday
Hello World
Hello
"Myday"
myday
space
return
Running HelloWorld on iPhone 7
View as: iPhone 6s
75%
HelloWorld
Automatic
ViewController.swift
btnHello(_:)
//
// ViewController.swift
// HelloWorld
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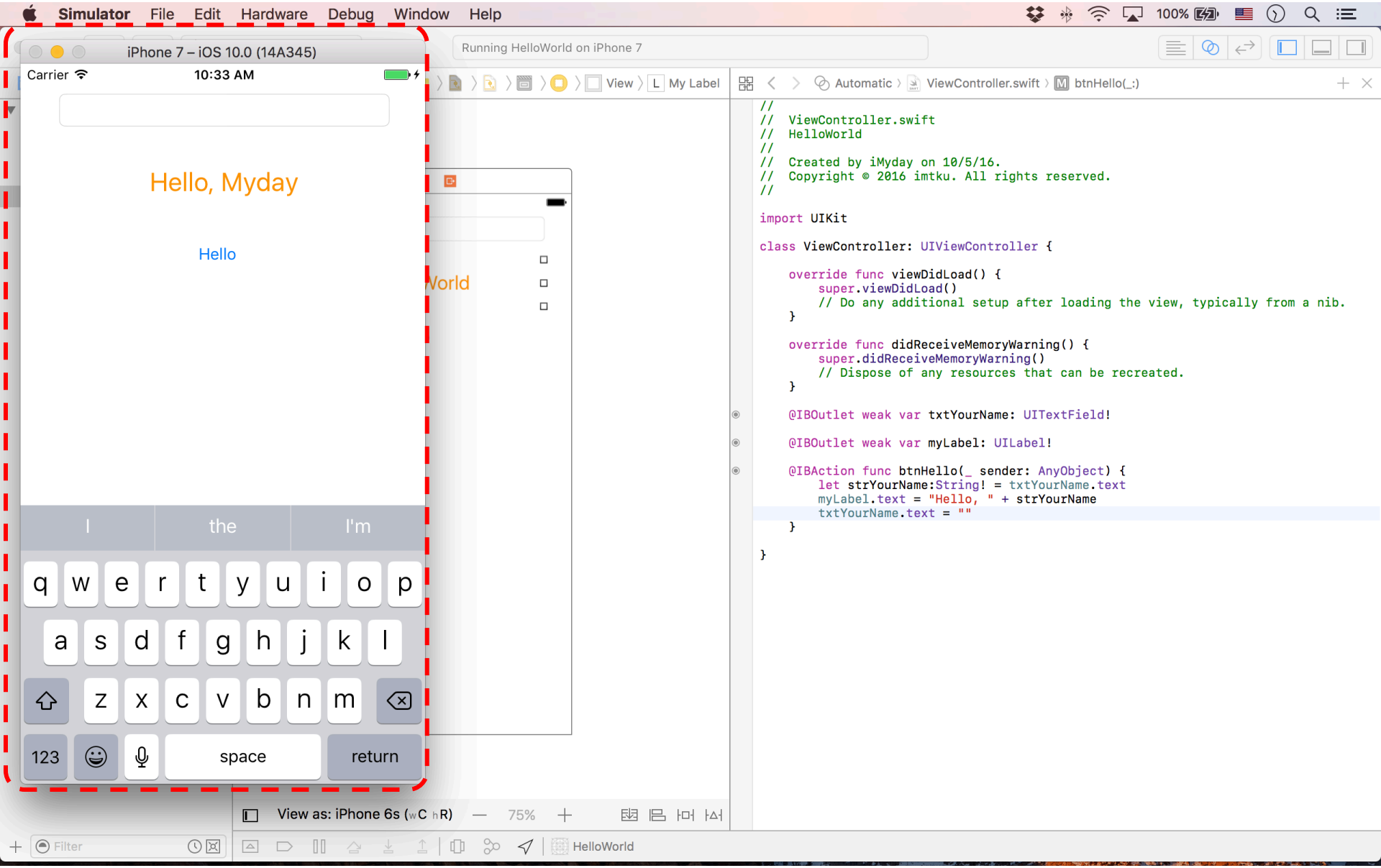
txtYourName.text = ""
}
}


Simulator File Edit Hardware Debug Window Help
iPhone 7 – iOS 10.0 (14A345)
Carrier
10:33 AM
Hello, Myday
Hello
Running HelloWorld on iPhone 7
View
My Label
Automatic
ViewController.swift
btnHello(_:)
//
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// HelloWorld
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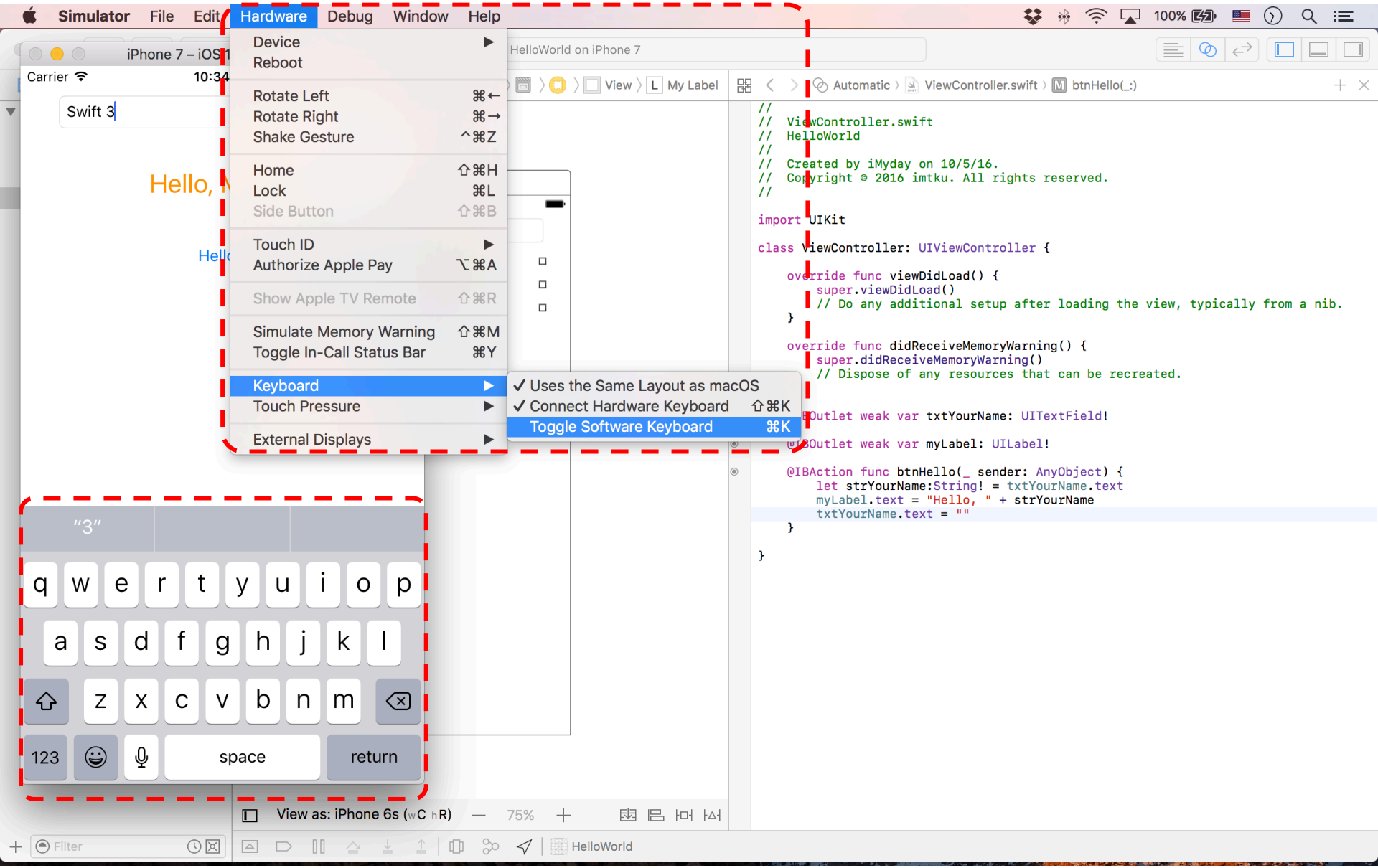
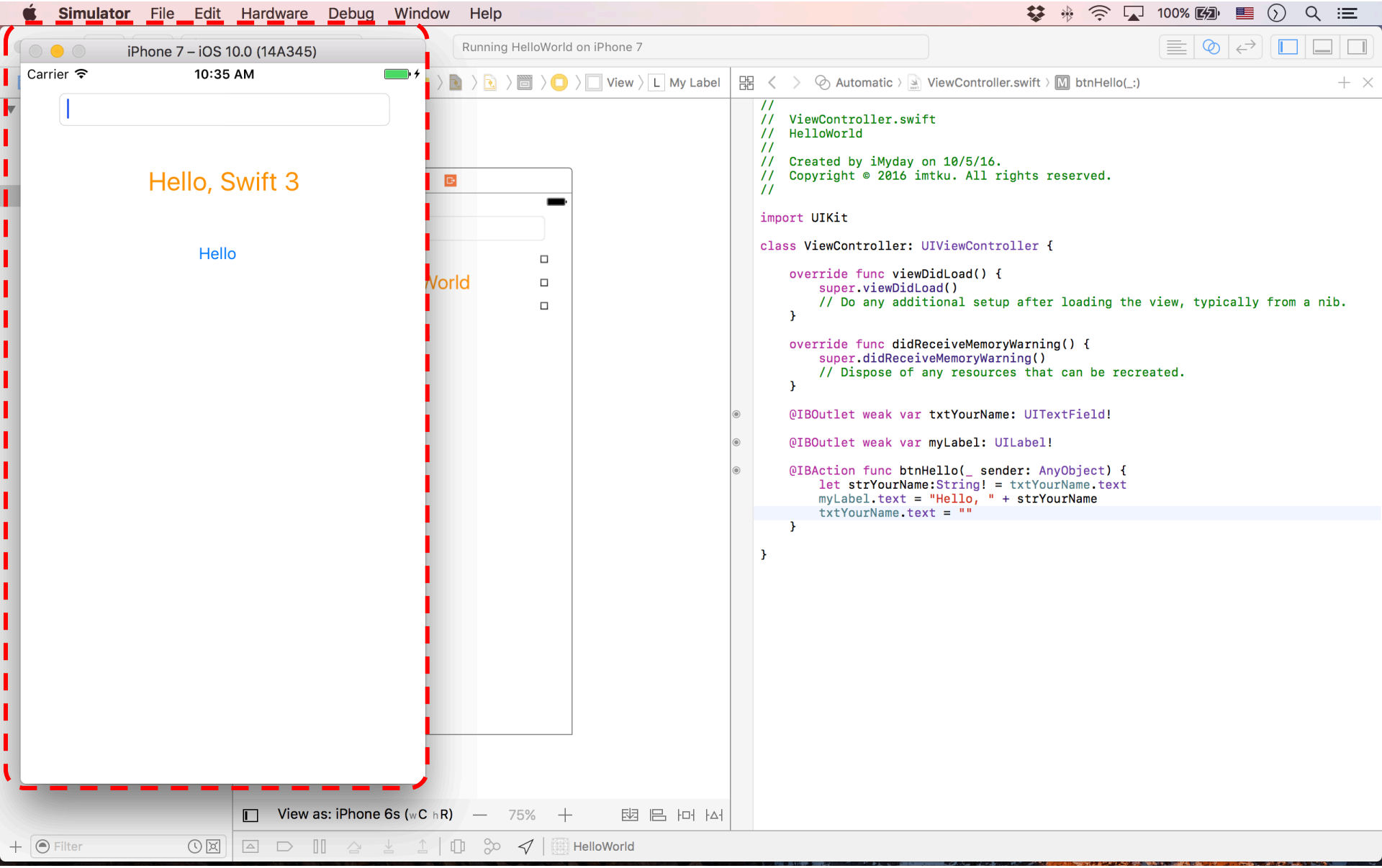
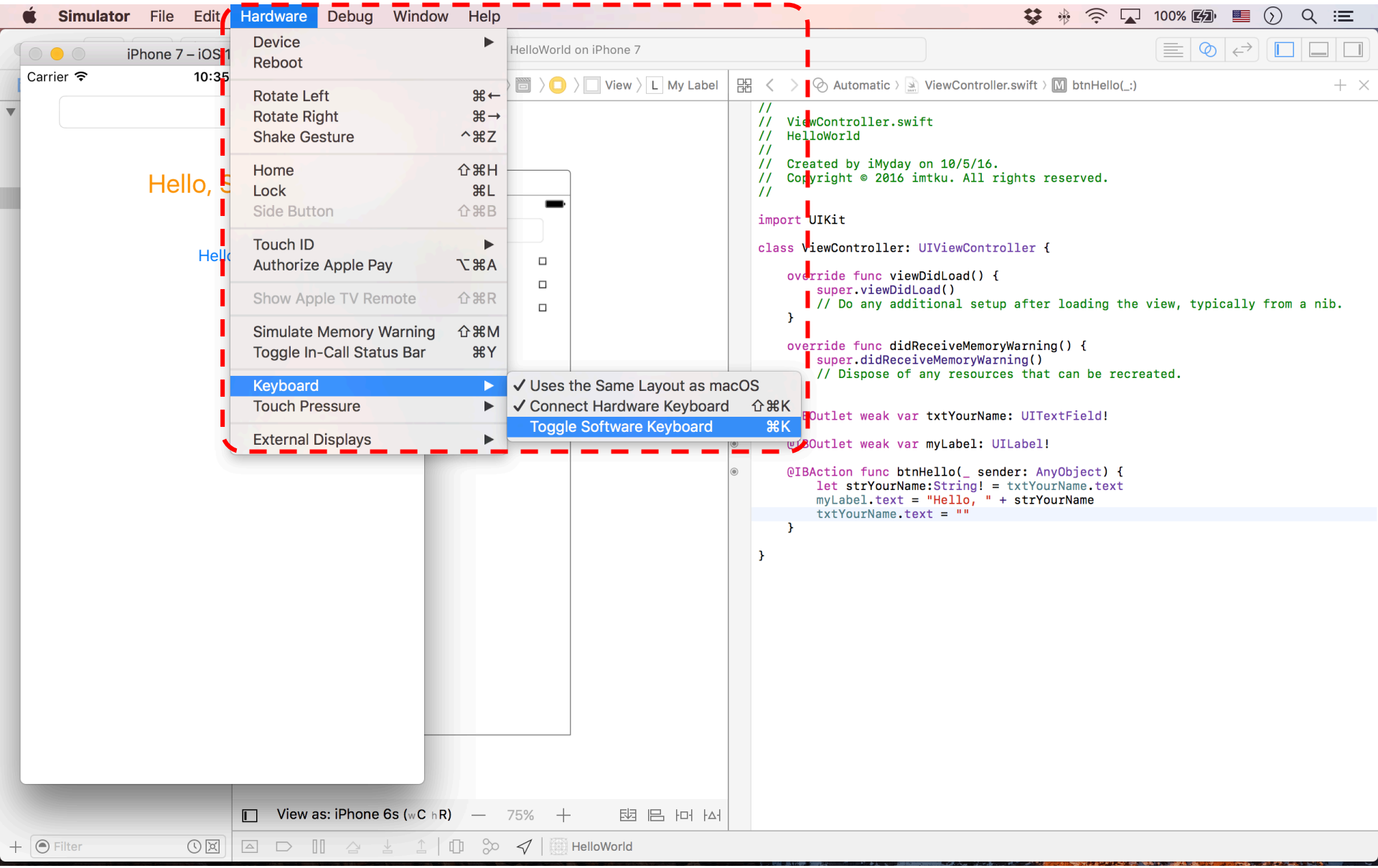
let strYourName:String! = txtYourName.text
myLabel.text = "Hello, " + strYourName
txtYourName.text = ""
}
}
View as: iPhone 6s (wC hR)
75%
HelloWorld


Simulator File Edit Hardware Debug Window Help
Device
Reboot
Rotate Left ⌘←
Rotate Right ⌘→
Shake Gesture ^⌘Z
Home ⇧⌘H
Lock ⌘L
Side Button ⇧⌘B
Touch ID
Authorize Apple Pay ⌥⌘A
Show Apple TV Remote ⇧⌘R
Simulate Memory Warning ⇧⌘M
Toggle In-Call Status Bar ⌘Y
Keyboard
Touch Pressure
External Displays
✓ Uses the Same Layout as macOS
✓ Connect Hardware Keyboard ⇧⌘K
Toggle Software Keyboard ⌘K
iPhone 7 – iOS11
Carrier 10:34
Swift 3
Hello,
HelloWorld on iPhone 7
View My Label
Automatic ViewController.swift btnHello(_:)
// ViewController.swift // HelloWorld // Created by iMyday on 10/5/16. // Copyright © 2016 imtku. All rights reserved. //
import UIKit
class ViewController: UIViewController {
override func viewDidLoad() { super.viewDidLoad() // Do any additional setup after loading the view, typically from a nib. }
override func didReceiveMemoryWarning() { super.didReceiveMemoryWarning() // Dispose of any resources that can be recreated. }
@IBOutlet weak var txtYourName: UITextField!
@IBOutlet weak var myLabel: UILabel!
@IBAction func btnHello(_ sender: AnyObject) { let strYourName:String! = txtYourName.text myLabel.text = "Hello, " + strYourName txtYourName.text = "" }
}
"3"
q w e r t y u i o p
a s d f g h j k l
z x c v b n m
123 space return
View as: iPhone 6s (wC hR) 75%
Filter
HelloWorld


Simulator File Edit Hardware Debug Window Help
100%
iPhone 7 – iOS 10.0 (14A345)
Carrier
10:35 AM
Hello, Swift 3
Hello
Running HelloWorld on iPhone 7
View
My Label
Automatic
ViewController.swift
btnHello(_:)
//
// ViewController.swift
// HelloWorld
//
// Created by iMyday on 10/5/16.
// Copyright © 2016 imtku. All rights reserved.
//
import UIKit
class ViewController: UIViewController {
override func viewDidLoad() {
super.viewDidLoad()
// Do any additional setup after loading the view, typically from a nib.
}
override func didReceiveMemoryWarning() {
super.didReceiveMemoryWarning()
// Dispose of any resources that can be recreated.
}
@IBOutlet weak var txtYourName: UITextField!
@IBOutlet weak var myLabel: UILabel!
@IBAction func btnHello(_ sender: AnyObject) {
let strYourName:String! = txtYourName.text
myLabel.text = "Hello, " + strYourName
txtYourName.text = ""
}
}
View as: iPhone 6s (wC hR)
75%
Filter
HelloWorld


Simulator File Edit Hardware Debug Window Help
Device
Reboot
Rotate Left ⌘←
Rotate Right ⌘→
Shake Gesture ^⌘Z
Home ⇧⌘H
Lock ⌘L
Side Button ⇧⌘B
Touch ID
Authorize Apple Pay ⌥⌘A
Show Apple TV Remote ⇧⌘R
Simulate Memory Warning ⇧⌘M
Toggle In-Call Status Bar ⌘Y
Keyboard
Touch Pressure
External Displays
✓ Uses the Same Layout as macOS
✓ Connect Hardware Keyboard ⇧⌘K
Toggle Software Keyboard ⌘K
iPhone 7 – iOS11
Carrier
10:35
Hello,
HelloWorld on iPhone 7
View
My Label
Automatic
ViewController.swift
btnHello(_:)
//
// ViewController.swift
// HelloWorld
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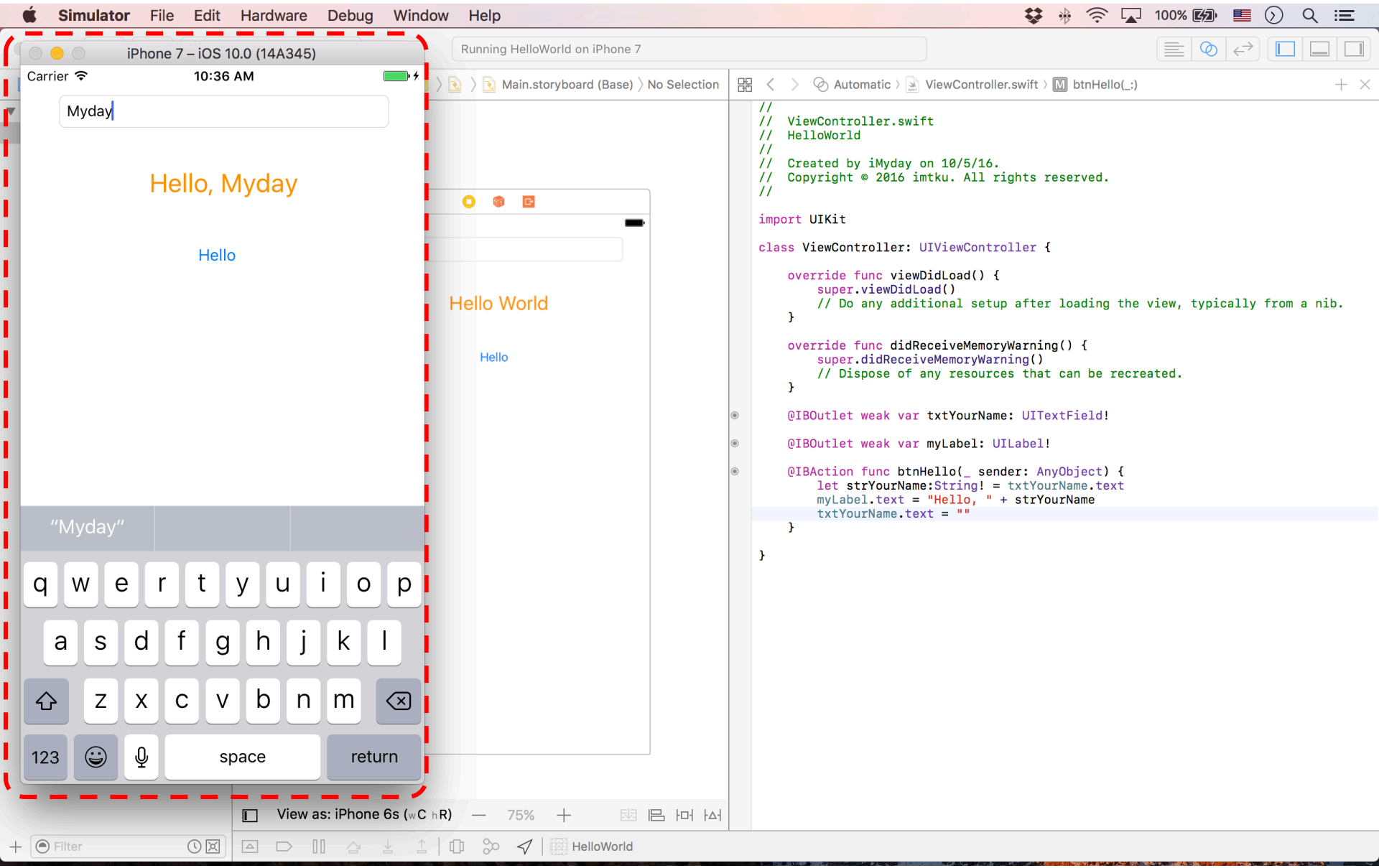
}
View as: iPhone 6s (wC hR)
75%
HelloWorld


Simulator File Edit Hardware Debug Window Help
iPhone 7 – iOS 10.0 (14A345)
Carrier
10:36 AM
Myday
Hello, Myday
Hello
"Myday"
q w e r t y u i o p
a s d f g h j k l
z x c v b n m
123
space
return
Running HelloWorld on iPhone 7
Main.storyboard (Base) 〉 No Selection
Hello World
Hello
View as: iPhone 6s (wC hR)
75%
Automatic 〉 ViewController.swift 〉 btnHello(_:)
//
// ViewController.swift
// HelloWorld
//
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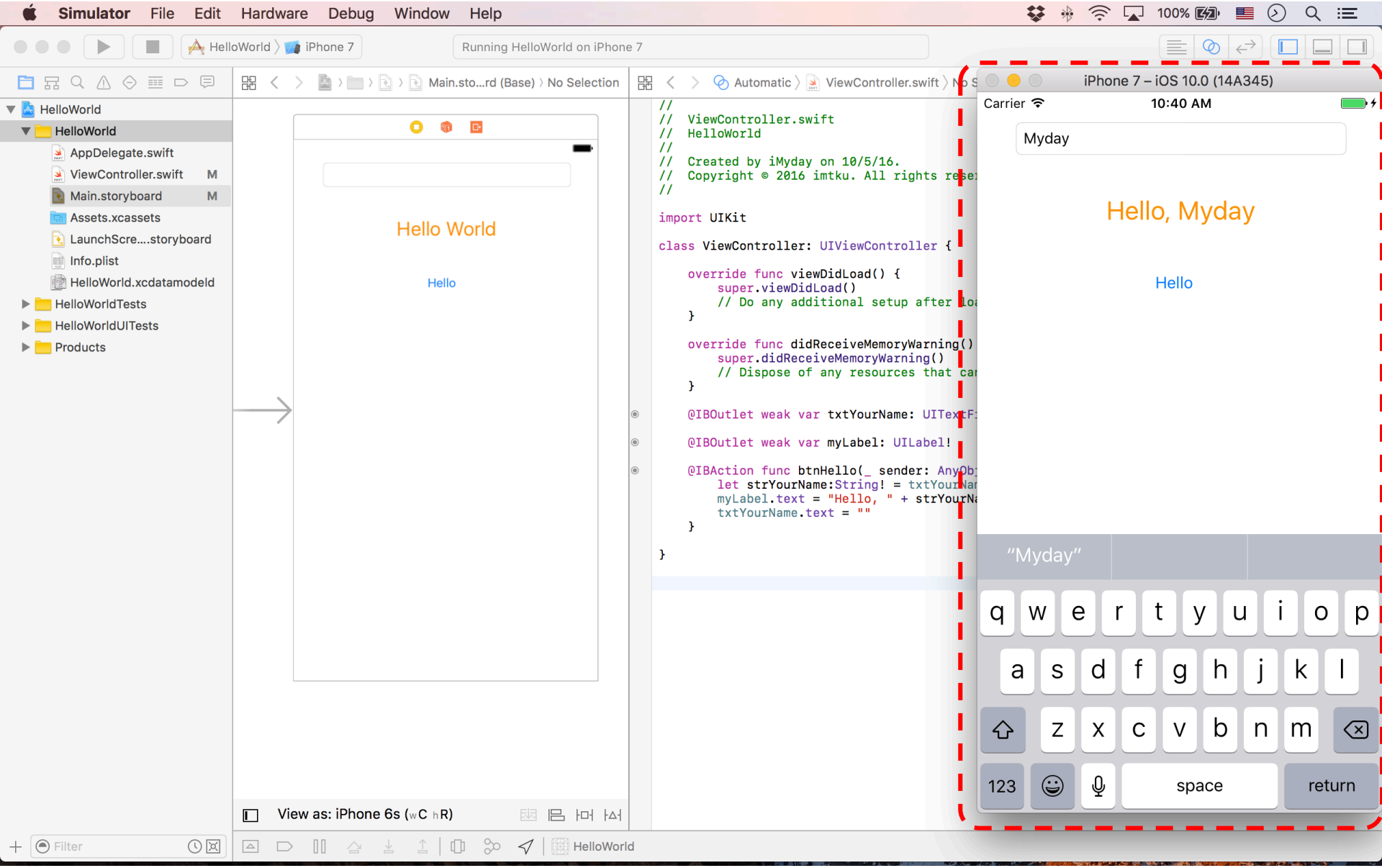
}
}
Filter
HelloWorld


Simulator File Edit Hardware Debug Window Help
HelloWorld
iPhone 7
Running HelloWorld on iPhone 7
HelloWorld
HelloWorld
AppDelegate.swift
ViewController.swift M
Main.storyboard M
Assets.xcassets
LaunchScre....storyboard
Info.plist
HelloWorld.xcdatamodeld
HelloWorldTests
HelloWorldUITests
Products
Hello World
Hello
View as: iPhone 6s (wC hR)
Main.sto...rd (Base) No Selection
Automatic ViewController.swift
//
// ViewController.swift
// HelloWorld
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// Do any additional setup after loa
}
override func didReceiveMemoryWarning()
super.didReceiveMemoryWarning()
// Dispose of any resources that ca
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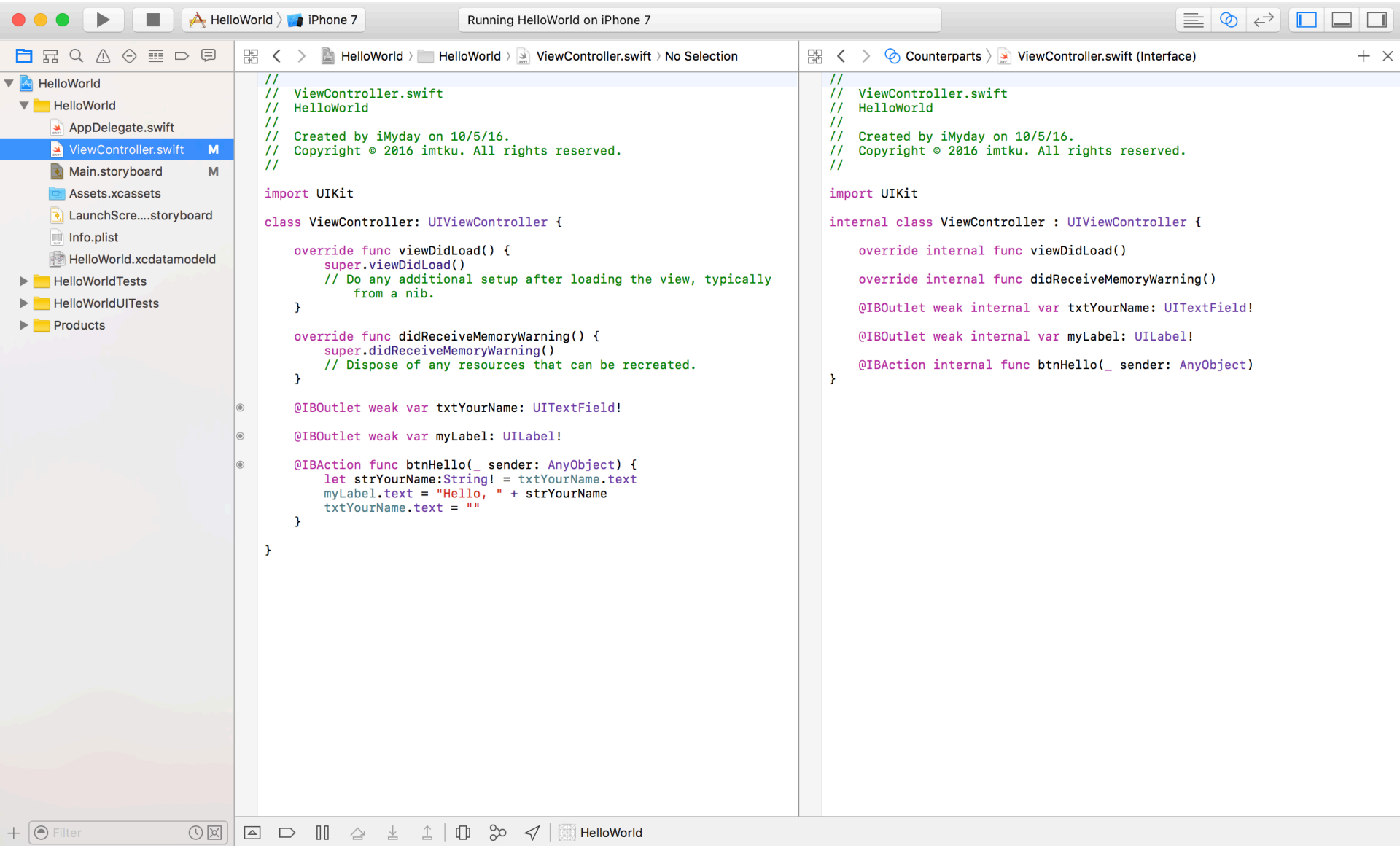
@IBOutlet weak var myLabel: UILabel!
@IBAction func btnHello(_ sender: AnyOb
let strYourName:String! = txtYourNa
myLabel.text = "Hello, " + strYourNa
txtYourName.text = ""
}
}
HelloWorld
iPhone 7 – iOS 10.0 (14A345)
Carrier
10:40 AM
Myday
Hello, Myday
Hello
"Myday"
q w e r t y u i o p
a s d f g h j k l
z x c v b n m
123
space
return

ViewController.swift



ViewController.swift

```
//
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//  HelloWorld
//
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//

import UIKit

class ViewController: UIViewController {

    override func viewDidLoad() {
        super.viewDidLoad()
        // Do any additional setup after loading the view, typically from a nib.
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    override func didReceiveMemoryWarning() {
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    }

    @IBOutlet weak var txtYourName: UITextField!

    @IBOutlet weak var myLabel: UILabel!

    @IBAction func btnHello(_ sender: AnyObject) {
        let strYourName:String! = txtYourName.text
        myLabel.text = "Hello, " + strYourName
        txtYourName.text = ""
    }

}
```

ViewController.swift

```
@IBOutlet weak var txtYourName: UITextField!

@IBOutlet weak var myLabel: UILabel!

@IBAction func btnHello(_ sender: AnyObject) {
        let strYourName:String! = txtYourName.text
        myLabel.text = "Hello, " + strYourName
      txtYourName.text = ""
```

ViewController.swift (Interface)

```swift
//
//  ViewController.swift
//  HelloWorld
//
//  Created by iMyday on 10/5/16.
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//

import UIKit

internal class ViewController : UIViewController {

    override internal func viewDidLoad()

    override internal func didReceiveMemoryWarning()

    @IBOutlet weak internal var txtYourName: UITextField!

    @IBOutlet weak internal var myLabel: UILabel!

    @IBAction internal func btnHello(_ sender: AnyObject)
}
```
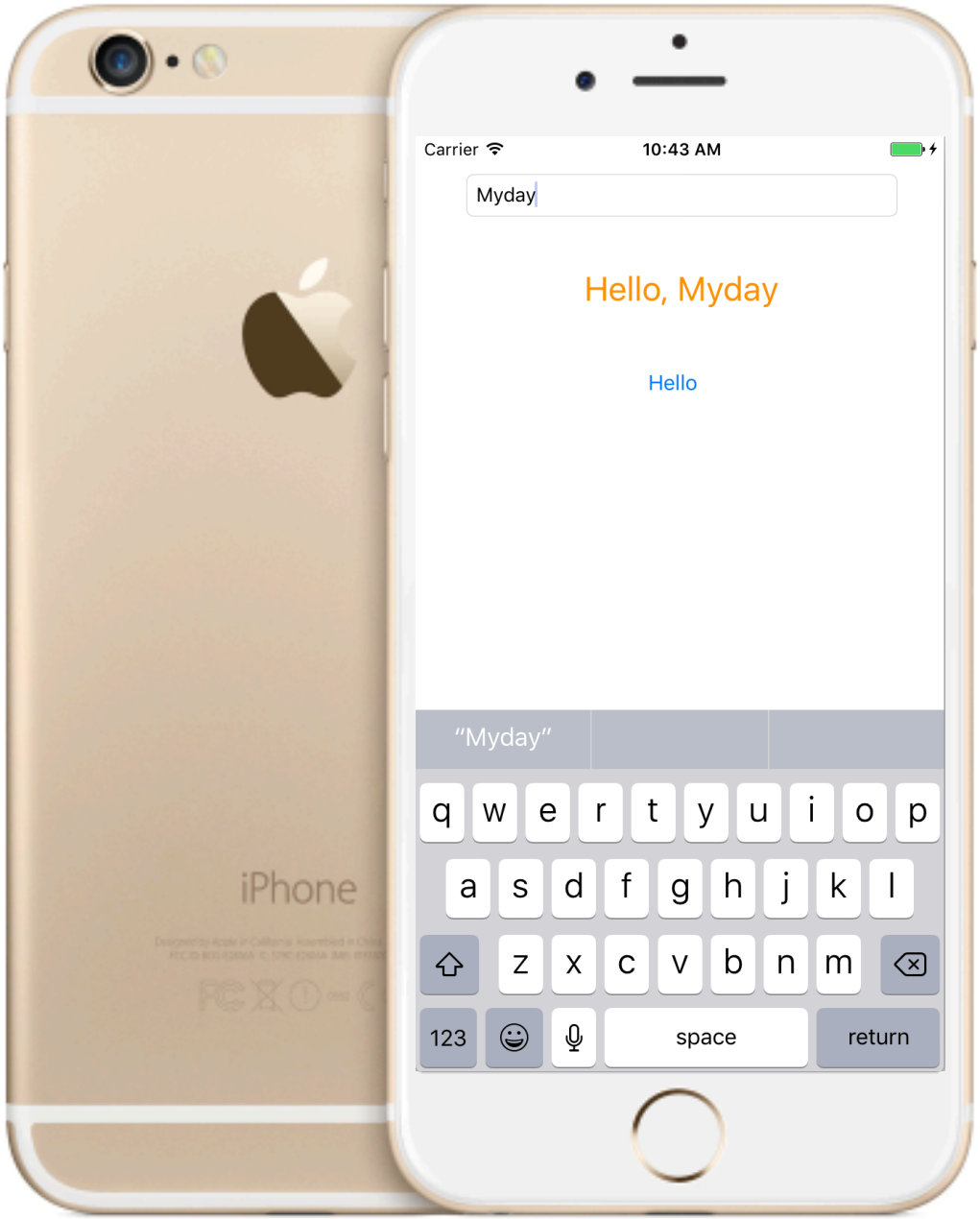


9:41 AM
100%
Messages
Calendar
Tuesday
9
Photos
Camera
Weather
Clock
Maps
Videos
Notes
Reminders
Stocks
Game Center
Newsstand
iTunes Store
App Store
iBooks
Health
Passbook
Settings
Phone
Mail
Safari
Music
iPhone


Carrier
10:43 AM
Myday
Hello, Myday
Hello
"Myday"
q w e r t y u i o p
a s d f g h j k l
z x c v b n m
123
space
return
iPhone

Summary

- **Developing iPhone / iPad Native Apps with Swift 4 (Xcode 9)**
  - **Mac OS X 10.8, 10.9, 10.10, 10.11, 10.12, 10.13**
  - **Xcode 6, Xcode 7, Xcode 8, Xcode 9**
  - **iOS 8, iOS 9, iOS 10, iOS 11**
- **Building Your First iOS App with Xcode 9**

Xcode 8

Swift 3

Xcode 9

Swift 4

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- Apple - WWDC 2015
  - https://www.youtube.com/watch?v=_p8AsQhaVKI
- Apple - WWDC 2016 Keynote
  - https://www.youtube.com/watch?v=n5jXg_NNiCA
- What's New in Swift 4 - Apple WWDC 2017
  - https://www.youtube.com/watch?v=3y42Qg6MTvk