

# Hello Watch! Build your First Apple Watch App

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Download project files:  
[bit.ly/ghcwatch](http://bit.ly/ghcwatch)



2016

ANITA BORG INSTITUTE  
**GRACE HOPPER CELEBRATION OF WOMEN IN COMPUTING**

 #GHC16

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ANITA BORG INSTITUTE 

 Association for Computing Machinery

# Hi, I'm Kristina!



# Hi! I'm Mayuko



# Workshop Agenda

1. Intro to Apple Watch Development
2. Hello Watch! App
3. Counter App with iPhone Companion App
4. Resources and Q&A

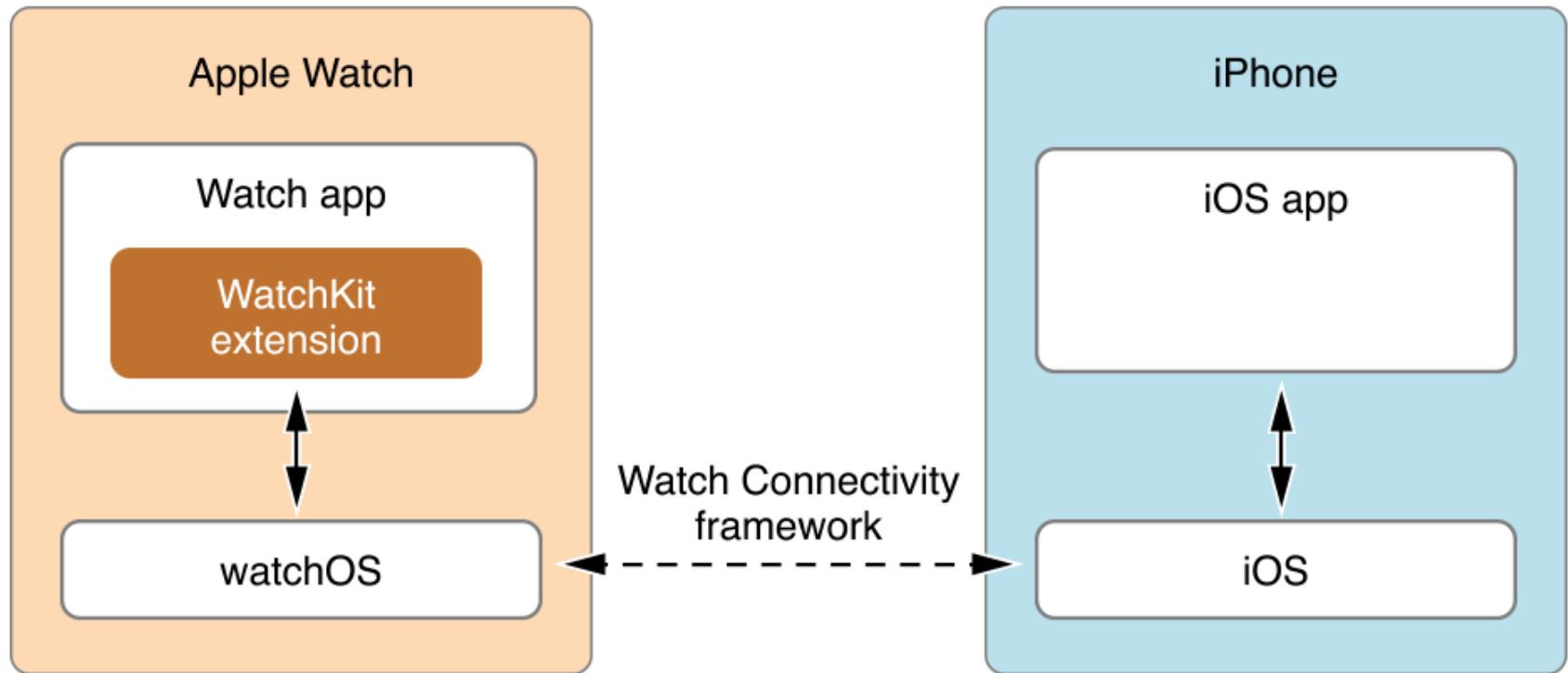
# Apple Watch



# Apple Watch



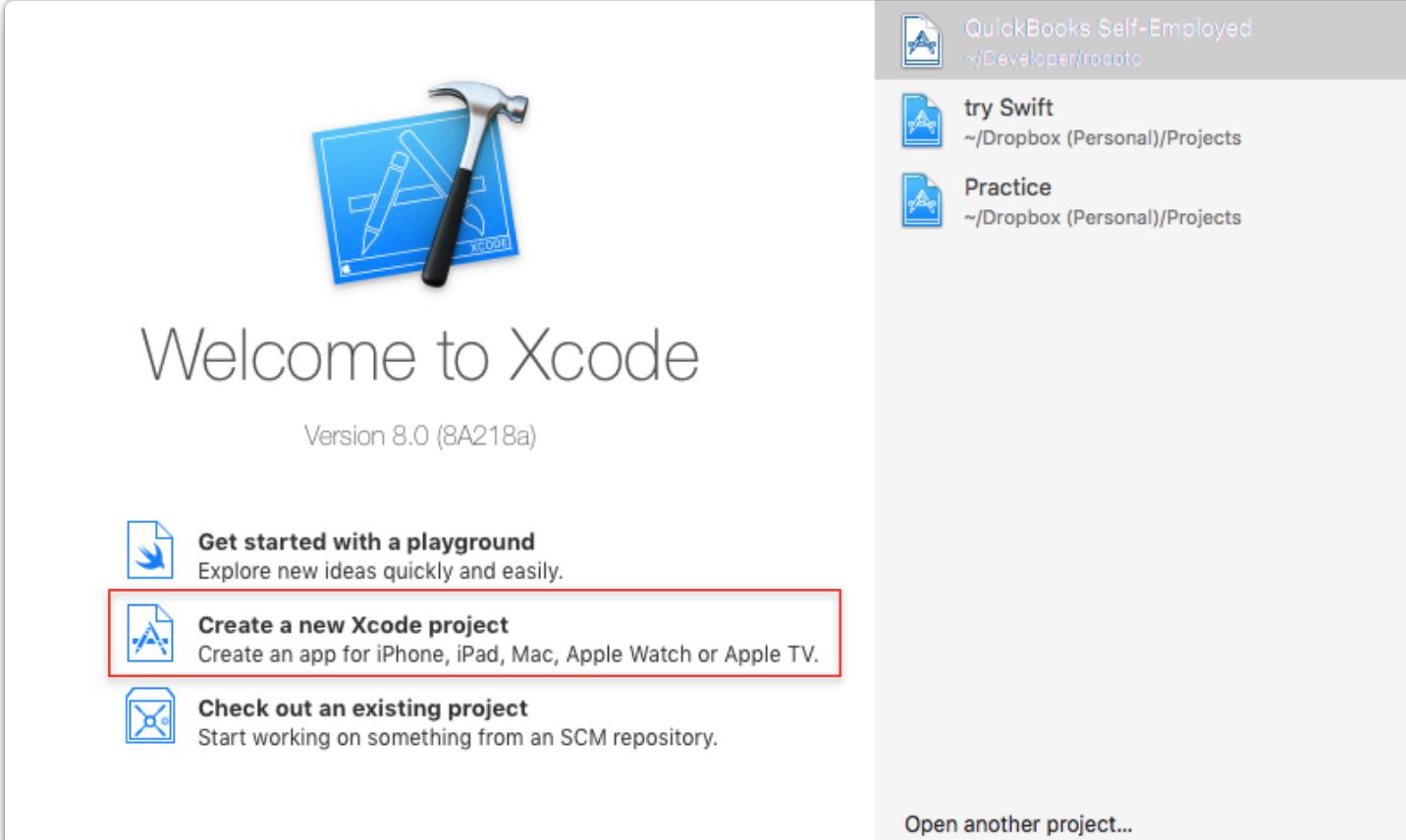
# Apple Watch Architecture



# Hello Watch! App

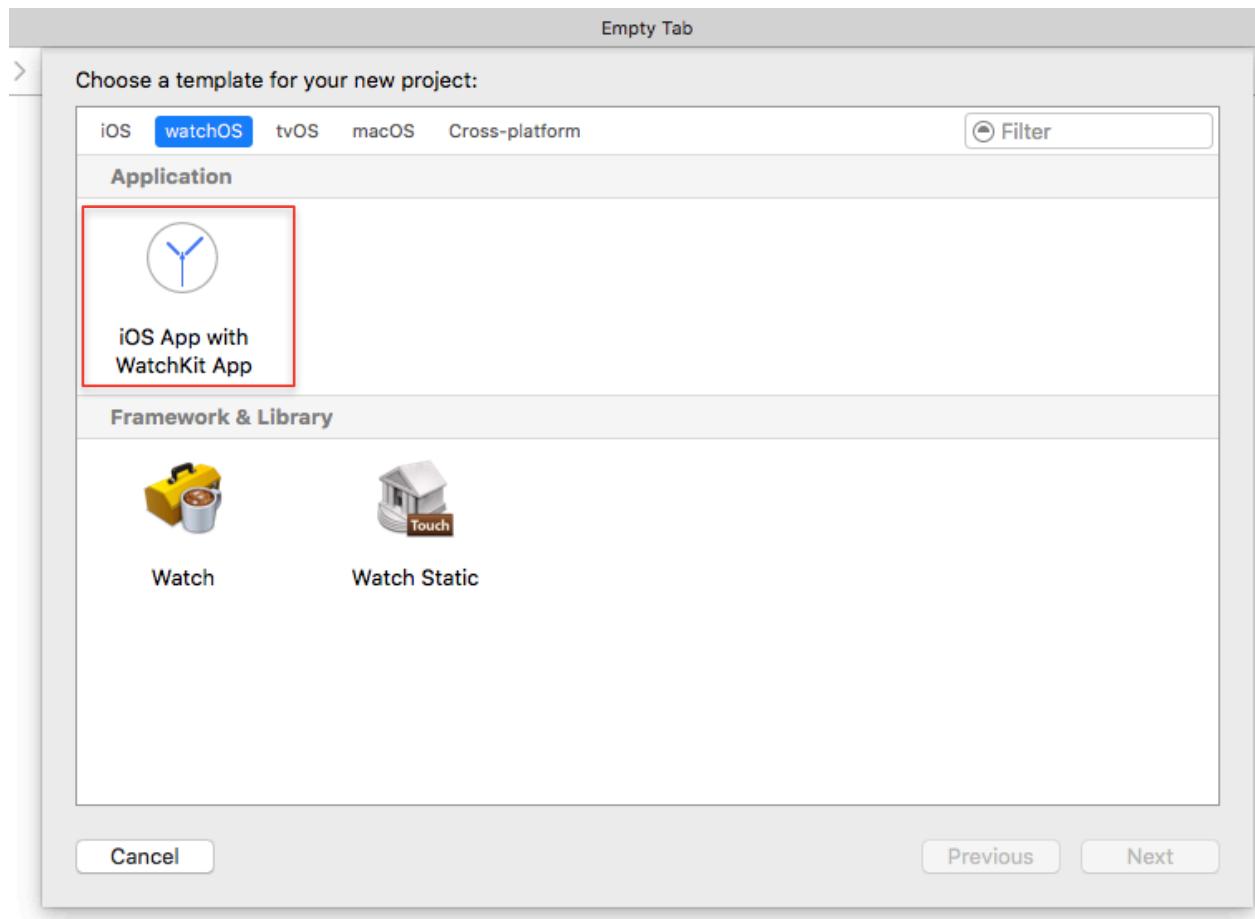


# Hello Watch Application



The image shows the 'Welcome to Xcode' screen. At the top, there's a blue icon of a hammer and a ruler on a blueprint. Below it, the text 'Welcome to Xcode' and 'Version 8.0 (8A218a)' are displayed. On the right, there's a sidebar with three project entries: 'QuickBooks Self-Employed' (with path '~Developer/rocoto'), 'try Swift' (with path '~Dropbox (Personal)/Projects'), and 'Practice' (with path '~Dropbox (Personal)/Projects'). The main area contains three buttons: '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), and 'Check out an existing project' (Start working on something from an SCM repository). The 'Create a new Xcode project' button is highlighted with a red border. At the bottom right of the main area, there's a link 'Open another project...'. A horizontal bar at the very bottom of the slide contains the text 'PAGE 9 | GRACE HOPPER CELEBRATION 2016 | #GHC16 | @kristinathai | @hellomayuko'.

# Choose App Type



# Name Your Project

Empty Tab

Choose options for your new project:

Product Name: HelloWatch

Team: None

Organization Name:

Organization Identifier: kristina

Bundle Identifier: kristina.HelloWatch

Language: Swift

Devices: Universal

Include Notification Scene

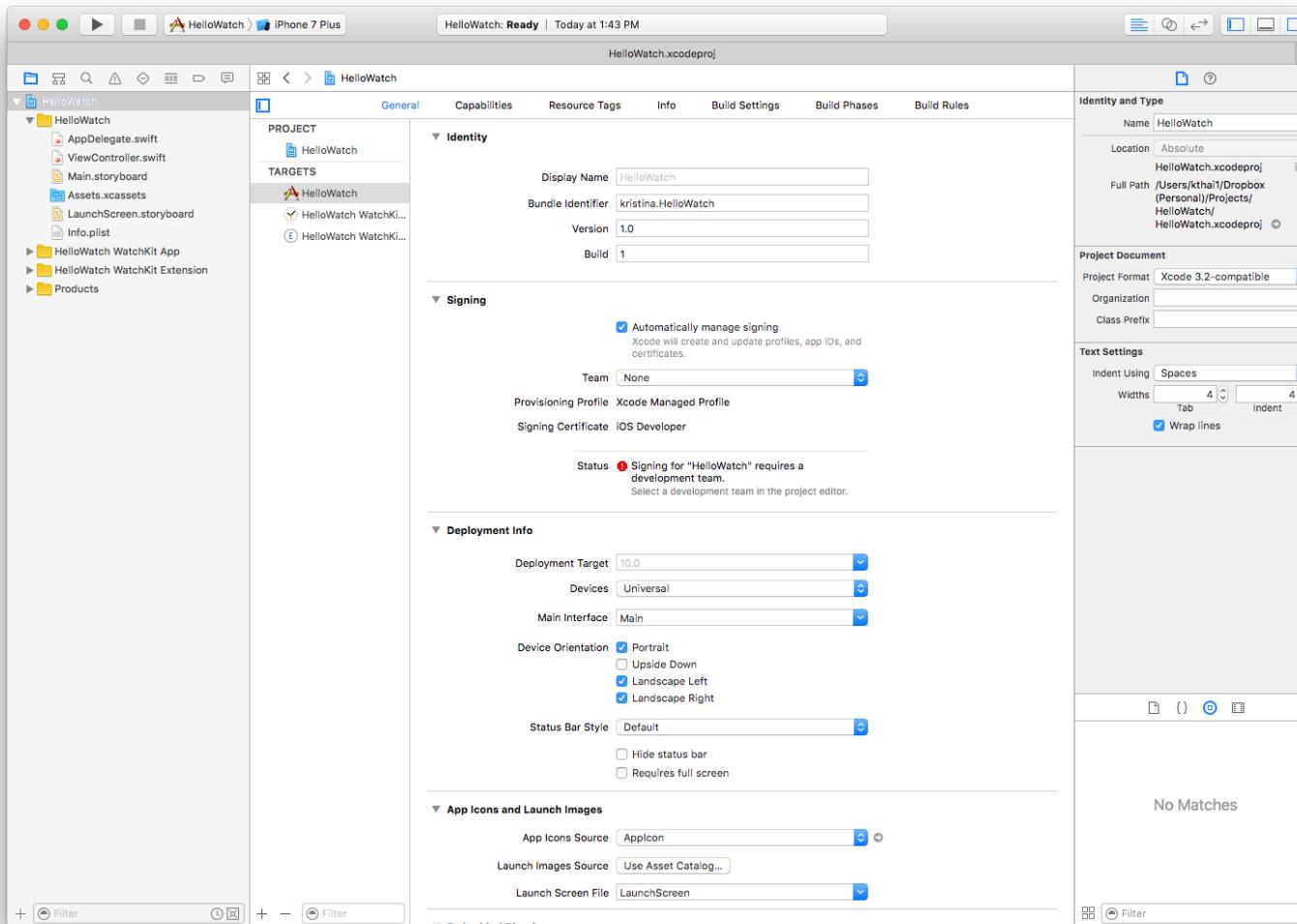
Include Complication

Include Unit Tests

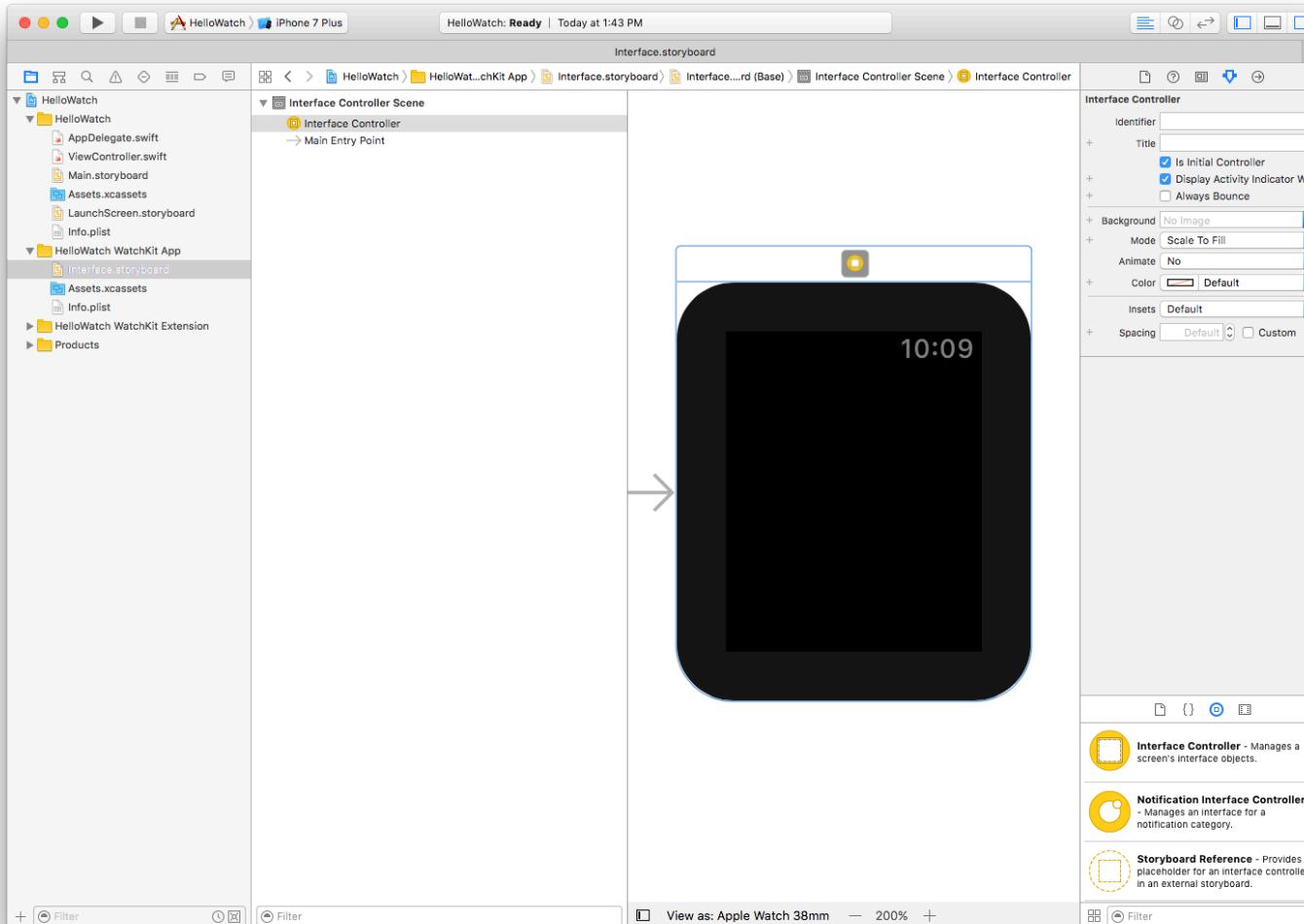
Include UI Tests

[Cancel](#) [Previous](#) [Next](#)

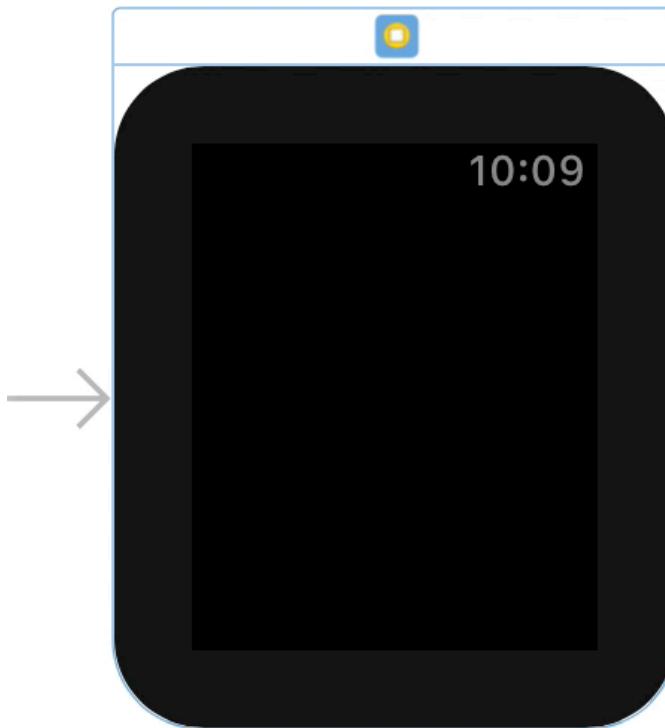
# You're In!



# Build the Interface



# Drag the Label



The image shows the Xcode interface with the object library open on the right side. The 'Label' section is highlighted, showing its description: 'Label - Label - Displays a static text string.' Below it are other controls like 'Slider', 'Picker', 'Date', 'Timer', and 'Activity Ring'. The 'Label' section has a small thumbnail icon of a text box.

+ Background No Image  
+ Mode Scale To Fill  
Animate No  
Color Default  
Insets Default  
Spacing Default  
Custom

Slider - A control for selecting a floating-point value from a range of continuous or discrete values.

Picker - A control for selecting an item from a list.

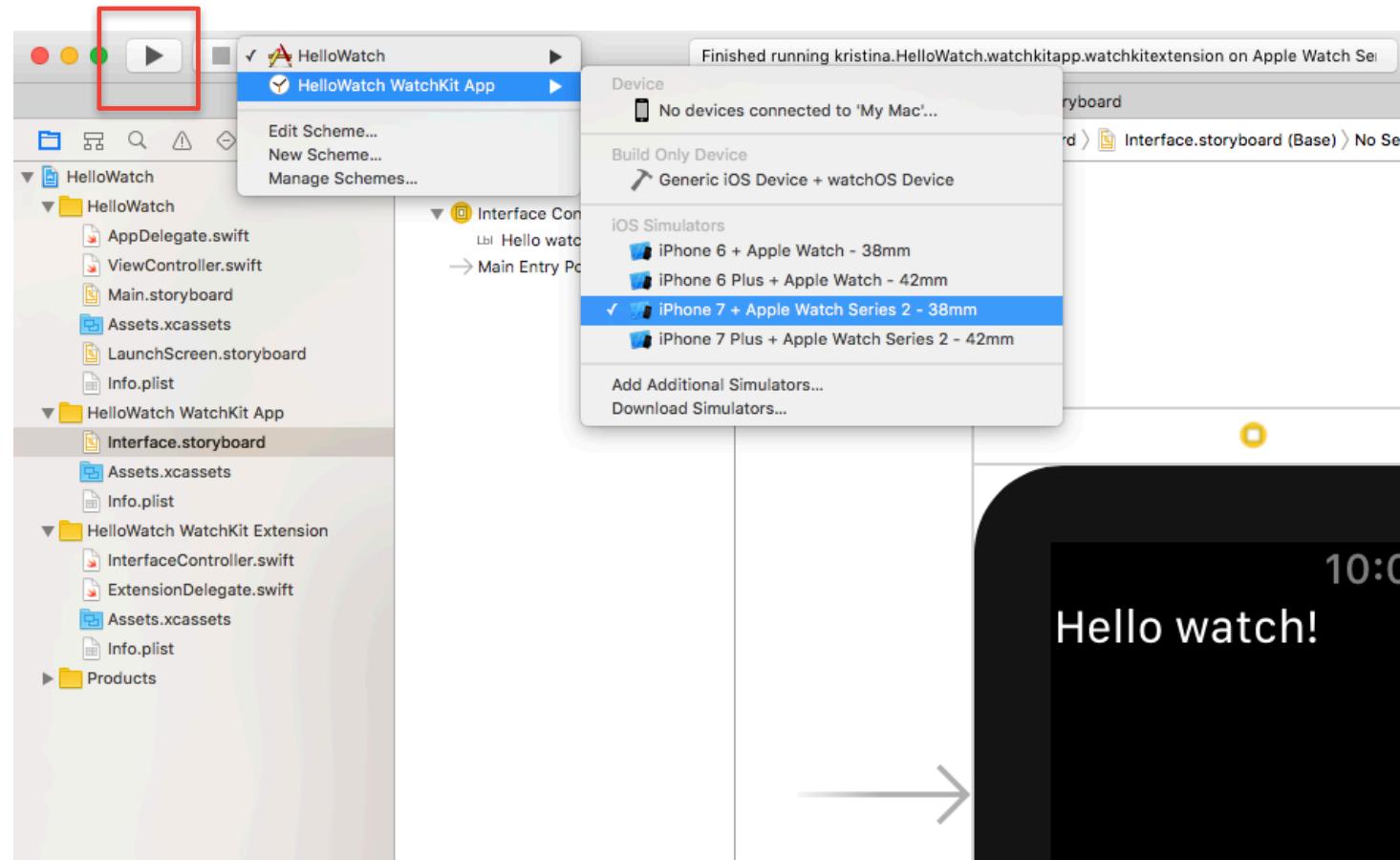
Label Label - Displays a static text string.

9/9/14 Date - Displays the current date and time.

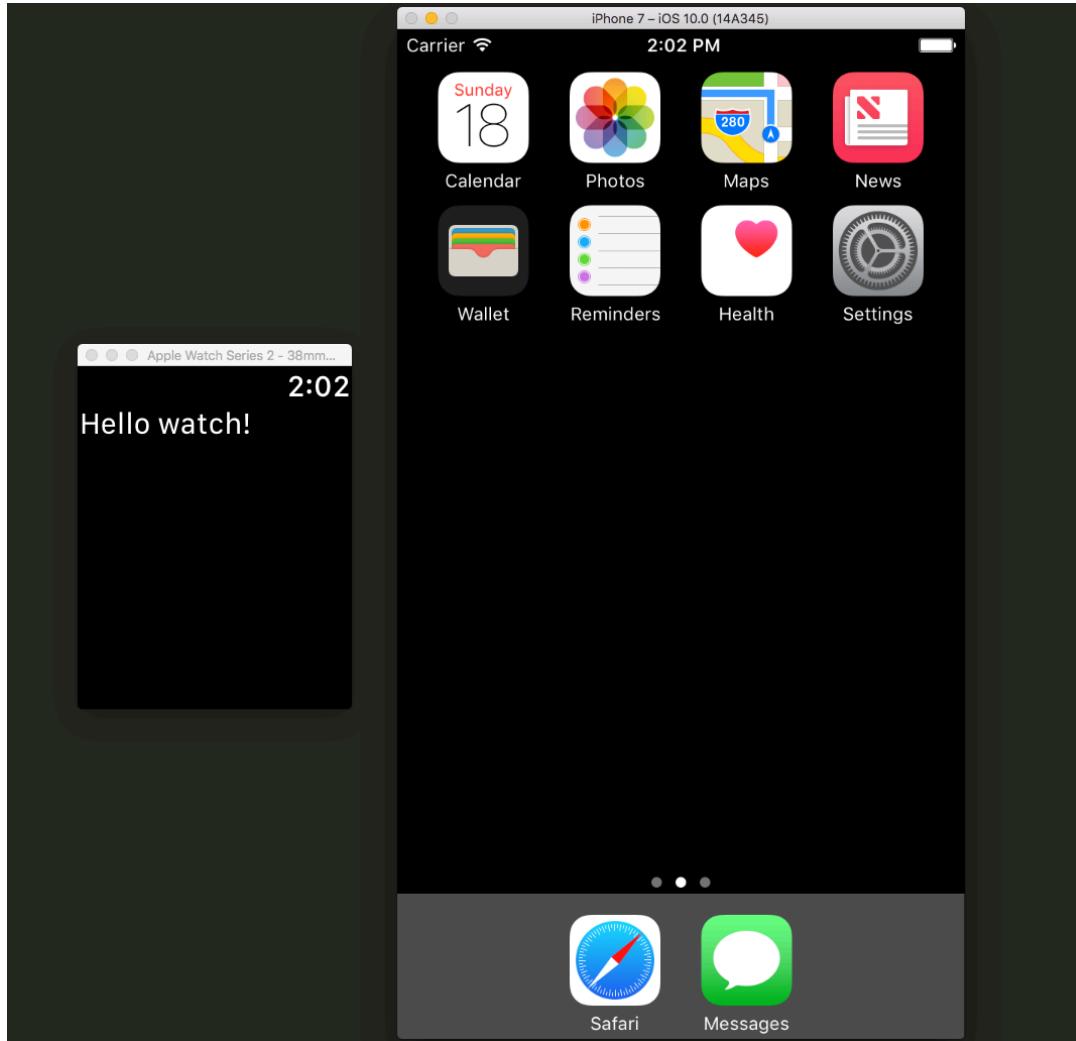
59:59 Timer - Displays a string that counts up or down to a specified time.

Activity Ring Activity Ring - Displays an Activity Ring

# Pick a Scheme...and Run!



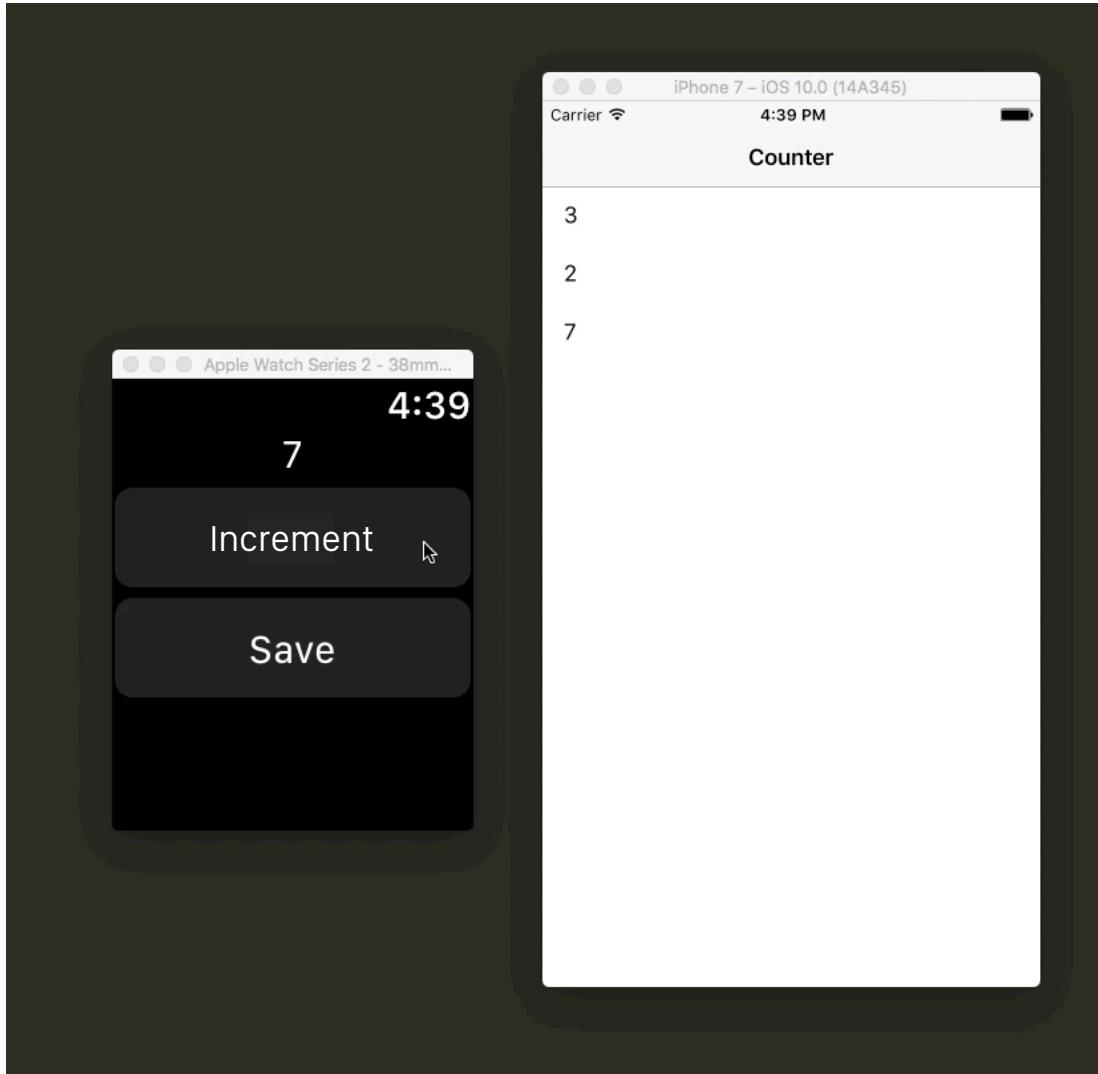
# Launch the App!



# Watch Counter App (with iPhone Companion App)



# Final Product

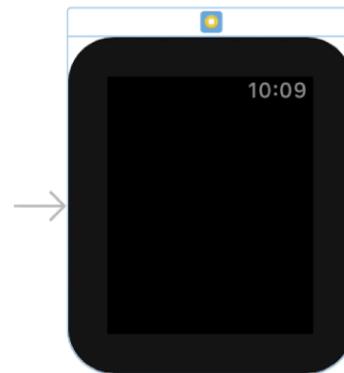


# Counter Application

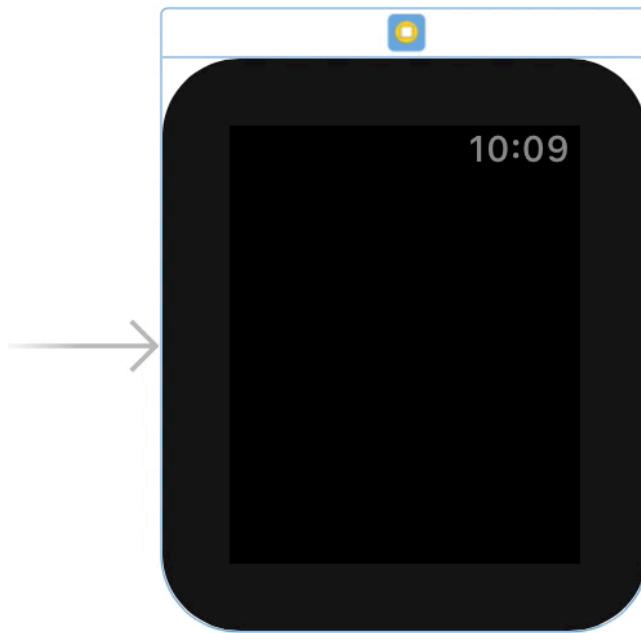
Open the Xcode project that we gave you (Counter.xcodeproj)

[bit.ly/ghcwatch](http://bit.ly/ghcwatch)

On left sidebar, navigate to Counter WatchKit App >  
Interface.storyboard



# Setup the Counter Label



**Interface Controller**

Identifier:

+ Title:   
 Is Initial Controller  
 Display Activity Indicator W...  
 Always Bounce

+ Background:

+ Mode:

+ Animate:

+ Color:  Default

+ Insets:

+ Spacing:

---

**Switch** - A control for indicating a binary value.

**Slider** - A control for selecting a floating-point value from a range of continuous or discrete values.

---

**Picker** - A control for selecting an item from a list.

---

**Label** **Label** - Displays static text string.

# Add the buttons

No Selection

Separator - A line for separating content in your interface.

Button - A tappable area with a title and image.

Payment Button - Standard button for initiating Apple Pay transactions.

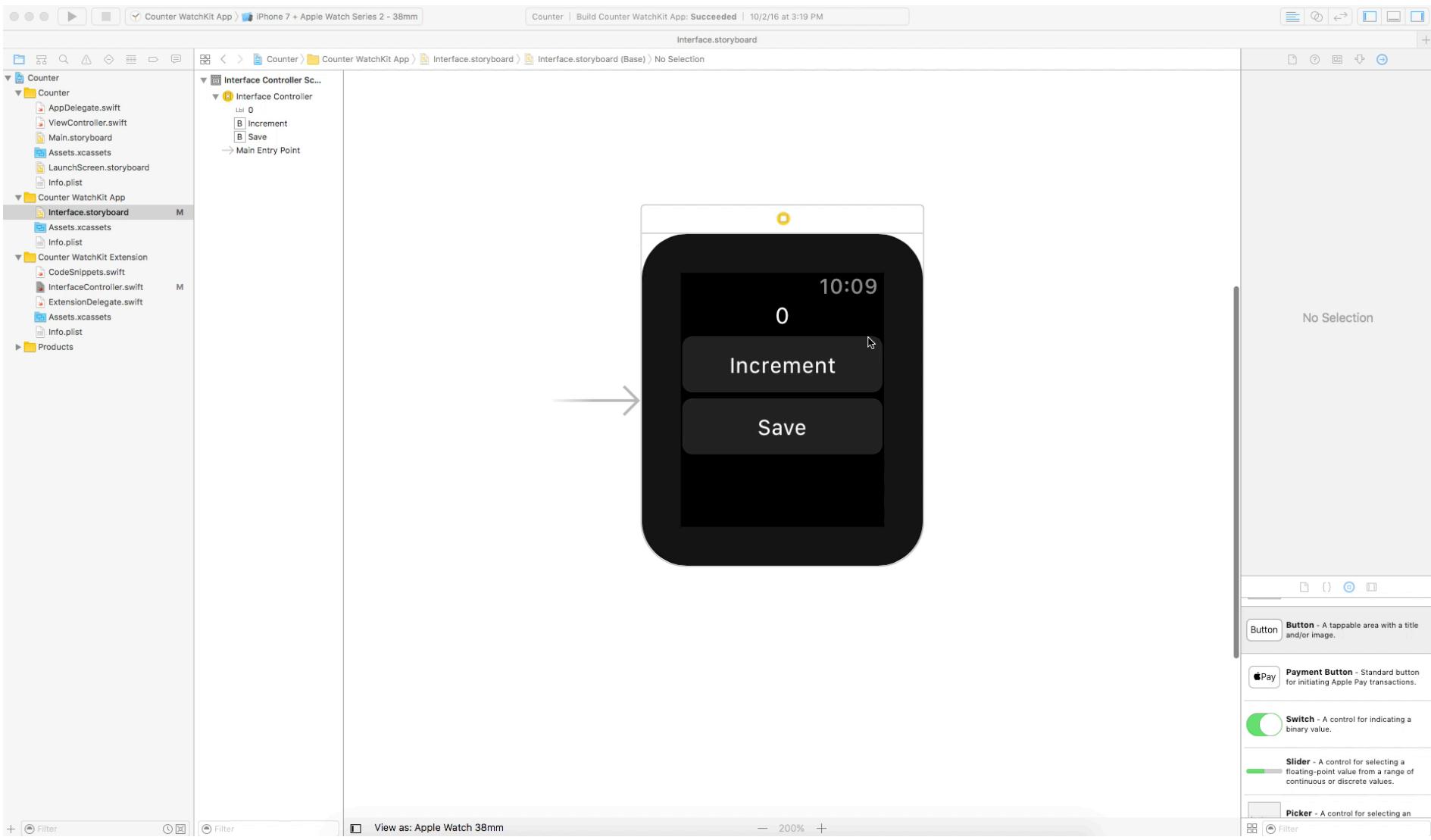
Switch - A control for indicating a binary value.

Slider - A control for selecting a floating-point value from a range of continuous or discrete values.

Picker - A control for selecting an item from a list.

Label - Displays a static text string.

# Go into split view



# Connect the counter label outlet

The image shows a split-screen view of Xcode. On the left, the storyboard interface is displayed, featuring a digital watch face with a black background. The time is set to 10:09. A digital label displays the value '0'. Below the label are two large, rounded rectangular buttons labeled 'Increment' and 'Save'. On the right, the code editor displays the Swift file `InterfaceController.swift`. The code is a template for a WatchKit extension, starting with several comments explaining the steps for setting up connectivity and a counter function.

```
// InterfaceController.swift
// Counter WatchKit Extension
//
// Created by Thai, Kristina on 9/18/16.
//
//
import WatchKit
import Foundation
/*
 * 2 - Import Watch Connectivity framework
 */
/*
 * 3 - Add WCSessionDelegate to class definition
 */
class InterfaceController: WKInterfaceController {
    /*
     * 1 - Create a variable for your counter
     */

    /*
     * 4 - Set up Watch Connectivity
     */

    /*
     * 5 - Setup your incrementCounter() function
     */

    /*
     * 6 - Setup your saveCounter() function
     */
}
```

# Connect the button actions

The screenshot shows the Xcode interface with two main panes. On the left, the storyboard preview shows a digital watch face with a digital clock at the top displaying "10:09" and a counter below it showing "0". There are two buttons: "Increment" and "Save". A large arrow points from the storyboard preview towards the code editor on the right. The code editor displays the file "InterfaceController.swift" with the following content:

```
// InterfaceController.swift
// Counter WatchKit Extension
//
// Created by Thai, Kristina on 9/18/16.
//
import WatchKit
import Foundation
/*
 * 2 - Import Watch Connectivity framework
 */
/*
 * 3 - Add WCSessionDelegate to class definition
 */
class InterfaceController: WKInterfaceController {
    @IBOutlet var counterLabel: WKInterfaceLabel!
    /*
     * 1 - Create a variable for your counter
     */

    /*
     * 4 - Set up Watch Connectivity
     */

    /*
     * 5 - Setup your incrementCounter() function
     */

    /*
     * 6 - Setup your saveCounter() function
     */
}
```

# Time to code!

On the left sidebar, go to the Counter WatchKit Extension folder and click on “CodeSnippets.swift”

Hold down the Option key and click on “InterfaceController.swift”

```
// CodeSnippets.swift
// Counter WatchKit Extension
//
// Created by Thai, Kristina on 9/18/16.
//
/*
 * 1 - Create a variable for your counter
 */
var counter = 0

/*
 * 2 - Import Watch Connectivity framework
 */
import WatchConnectivity

/*
 * 3 - Add WCSessionDelegate to class definition
 */
class InterfaceController: WKInterfaceController, WCSessionDelegate {

/*
 * 4 - Set up Watch Connectivity
 */

// InterfaceController.swift
// Counter WatchKit Extension
//
// Created by Thai, Kristina on 9/18/16.
//
import WatchKit
import Foundation
/*
 * 2 - Import Watch Connectivity framework
 */
/*
 * 3 - Add WCSessionDelegate to class definition
 */
class InterfaceController: WKInterfaceController {
    @IBOutlet var counterLabel: WKInterfaceLabel!
    /*
     * 1 - Create a variable for your counter
     */

    /*
     * 4 - Set up Watch Connectivity
     */

    /*
     * 5 - Setup your incrementCounter() function
     */
}
```

# 1 – Create a variable for your counter

```
15  /*
16   * 3 - Add WCSessionDelegate to class definition
17   */
18  class InterfaceController: WKInterfaceController {
19      @IBOutlet var counterLabel: WKInterfaceLabel!
20      /*
21       * 1 - Create a variable for your counter|
22       */
23      var counter = 0
24
25      /*
26       * 4 - Set up Watch Connectivity
27       */
28
```

## 2 – Import Watch Connectivity framework

```
9 import WatchKit
10 import Foundation
11 /*
12 * 2 - Import Watch Connectivity framework
13 */
14 import WatchConnectivity
15
16 /*
17 * 3 - Add WCSessionDelegate to class definition
18 */
19 class InterfaceController: WKInterfaceController {
```

# 3 – Add WCSessionDelegate to class definition

```
16  /*
17   * 3 - Add WCSessionDelegate to class definition
18   */
19  class InterfaceController: WKInterfaceController, WCSessionDelegate {
20      @IBOutlet var counterLabel: WKInterfaceLabel!
21      /*
22       * 1 - Create a variable for your counter
23       */
24      var counter = 0
25
26      /*
27       * 4 - Set up Watch Connectivity
28       */
29
```

# 4 – Setup Watch Connectivity

```
25
26  /*
27   * 4 - Set up Watch Connectivity
28   */
29  private let session : WCSession? = WCSession.isSupported() ?
30      WCSession.default() : nil
31
32  override init() {
33      super.init()
34
35      session?.delegate = self
36      session?.activate()
37  }
38
39  func session(_ session: WCSession, activationDidCompleteWith
40      activationState: WCSessionActivationState, error: Error?) {}
41
42  /*
43   * 5 - Setup your incrementCounter() function
44   */
45  @IBAction func incrementCounter() {
46  }
```

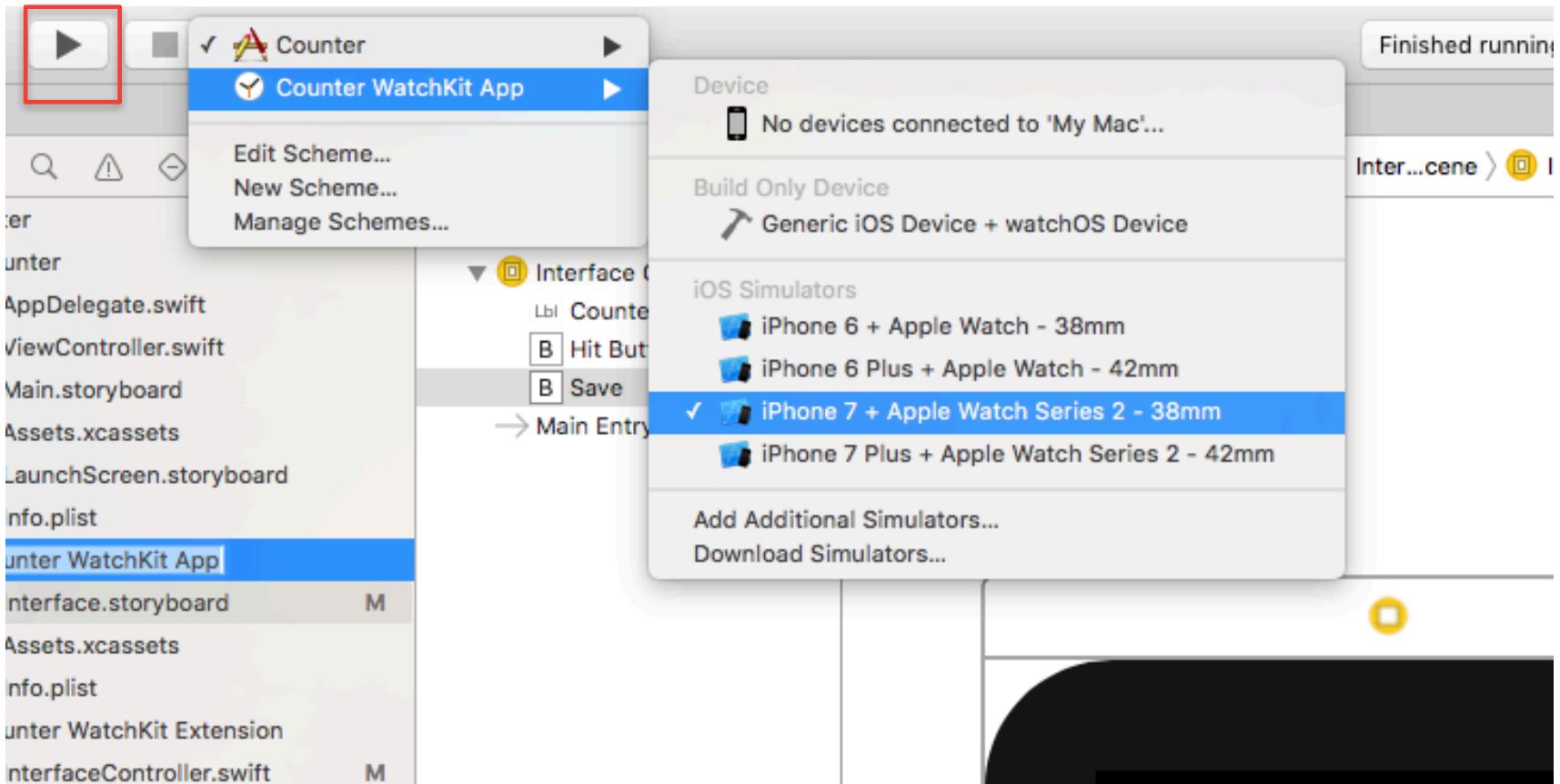
# 5 – Setup your incrementCounter() function

```
38 func session(_ session: WCSession, activationDidCompleteWith  
activationState: WCSessionActivationState, error: Error?) {}  
39  
40 /*  
41 * 5 - Setup your incrementCounter() function  
42 */  
④ 43 @IBAction func incrementCounter() {  
44     counter+=1;  
45     counterLabel.setText(String(counter))  
46 }  
47
```

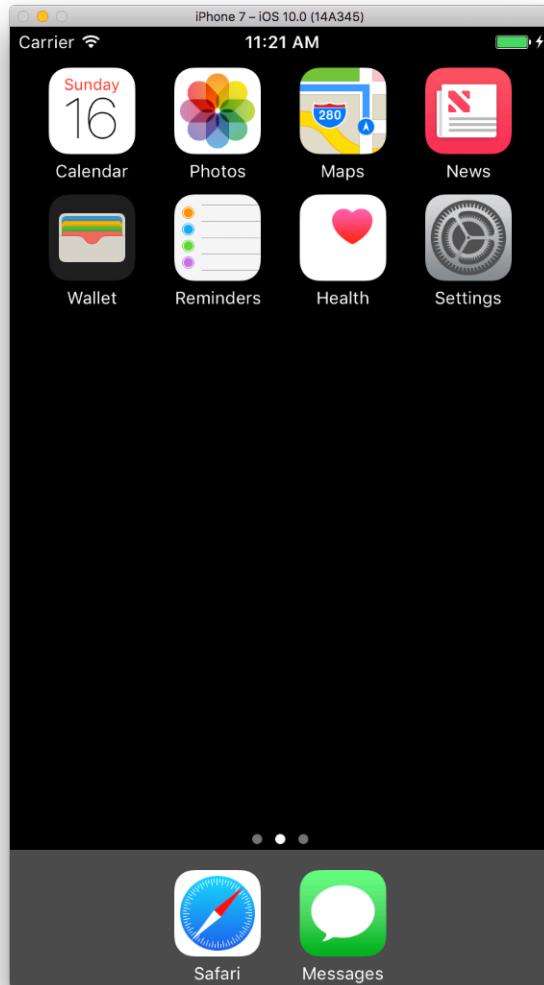
# 6 – Setup your saveCounter() function

```
47
48  /*
49   * 6 - Setup your saveCounter() function
50   */
51 @IBAction func saveCounter() {
52     let applicationData = ["counterValue" : counter]
53
54     if let session = session, session.isReachable {
55       session.sendMessage(applicationData, replyHandler: nil,
56                           errorHandler: { error in
57                             print(error)
58                           })
59 }
```

# Choose Your Scheme...and Run!



# Open the Counter app on the iPhone

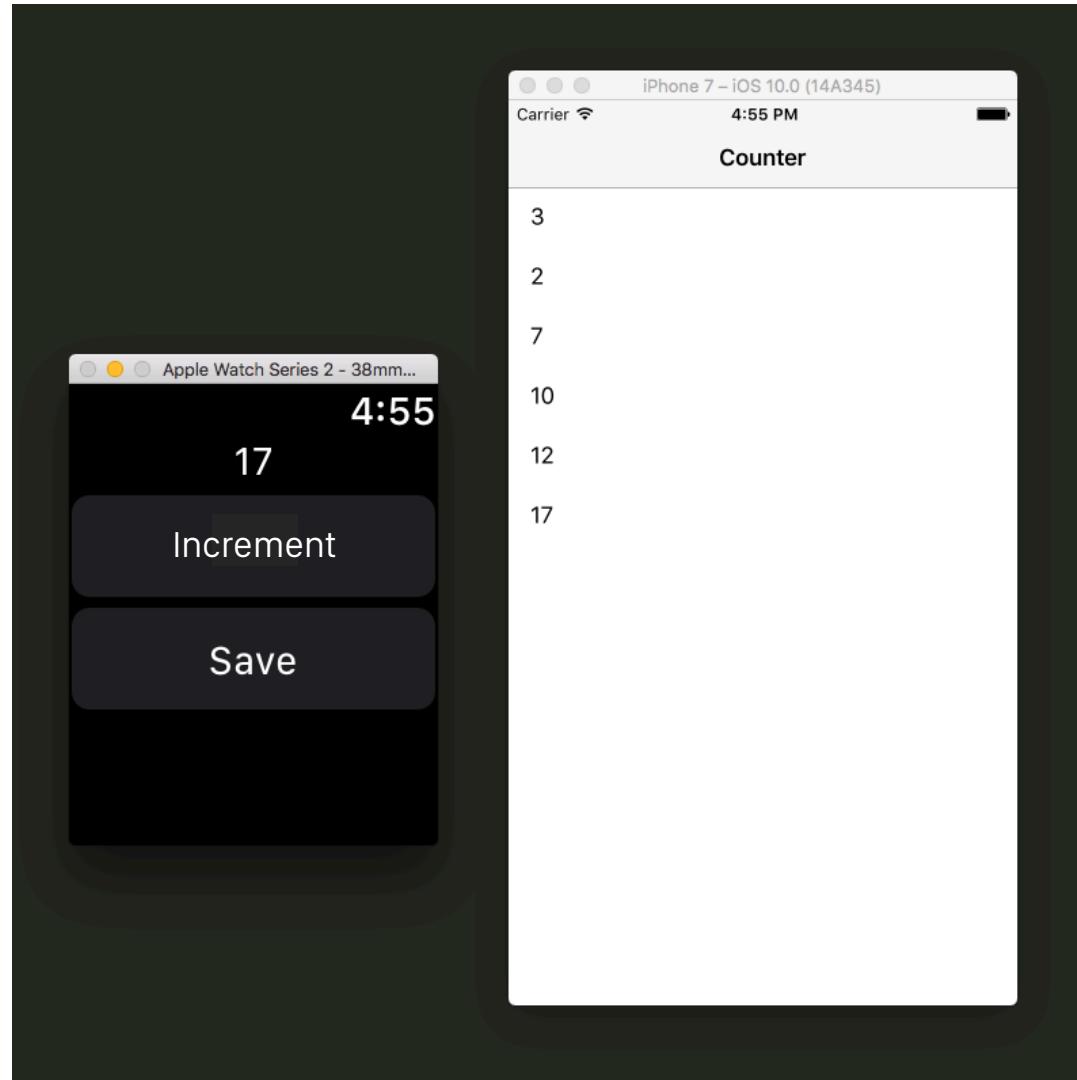


Swipe left to get  
to the 2<sup>nd</sup> page

Click on the  
Counter app



# Counter Application



# Final Project Code

The screenshot shows a GitHub repository page. At the top, there's a navigation bar with links for 'Pull requests', 'Issues', and 'Gist'. On the right side of the header are icons for notifications, a plus sign, and user profile. Below the header, the repository name 'kristinathai / watchOS3Counter' is displayed, along with buttons for 'Unwatch' (2), 'Unstar' (2), 'Fork' (0), and a profile picture. A secondary navigation bar below the main one includes links for 'Code', 'Issues 0', 'Pull requests 0', 'Projects 0', 'Wiki', 'Pulse', 'Graphs', and 'Settings'. The main content area starts with a message 'No description or website provided. — Edit'. Below this, a summary bar shows statistics: '12 commits', '1 branch', '0 releases', '2 contributors', and 'MIT'. Underneath is a form with 'Branch: master' dropdown, 'New pull request' button, and buttons for 'Create new file', 'Upload files', 'Find file', and a prominent green 'Clone or download' button. The main list of commits shows the following entries:

Commit	Message	Time
<b>kristinathai</b> Add code snippets file		Latest commit 924fef7 a minute ago
Counter WatchKit App	Add code snippets file	a minute ago
Counter WatchKit Extension	Add code snippets file	a minute ago
Counter.xcodeproj	Add code snippets file	a minute ago
Counter	Collapse functions we won't cover in the workshop	an hour ago
LICENSE	Initial commit	14 days ago
README.md	Initial commit	14 days ago

<https://github.com/kristinathai/watchOS3Counter>

# Resources and Q&A



# Kristina's iOS & watchOS Blog

The screenshot shows a blog post on the [kristina.io](http://kristina.io) website. The header features the site name in a large, orange, lowercase sans-serif font. Below the header is a navigation bar with links: ABOUT, WATCHOS, IOS, PRESENTATIONS & PUBLICATIONS, WRITING, and RESUME. The main content area has a light gray background. A red horizontal bar highlights the "WATCHOS" category under the post title. The post title is "watchOS 3 Key Takeaways from WWDC16 (Part 1)" in a large, dark gray serif font. Below the title is a thin horizontal line. The publication date "June 18, 2016" and author "kristina" are followed by a link "Leave a comment". The post content begins with "+8 Wow! What a week. I'm really excited about all the new developments in watchOS this year. It's now becoming the platform we all wished we had in the beginning – apps that actually launch, complications as shortcuts, an awesome new dock, etc. 🎉 🌟 🕒 ❤️ This week definitely passed by in a blur,...". At the end of the excerpt is a link "Continue reading" in orange. To the right of the post is a sidebar with social media icons for Twitter, GitHub, LinkedIn, and a key symbol. A red-bordered box contains a "Subscribe for Updates" section with a button to enter an email address and a "SUBSCRIBE" button.

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WATCHOS

### watchOS 3 Key Takeaways from WWDC16 (Part 1)

June 18, 2016 · kristina · Leave a comment

+8 Wow! What a week. I'm really excited about all the new developments in watchOS this year. It's now becoming the platform we all wished we had in the beginning – apps that actually launch, complications as shortcuts, an awesome new dock, etc. 🎉 🌟 🕒 ❤️ This week definitely passed by in a blur,...

[Continue reading](#)

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Email Address

SUBSCRIBE

# Resources

1. [App Programming Guide for Apple Watch](#)
2. [Apple Watch Human Interface Guidelines](#)
3. [Ray Wenderlich](#)
4. [Natasha the Robot](#)

# Thanks!



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@hellomayuko

# Thank you

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## Feedback?

@kristinathai @hellomayuko

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or search GHC 16 in the app store