



# Xcode and Storyboard

March 10, '16

# Reference of the Swift language

- Learn the Essentials of Swift

[https://developer.apple.com/library/ios/referencelibrary/GettingStarted/DevelopiOSAppsSwift/Lesson1.html#//apple\\_ref/doc/uid/TP40015214-CH3-SW1](https://developer.apple.com/library/ios/referencelibrary/GettingStarted/DevelopiOSAppsSwift/Lesson1.html#//apple_ref/doc/uid/TP40015214-CH3-SW1)

- The Swift Programming Language

[https://developer.apple.com/library/ios/documentation/Swift/Conceptual/Swift\\_Programming\\_Language/index.html#//apple\\_ref/doc/uid/TP40014097-CH3-ID0](https://developer.apple.com/library/ios/documentation/Swift/Conceptual/Swift_Programming_Language/index.html#//apple_ref/doc/uid/TP40014097-CH3-ID0)

# Xcode and Storyboard

# Storyboard

The screenshot displays the Xcode Storyboard editor interface. At the top, the title bar shows the project name "IssueBox" and the device "iPhone 6s Plus". The breadcrumb navigation indicates the current location: "IssueBox > IssueBox > Main.storyboard > Main.storyboard (Base) > Split View Controller Scene > Split View Controller".

The left sidebar contains a hierarchy of scene types:

- Master Scene
- Detail Scene
- Split View Controller...
  - Split View Controller (selected)
  - First Responder
  - Exit
  - Storyboard Entry Poi...
  - Relationship "master..."
  - Relationship "detail v..."
- Master Scene
- Navigation Controller...

The main canvas shows a storyboard with the following elements and relationships:

- A "Split View Controller" scene is connected to two "Navigation Controller" scenes.
- The top "Navigation Controller" scene is connected to a "Master" scene and a "Prototype Cells" scene.
- The bottom "Navigation Controller" scene is connected to a "Detail" scene.
- Relationships are indicated by lines with circular icons: a key icon for the Split View Controller to Navigation Controller, and a plus icon for the Navigation Controller to Detail.

The right sidebar contains the "Simulated Metrics" and "View Controller" panels:

**Simulated Metrics**

- Size: Inferred
- Orientation: Inferred
- Status Bar: Inferred

**View Controller**

- Title: [Empty field]
- 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

At the bottom right, there is a palette of UI elements including various view controllers, a "Label", and other standard UI components.

# Storyboard

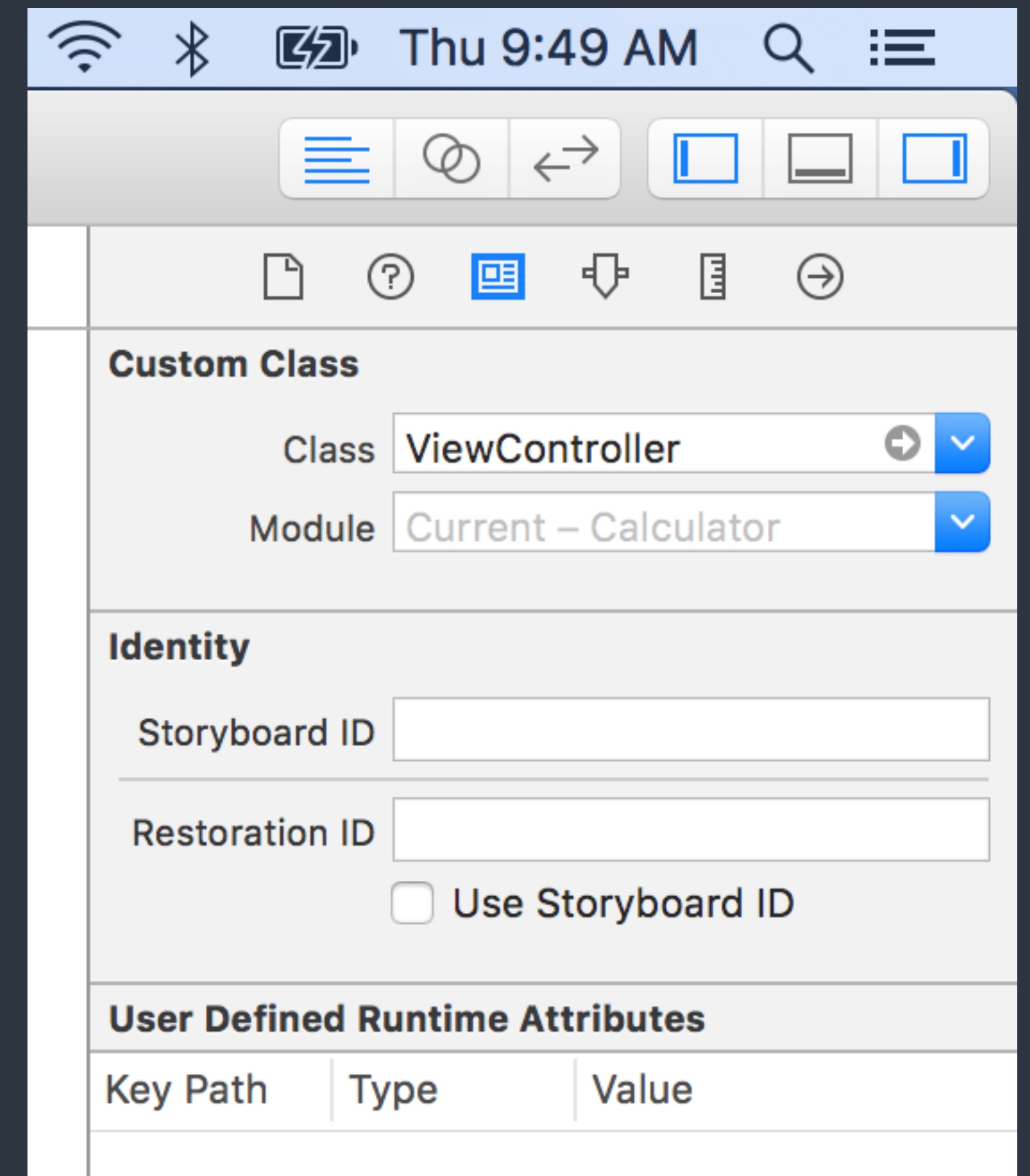
- A visual representation of the app's UI, showing screens of content (as scenes) and the transitions between them.
- **Connections** are the relationships between each scenes and its corresponding source code file (*usually a view controller class*).
- **Segues** are the relationships between different scenes.  
The detail of segues would be mentioned in future classes.

# Storyboard Connections

- **Actions** are connections which represents methods to be called on the view controller when the specified *UI events* is triggered. Such methods are annotated with `@IBAction` keyword.
- **Outlets** are connections which are properties of the view controller which reference to *UI elements*. Such properties are annotated with `@IBOutlet` keyword.
- The prefix pattern, *like the “IB” of IBOutlet*, is used as namespace in Objective-C.  
IB means “Interface Builder” which is the predecessor of Storyboard.

# Class Loading

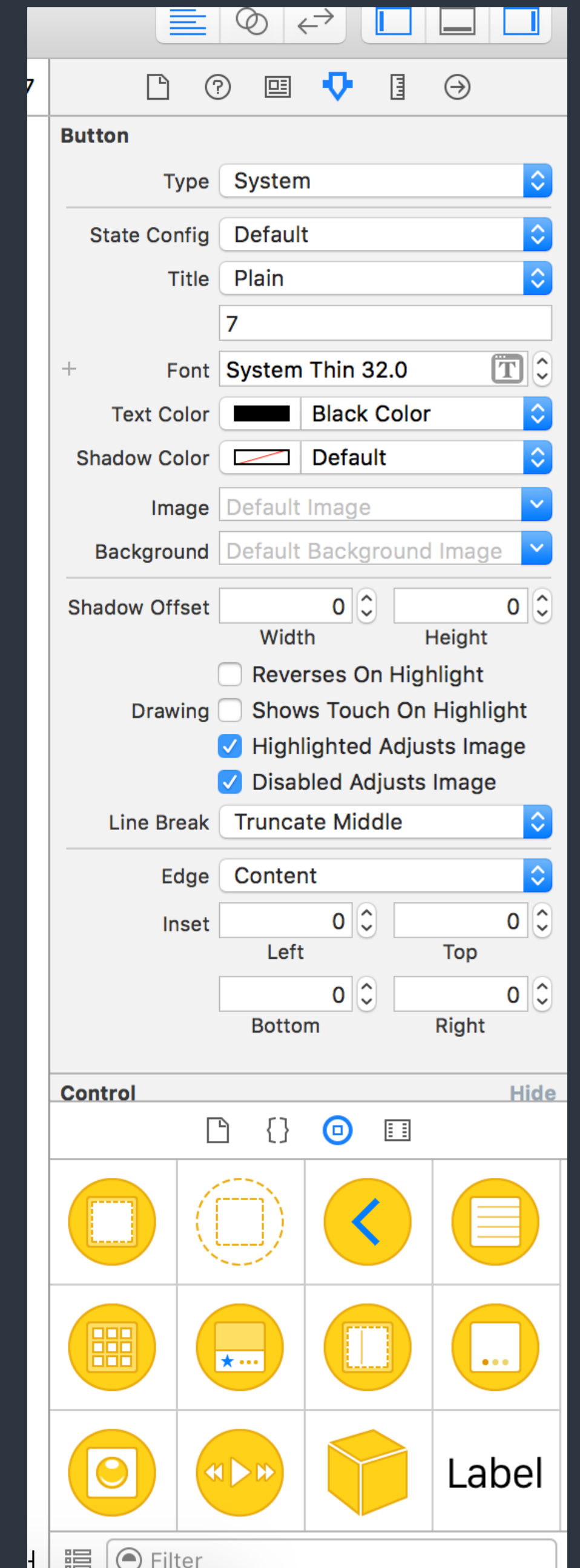
- Use Identity Inspector to specify custom class for elements.
- The app would use the class you assigned to instantiate that elements.  
And hence you code would be executed.



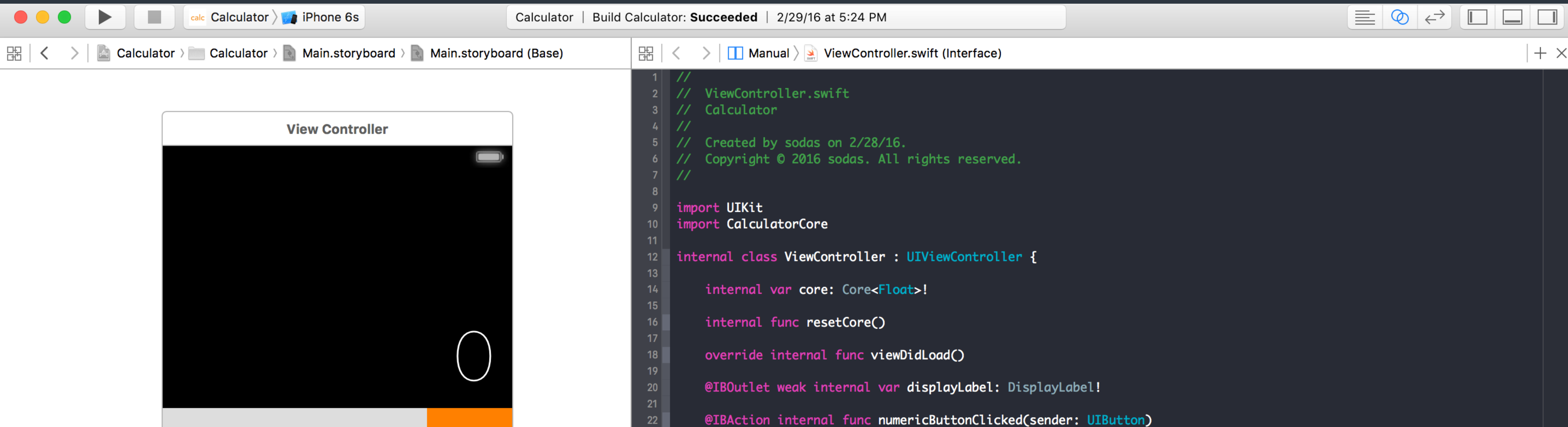


# Attributes Editing

- Use Attribute Inspector to custom the appearance and behavior of an element.
- Use Object Library to drag a new element into the storyboard.

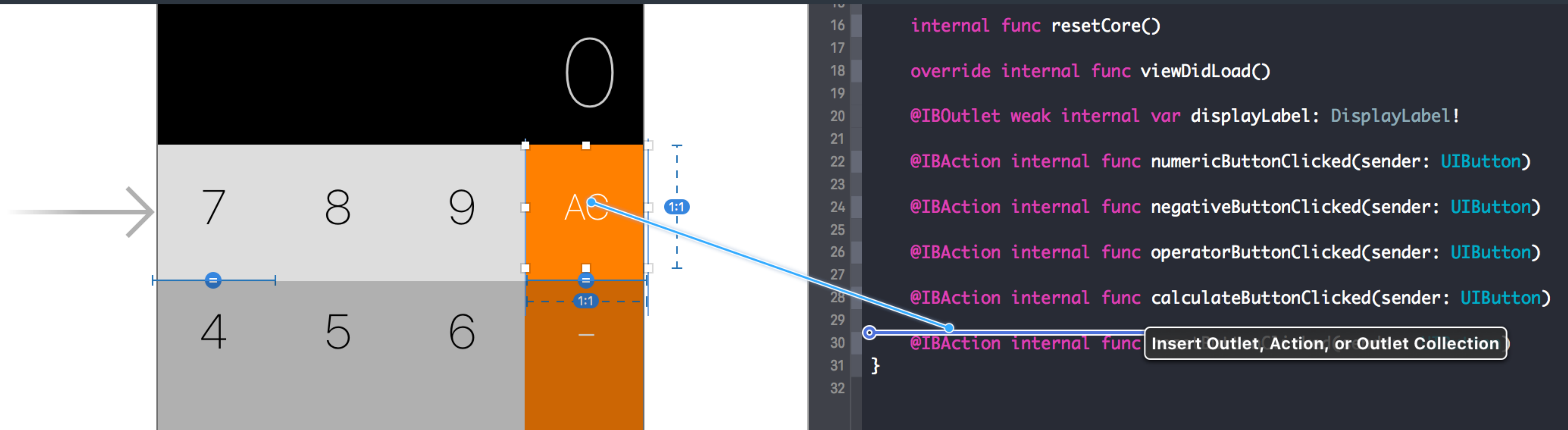


# Create connections - I



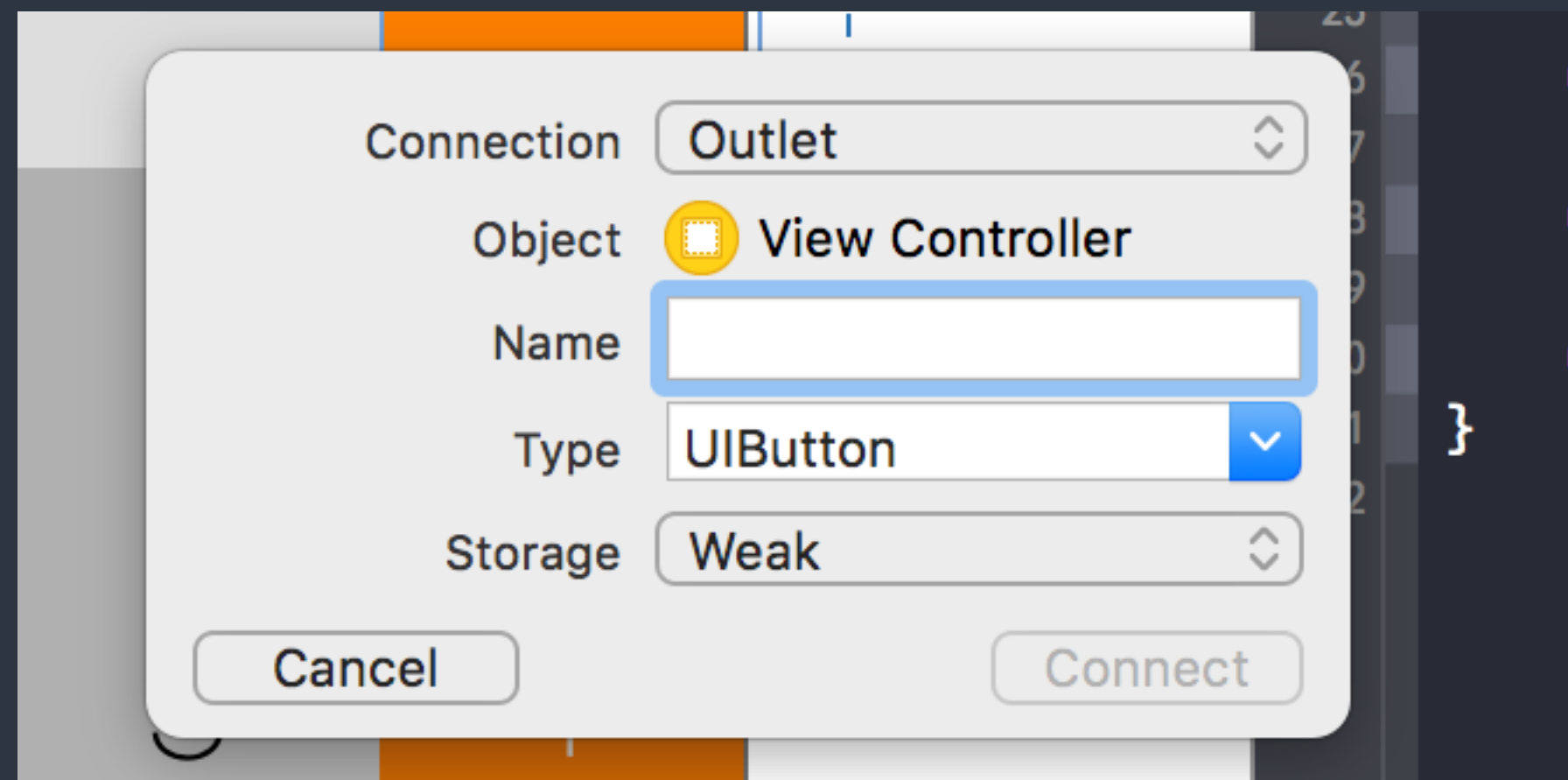
- Use Assistant Editor to see Storyboard and related source code. Or even two different source code file. Switch by the jump bar.

# Create connections - II

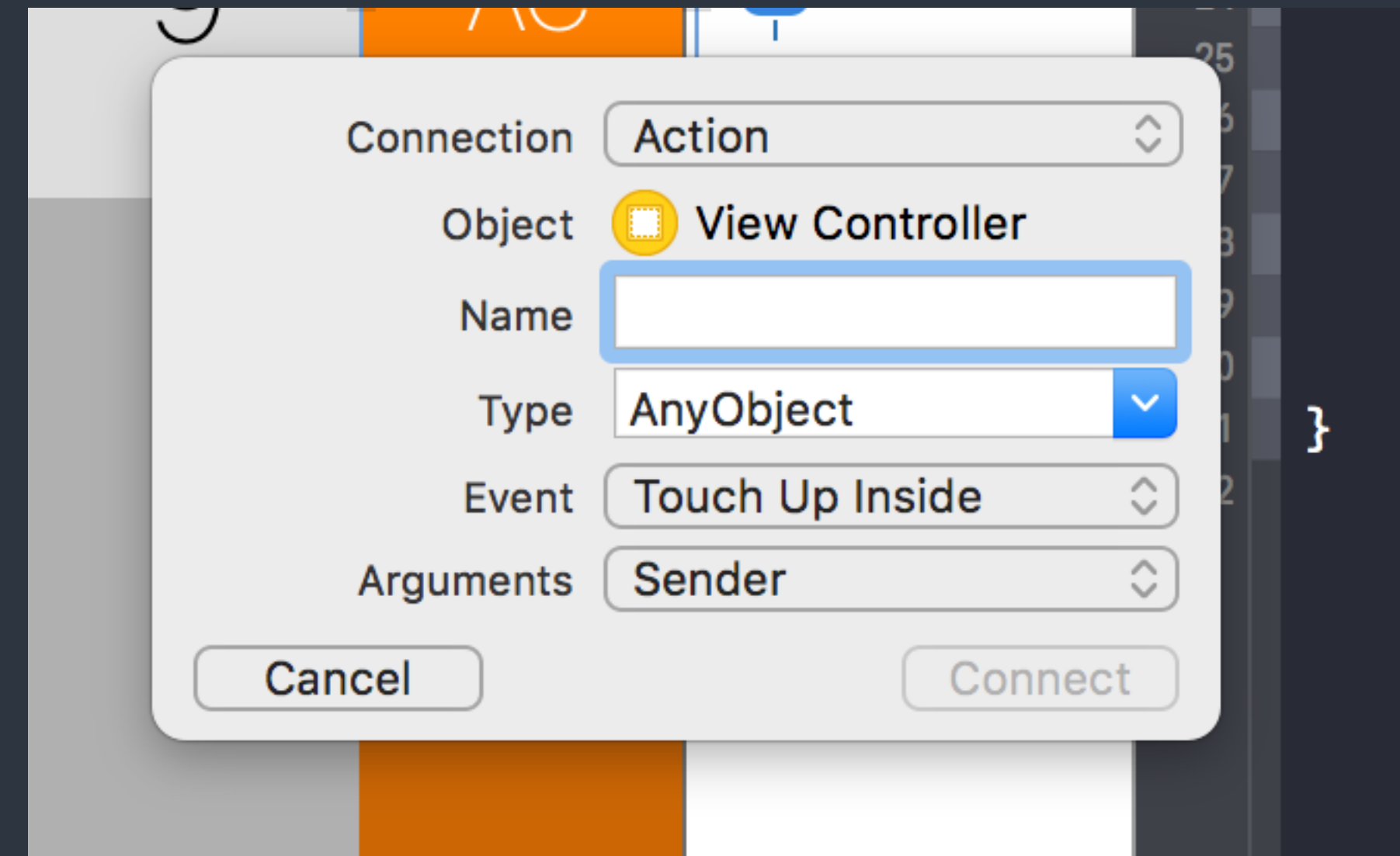


- Use “control+drag” to create connections between Storyboard and Swift source code

# Create connections - III



Outlet



Action

# References of using Storyboard

- Connect the UI to Code

[https://developer.apple.com/library/ios/referencelibrary/GettingStarted/DevelopiOSAppsSwift/Lesson3.html#//apple\\_ref/doc/uid/TP40015214-CH22-SW1](https://developer.apple.com/library/ios/referencelibrary/GettingStarted/DevelopiOSAppsSwift/Lesson3.html#//apple_ref/doc/uid/TP40015214-CH22-SW1)

- How To Prototype In Xcode Using Storyboard

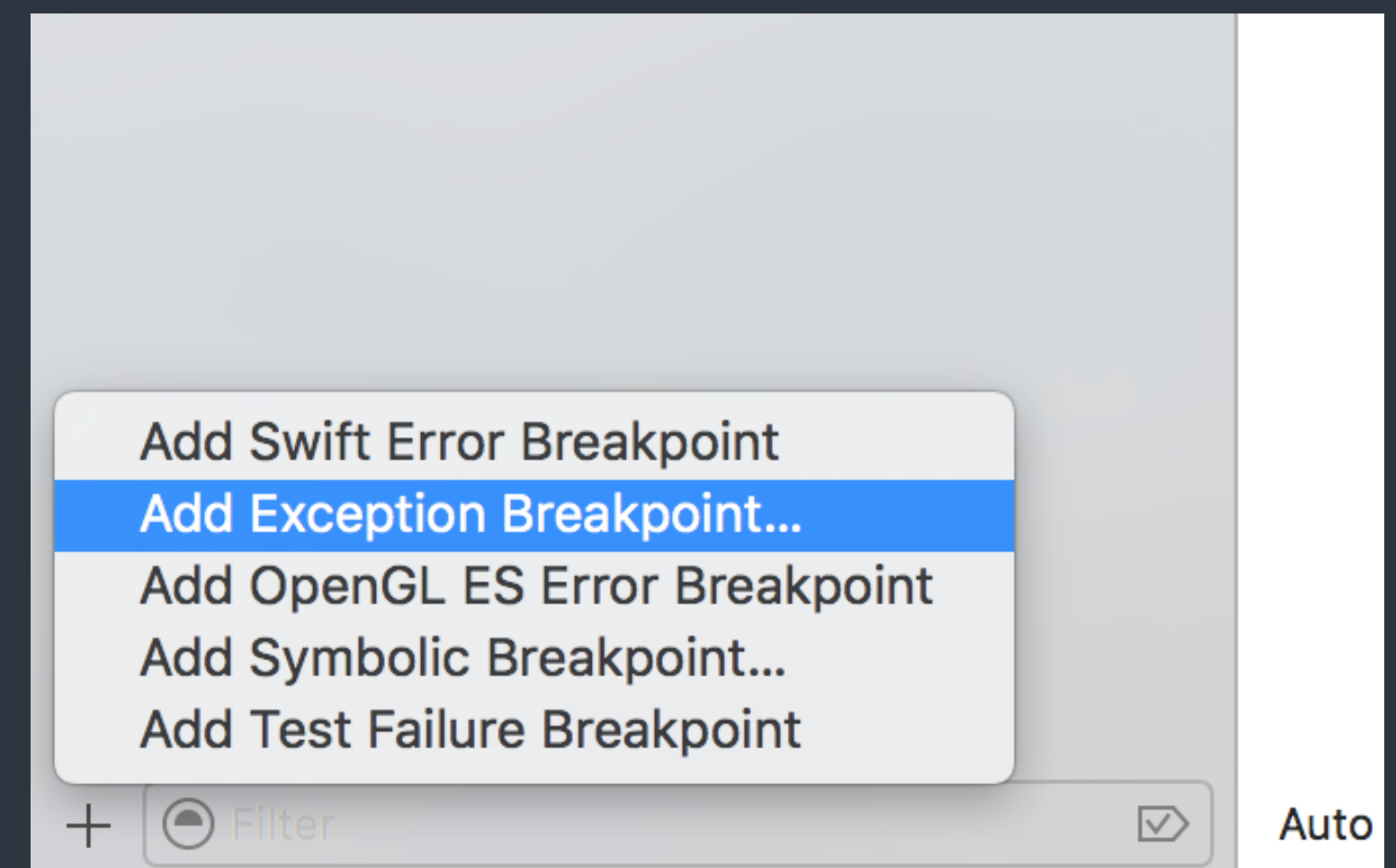
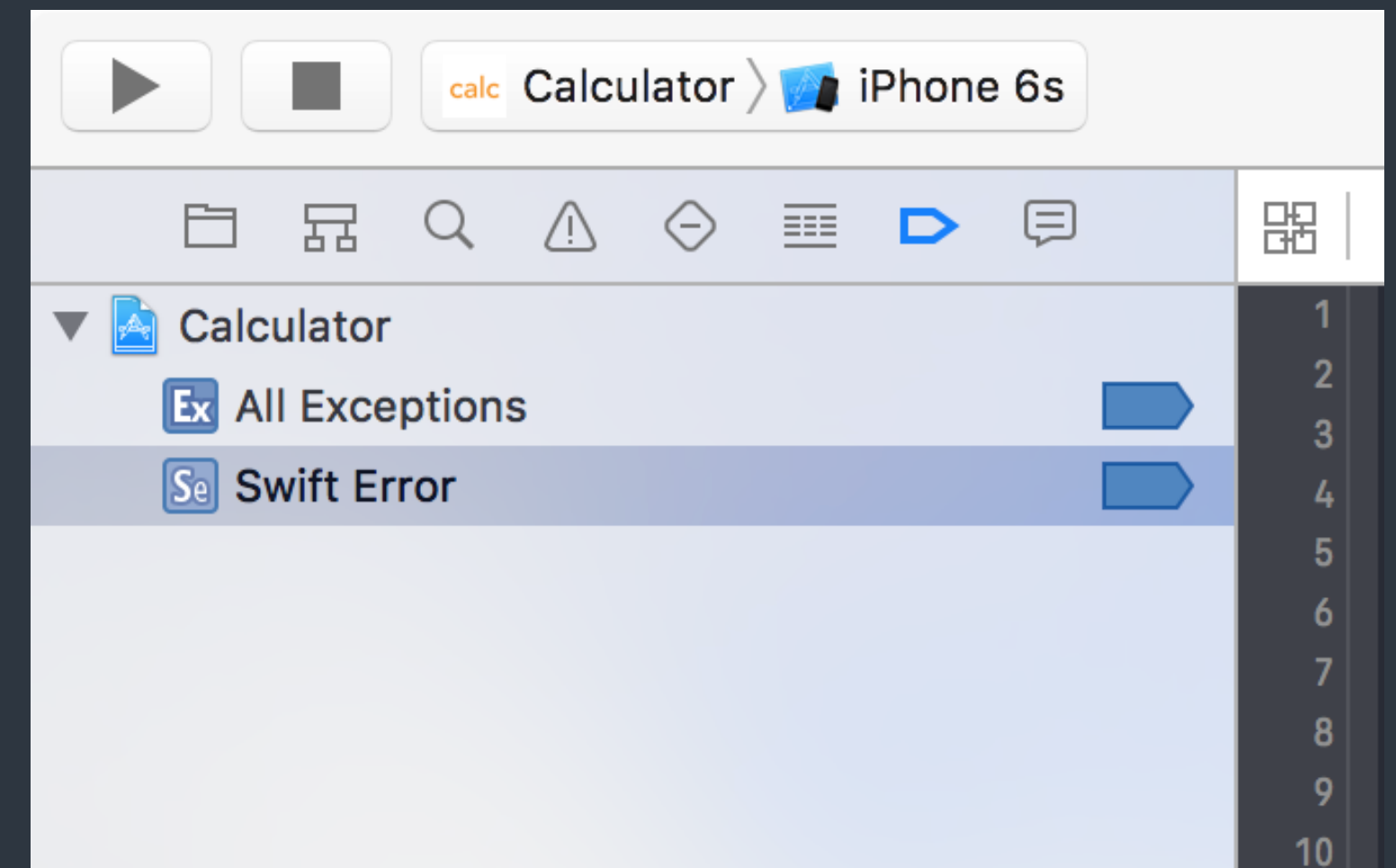
<http://blog.mengto.com/prototype-xcode-storyboard/>

Debug hints



# Debug hints - Add breakpoints

- Switch to “**Breakpoint Navigator**”
- Add both “Swift Error Breakpoint” and “Exception Breakpoint”  
The later one captures exceptions from Objective-C and C++.



# Debug hints - Unknown actions

The screenshot shows the Xcode debugger interface. On the left, the 'Call Stack' pane lists 14 frames, with '12 main' selected. The main window displays a crash report for the 'Calculator' app. The report indicates an 'unrecognized selector sent to instance' error, which has terminated the app. A call stack is provided, showing the sequence of method calls leading to the crash. The top of the stack is in UIKit, specifically in the `UIApplication` class, and the bottom is in the `Calculator` app's `main` function.

```
2016-03-09 15:55:32.760 Calculator[37694:1042312] -[Calculator.ViewController brokenMethod:]: unrecognized selector sent to instance 0x7f81f8e12bb0
2016-03-09 15:55:32.767 Calculator[37694:1042312] *** Terminating app due to uncaught exception 'NSInvalidArgumentException', reason: '-[Calculator.ViewController brokenMethod:]: unrecognized selector sent to instance 0x7f81f8e12bb0'
*** First throw call stack:
(
  0  CoreFoundation 0x000000010290de65 __exceptionPreprocess + 165
  1  libobjc.A.dylib 0x0000000104650deb objc_exception_throw + 48
  2  CoreFoundation 0x000000010291648d -[NSObject(NSObject) doesNotRecognizeSelector:] + 205
  3  CoreFoundation 0x000000010286390a __forwarding__ + 970
  4  CoreFoundation 0x00000001028634b8 __CF_forwarding_prep_0 + 120
  5  UIKit           0x000000010312e194 -[UIApplication sendAction:to:from:forEvent:] + 92
  6  UIKit           0x000000010329d6fc -[UIControl sendAction:to:forEvent:] + 67
  7  UIKit           0x000000010329d9c8 -[UIControl _sendActionsForEvents:withEvent:] + 311
  8  UIKit           0x000000010329caf8 -[UIControl touchesEnded:withEvent:] + 601
  9  UIKit           0x000000010319d49b -[UIWindow _sendTouchesForEvent:] + 835
  10 UIKit          0x000000010319e1d0 -[UIWindow sendEvent:] + 865
  11 UIKit          0x000000010314cb66 -[UIApplication sendEvent:] + 263
  12 UIKit          0x0000000103126d97 _UIApplicationHandleEventQueue + 6844
  13 CoreFoundation 0x0000000102839a31 __CFRUNLOOP_IS_CALLING_OUT_TO_A_SOURCE0_PERFORM_FUNCTION__ + 17
  14 CoreFoundation 0x000000010282f95c __CFRunLoopDoSources0 + 556
  15 CoreFoundation 0x000000010282ee13 __CFRunLoopRun + 867
  16 CoreFoundation 0x000000010282e828 CFRunLoopRunSpecific + 488
  17 GraphicsServices 0x0000000106f61ad2 GSEventRunModal + 161
  18 UIKit           0x000000010312c610 UIApplicationMain + 171
  19 Calculator     0x000000010271e20d main + 109
  20 libdyld.dylib  0x000000010516092d start + 1
)
libc++abi.dylib: terminating with uncaught exception of type NSException
(lldb)
```



# Debug hints - Unknown actions

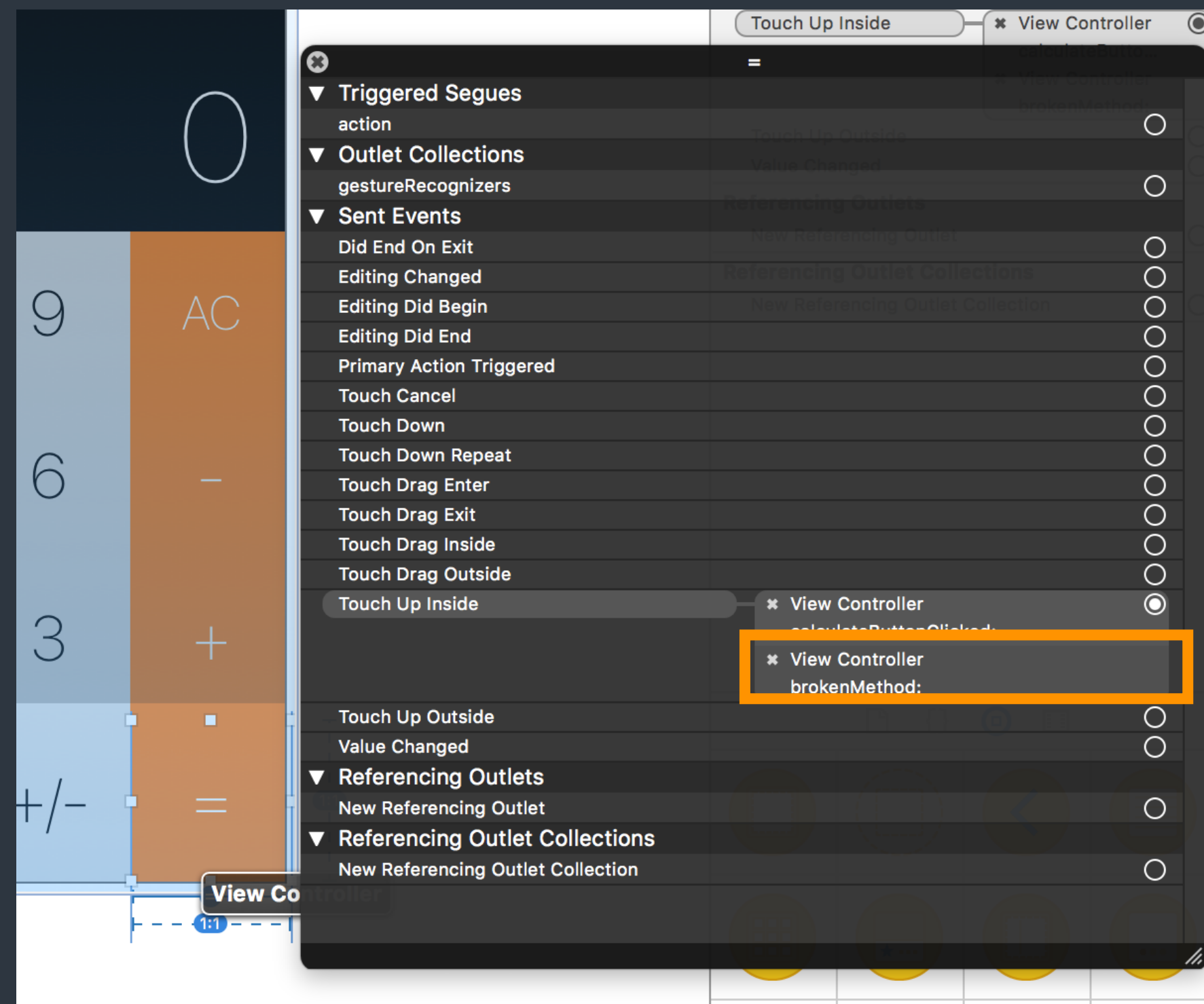
The screenshot shows the Xcode debugger interface. On the left, the Call Stack for Thread 1 (Queue: com.app...ain-thread (serial)) is visible, with step 18 'main' selected. The main editor displays the source code for AppDelegate.swift, with a breakpoint set at line 12: `class AppDelegate: UIResponder, UIApplicationDelegate {`. The console at the bottom shows a log message: `2016-03-09 15:56:44.689 Calculator[37743:1045111] -[Calculator.ViewController brokenMethod:]: unrecognized selector sent to instance 0x7fdd514561c0 (lldb)`. The breadcrumb at the top of the console reads 'Calculator > Thread 1 > 18 main'.

# Debug hints - Unknown actions

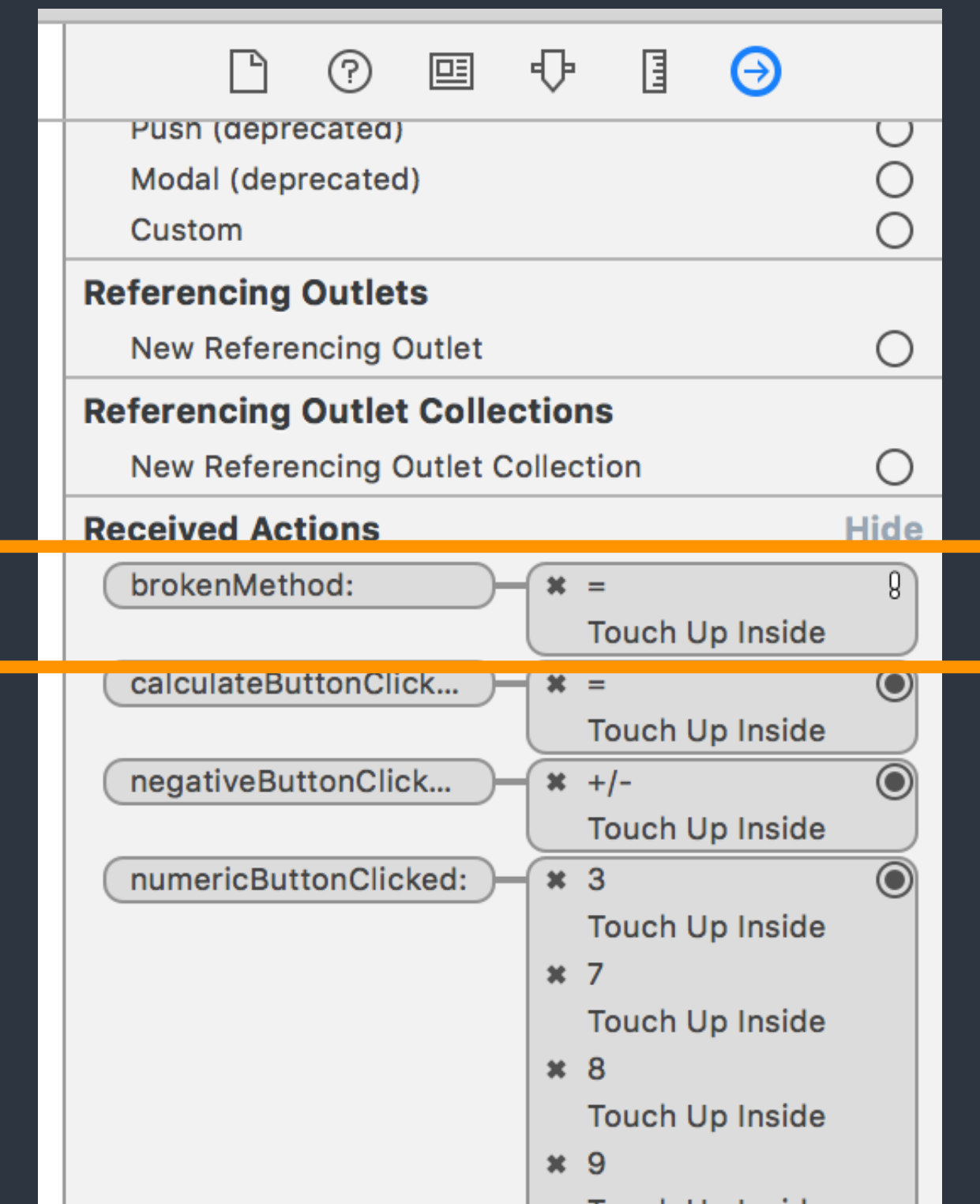
```
2016-03-09 15:56:44.689 Calculator[37743:1045111] -[Calculator.ViewController brokenMethod:]: unrecognized selector sent to instance 0x7fdd514561c0 (lldb)
```

- Usually happens when you remove a method from a view controller which is miss-created in the storyboard.

# Debug hints - Unknown actions



Connection Popup  
by right-click on an element



Connection Inspector

# Hints of git commands

- Create an account for git hosting service. [GitHub](#) or [Bitbucket](#).
- Create a remote git repository.
- `git init`  
Create a git local repo
- `git add`  
Add files to be committed
- `git commit`  
Save current progress
- `git remote`  
Add refs of remote repo
- `git tag`  
Annotate a tag
- `git push [--tags]`  
Send changes (or tags) to remote repo

# Assignments

- Read [Human Interface Guidelines](#)

We may have a simple report or quiz for this in the future classes.

- Prepare your team final project.
- Explore [Apple's Swift Documentation](#)



# CocoaHeads Meet-up 3/10



- Target on developers in Apple's platform
- 台北市大安區光復南路102號7樓 Cardinal Blue Office (PicCollage)  
每月第二個週四 (Check [CocoaHeads Facebook Group](#))

