

Xcode and Storyboard

March 10, '16

Reference of the Swift language

- Learn the Essentials of Swift

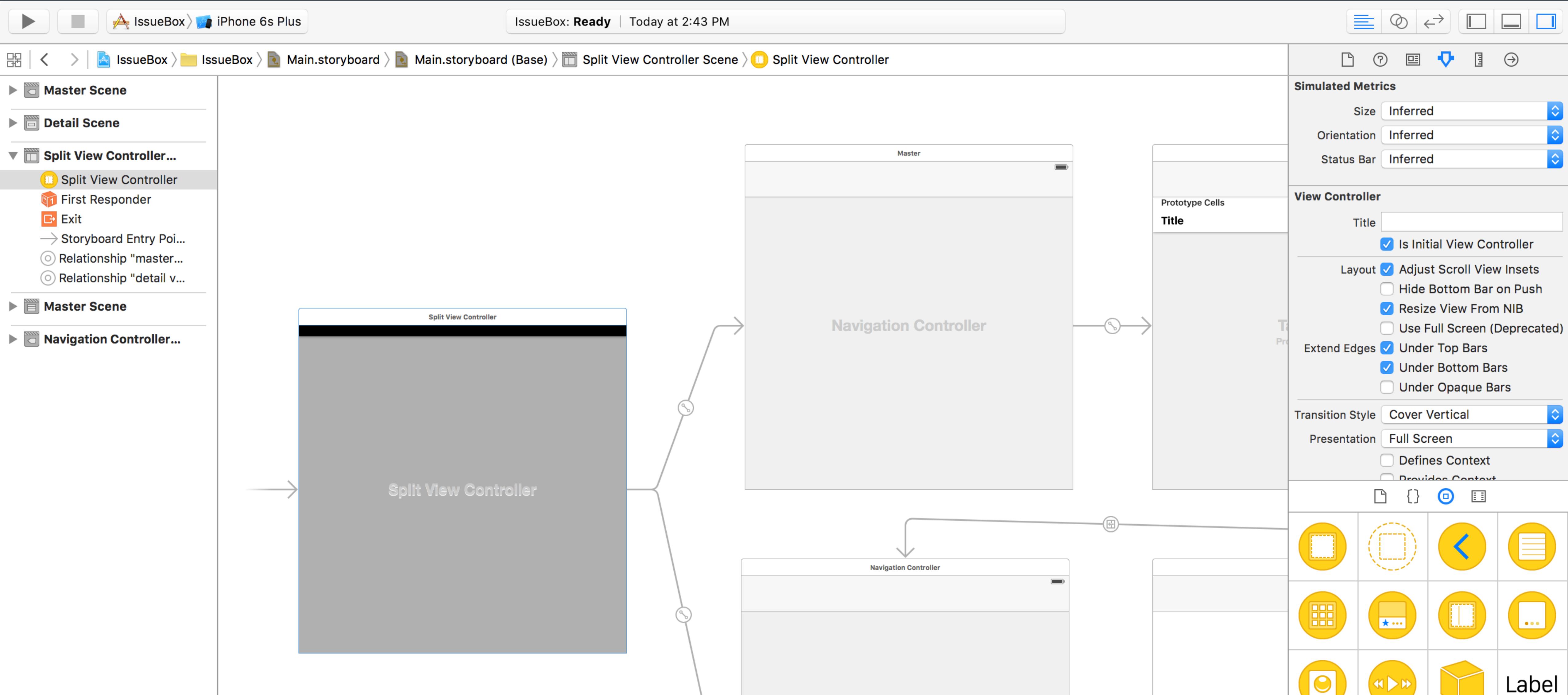
https://developer.apple.com/library/ios/referencelibrary/GettingStarted/DevelopiOSAppsSwift/Lesson1.html#/apple_ref/doc/uid/TP40015214-CH3-SW1

- 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

Xcode and Storyboard

Storyboard



Storyboard

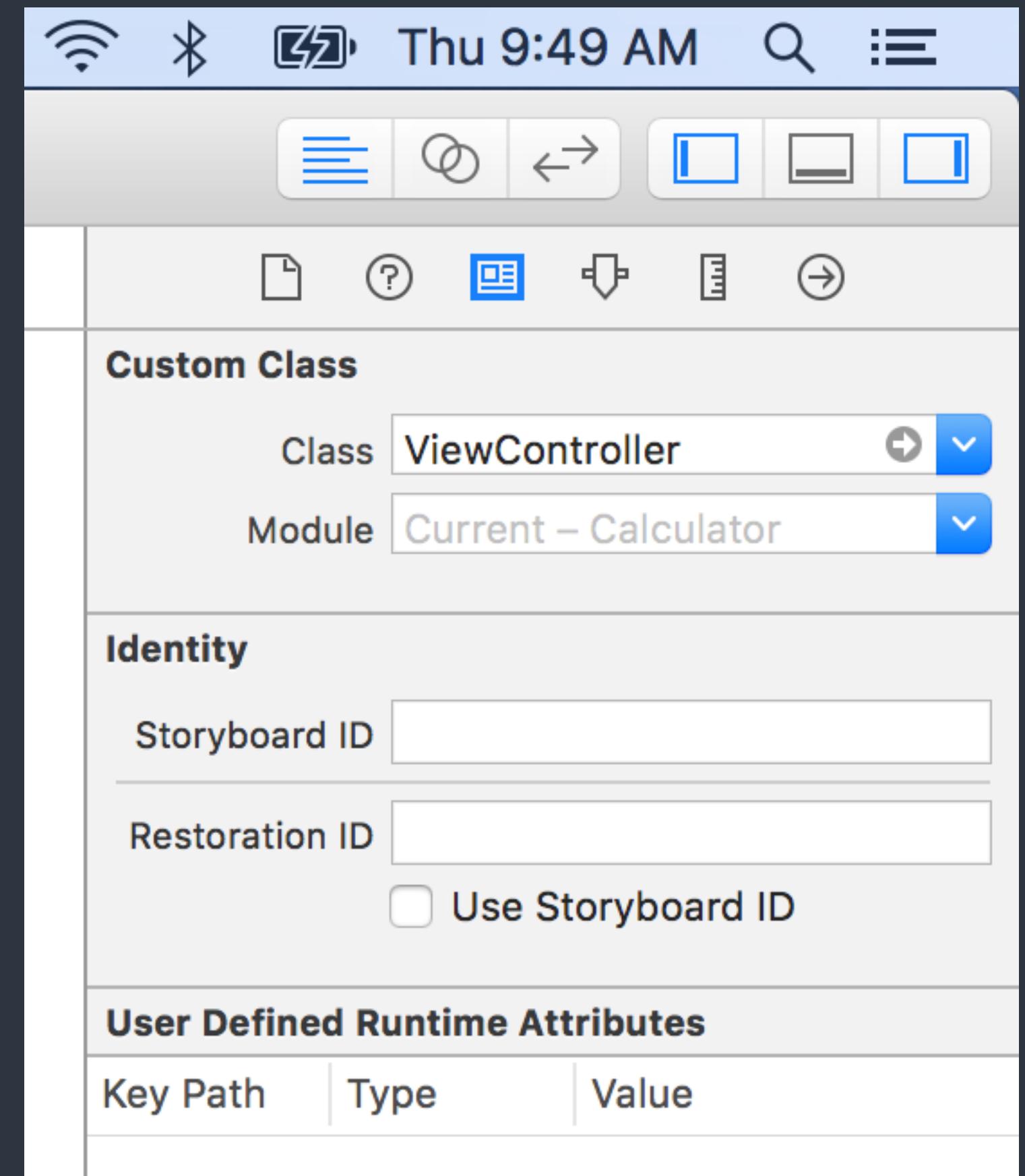
- A visual representation of the app's UI, showing screens of content (as scenes) and the transitions between them.
- **Connections** are the relationships between each scenes and its corresponding source code file (*usually a view controller class*).
- **Segues** are the relationships between different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

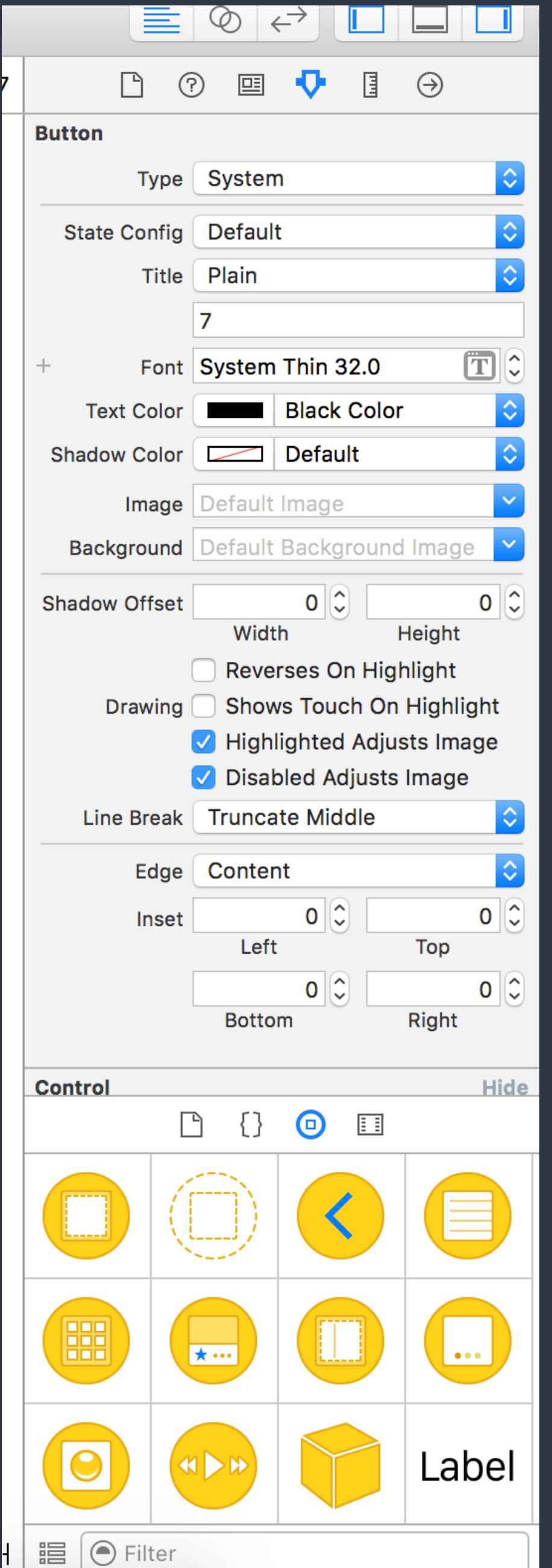
- Use Identity Inspector to specify custom class for elements.
- The app would use the class you assigned to instantiate that elements.
And hence your code would be executed.



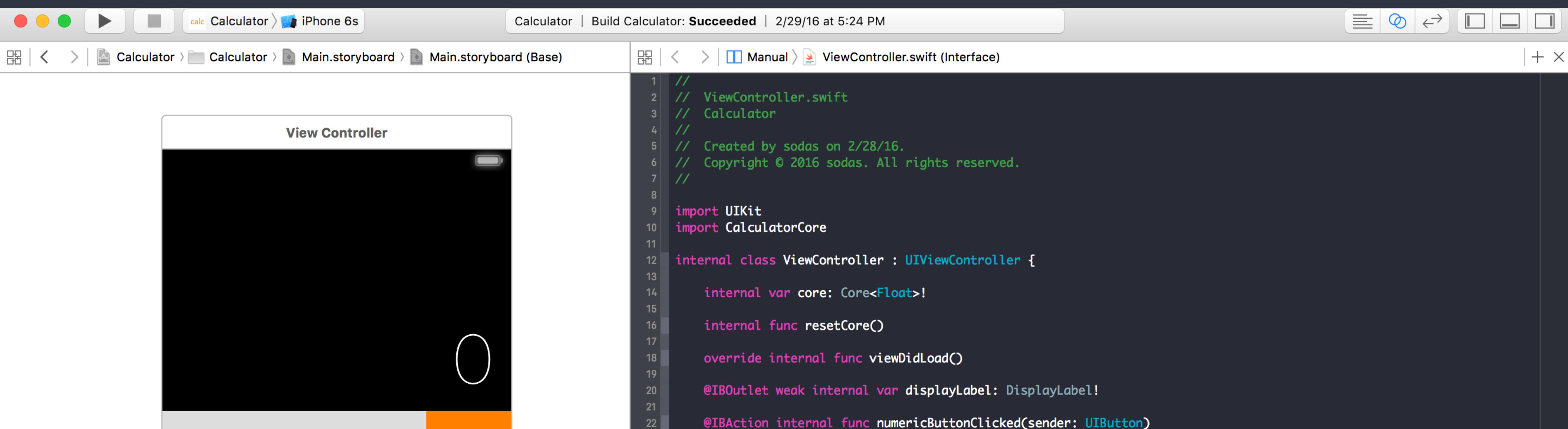
Storyboard > Identity Inspector

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.

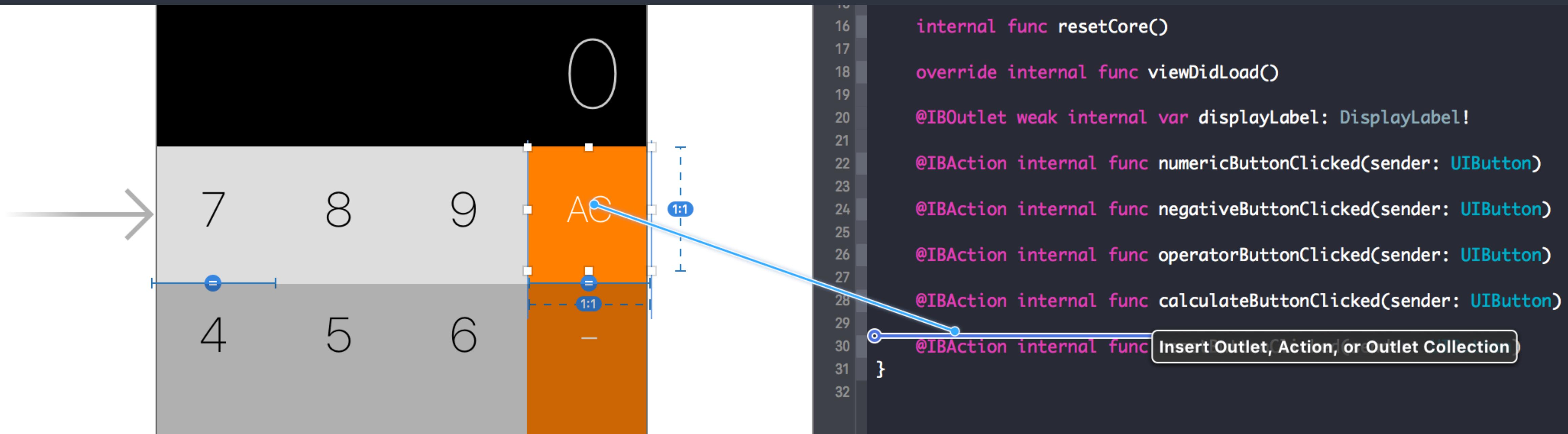


Create connections - I



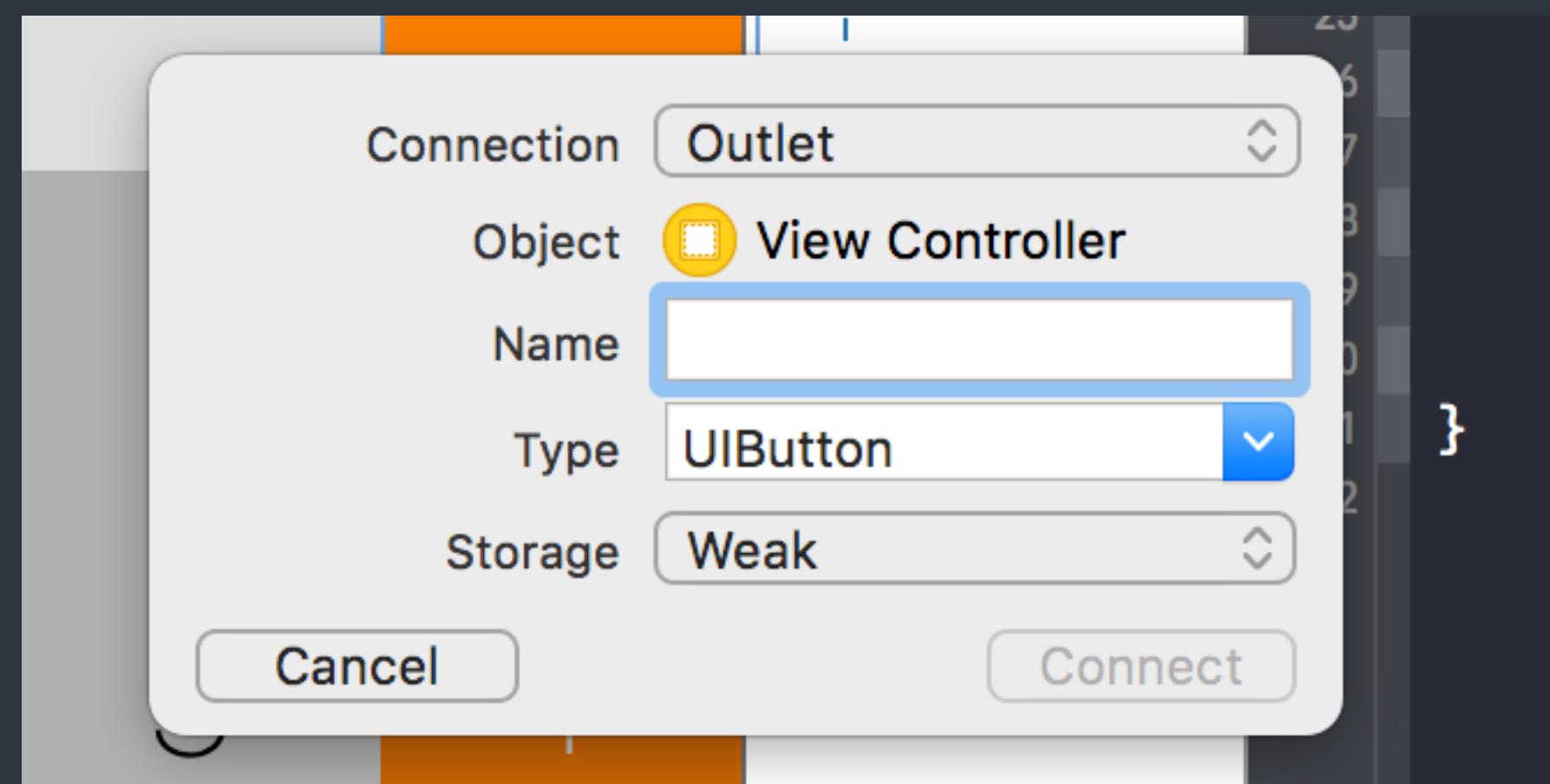
- Use Assistant Editor to see Storyboard and related source code.
Or even two different source code file. Switch by the jump bar.

Create connections - II

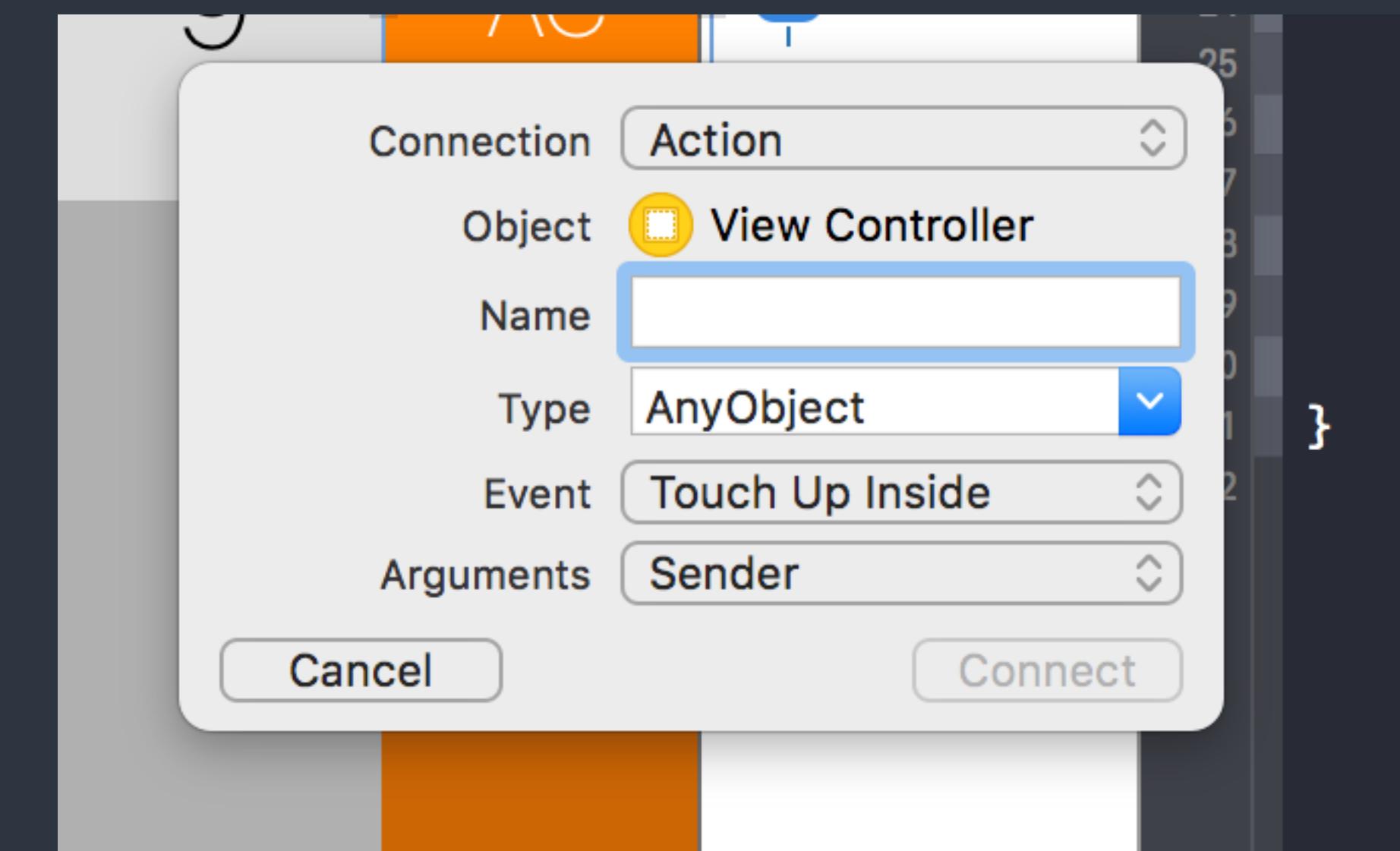


- Use “control+drag” to create connections between Storyboard and Swift source code

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

- How To Prototype In Xcode Using Storyboard

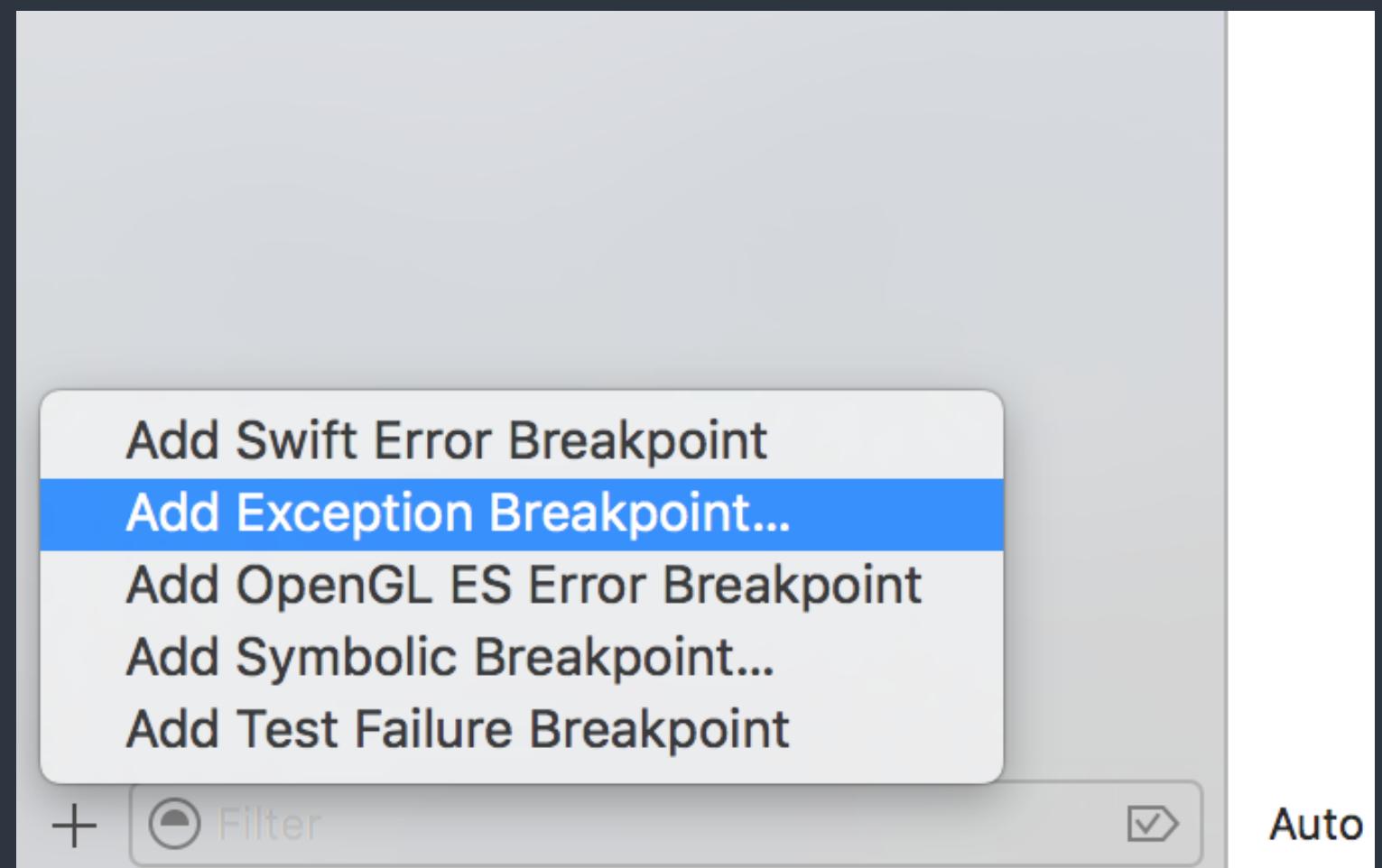
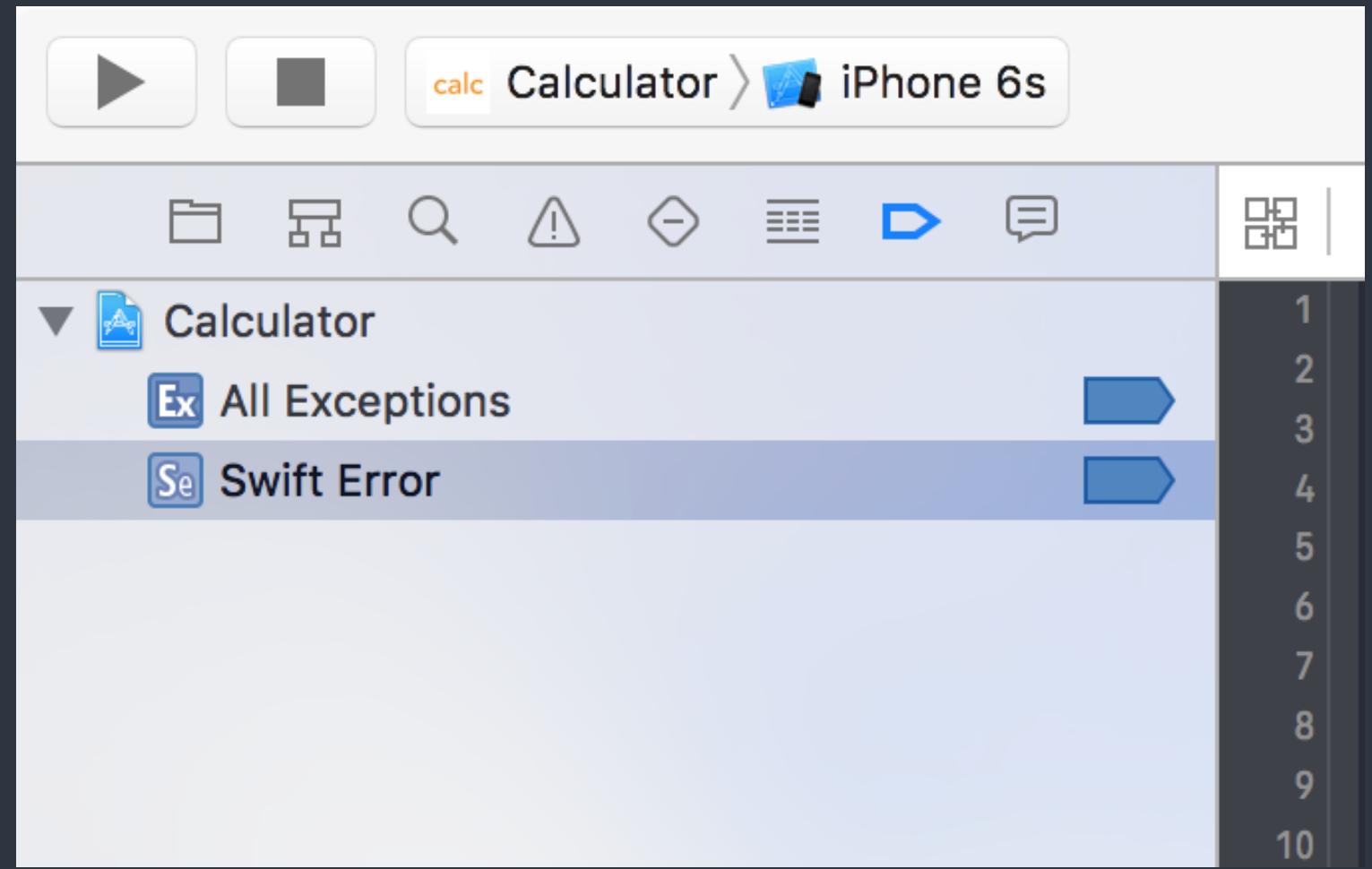
<http://blog.mengto.com/prototype-xcode-storyboard/>

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 interface during a debug session. The top navigation bar indicates the target is 'Calculator' and the thread is 'Thread 1'. The main area displays a crash log:

```
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 with the following details:

- Thread 1 Queue: com.apple.main-thread (serial)**: This is the current thread being debugged.
- Breakpoint 1**: Located at the top right of the code editor.
- Code Editor (Thread 1):**

```
11 @UIApplicationMain
12 class AppDelegate: UIResponder, UIApplicationDelegate {
13
14     var window: UIWindow?
15 }
16
17
```
- Call Stack (Thread 1):**
 - objc_exception_throw
 - [NSObject(NSObject) doesNotRecognizeSelector:]
 - __forwarding__
 - __forwarding_prep_0__
 - [UIApplication sendAction:to:from:forEvent:]
 - [UIControl sendAction:to:forEvent:]
 - [UIControl _sendActionsForEvents:withEvent:]
 - [UIControl touchesEnded:withEvent:]
 - [UIWindow _sendTouchesForEvent:]
 - [UIWindow sendEvent:]
 - [UIApplication sendEvent:]
 - _UIApplicationHandleEventQueue
 - _CFRUNLOOP_IS_CALLING_OUT_TO_A_SOURCE_0
 - _CFRunLoopDoSources0
 - _CFRunLoopRun
 - CFRunLoopRunSpecific
 - GSEventRunModal
 - UIApplicationMain
 - main** (selected)
 - start
 - start
- Output Window:**

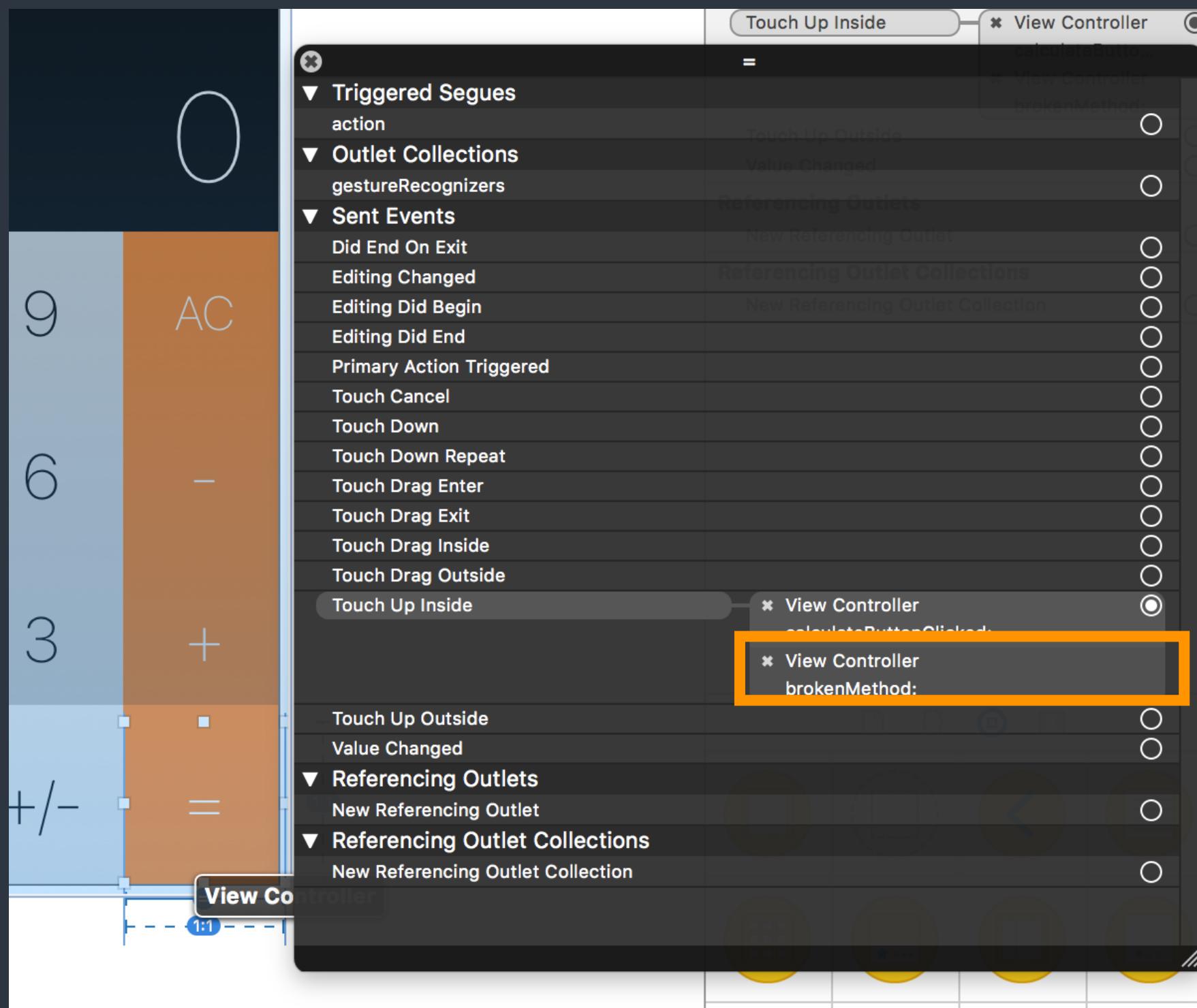
```
2016-03-09 15:56:44.689 Calculator[37743:1045111] -[Calculator.ViewController brokenMethod]: unrecognized selector sent to instance 0x7fd514561c0
(lldb)
```
- Thread 2 Queue: com.apple/-manager (serial)**: This is another thread listed in the sidebar.

Debug hints - Unknown actions

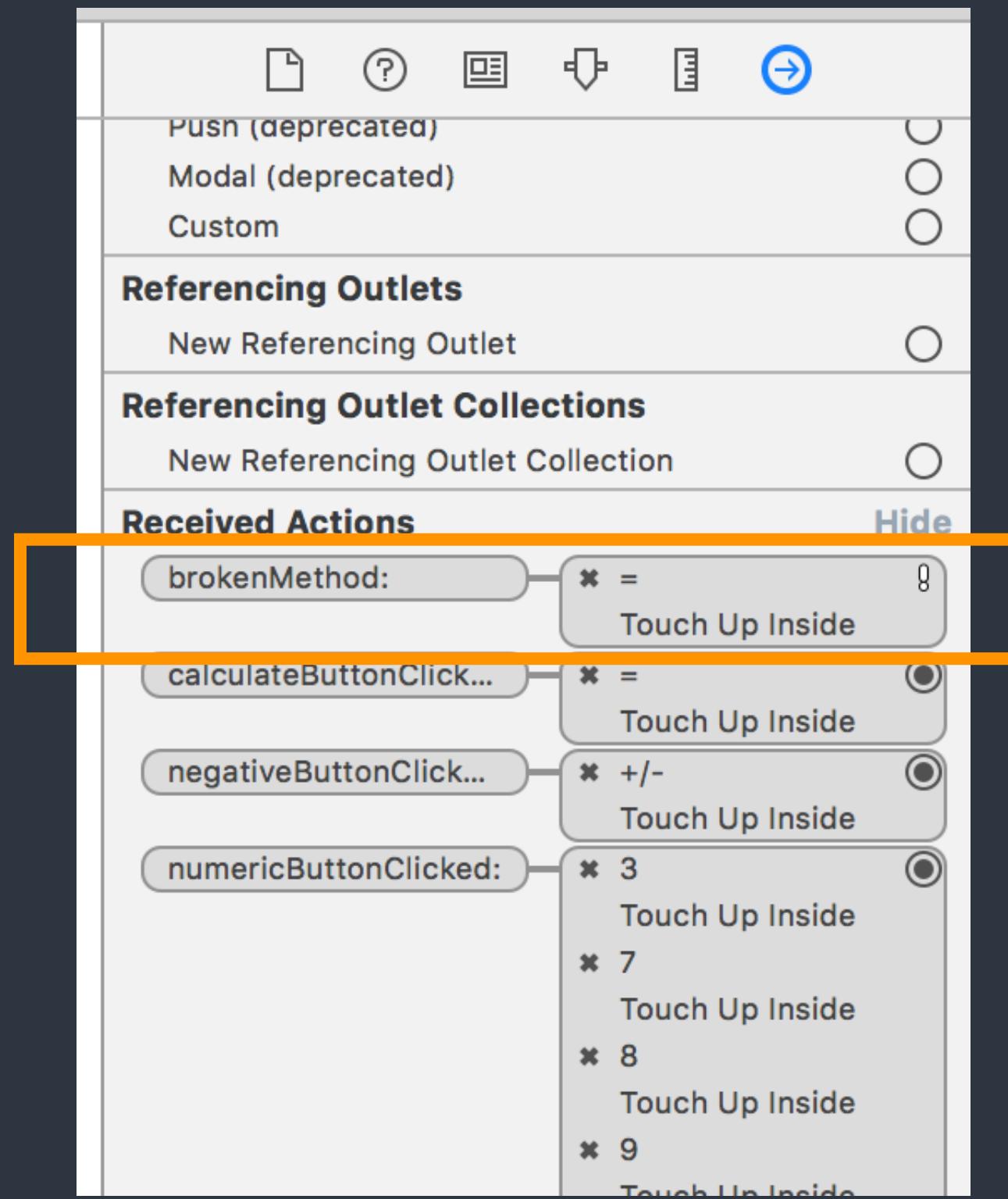
```
2016-03-09 15:56:44.689 Calculator[37743:1045111] -[Calculator.ViewController brokenMethod:]: unrecognized selector sent to instance 0x7fdd514561c0  
(lldb)
```

- 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)

