

The logo consists of a white rounded rectangle on a blue background. Inside the rectangle, the text "ios" is written in a bold, lowercase sans-serif font, and "DeCal" is written below it in a regular, title-case sans-serif font.

**ios**  
DeCal

# lecture 3

**Multiview Applications**

cs198-001 : fall 2017

# announcements

- Hangman project due Friday at 10pm
- office hour after lecture in 283E  
(undergrad lounge)
- only excusing absences for midterm  
conflicts - no review sessions

# **view controller lifecycle**

# view controller lifecycle

viewDidLoad()

viewWillAppear()

viewDidAppear()

viewWillDisappear()

viewDidDisappear()



someViewController.swift

# view controller lifecycle

**viewDidLoad()**

viewWillAppear()

viewDidAppear()

viewWillDisappear()

viewDidDisappear()

someViewController.swift

A vertical blue line is positioned to the right of the five lifecycle methods. A horizontal blue line branches off from the vertical line, pointing to the text 'someViewController.swift'.

automatically called when the view controller  
loaded completely in the memory

# view controller lifecycle

viewDidLoad()

**viewWillAppear()**

viewDidAppear()

viewWillDisappear()

viewDidDisappear()

someViewController.swift

A vertical blue line with horizontal caps at the top and bottom, and a horizontal line segment extending to the right from the middle, pointing towards the text 'someViewController.swift'. This diagram groups the five lifecycle methods listed to the left of the line.

called when the view controller is about to be  
added to the view hierarchy

# view controller lifecycle

viewDidLoad()

viewWillAppear()

**viewDidAppear()**

viewWillDisappear()

viewDidDisappear()



someViewController.swift

called when the view controller was added to the  
view hierarchy

# view controller lifecycle

viewDidLoad()

viewWillAppear()

viewDidAppear()

**viewWillDisappear()**

viewDidDisappear()

someViewController.swift

A vertical blue line with horizontal caps at the top and bottom, and a horizontal line segment extending to the right from the middle, pointing towards the text 'someViewController.swift'. This diagram groups the five lifecycle methods listed to its left.

called when the view controller is about to be removed from the view controller hierarchy



# view controller lifecycle

viewDidLoad()

viewWillAppear()

viewDidAppear()

viewWillDisappear()

**viewDidDisappear()**

someViewController.swift

called when the view controller was removed from  
the view controller hierarchy

# view controller lifecycle

viewDidLoad()

viewWillAppear()

viewDidAppear()

viewWillDisappear()

viewDidDisappear()

someViewController.swift

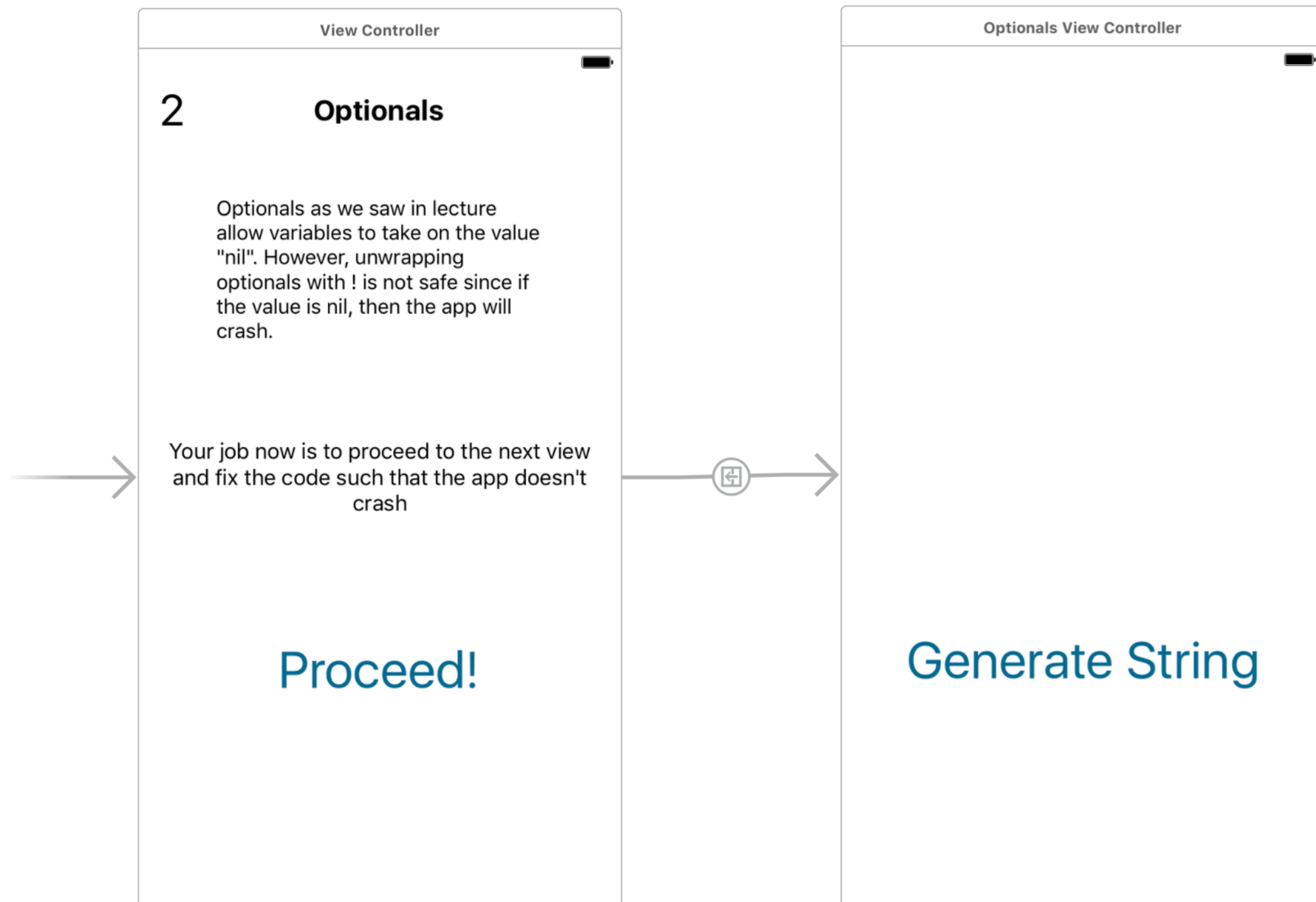


**didReceiveMemoryWarning**

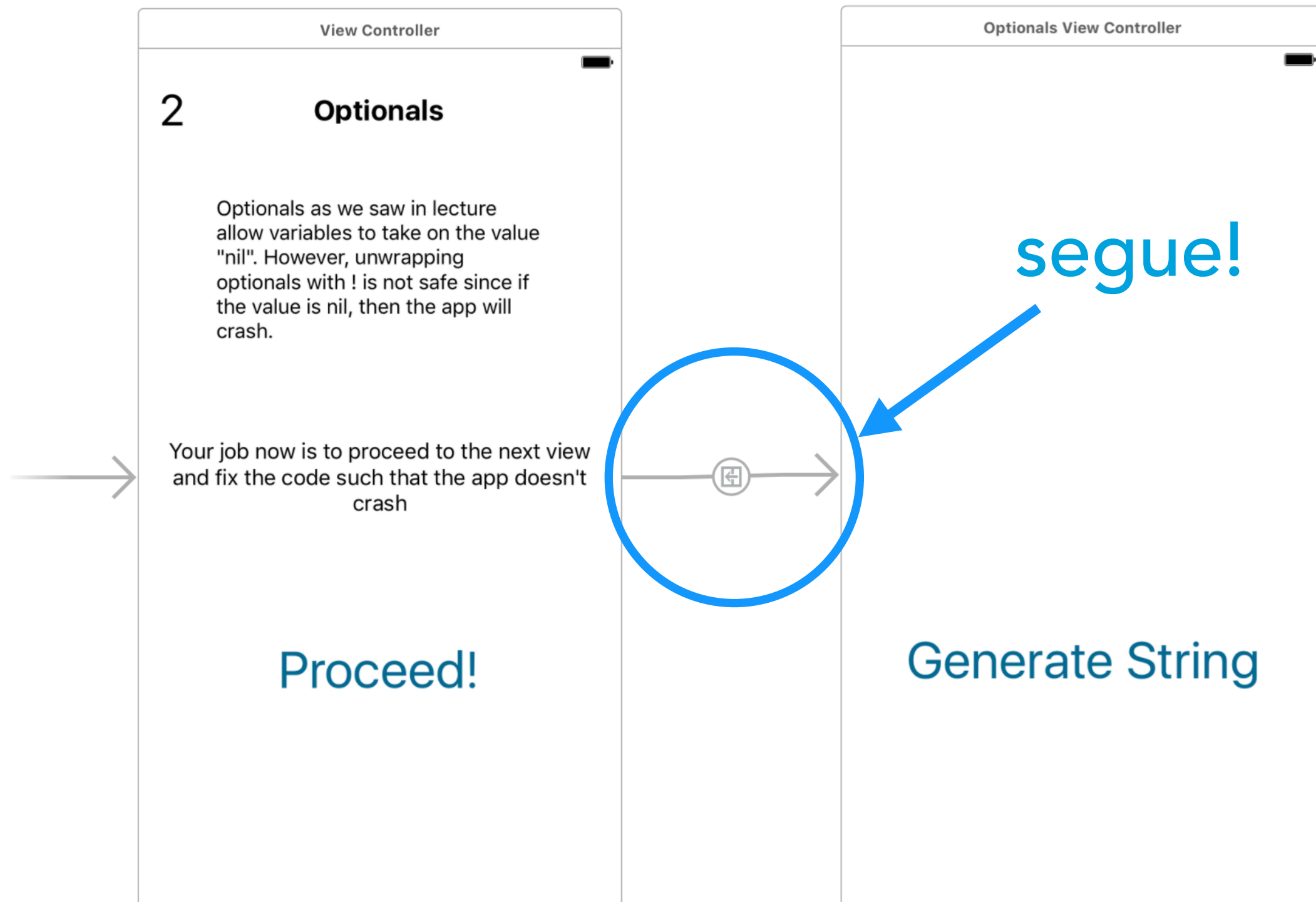
called when available memory is low

**multiview applications**

# lab 1 (multiview example)



# lab 1 (multiview example)



# multiview applications

Multi-view applications are made up of multiple MVC's stringed together

To communication and transitioning between MVC's, create **segues** between View Controllers in Storyboard

Each time a user triggers a segue, a **new instance** of an MVC will be created (not an old instance).

*More on this later!*

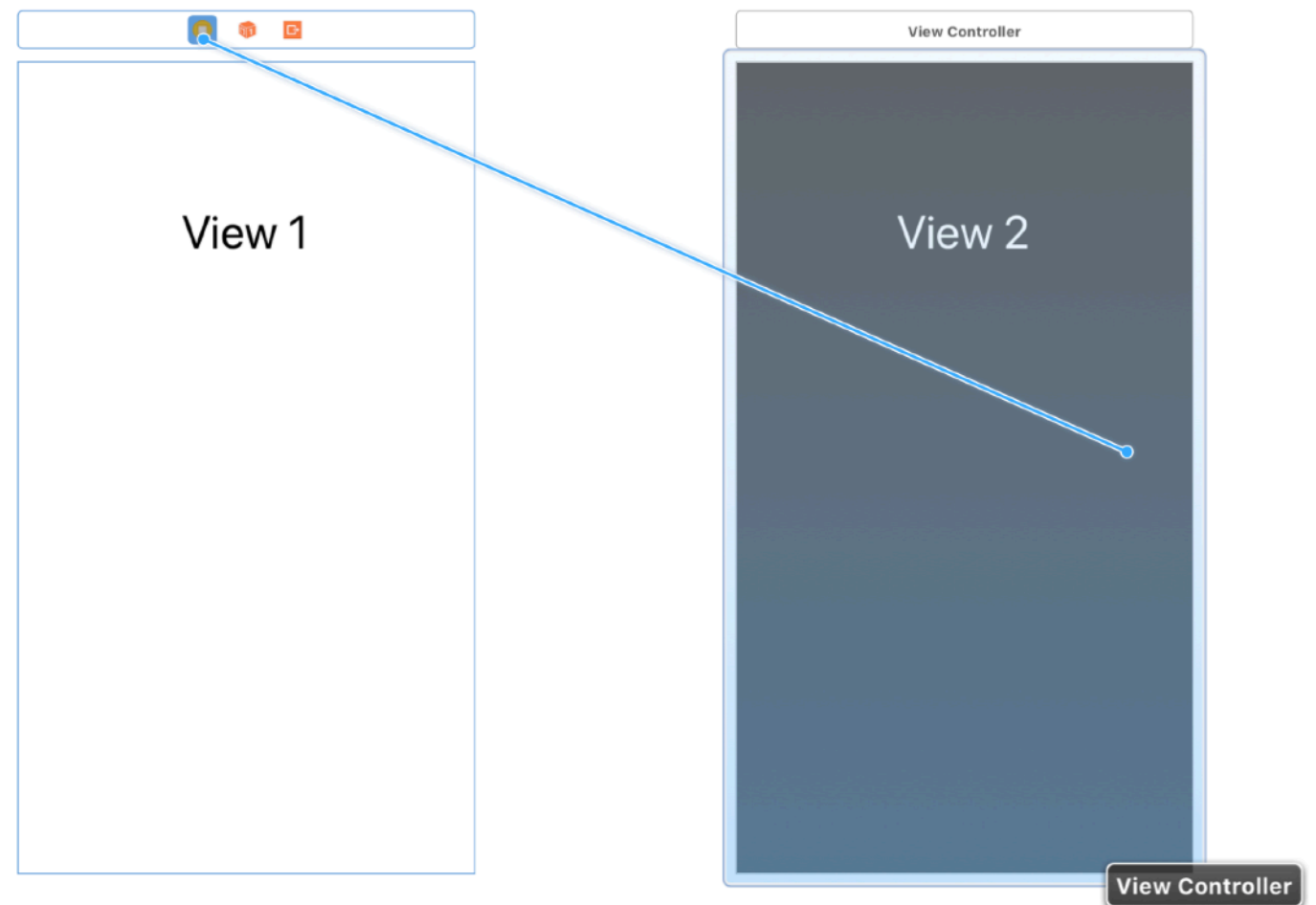
# segues

To create a segue between MVC's, you need to:

1. create the segue (control + drag)
2. create a segue identifier
3. trigger the segue using `performSegue`
  1. if you need to pass data or do any other “pre-segue” work, use the “`prepareForSegue`” method

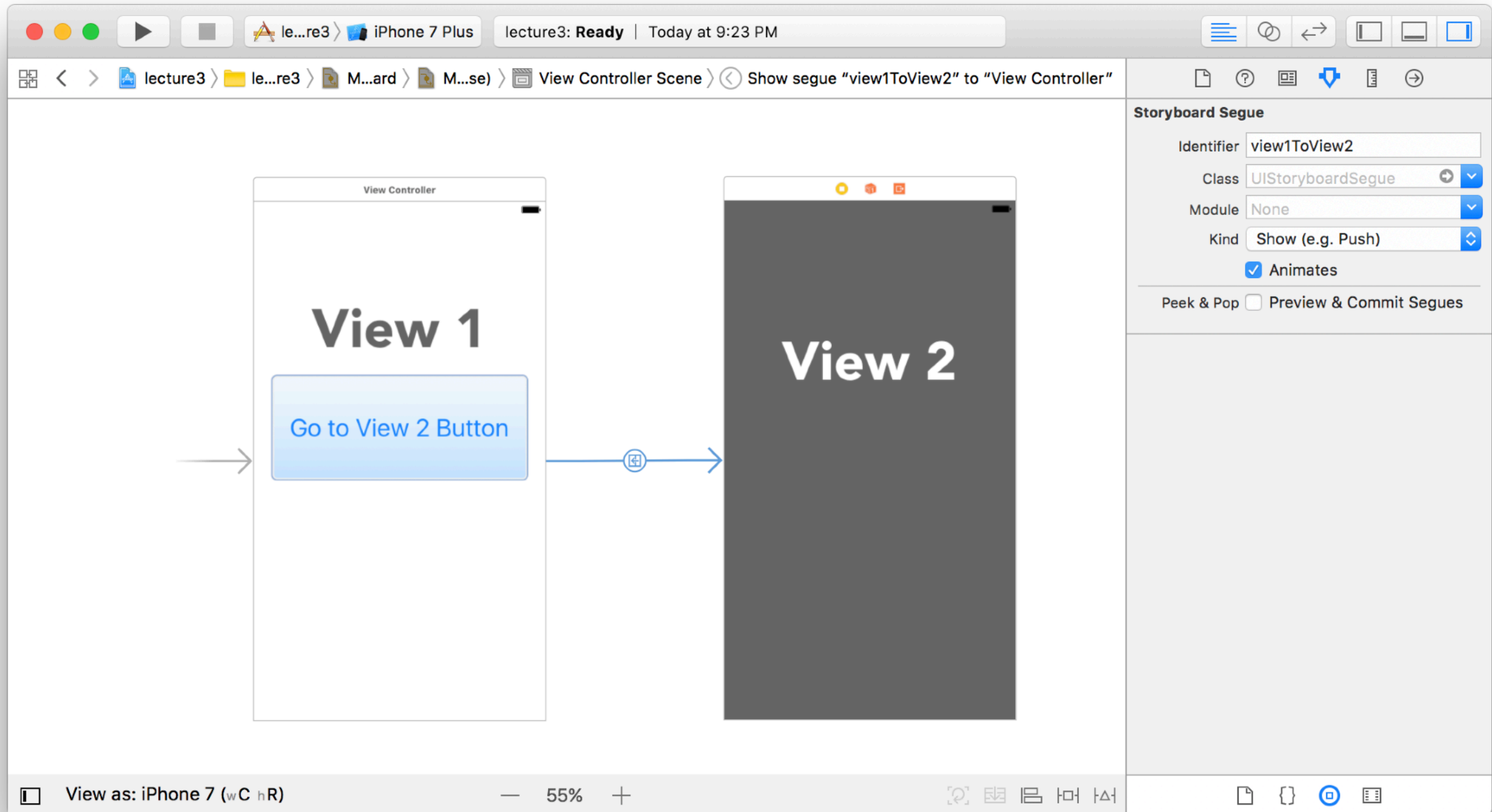
# segue creation

**Step 1: control drag from your initial view controller to the destination view controller**

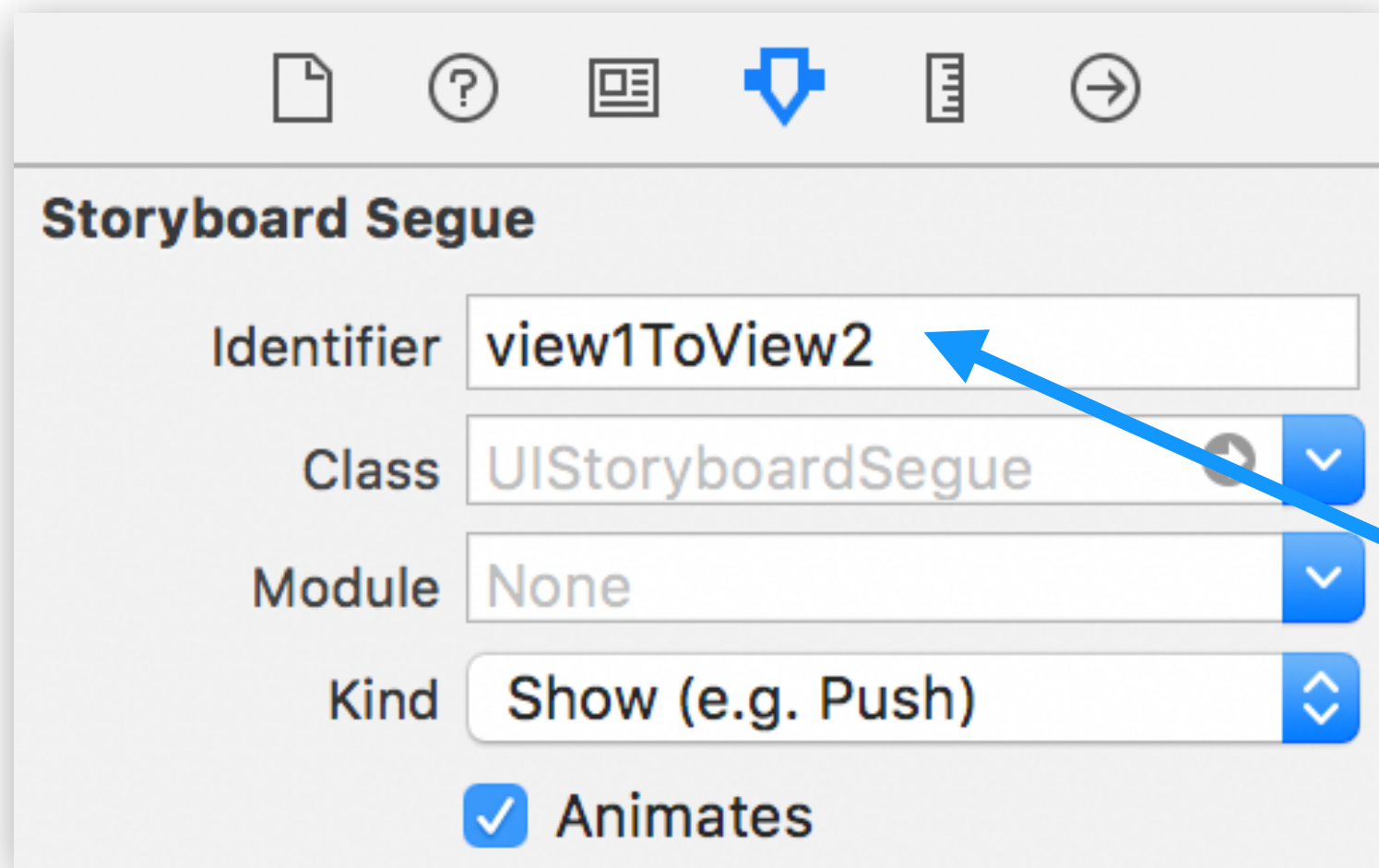




# Segue Identification: Tap on a segue in Storyboard, and add a **Identifier** in the **Attributes Inspector**



**Segue Identification:** Tap on a segue in Storyboard, and add a **Identifier** in the **Attributes Inspector**



The image shows a screenshot of the 'Storyboard Segue' panel in Xcode's Attributes Inspector. The panel has a title bar with icons for file, help, storyboard, segue, and navigation. Below the title, there are four labeled text fields: 'Identifier' with the value 'view1ToView2', 'Class' with 'UIStoryboardSegue', 'Module' with 'None', and 'Kind' with 'Show (e.g. Push)'. Each field has a dropdown arrow on its right. At the bottom, there is a checked checkbox labeled 'Animates'. A blue arrow points from the text 'you can use this identifier to reference your segue in code' to the 'Identifier' field.

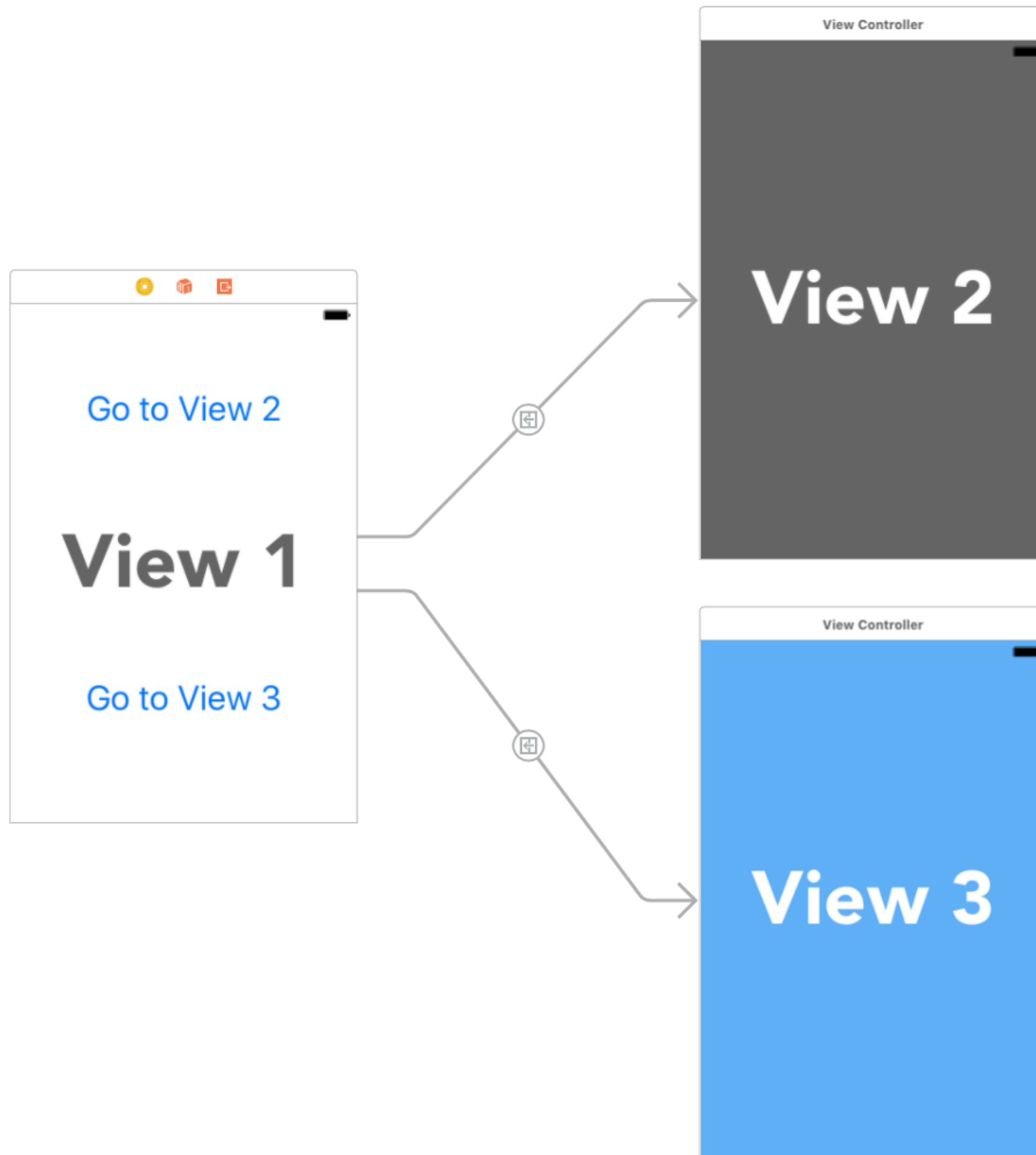
Storyboard Segue	
Identifier	view1ToView2
Class	UIStoryboardSegue
Module	None
Kind	Show (e.g. Push)
<input checked="" type="checkbox"/> Animates	

you can use this  
identifier to  
reference your  
segue in code

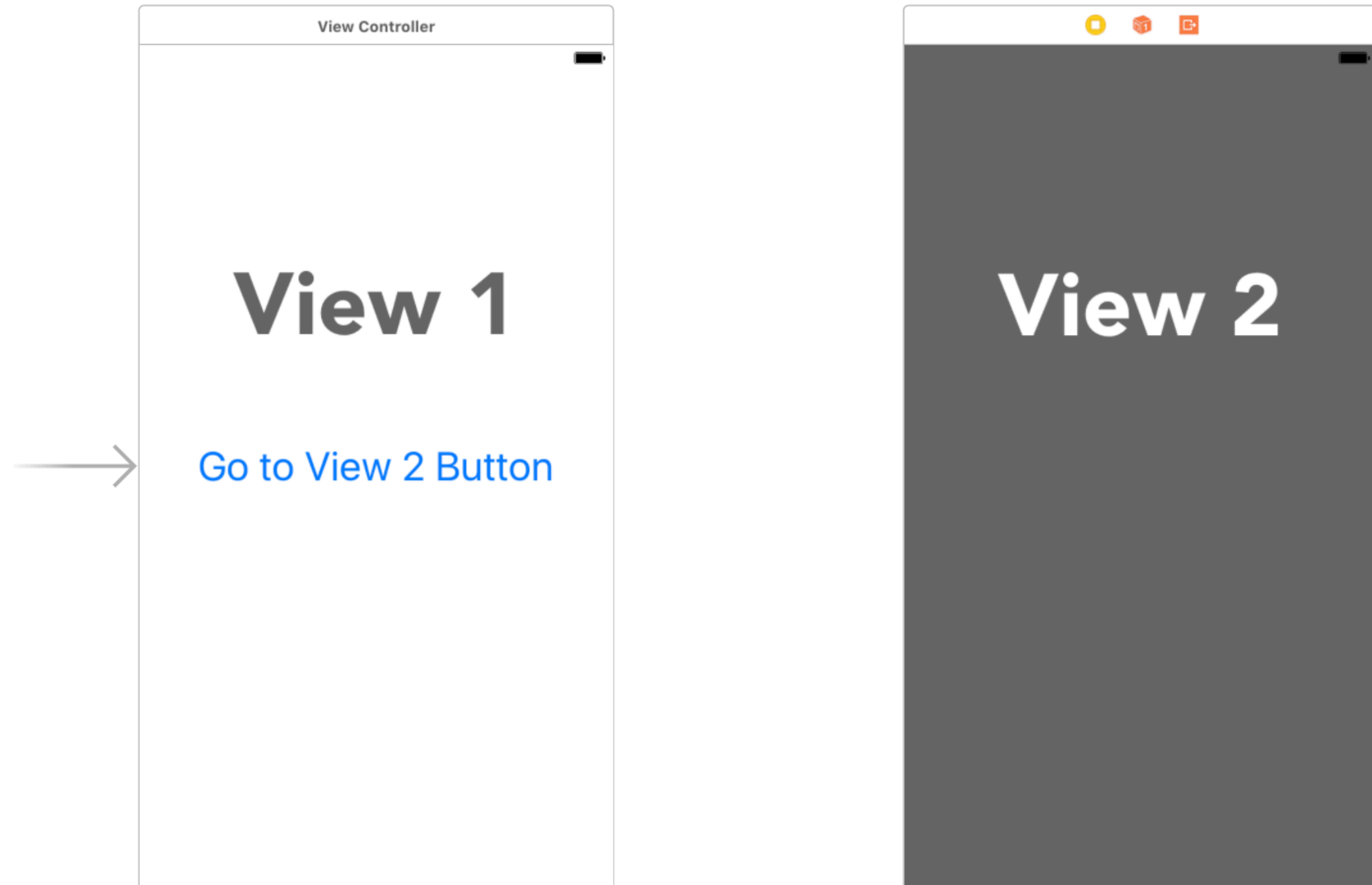
# performSegue

Call `performSegue` to trigger the segue created in Storyboard using the identifier you set

```
@IBAction func buttonPressed(sender: UIButton) {  
    performSegue(withIdentifier: "view1ToView2",  
                  sender: sender)  
}
```

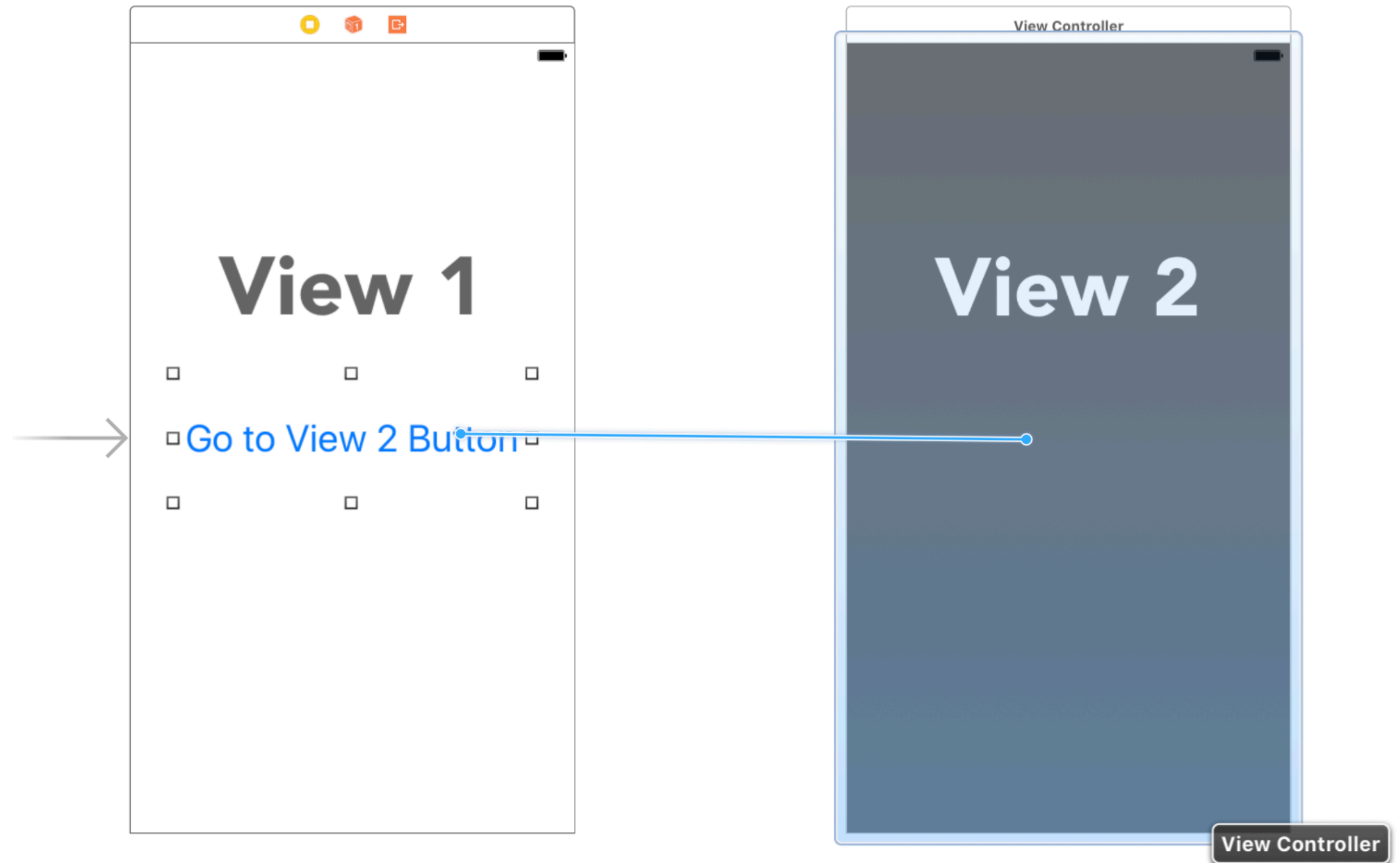


**Segue Identifiers**  
are useful to  
distinguish  
between which  
MVC you are  
going to  
(one MVC can  
have a segue to  
multiple others)



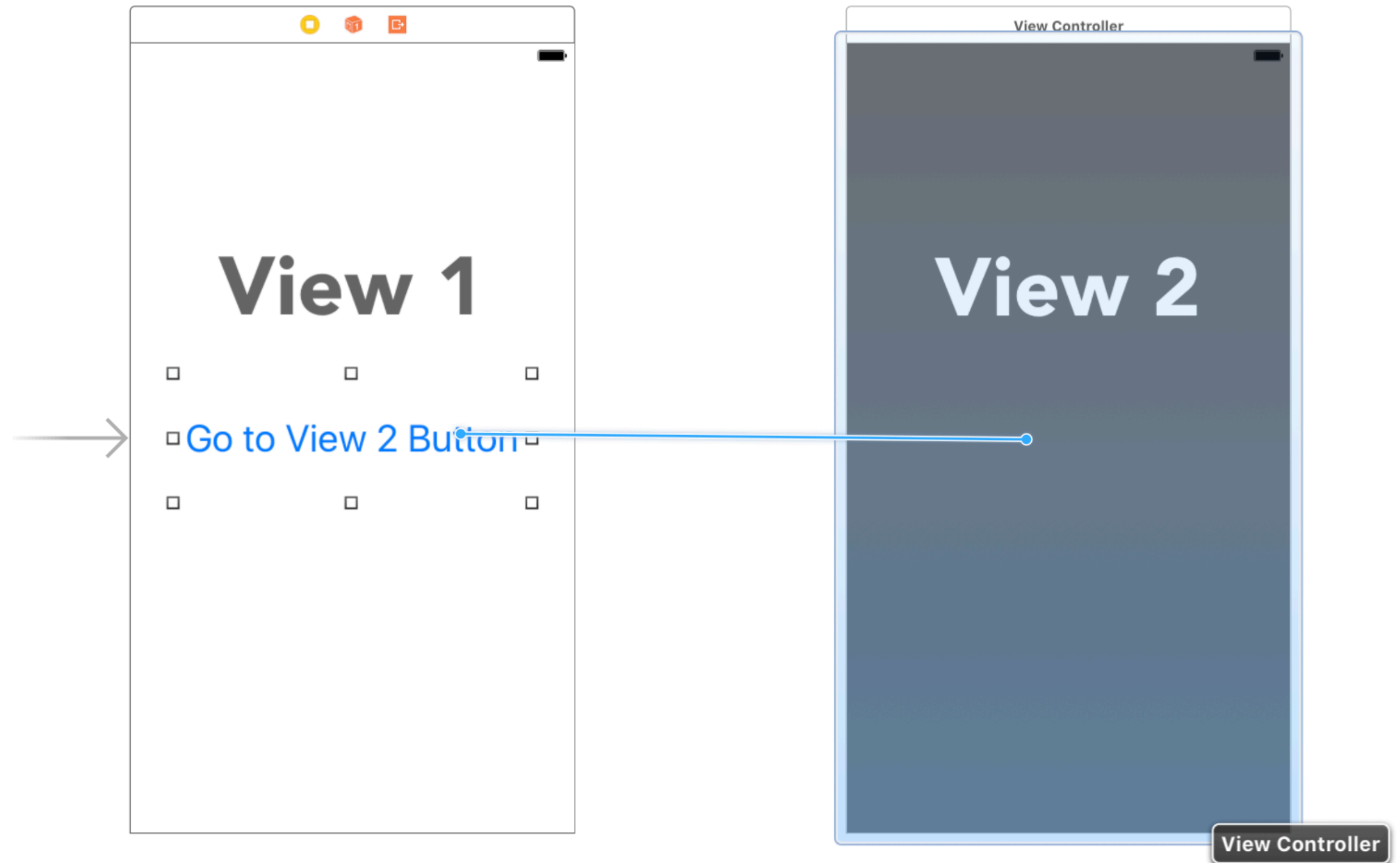
**shortcut (if using button or cell)**

You can also control + drag from an instigator (typically a button) from one MVC to another MVC



**shortcut (if using button or cell)**

You can also control + drag from an instigator (typically a button) from one MVC to another MVC



**shortcut (if using button or cell)**

this eliminates the need to call "performSegue" in your code

# passing data between MVC's

When the user taps on a button that triggers a segue, the MVC they will transition to will be a **new instance of that MVC.**



# passing data between MVC's

When the user taps on a button that triggers a segue, the MVC they will transition to will be a **new instance of that MVC**.

Therefore, we need to pass data from the first MVC to the new MVC **before** the segue takes place.

How do we do this? —> `prepareForSegue`

# prepareForSegue

```
func prepare(for segue: UIStoryboardSegue, sender: Any?) {  
    if let identifier = segue.identifier {  
        if identifier == "goToMainView" {  
            if let dest = segue.destination as? MainViewController {  
                dest.somePropertyOnMainView = "hi!"  
                dest.someMainViewSetupFunc()  
            }  
        }  
        else if identifier == "goToSettings" {  
            if let dest = segue.destination as? SettingsViewController {  
                // do stuff in the settingsVC before it loads  
            }  
        }  
    }  
}
```

# prepareForSegue

```
func prepare(for segue: UIStoryboardSegue, sender: Any?) {  
    if let identifier = segue.identifier {  
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        }  
    }  
    else if identifier == "goToSettings" {  
        if let dest = segue.destination as? SettingsViewController {  
            // do stuff in the settingsVC before it loads  
        }  
    }  
}
```

**segue** : The segue just instigated  
**sender** : The segue's instigator (usually a button)

# prepareForSegue

```
func prepare(for segue: UIStoryboardSegue, sender: Any?) {  
    if let identifier = segue.identifier {  
        if identifier == "goToMainView" {  
            if let dest = segue.destination as? MainViewController {  
                dest.somePropertyOnMainView = "hi!"  
                dest.someMainViewSetupFunc()  
            }  
        }  
        else if identifier == "goToSettings" {  
            if let dest = segue.destination as? SettingsViewController {  
                // do stuff in the settingsVC before it loads  
            }  
        }  
    }  
}
```

First, get the identifier we created in Storyboard  
by accessing segue.*identifier*

# prepareForSegue

```
func prepare(for segue: UIStoryboardSegue, sender: Any?) {  
    if let identifier = segue.identifier {  
        if identifier == "goToMainView" {  
            if let dest = segue.destination as? MainViewController {  
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            }  
        }  
        else if identifier == "goToSettings" {  
            if let dest = segue.destination as? SettingsViewController {  
                // do stuff in the settingsVC before it loads  
            }  
        }  
    }  
}
```

If the identifier is "goToMainView", we know we are heading to the MainViewController

# prepareForSegue

```
func prepare(for segue: UIStoryboardSegue, sender: Any?) {  
    if let identifier = segue.identifier {  
        if identifier == "goToMainView" {  
            if let dest = segue.destination as? MainViewController {  
                dest.somePropertyOnMainView = "hi!"  
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            }  
        }  
        else if identifier == "goToSettings" {  
            if let dest = segue.destination as? SettingsViewController {  
                // do stuff in the settingsVC before it loads  
            }  
        }  
    }  
}
```

We can get a reference to the destination View Controller by accessing segue.destination

# prepareForSegue

```
func prepare(for segue: UIStoryboardSegue, sender: Any?) {  
    if let identifier = segue.identifier {  
        if identifier == "goToMainView" {  
            if let dest = segue.destination as? MainViewController {  
                dest.somePropertyOnMainView = "hi!"  
                dest.someMainViewSetupFunc()  
            }  
        }  
        else if identifier == "goToSettings" {  
            if let dest = segue.destination as? SettingsViewController {  
                // do stuff in the settingsVC before it loads  
            }  
        }  
    }  
}
```

`type(segue.destination)` is `ViewController`,  
we need to cast it as a `MainViewController`

# prepareForSegue

```
func prepare(for segue: UIStoryboardSegue, sender: Any?) {  
    if let identifier = segue.identifier {  
        if identifier == "goToMainView" {  
            if let dest = segue.destination as? MainViewController {  
                dest.somePropertyOnMainView = "hi!"  
                dest.someMainViewSetupFunc()  
            }  
        }  
        else if identifier == "goToSettings" {  
            if let dest = segue.destination as? SettingsViewController {  
                // do stuff in the settingsVC before it loads  
            }  
        }  
    }  
}
```

Now we can set properties / call methods in the MainViewController before it's view loads



# prepareForSegue

```
func prepare(for segue: UIStoryboardSegue, sender: Any?) {  
    if let identifier = segue.identifier {  
        if identifier == "goToMainView" {  
            if let dest = segue.destination as? MainViewController {  
                dest.somePropertyOnMainView = "hi!"  
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}
```

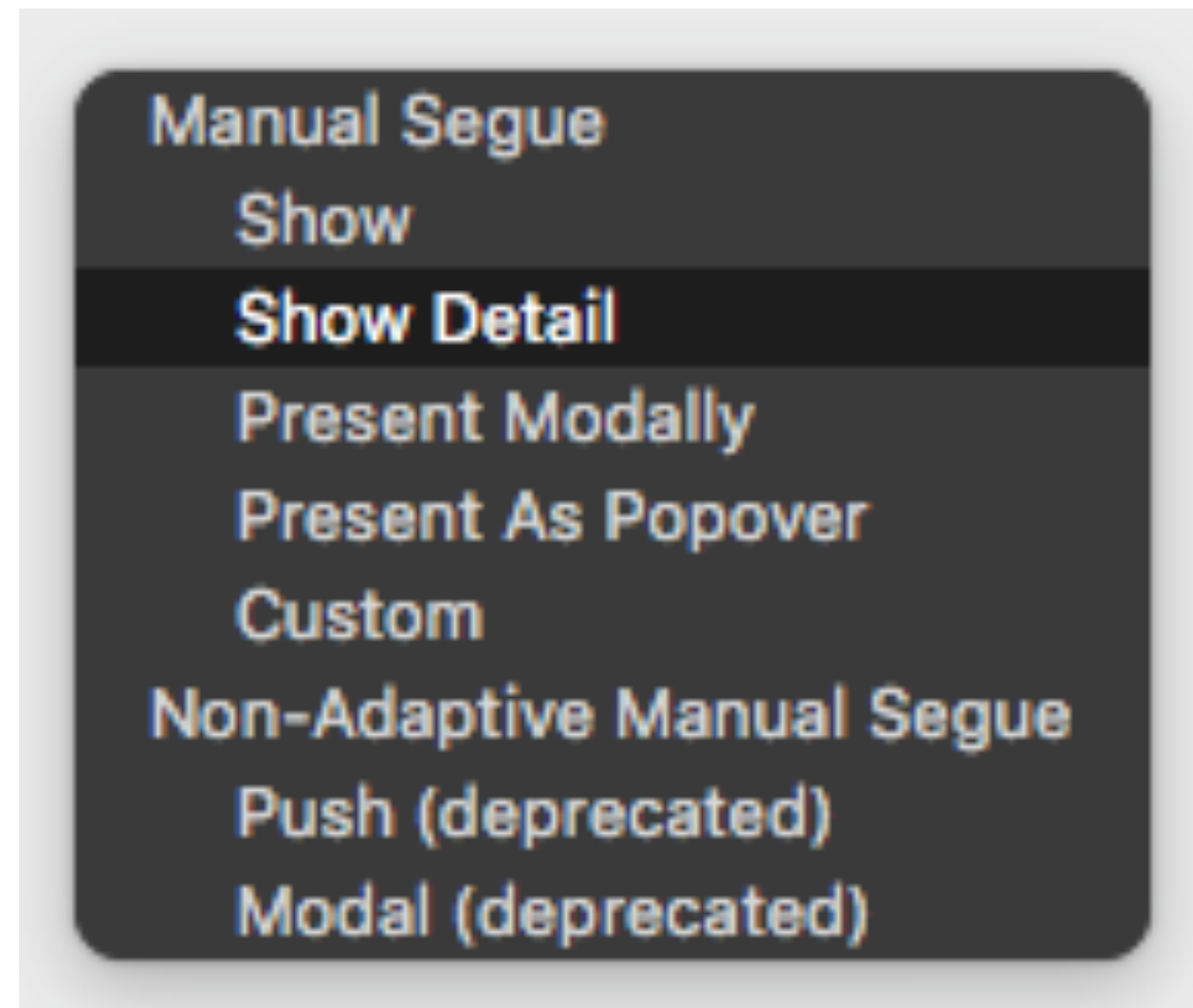
Since MVC's can segue to multiple other MVC's, segue.*identifier* can take on different values

# segue types

when control dragging to create a segue, drop down will show up, asking you to specify the segue type

## available segue options

- show
- show detail
- present modally
- present as popover
- custom

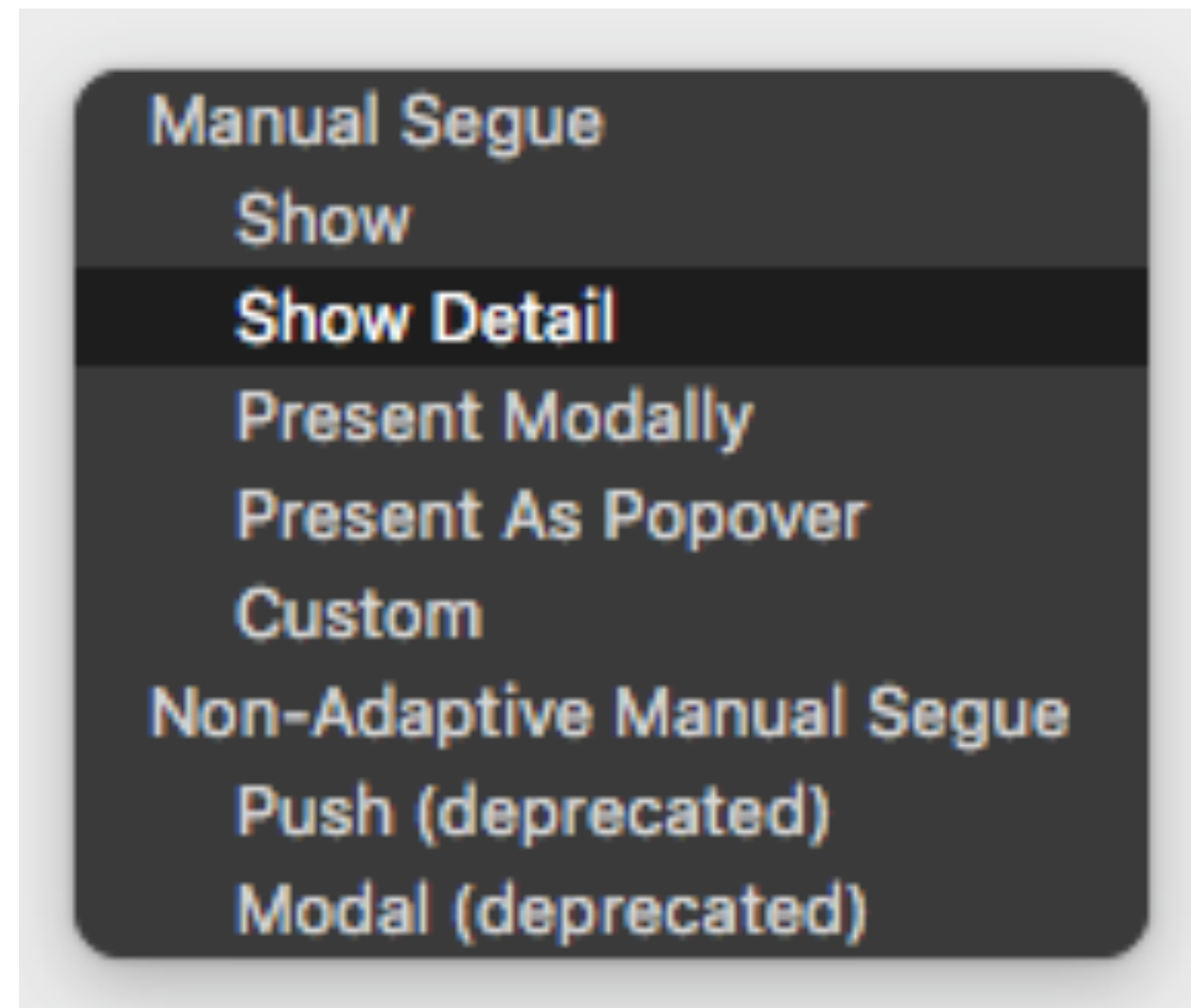


# segue types

when control dragging to create a segue, drop down will show up, asking you to specify the segue type

## available segue options

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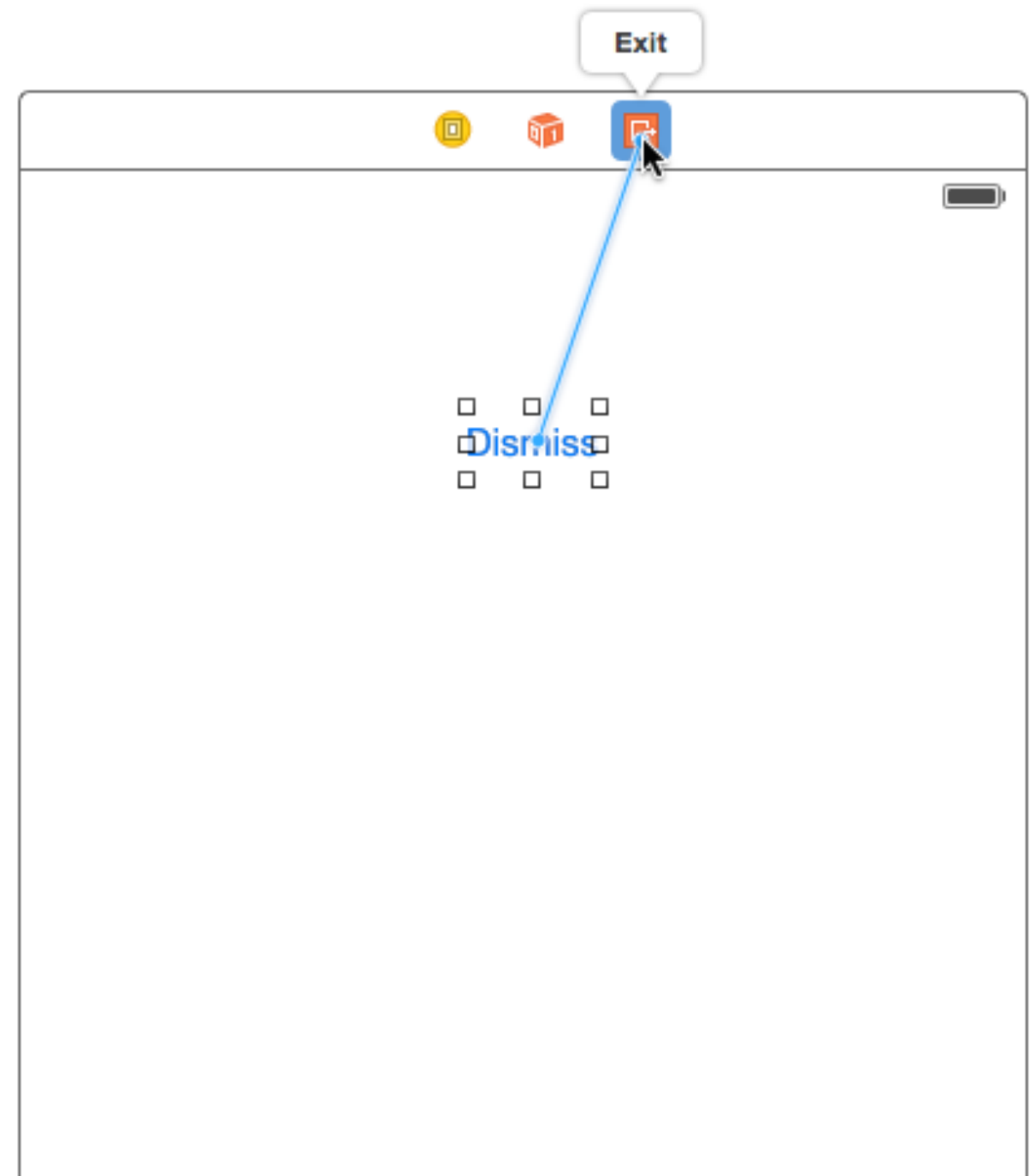


great explanation of the difference between segue types here: <https://stackoverflow.com/questions/25966215/whats-the-difference-between-all-the-selection-segues>

# unwind segues

to dismiss a view controller that you've presented, create an unwind segue

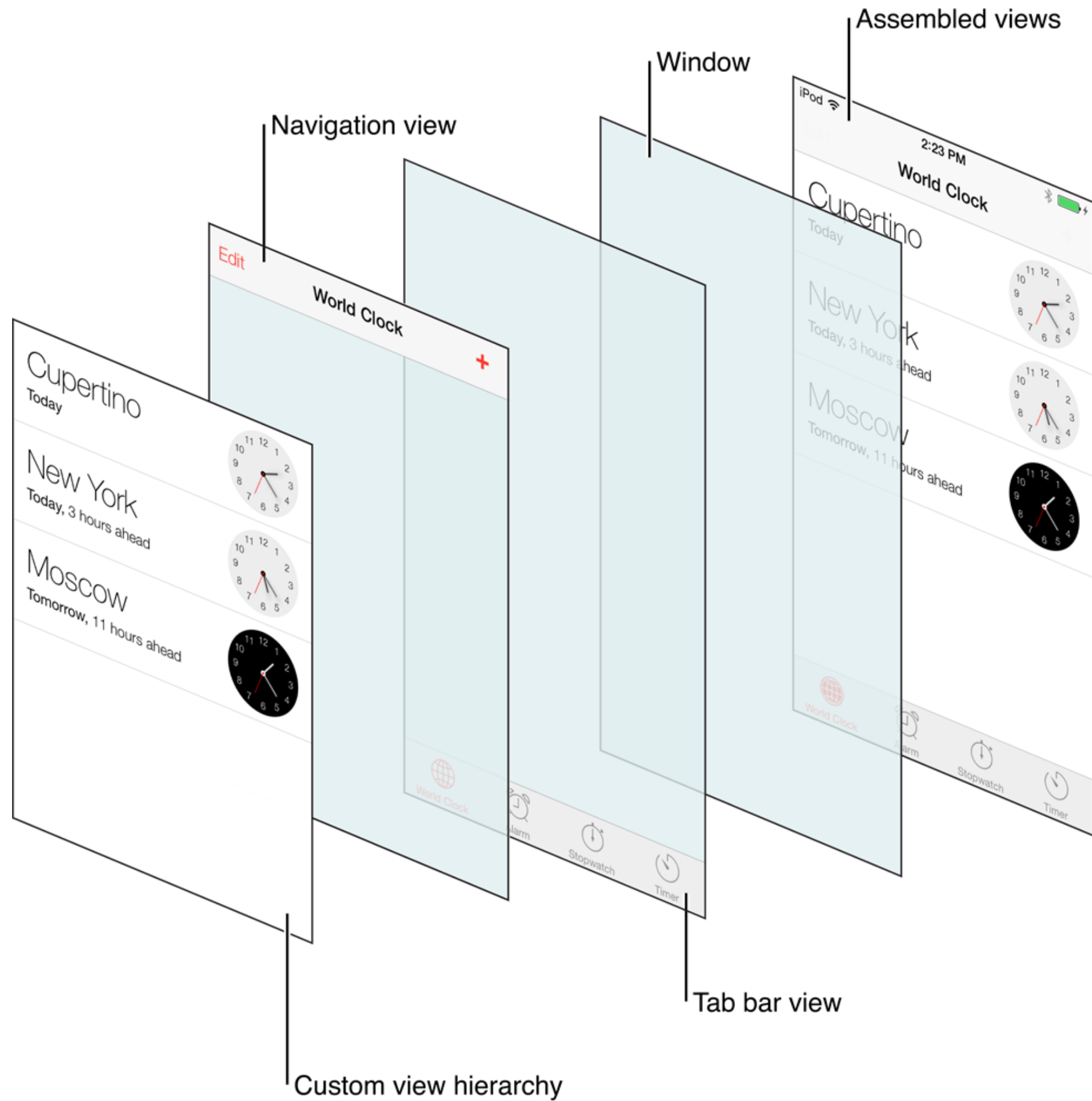
1. define an unwind @IBAction in the view controller you want to return to after dismissal
2. create segue by control dragging to the "exit" in storyboard
3. select the IBAction you created



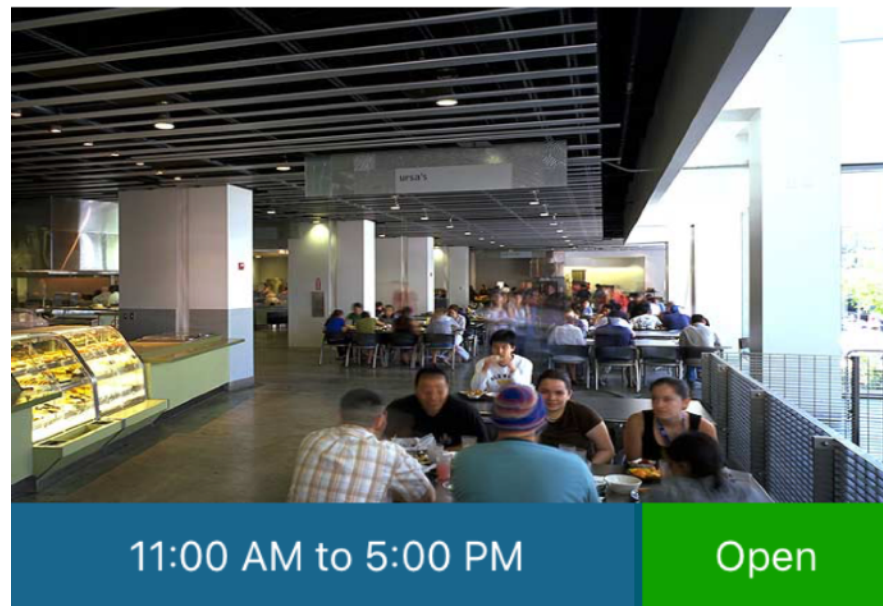
# segue demo

<https://github.com/paigeplan/Segue-Demo>

# Navigation + Tab bars



BREAKFAST LUNCH DINNER NIGHT



Baked Potato Bar



Aurora Sauce



BearTransit



Dining



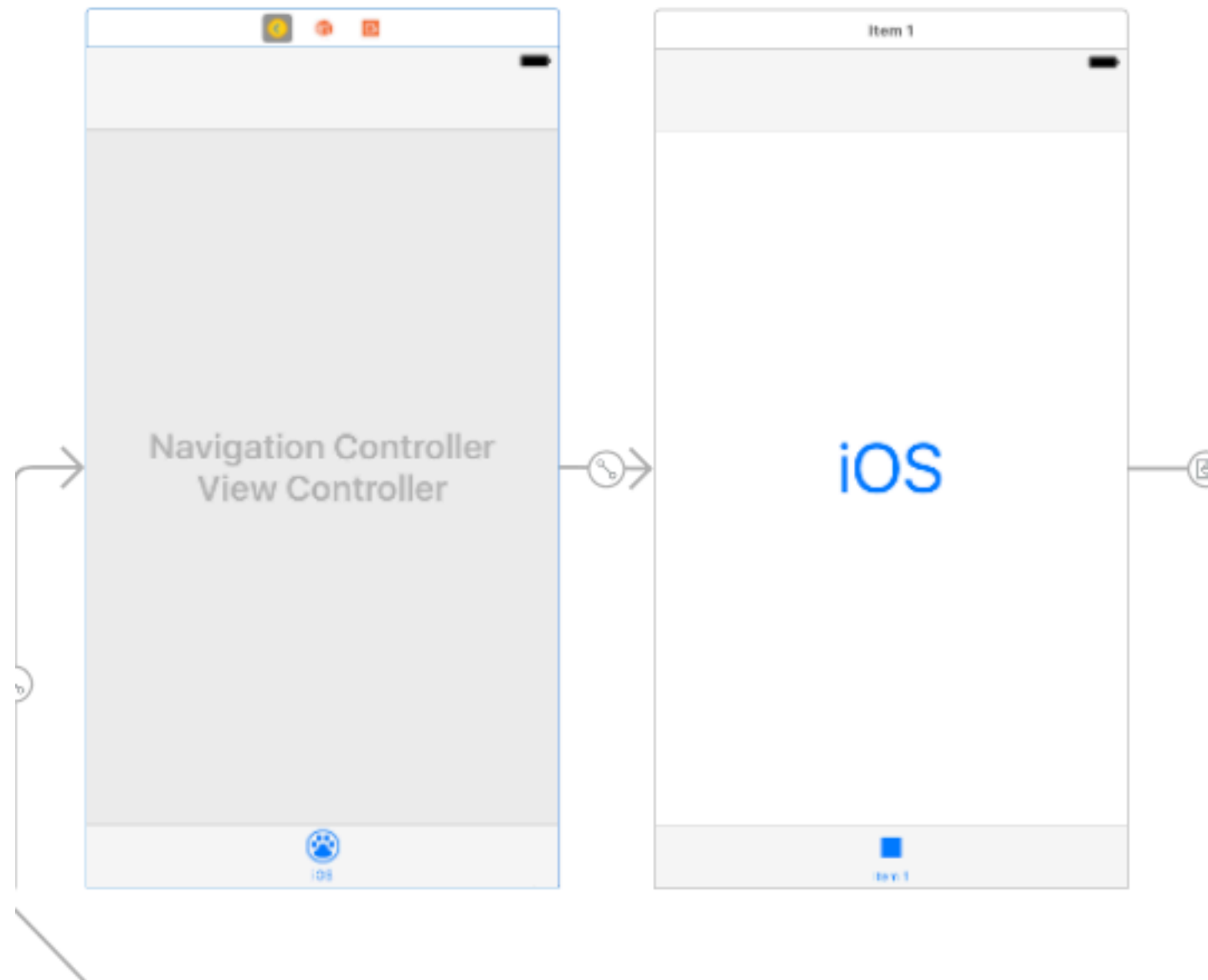
Resources



# navigation controllers

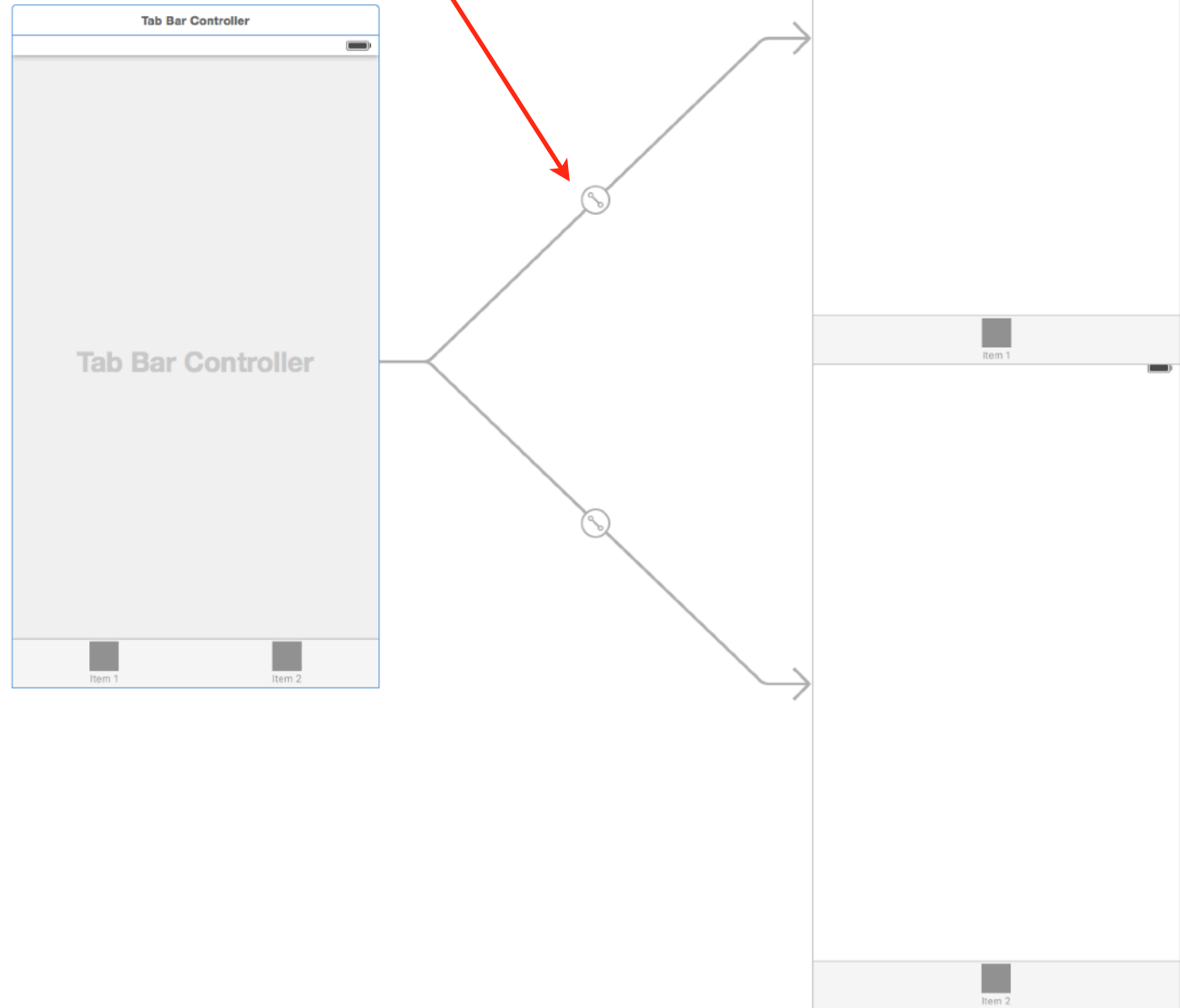
1. pull out a navigation controller from the object library
2. set a “root view controller”
3. add view controllers to your navigation stack using “show” segues
4. if needed, create “unwind segues” to dismiss view controllers

# Navigation Bars



# Tab Bars

Relationship Segue



# Tab Bars : Customization



# Tab Bars : Customization

```
class AppDelegate: UIResponder, UIApplicationDelegate {  
    var window: UIWindow?  
  
    func application(_ application: UIApplication,  
        didFinishLaunchingWithOptions launchOptions:  
        [UIApplicationLaunchOptionsKey: Any]?) -> Bool {  
  
        UITabBar.appearance().tintColor =  
            UIColor.lightGray//selected tab color  
        UITabBar.appearance().backgroundImage =  
            UIImage(named: "tabbarbg.png")  
        UITabBar.appearance().barTintColor =  
            UIColor.white  
        return true  
    }  
}
```

# Navigation Bars : Customization

```
class ViewController: UIViewController

func viewDidLoad() {

    navigationBar.barTintColor =
    UIColor(colorLiteralRed: 51/255, green:
    90/255, blue: 149/255, alpha: 1)

    navigationBar.titleTextAttributes =
    [NSForegroundColorAttributeName:
    UIColor.white]

    navigationBar.tintColor = UIColor.white
}
```