

MOBILE DEVELOPMENT

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INTRO TO VIEWS AND VIEW CONTROLLERS

OBJECTIVES

- Label Xcode and many of the buttons in it
- Deep dive into UIView
- Explore UIViewController: What it is and the different types
- What's the difference between a view and a view controller?
- Segues: Multiple View Controllers

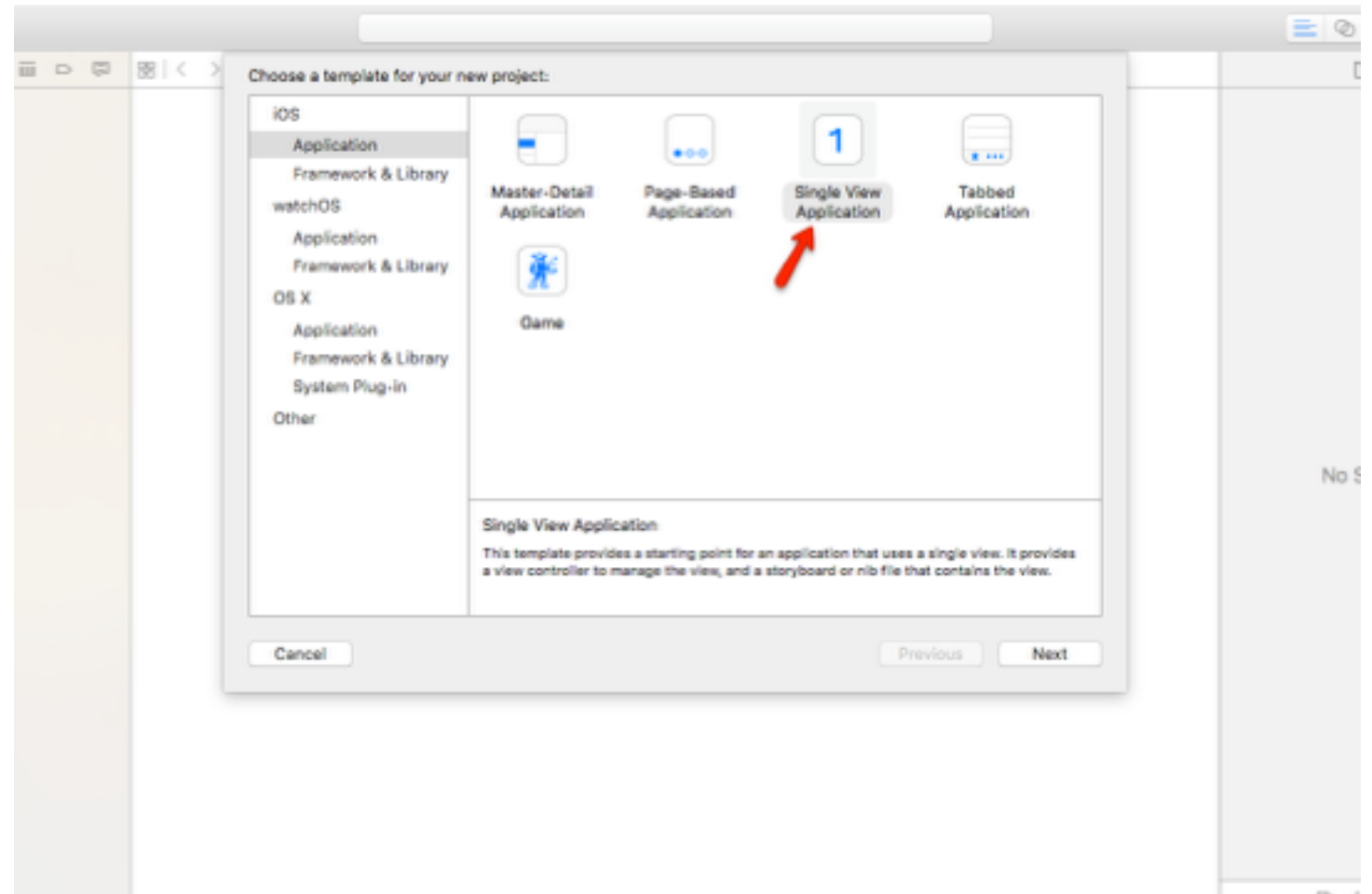
RECAP

RECAP

INTRO TO VIEWS AND VIEW CONTROLLERS

NEW PROJECT

- ▶ When creating a new project (Command + Shift + N) we selected the “Single View Application” template
- ▶ This provides one view controller



INTRO TO VIEWS AND VIEW CONTROLLERS

Choose options for your new project:

Product Name:

Organization Name:

Organization Identifier:

Bundle Identifier:

Language:

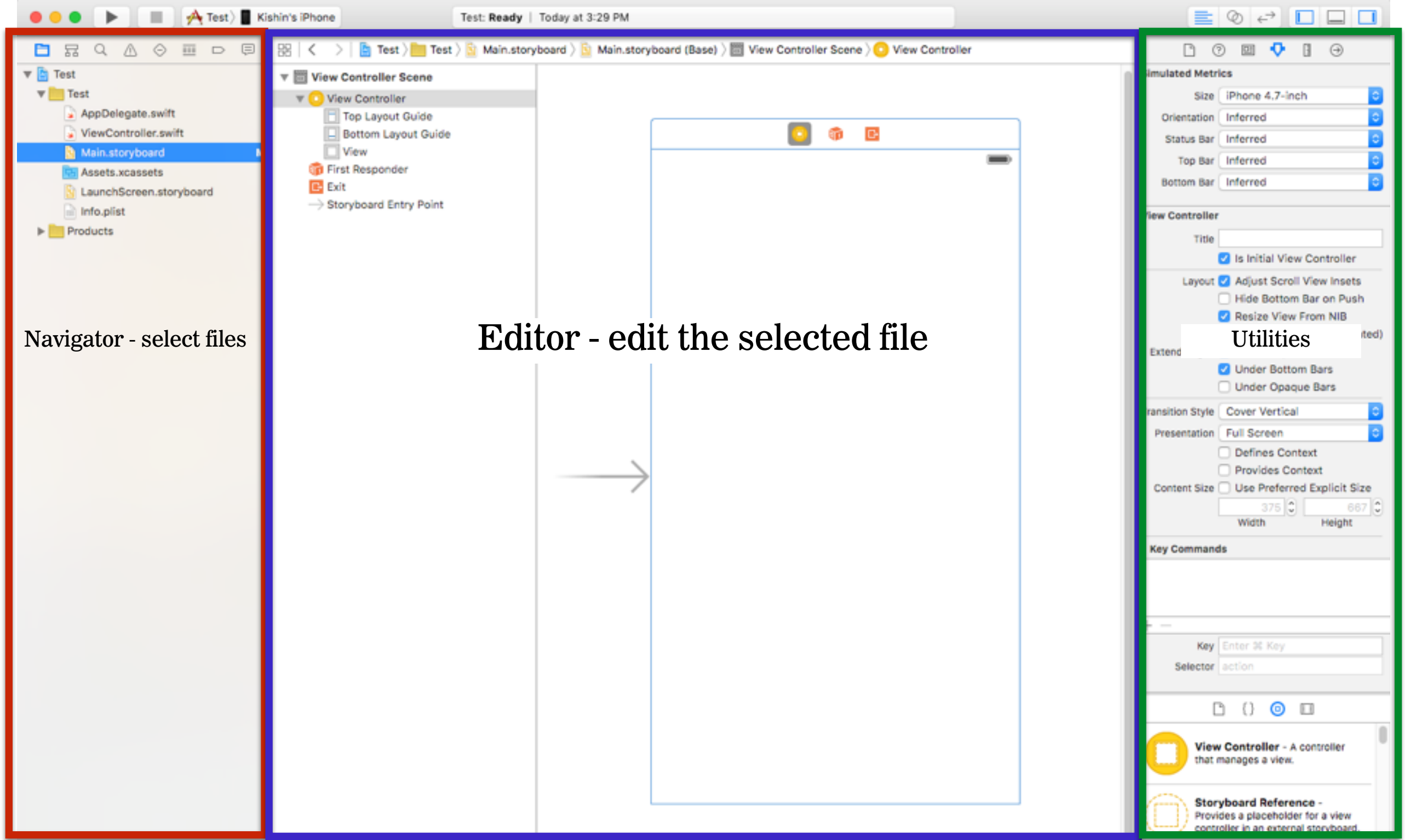
Devices:

☐ Use Core Data

☐ Include Unit Tests

☐ Include UI Tests

- Select Swift
- iPhone
- Uncheck all boxes



INTRO TO VIEWS AND VIEW CONTROLLERS

UIVIEW VS UIVIEWCONTROLLER

INTRO TO VIEWS AND VIEW CONTROLLERS

UIVIEW

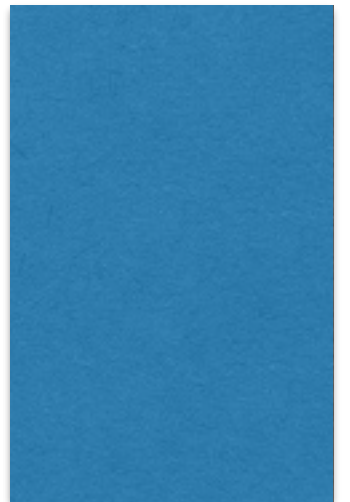
INTRO TO VIEWS AND VIEW CONTROLLERS

UIVIEW

- A UIView defines a rectangular area that is drawn on the screen
 - To do so it needs an X and Y coordinate and a height and width
- It may also contain other views (subviews) that are inside it and move with it

x, y: 0, 0

height: 200



width: 100

INTRO TO VIEWS AND VIEW CONTROLLERS

UIVIEW

- UIKit framework includes widely used subclasses
- When we drag components into our storyboard these are all UIViews, many of them were subclasses of UIViews
- UIViews are “dumb”
- What does that mean?

INTRO TO VIEWS AND VIEW CONTROLLERS

UIVIEWCONTROLLER

INTRO TO VIEWS AND VIEW CONTROLLERS

UIVIEWCONTROLLER

- A UIViewController is NOT drawable on the screen
 - Don't technically see a UIViewController
- Instead, each UIViewController contains a UIView, which is what we see
- Each ViewController has a View property associated to it, which is the one you are seeing in interface
- UIViewControllers are “smart”: glue between your overall application and the UIViews/screen

Test > Test > Main.storyboard > Main.storyboard (Base) > View Controller Scene > View Controller

View Controller Scene

View Controller

Top Layout Guide

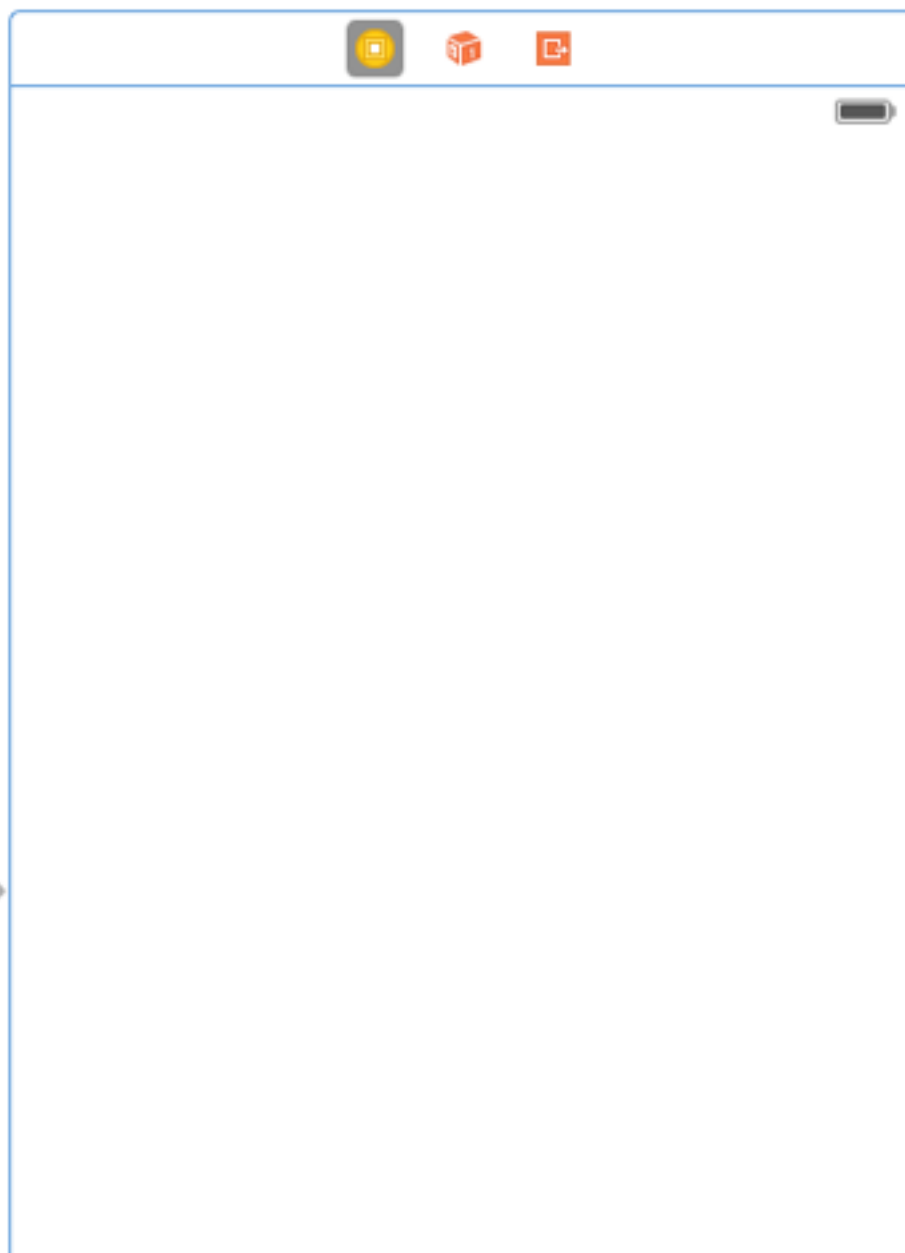
Bottom Layout Guide

View

First Responder

Exit

Storyboard Entry Point



Simulated Metrics

Size iPhone 4.7-inch

Orientation 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

Content Size ☐ Use Preferred Explicit Size

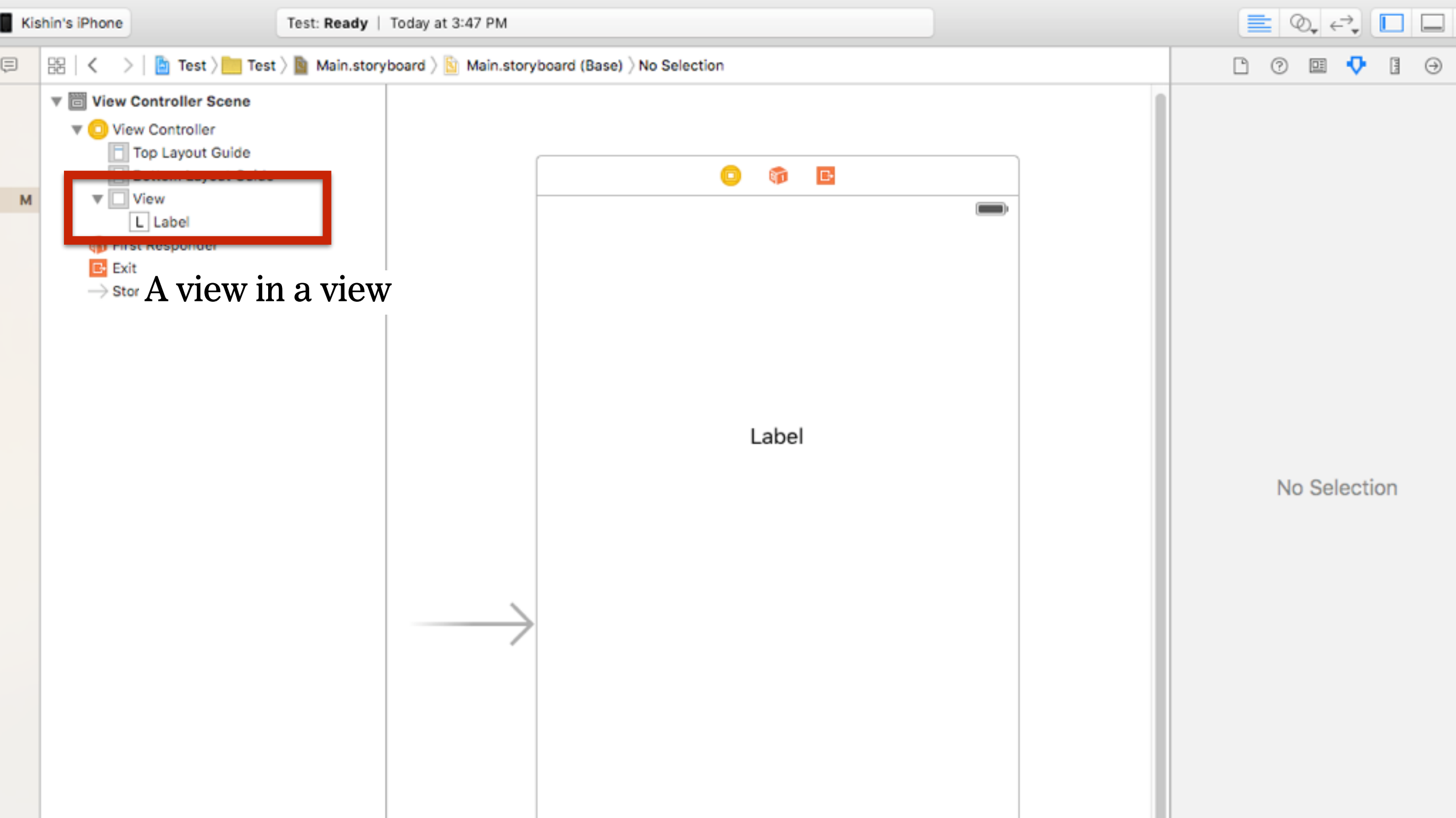
375

Width

667

Height

Key Commands



A view in a view

INTRO TO VIEWS AND VIEW CONTROLLERS

UIVIEWCONTROLLER

- We can add a second view controller in the storyboard
- There are also many different types of view controllers, which we'll cover shortly
- The official storyboard terminology for a view controller is “scene”

INTRO TO VIEWS AND VIEW CONTROLLERS

UIVIEW VS UIVIEWCONTROLLER

INTRO TO VIEWS AND VIEW CONTROLLERS

STORYBOARDS

INTRO TO VIEWS AND VIEW CONTROLLERS

STORYBOARDS

- A Storyboard is a what you see is what you get (WYSIWYG) editor
 - In other words, you can just drag and drop UIViews
- When we build and run our storyboard can serve as an app, it can run on a device and is functional
- Who's familiar with Flinto, Invisio, or something similar?
 - With what we've learned so far you've learned how to build a far more powerful prototype
- Composed of UIViews, UIViewController and Segues

INTRO TO VIEWS AND VIEW CONTROLLERS

STORYBOARDS

- So far we've only used one storyboard, it's possible to use multiple storyboards
- Why would we want to do this?

INTRO TO VIEWS AND VIEW CONTROLLERS

SEGUE

INTRO TO VIEWS AND VIEW CONTROLLERS

SEGUE

- A transition from one View Controller to another View Controller



Label

Button

Segue



View Controller



INTRO TO VIEWS AND VIEW CONTROLLERS

SEGUE

- How do we create a segue?
- Control + drag from a *button* in a view controller to a second view controller
- Can invoke/start the segue by pressing the a or in code
- Can use standard iOS transitions or even create custom ones

Action Segue

show

show detail

present modally

popover presentation

custom

Non-Adaptive Action Segue

push (deprecated)

modal (deprecated)

INTRO TO VIEWS AND VIEW CONTROLLERS

LET'S TRY IT

INTRO TO VIEWS AND VIEW CONTROLLERS

SEGUE PRACTICE

- Start a new project
- Create two view controllers
- Create a button with the text “Next”
- Create a segue between the two view controllers
- Make the background on the second view controller black
- How can you go back to the previous view controller?

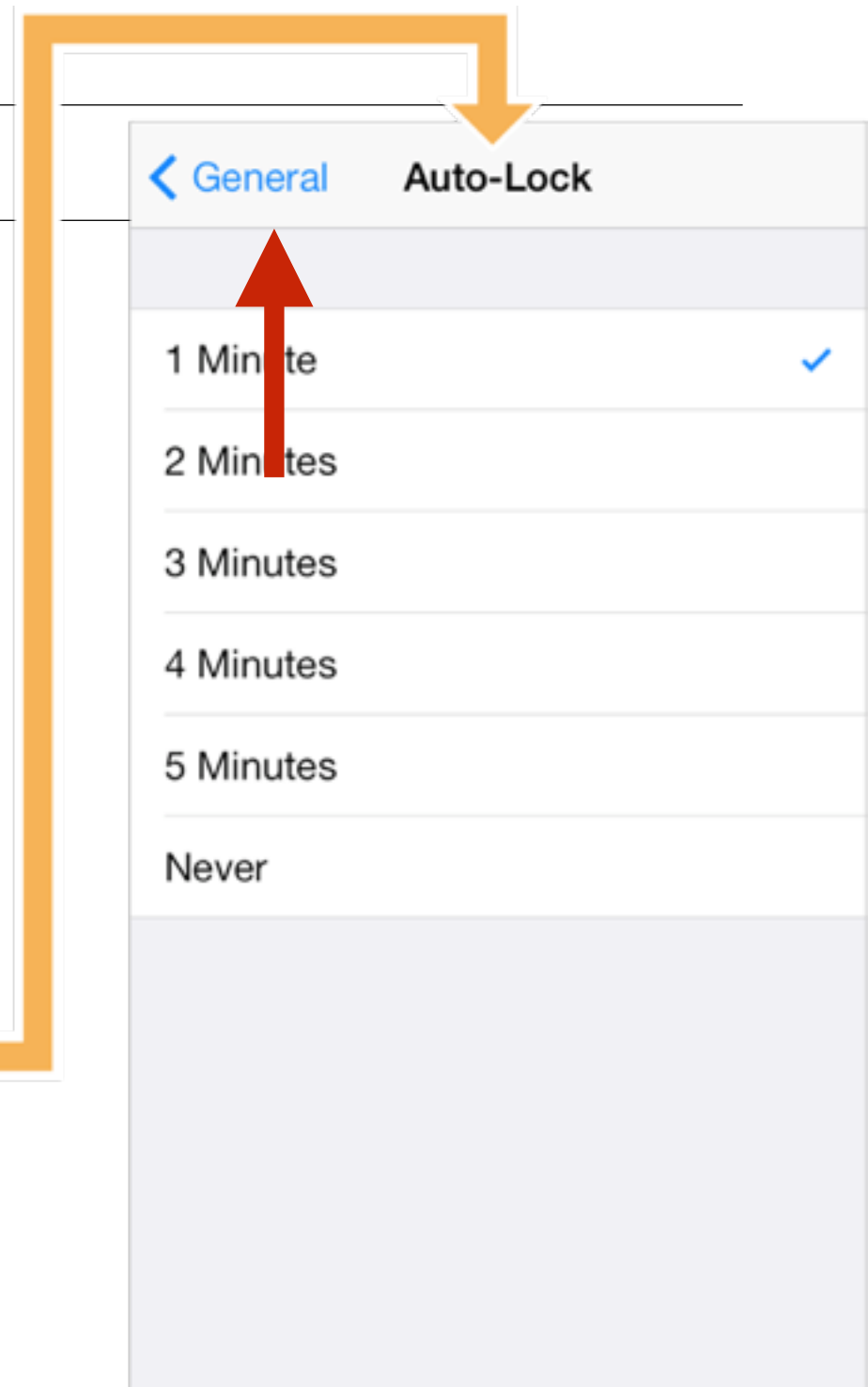
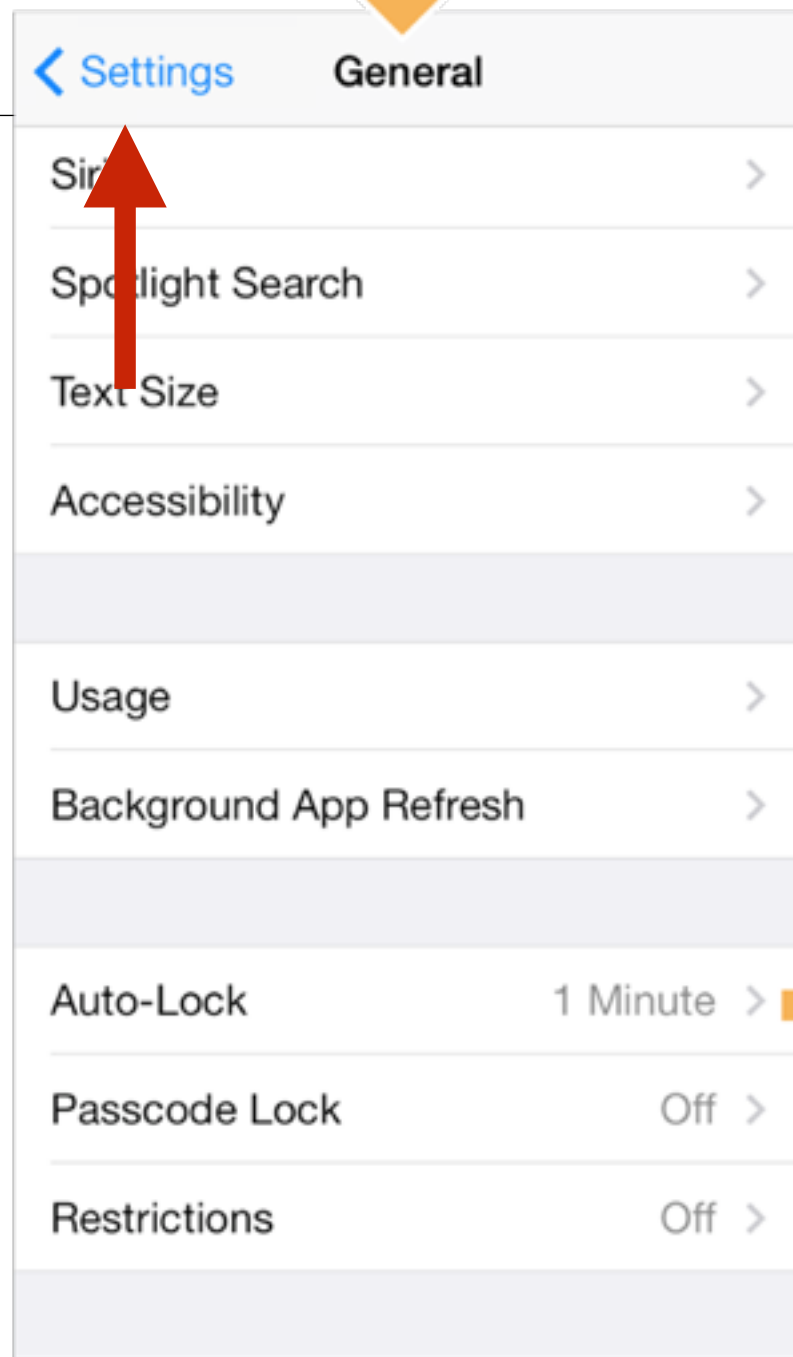
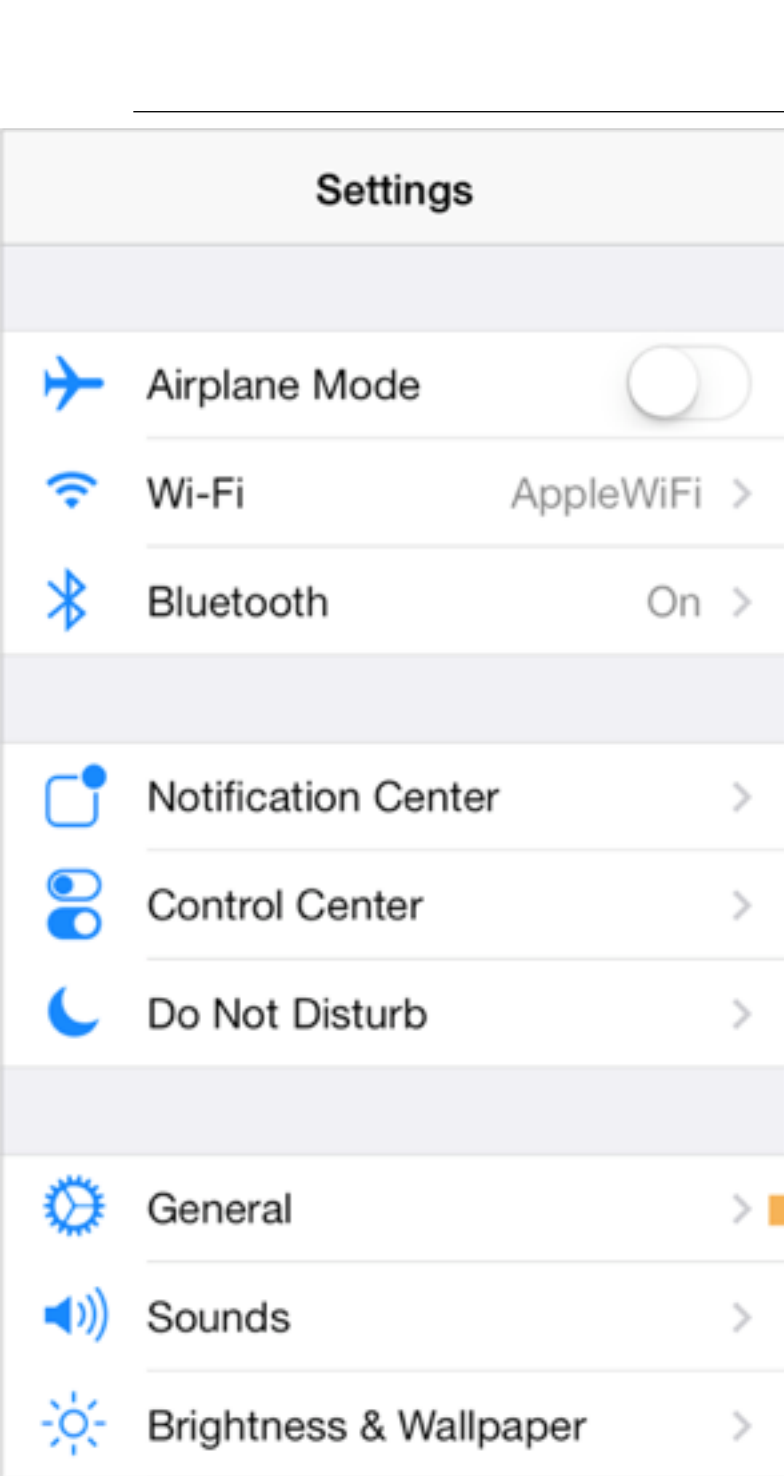
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UIVIEWCONTROLLERS

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UINavigationController

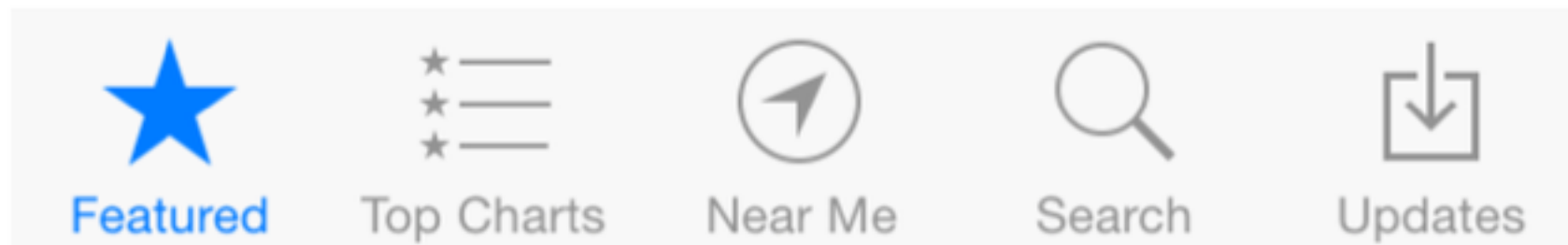
- UINavigationController
- A “special” view controller that manages hierarchical content
- When we want to view the next view controller, it will “slide” in and give us a back button
- Has a root view controller, which is just a fancy way of saying the first view controller
- Navigation Bar at the top

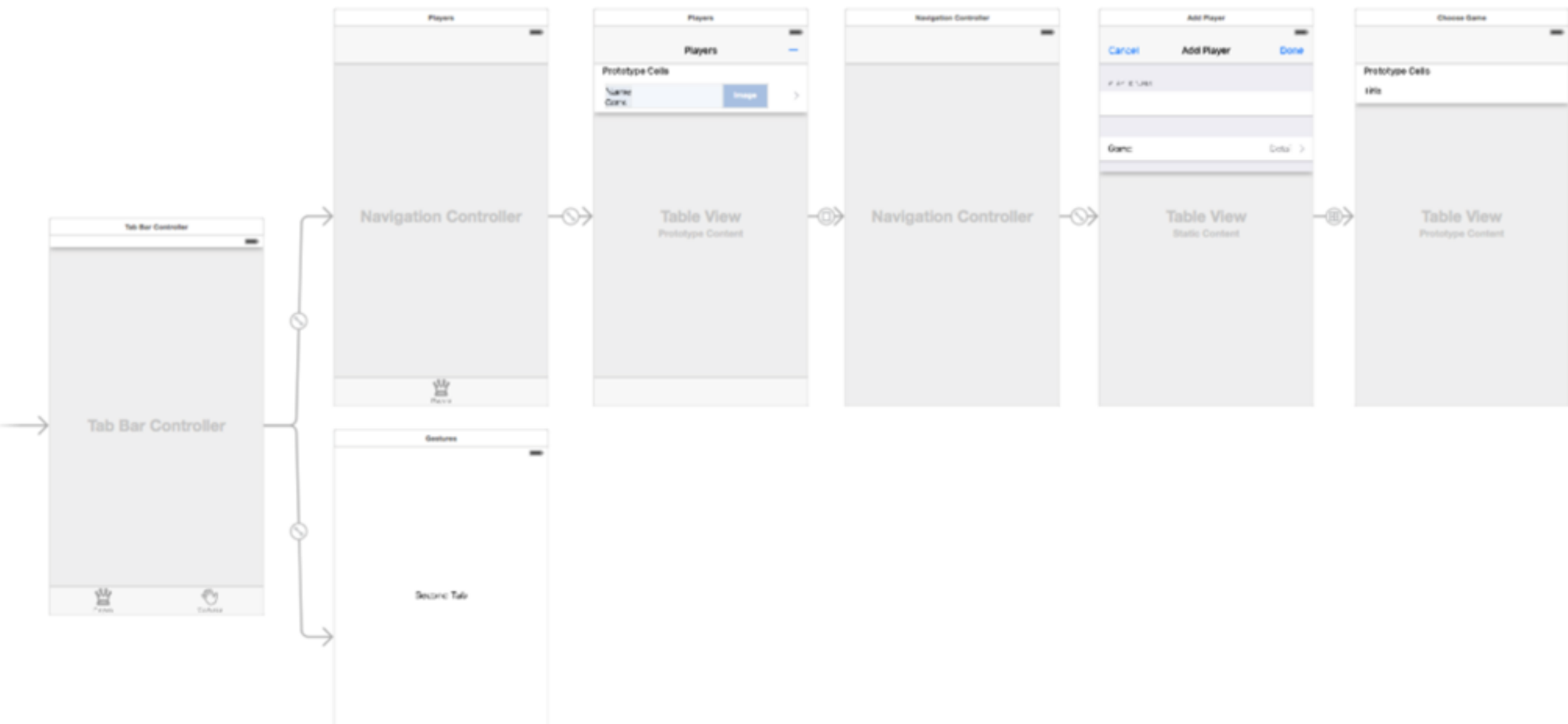


INTRO TO VIEWS AND VIEW CONTROLLERS

UITABBARCONTROLLER

- UITabBarController
- Provides tabs at the bottom of the screen
- Similar to what you see in the Facebook, Twitter, or Instagram apps
- Each tab represents a view controller
- UITabBar

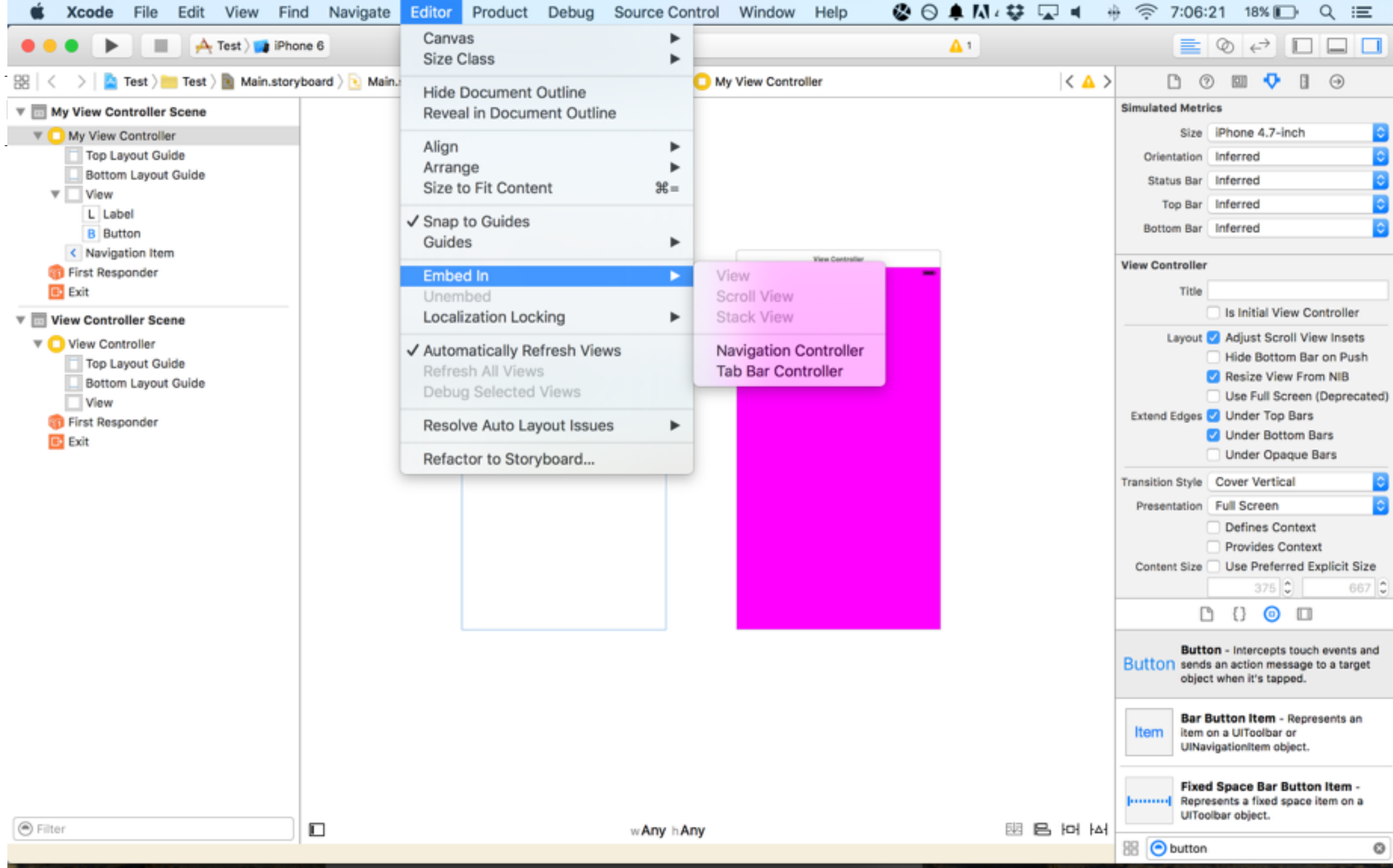




INTRO TO VIEWS AND VIEW CONTROLLERS

EMBED

- Putting a view controller inside a UINavigationController or a UITabBarController is easy using storyboards
- Select a View Controller in Interface Builder -> Click Editor in the menu bar -> Click Embed In



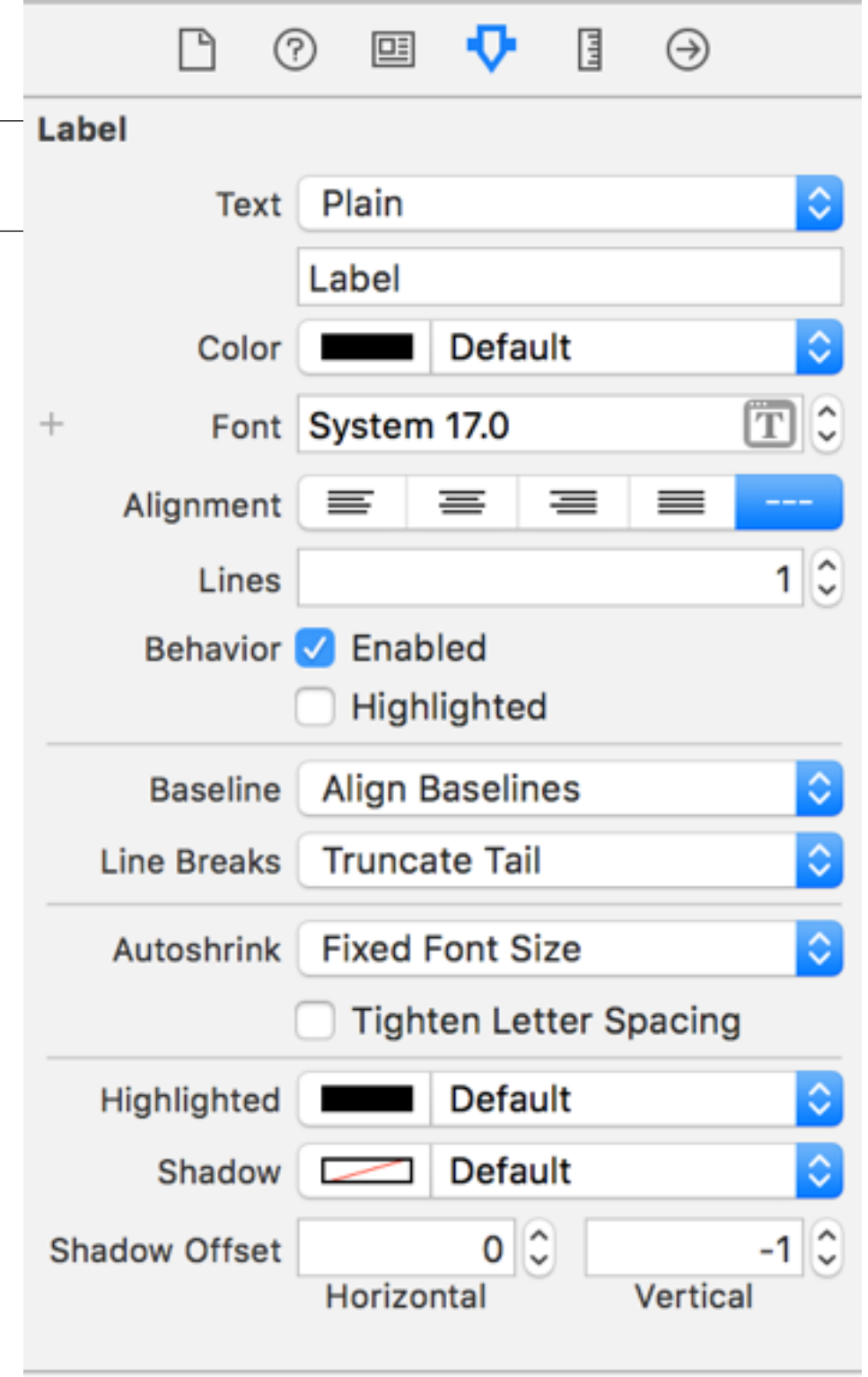
INTRO TO VIEWS AND VIEW CONTROLLERS

DEEPER DIVE INTO UIVIEWS

INTRO TO VIEWS AND VIEW CONTROLLERS

UILabel

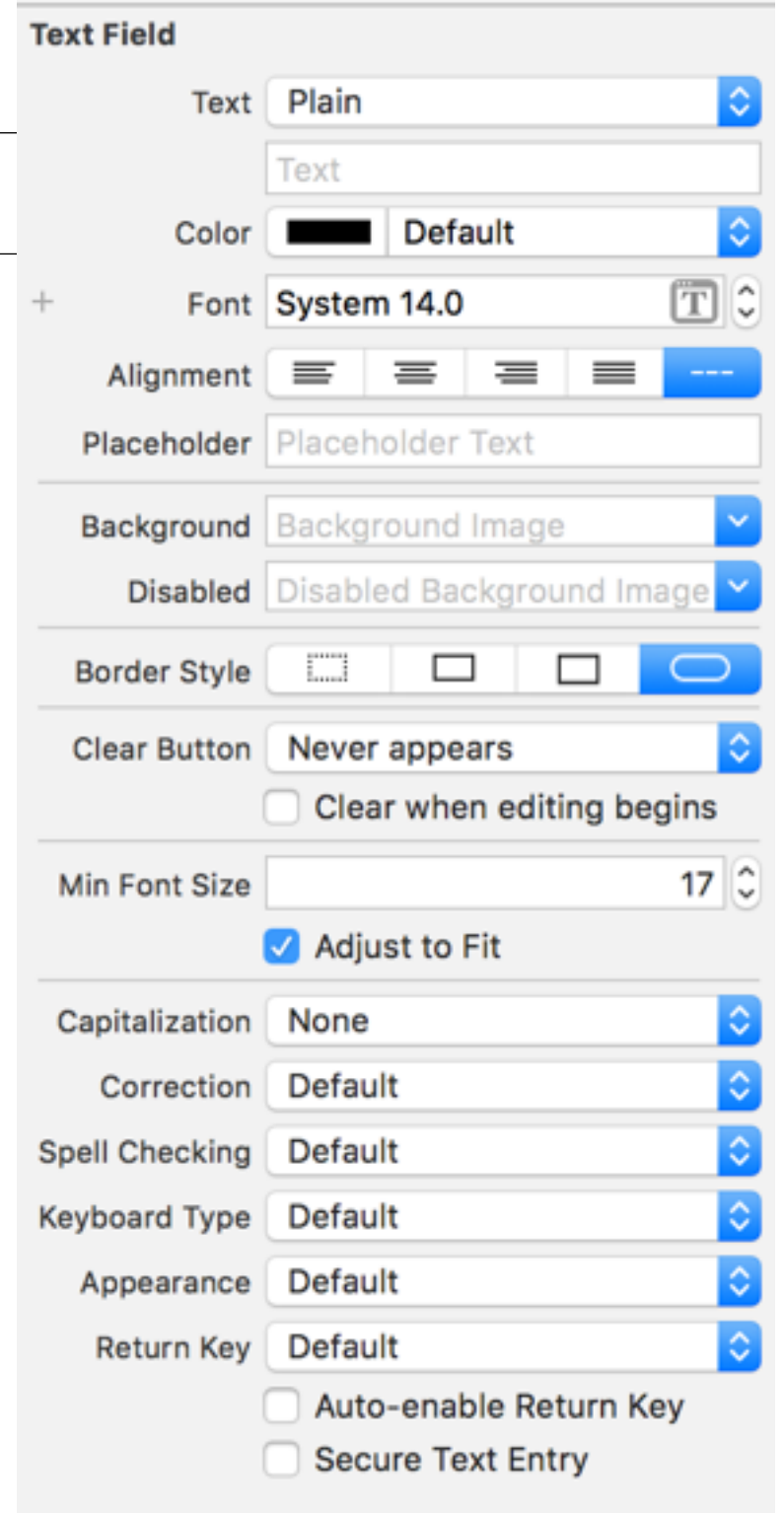
- A Label or UILabel displays static text on the screen
- This is one of the most commonly used elements



INTRO TO VIEWS AND VIEW CONTROLLERS

UITextField

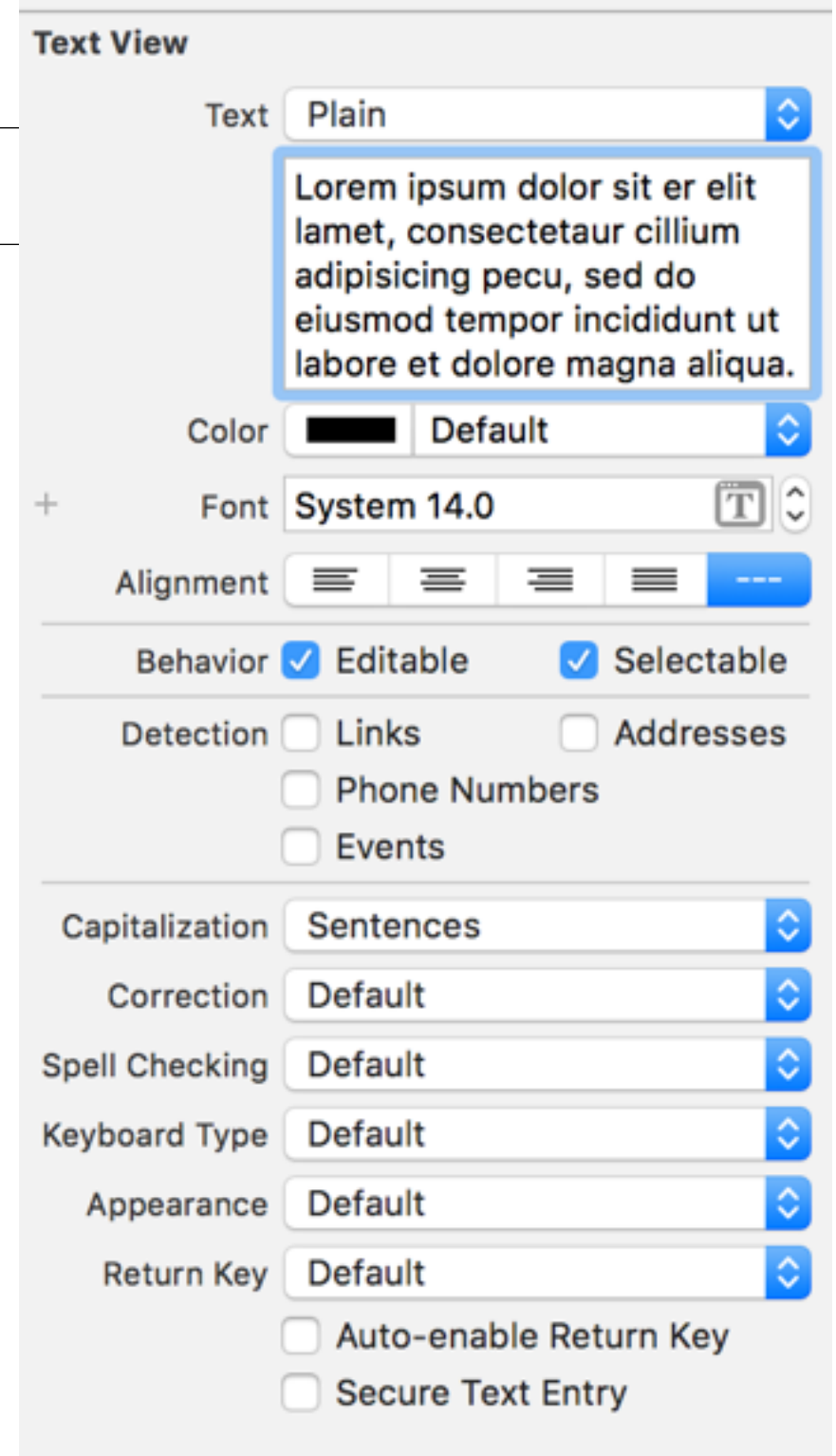
- A Text Field or UITextField provides a view for user input
- Can set the “Keyboard Type” to get a numbers only keyboard, for example



INTRO TO VIEWS AND VIEW CONTROLLERS

UITextView

- A text view or UITextView is a multiline editable text field
- Can also be non editable



INTRO TO VIEWS AND VIEW CONTROLLERS

UIImageView

- An image view or a UIImageView is a view used to display an image
- Mode is very important!

Image View

Image

Image

Highlighted

Highlighted Image

State ☐ Highlighted

View

Mode

Scale To Fill

Semantic

Unspecified

Tag

0

Interaction



User Interaction Enabled



Multiple Touch

Alpha

1

Background



Default

Tint



Default

Drawing



Opaque



Hidden

- TipCalculator M
 - TipCalculator
 - AppDelegate.swift
 - ViewController.swift M
 - SecondViewController.swift A
 - Main.storyboard M
 - Assets.xcassets M**
 - LaunchScreen.storyboard M
 - Info.plist
 - Products

- AppIcon
 - emoji-image**
 - LaunchImage



INTRO TO VIEWS AND VIEW CONTROLLERS

UIButton

- A button or UIButton allows for user interaction
- This can trigger segues or functions, which we'll cover next week

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 0 0
Width Height

☐ Reverses On Highlight

Drawing ☐ Shows Touch On Highlight

☒ Highlighted Adjusts Image

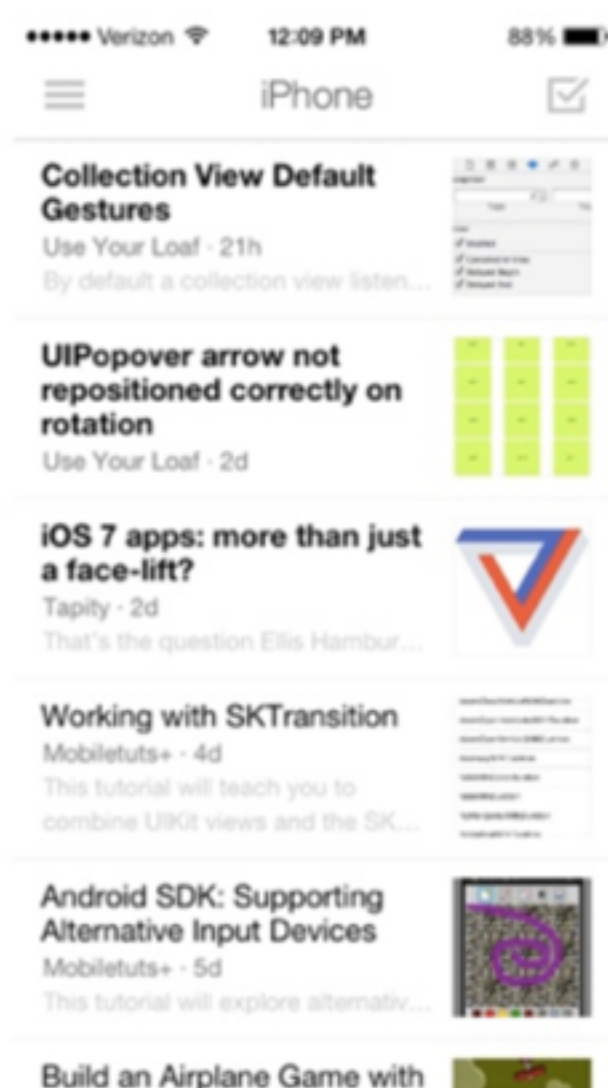
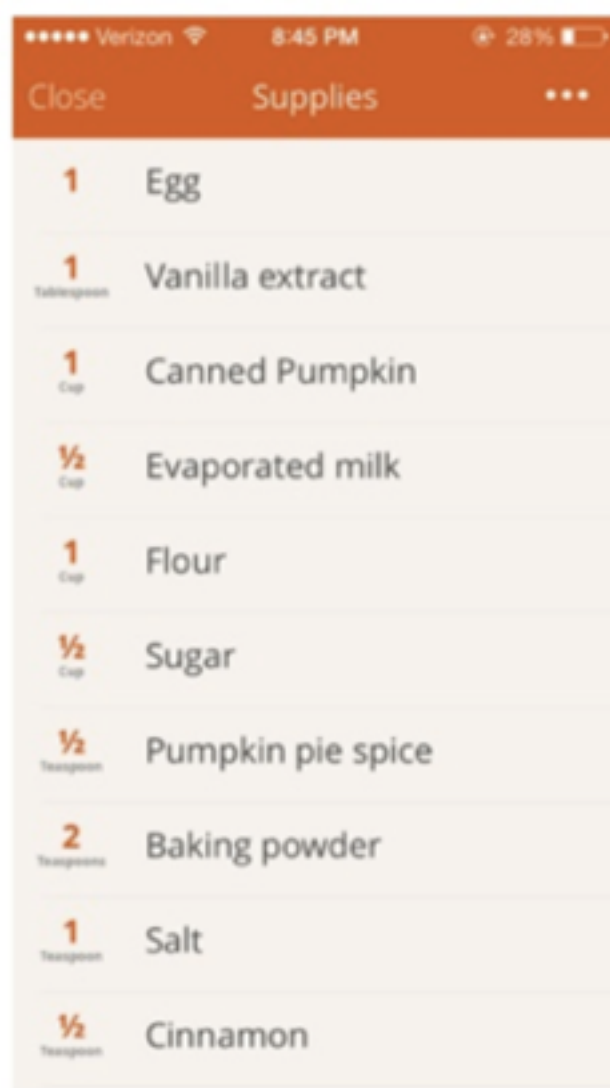
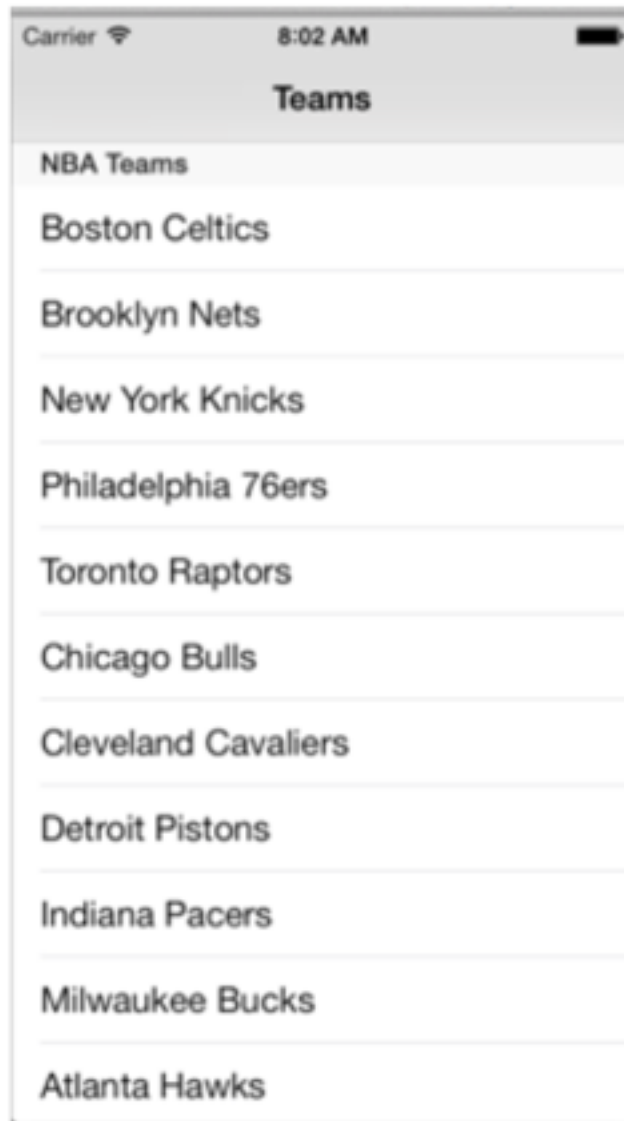
☒ Disabled Adjusts Image

Line Break Truncate Middle

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UITABLEVIEW

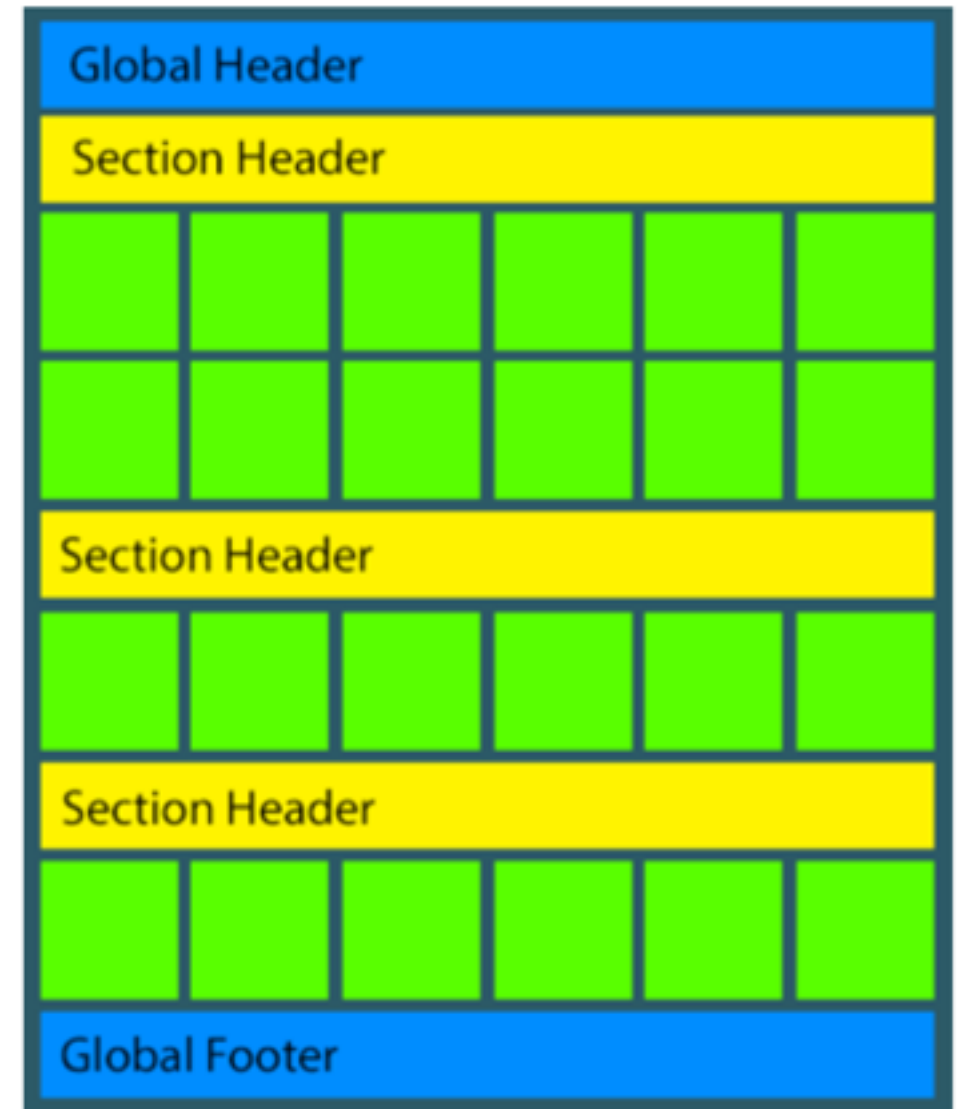
- A Table View or UITableView displays a scrollable list of data
- Almost every app I've worked on has used a UITableView
- Twitter, Facebook, Instagram, Settings, Messages, etc.
- Composed of sections that have rows
- Each row has a cell or a UITableViewCell, ONLY one cell per row
- Static content vs. Dynamic Content
 - Dynamic content is provided by code and can be any variable amount provided by an API, the user, etc.
 - Static content is predetermined



INTRO TO VIEWS AND VIEW CONTROLLERS

UICollectionView

- A Collection View or UICollectionView is similar to a UITableView (it can display a variable amount of data)
- However, unlike a UITableView a UICollectionView can have multiple items on a single line
- It can be in a grid form or really any kind of layout you want
- This is much more complex than a UITableView



INTRO TO VIEWS AND VIEW CONTROLLERS

ASSESSMENT 1

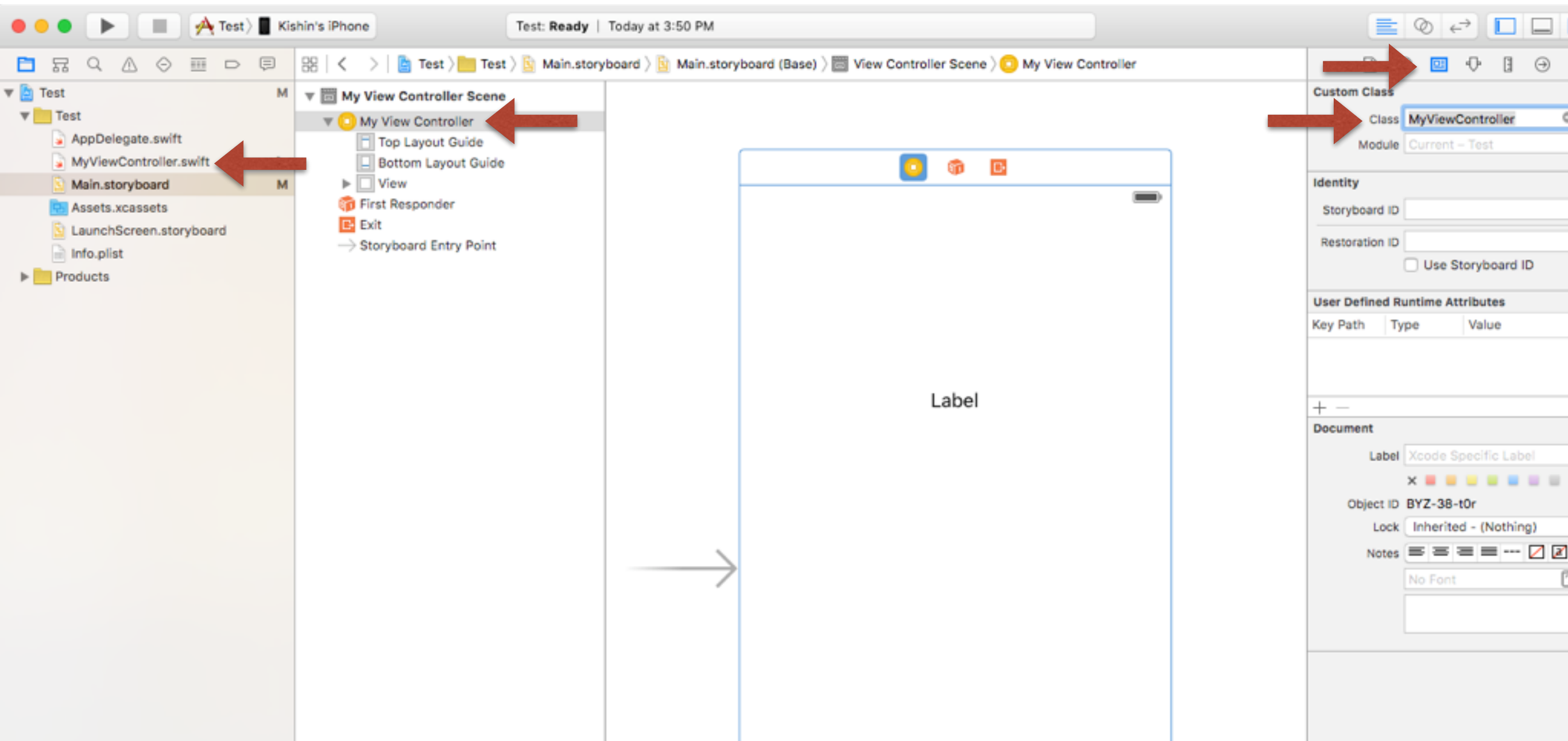
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Q&A

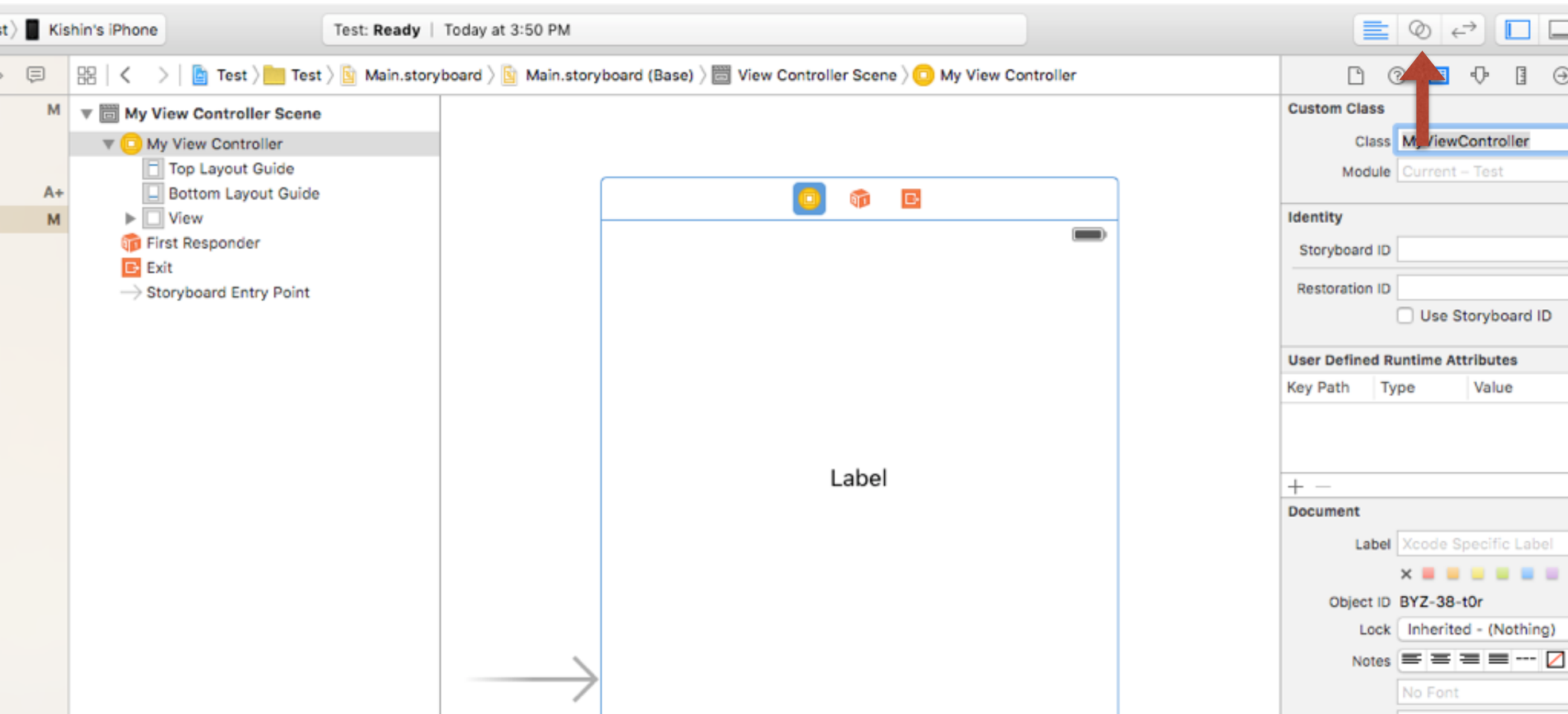
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**“SMART”
VIEWCONTROLLERS**

This is no coincidence

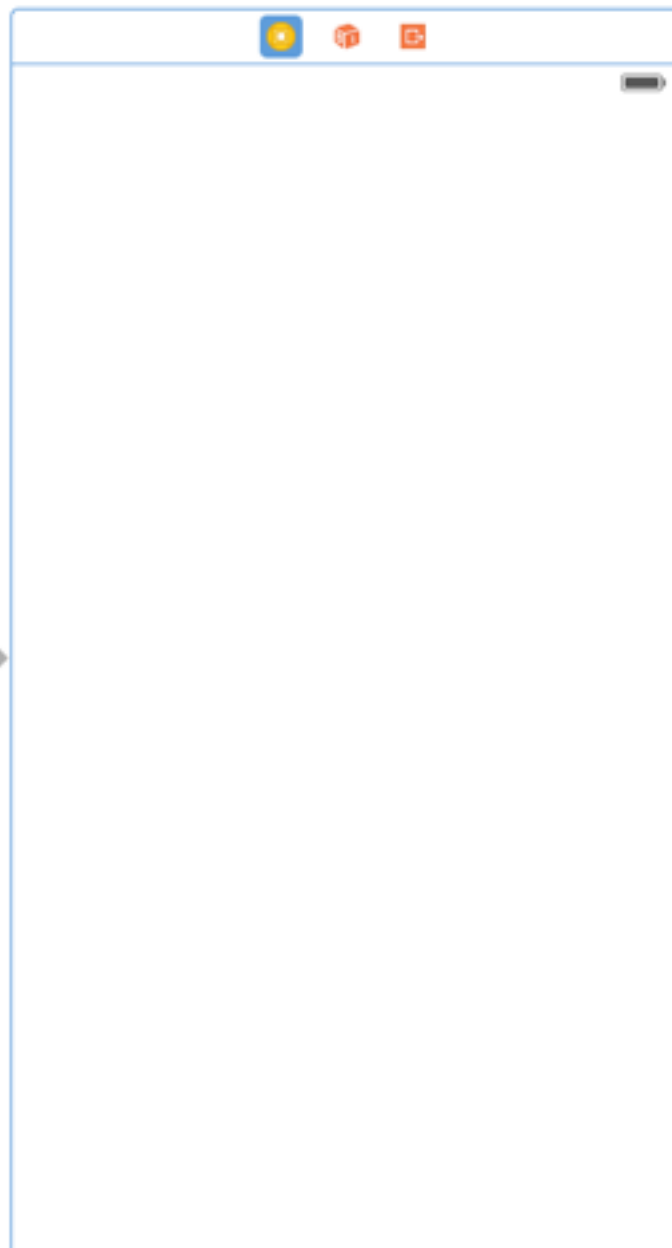


Assistant Editor



View Controller Scene

- View Controller
 - Top Layout Guide
 - Bottom Layout Guide
 - View
 - First Responder
 - Exit
 - Storyboard Entry Point



```

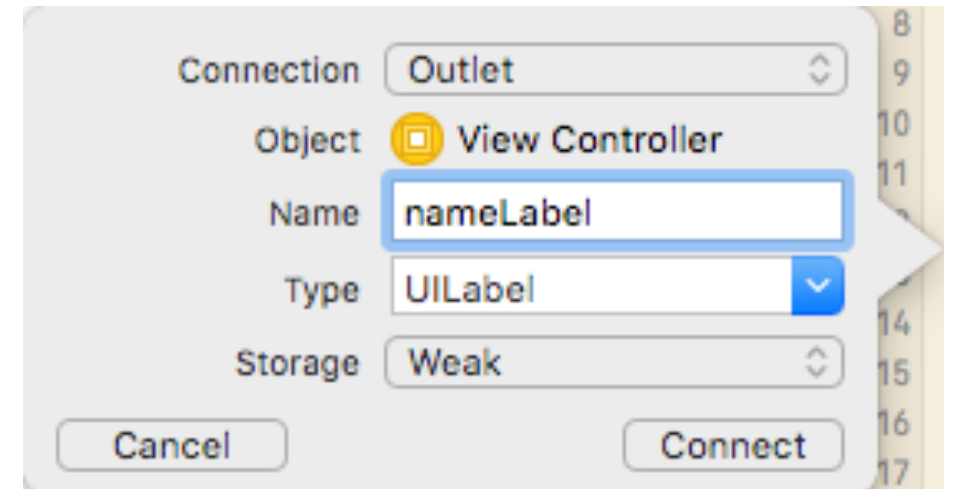
1 //
2 // ViewController.swift
3 // Test
4 //
5 // Created by Kishin Manglani on 10/5/15.
6 // Copyright © 2015 KM. All rights reserved.
7 //
8
9 import UIKit
10
11 class ViewController: UIViewController {
12
13     override func viewDidLoad() {
14         super.viewDidLoad()
15         // Do any additional setup after loading the view, typically from a nib.
16     }
17
18     override func didReceiveMemoryWarning() {
19         super.didReceiveMemoryWarning()
20         // Dispose of any resources that can be recreated.
21     }
22
23 }
24
25
26

```


INTRO TO VIEWS AND VIEW CONTROLLERS

IBOUTLET

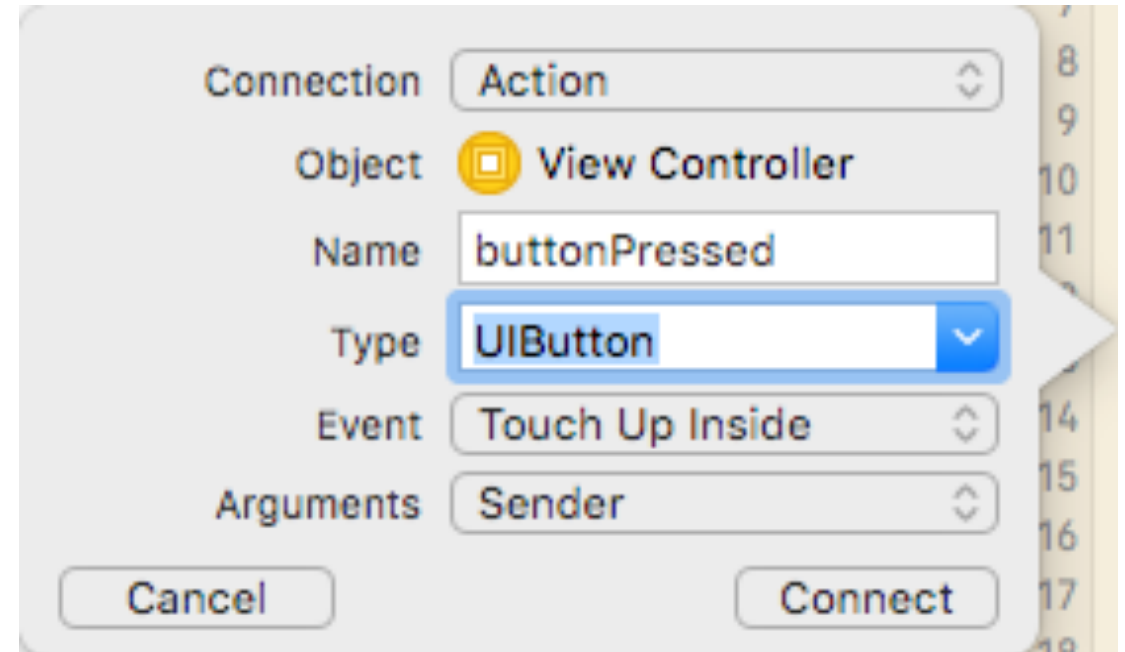
- IBOutlet or Interface Builder Outlet
- Create by control + dragging from our storyboard to our view controller file in the assistant editor
- This allows us to reference UIViews in interface builder in our code
- Best practice tip**



INTRO TO VIEWS AND VIEW CONTROLLERS

IBACTION

- IBAction or Interface Builder Action
- Create by control + dragging from our storyboard to our view controller file in the assistant editor
- Typically used for UIButton or Views that can trigger actions



INTRO TO VIEWS AND VIEW CONTROLLERS

LET'S TRY IT

INTRO TO VIEWS AND VIEW CONTROLLERS

PRINT

- In an IBAction add `print("hello world")`
- Then build and run the app and invoke that action
- The result will be printed in the console

INTRO TO VIEWS AND VIEW CONTROLLERS

Q&A