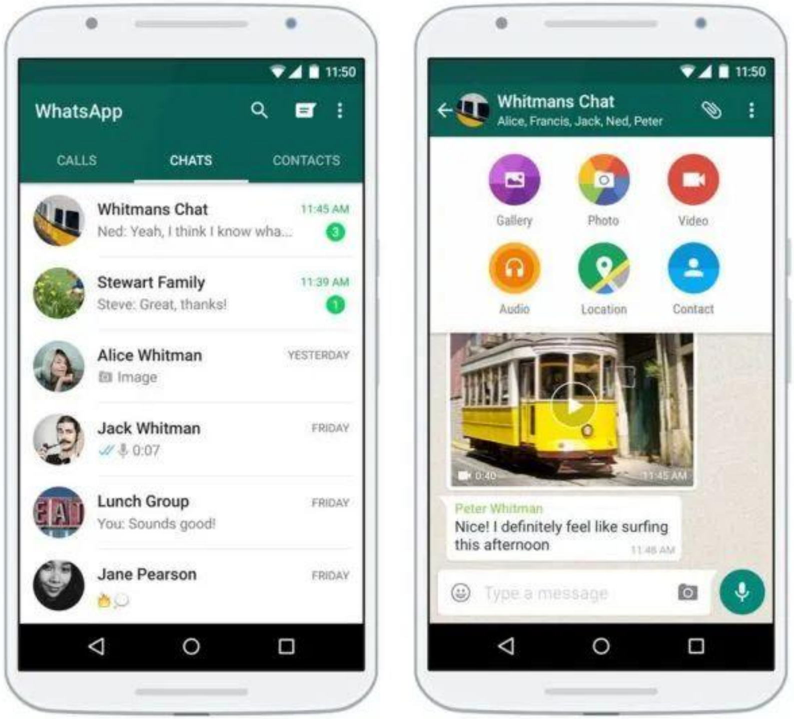
# Mobile Application Development

A mobile application consists of screens that are connected to each other



Whitmans Chat 11:45 AM
Ned: Yeah, I think I know wha... 3

Stewart Family 11:39 AM
Steve: Great, thanks! 1

Alice Whitman YESTERDAY
Image

Jack Whitman FRIDAY
0:07

Lunch Group FRIDAY
You: Sounds good!

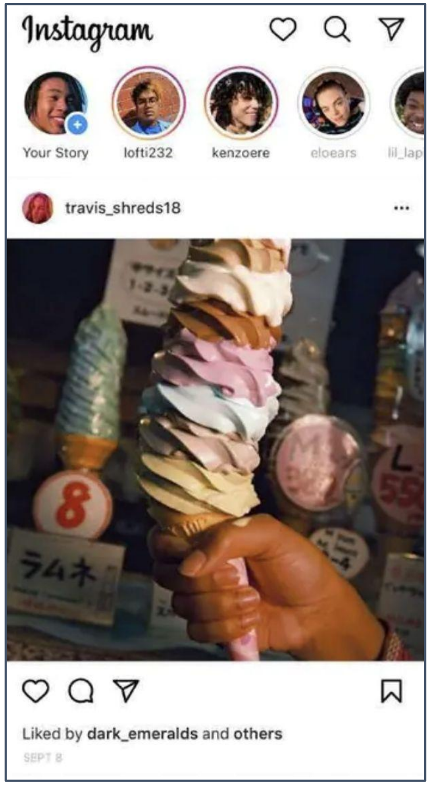
Jane Pearson FRIDAY

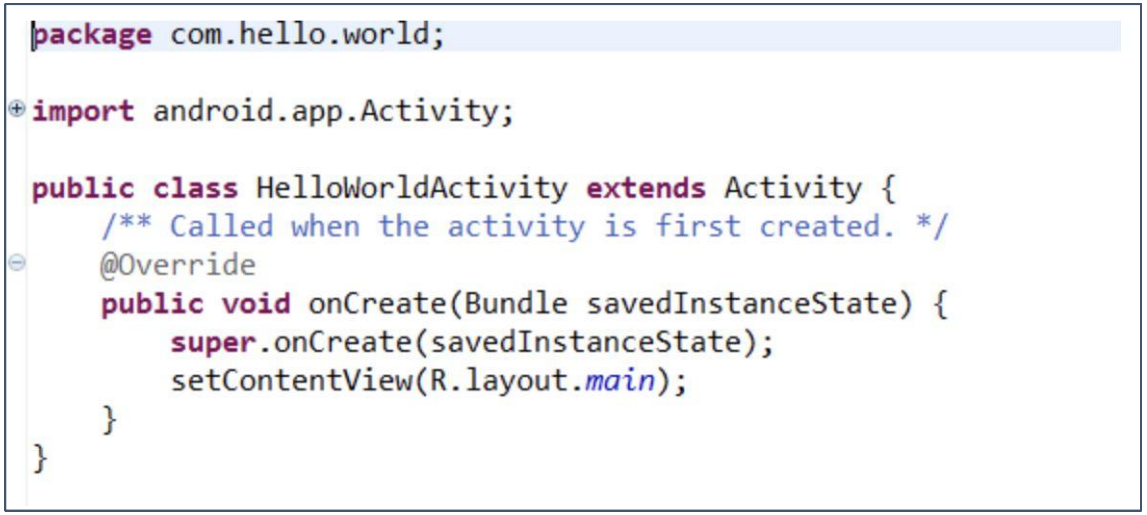
Whitmans Chat
Alice, Francis, Jack, Ned, Peter

Peter Whitman
Nice! I definitely feel like surfing this afternoon
11:46 AM

# Mobile Application Development

Screens consist of a **user interface** and ***programming logic***



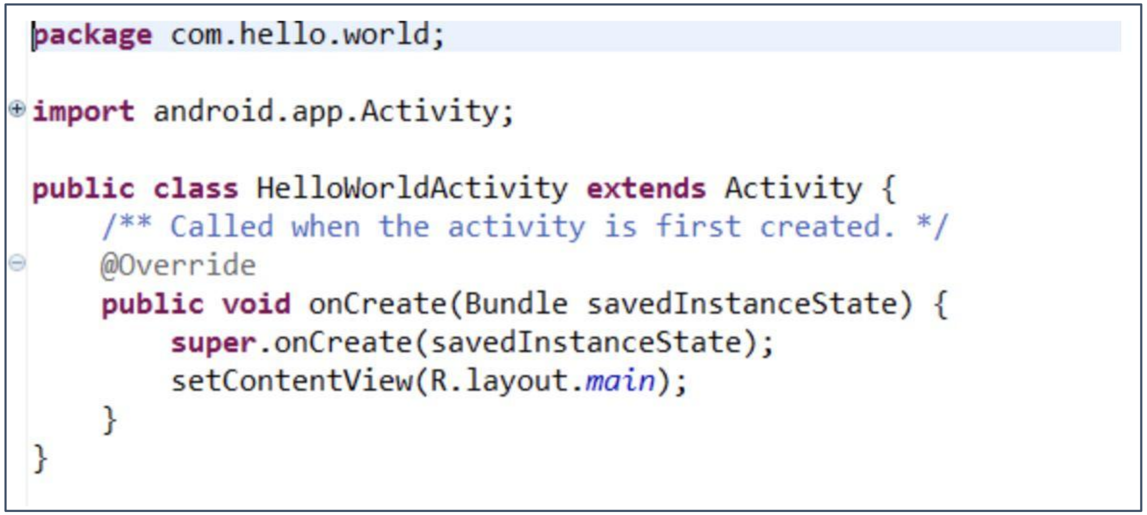


```
package com.hello.world;

import android.app.Activity;

public class HelloWorldActivity extends Activity {
    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);
    }
}
```

# Mobile Application Development

Web / Web programming

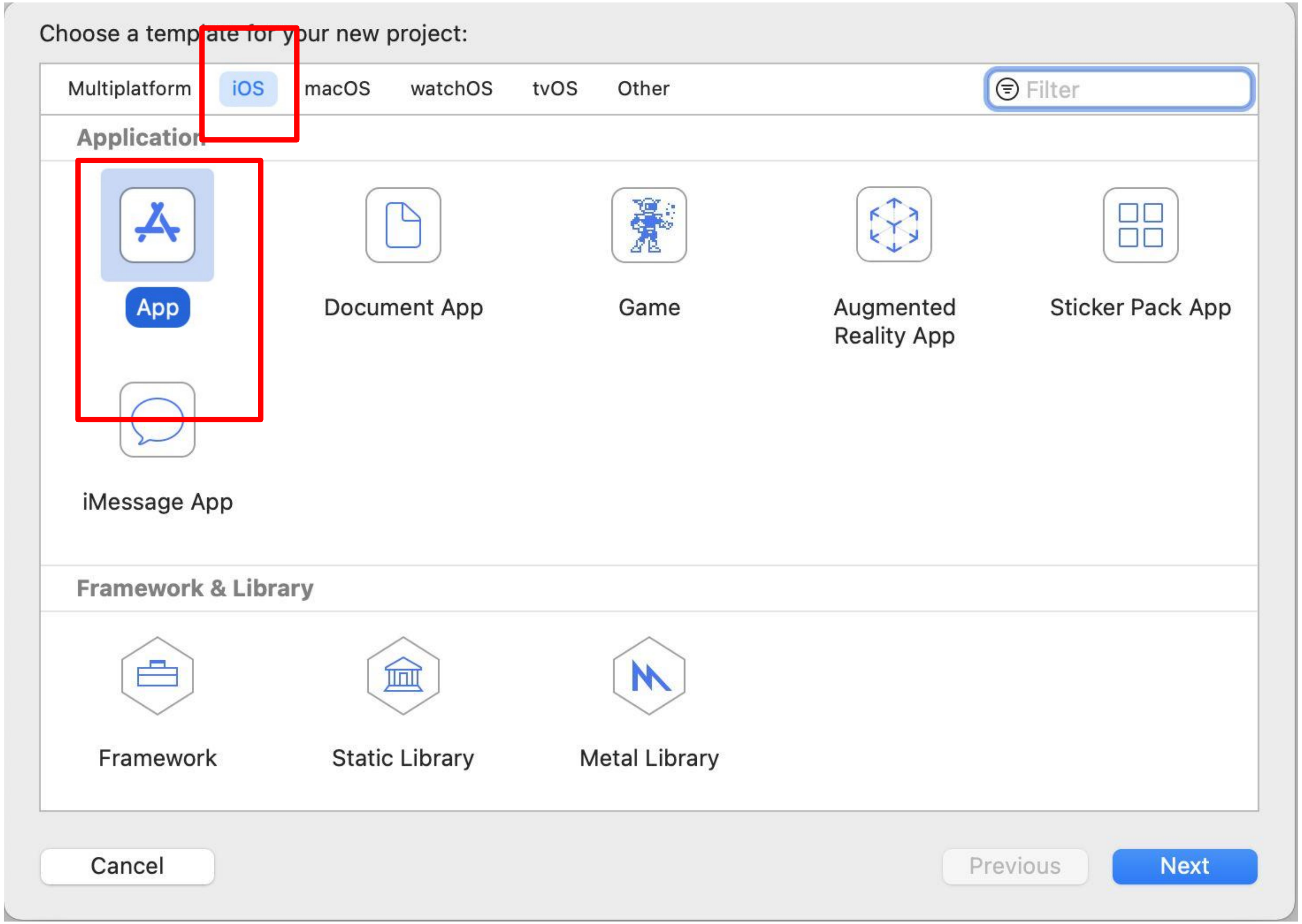
HTML/CSS JS



```
package com.hello.world;

import android.app.Activity;

public class HelloWorldActivity extends Activity {
    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);
    }
}
```

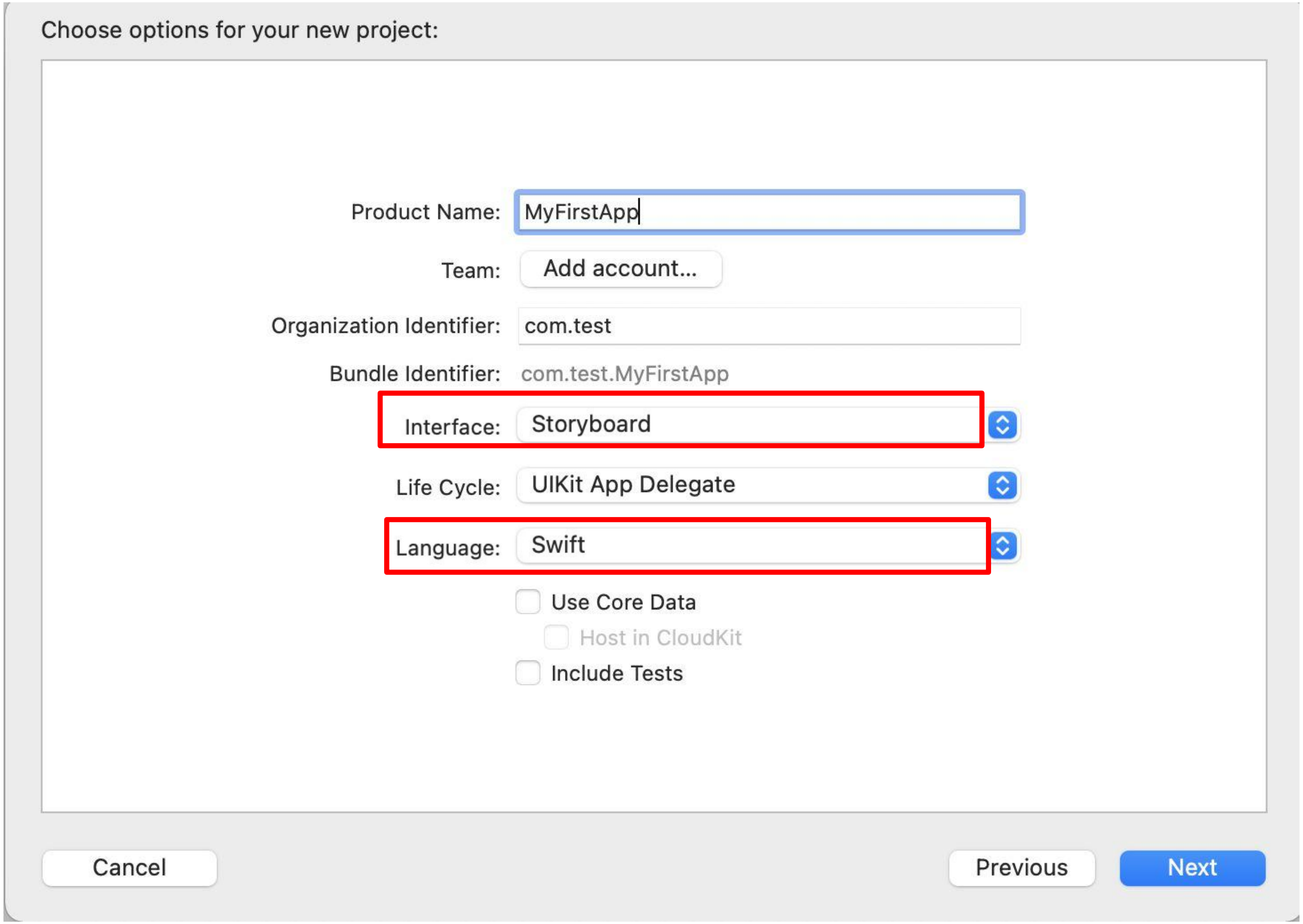
Min: XCode 11.3+

# Creating a new IOS Project



Choose a template for your new project:

# Select Interface and Language



Choose options for your new project:

Product Name: MyFirstApp

Team: Add account...

Organization Identifier: com.test

Bundle Identifier: com.test.MyFirstApp

Interface: Storyboard

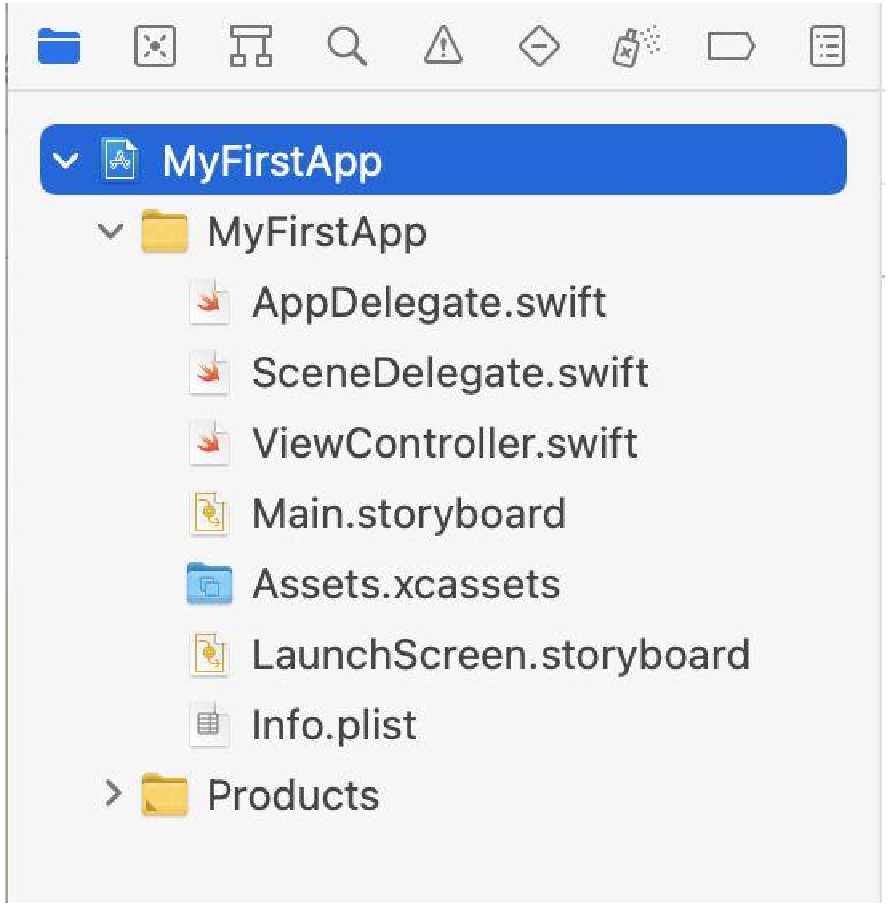
Life Cycle: UIKit App Delegate

Language: Swift

☐ Use Core Data

☐ Host in CloudKit

☐ Include Tests

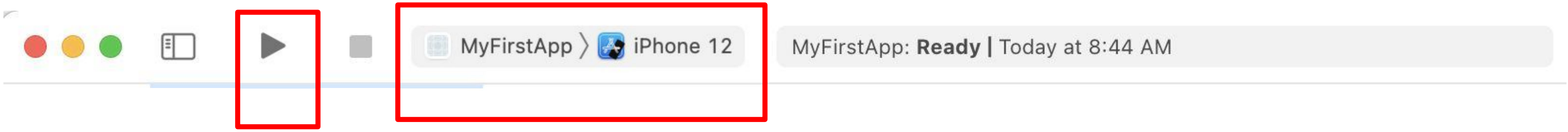


- MyFirstApp
  - MyFirstApp
    - AppDelegate.swift
    - SceneDelegate.swift
    - ViewController.swift
    - Main.storyboard
    - Assets.xcassets
    - LaunchScreen.storyboard
    - Info.plist
  - Products

This is the template for a IOS application.

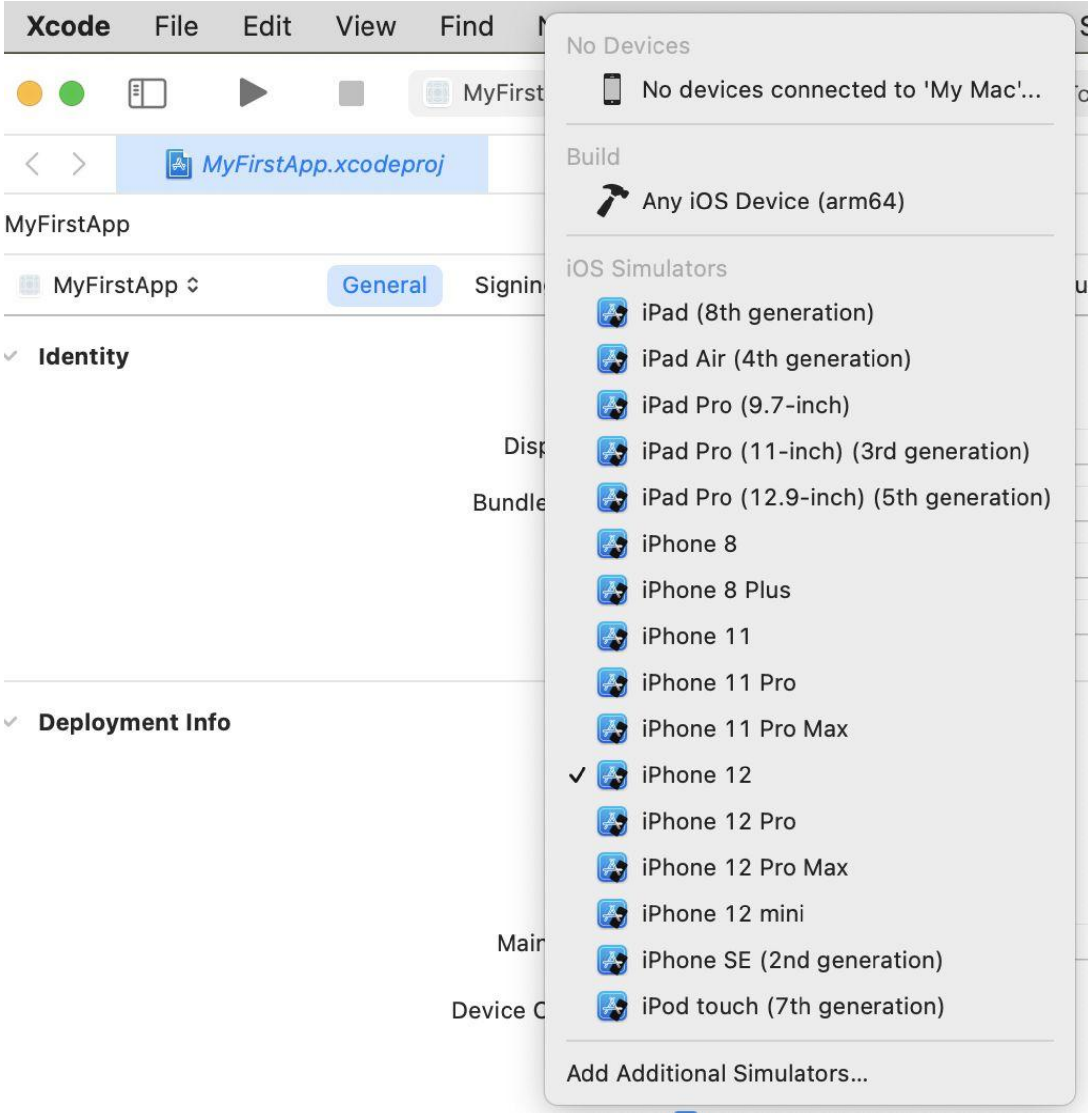
Older versions of XCode may not have some files, such as:

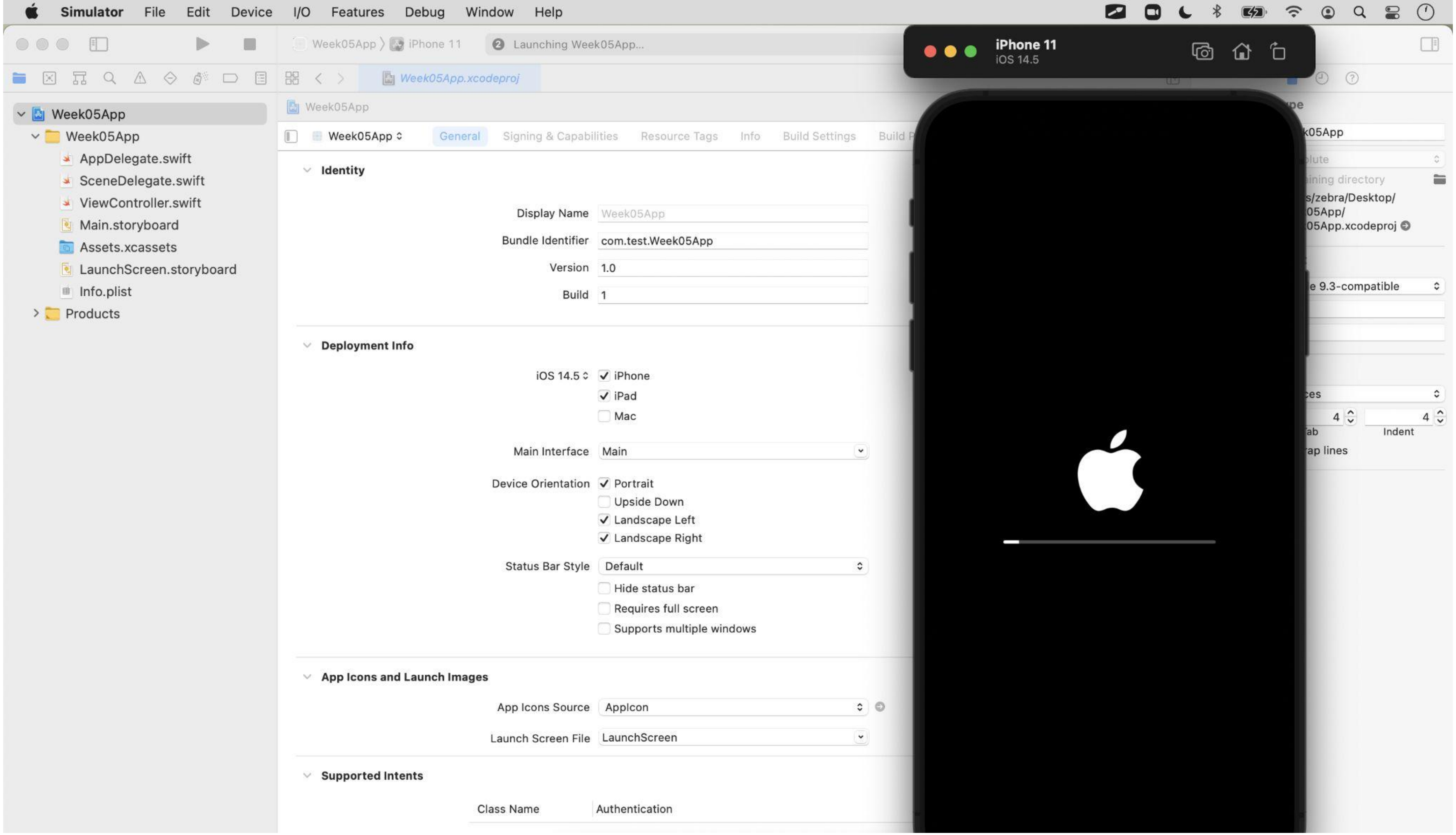
- SceneDelegate.swift
- LaunchScreen.storyboard



MyFirstApp 〉 iPhone 12

MyFirstApp: **Ready |** Today at 8:44 AM


Xcode
File
Edit
View
Find
MyFirst
MyFirstApp.xcodeproj
MyFirstApp
MyFirstApp
General
Signin
Identity
Disp
Bundle
Deployment Info
Main
Device C
No Devices
No devices connected to 'My Mac'...
Build
Any iOS Device (arm64)
iOS Simulators
iPad (8th generation)
iPad Air (4th generation)
iPad Pro (9.7-inch)
iPad Pro (11-inch) (3rd generation)
iPad Pro (12.9-inch) (5th generation)
iPhone 8
iPhone 8 Plus
iPhone 11
iPhone 11 Pro
iPhone 11 Pro Max
✓ iPhone 12
iPhone 12 Pro
iPhone 12 Pro Max
iPhone 12 mini
iPhone SE (2nd generation)
iPod touch (7th generation)
Add Additional Simulators...



Week05App

Week05App ⌃

**Identity**

Display Name: Week05App

Bundle Identifier: com.test.Week05App

Version: 1.0

Build: 1

**Deployment Info**

iOS 14.5 ☑ iPhone
☑ iPad
□ Mac

Main Interface: Main

Device Orientation: ☑ Portrait
□ Upside Down
☑ Landscape Left
☑ Landscape Right

Status Bar Style: Default
□ Hide status bar
□ Requires full screen
□ Supports multiple windows

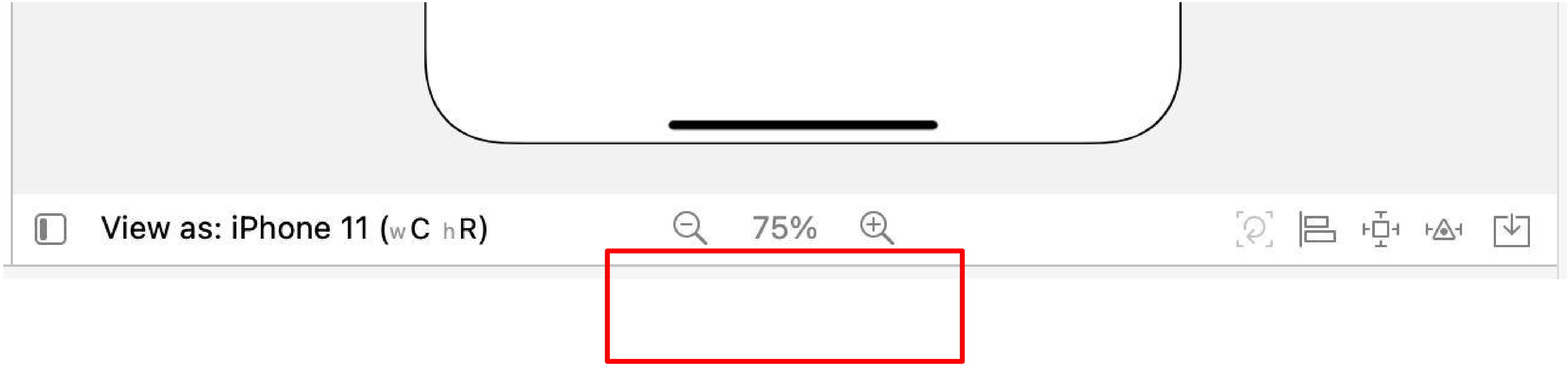
**App Icons and Launch Images**

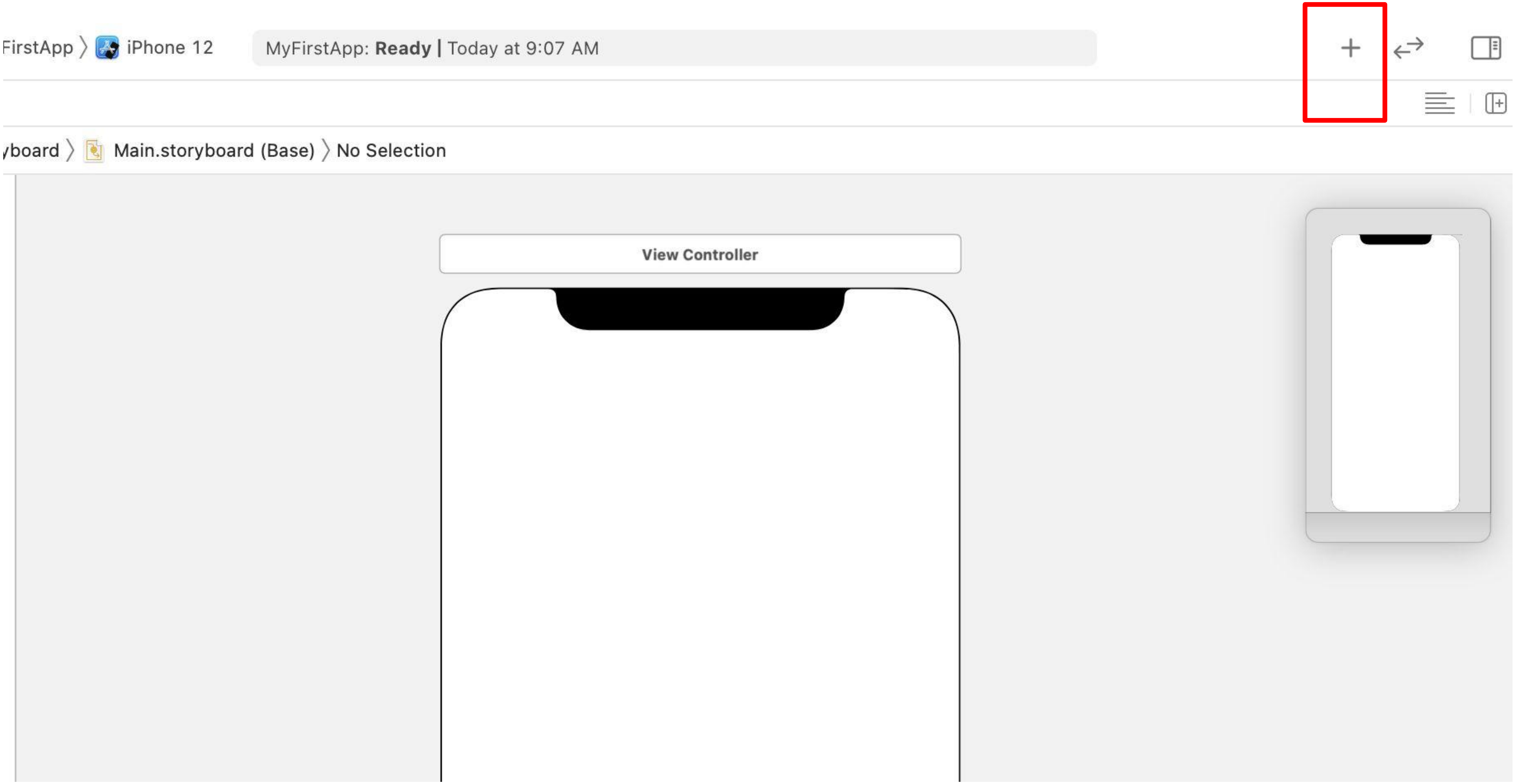
App Icons Source: AppIcon

Launch Screen File: LaunchScreen

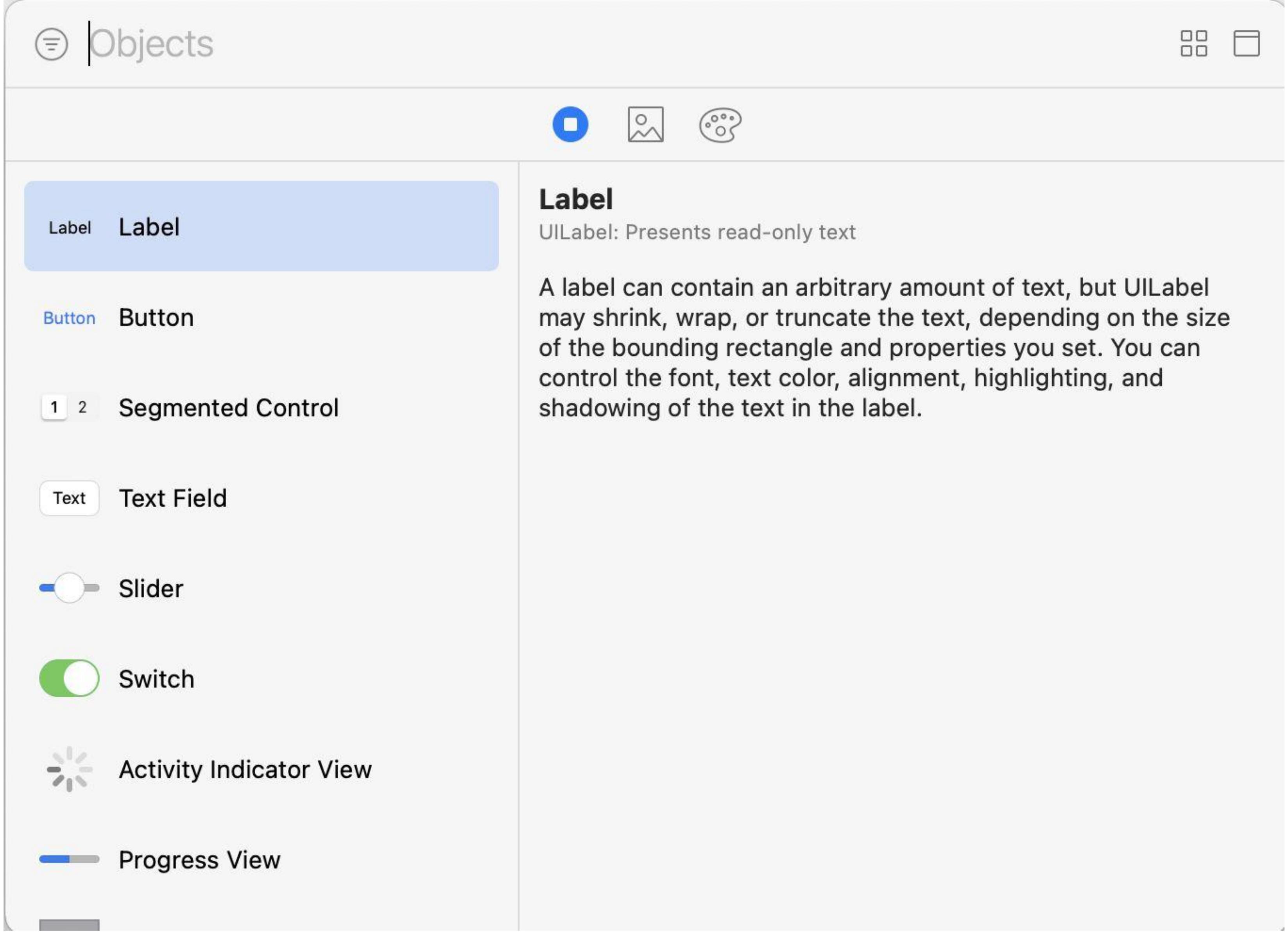
**Supported Intents**

| Class Name | Authentication |
|---|---|


View as: iPhone 11 (wC hR)
75%



FirstApp 〉 iPhone 12
MyFirstApp: Ready | Today at 9:07 AM
yboard 〉 Main.storyboard (Base) 〉 No Selection
View Controller

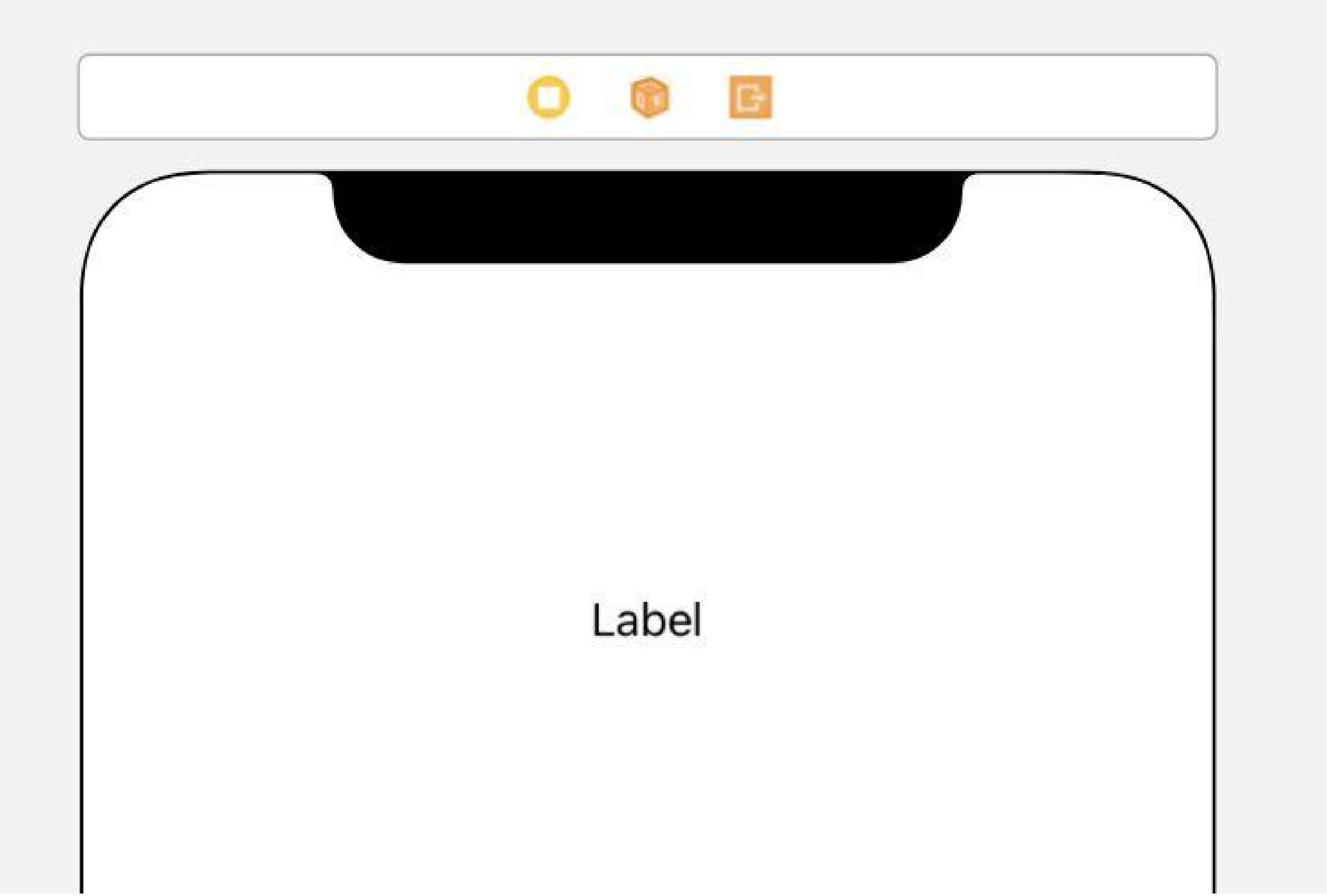


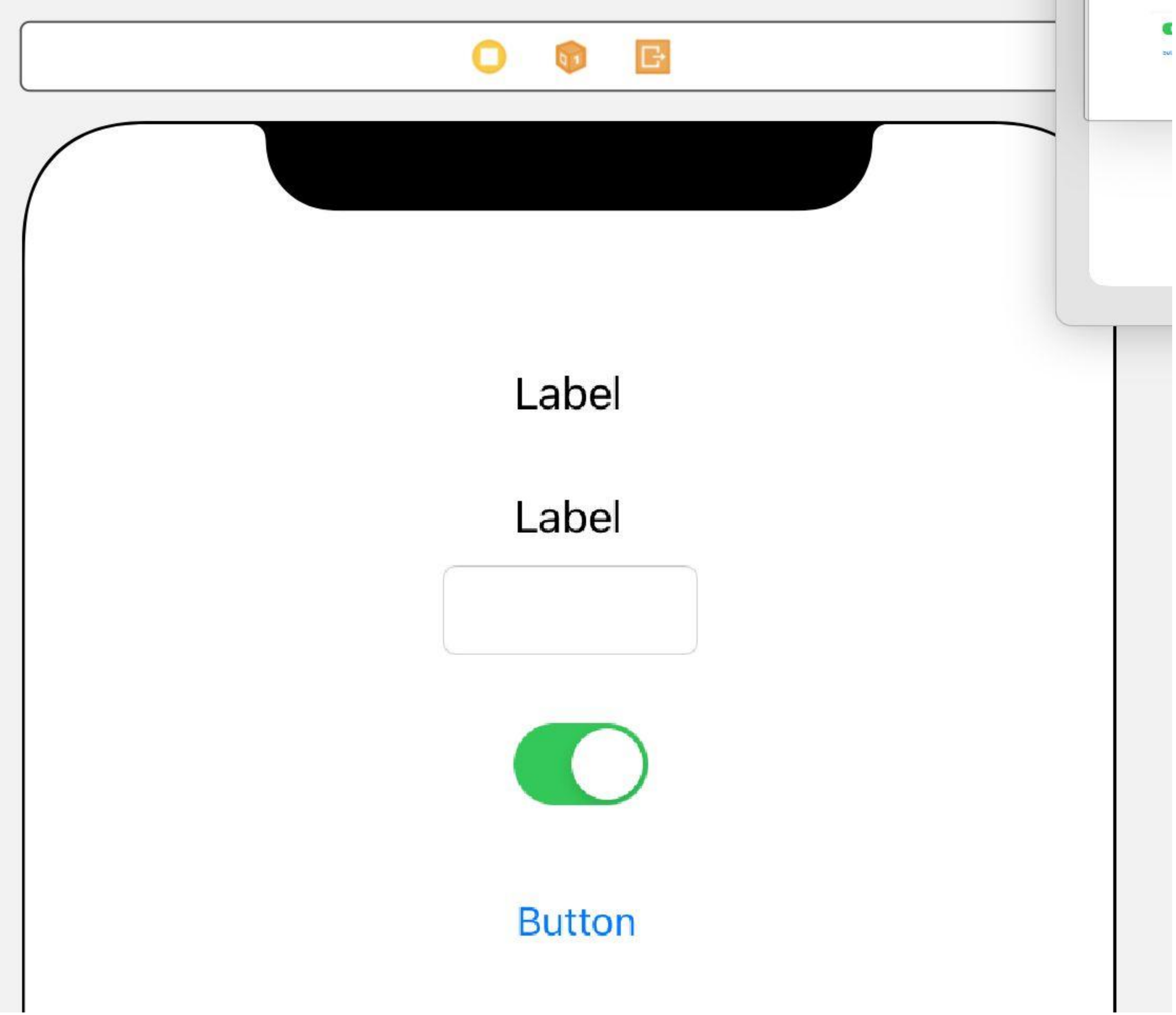
- Label
- Button
- Segmented Control
- Text Field
- Slider
- Switch
- Activity Indicator View
- Progress View

**Label**

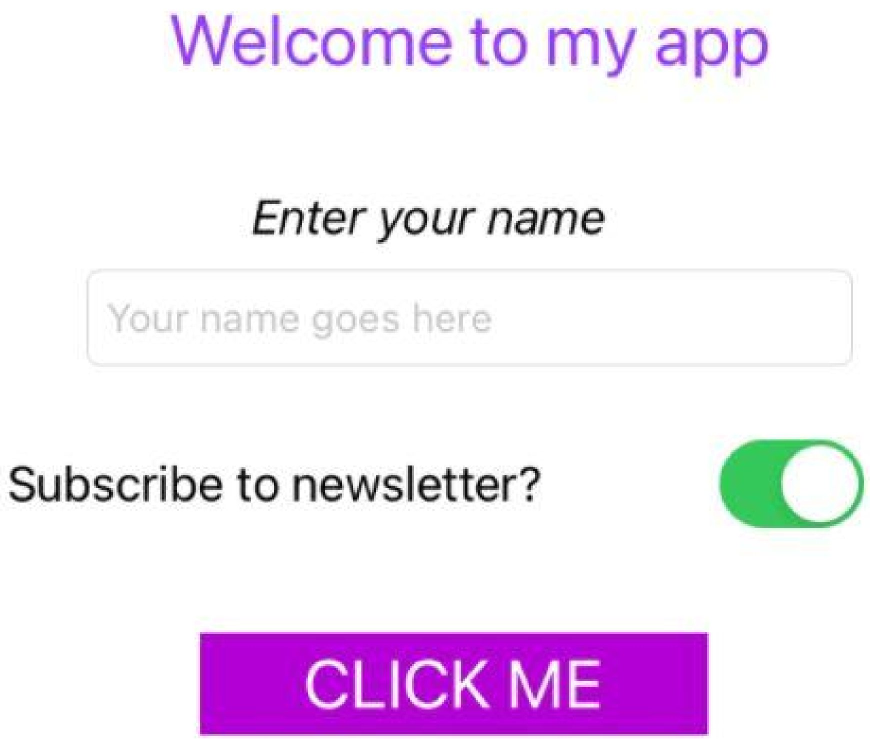
UILabel: Presents read-only text

A label can contain an arbitrary amount of text, but UILabel may shrink, wrap, or truncate the text, depending on the size of the bounding rectangle and properties you set. You can control the font, text color, alignment, highlighting, and shadowing of the text in the label.


Label


Label
Label
Button

# Designing your app



Welcome to my app

*Enter your name*

Your name goes here

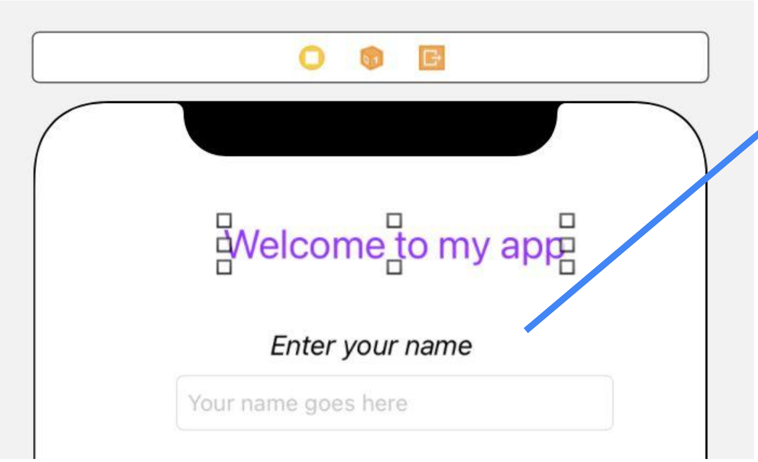
Subscribe to newsletter?

# Use the attributes inspector

This icon looks different on XCode 11.____

Click on UI element

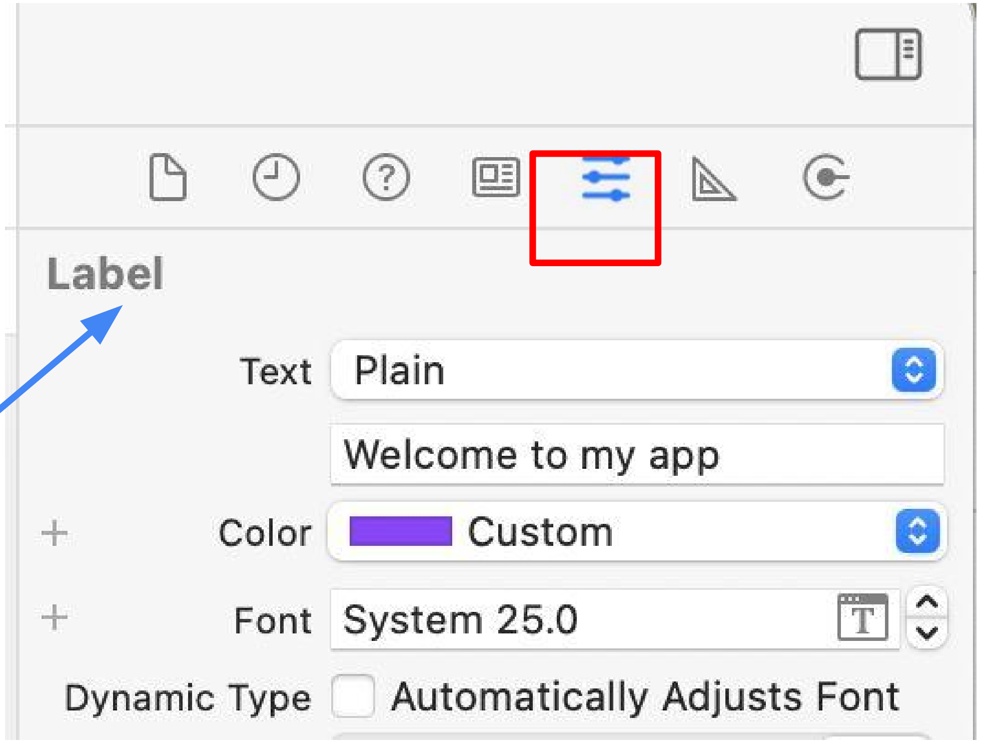
Then click attributes inspector



Welcome to my app

Enter your name

Your name goes here



Label

Text: Plain

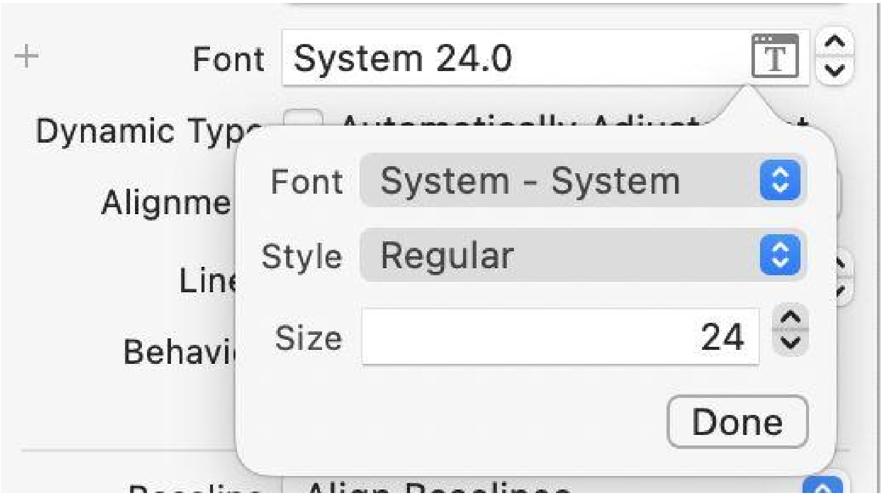
Welcome to my app

Color: Custom

Font: System 25.0

Dynamic Type: □ Automatically Adjusts Font

# Adjust the Font



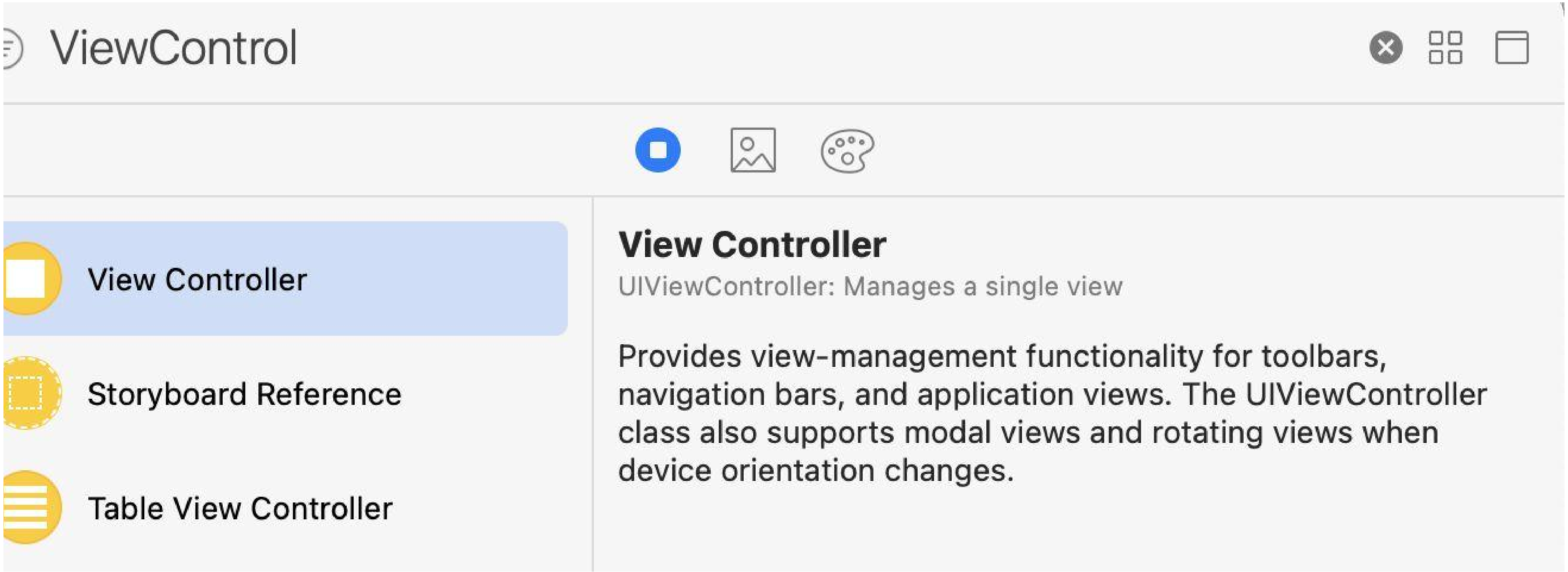
Font System 24.0

Font System - System

Style Regular

Size 24

# To add additional screens

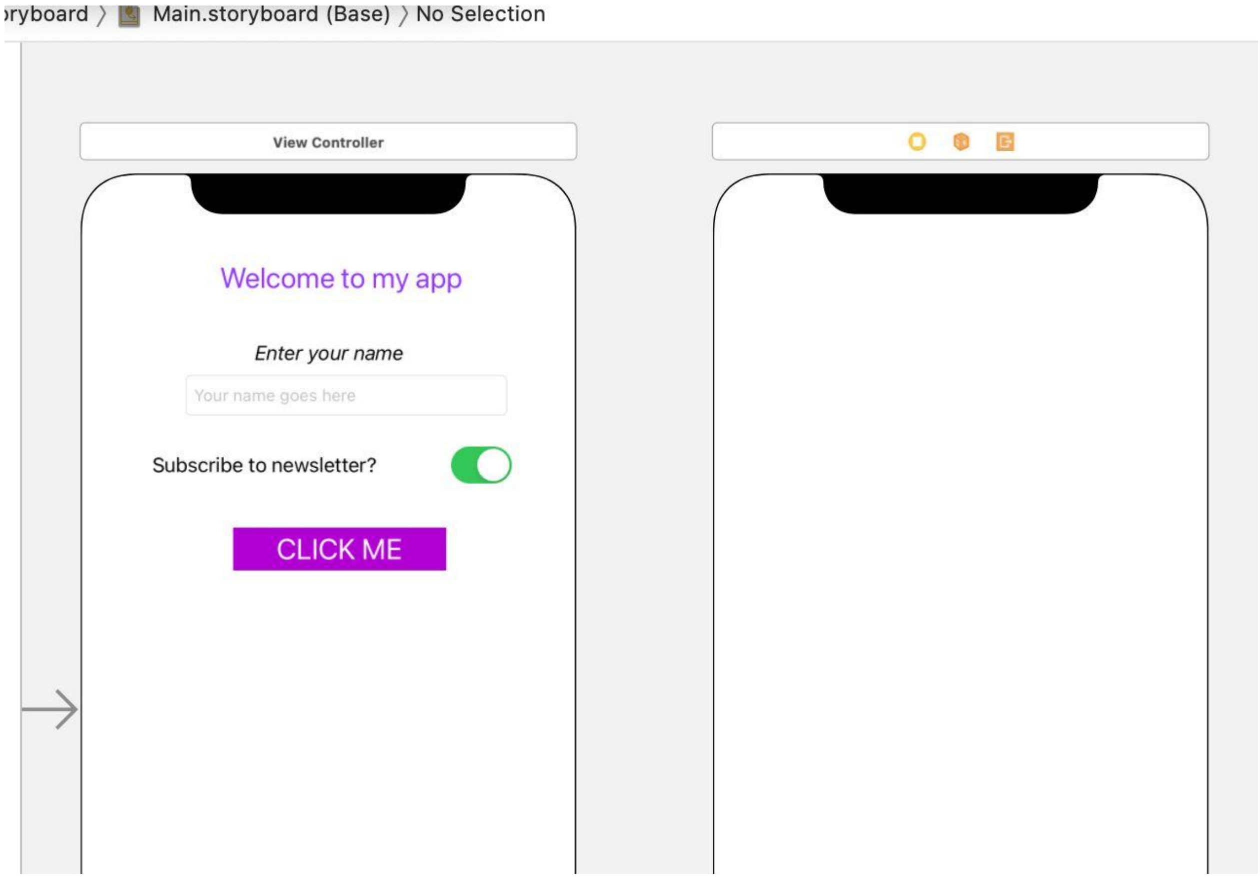


**View Controller**

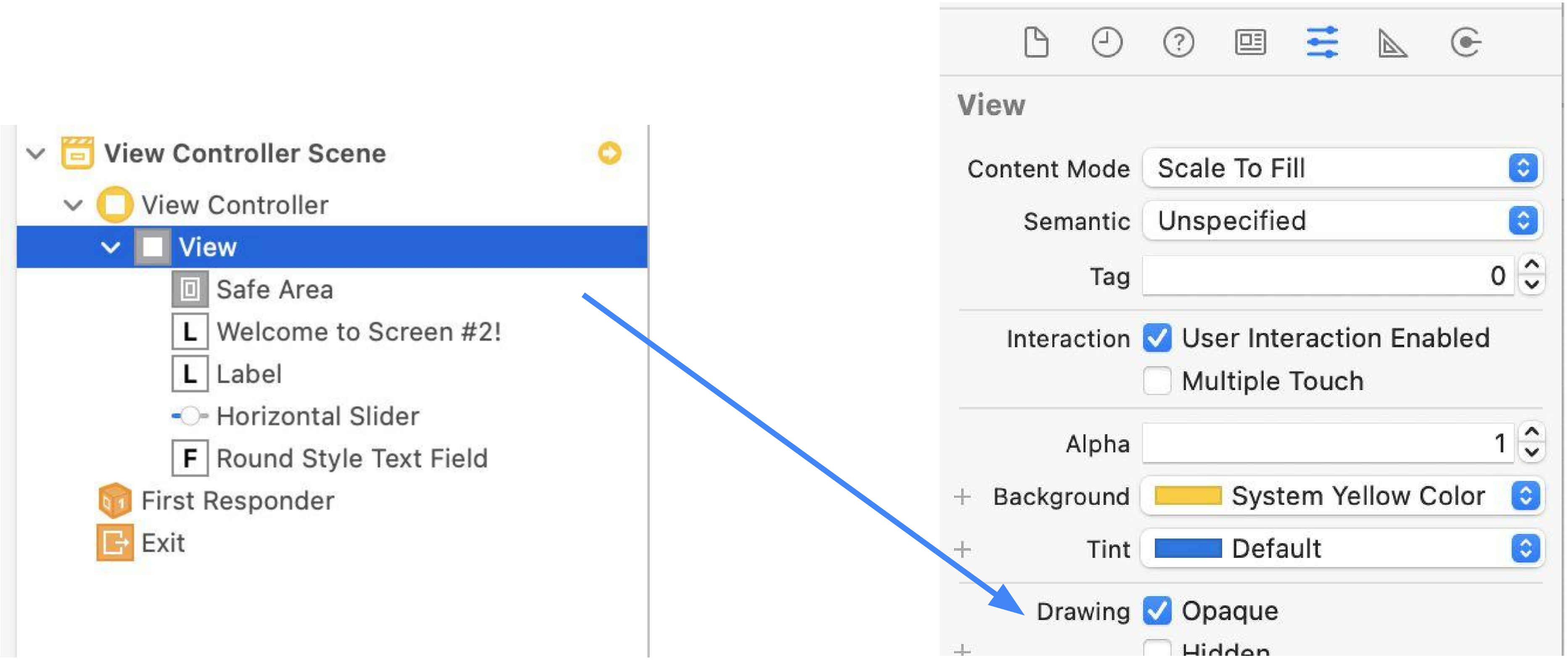
UIViewController: Manages a single view

Provides view-management functionality for toolbars, navigation bars, and application views. The UIViewController class also supports modal views and rotating views when device orientation changes.

# Drag and drop ViewController onto the Storyboard



# Change background color of entire screen



View

Content Mode: Scale To Fill

Semantic: Unspecified

Tag: 0

Interaction: ☑ User Interaction Enabled

□ Multiple Touch

Alpha: 1

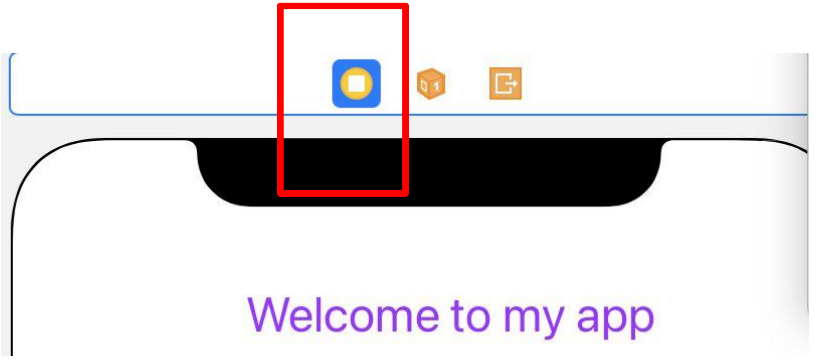
Background: 🟨 System Yellow Color

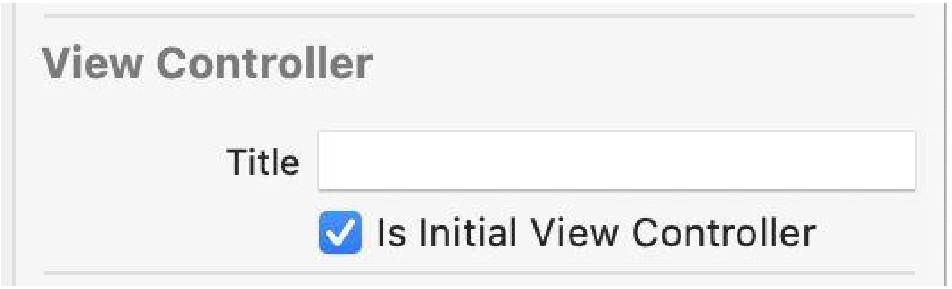
Tint: 🟦 Default

Drawing: ☑ Opaque

□ Hidden

When you have multiple screens, IOS needs to know what the default *starting* screen is - “Initial View Controller”

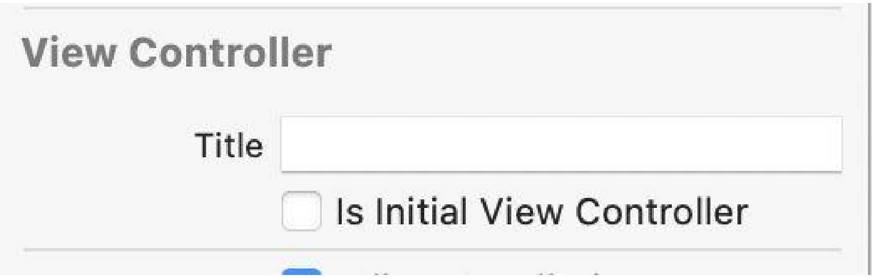



View Controller

Title

☑ Is Initial View Controller

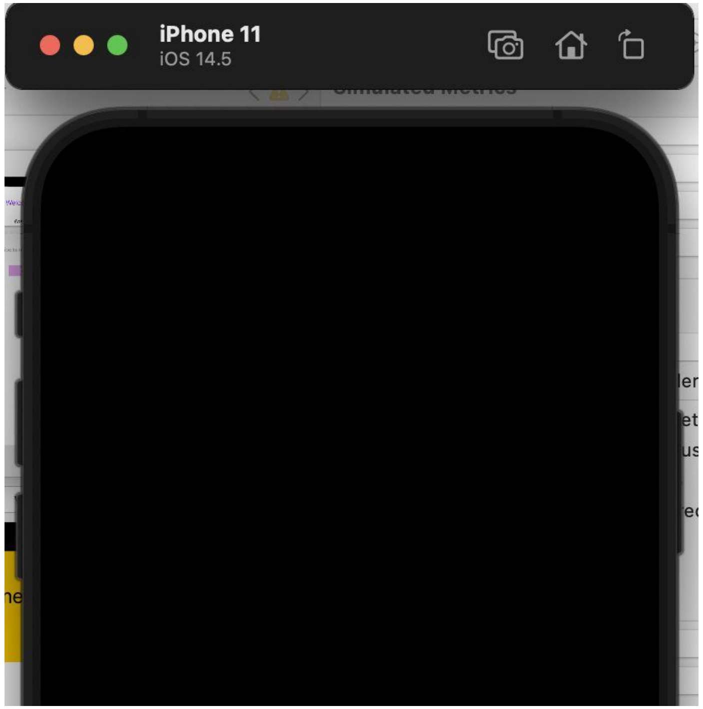
# If you do NOT specify a view controller, you get an error

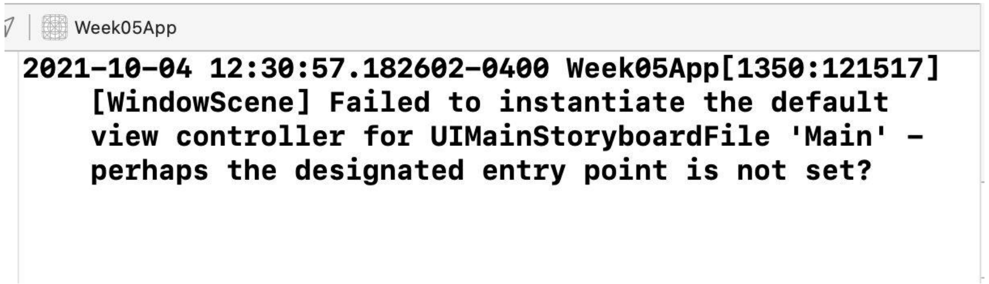


View Controller

Title

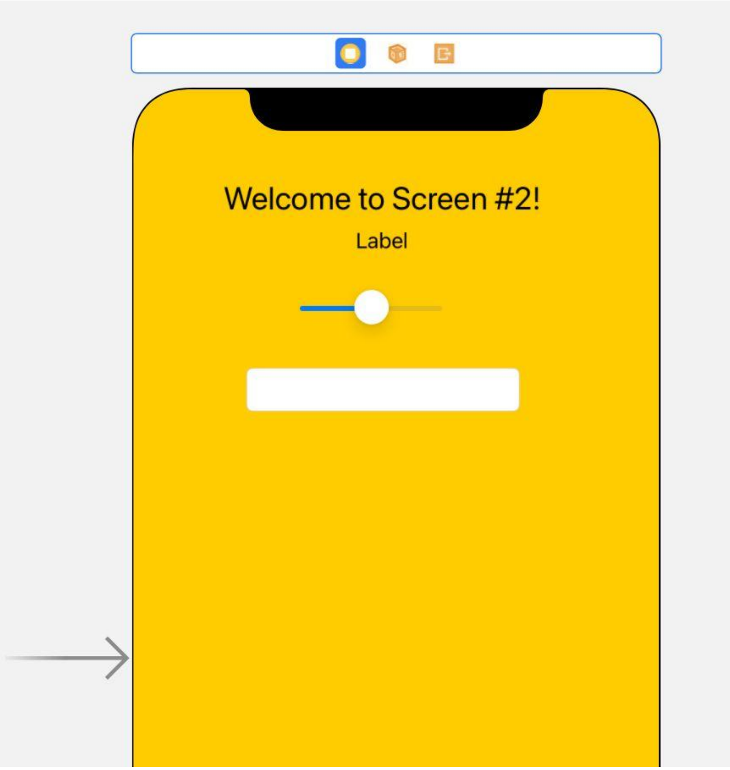
□ Is Initial View Controller

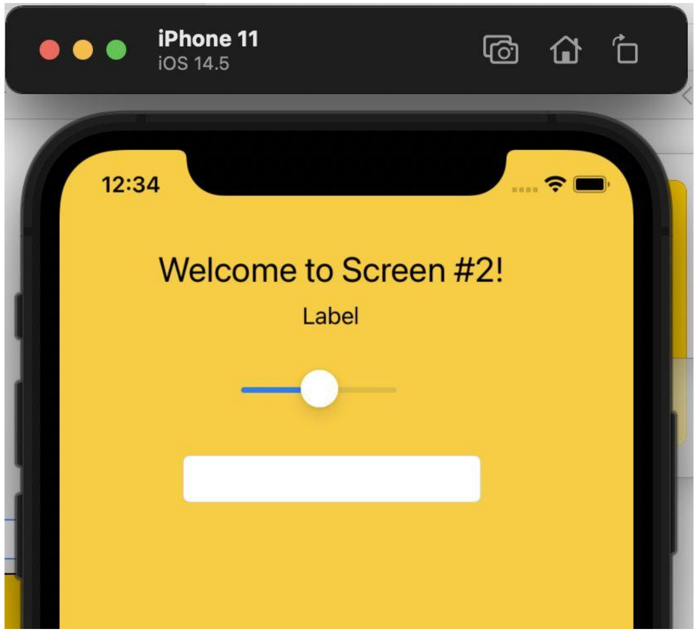


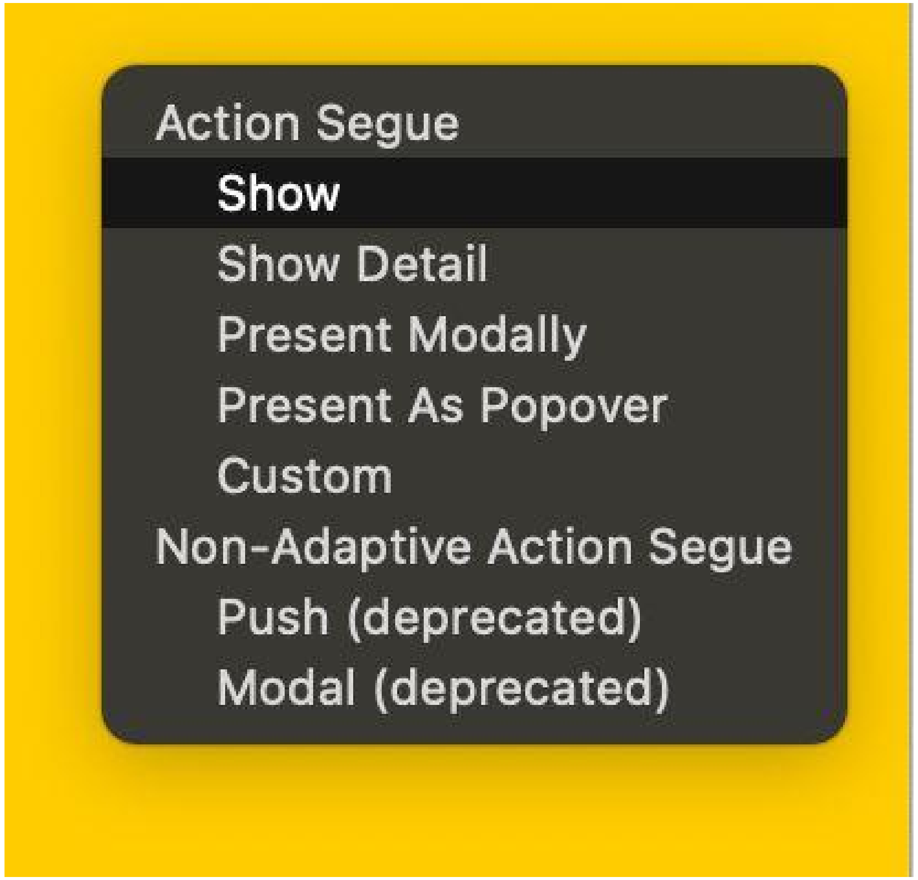


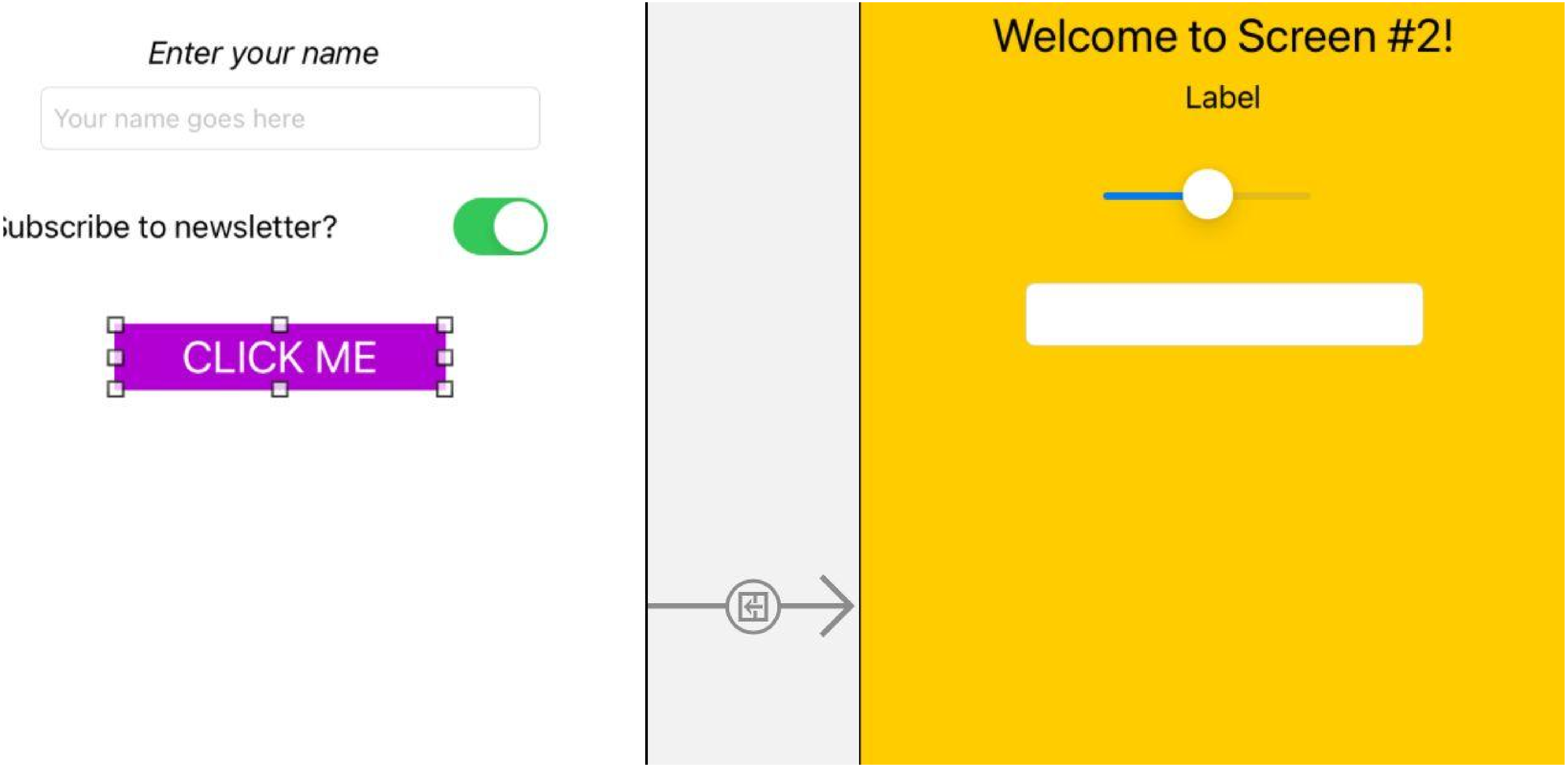
```
2021-10-04 12:30:57.182602-0400 Week05App[1350:121517]
    [WindowScene] Failed to instantiate the default
    view controller for UIMainStoryboardFile 'Main' -
    perhaps the designated entry point is not set?
```

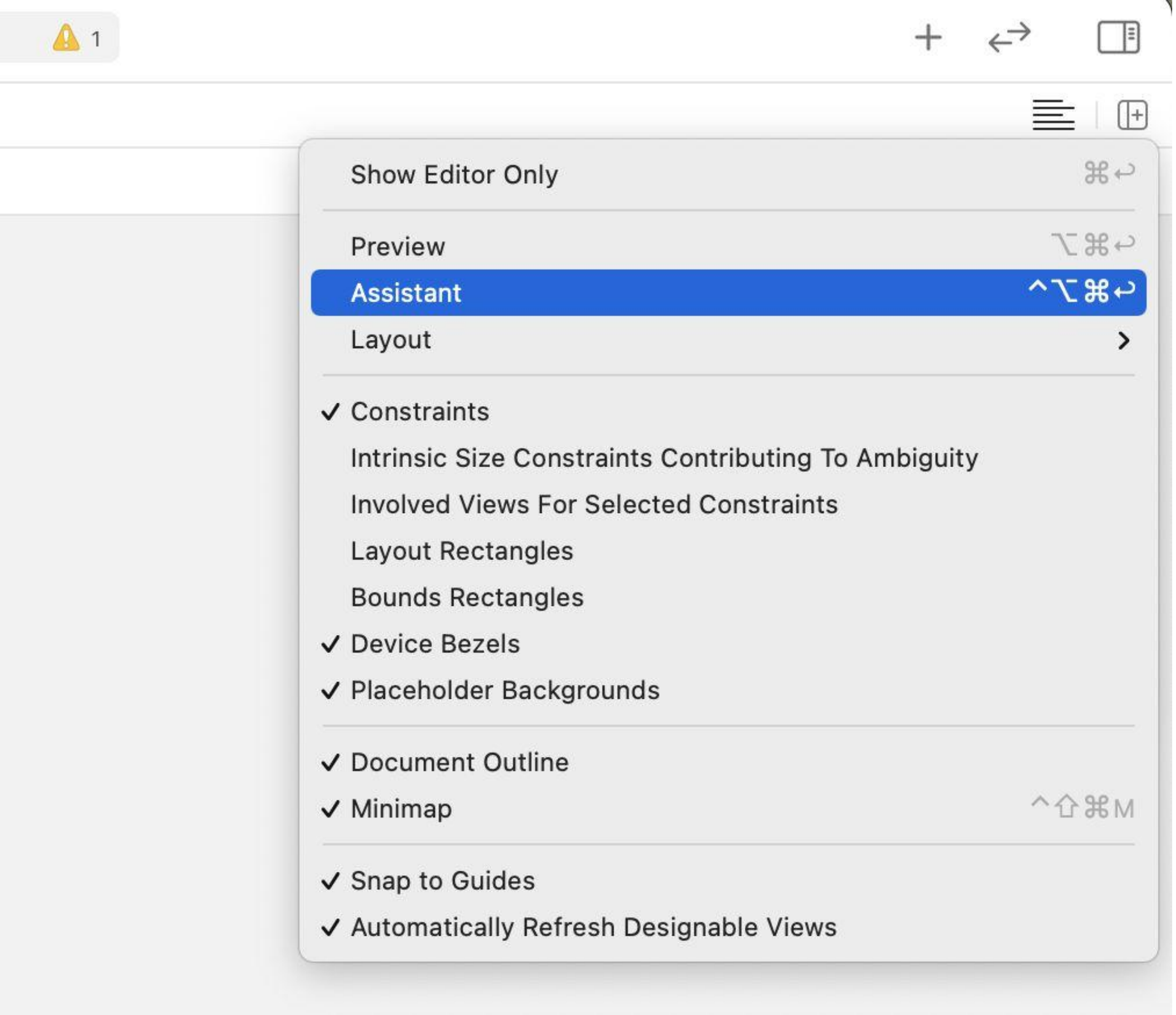
# Exercise: Set the Initial View Controller to Screen #2

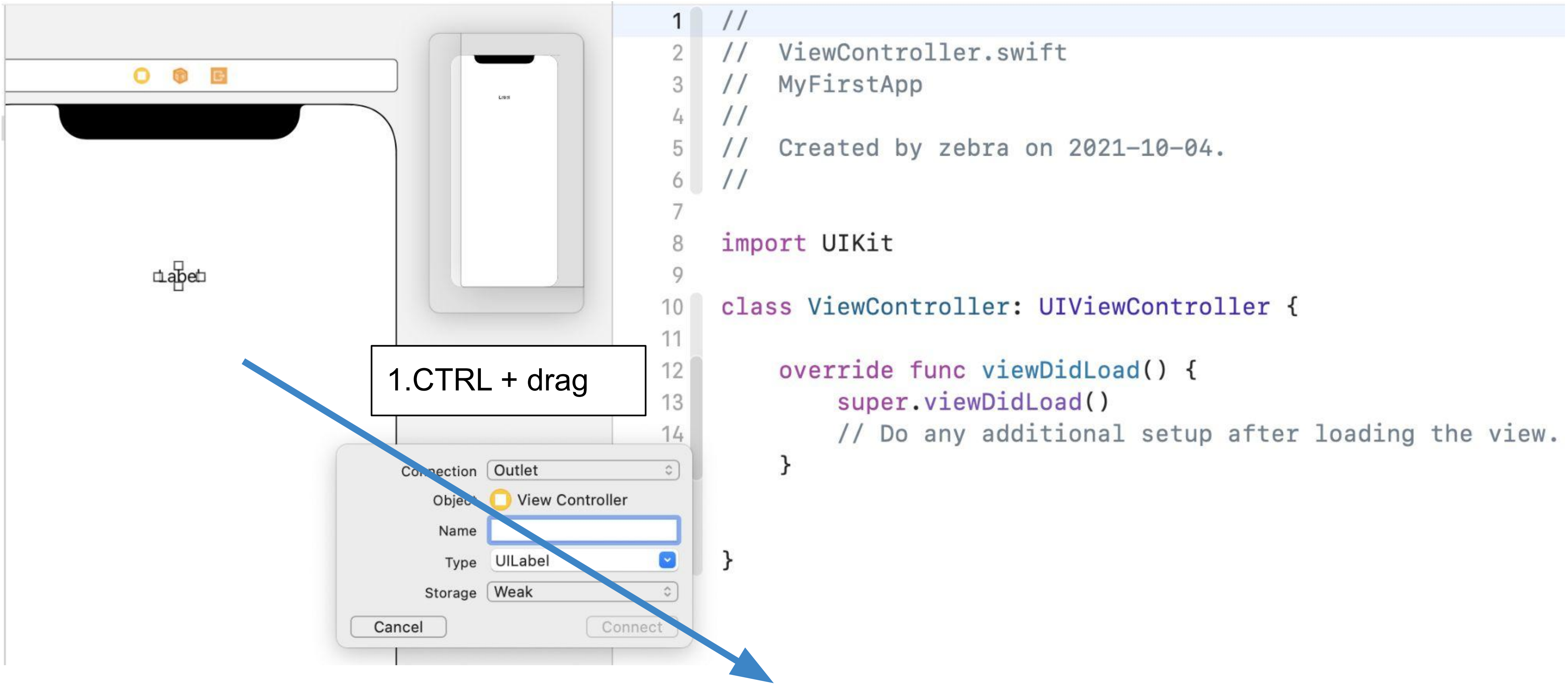





Action Segue
Show
Show Detail
Present Modally
Present As Popover
Custom
Non-Adaptive Action Segue
Push (deprecated)
Modal (deprecated)


Enter your name
Your name goes here
ubscribe to newsletter?
CLICK ME
Welcome to Screen #2!
Label


1
Show Editor Only ⌘↩
Preview ⌥⌘↩
Assistant ^⌥⌘↩
Layout
✓ Constraints
Intrinsic Size Constraints Contributing To Ambiguity
Involved Views For Selected Constraints
Layout Rectangles
Bounds Rectangles
✓ Device Bezels
✓ Placeholder Backgrounds
✓ Document Outline
✓ Minimap ^⇧⌘M
✓ Snap to Guides
✓ Automatically Refresh Designable Views



1.CTRL + drag

```
//
//  ViewController.swift
//  MyFirstApp
//
//  Created by zebra on 2021-10-04.
//

import UIKit

class ViewController: UIViewController {

    override func viewDidLoad() {
        super.viewDidLoad()
        // Do any additional setup after loading the view.
    }


}
```

Connection: Outlet
Object: View Controller
Name:
Type: UILabel
Storage: Weak

2. Popup appears

# Returning at 1:51pm

After break, how to create “logic” for your application

# Adding an Image

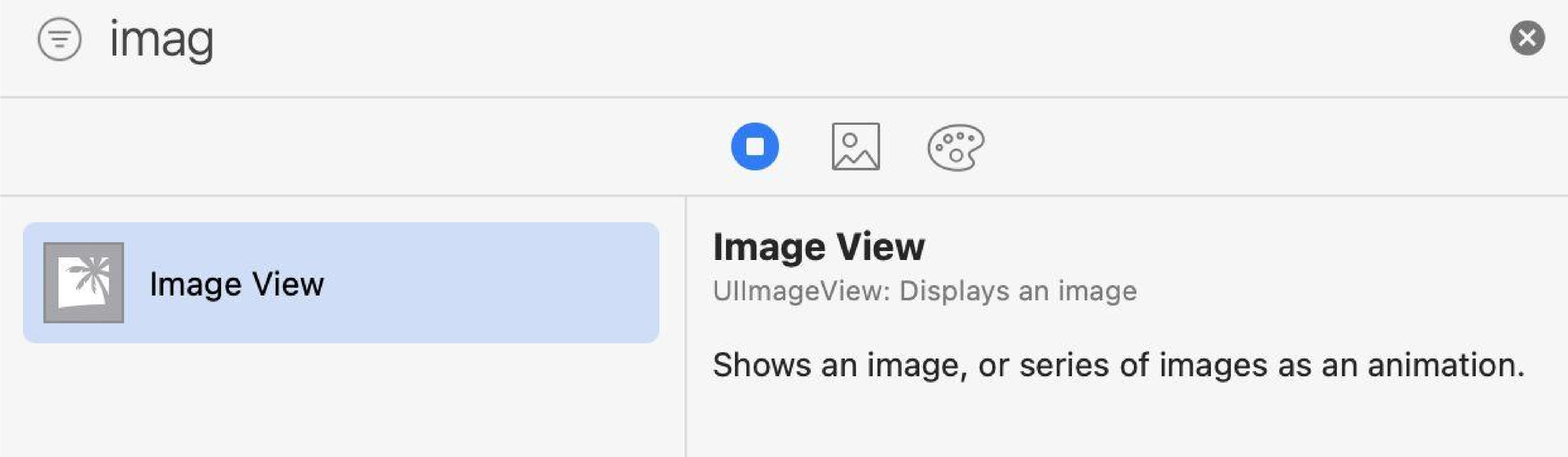
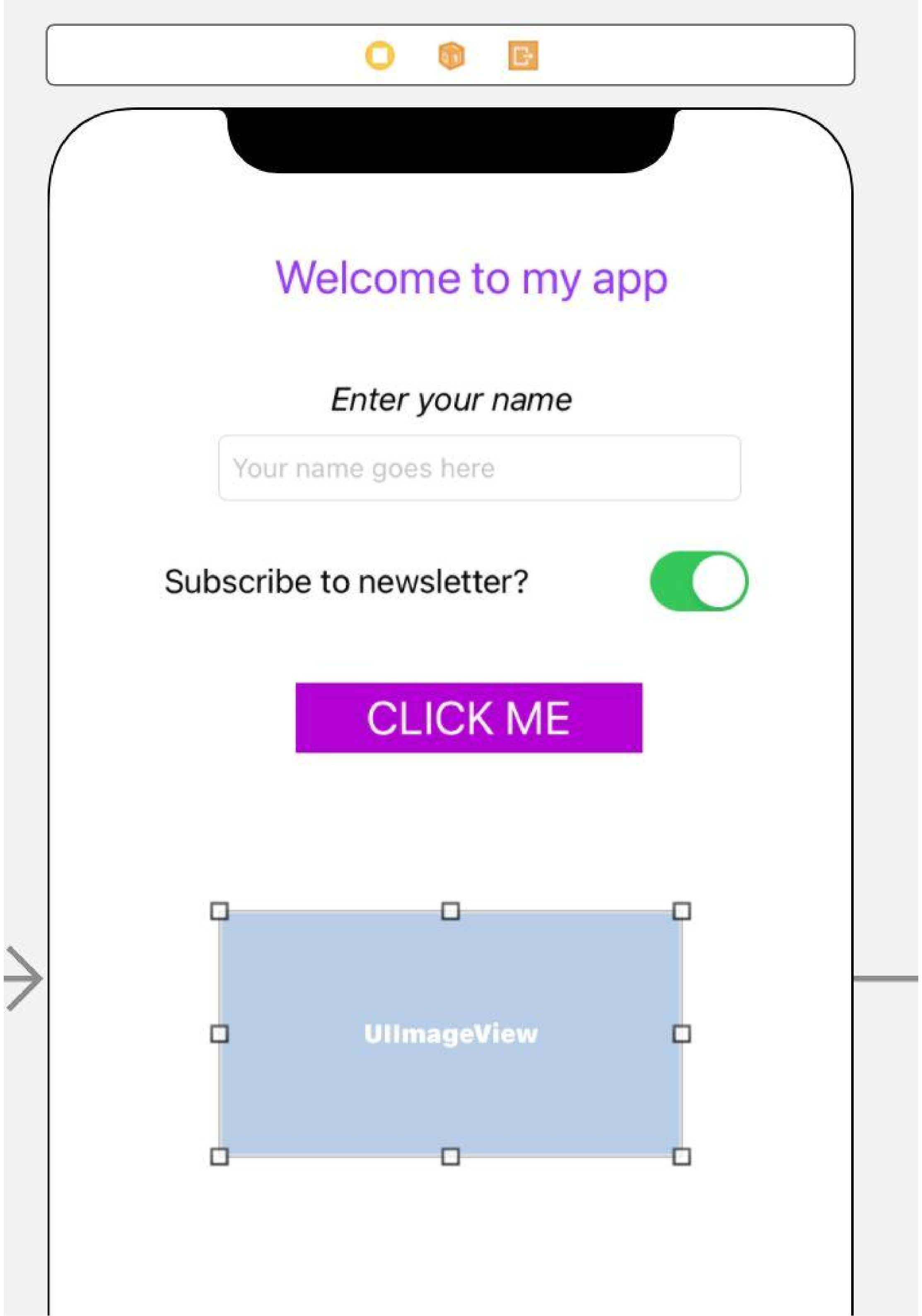


Image View

**Image View**

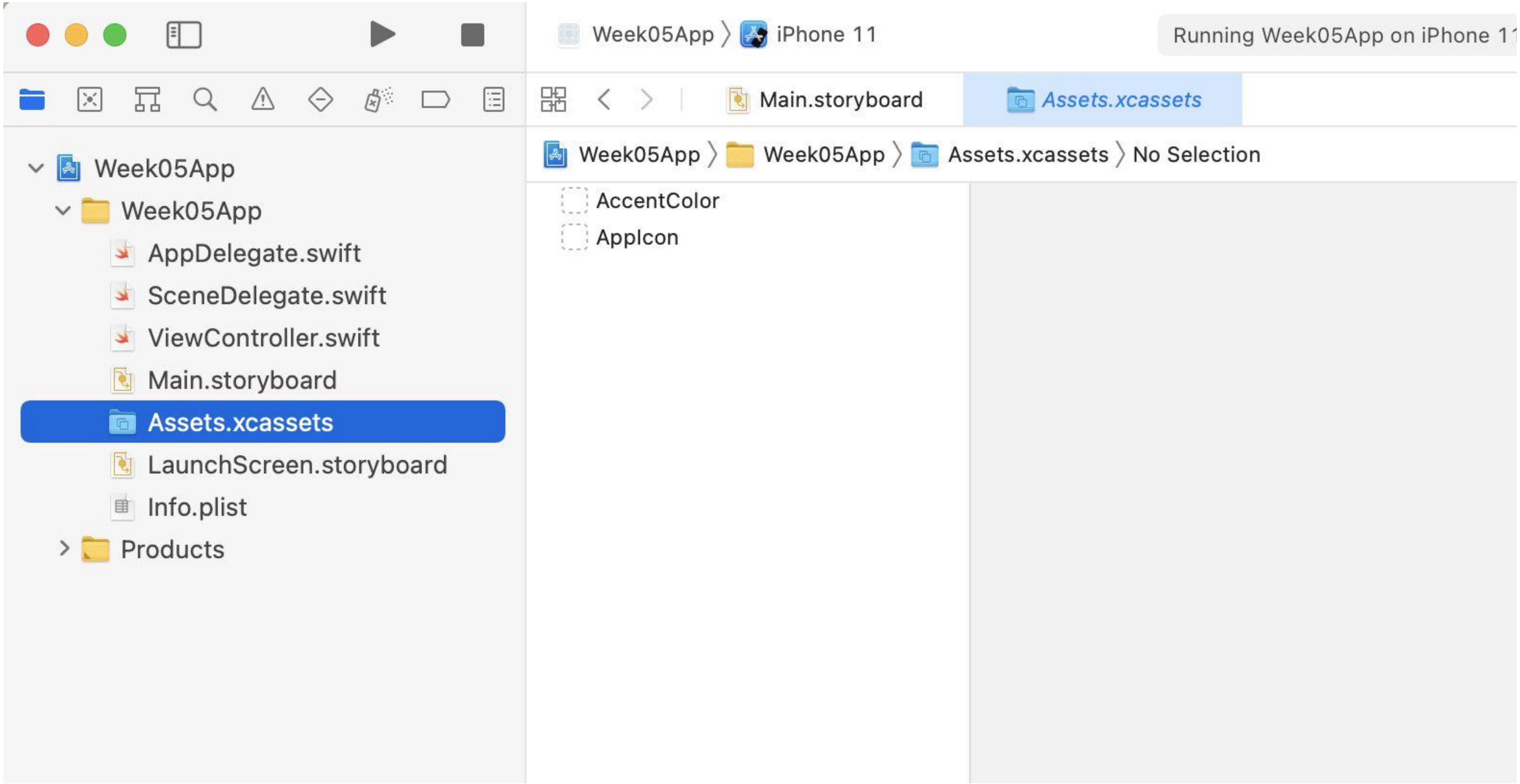
UIImageView: Displays an image

Shows an image, or series of images as an animation.

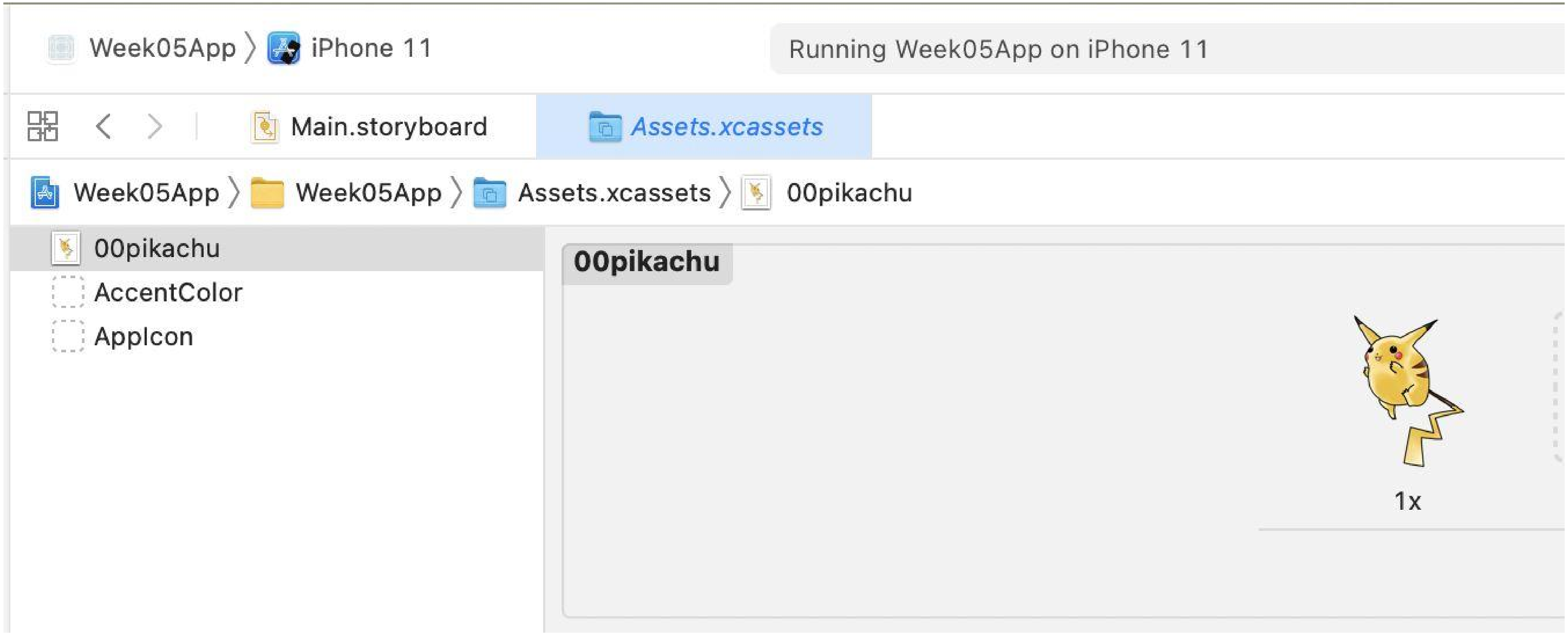


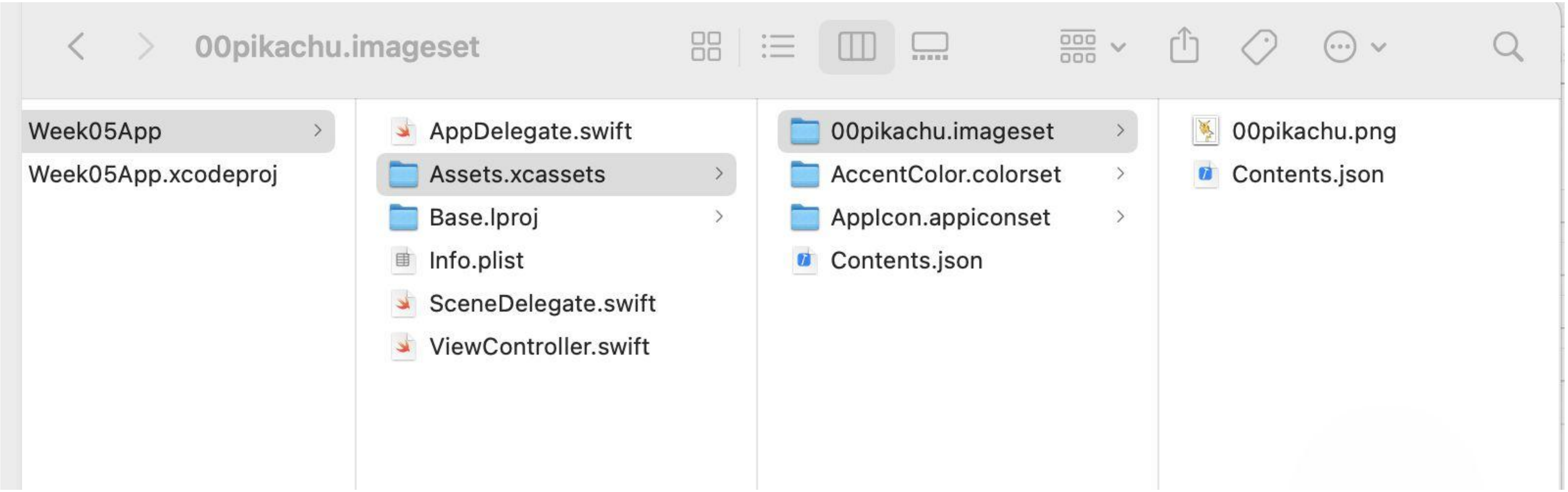
Welcome to my app
Enter your name
Your name goes here
Subscribe to newsletter?
CLICK ME
UIImageView

# Add image assets to your Assets.xcassets folder



Drag and drop an image into the Assets.xcassets folder




00pikachu.imageset
Week05App
Week05App.xcodeproj
AppDelegate.swift
Assets.xcassets
Base.lproj
Info.plist
SceneDelegate.swift
ViewController.swift
00pikachu.imageset
AccentColor.colorset
AppIcon.appiconset
Contents.json
00pikachu.png
Contents.json

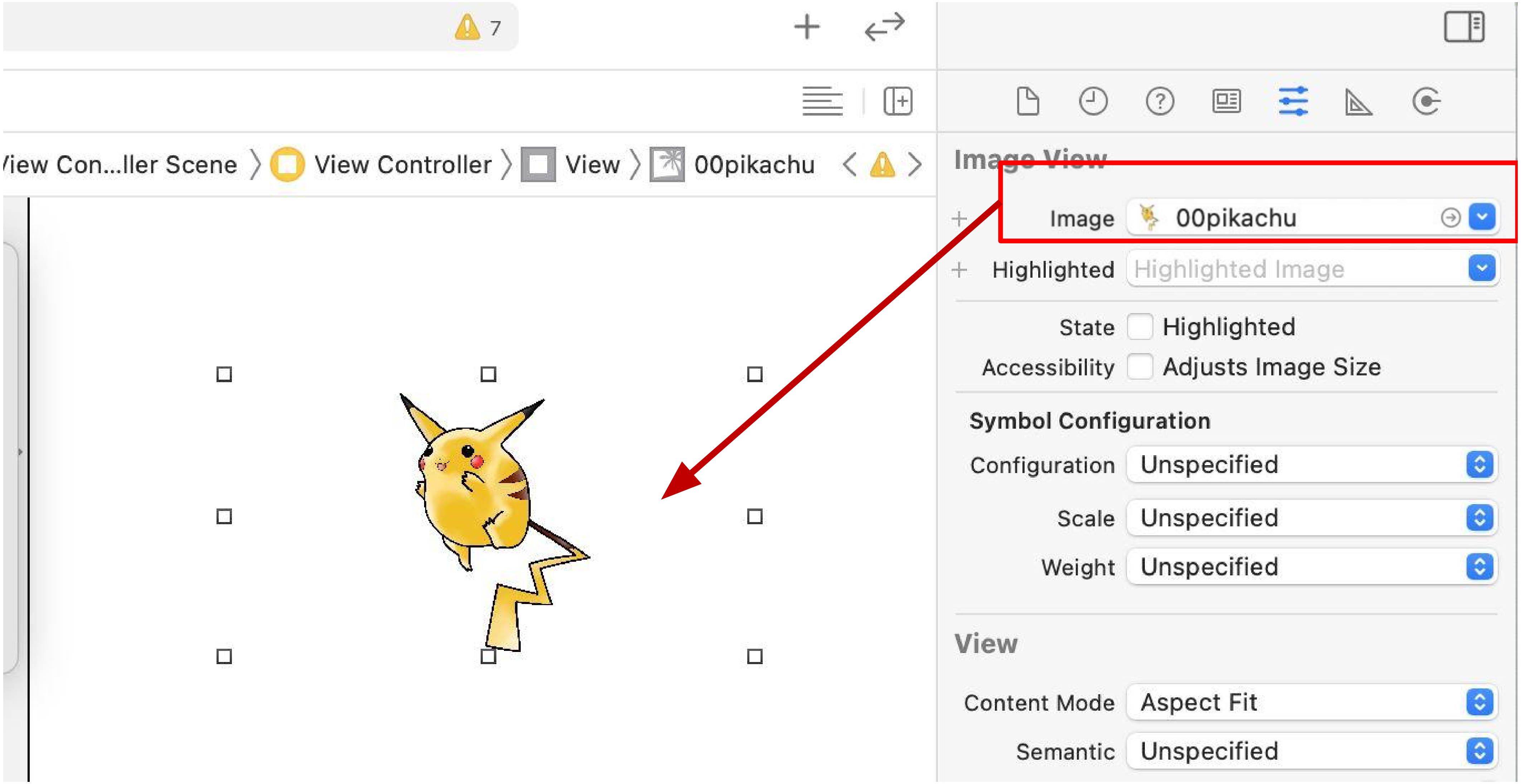


Image View

Image 00pikachu

Highlighted Highlighted Image

State □ Highlighted

Accessibility □ Adjusts Image Size

Symbol Configuration

Configuration Unspecified

Scale Unspecified

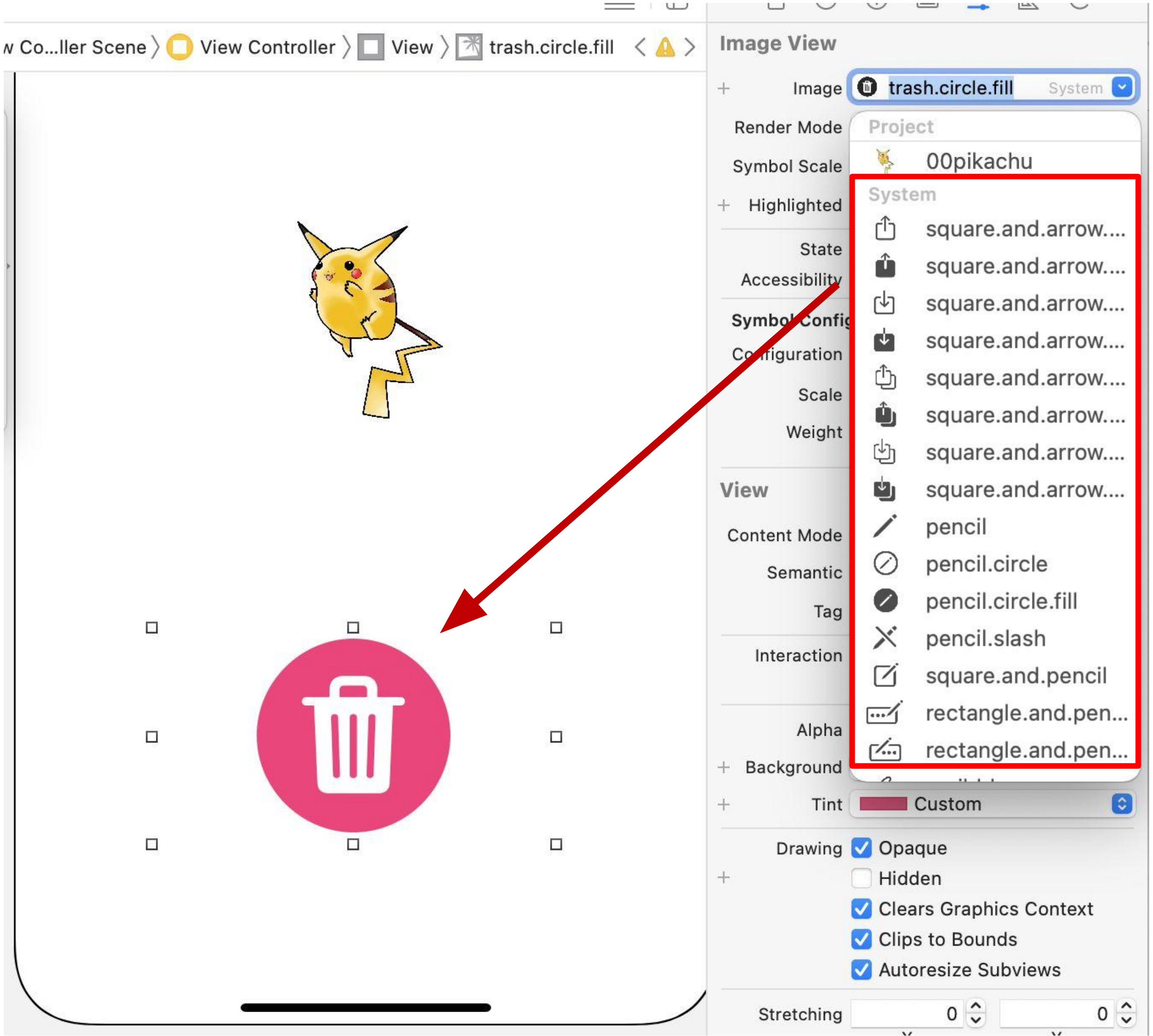
Weight Unspecified

View

Content Mode Aspect Fit

Semantic Unspecified

# You can also use a default image provided by IOS



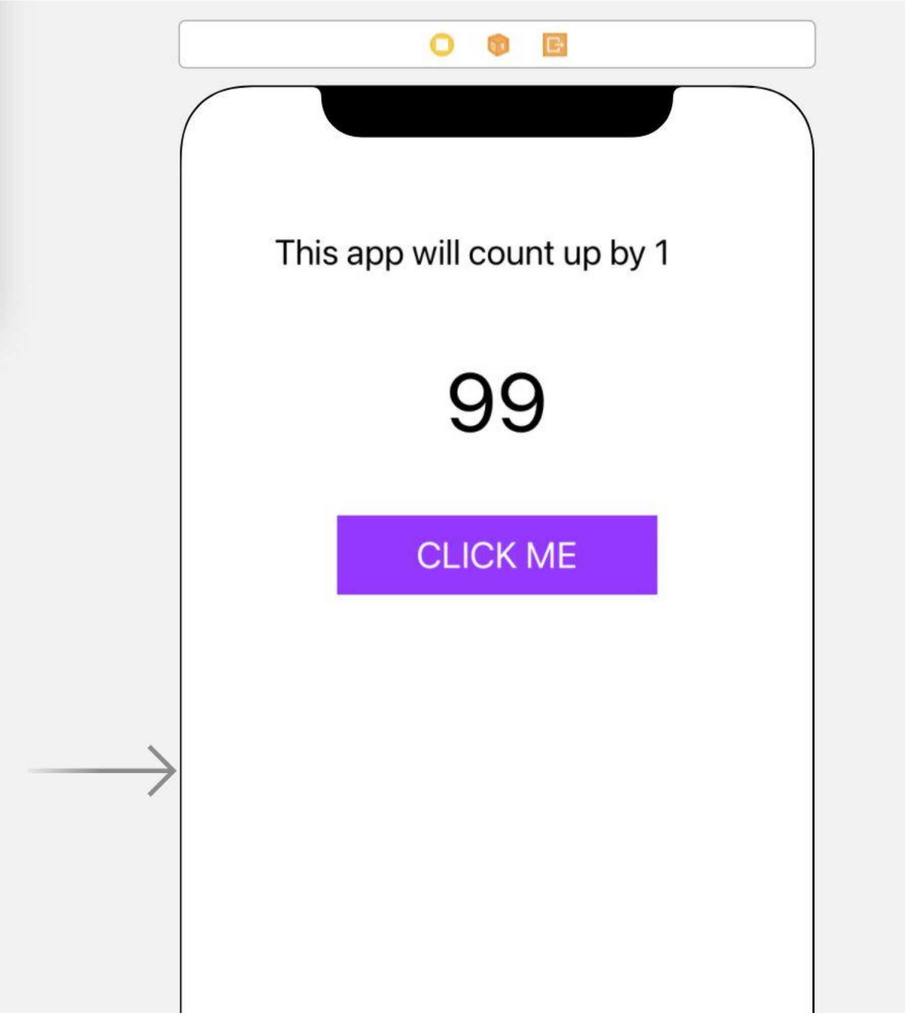
# DEMO: Add programming logic

Create a user interface with

- 2 x label
- 1 x button

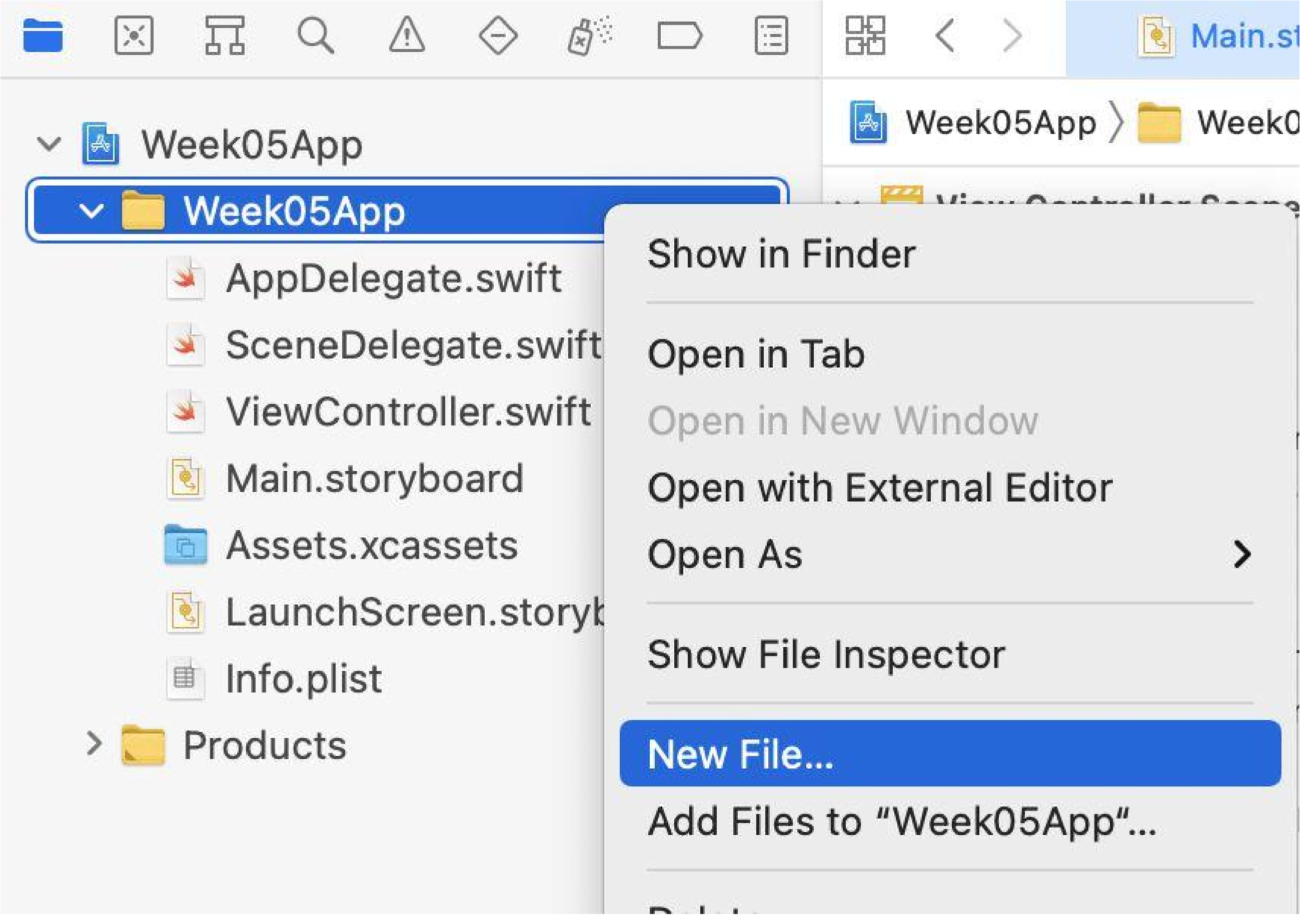
The goal of this app:

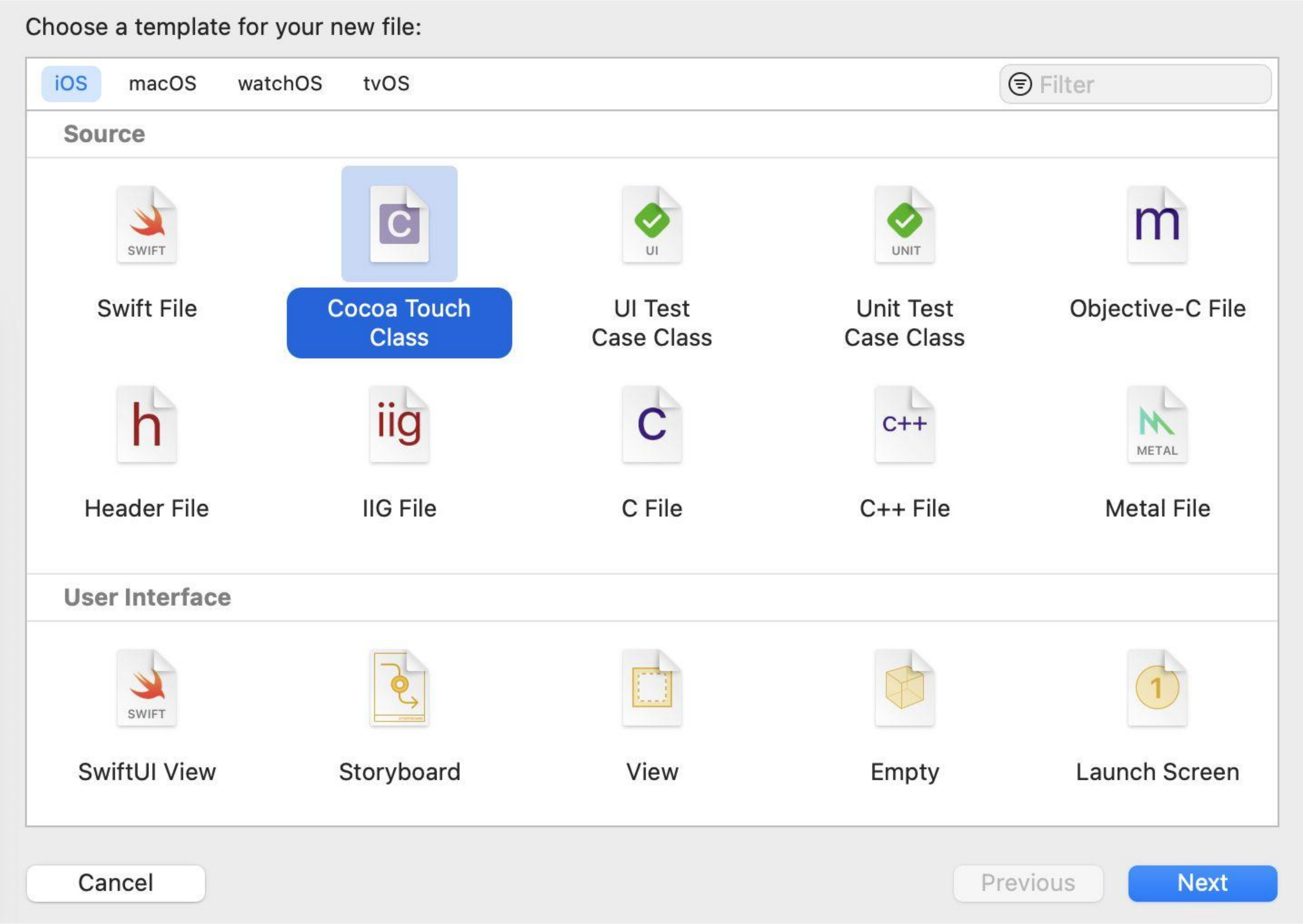
- Each time the user presses the button, increment the counter by 1
- So: 99, 100, 101, 102… etc

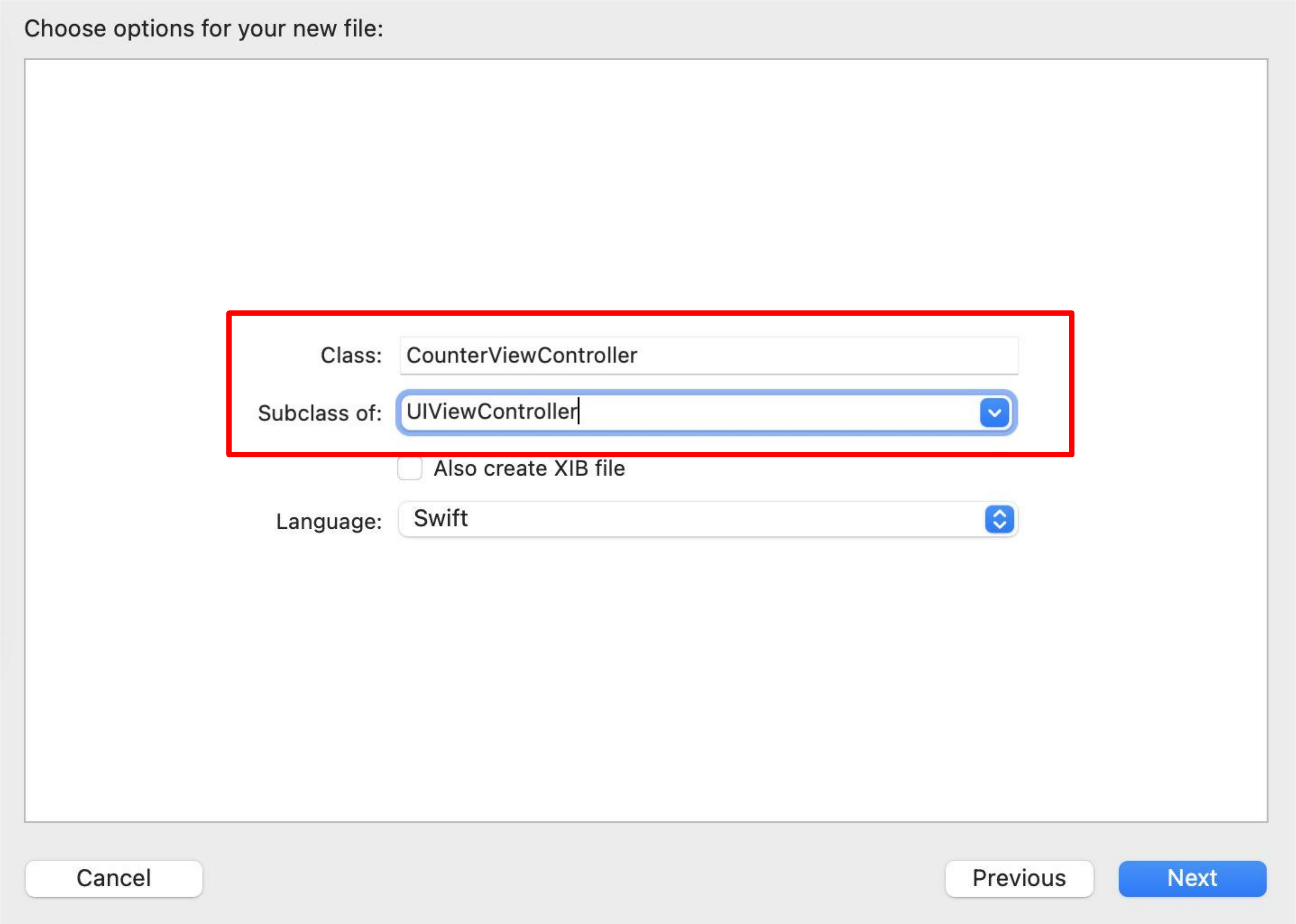


# Every screen *can* have associated programming logic

- Create a ViewController file that is associated with your UI storyboard




Choose a template for your new file:
iOS
macOS
watchOS
tvOS
Filter
Source
SWIFT
Swift File
C
Cocoa Touch Class
UI
UI Test Case Class
UNIT
Unit Test Case Class
m
Objective-C File
h
Header File
iig
IIG File
C
C File
C++
C++ File
METAL
Metal File
User Interface
SWIFT
SwiftUI View
Storyboard
View
Empty
1
Launch Screen
Cancel
Previous
Next



Choose options for your new file:

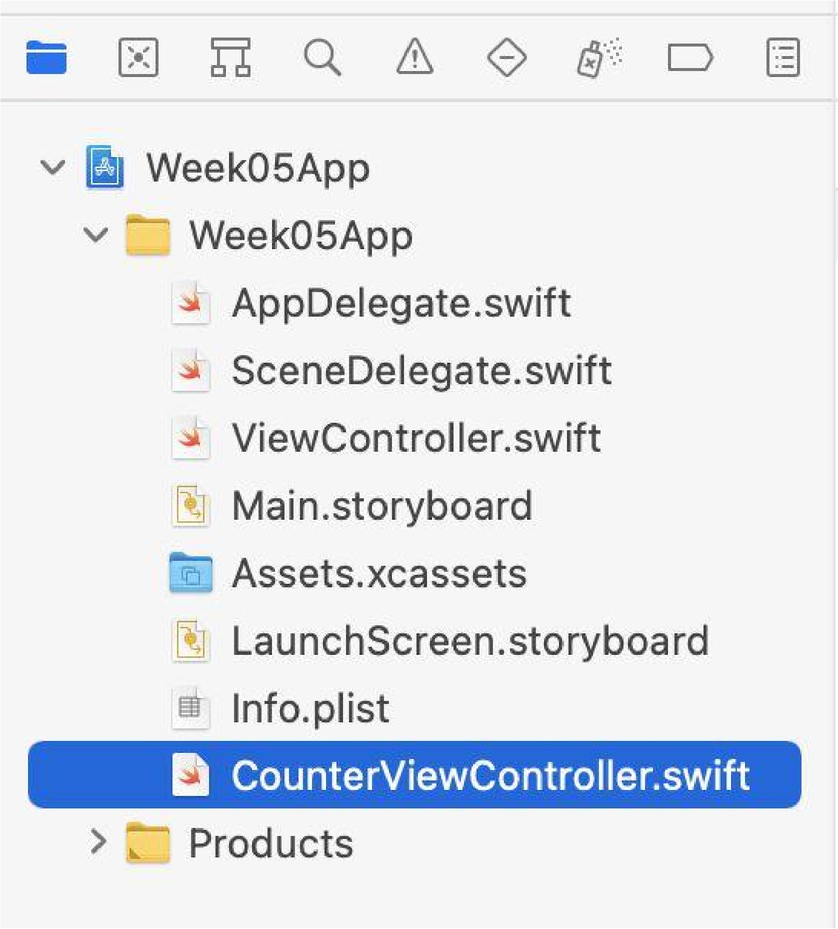
Class: CounterViewController

Subclass of: UIViewController

□ Also create XIB file

Language: Swift

# ViewController file will be added to your project



Week05App

Week05App

AppDelegate.swift

SceneDelegate.swift

ViewController.swift

Main.storyboard

Assets.xcassets

LaunchScreen.storyboard

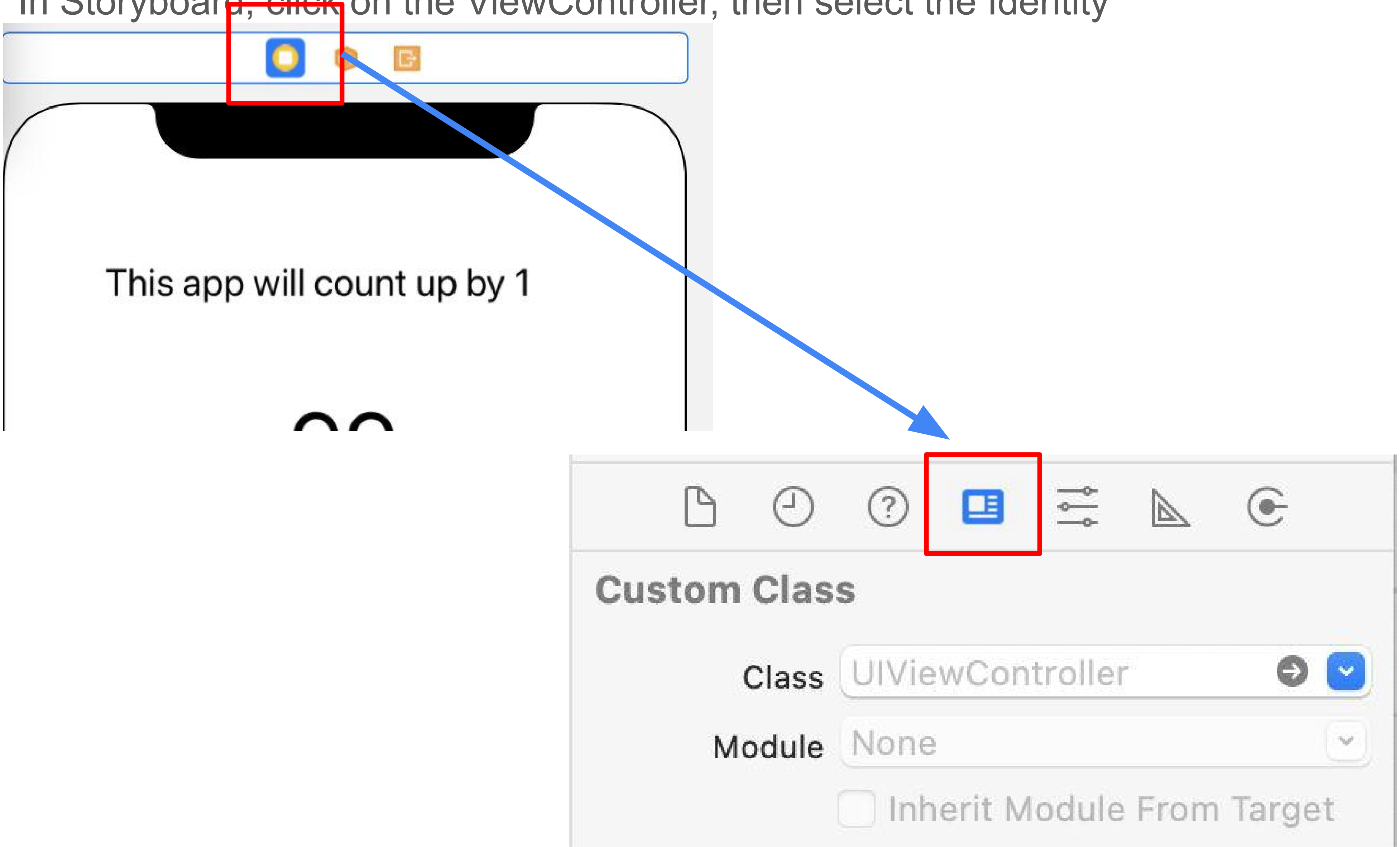
Info.plist

CounterViewController.swift

Products

# Associate the new ViewController file with your storyboard

In Storyboard, click on the ViewController, then select the Identity



This app will count up by 1

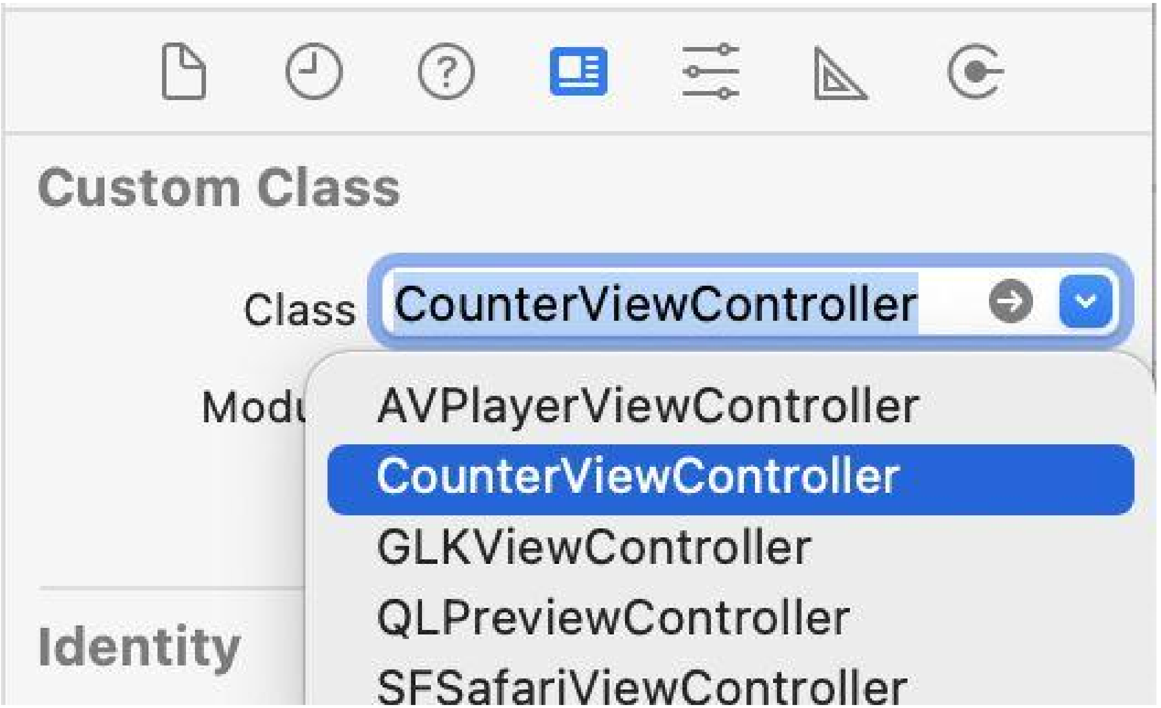
Custom Class

Class UIViewController

Module None

□ Inherit Module From Target

In the *Class* dropdown, select the file we just created (CounterViewController.swift)



Custom Class

Class CounterViewController

Modu

AVPlayerViewController

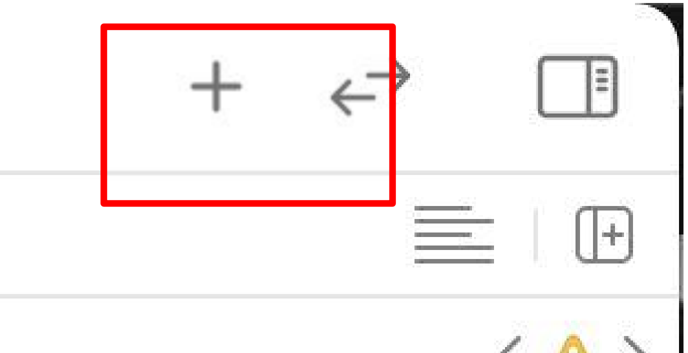
CounterViewController

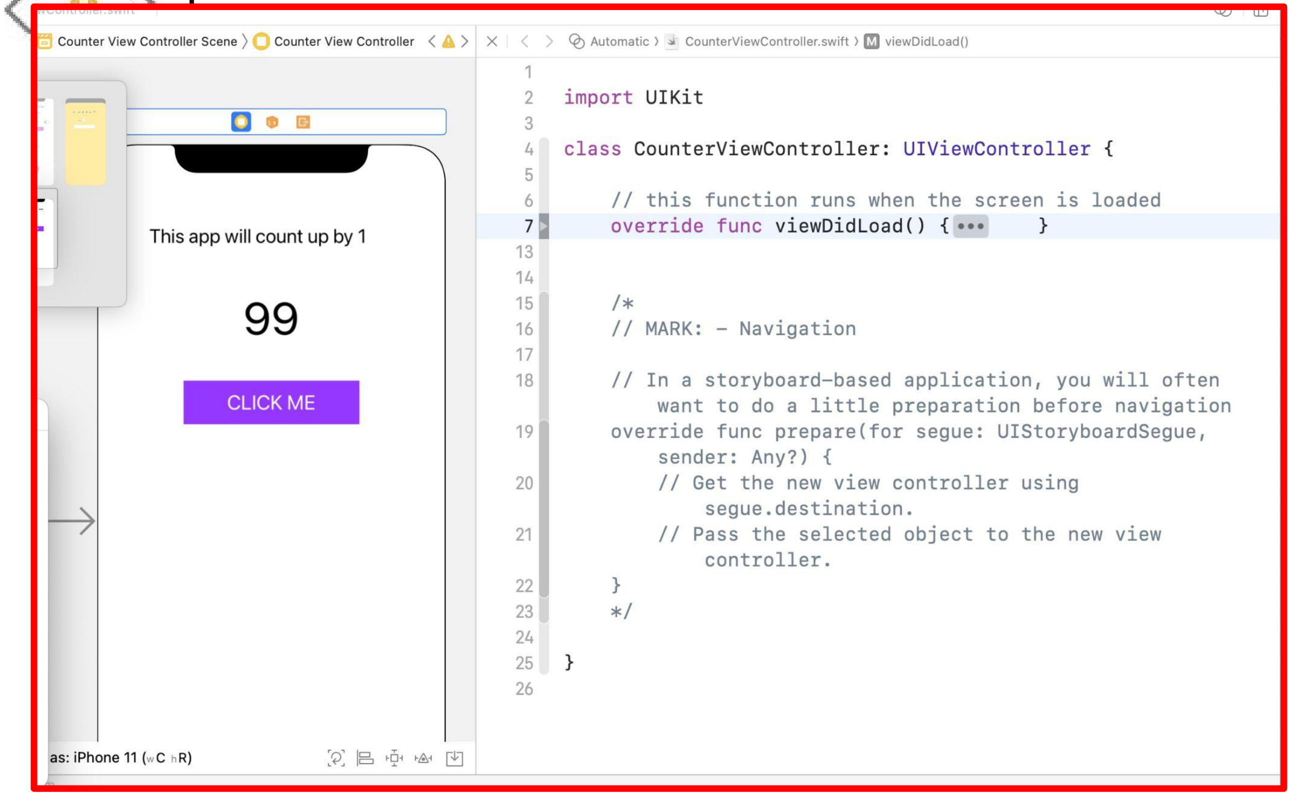
GLKViewController

QLPreviewController

SFSafariViewController

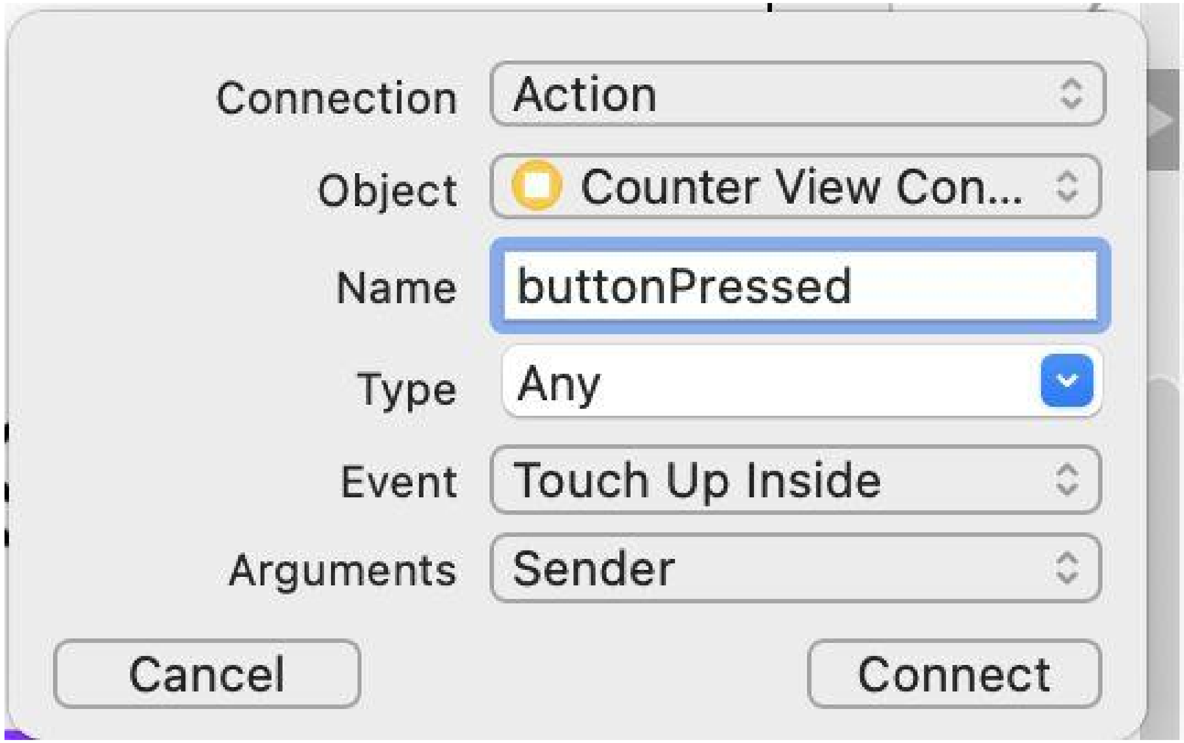
Identity





Counter View Controller Scene
Counter View Controller
Automatic
CounterViewController.swift
viewDidLoad()
This app will count up by 1
99
CLICK ME
as: iPhone 11 (wC hR)

```swift

import UIKit

class CounterViewController: UIViewController {

    // this function runs when the screen is loaded
    override func viewDidLoad() {•••    }


    /*
    // MARK: - Navigation

    // In a storyboard-based application, you will often want to do a little preparation before navigation
    override func prepare(for segue: UIStoryboardSegue, sender: Any?) {
        // Get the new view controller using segue.destination.
        // Pass the selected object to the new view controller.
    }
    */

}

```



| | |
|---|---|
| Connection | Action |
| Object | Counter View Con... |
| Name | buttonPressed |
| Type | Any |
| Event | Touch Up Inside |
| Arguments | Sender |