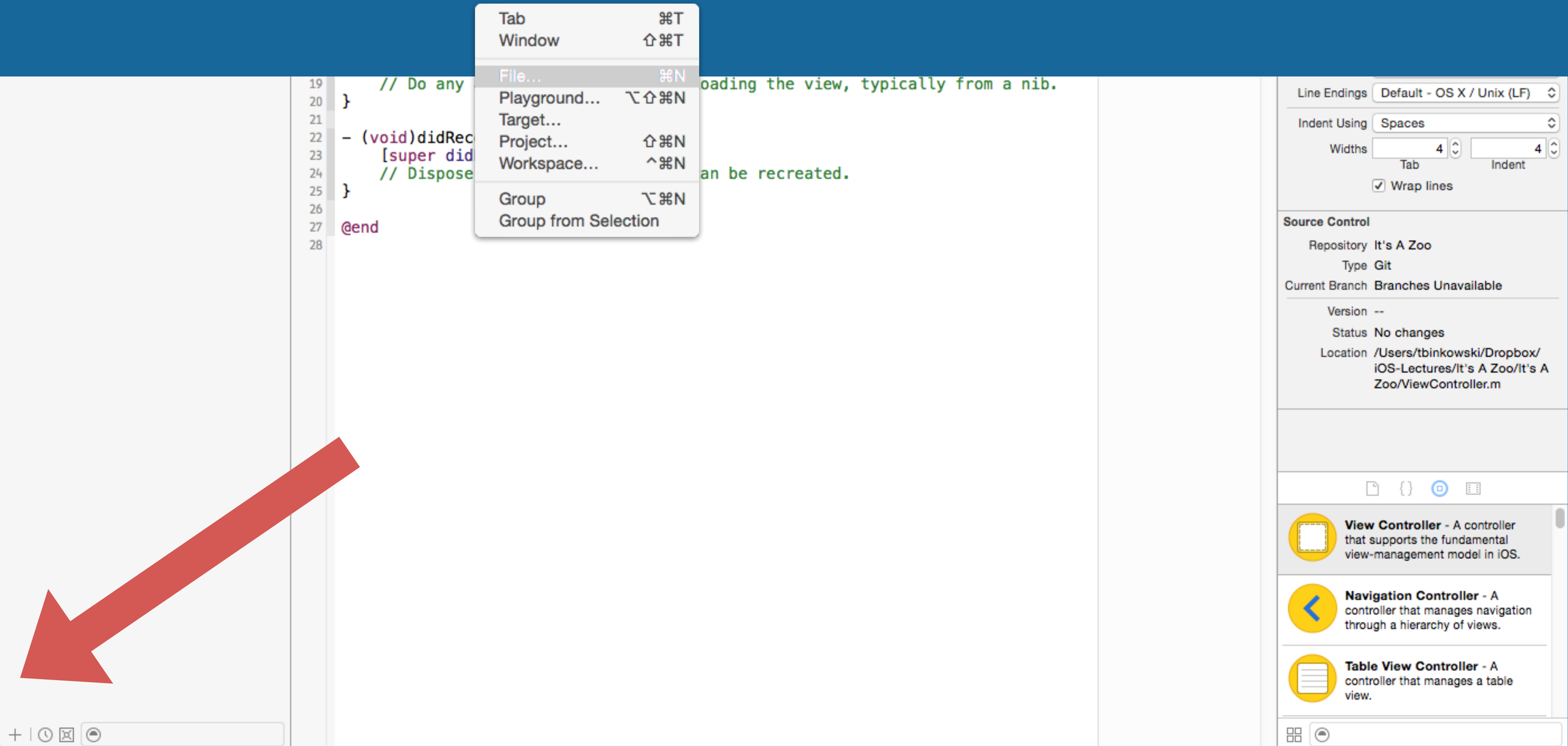
THE UNIVERSITY OF CHICAGO

ADVANCED iOS APPLICATION DEVELOPMENT

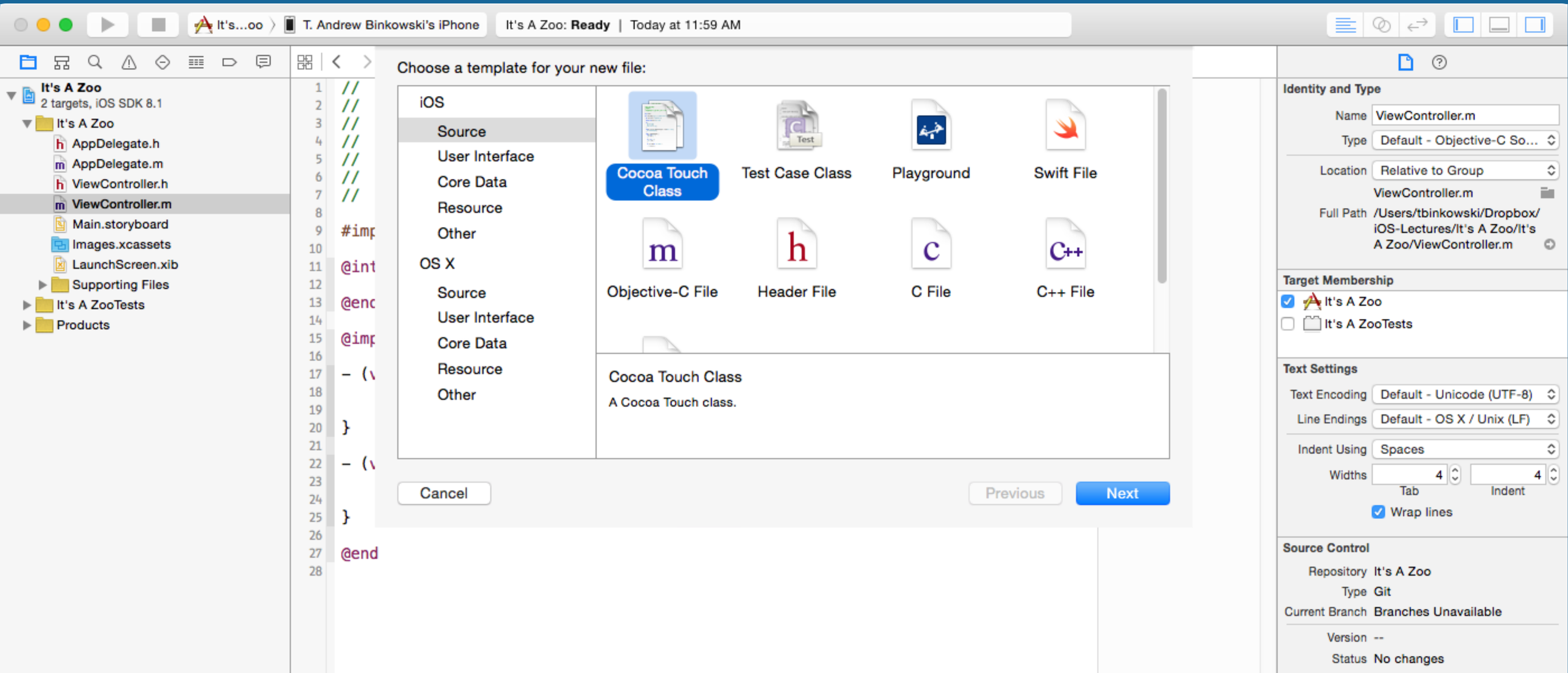
MPCS 51032 • SPRING 2020 • SESSION 2B

A CUSTOM OBJECTIVE-C CLASS

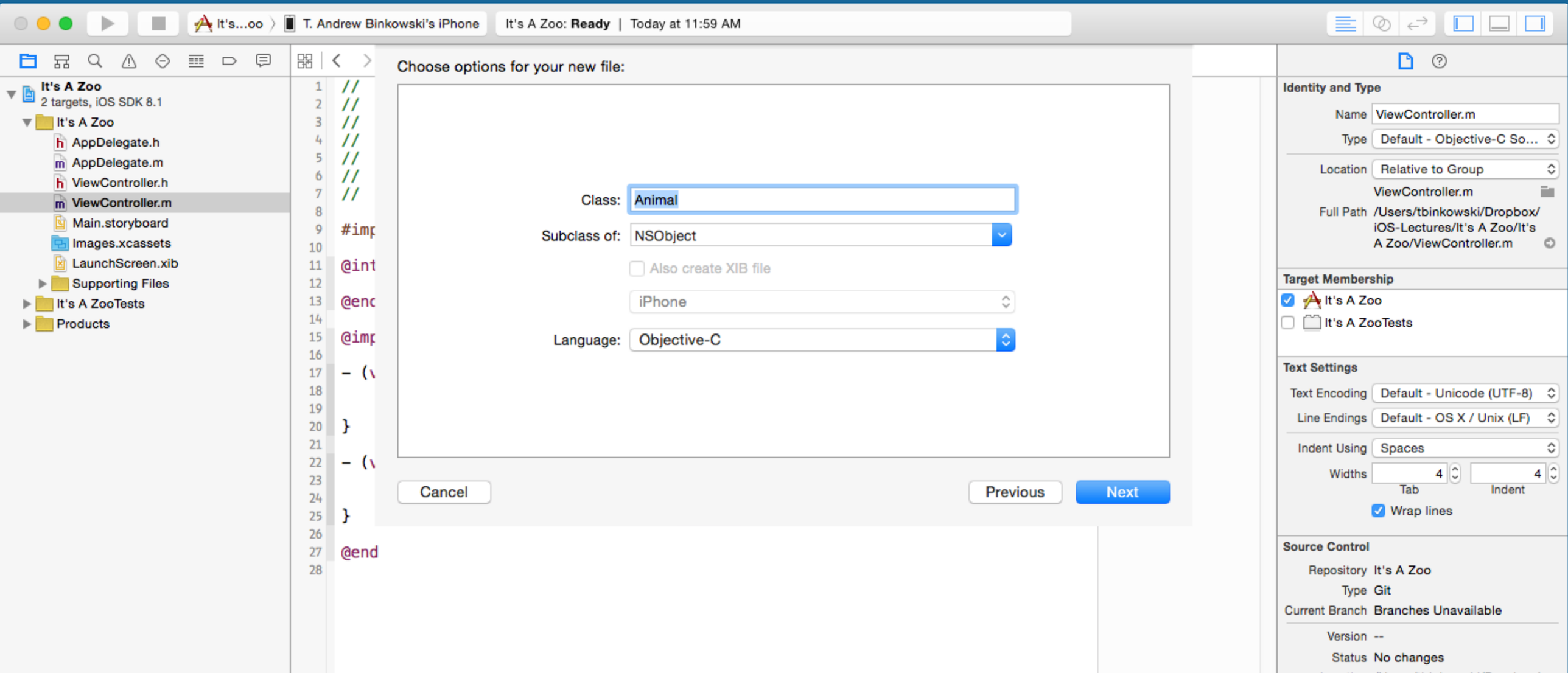
A CUSTOM OBJECTIVE-C CLASS



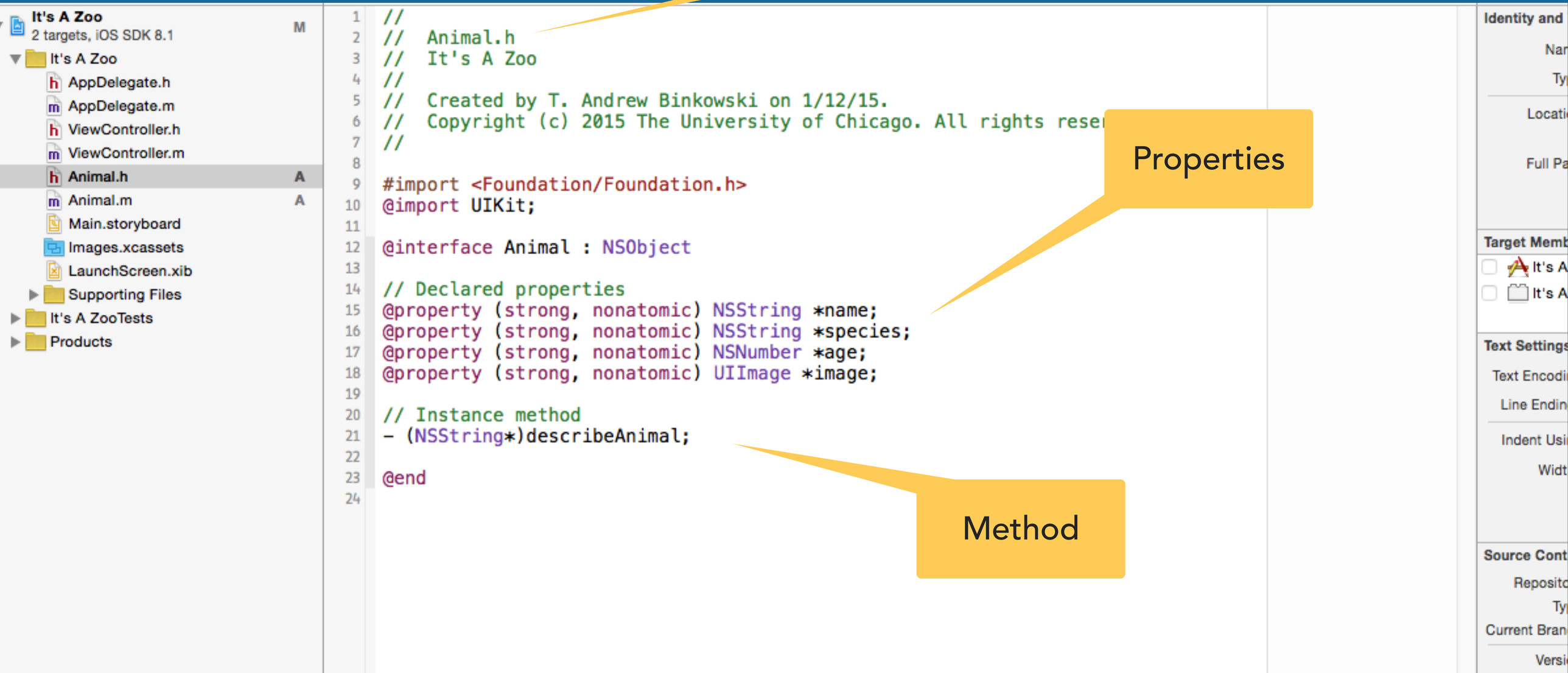
A CUSTOM OBJECTIVE-C CLASS



A CUSTOM OBJECTIVE-C CLASS



A CUSTOM OBJECTIVE-C CLASS



Header file

Properties

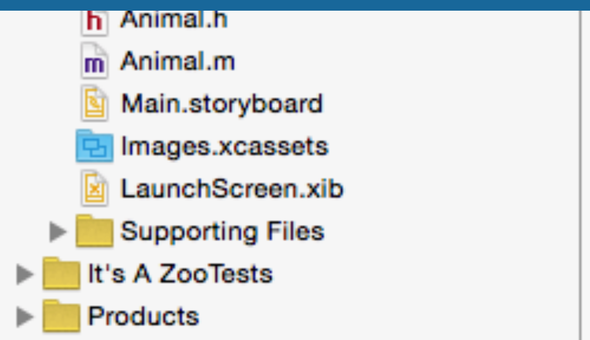
Method

A CUSTOM OBJECTIVE-C CLASS

We don't have to write [init] methods; only if you want to

```
#import "Animal.h"

@implementation Animal


- (NSString*)describeAnimal
{
    NSString *descriptionString = [NSString stringWithFormat:@"Animal Name:%@ Species:%@ Age:%@ \n",
                                   self.name,self.species,self.age];
    return descriptionString;
}

@end

```

A CUSTOM OBJECTIVE-C CLASS




```objc
#import "ViewController.h"
#import "Animal.h"

@interface ViewController ()

@end

@implementation ViewController

- (void)viewDidLoad {
    [super viewDidLoad];
    // Do any additional setup after loading the nib.
}


- (void)viewWillAppear:(BOOL)animated
{
    // Create new dog object and fill it with data
    Animal *dog = [[Animal alloc] init];
    dog.name = @"Max";
    dog.species = @"Great Dane";
    dog.age = @1;
    dog.image = [UIImage imageNamed:@"ImageInAssetCatalog"];

    NSLog(@"Dog Description:%@",[dog describeAnimal]);
}

- (void)didReceiveMemoryWarning {
    [super didReceiveMemoryWarning];
```

import class

create new class

call our method; message our object

A CUSTOM OBJECTIVE-C CLASS


```
@interface ViewController ()

@end

@implementation ViewController

- (void)viewDidLoad {
    [super viewDidLoad];
    // Do any additional setup after loading the view, typically from a nib.
}


- (void)viewWillAppear:(BOOL)animated
{
    // Create new dog object and fill it with data
    Animal *dog = [[Animal alloc] init];
    dog.name = @"Max";
    dog.species = @"Great Dane";
    dog.age = @1;
    dog.image = [UIImage imageNamed:@"ImageInAssetCatalog"];

    NSLog(@"Dog Description:%@",[dog describeAnimal]);
}

- (void)didReceiveMemoryWarning {
    [super didReceiveMemoryWarning];
    // Dispose of any resources that can be recreated.
}
```

console output

OBJECTIVE-C IN A SWIFT PROJECT

CREATE A PROJECT

On This Page

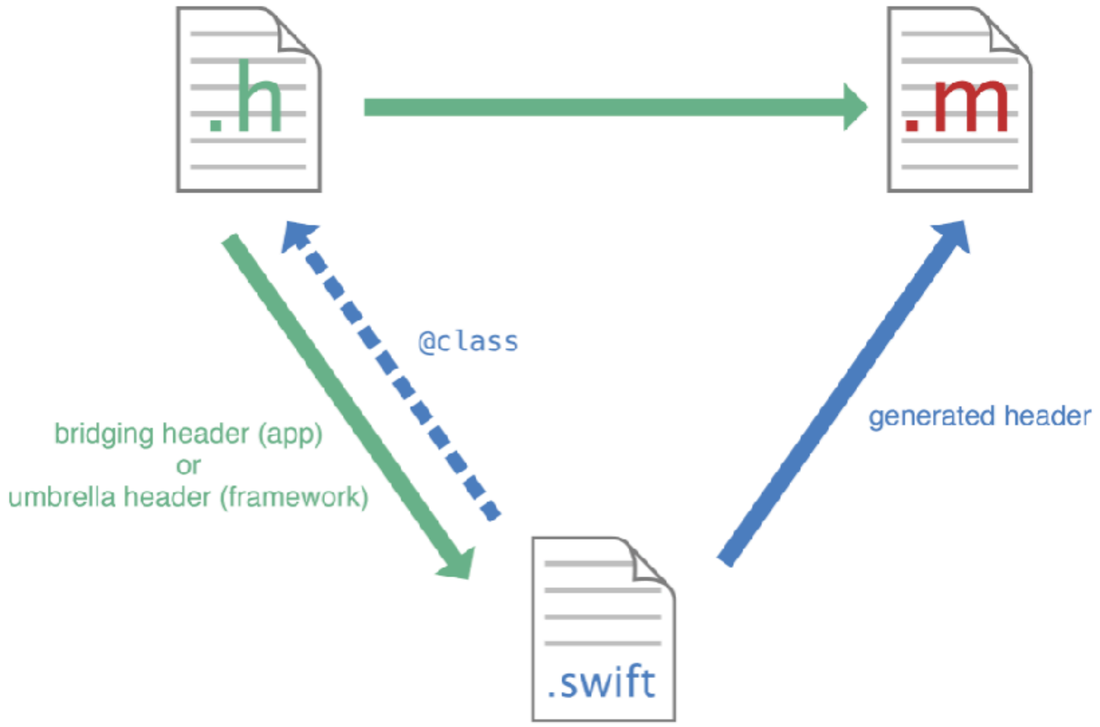
Swift and Objective-C in the Same Project

Swift's compatibility with Objective-C lets you create a project that contains files written in either language. You can use this feature, called *mix and match*, to write apps that have a mixed-language codebase. Using mix and match, you can implement part of your app's functionality using the latest Swift features and seamlessly incorporate it back into your existing Objective-C codebase.

Mix and Match Overview

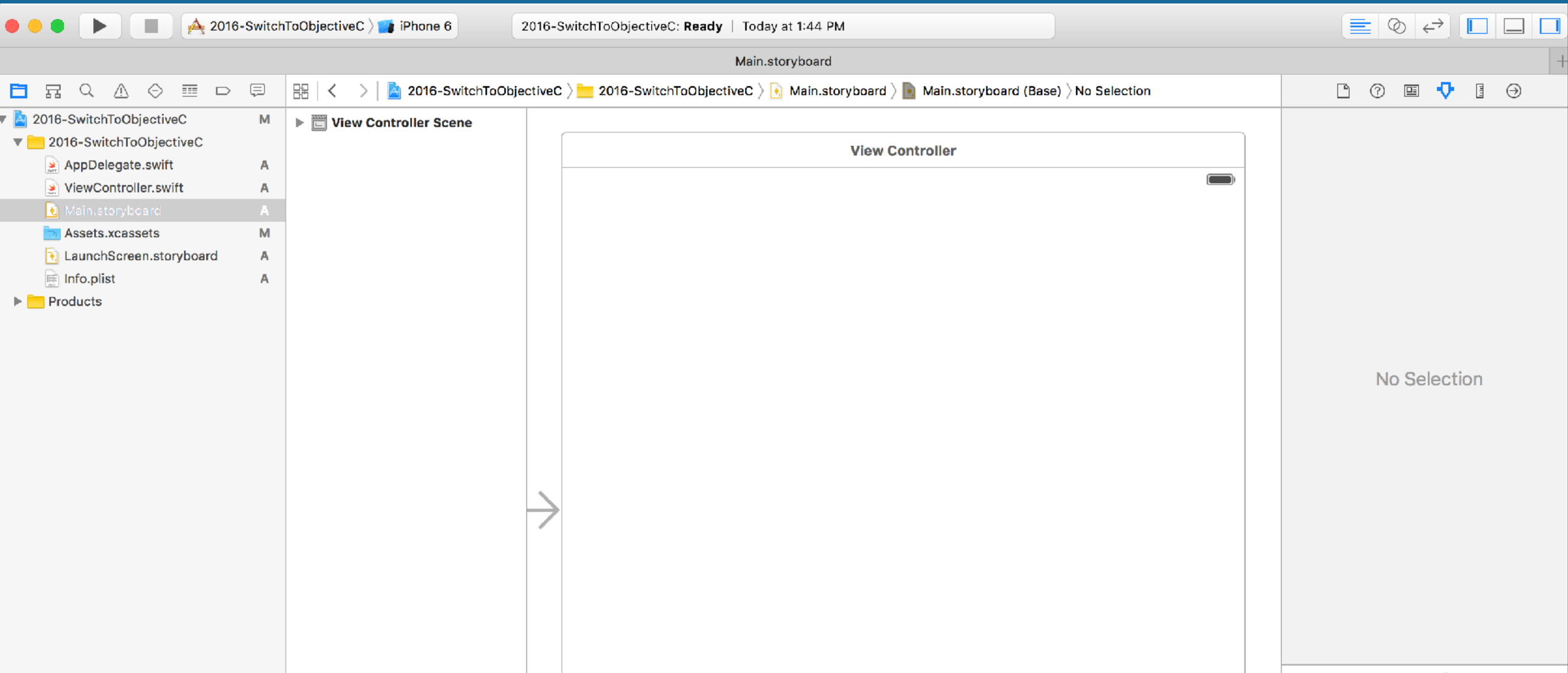
https://developer.apple.com/library/content/documentation/Swift/Conceptual/BuildingCocoaApps/MixandMatch.html

CREATE A PROJECT

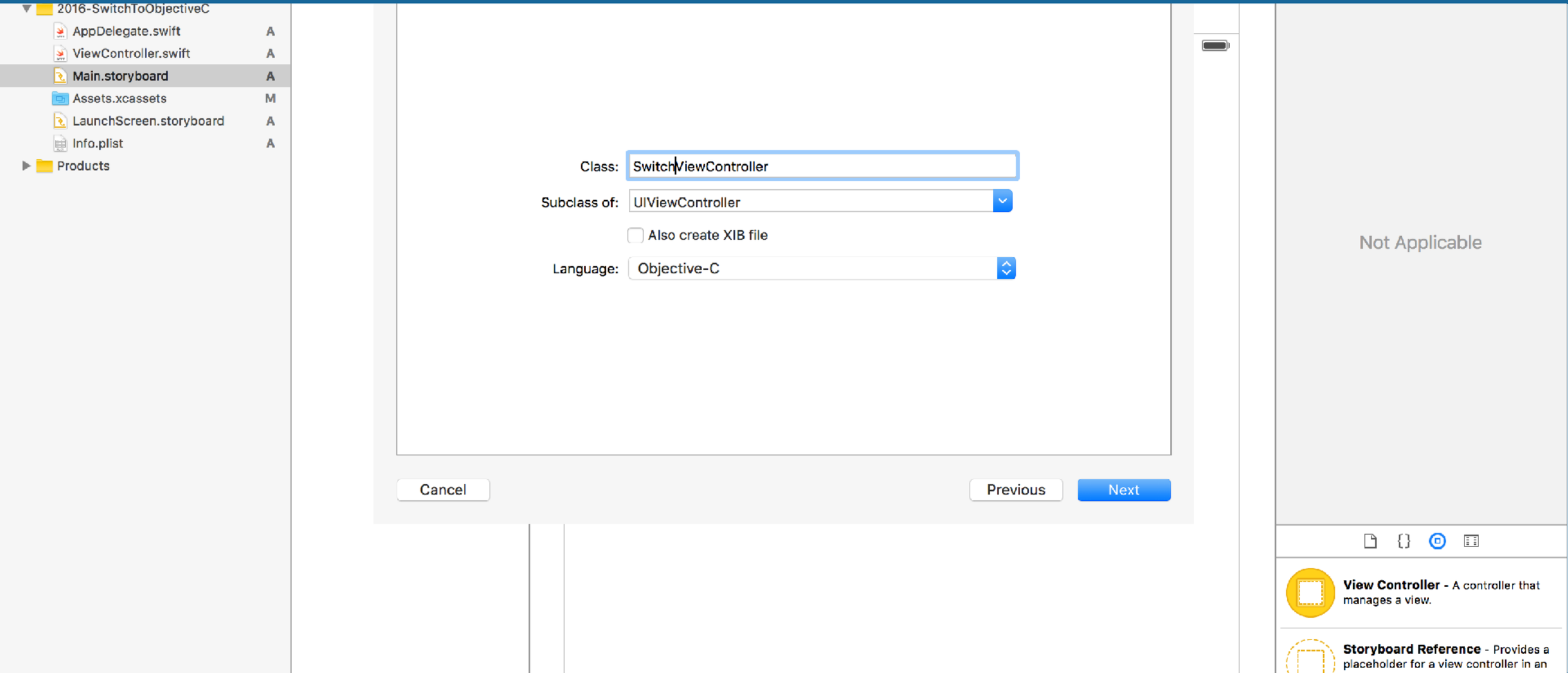


AN OBJECTIVE-C VIEW CONTROLLER

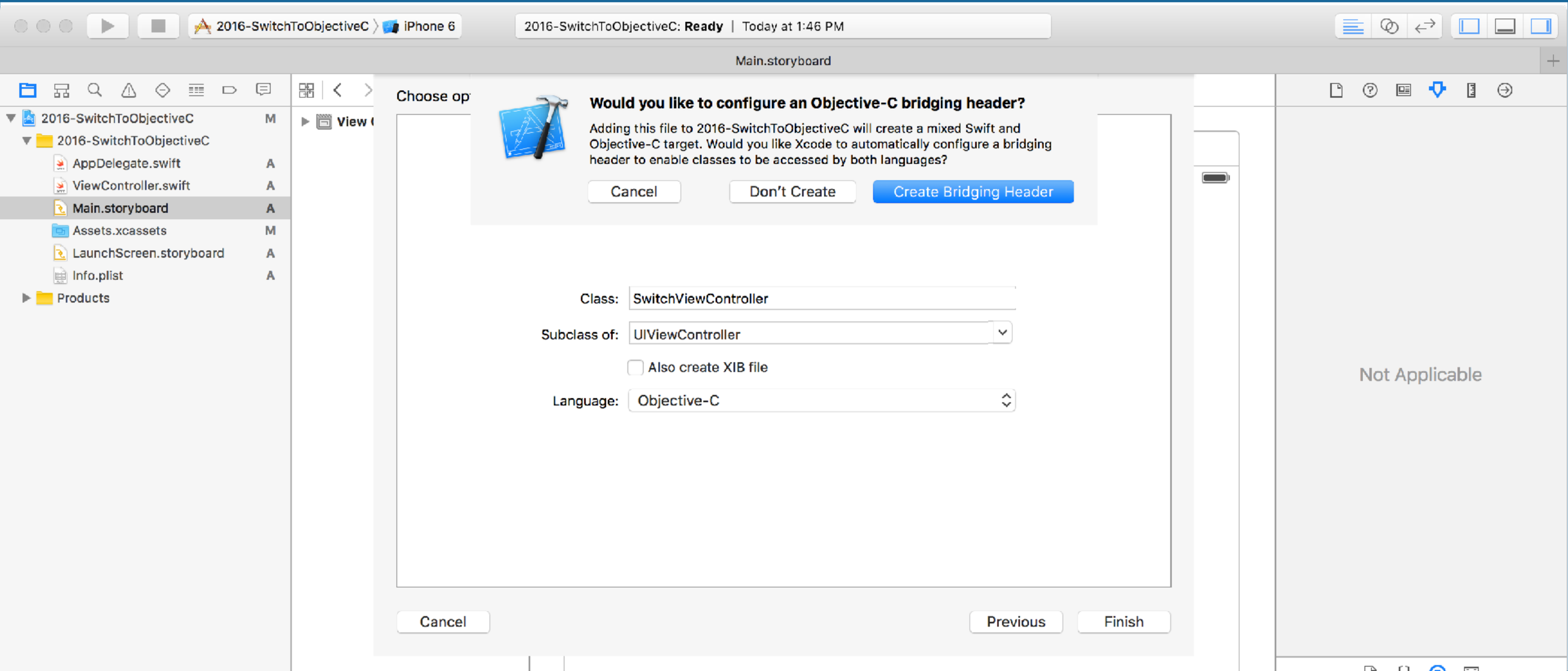
CREATE A PROJECT



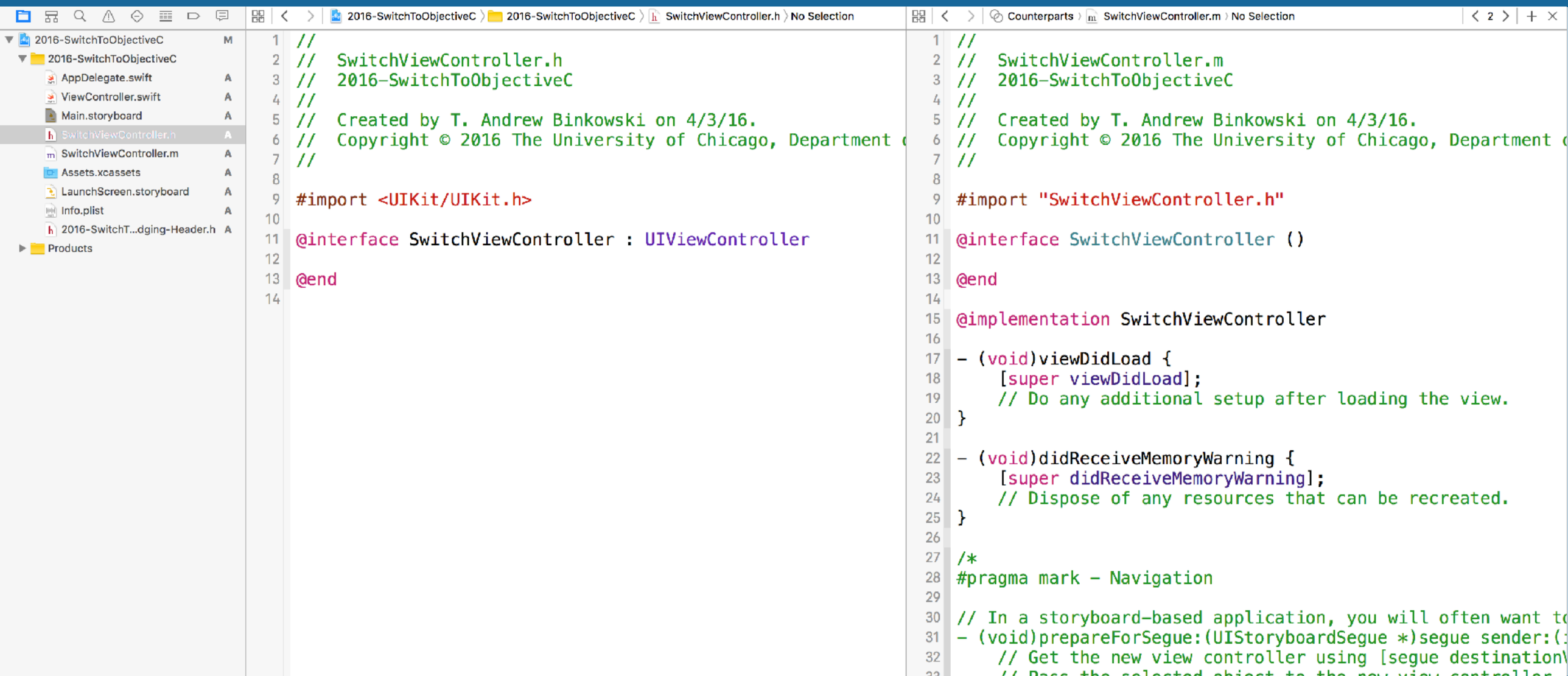
AN OBJECTIVE-C VIEW CONTROLLER



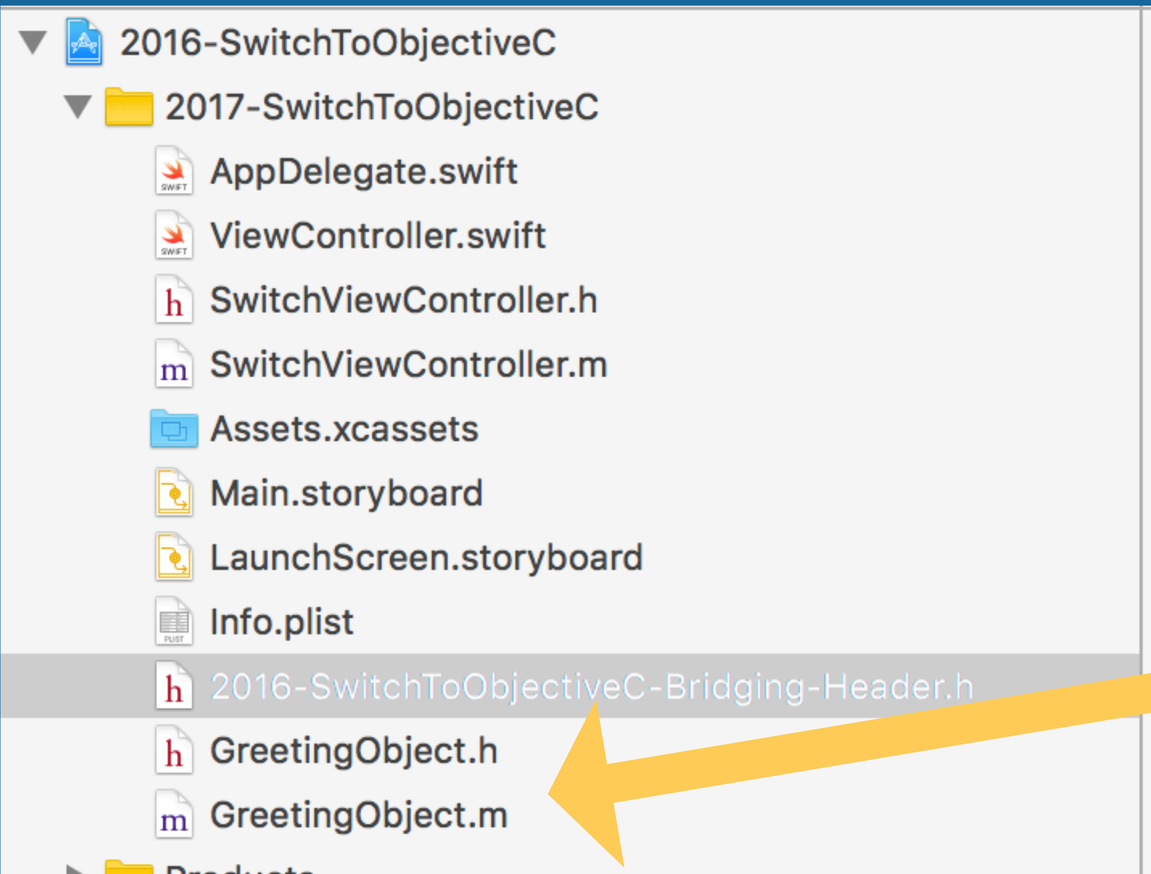
AN OBJECTIVE-C VIEW CONTROLLER



AN OBJECTIVE-C VIEW CONTROLLER



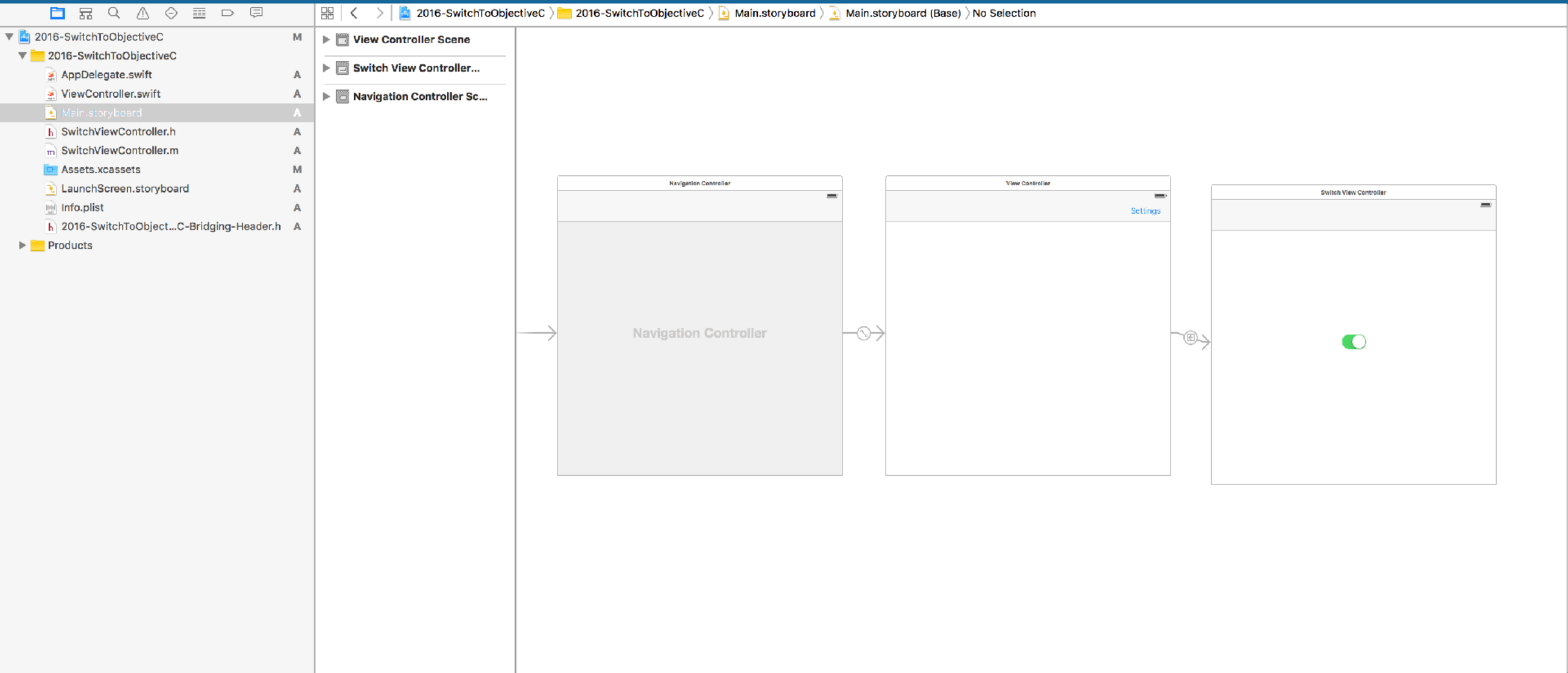
AN OBJECTIVE-C VIEW CONTROLLER




```
//
//  Use this file to import your target's public headers that
//

#import "GreetingObject.h"
```

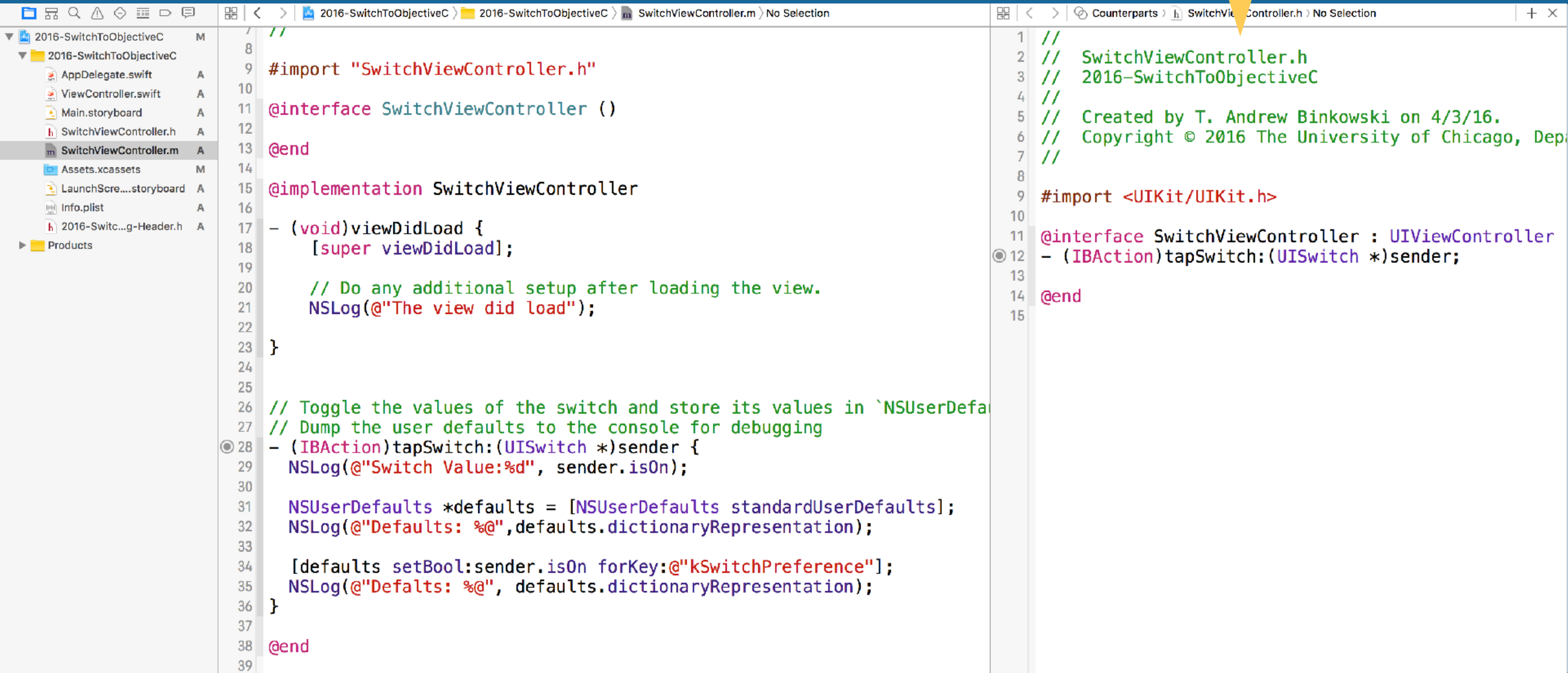
IMPORT THE OBJECTIVE-C HEADER INTO A SWIFT PROJECT FOR CUSTOM CLASSES

AN OBJECTIVE-C VIEW CONTROLLER



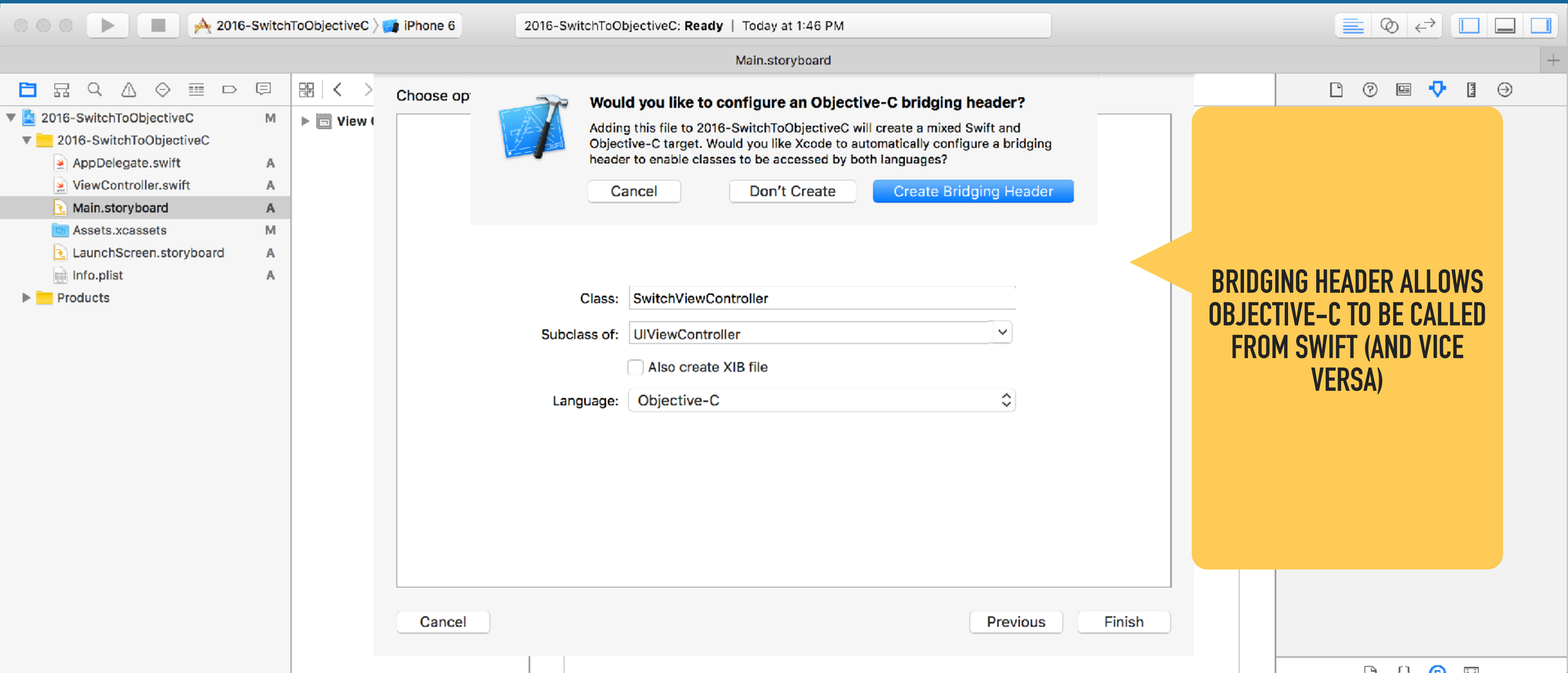
AN OBJECTIVE-C VIEW CONTROLLER

IBOUTLETS WILL AUTOMATICALLY CREATE METHOD DEFINITIONS DURING DRAG/DROP

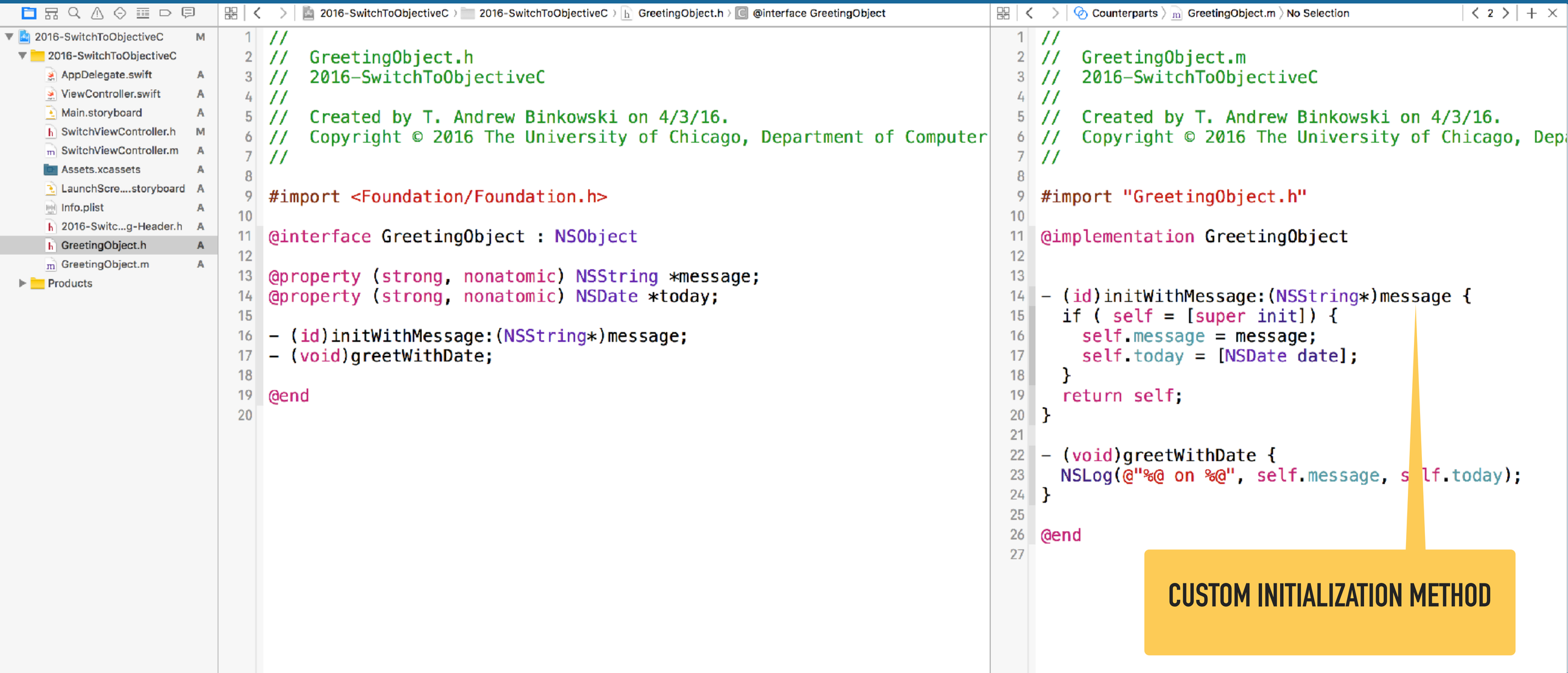


USING CUSTOM CLASSES

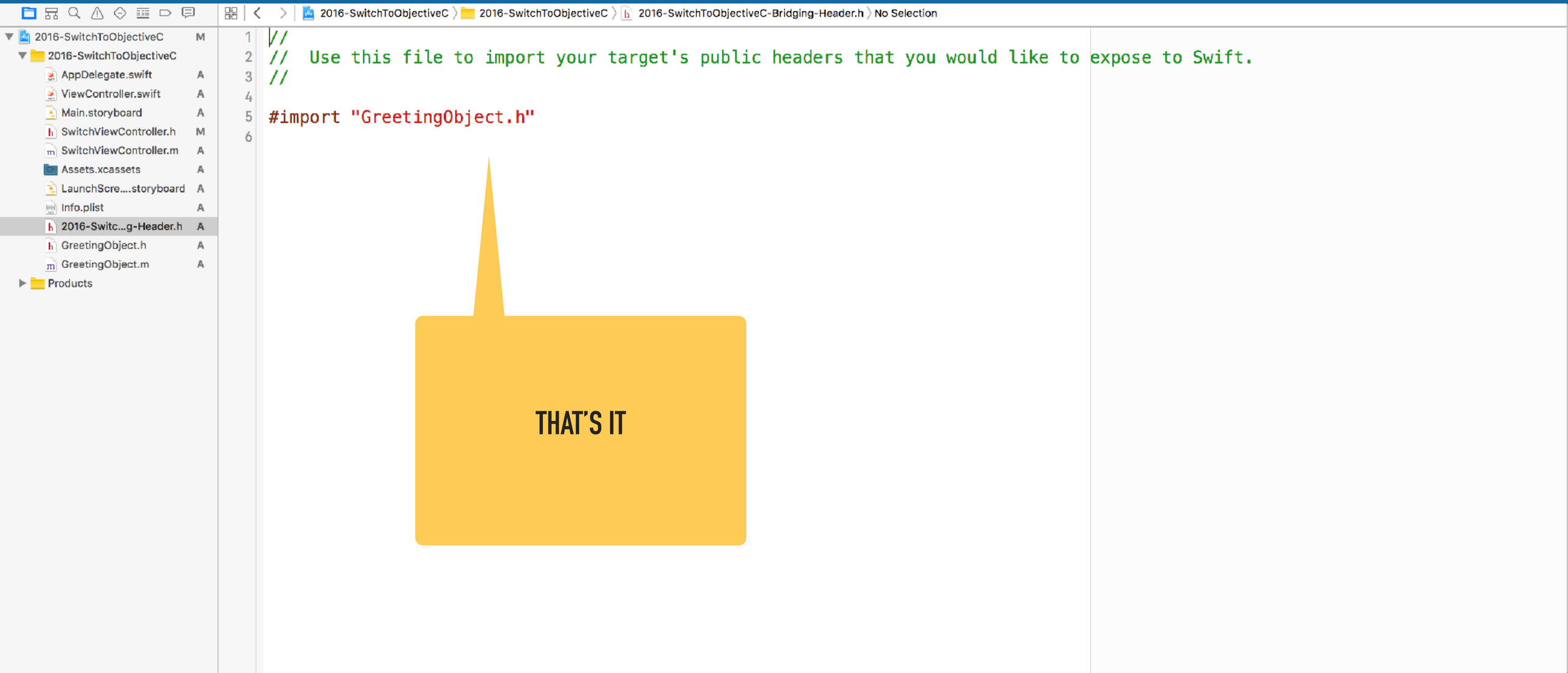
CREATE A PROJECT



CREATE A PROJECT



CREATE A PROJECT



CREATE A PROJECT

THE BRIDGING HEADER CONVERTS TO SWIFT (DOES NOT ACTUALLY GENERATE THE FILE)

2016-Swit...bjectiveC › GreetingObject.h › No Selection

```objc
//
//  GreetingObject.h
//  2016-SwitchToObjectiveC
//
//  Created by T. Andrew Binkowski on 4/3/16.
//  Copyright © 2016 The University of Chicago, Department of
    Computer Science. All rights reserved.
//

#import <Foundation/Foundation.h>

@interface GreetingObject : NSObject

@property (strong, nonatomic) NSString *message;
@property (strong, nonatomic) NSDate *today;

/// Custom initialization that sets the message and timestamp
/// - parameters message: An `NSString` that holds the message to
    display
- (id)initWithMessage:(NSString*)message;

/// Print the message and date to the console
- (void)greetWithDate;

@end
```

DECLARE CLASS METHODS AND PROPERTIES IN HEADER

Counterparts › GreetingObject.h (Interface) 2

```swift
//
//  GreetingObject.h
//  2016-SwitchToObjectiveC
//
//  Created by T. Andrew Binkowski on 4/3/16.
//  Copyright © 2016 The University of Chicago, Department of
    Computer Science. All rights reserved.
//

import Foundation

open class GreetingObject : NSObject {


    open var message: String!

    open var today: Date!


    /// Custom initialization that sets the message and timestamp
    /// - parameters message: An `NSString` that holds the messag
        display
    public init!(message: String!)


    /// Print the message and date to the console
    open func greetWithDate()
}
```

CREATE A PROJECT

```
class ViewController: UIViewController {

  //
  // MARK: - Lifecycle
  //


  override func viewDidAppear(_ animated: Bool) {
    super.viewDidAppear(animated)

    // Load up the defaults and print them the console (we should be able to see
    // that we changed the values from Objectice-C
    let defaults = UserDefaults.standard
    print("Defaults (from Swift ViewController:\n \(defaults.dictionaryRepresentation())")

    // Call our objective-c code
    let message = GreetingObject(message: "This is from Swift")
    message?.greetWithDate()

  }

}
```

```
- (id)initWithMessage:(NSString*)message;
- (void)greetWithDate;
```

CREATE A PROJECT

```swift
let d = Dog()
let numberOfDogs = d.number(ofDogs: 4)
print("Number of Dogs: \(numberOfDogs)")
```

```objc
//
//  Dog.m
//  2018-SwitchToObjectiveC
//
//  Created by T. Andrew Binkowski on 4/9/18.
//  Copyright © 2018 The University of Chicago,
    Department of Computer Science. All rights reserved.
//

#import "Dog.h"

@implementation Dog
- (int)numberOfDogs:(int)number {
  return number;
}
@end

```

```objc
//
//  Dog.h
//  2018-SwitchToObjectiveC
//
//  Created by T. Andrew Binkowski on 4/9/18.
//  Copyright © 2018 The University of Chicago,
    Department of Computer Science. All rights reserved.
//

#import <Foundation/Foundation.h>

@interface Dog : NSObject
@property (strong, nonatomic) NSString *message;

- (int)numberOfDogs:(int)number;

@end

```

CREATE A PROJECT

- https://developer.apple.com/library/content/documentation/Swift/Conceptual/BuildingCocoaApps/InteractingWithObjective-CAPIs.html#//apple_ref/doc/uid/TP40014216-CH4-ID35

```
@property (nullable) id nullableProperty;
@property (nonnull) id nonNullProperty;
@property id unannotatedProperty;
```

```
var nullableProperty: Any?
var nonNullProperty: Any
var unannotatedProperty: Any!
```

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