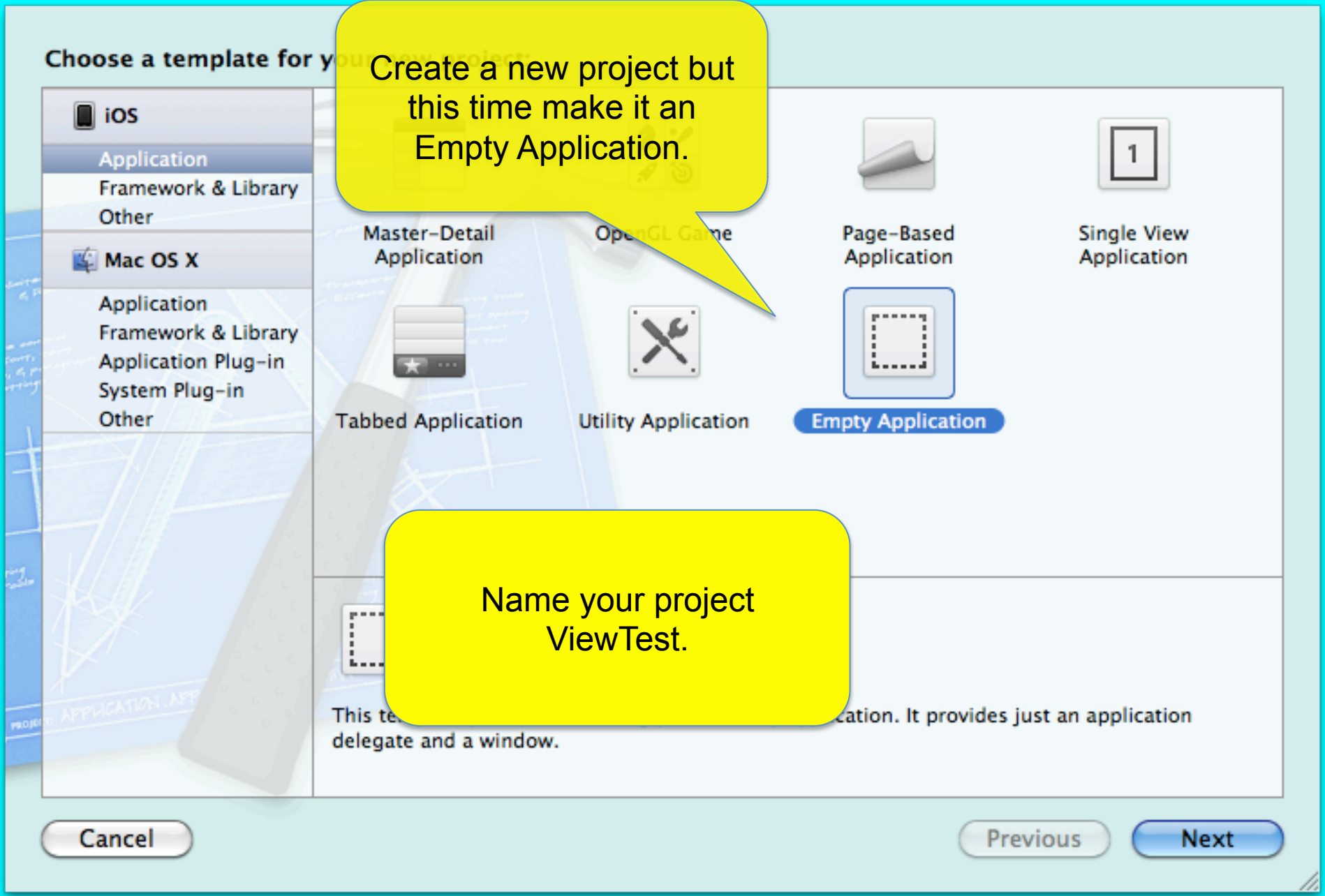
CS121 Tutorial 2

Intro to views and re-intro to buttons.

Purple bubbles give you information you'll need to know.

Yellow Bubbles tell you what to do.

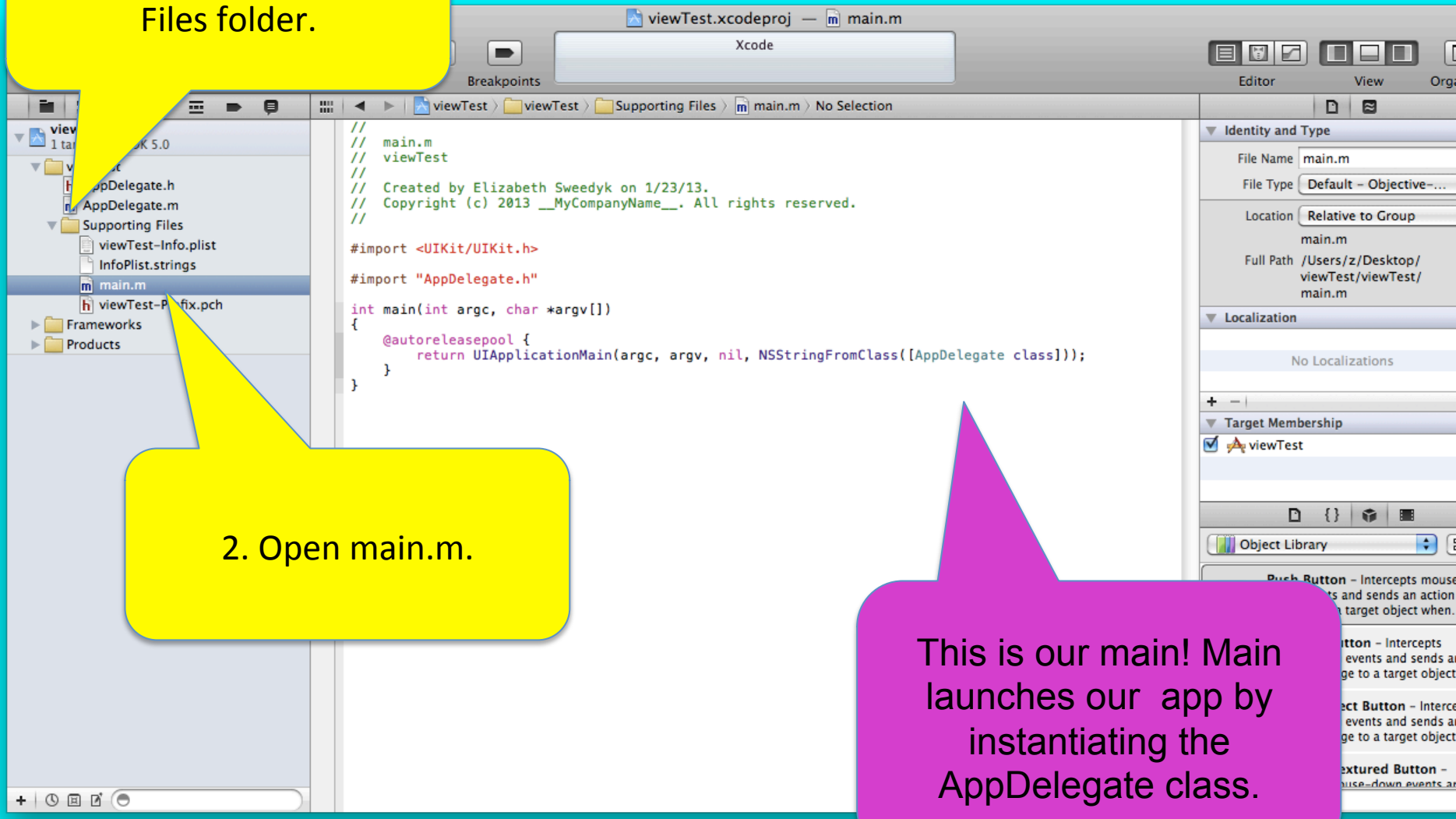
Orange bubbles tell you what you're not expected to understand yet. ☺



Create a new project but this time make it an Empty Application.

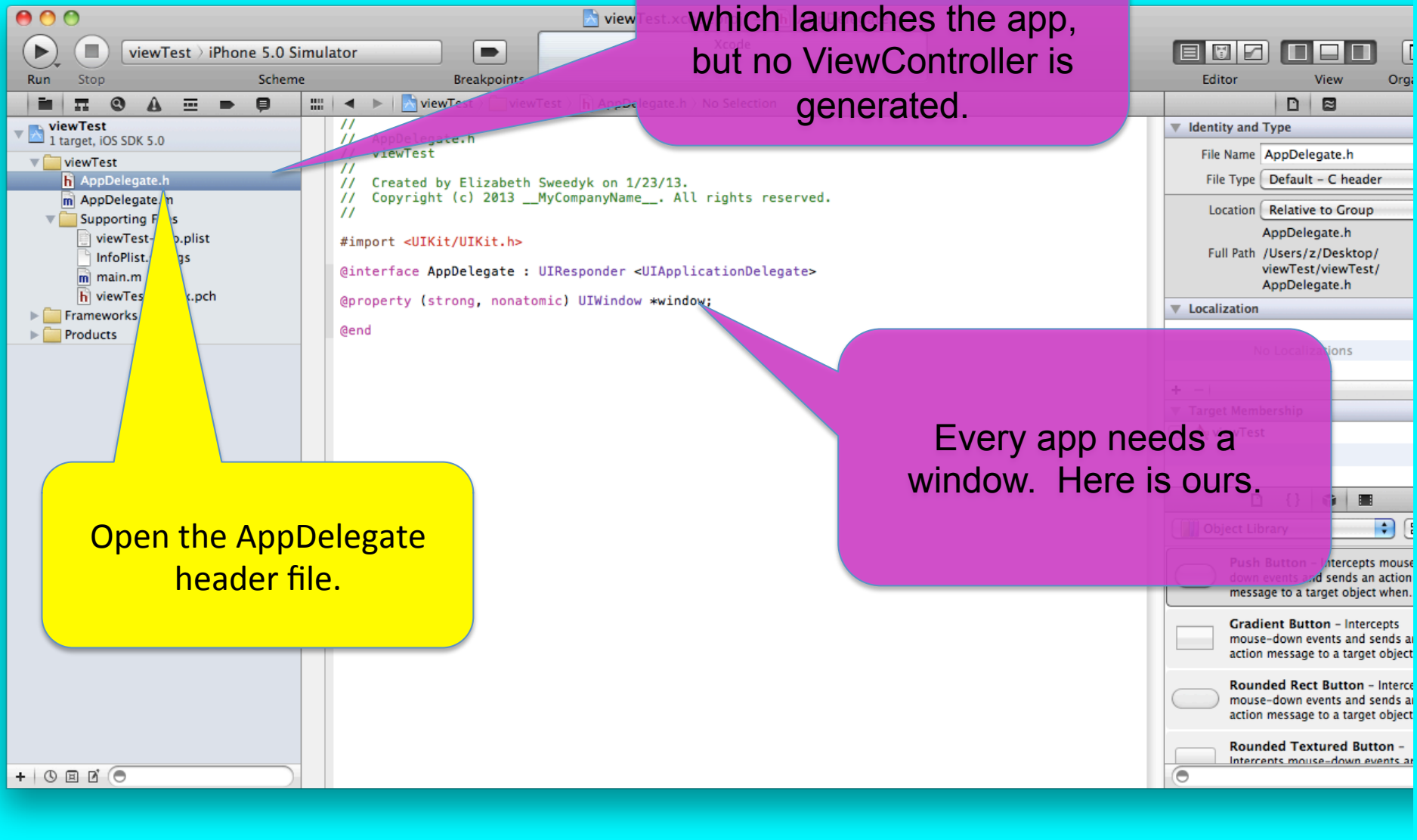
Name your project ViewTest.

1. Open the Supporting Files folder.

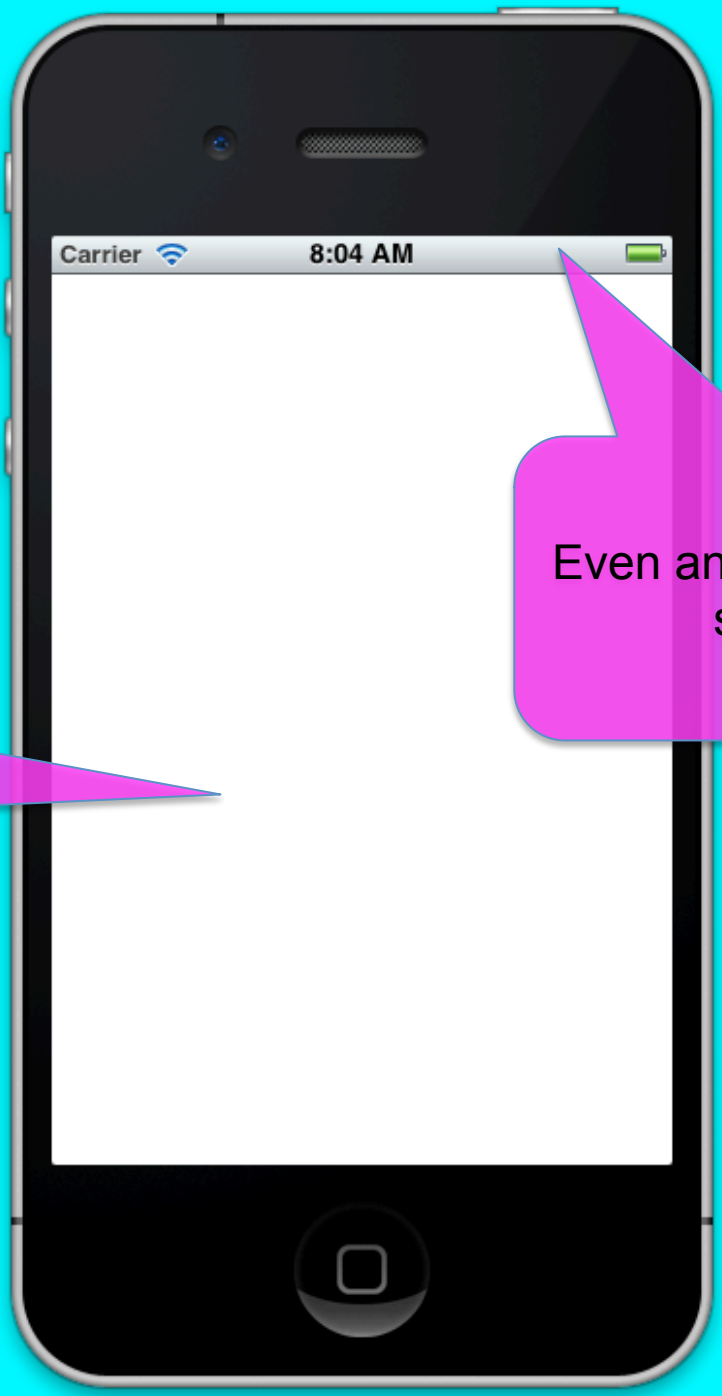


2. Open main.m.

This is our main! Main launches our app by instantiating the AppDelegate class.

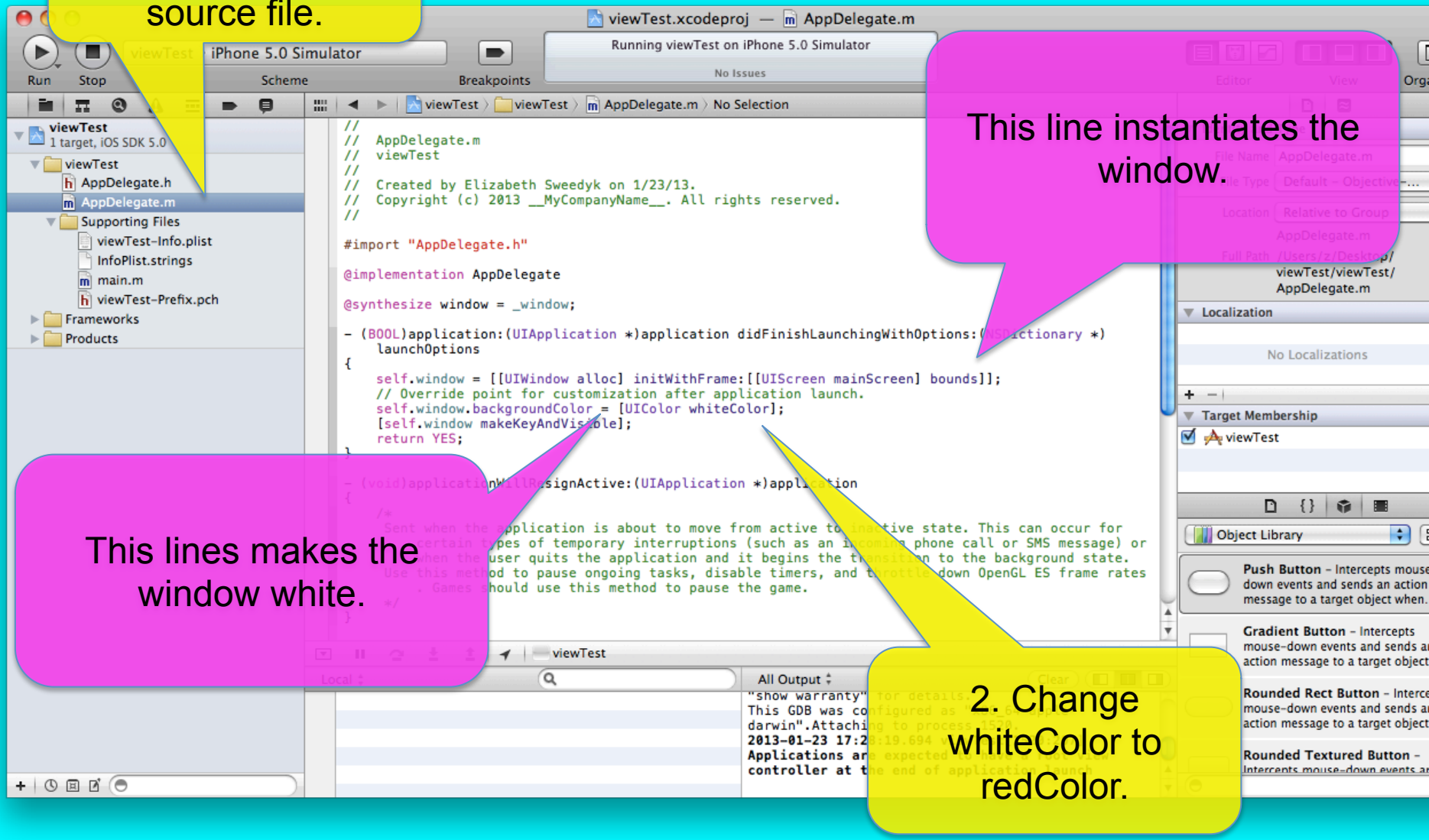

An empty application still has an AppDelegate, which launches the app, but no ViewController is generated.
Open the AppDelegate header file.
Every app needs a window. Here is ours.
viewTest
iPhone 5.0 Simulator
Run
Stop
Scheme
Breakpoints
Editor
View
viewTest
1 target, iOS SDK 5.0
AppDelegate.h
Frameworks
Products
//
// AppDelegate.h
// viewTest
//
// Created by Elizabeth Sweedyk on 1/23/13.
// Copyright (c) 2013 __MyCompanyName__. All rights reserved.
//
#import <UIKit/UIKit.h>
@interface AppDelegate : UIResponder <UIApplicationDelegate>
@property (strong, nonatomic) UIWindow *window;
@end
Identity and Type
File Name AppDelegate.h
File Type Default – C header
Location Relative to Group
AppDelegate.h
Full Path /Users/z/Desktop/viewTest/viewTest/AppDelegate.h
Localization
Object Library
Gradient Button – Intercepts mouse-down events and sends an action message to a target object
Rounded Rect Button – Intercepts mouse-down events and sends an action message to a target object
Rounded Textured Button –

Run the app and check out the simulator.



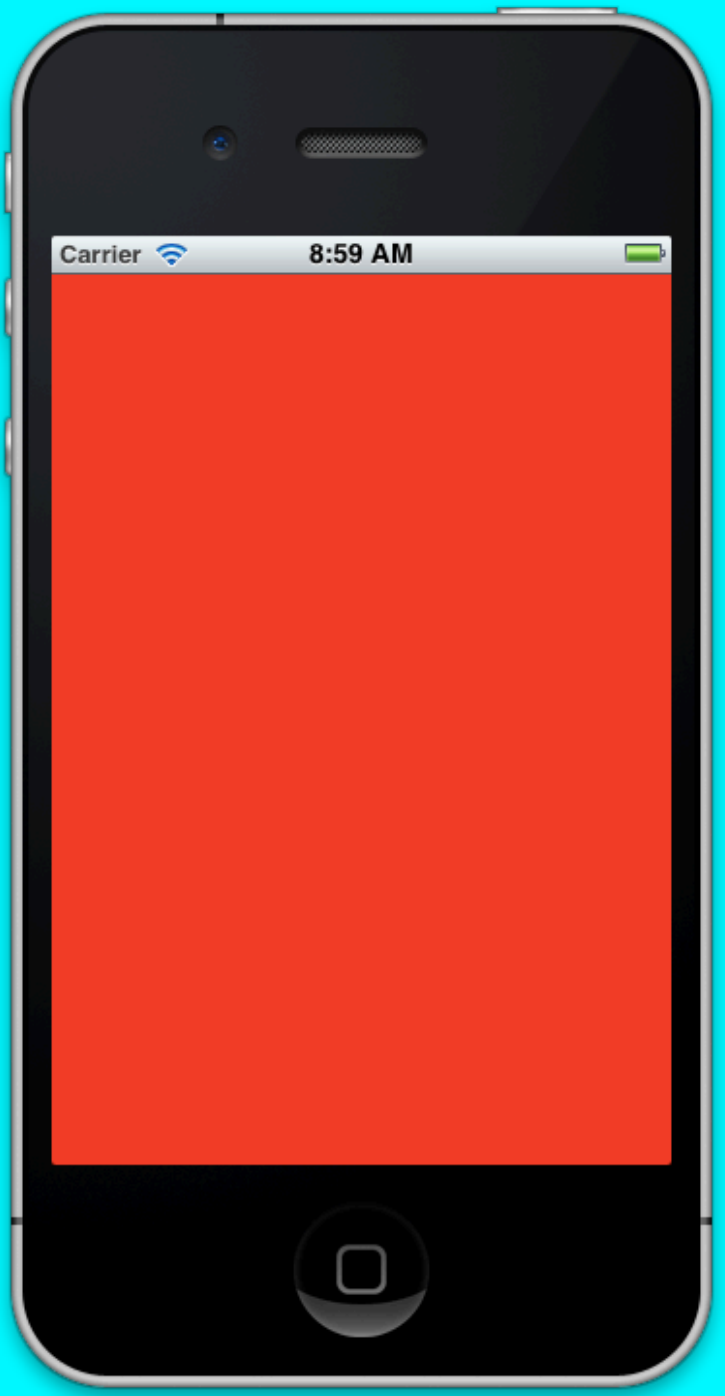
The white region is our window.

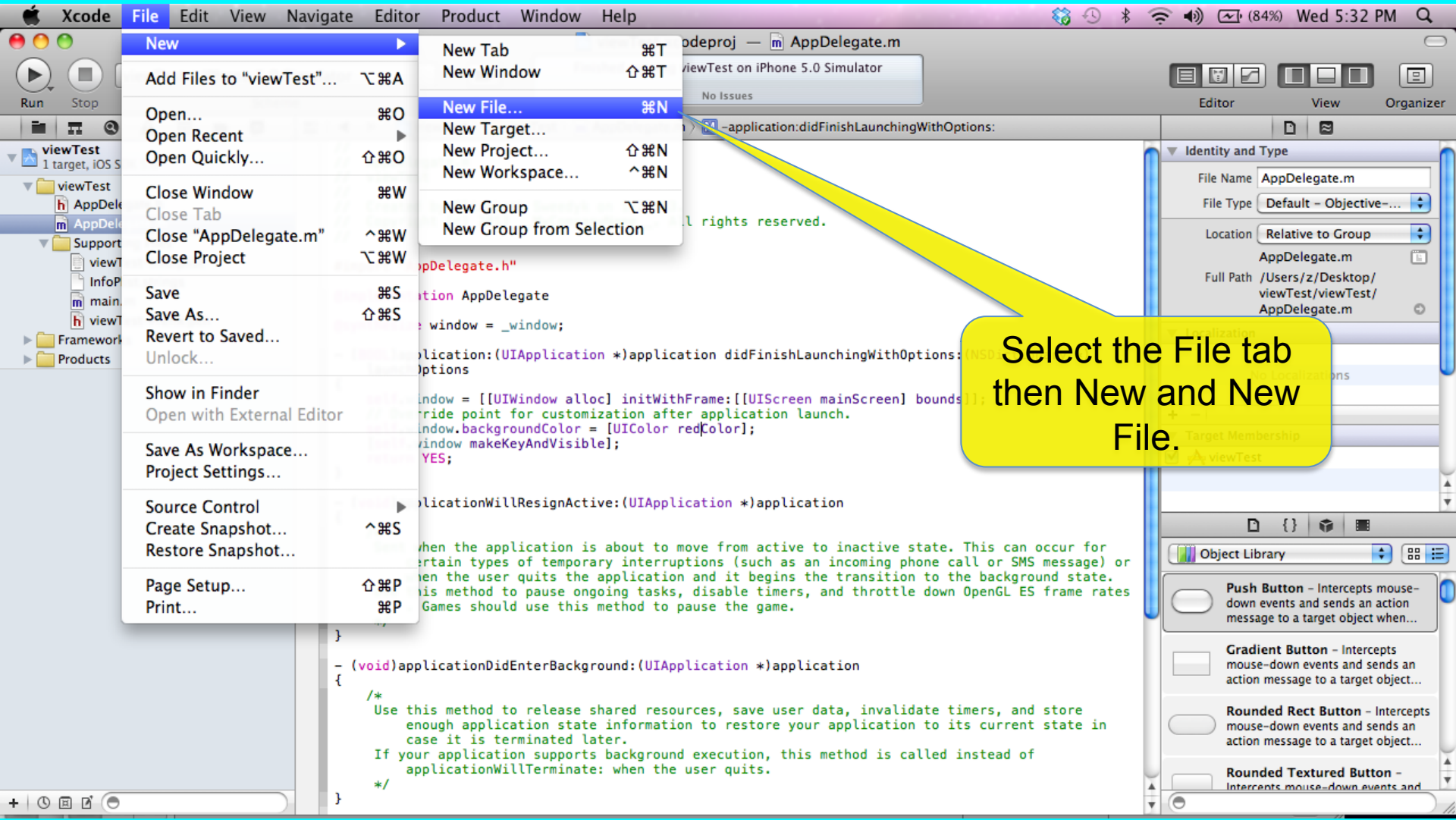
Even an empty app has a status bar.

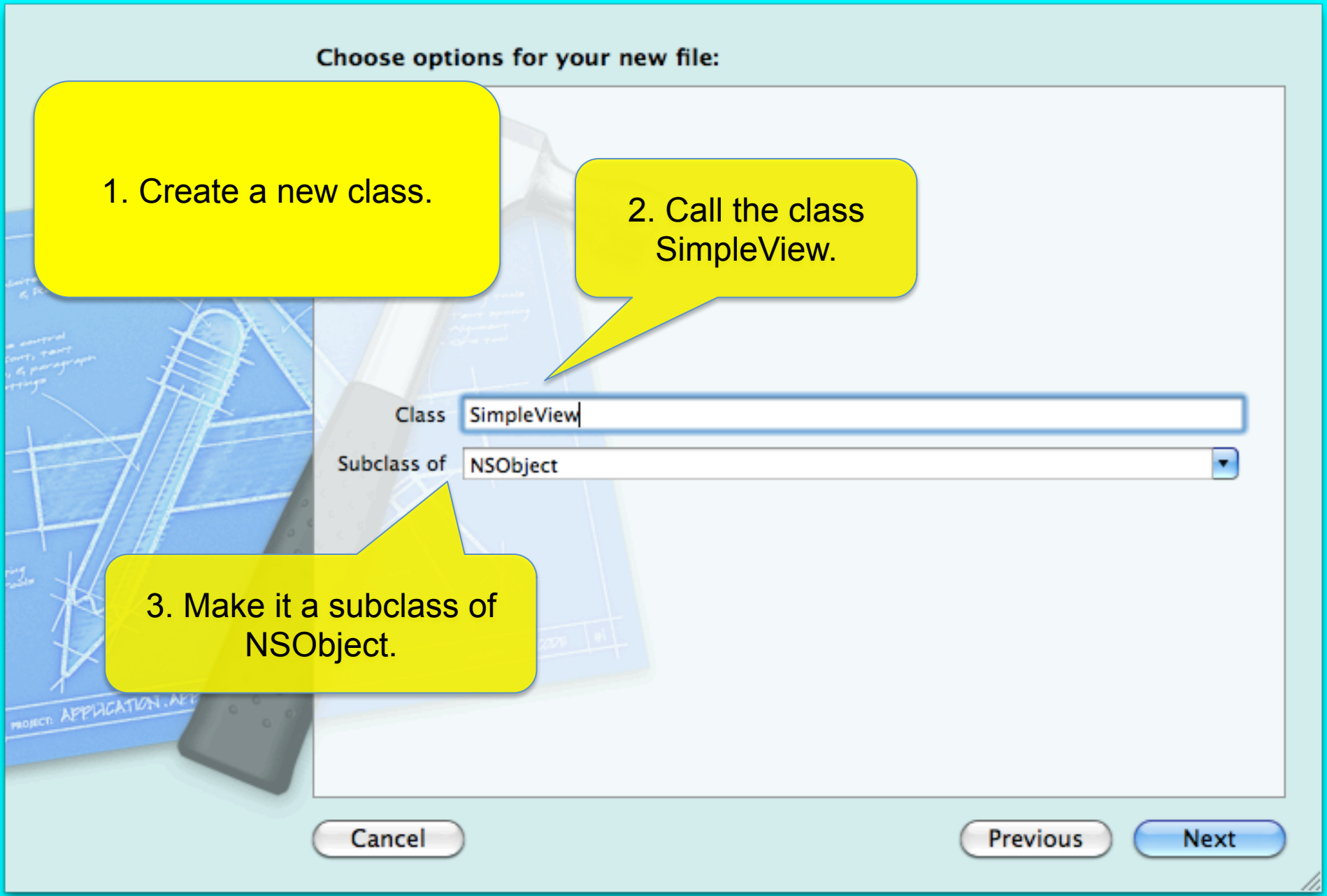

1. Open the AppDelegate source file.
This line instantiates the window.
This lines makes the window white.
2. Change whiteColor to redColor.
viewTest.xcodeproj — AppDelegate.m
Run
Stop
Scheme
iPhone 5.0 Simulator
Breakpoints
Running viewTest on iPhone 5.0 Simulator
No Issues
viewTest
1 target, iOS SDK 5.0
AppDelegate.h
AppDelegate.m
Supporting Files
viewTest-Info.plist
InfoPlist.strings
main.m
viewTest-Prefix.pch
Frameworks
Products
//
// AppDelegate.m
// viewTest
//
// Created by Elizabeth Sweedyk on 1/23/13.
// Copyright (c) 2013 __MyCompanyName__. All rights reserved.
//
#import "AppDelegate.h"
@implementation AppDelegate
@synthesize window = _window;
- (BOOL)application:(UIApplication *)application didFinishLaunchingWithOptions:
launchOptions
{
self.window = [[UIWindow alloc] initWithFrame:[[UIScreen mainScreen] bounds]];
// Override point for customization after application launch.
self.window.backgroundColor = [UIColor whiteColor];
[self.window makeKeyAndVisible];
return YES;
}
Localization
No Localizations
Target Membership
viewTest
Object Library
Push Button - Intercepts mouse
Gradient Button - Intercepts
Rounded Rect Button - Interce
Rounded Textured Button -

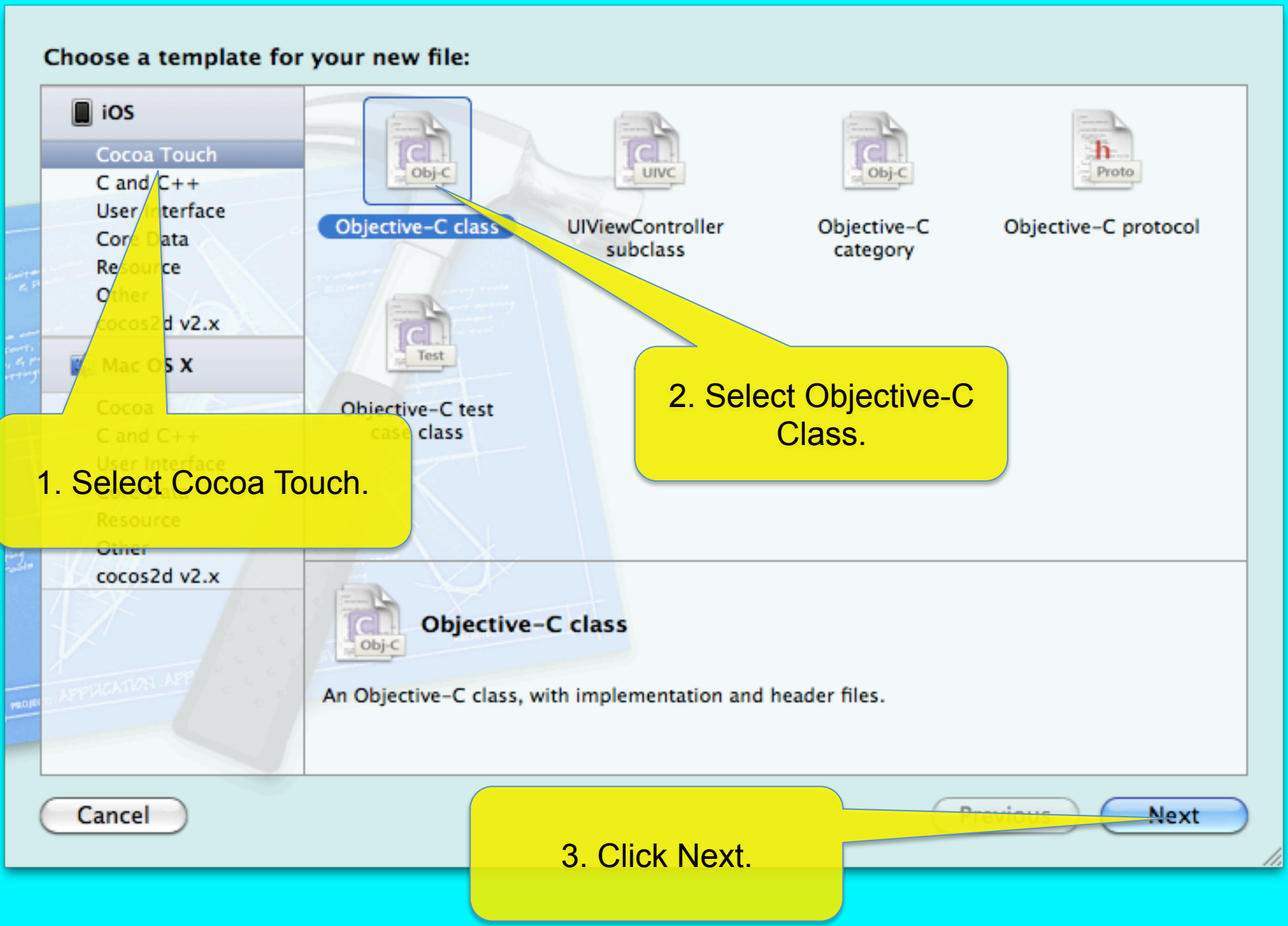
Run the app and check out the simulator.

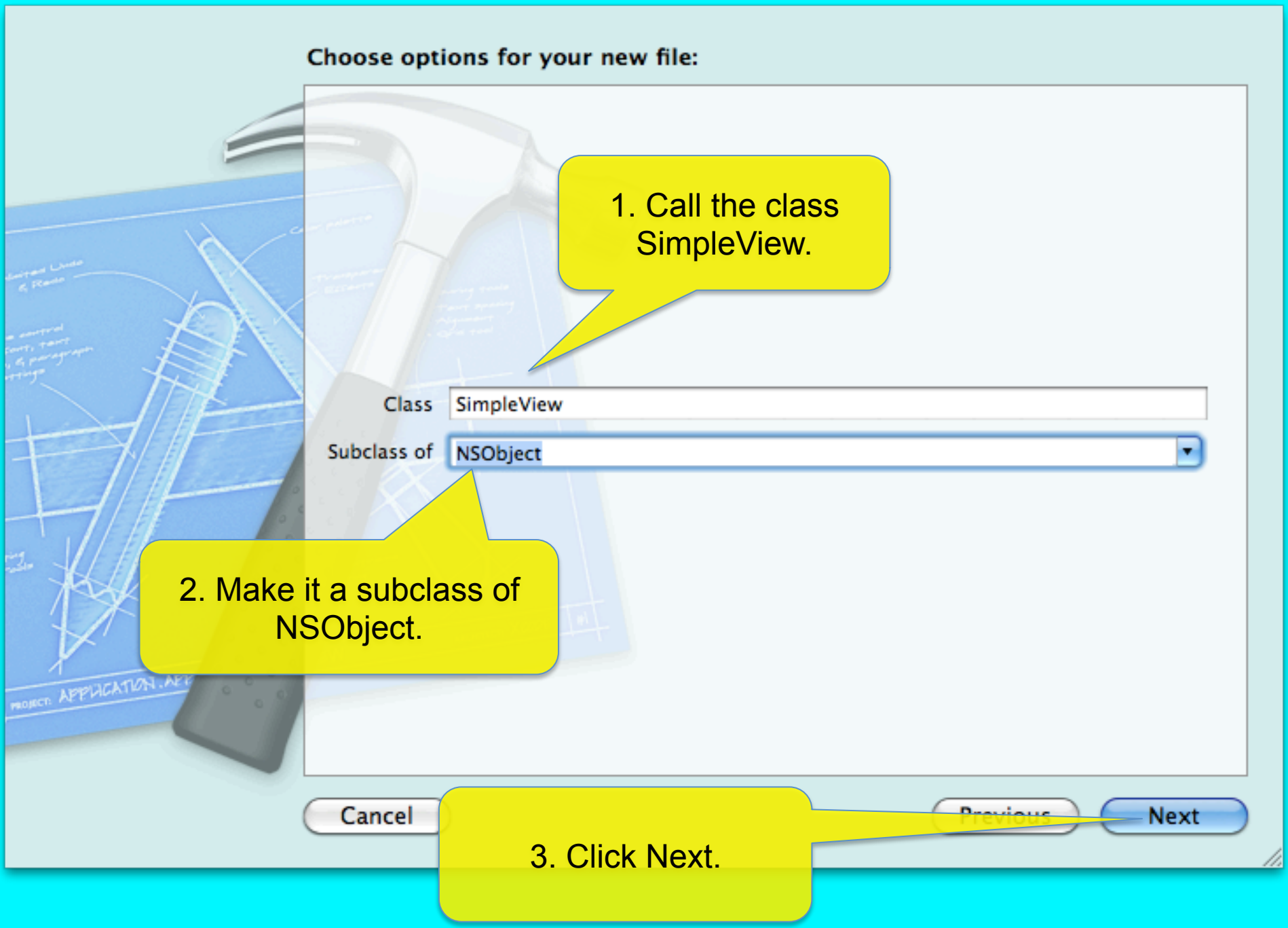
Now our window is red.



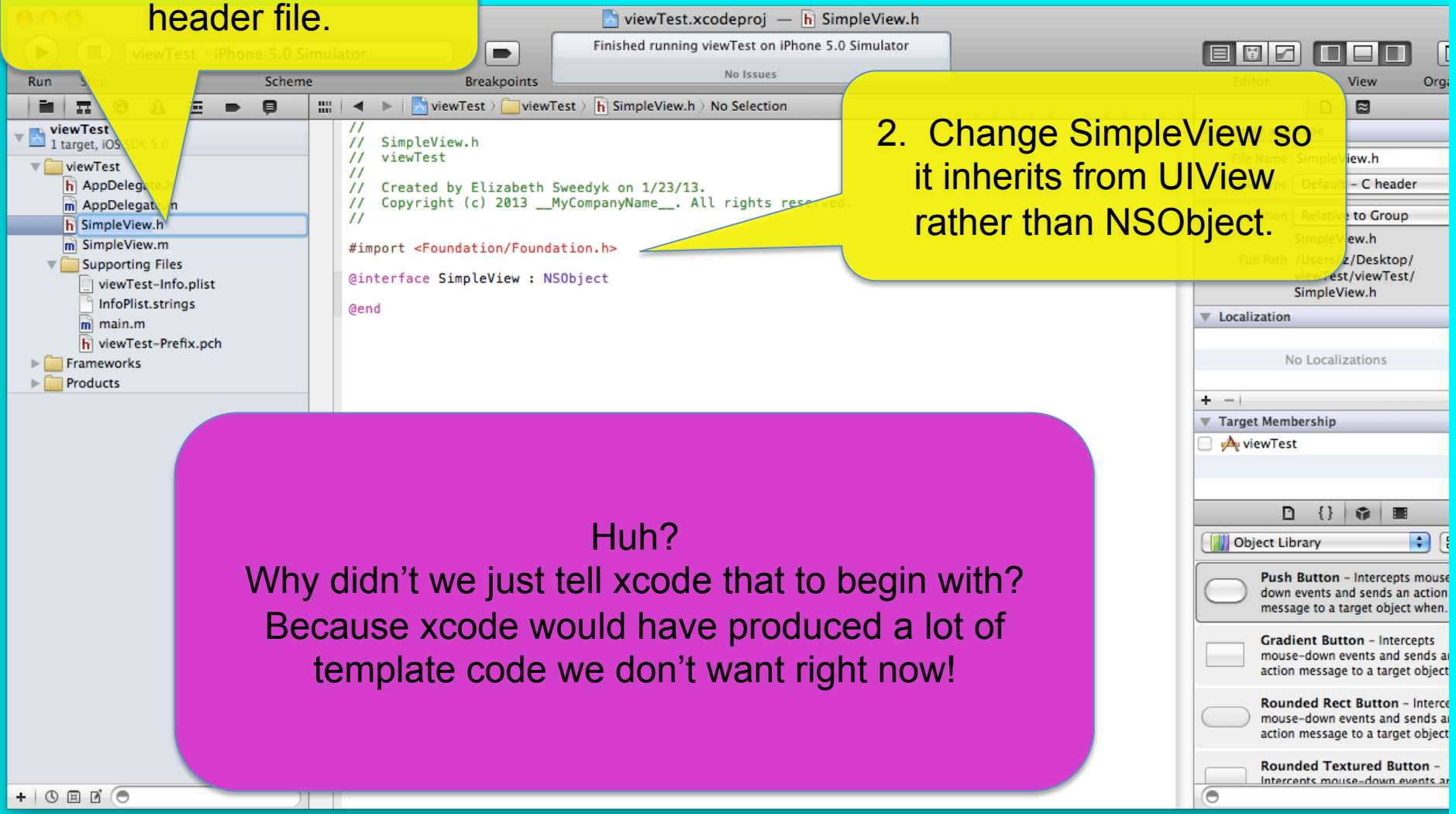

Xcode File Edit View Navigate Editor Product Window Help
New
Add Files to "viewTest"... ⌥⌘A
Open... ⌘O
Open Recent
Open Quickly... ⇧⌘O
Close Window ⌘W
Close Tab
Close "AppDelegate.m" ^⌘W
Close Project ⌥⌘W
Save ⌘S
Save As... ⇧⌘S
Revert to Saved...
Unlock...
Show in Finder
Open with External Editor
Save As Workspace...
Project Settings...
Source Control
Create Snapshot... ^⌘S
Restore Snapshot...
Page Setup... ⇧⌘P
Print... ⌘P
New Tab ⌘T
New Window ⇧⌘T
New File... ⌘N
New Target...
New Project... ⇧⌘N
New Workspace... ^⌘N
New Group ⌥⌘N
New Group from Selection
Select the File tab then New and New File.


Choose options for your new file:
1. Create a new class.
2. Call the class SimpleView.
Class
SimpleView
Subclass of
NSObject
3. Make it a subclass of NSObject.
Cancel
Previous
Next


Choose a template for your new file:
iOS
Cocoa Touch
C and C++
User Interface
Core Data
Resource
Other
cocos2d v2.x
Mac OS X
Cocoa
C and C++
User Interface
Core Data
Resource
Other
cocos2d v2.x
Objective-C class
UIViewController subclass
Objective-C category
Objective-C protocol
Objective-C test case class
1. Select Cocoa Touch.
2. Select Objective-C Class.
Objective-C class
An Objective-C class, with implementation and header files.
Cancel
Previous
Next
3. Click Next.

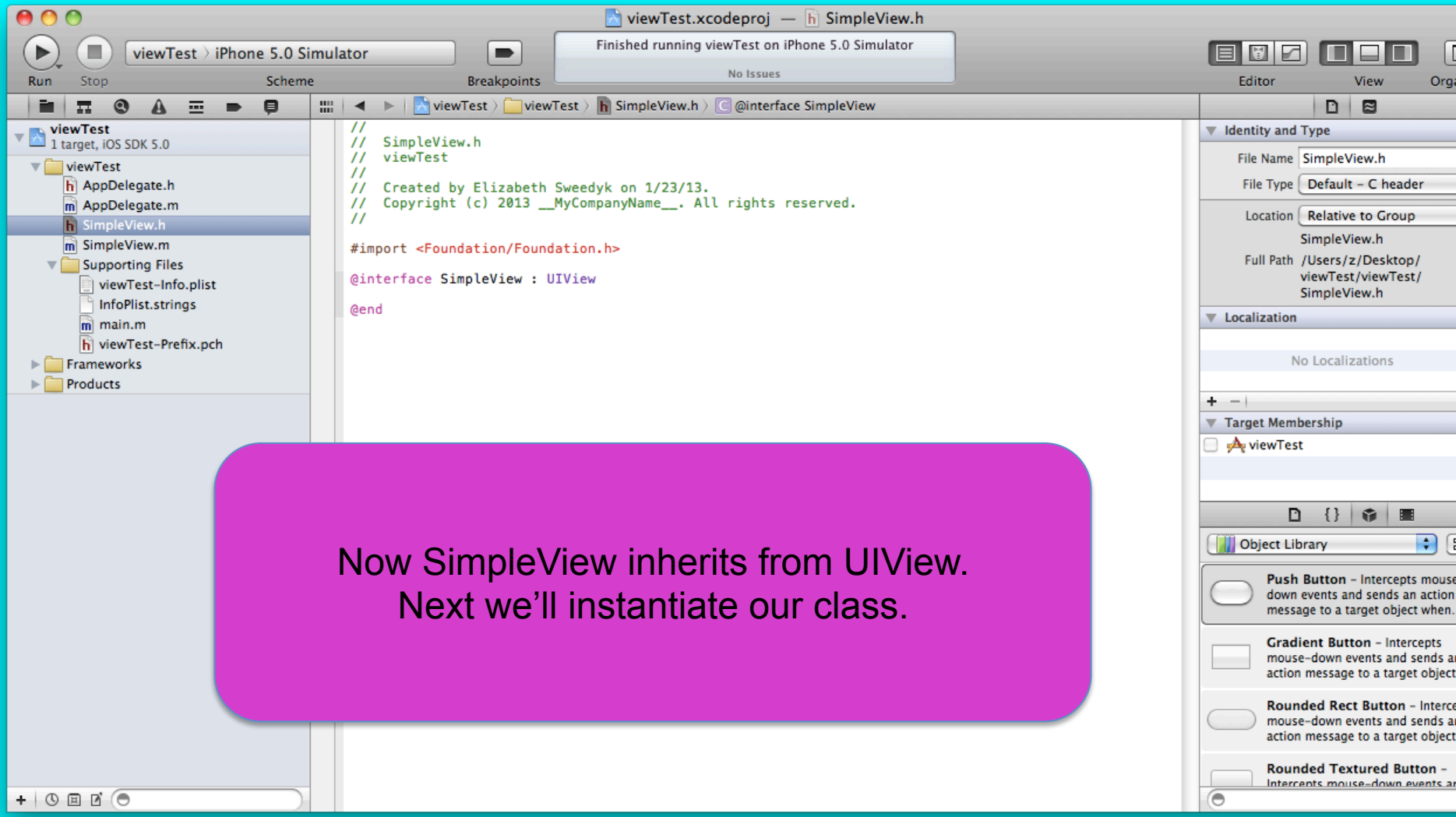

Choose options for your new file:
1. Call the class SimpleView.
Class
SimpleView
Subclass of
NSObject
2. Make it a subclass of NSObject.
Cancel
Previous
Next
3. Click Next.

Open the SimpleView header file.



2. Change SimpleView so it inherits from UIView rather than NSObject.

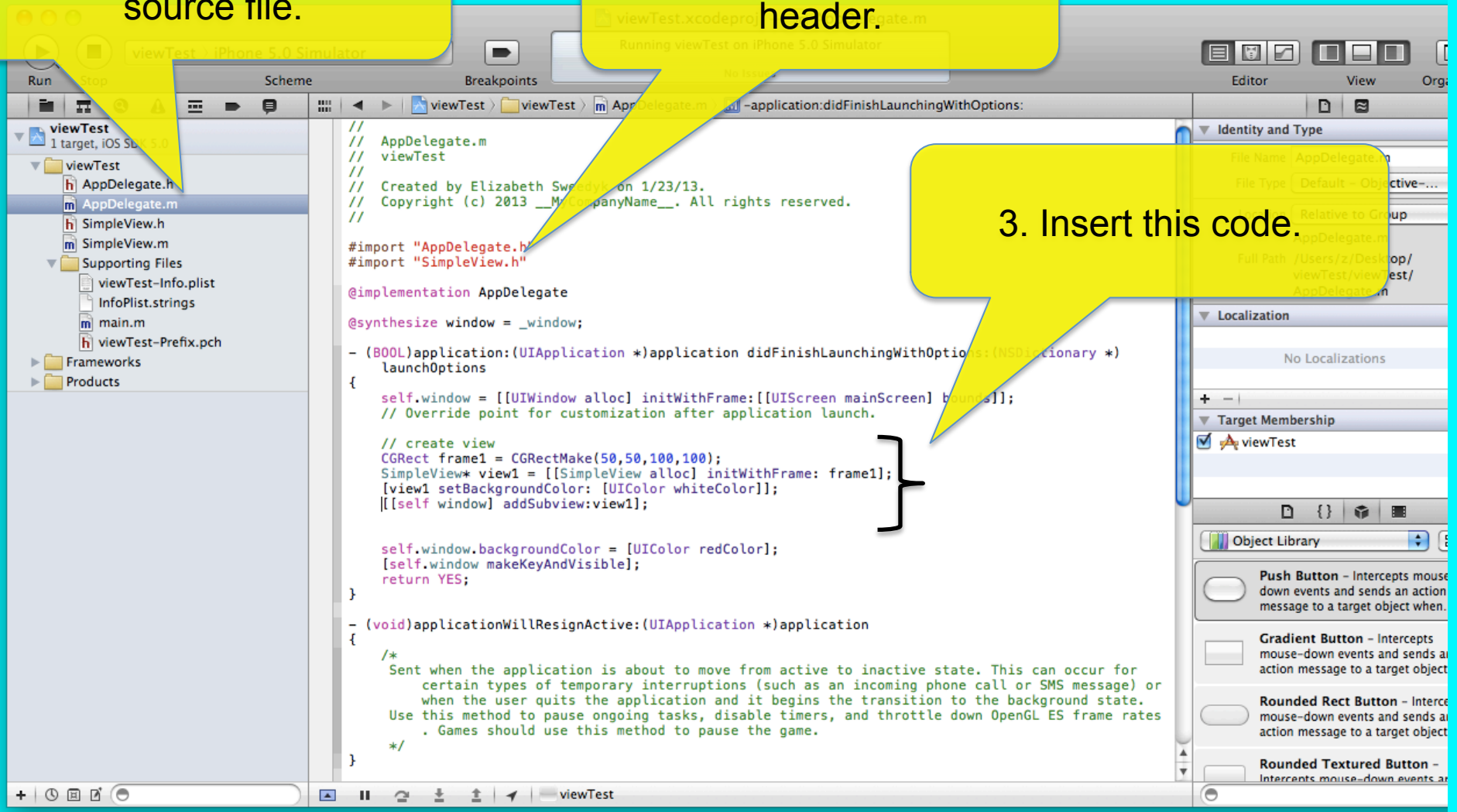
Huh?
Why didn't we just tell xcode that to begin with?
Because xcode would have produced a lot of template code we don't want right now!


viewTest.xcodeproj — SimpleView.h
Run
Stop
viewTest 〉 iPhone 5.0 Simulator
Scheme
Breakpoints
Finished running viewTest on iPhone 5.0 Simulator
No Issues
Editor
View
viewTest 〉 viewTest 〉 SimpleView.h 〉 @interface SimpleView
viewTest
1 target, iOS SDK 5.0
viewTest
AppDelegate.h
AppDelegate.m
SimpleView.h
SimpleView.m
Supporting Files
viewTest-Info.plist
InfoPlist.strings
main.m
viewTest-Prefix.pch
Frameworks
Products
//
// SimpleView.h
// viewTest
//
// Created by Elizabeth Sweedyk on 1/23/13.
// Copyright (c) 2013 __MyCompanyName__. All rights reserved.
//
#import <Foundation/Foundation.h>
@interface SimpleView : UIView
@end
Identity and Type
File Name SimpleView.h
File Type Default - C header
Location Relative to Group
SimpleView.h
Full Path /Users/z/Desktop/viewTest/viewTest/SimpleView.h
Localization
No Localizations
Target Membership
viewTest
Object Library
Push Button - Intercepts mouse down events and sends an action message to a target object when.
Gradient Button - Intercepts mouse-down events and sends a action message to a target object
Rounded Rect Button - Interce mouse-down events and sends a action message to a target object
Rounded Textured Button -
Now SimpleView inherits from UIView.
Next we'll instantiate our class.

1. Open the AppDelegate source file.

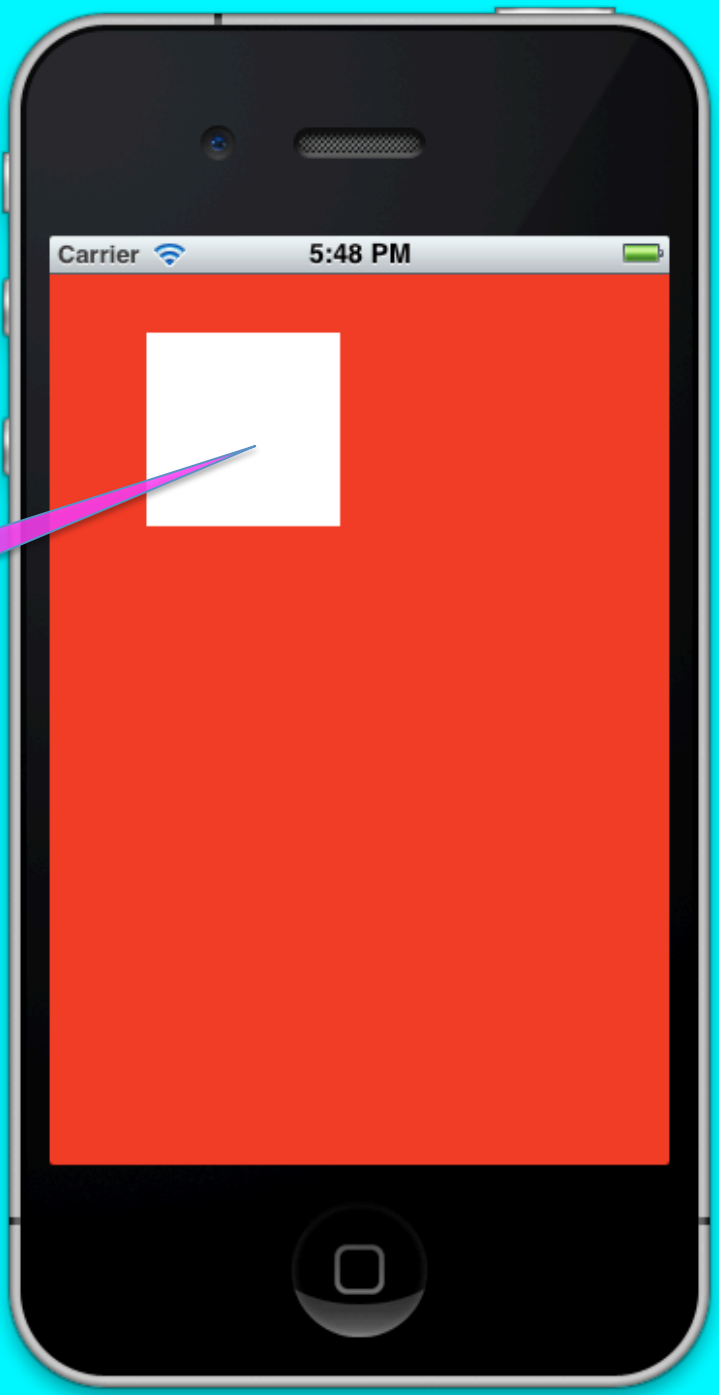
2. Import our class header.

3. Insert this code.



Run the app.

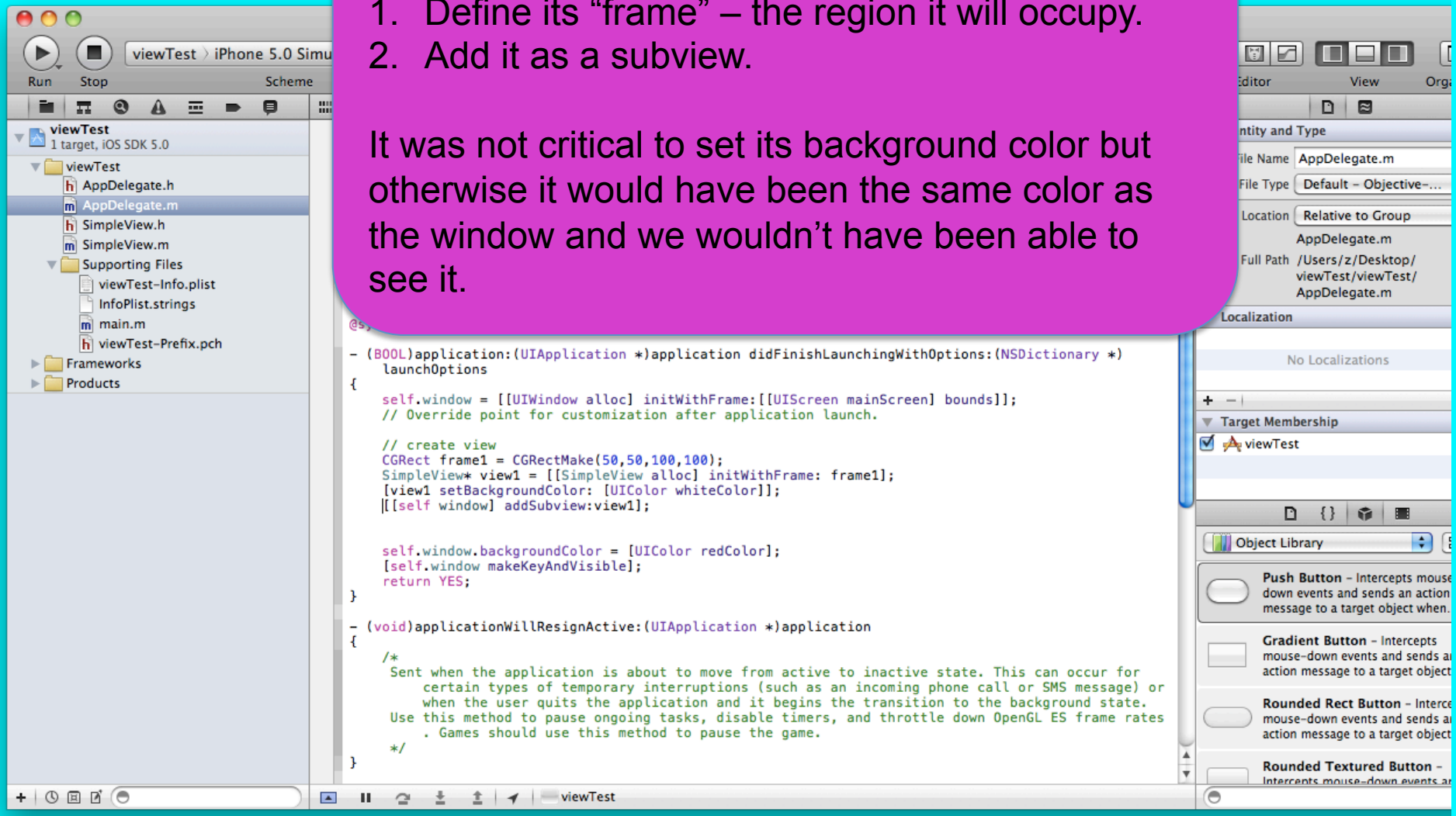
This is our new view.



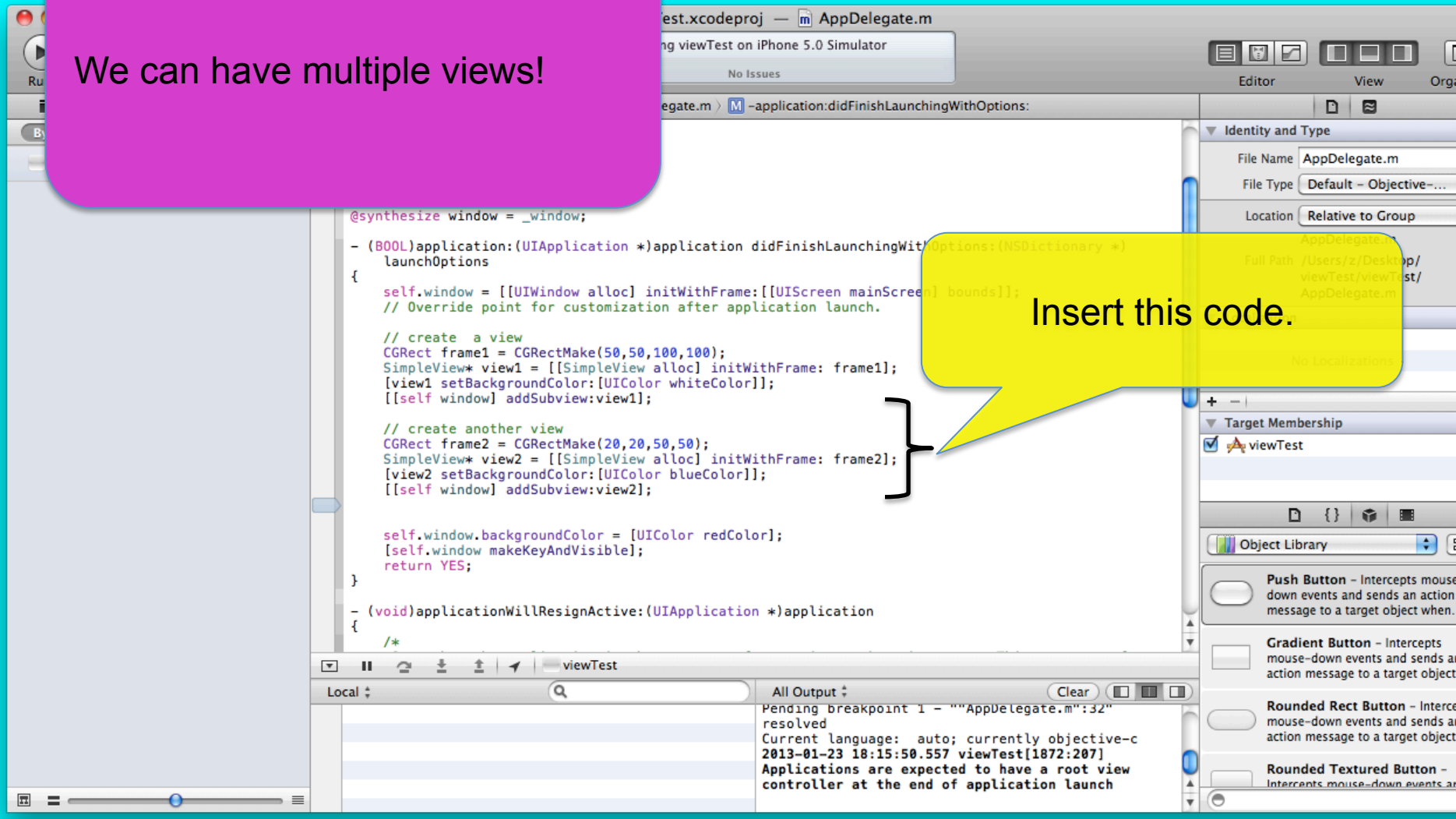
A view is like a subwindow. The key steps to creating a view are to:

1. Define its “frame” – the region it will occupy.
2. Add it as a subview.

It was not critical to set its background color but otherwise it would have been the same color as the window and we wouldn’t have been able to see it.

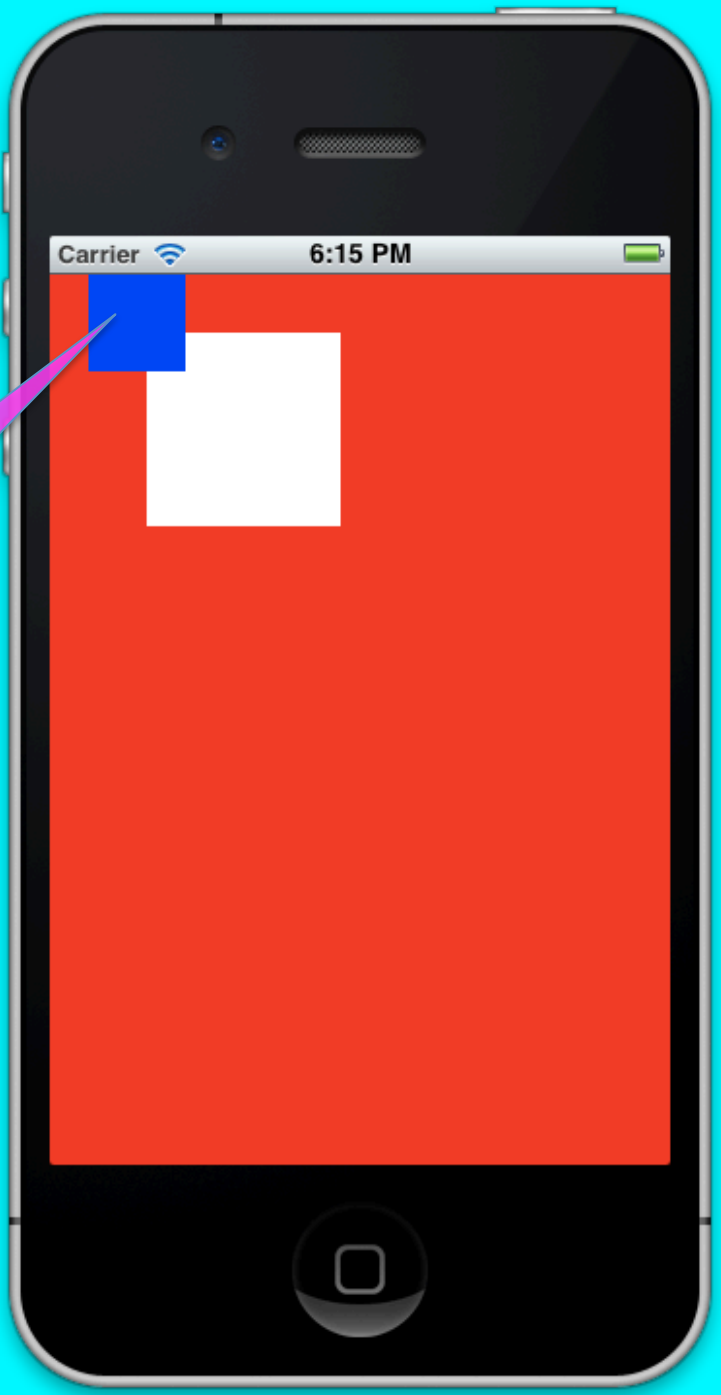


We can have multiple views!

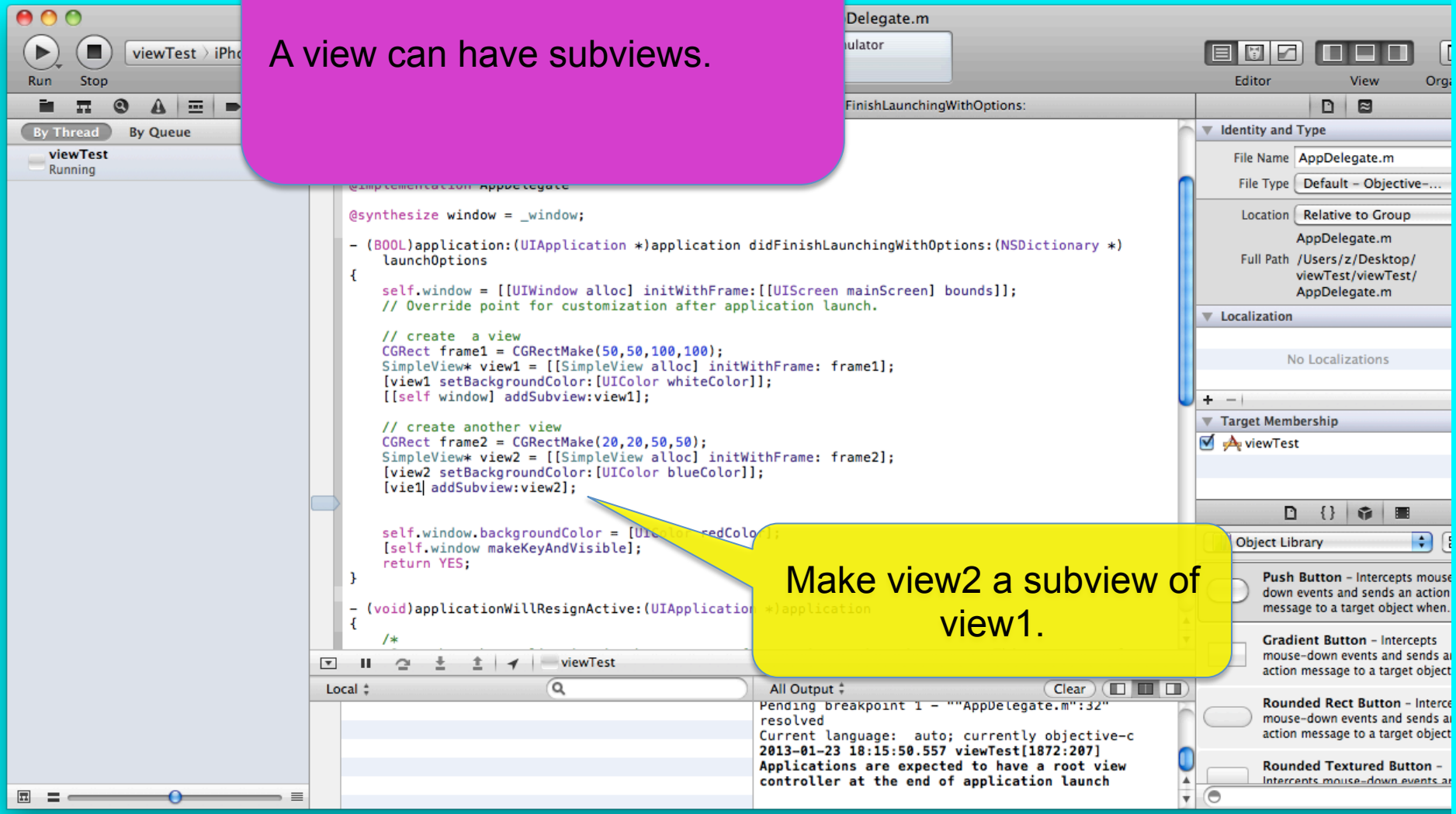


Run the app.

This is our new view. Views are drawn in the order they are added as subviews, so the blue view is drawn on top of the red one. (There is a way to reorder the views.)

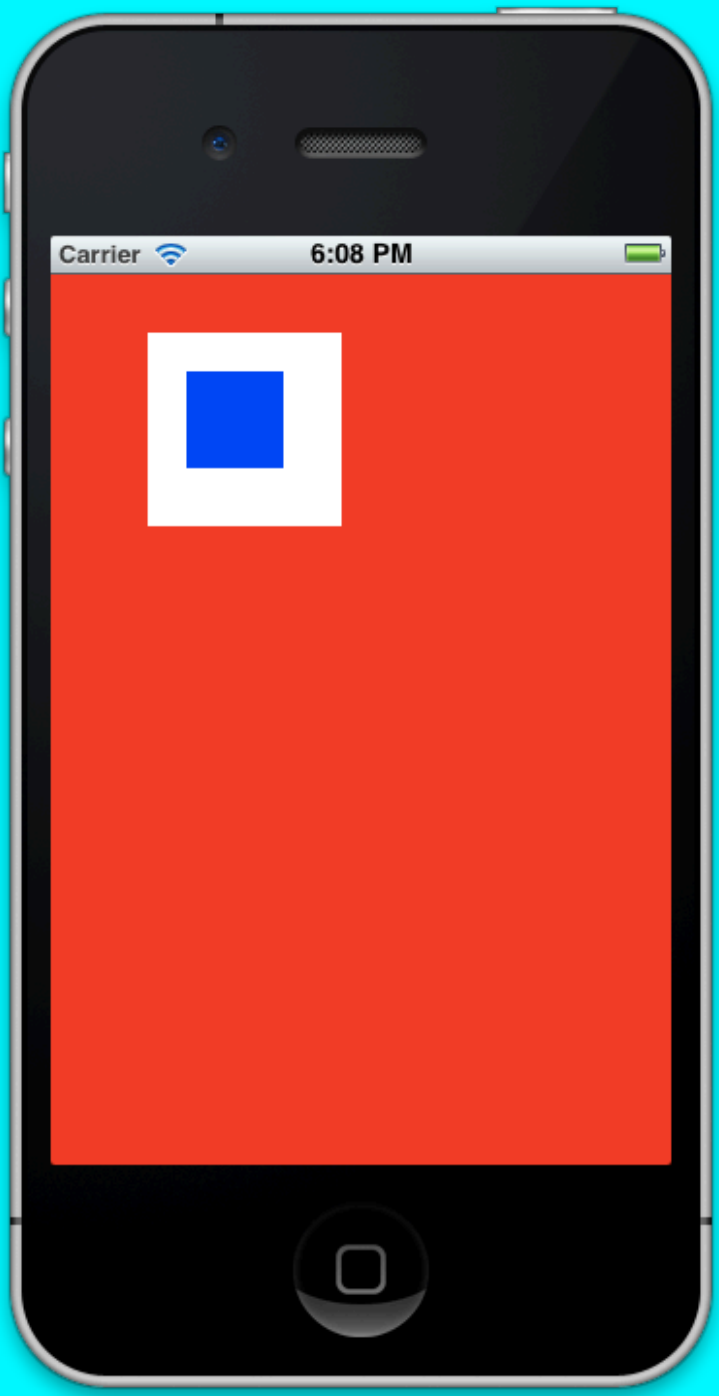


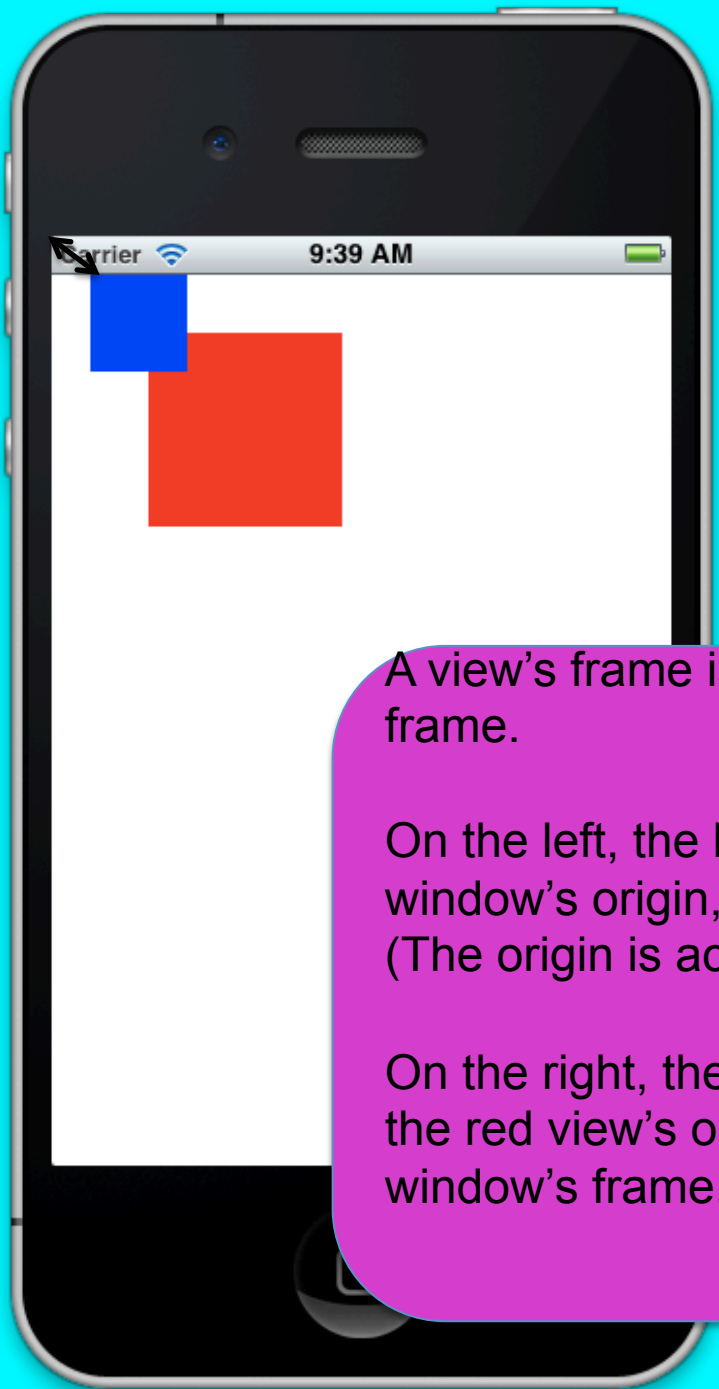
A view can have subviews.

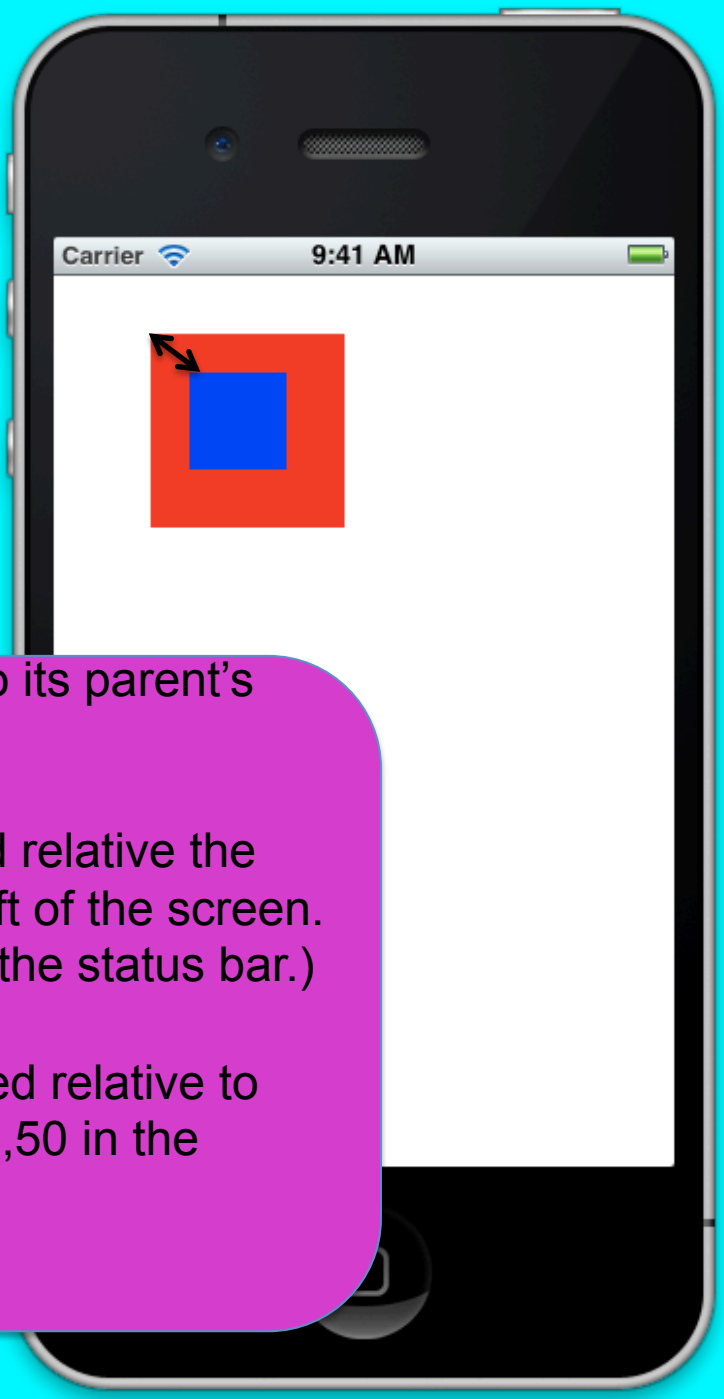


Run the app.

Is this what you expected?





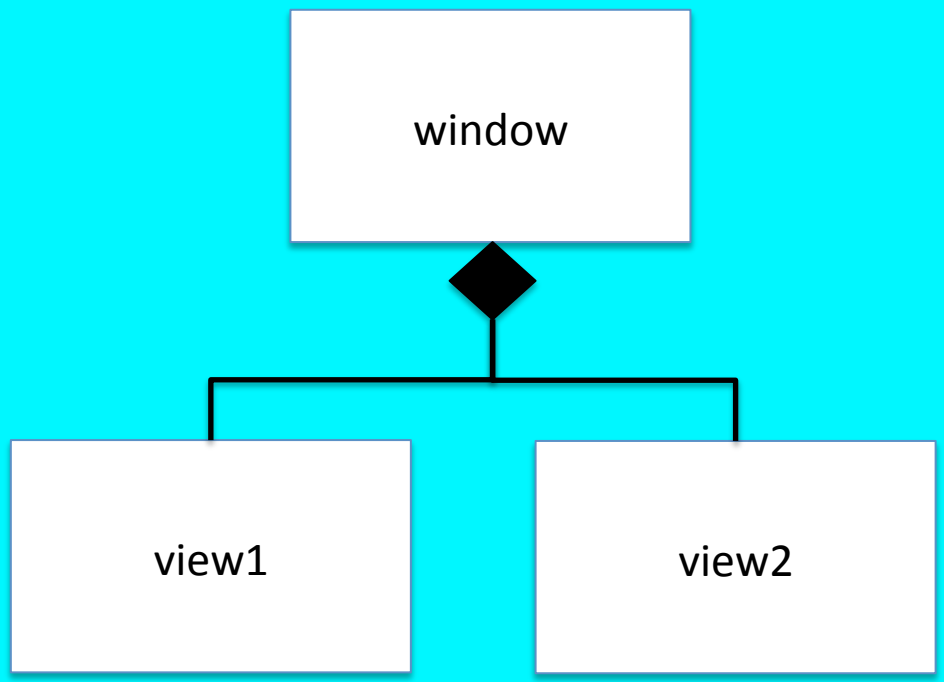


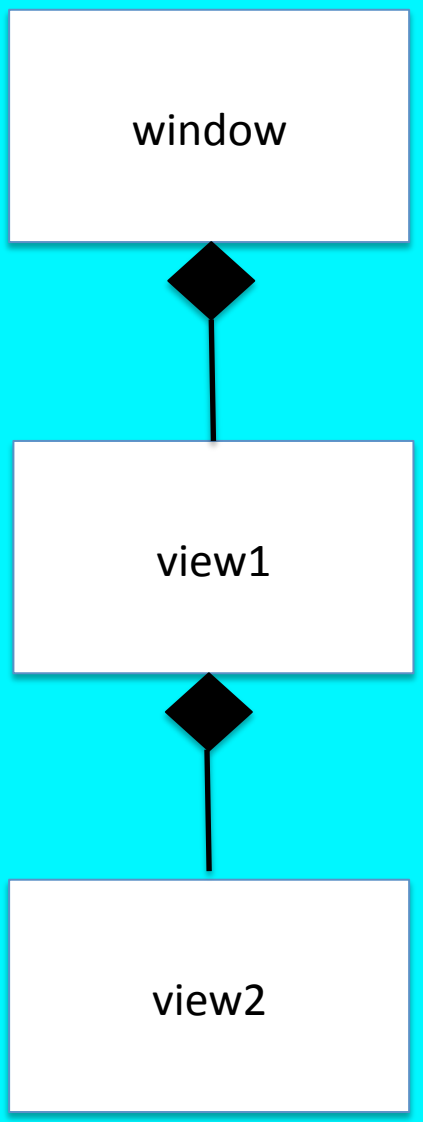
A view's frame is defined relative to its parent's frame.

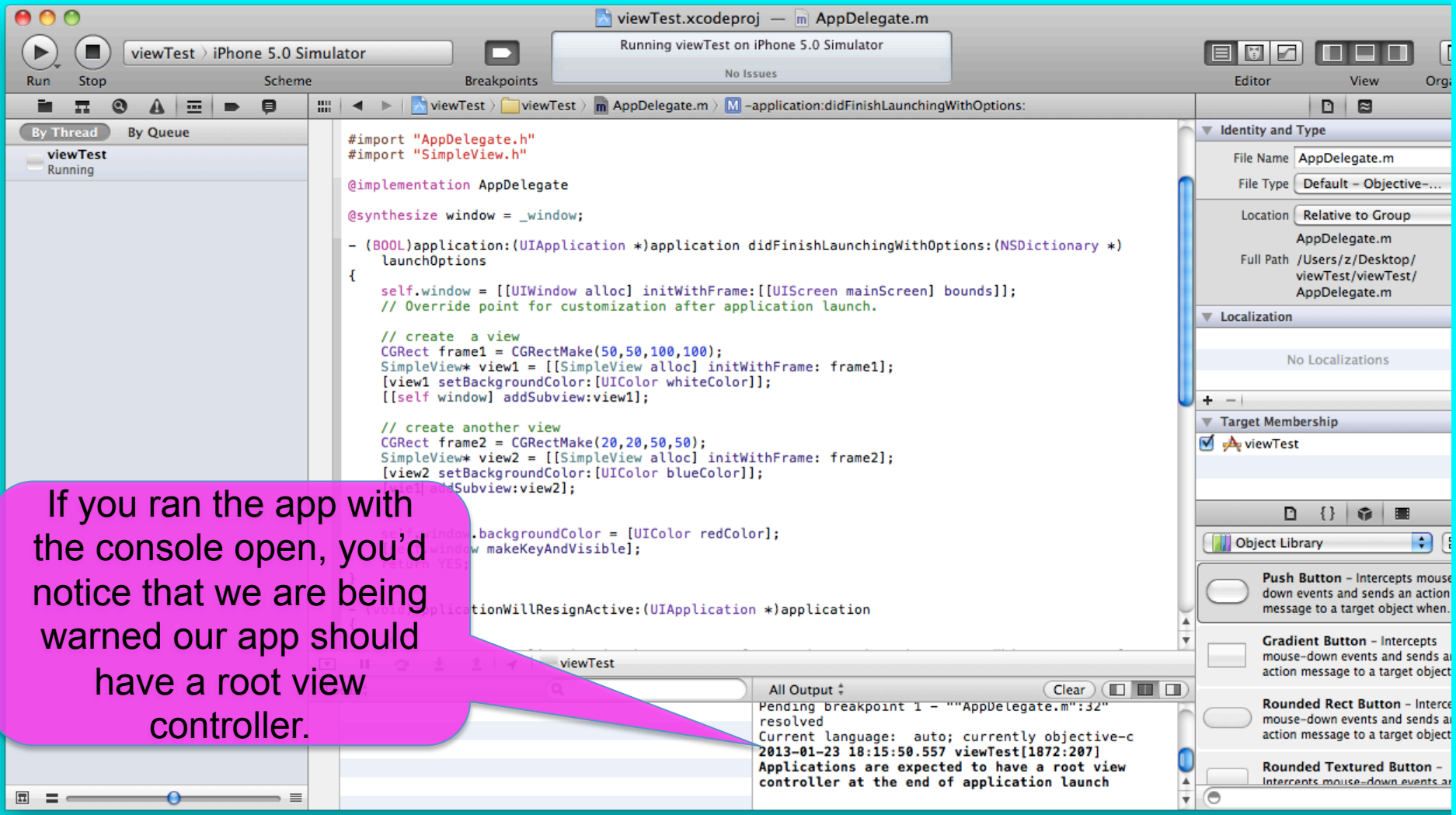
On the left, the blue view is defined relative the window's origin, which is the top left of the screen. (The origin is actually occluded by the status bar.)

On the right, the blue view is defined relative to the red view's origin, which is at 50,50 in the window's frame.

Here are" UML Object diagrams" of the two approaches!



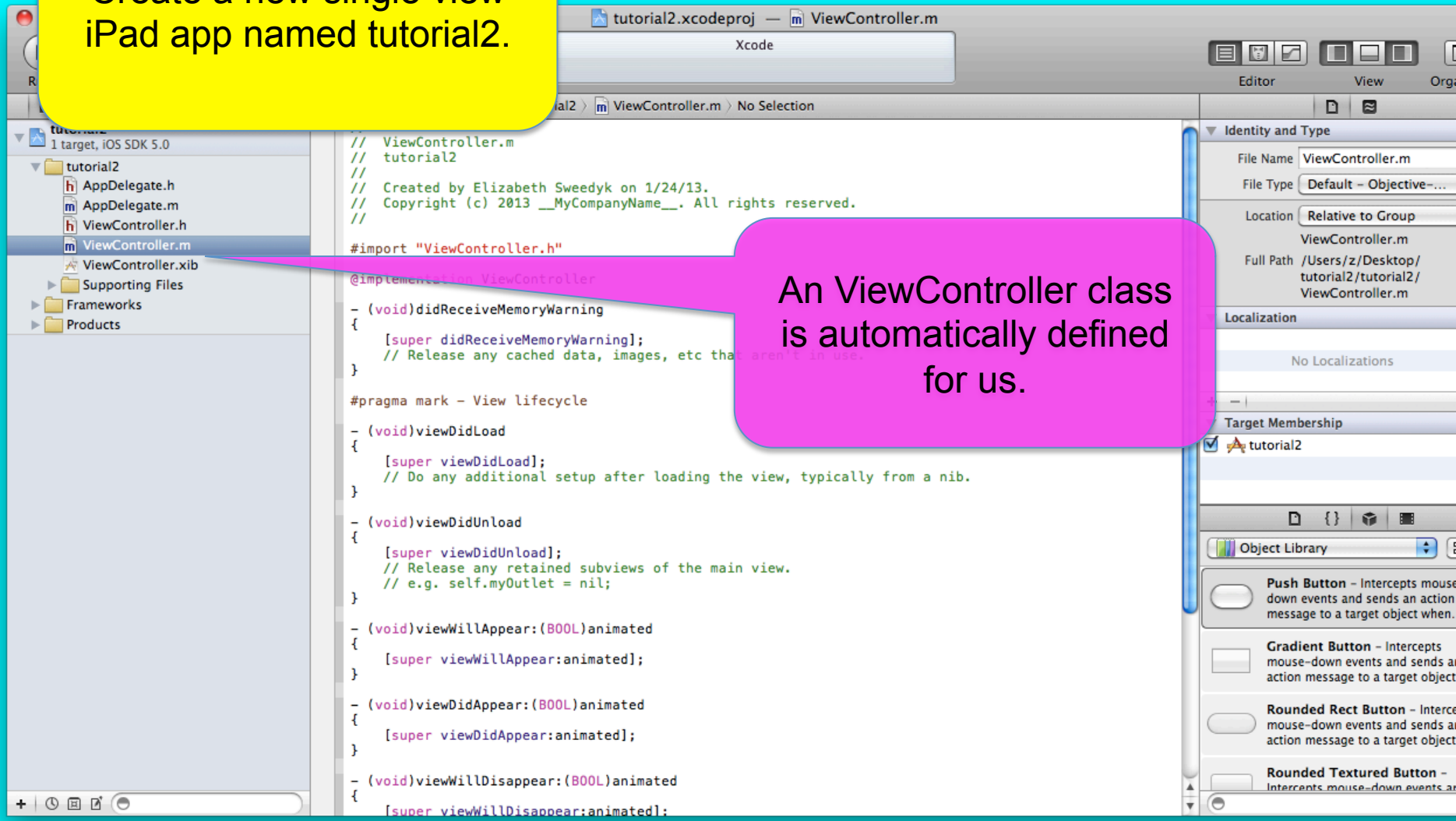




If you ran the app with the console open, you'd notice that we are being warned our app should have a root view controller.

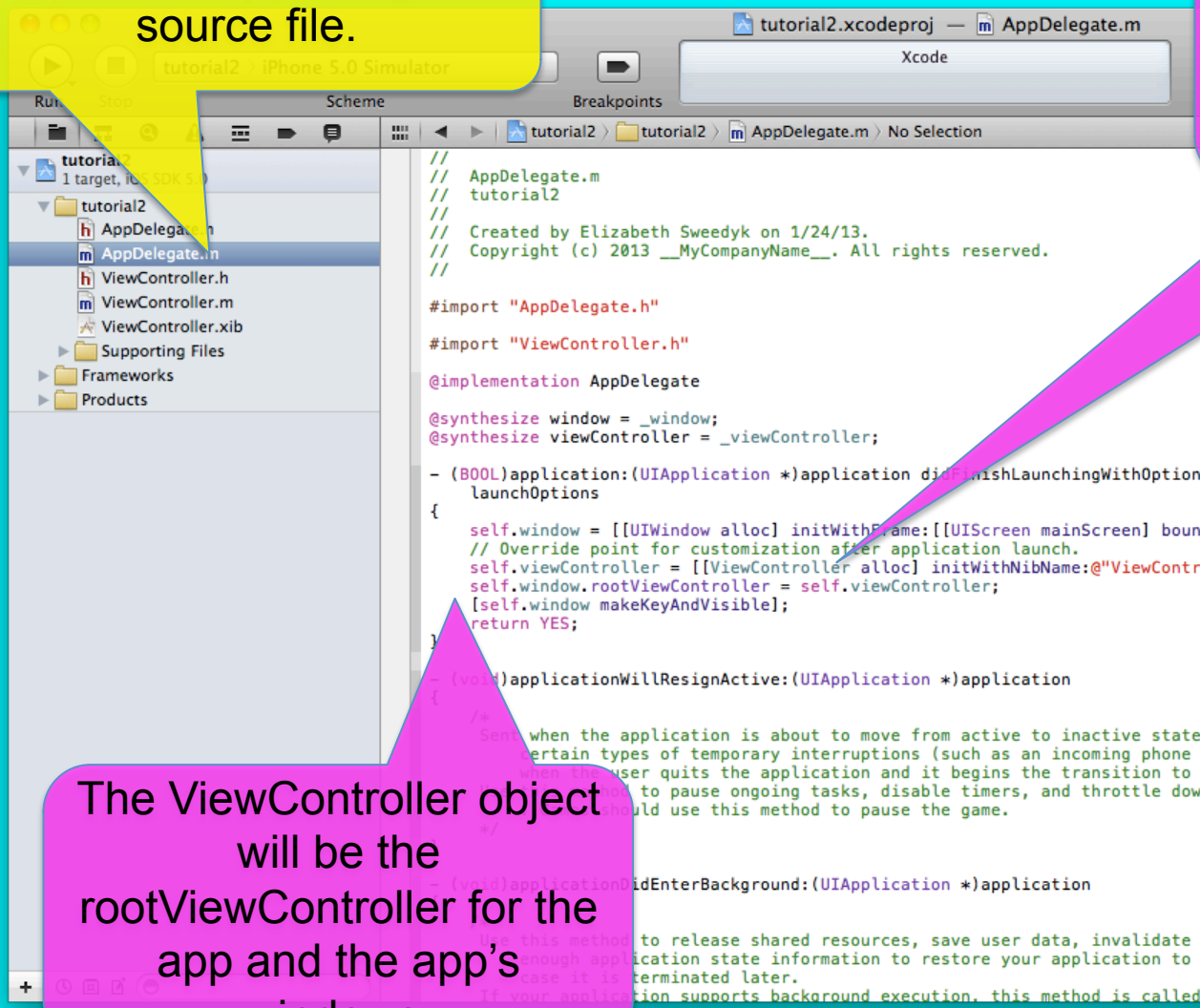
What we did was an experiment. Until you become an iOS expert, you would be wise to use the template code.

Create a new single view iPad app named tutorial2.



An ViewController class is automatically defined for us.

Open the AppDelegate source file.

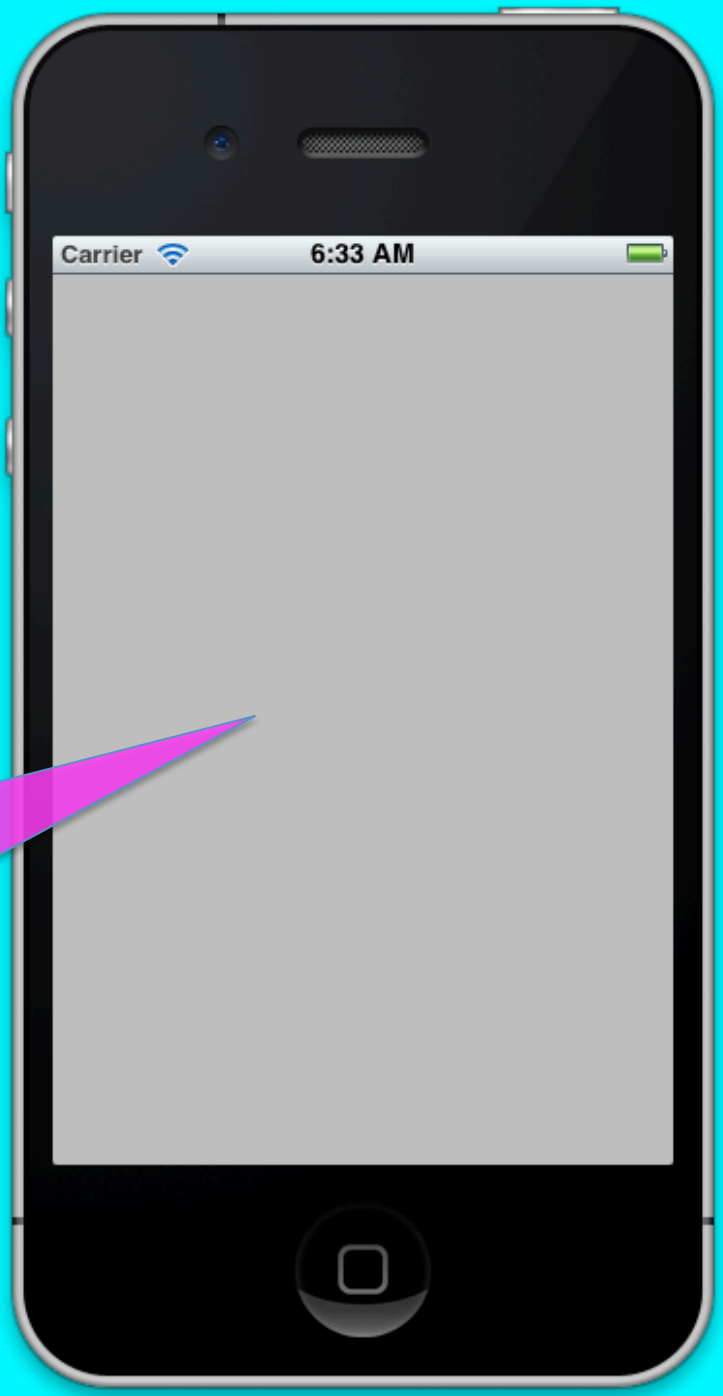


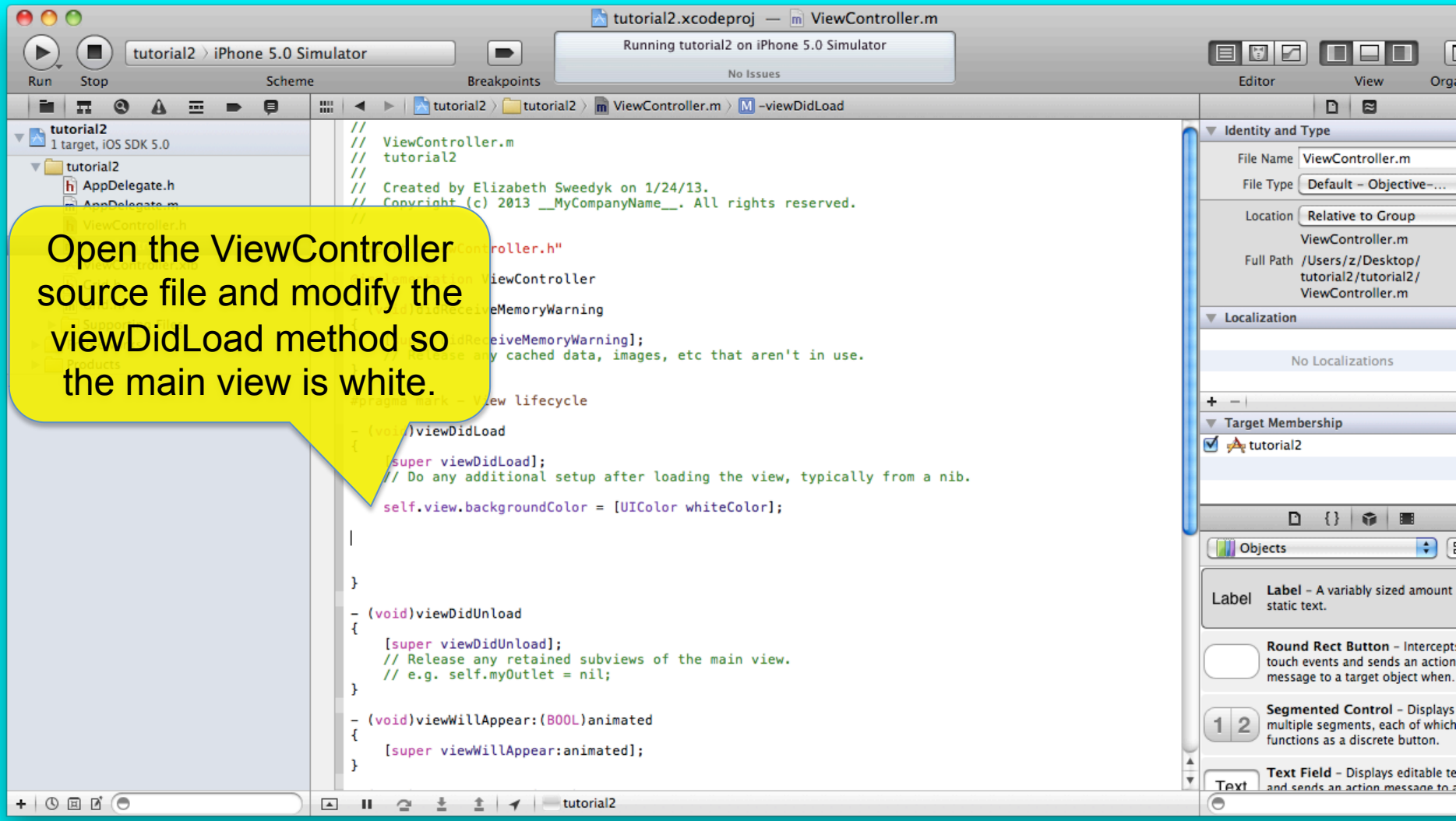
We still have a window but this time the template code also instantiates our ViewController class.

The ViewController object will be the rootViewController for the app and the app's windows.

Run the app.

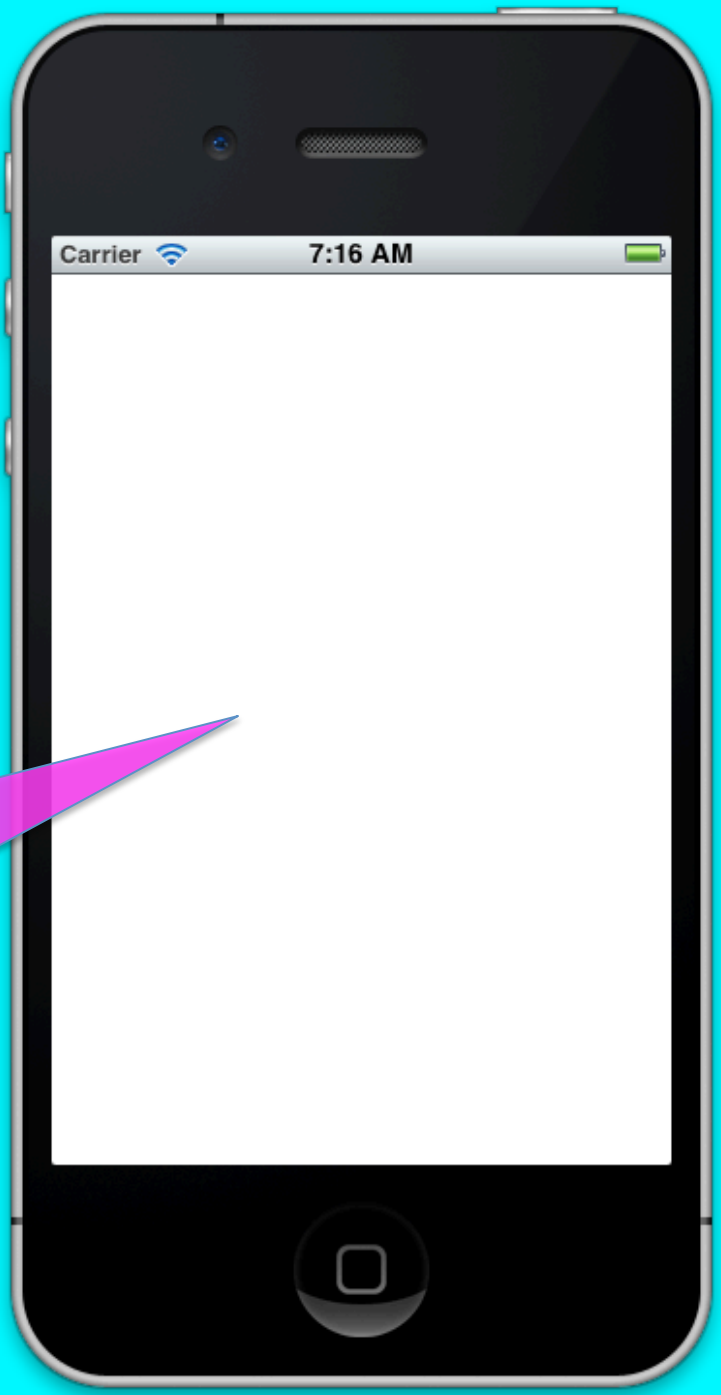
The UIViewController class has a pointer to a view. When the class is instantiated this “main view” is created as well.The default background color of the main view is gray.




tutorial2.xcodeproj — ViewController.m
Run
Stop
tutorial2 › iPhone 5.0 Simulator
Scheme
Breakpoints
Running tutorial2 on iPhone 5.0 Simulator
No Issues
Editor
View
tutorial2
1 target, iOS SDK 5.0
tutorial2
AppDelegate.h
Open the ViewController source file and modify the viewDidLoad method so the main view is white.
tutorial2 › tutorial2 › ViewController.m › -viewDidLoad
//
// ViewController.m
// tutorial2
//
// Created by Elizabeth Sweedyk on 1/24/13.
// Copyright (c) 2013 __MyCompanyName__. All rights reserved.
//
roller.h"
iewController
eMemoryWarning
eiveMemoryWarning];
y cached data, images, etc that aren't in use.
iew lifecycle
)viewDidLoad
{
[super viewDidLoad];
// Do any additional setup after loading the view, typically from a nib.
self.view.backgroundColor = [UIColor whiteColor];
}
- (void)viewDidUnload
{
[super viewDidUnload];
// Release any retained subviews of the main view.
// e.g. self.myOutlet = nil;
}
- (void)viewWillAppear:(BOOL)animated
{
[super viewWillAppear:animated];
}
tutorial2
Identity and Type
File Name ViewController.m
File Type Default – Objective-...
Location Relative to Group
ViewController.m
Full Path /Users/z/Desktop/tutorial2/tutorial2/ViewController.m
Localization
No Localizations
Target Membership
tutorial2
Objects
Label – A variably sized amount static text.
Round Rect Button – Intercepts touch events and sends an action message to a target object when.
Segmented Control – Displays multiple segments, each of which functions as a discrete button.
Text Field – Displays editable te

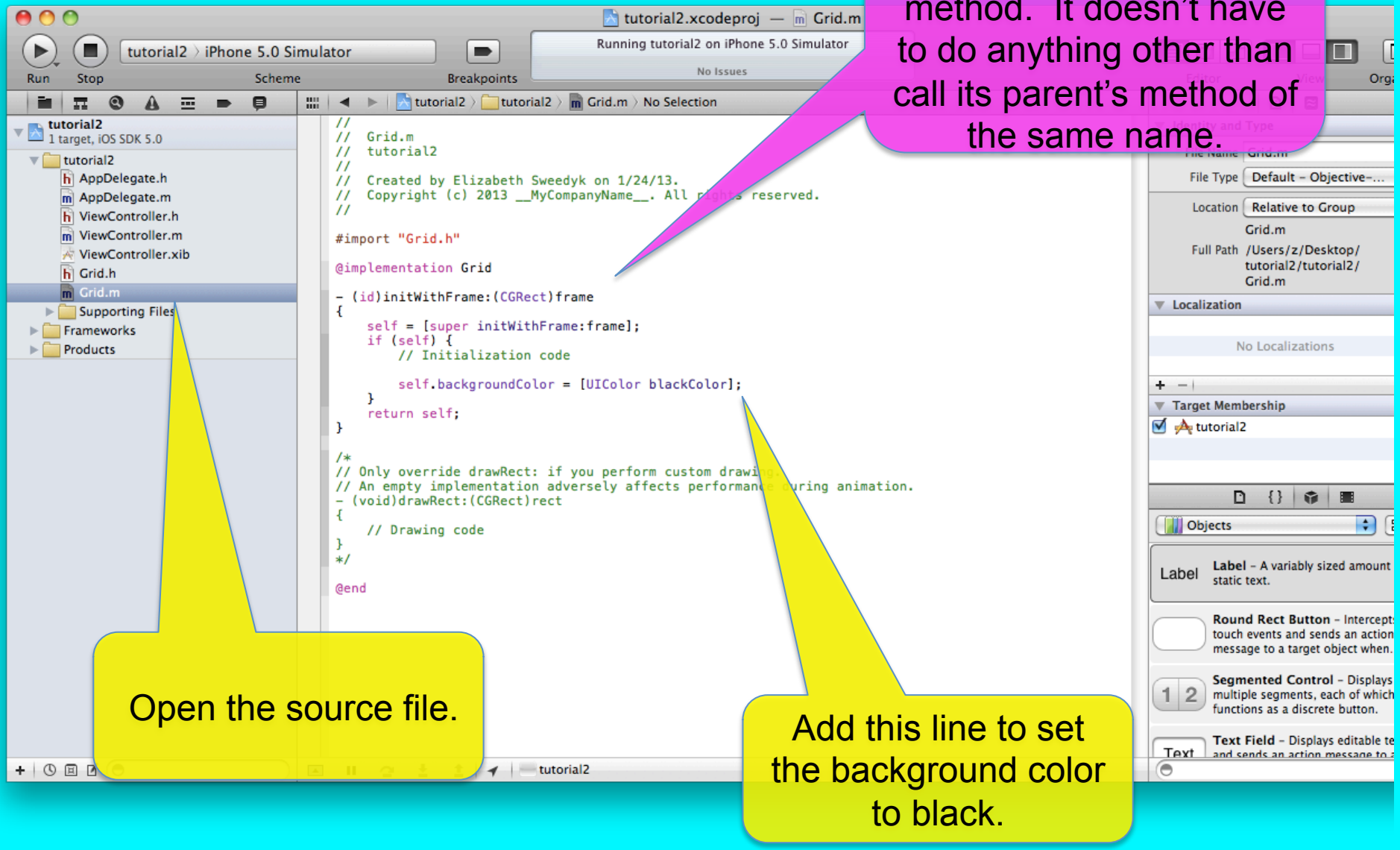
Run the app.

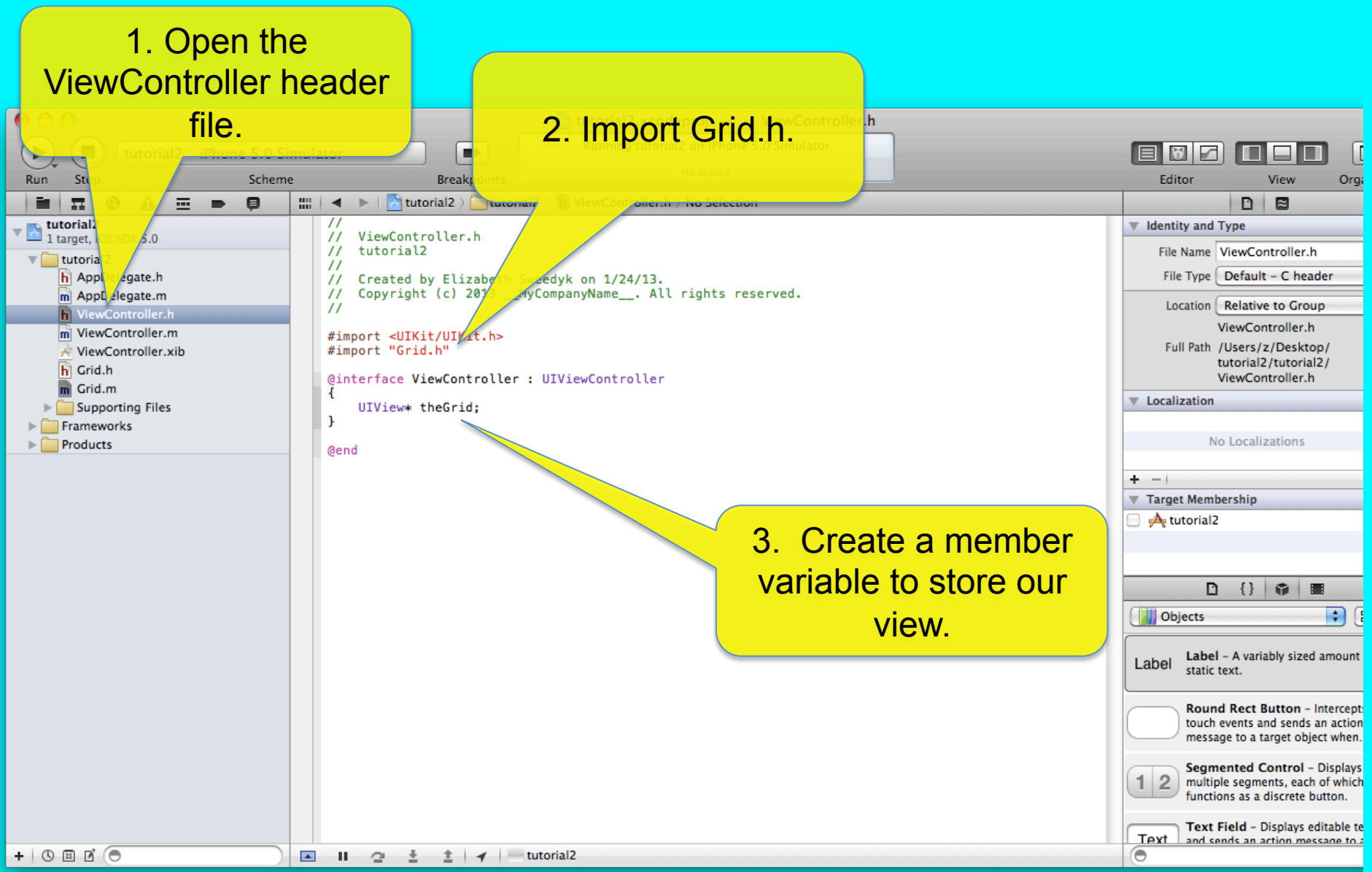
Now the rootViewController's main view is black.

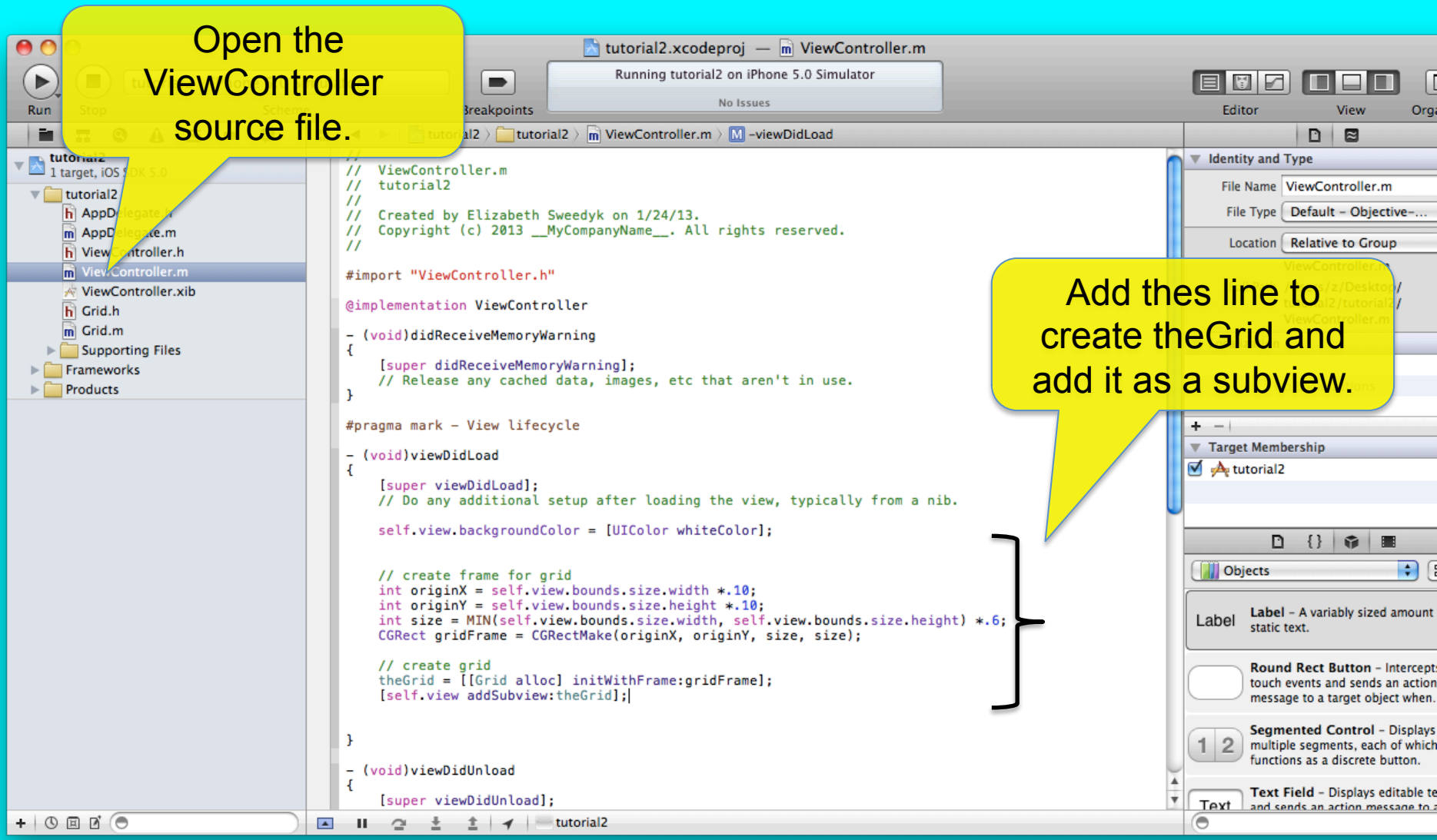


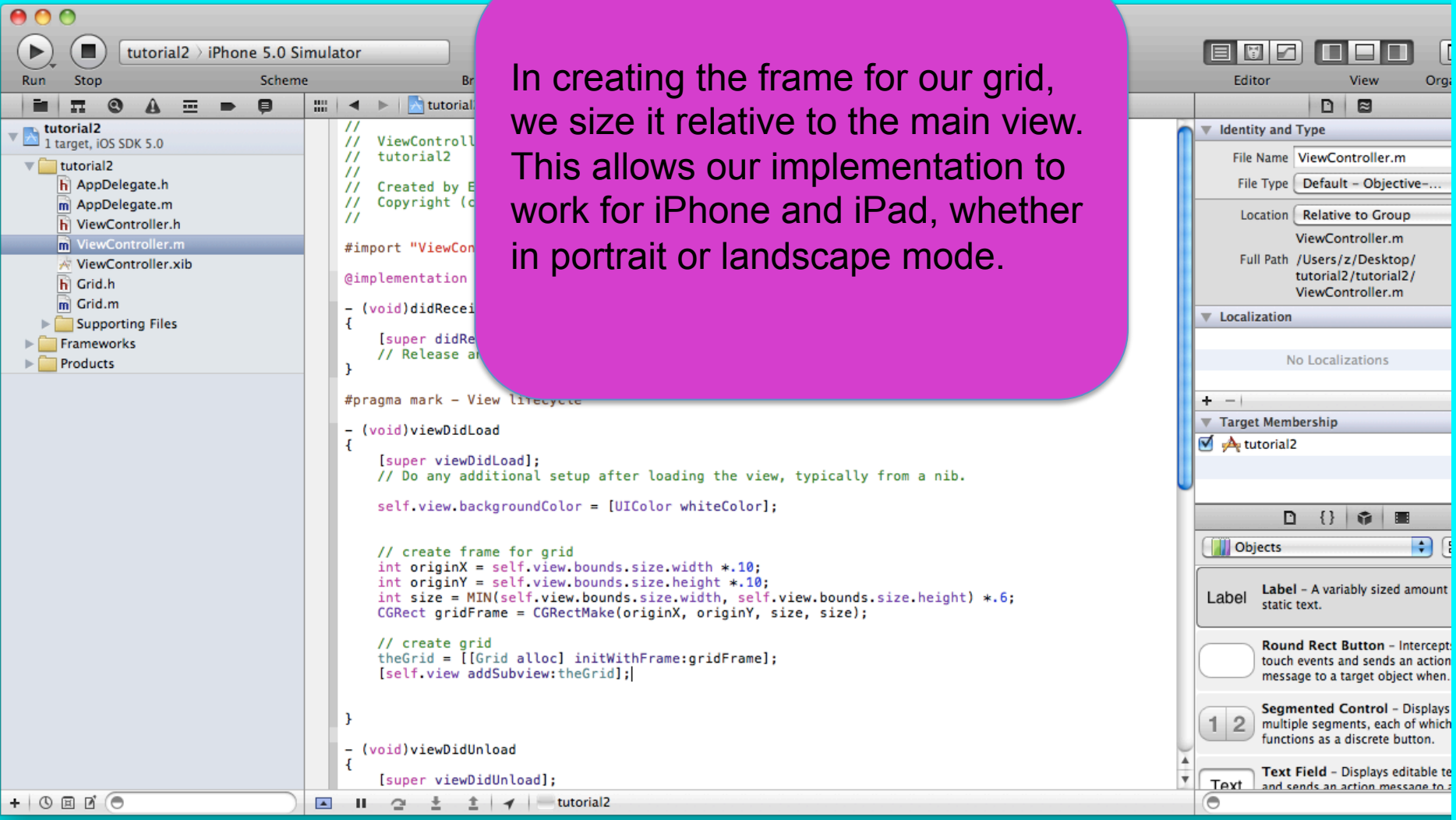
Now we are going to give our view controller a subview that will, eventually, hold our Sudoku grid.


Choose options for your new file:
Create a new class Grid that inherits from UIView.
Class
Grid
Subclass of
UIView
Cancel
Previous
Next


A UIView subclasss should implement this method. It doesn't have to do anything other than call its parent's method of the same name.
tutorial2.xcodeproj — Grid.m
tutorial2 › iPhone 5.0 Simulator
Running tutorial2 on iPhone 5.0 Simulator
No Issues
Run
Stop
Scheme
Breakpoints
tutorial2
1 target, iOS SDK 5.0
AppDelegate.h
AppDelegate.m
ViewController.h
ViewController.m
ViewController.xib
Grid.h
Grid.m
Supporting Files
Frameworks
Products
tutorial2 › tutorial2 › Grid.m › No Selection
//
// Grid.m
// tutorial2
//
// Created by Elizabeth Sweedyk on 1/24/13.
// Copyright (c) 2013 __MyCompanyName__. All rights reserved.
//
#import "Grid.h"
@implementation Grid
- (id)initWithFrame:(CGRect)frame
{
self = [super initWithFrame:frame];
if (self) {
// Initialization code
self.backgroundColor = [UIColor blackColor];
}
return self;
}
/*
// Only override drawRect: if you perform custom drawing.
// An empty implementation adversely affects performance during animation.
- (void)drawRect:(CGRect)rect
{
// Drawing code
}
*/
@end
File Type
Default – Objective-...
Location
Relative to Group
Grid.m
Full Path
/Users/z/Desktop/tutorial2/tutorial2/Grid.m
Localization
No Localizations
Target Membership
tutorial2
Objects
Label
Label – A variably sized amount of static text.
Round Rect Button – Intercepts touch events and sends an action message to a target object when.
Segmented Control – Displays multiple segments, each of which functions as a discrete button.
Text Field – Displays editable te
Open the source file.
Add this line to set the background color to black.

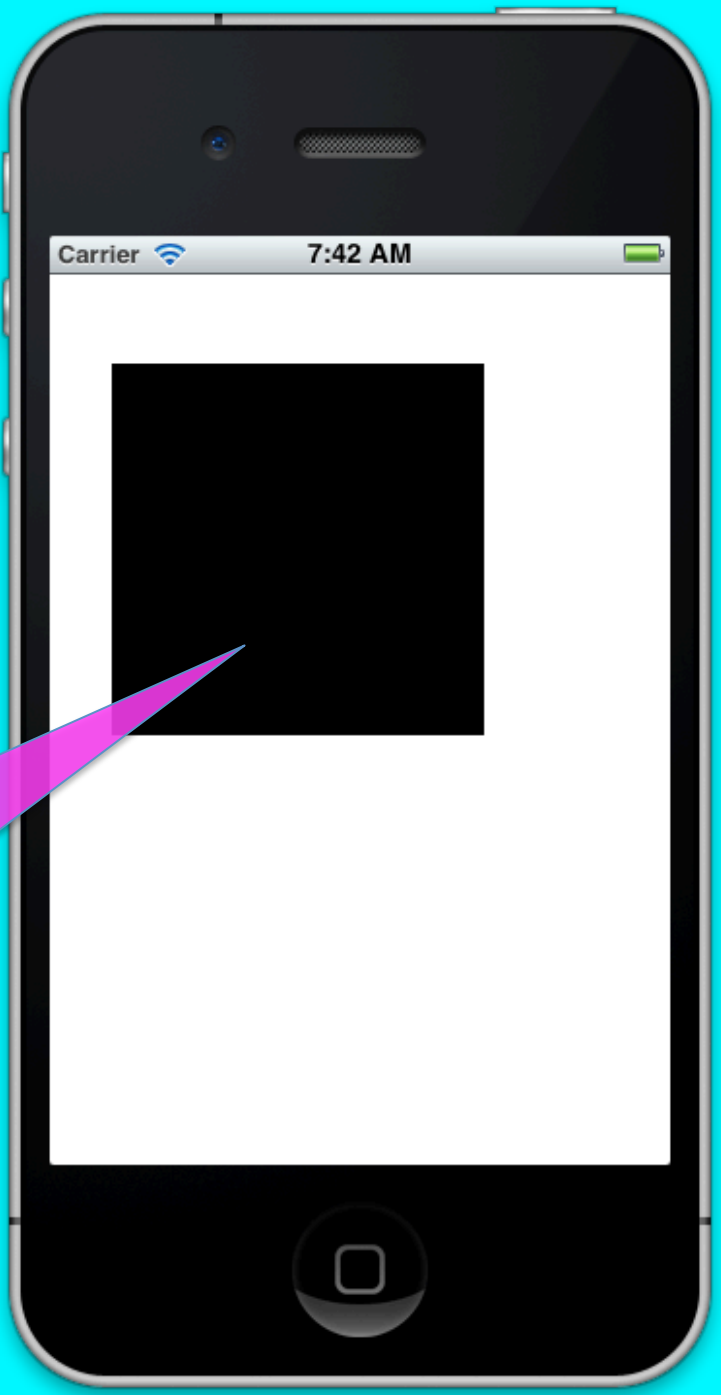

1. Open the ViewController header file.
2. Import Grid.h.
3. Create a member variable to store our view.
tutorial2
ViewController.h
tutorial2
Created by Elizabeth Szeedyk on 1/24/13.
Copyright (c) 2013 __MyCompanyName__. All rights reserved.
#import <UIKit/UIKit.h>
#import "Grid.h"
@interface ViewController : UIViewController
{
UIView* theGrid;
}
@end
Identity and Type
File Name ViewController.h
File Type Default – C header
Location Relative to Group
ViewController.h
Full Path /Users/z/Desktop/tutorial2/tutorial2/ViewController.h
Localization
No Localizations
Target Membership
tutorial2
Objects
Label – A variably sized amount of static text.
Round Rect Button – Intercepts touch events and sends an action message to a target object when.
Segmented Control – Displays multiple segments, each of which functions as a discrete button.
Text Field – Displays editable te

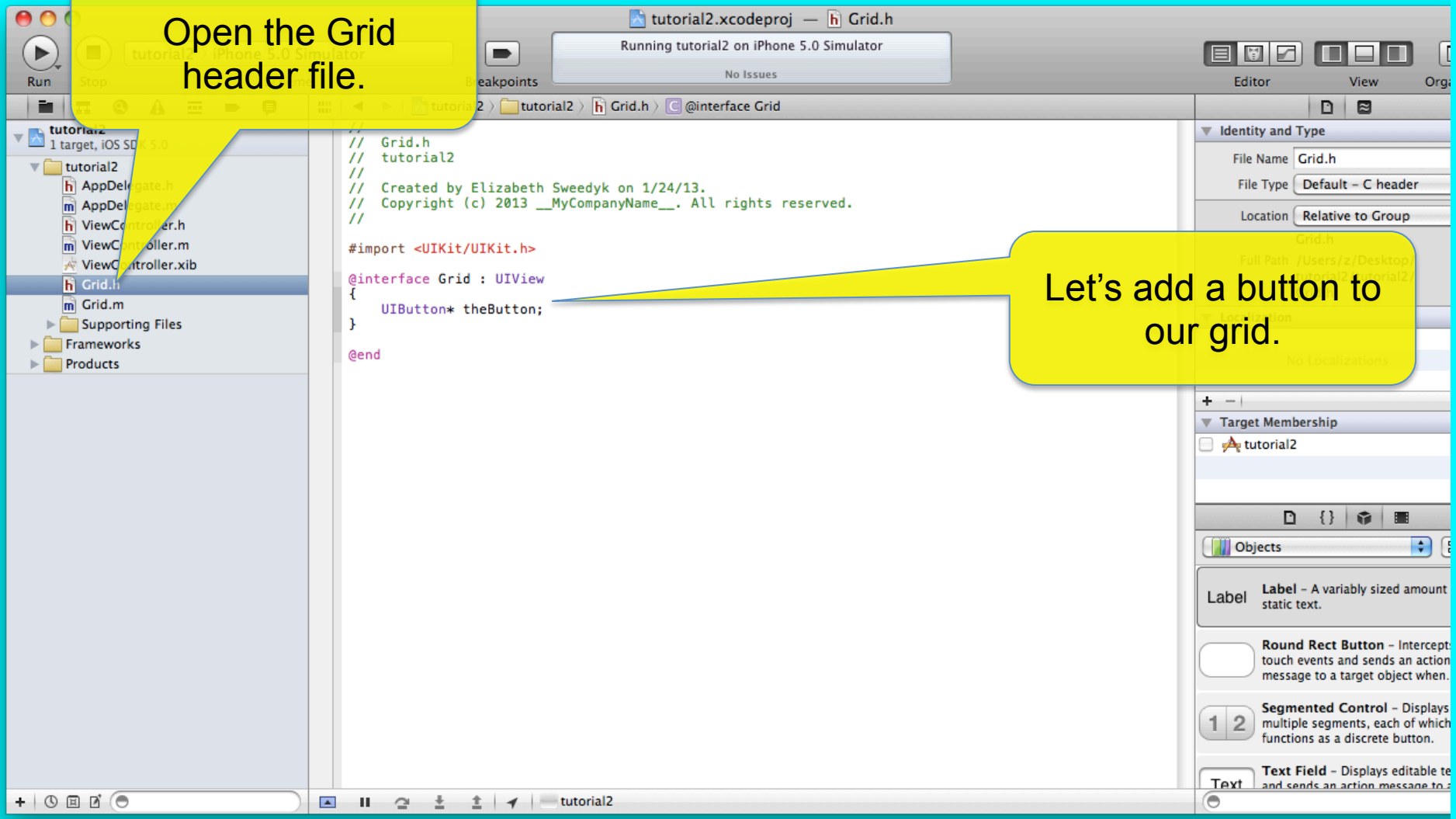

Open the ViewController source file.
tutorial2.xcodeproj — ViewController.m
Running tutorial2 on iPhone 5.0 Simulator
No Issues
Run
Stop
Breakpoints
Editor
View
tutorial2
ViewController.m
-viewDidLoad
1 target, iOS
tutorial2
AppDelegate.h
AppDelegate.m
ViewController.h
ViewController.m
ViewController.xib
Grid.h
Grid.m
Supporting Files
Frameworks
Products
// ViewController.m
// tutorial2
// Created by Elizabeth Sweedyk on 1/24/13.
// Copyright (c) 2013 __MyCompanyName__. All rights reserved.
#import "ViewController.h"
@implementation ViewController
- (void)didReceiveMemoryWarning
{
[super didReceiveMemoryWarning];
// Release any cached data, images, etc that aren't in use.
}
#pragma mark - View lifecycle
- (void)viewDidLoad
{
[super viewDidLoad];
// Do any additional setup after loading the view, typically from a nib.
self.view.backgroundColor = [UIColor whiteColor];
// create frame for grid
int originX = self.view.bounds.size.width *.10;
int originY = self.view.bounds.size.height *.10;
int size = MIN(self.view.bounds.size.width, self.view.bounds.size.height) *.6;
CGRect gridFrame = CGRectMake(originX, originY, size, size);
// create grid
theGrid = [[Grid alloc] initWithFrame:gridFrame];
[self.view addSubview:theGrid];
}
- (void)viewDidUnload
{
[super viewDidUnload];
Add thes line to create theGrid and add it as a subview.
Identity and Type
File Name ViewController.m
File Type Default - Objective-...
Location Relative to Group
Target Membership
tutorial2
Objects
Label Label - A variably sized amount static text.
Round Rect Button - Intercept touch events and sends an action message to a target object when.
Segmented Control - Displays multiple segments, each of which functions as a discrete button.
Text Field - Displays editable te

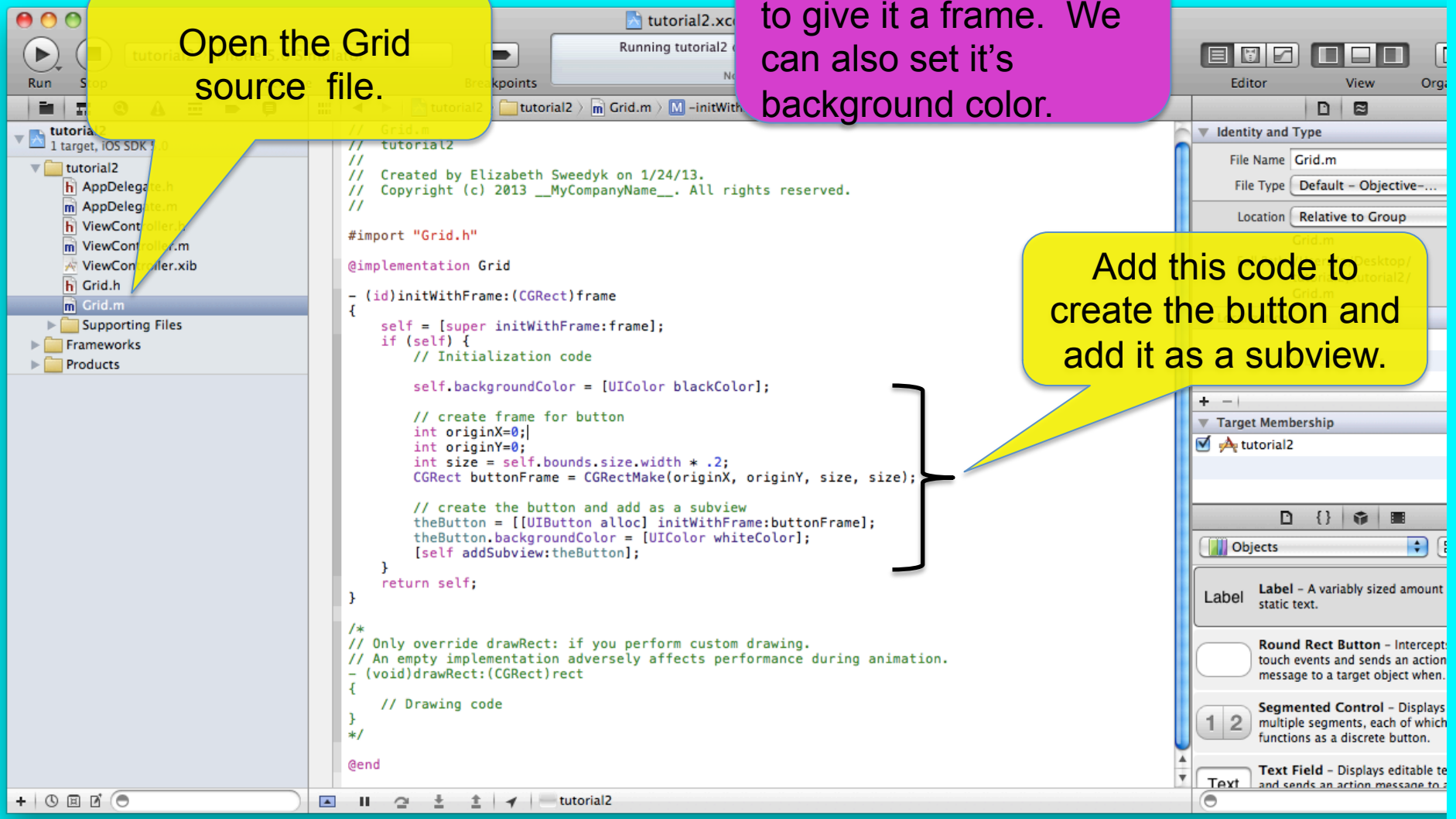

In creating the frame for our grid, we size it relative to the main view. This allows our implementation to work for iPhone and iPad, whether in portrait or landscape mode.
tutorial2 › iPhone 5.0 Simulator
Run
Stop
Scheme
Editor
View
tutorial2
1 target, iOS SDK 5.0
AppDelegate.h
AppDelegate.m
ViewController.h
ViewController.m
ViewController.xib
Grid.h
Grid.m
Supporting Files
Frameworks
Products
- (void)viewDidLoad
{
[super viewDidLoad];
// Do any additional setup after loading the view, typically from a nib.
self.view.backgroundColor = [UIColor whiteColor];
// create frame for grid
int originX = self.view.bounds.size.width *.10;
int originY = self.view.bounds.size.height *.10;
int size = MIN(self.view.bounds.size.width, self.view.bounds.size.height) *.6;
CGRect gridFrame = CGRectMake(originX, originY, size, size);
// create grid
theGrid = [[Grid alloc] initWithFrame:gridFrame];
[self.view addSubview:theGrid];
}
- (void)viewDidUnload
{
[super viewDidUnload];
Identity and Type
File Name ViewController.m
File Type Default – Objective-...
Location Relative to Group
ViewController.m
Full Path /Users/z/Desktop/tutorial2/tutorial2/ViewController.m
Localization
No Localizations
Target Membership
tutorial2
Objects
Label – A variably sized amount static text.
Round Rect Button – Intercept touch events and sends an action message to a target object when.
Segmented Control – Displays multiple segments, each of which functions as a discrete button.
Text Field – Displays editable te

Run the app.

This is our grid view. You'll need to refine the location and size once you develop and test your UI design.

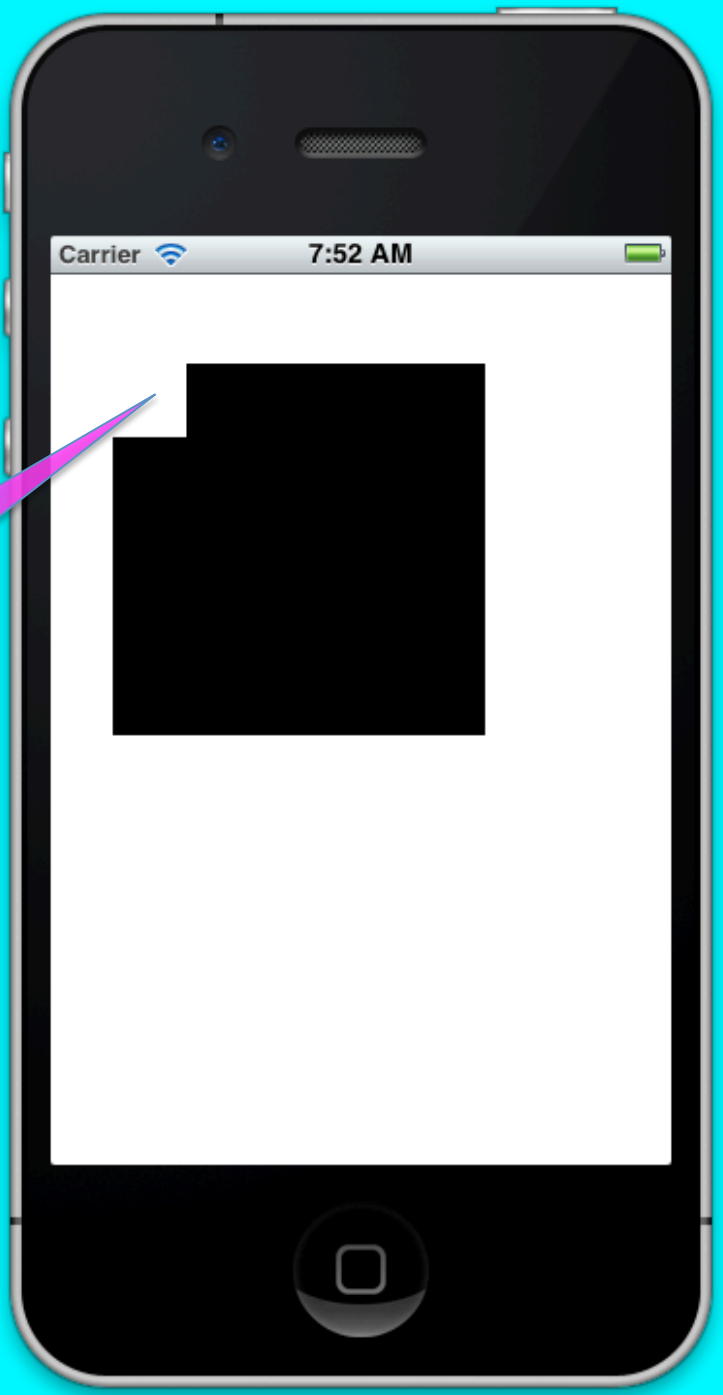


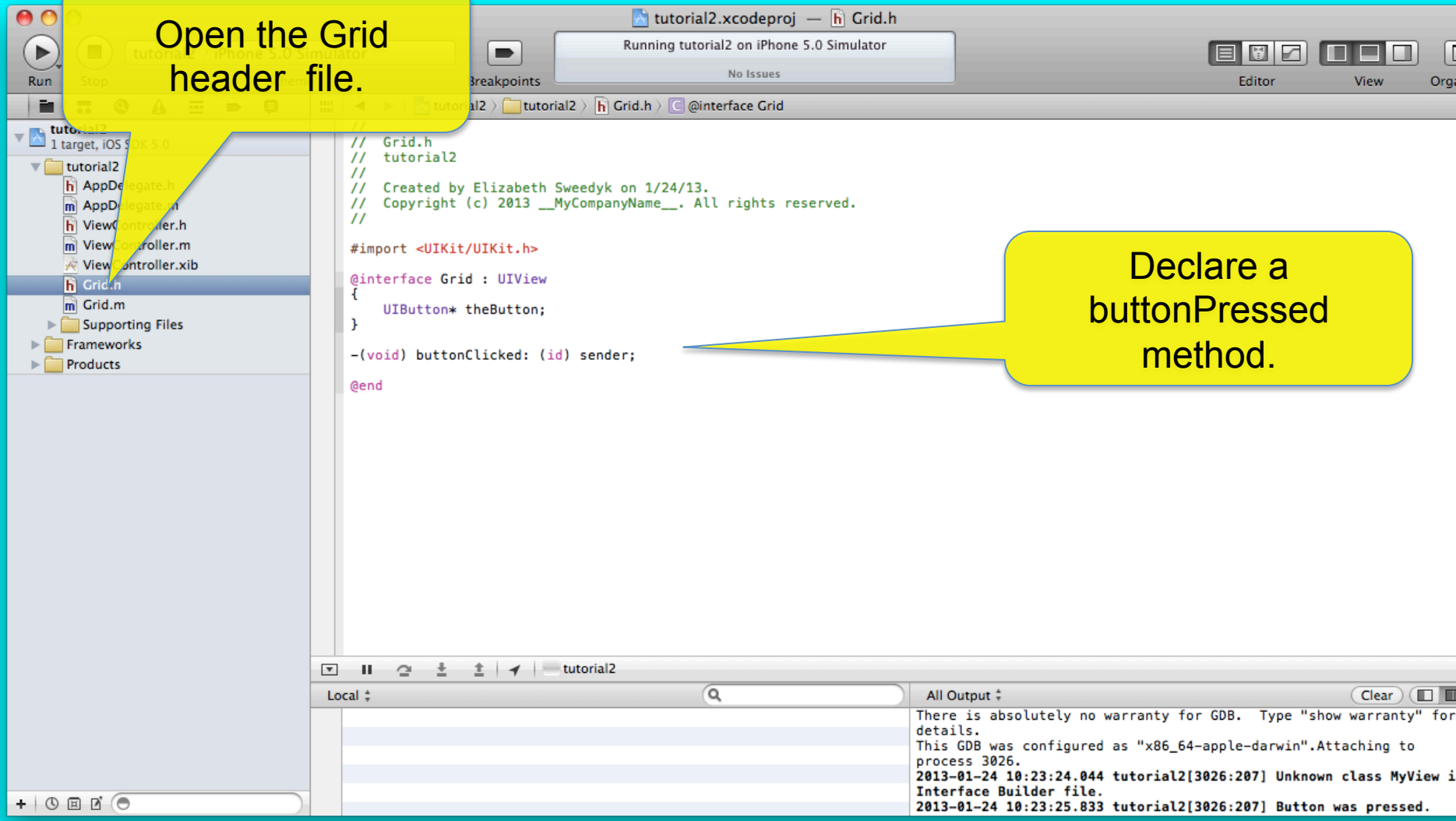

Open the Grid header file.
tutorial2.xcodeproj — Grid.h
Running tutorial2 on iPhone 5.0 Simulator
No Issues
Run
Editor
View
tutorial2
Grid.h
Grid.m
Supporting Files
Frameworks
Products
// Grid.h
// tutorial2
// Created by Elizabeth Sweedyk on 1/24/13.
// Copyright (c) 2013 __MyCompanyName__. All rights reserved.
#import <UIKit/UIKit.h>
@interface Grid : UIView
{
UIButton* theButton;
}
@end
Let's add a button to our grid.
Identity and Type
File Name Grid.h
File Type Default - C header
Location Relative to Group
Target Membership
tutorial2
Objects
Label - A variably sized amount static text.
Round Rect Button - Intercept touch events and sends an action message to a target object when.
Segmented Control - Displays multiple segments, each of which functions as a discrete button.
Text Field - Displays editable te


Open the Grid source file.
UIButton is a subclass of UIView. So we need to give it a frame. We can also set it's background color.
Add this code to create the button and add it as a subview.
tutorial2
Grid.m
Identity and Type
File Name
Grid.m
File Type
Default – Objective-...
Location
Relative to Group
Target Membership
tutorial2
Objects
Label
Label – A variably sized amount static text.
Round Rect Button – Intercept touch events and sends an action message to a target object when.
Segmented Control – Displays multiple segments, each of which functions as a discrete button.
Text Field – Displays editable te
Text
// tutorial2
//
// Created by Elizabeth Sweedyk on 1/24/13.
// Copyright (c) 2013 __MyCompanyName__. All rights reserved.
//
#import "Grid.h"
@implementation Grid
- (id)initWithFrame:(CGRect)frame
{
self = [super initWithFrame:frame];
if (self) {
// Initialization code
self.backgroundColor = [UIColor blackColor];
// create frame for button
int originX=0;
int originY=0;
int size = self.bounds.size.width * .2;
CGRect buttonFrame = CGRectMake(originX, originY, size, size);
// create the button and add as a subview
theButton = [[UIButton alloc] initWithFrame:buttonFrame];
theButton.backgroundColor = [UIColor whiteColor];
[self addSubview:theButton];
}
return self;
}
/*
// Only override drawRect: if you perform custom drawing.
// An empty implementation adversely affects performance during animation.
- (void)drawRect:(CGRect)rect
{
// Drawing code
}
*/
@end

Run the app.

This is our button. It doesn't do anything yet. We have to configure it appropriately.




Open the Grid header file.
tutorial2.xcodeproj — Grid.h
Running tutorial2 on iPhone 5.0 Simulator
No Issues
Run
Stop
Breakpoints
Editor
View
tutorial2
Grid.h
@interface Grid
1 target, iOS 5.0
tutorial2
AppDelegate.h
AppDelegate.m
ViewController.h
ViewController.m
ViewController.xib
Grid.h
Grid.m
Supporting Files
Frameworks
Products
// Grid.h
// tutorial2
//
// Created by Elizabeth Sweedyk on 1/24/13.
// Copyright (c) 2013 __MyCompanyName__. All rights reserved.
//
#import <UIKit/UIKit.h>
@interface Grid : UIView
{
UIButton* theButton;
}
-(void) buttonClicked: (id) sender;
@end
Declare a buttonPressed method.
tutorial2
Local
All Output
Clear
There is absolutely no warranty for GDB. Type "show warranty" for details.
This GDB was configured as "x86_64-apple-darwin".Attaching to process 3026.
2013-01-24 10:23:24.044 tutorial2[3026:207] Unknown class MyView in Interface Builder file.
2013-01-24 10:23:25.833 tutorial2[3026:207] Button was pressed.

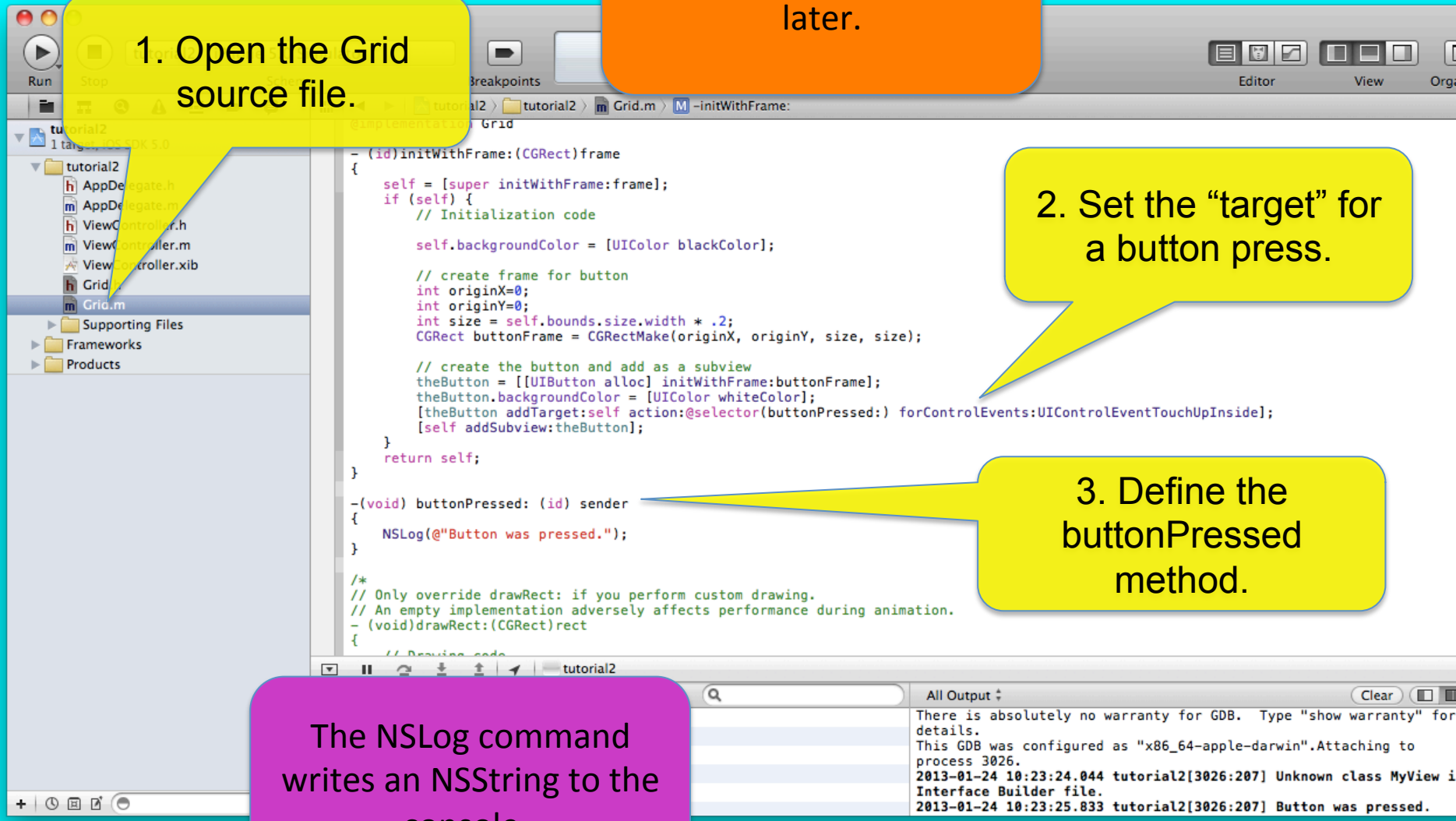
We'll talk about "targets" later.

1. Open the Grid source file.

2. Set the "target" for a button press.

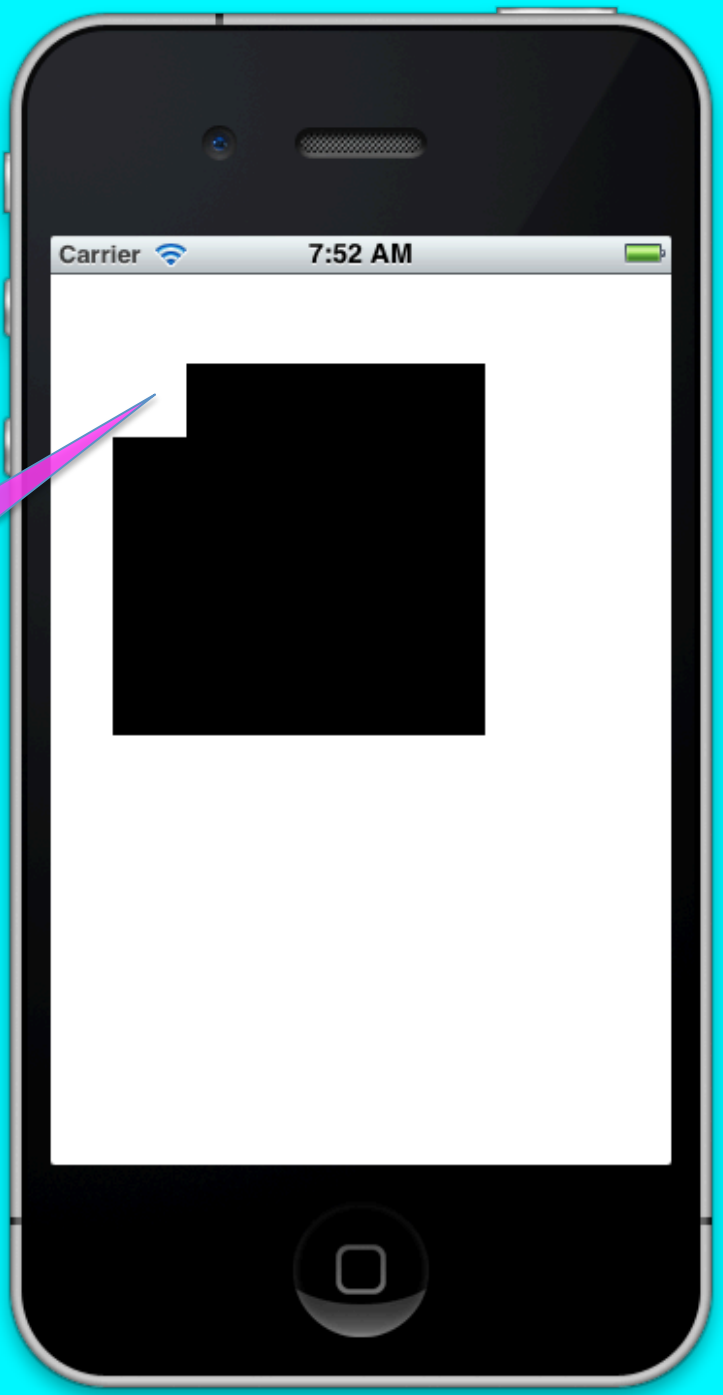
3. Define the buttonPressed method.

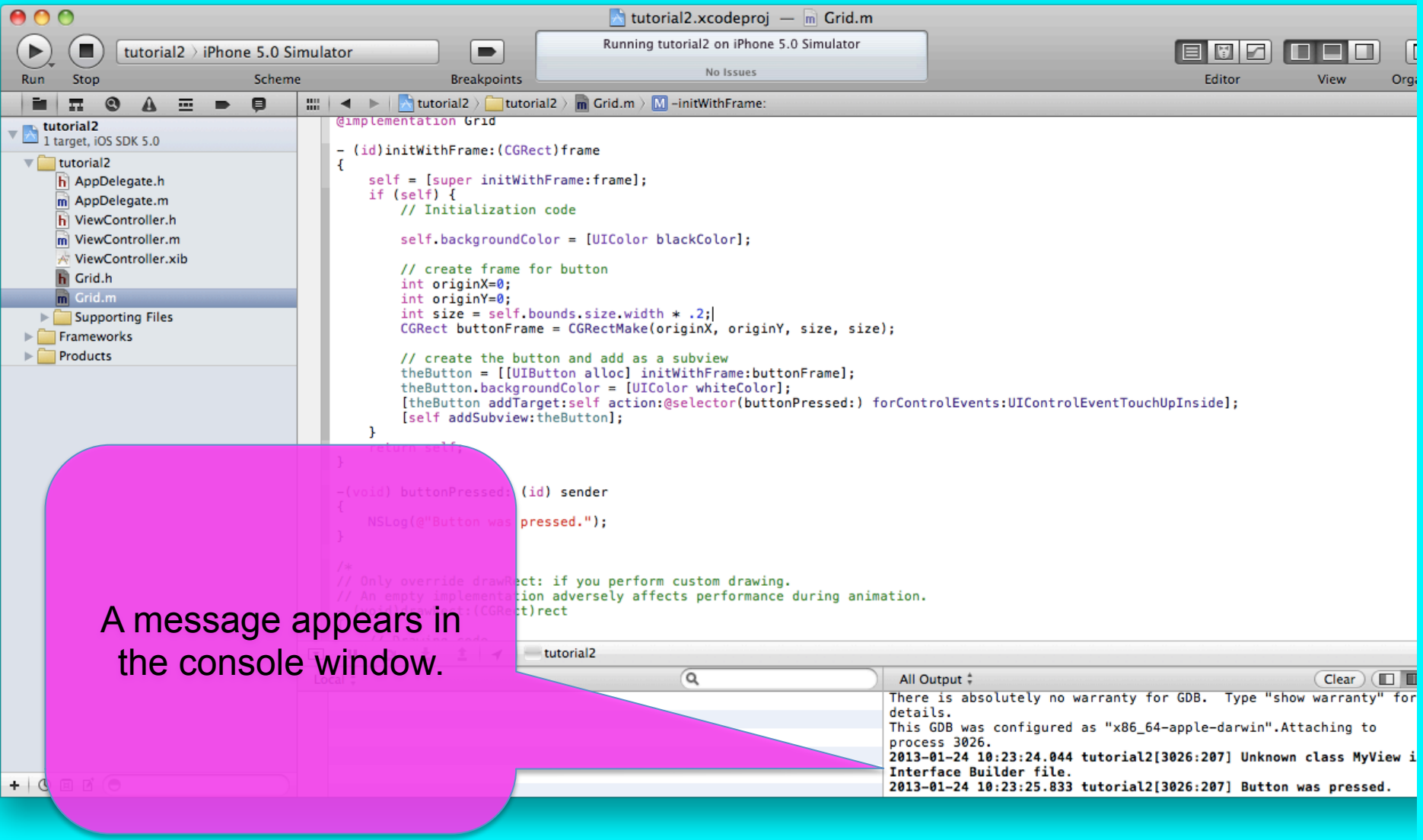
The NSLog command writes an NSString to the console..



Run the app.

Press the button





A message appears in the console window.