GENERAL ASSEMBLY

XCODE TUTORIAL PHOTO GALLERY

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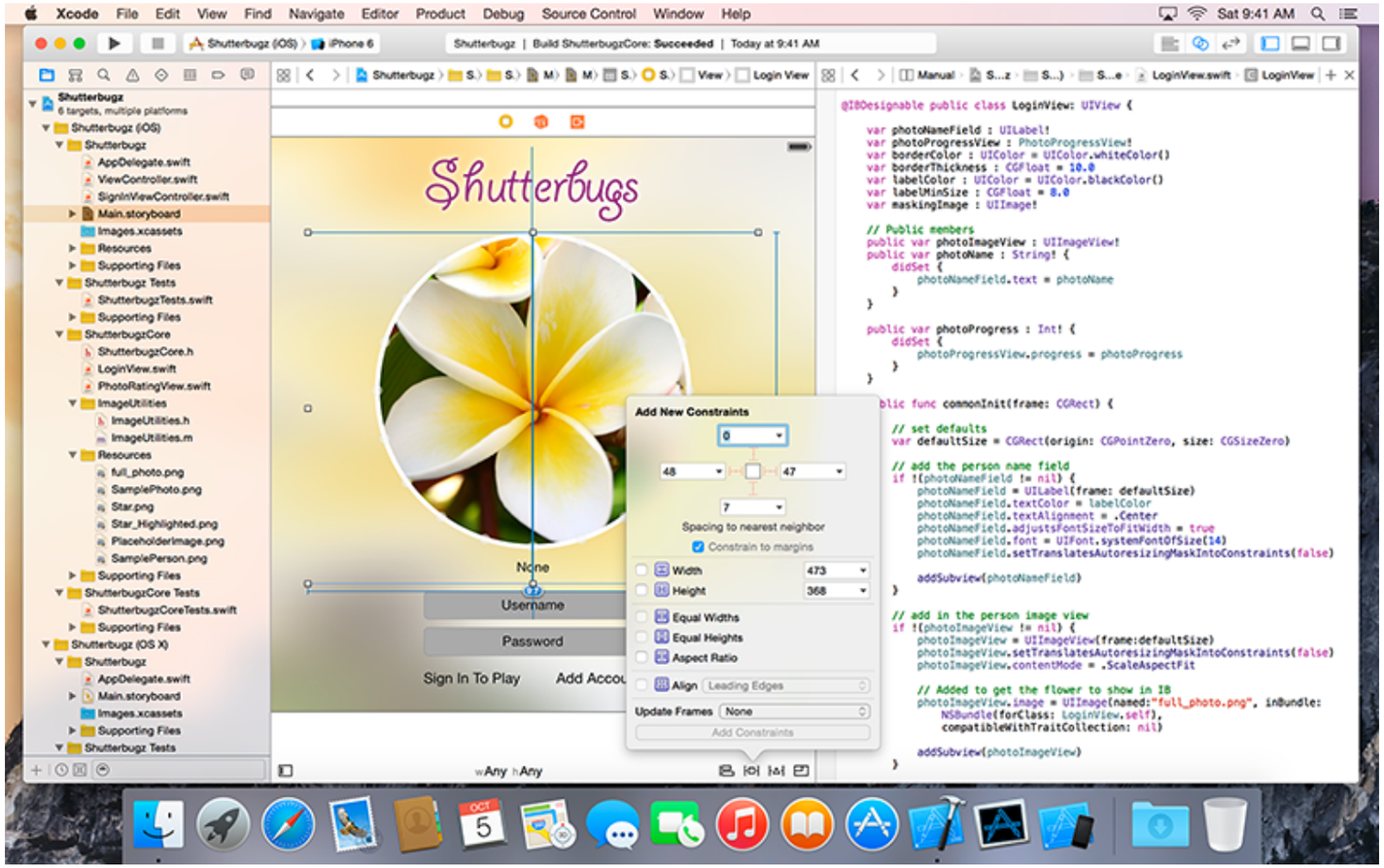
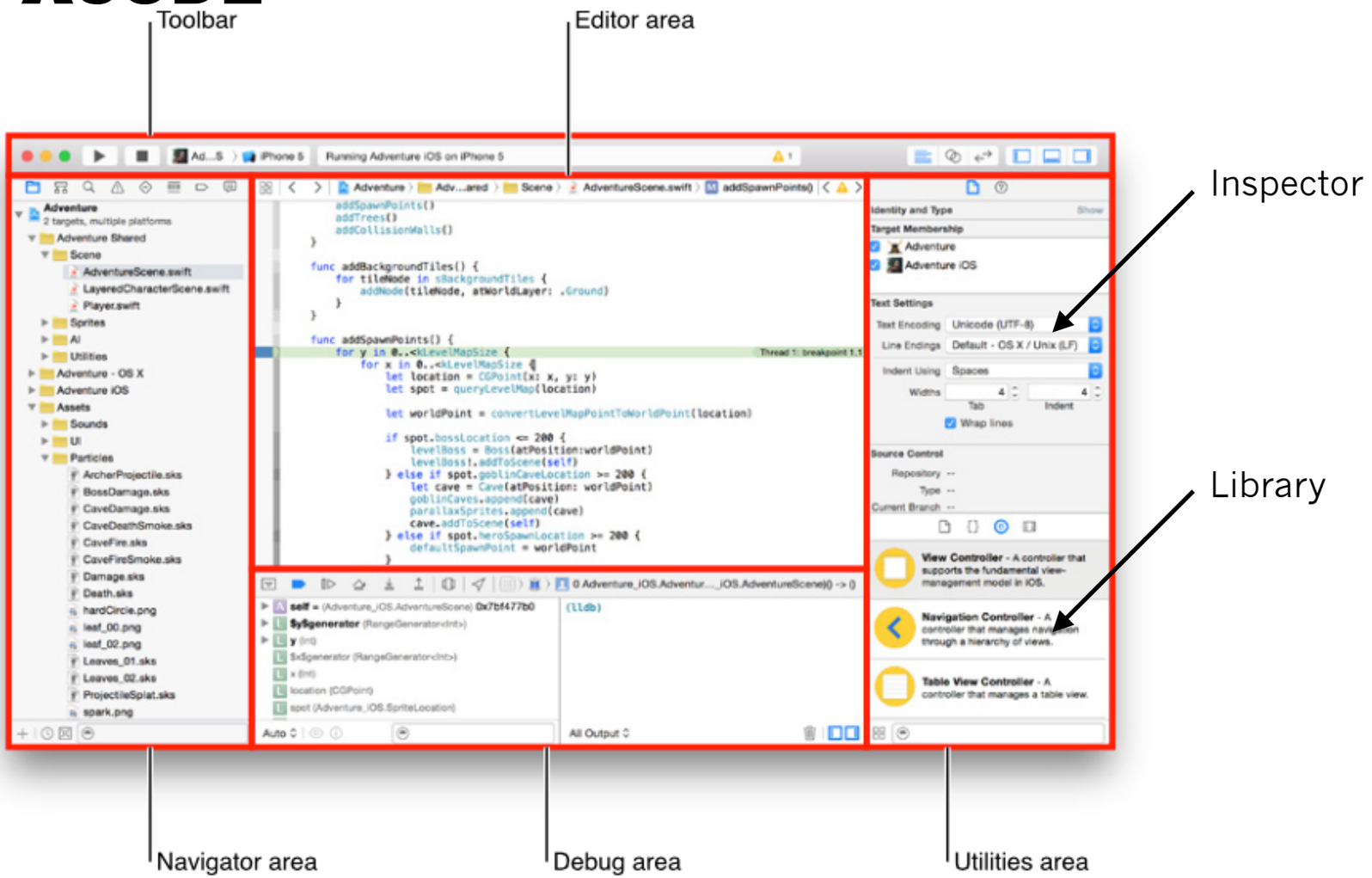
LEARNING OBJECTIVES

- Create your first working iOS app.
- Describe and execute the Xcode workflow.
- Place UI elements from the IB Library.
- Change elements by dragging.
- Change elements by adjusting their parameters in the Inspector.
- Learn about scroll views, labels, and photo views.

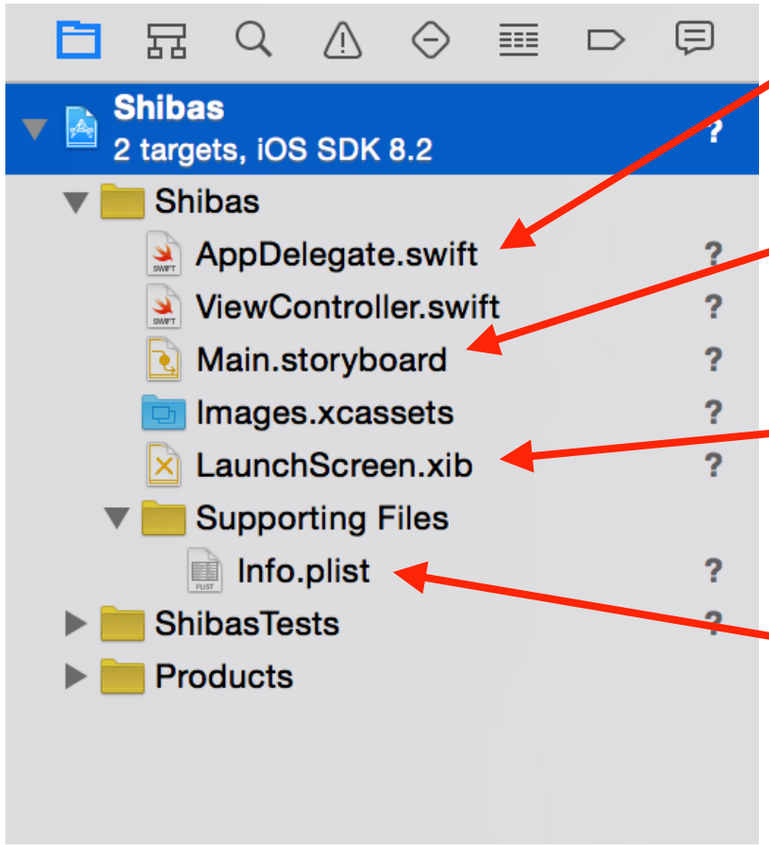
WHAT IS XCODE?



NAVIGATING XCODE



FILE TYPES



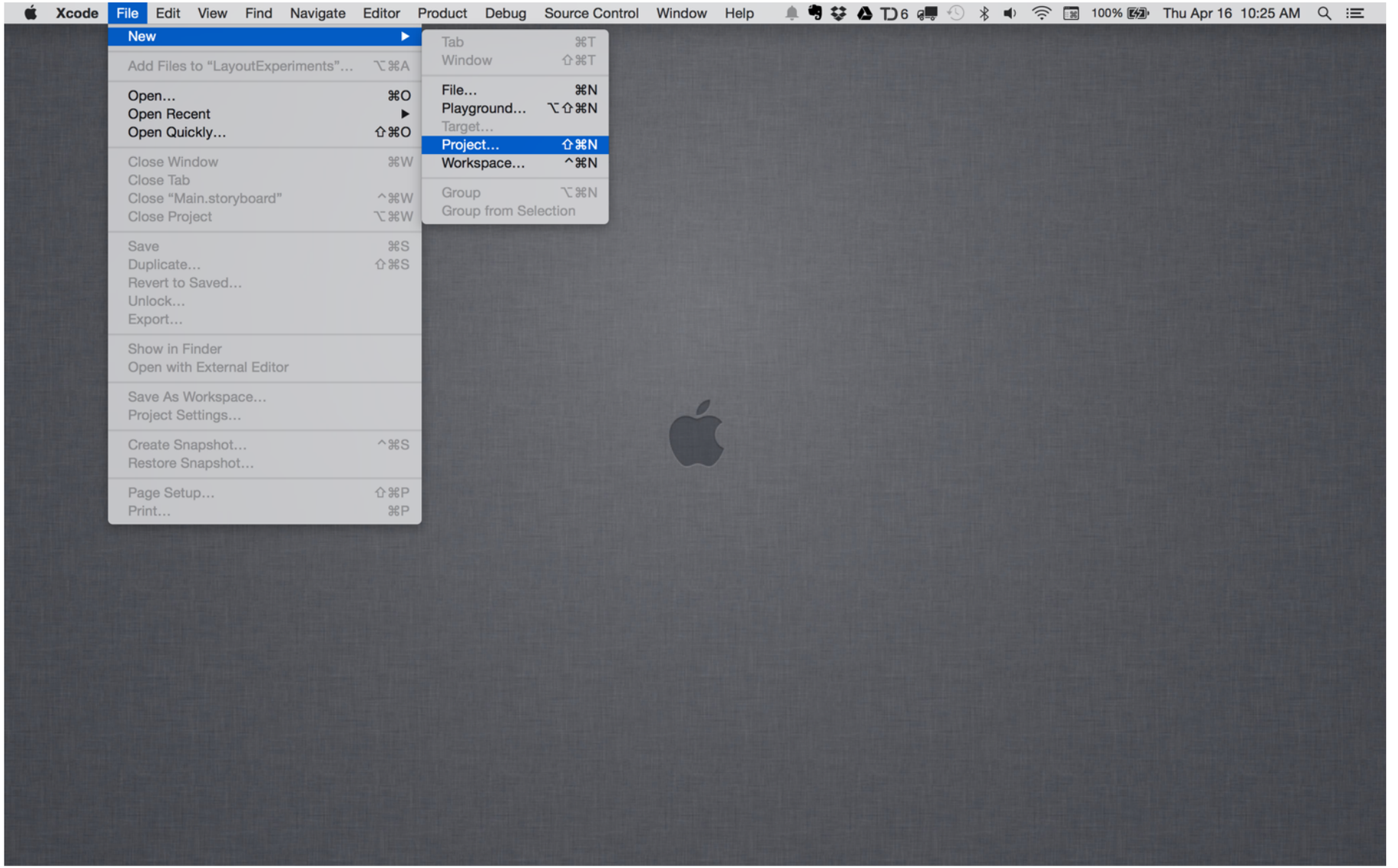
- .swift
  Swift source code file
- .storyboard
  an Interface Builder “storyboard” file
- .xib
  an Interface Builder “NIB” file
- .plist
  a “property list”

CREATE A NEW PROJECT

CREATE A NEW PROJECT: LEARNING OBJECTIVES

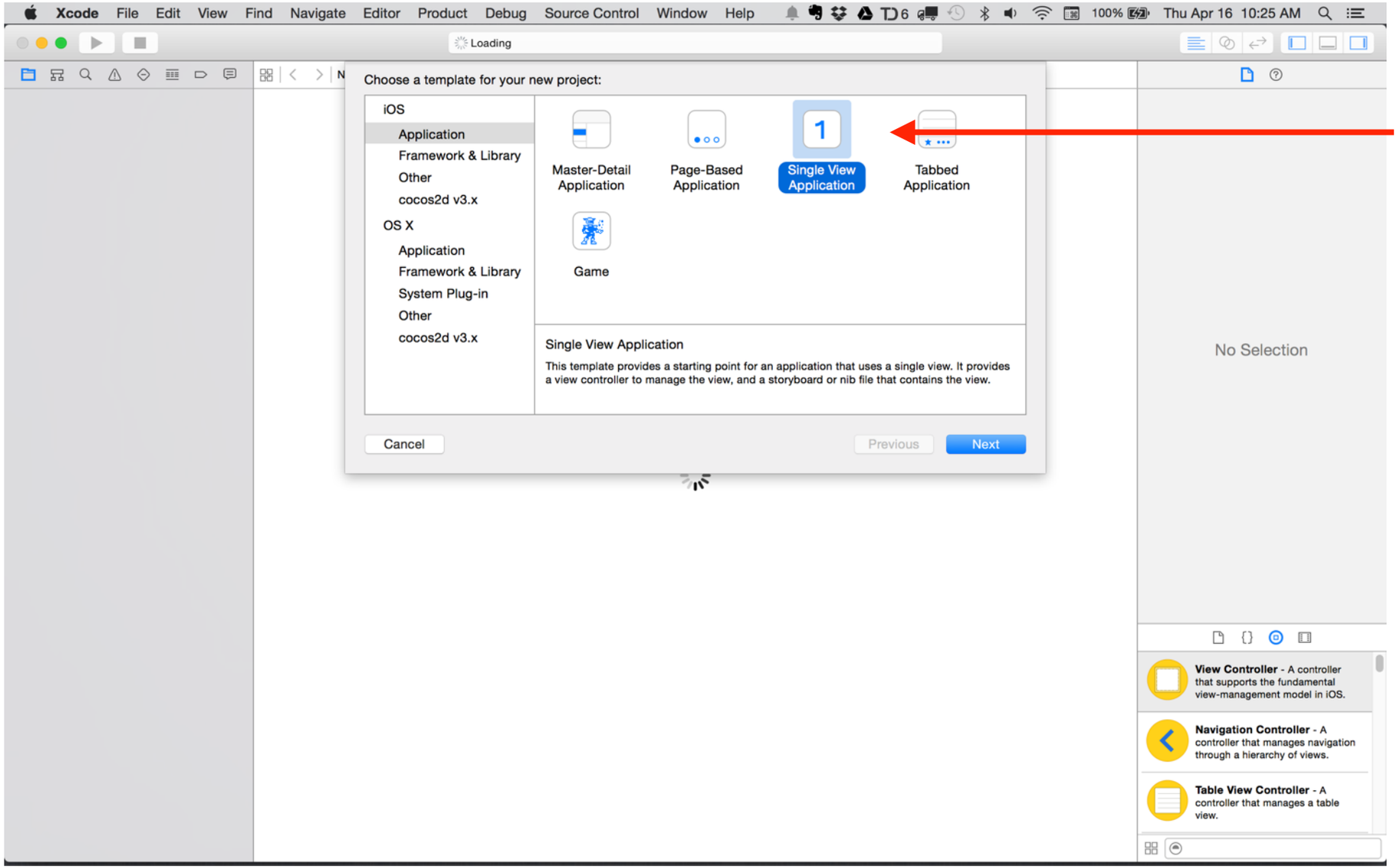
- Create an Xcode “Project”, which is really a bundle of code and interfaces that constitute an App.

XCODE TUTORIAL: PHOTO GALLERY



Start Xcode and create a new Project.

XCODE TUTORIAL: PHOTO GALLERY

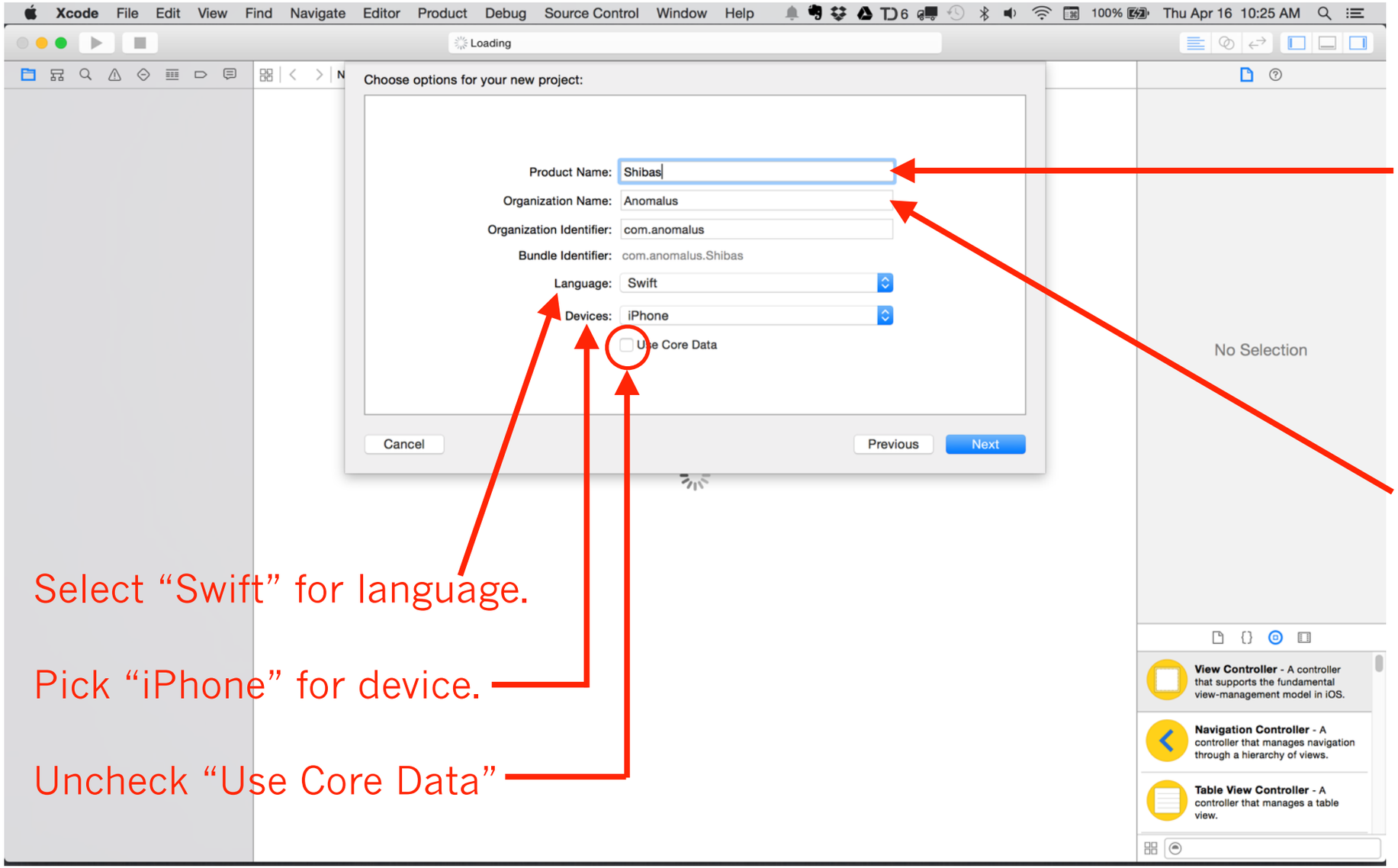


Pick the “Single View Application” project template.

Other templates are convenient starting points for different types of apps.

You’re not stuck if you pick the wrong one, but the right template does put you on the right track.

XCODE TUTORIAL: PHOTO GALLERY



Enter the name of your project here.

For now, just the plural form of whatever your photos will be of.

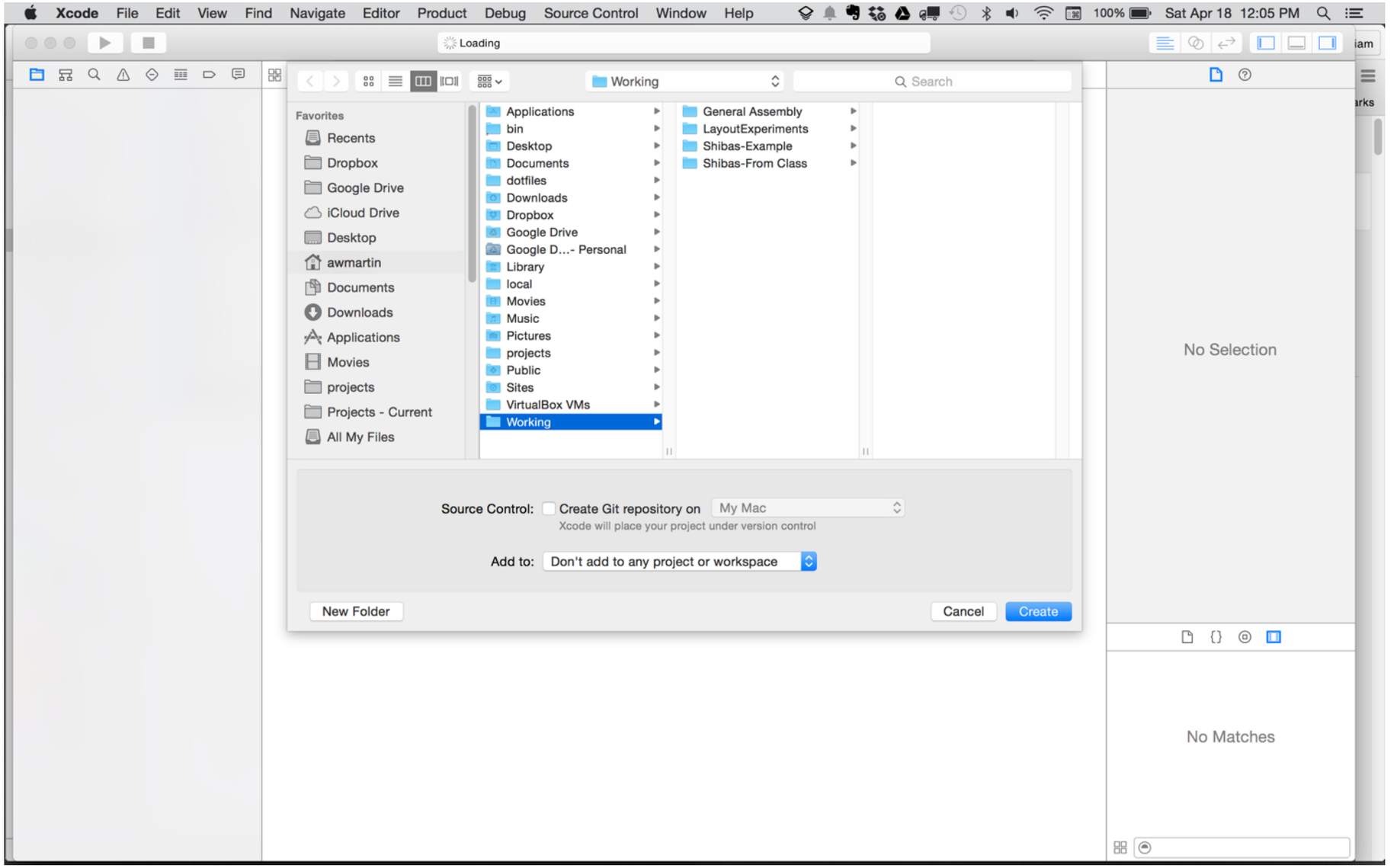
Also add an "Organization Name"; pretend it's your awesome startup that you'll start some day.

Select "Swift" for language.

Pick "iPhone" for device.

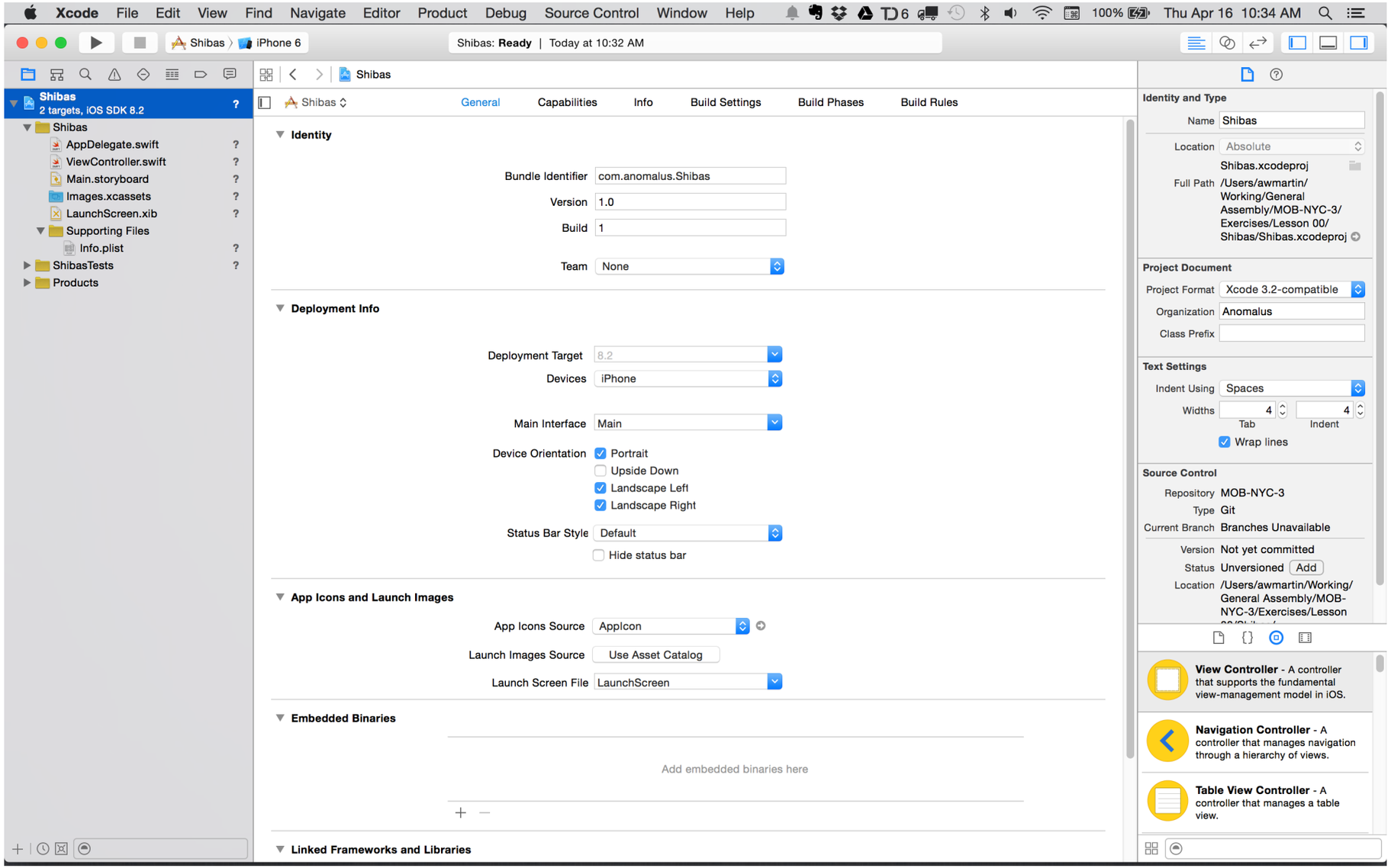
Uncheck "Use Core Data"

XCODE TUTORIAL: PHOTO GALLERY



Save the Project somewhere convenient.

XCODE TUTORIAL: PHOTO GALLERY



You may see this settings screen. Don't worry about any of these settings yet.

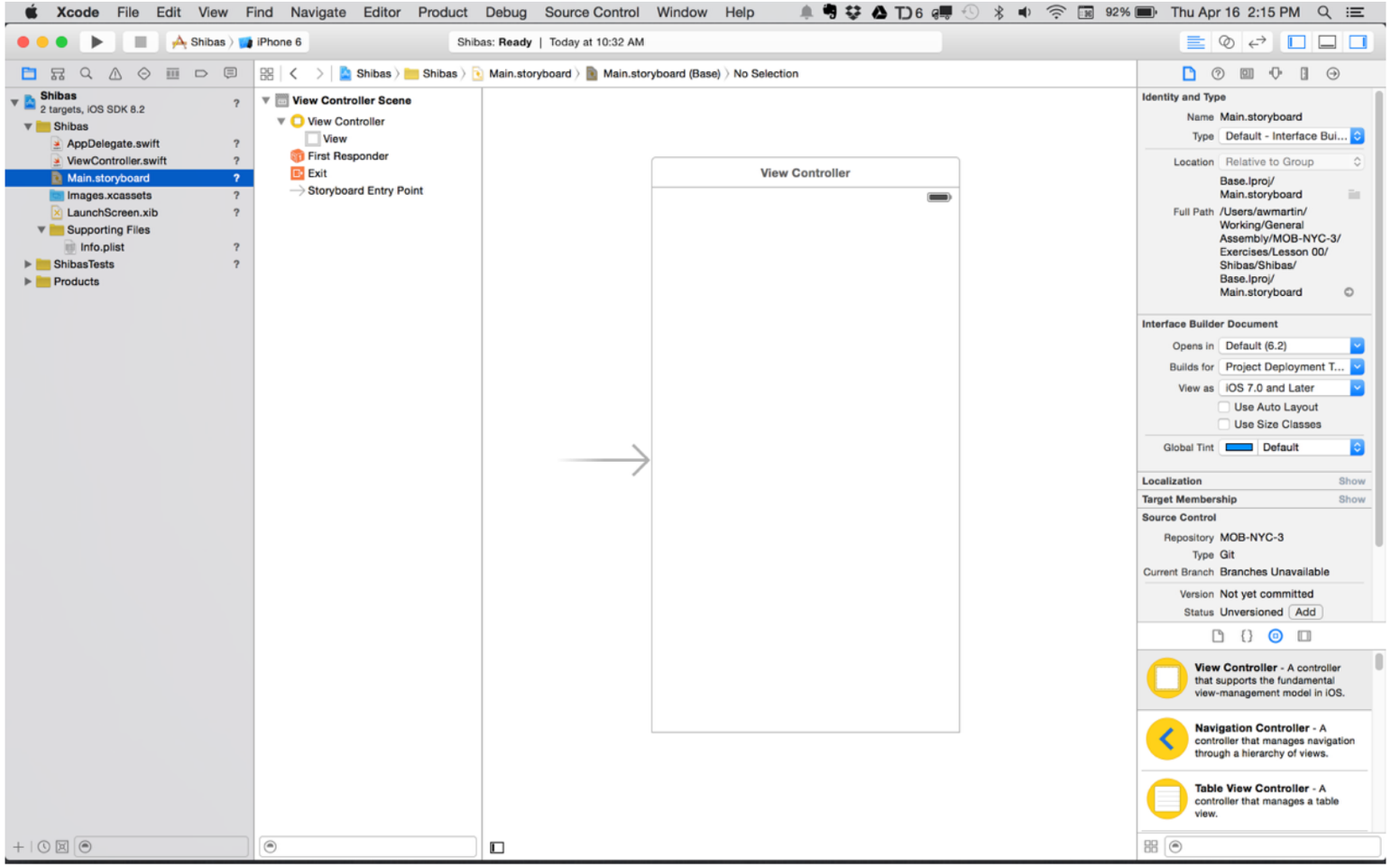
INTERFACE BUILDER

CREATE A NEW PROJECT: INTERFACE BUILDER

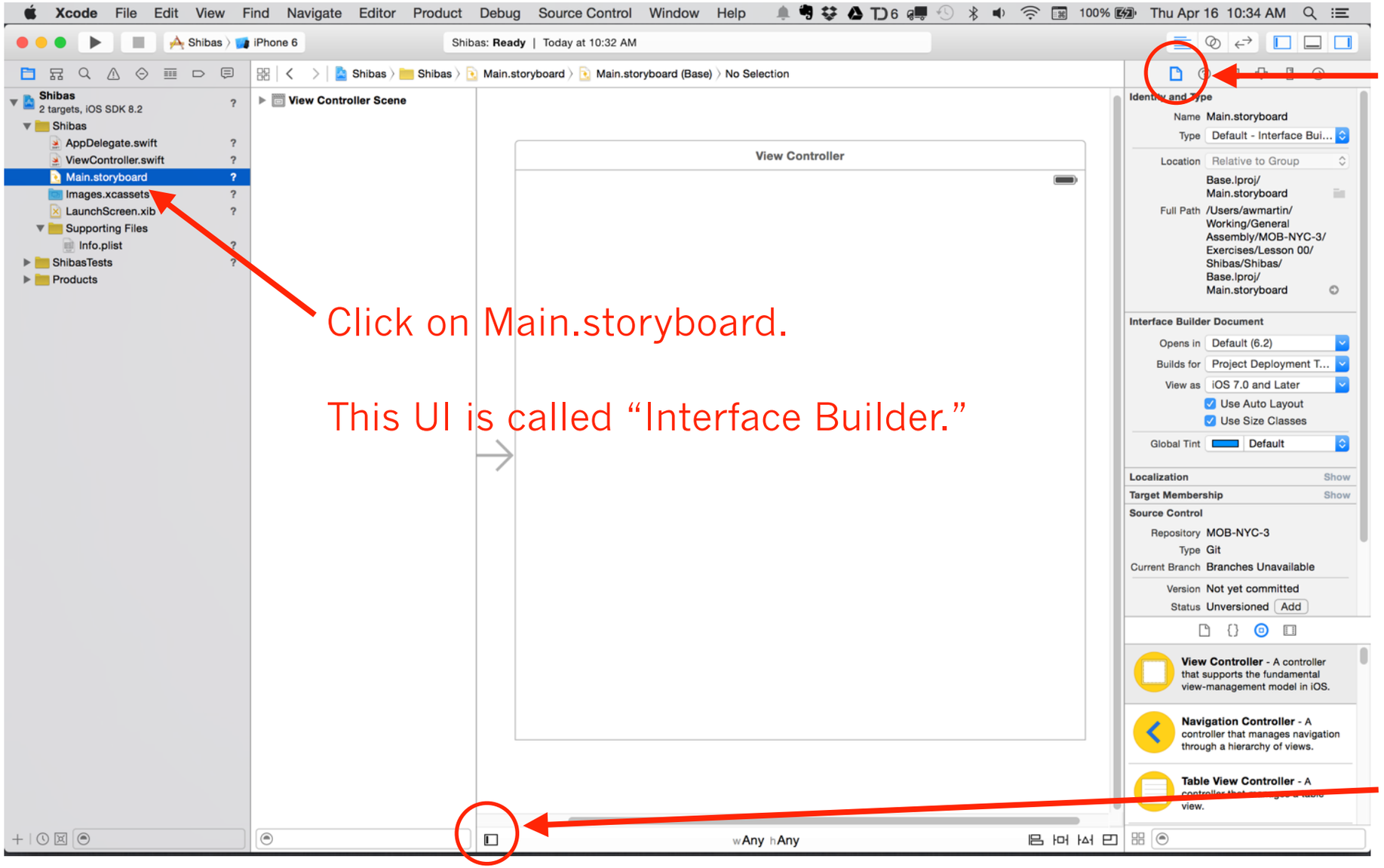
- Become familiar with the Interface Builder UI embedded into Xcode.

XCODE TUTORIAL: PHOTO GALLERY

INTERFACE BUILDER



XCODE TUTORIAL: PHOTO GALLERY



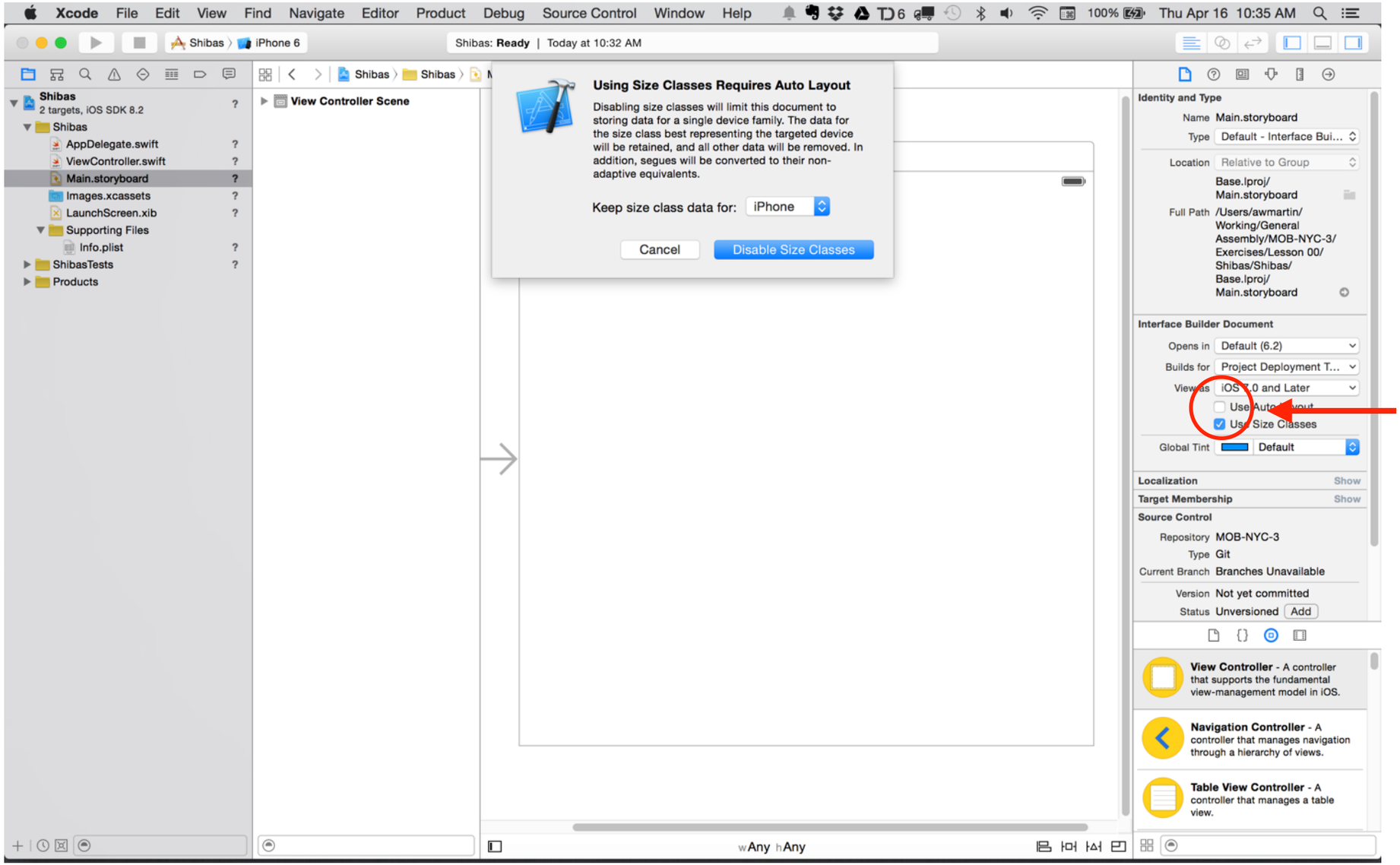
Click on Main.storyboard.

This UI is called “Interface Builder.”

Make sure you have the “File Inspector” selected

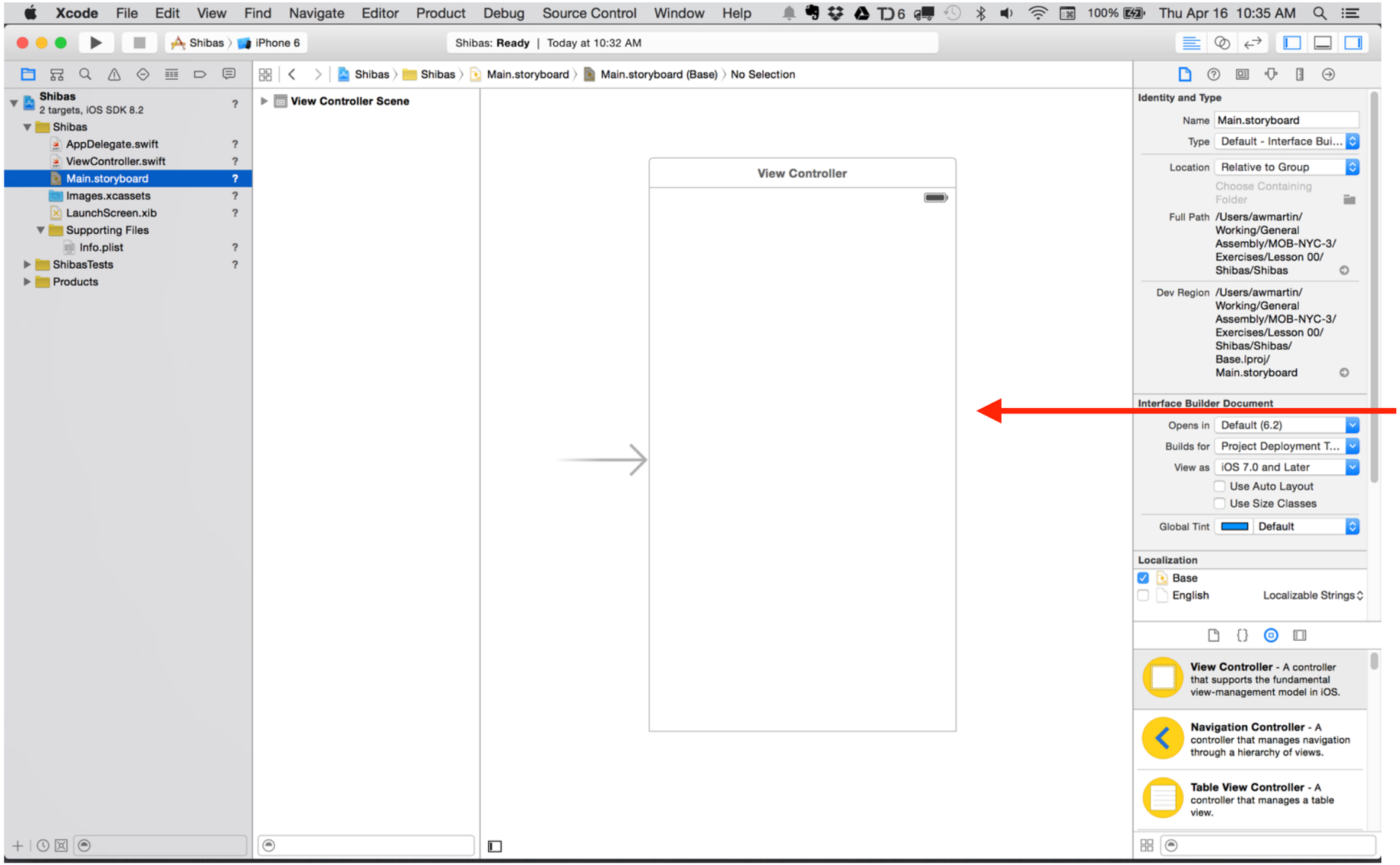
Open the “Document Outline” to show this second sidebar.

XCODE TUTORIAL: PHOTO GALLERY



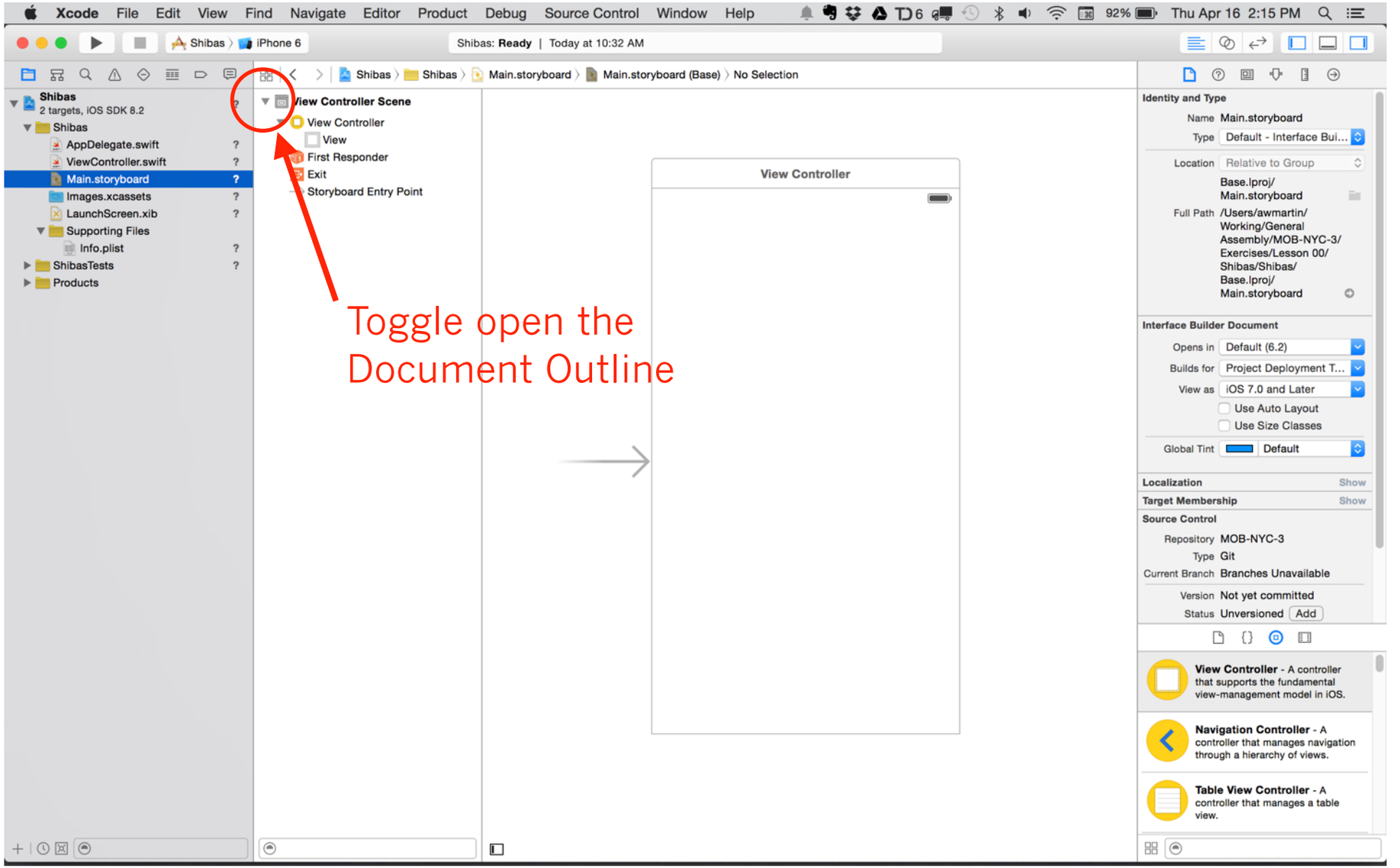
Uncheck
“Use Auto Layout”

XCODE TUTORIAL: PHOTO GALLERY



The result should be a smaller rectangle here, with the title “View Controller”, that mimics the proportions of an iPhone screen.

XCODE TUTORIAL: PHOTO GALLERY

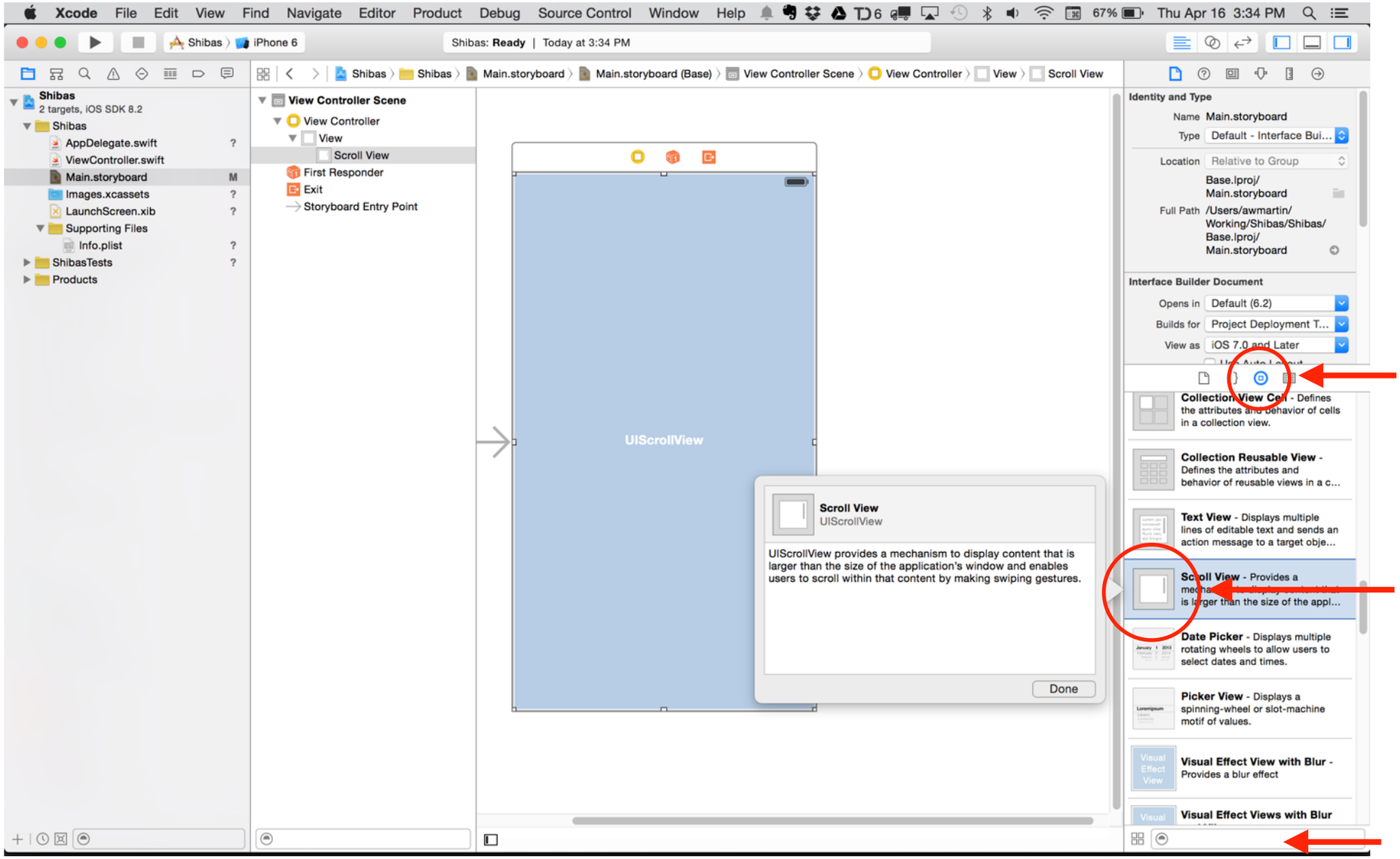


ADDING VIEWS

CREATE A NEW PROJECT: ADDING VIEWS

- Learn how to use Interface Builder to add views to an App's main UI (user interface).

XCODE TUTORIAL: PHOTO GALLERY

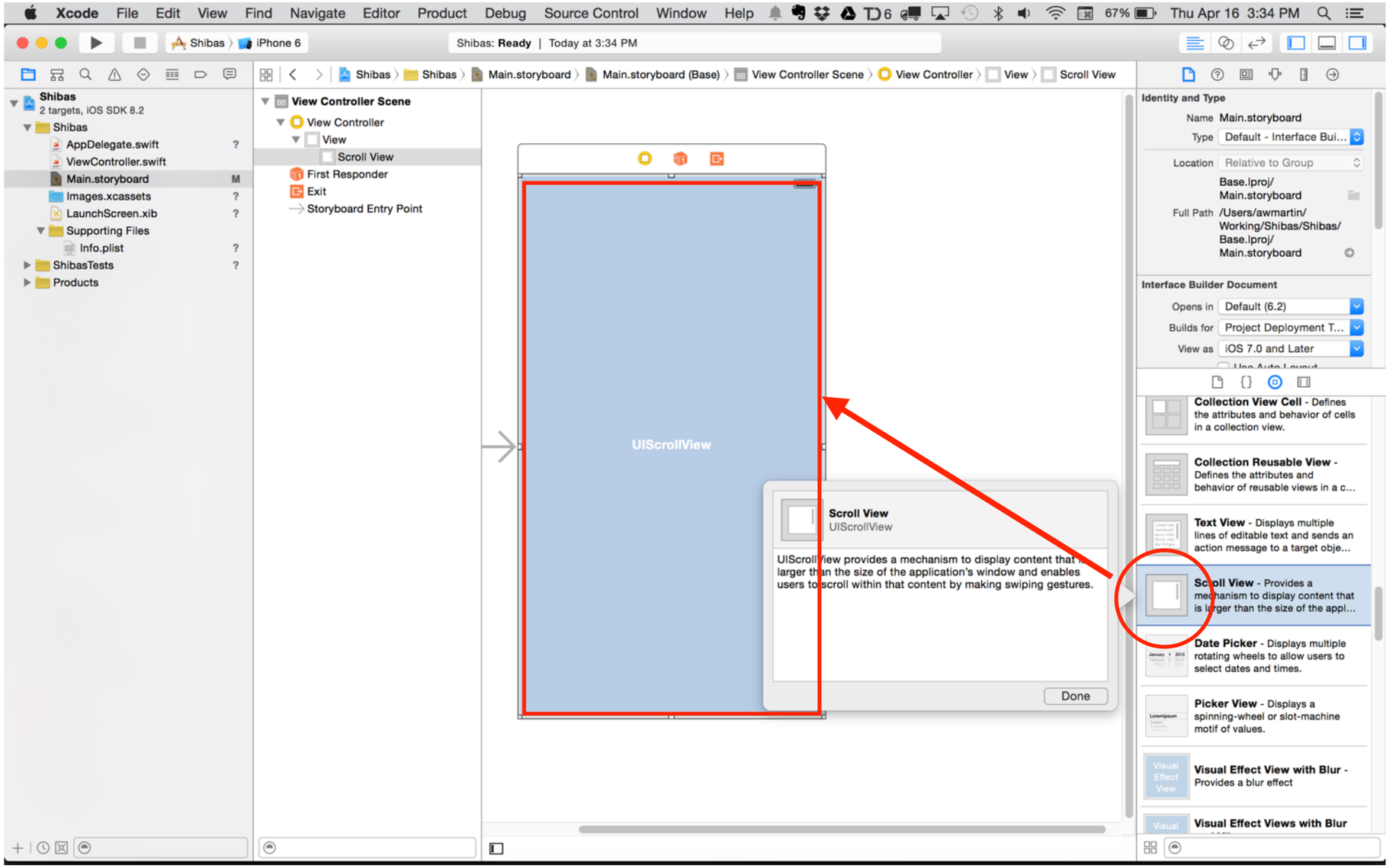


Make sure you have the “Object Library” pane open.

Find the “Scroll View” component in the Object Library.

If you prefer, you can search for “scroll” here to find it.

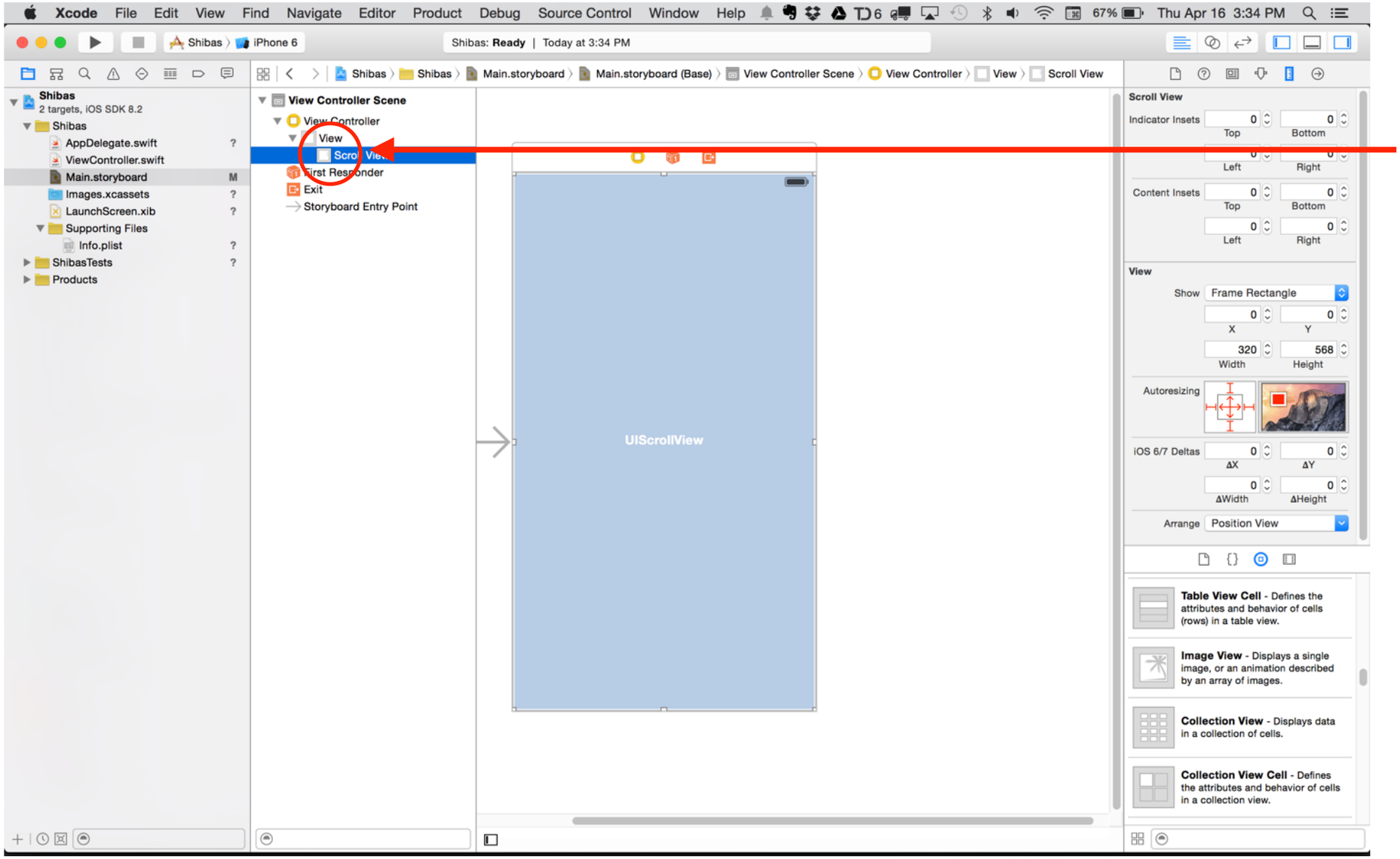
XCODE TUTORIAL: PHOTO GALLERY



Click-and-drag from the Scroll View in the list and drop it onto the iPhone-shaped box on the left.

Drag it to fill the iPhone screen.

XCODE TUTORIAL: PHOTO GALLERY

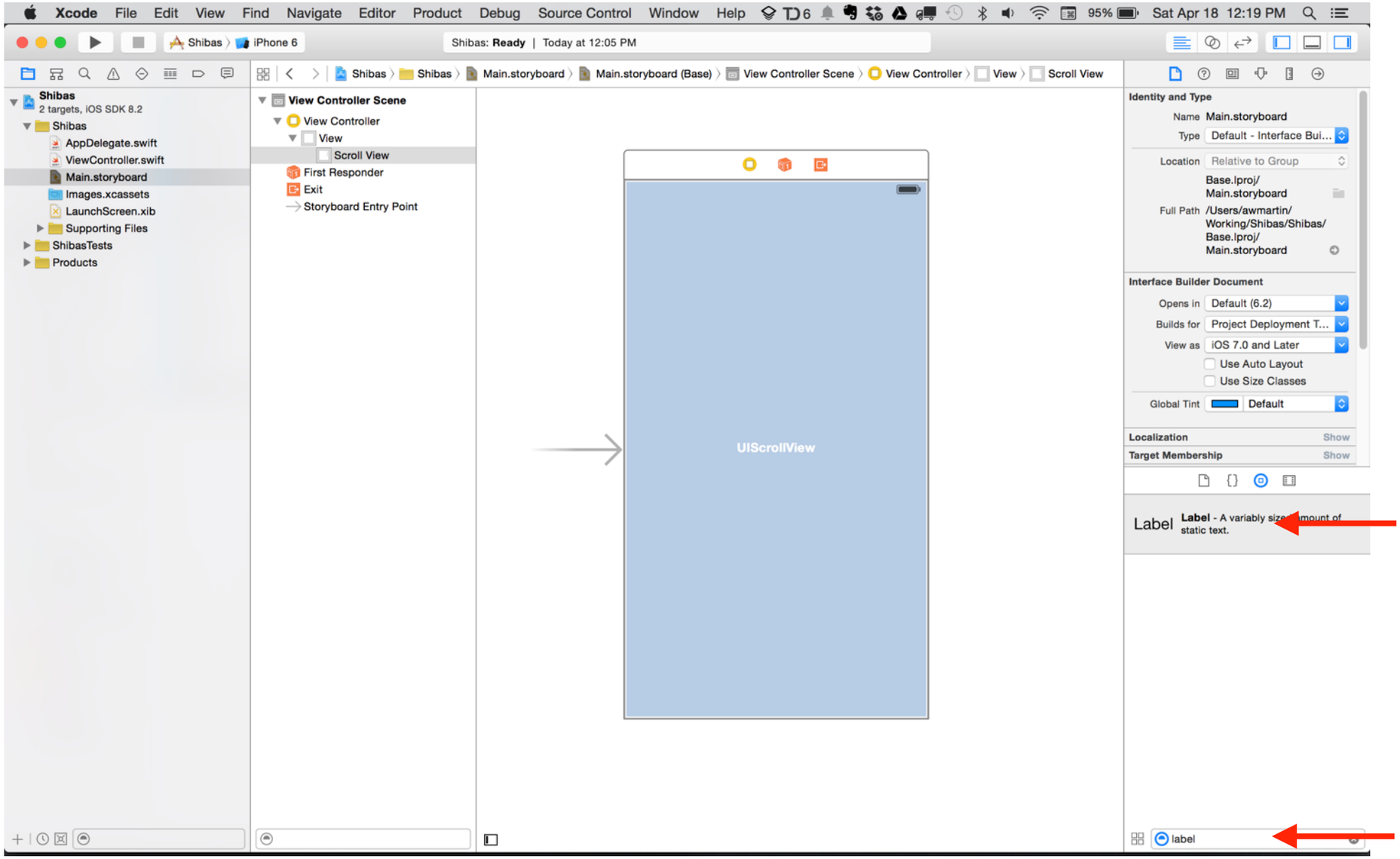


Note how a new generic “Scroll View” shows up in the Document Outline.

This lets us know “where” the Scroll View lives in terms of the data hierarchy we created.

More about this in a later tutorial.

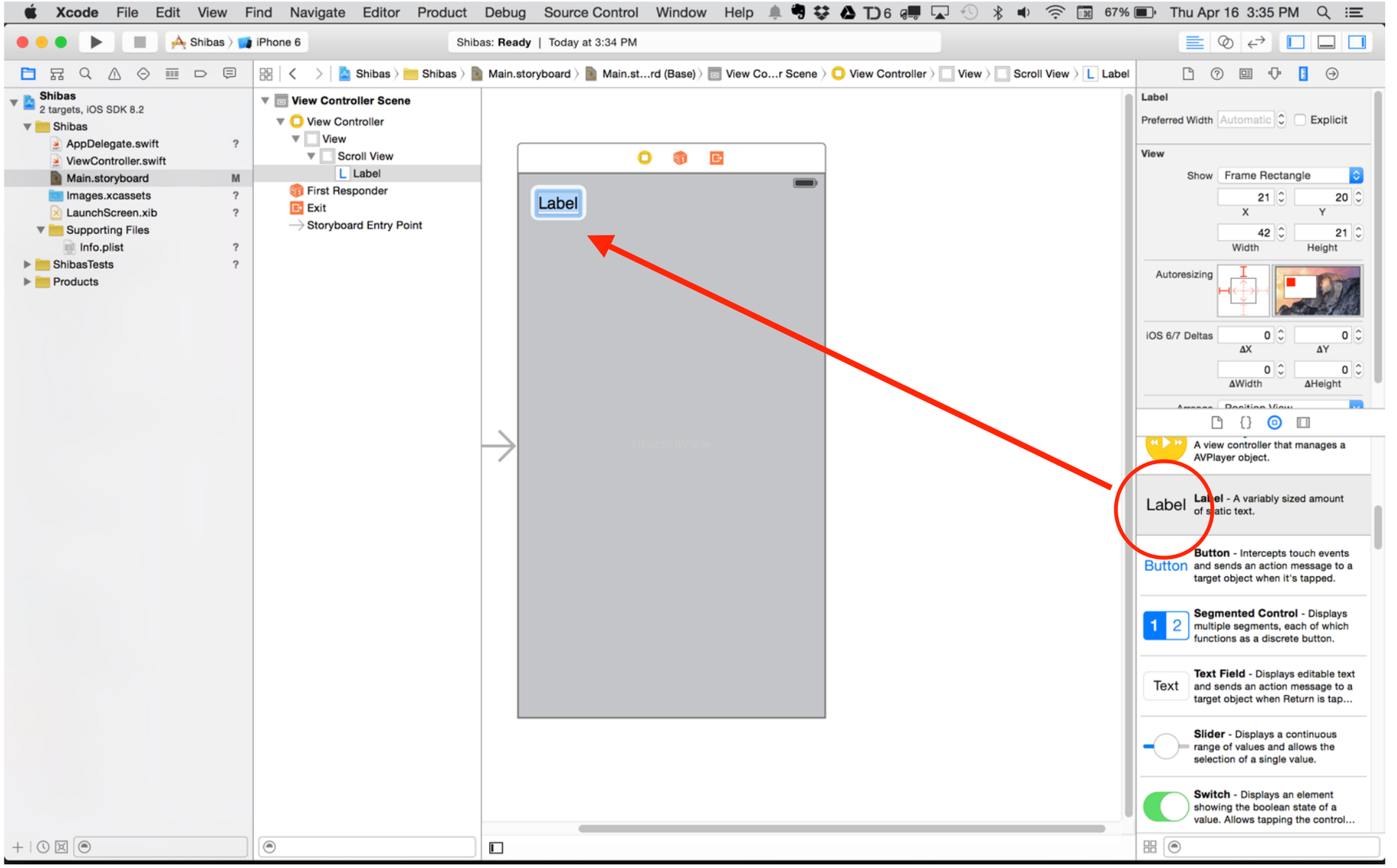
XCODE TUTORIAL: PHOTO GALLERY



Find a Label in the Object Library.

Perhaps by searching?

XCODE TUTORIAL: PHOTO GALLERY

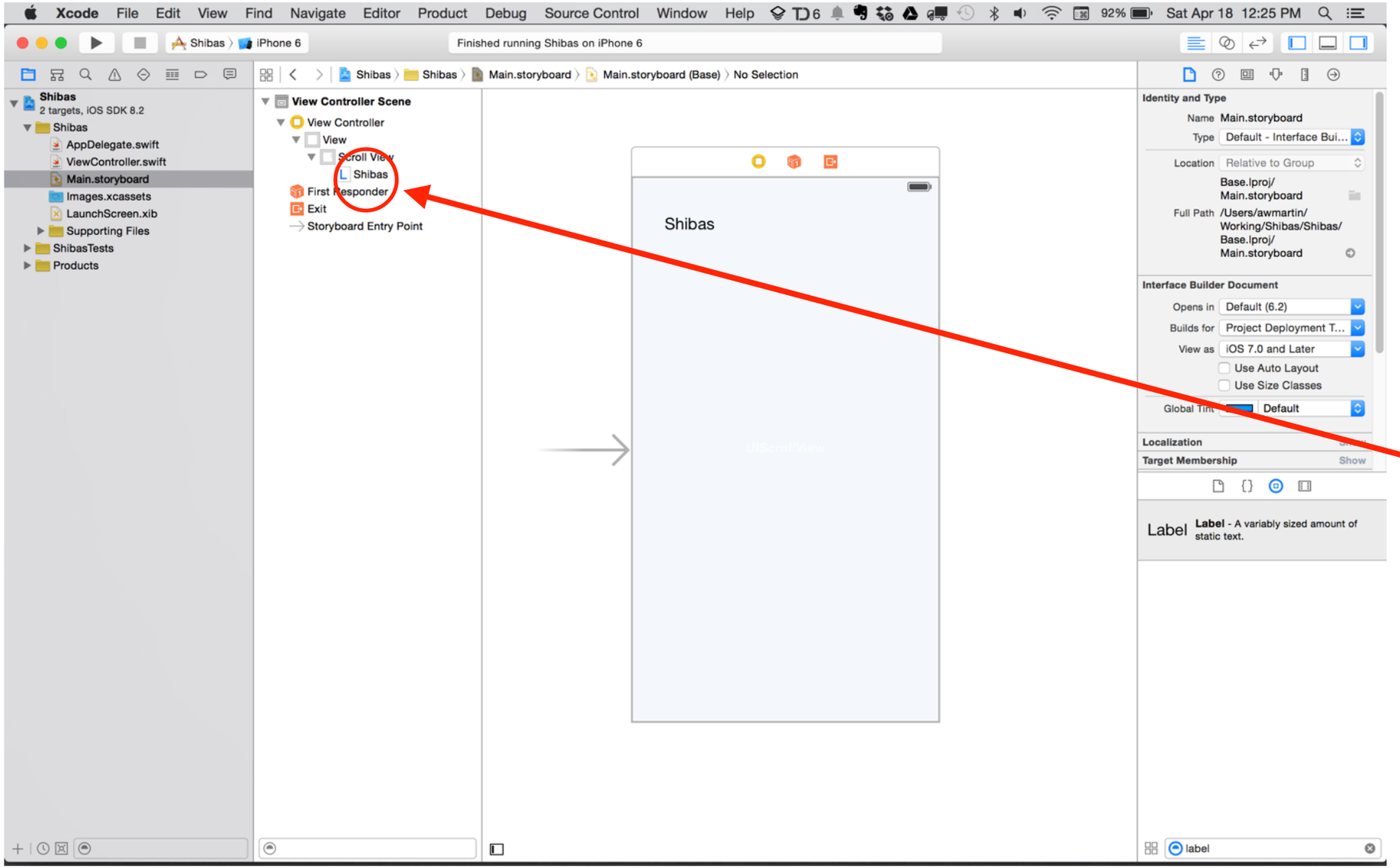


Drag a label onto the Scroll View.

Double-click it to edit the text in the Label.

Type in the name of your app.

XCODE TUTORIAL: PHOTO GALLERY



Success!

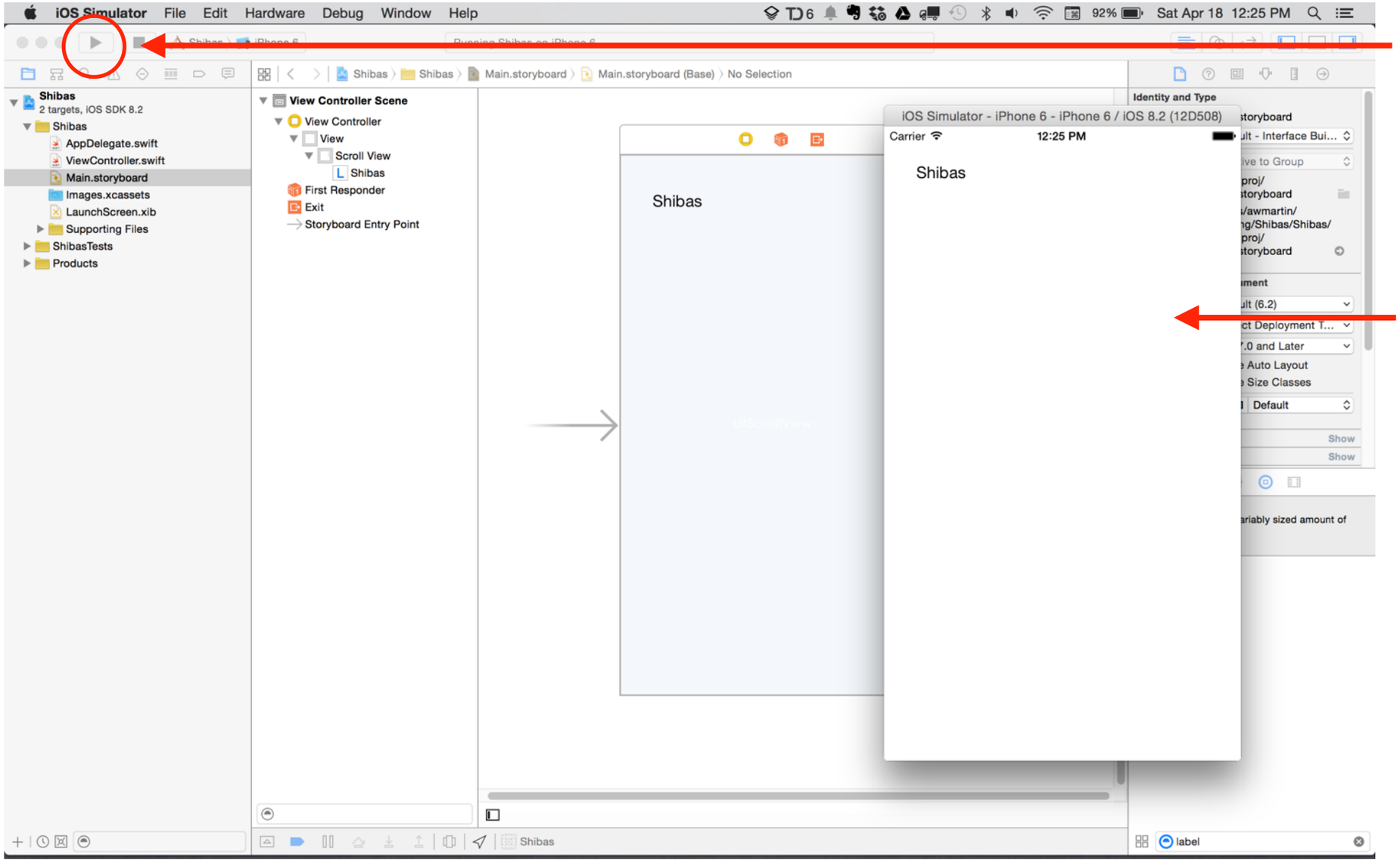
Note how the Label also shows up in the Document Outline.

RUNNING THE APP

CREATE A NEW PROJECT: RUNNING THE APP

- What's the workflow going to be like for running and editing apps?

XCODE TUTORIAL: PHOTO GALLERY



Click on the Play button to “Run” the app.

Another Mac app will start, called the “iOS Simulator”.

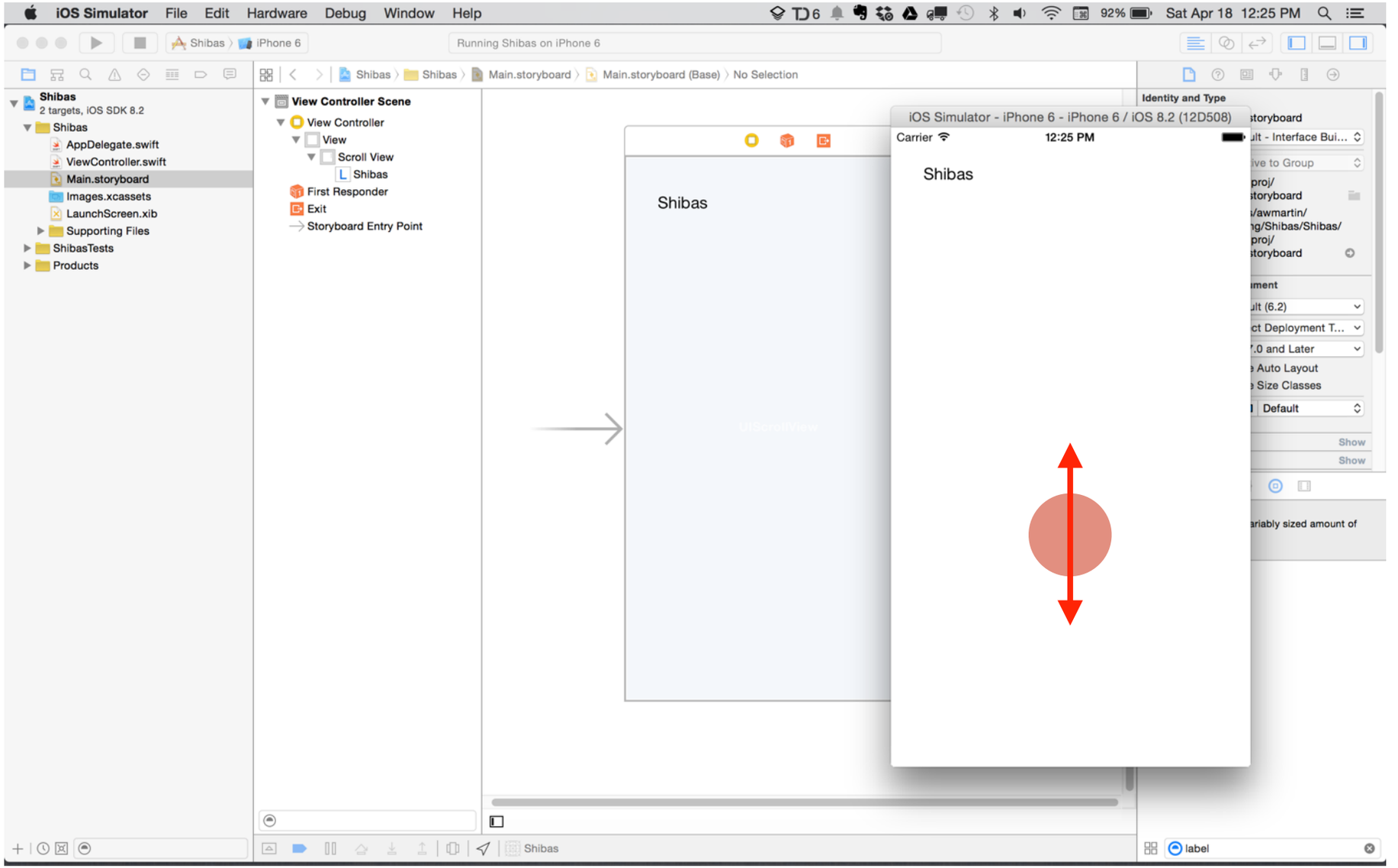
A little window should pop up and show your label!

If the view is unusually large, type Cmd+2 or Cmd+3 to make it smaller.

CONGRATULATIONS!

YOU JUST CREATED YOUR FIRST APP!

XCODE TUTORIAL: PHOTO GALLERY



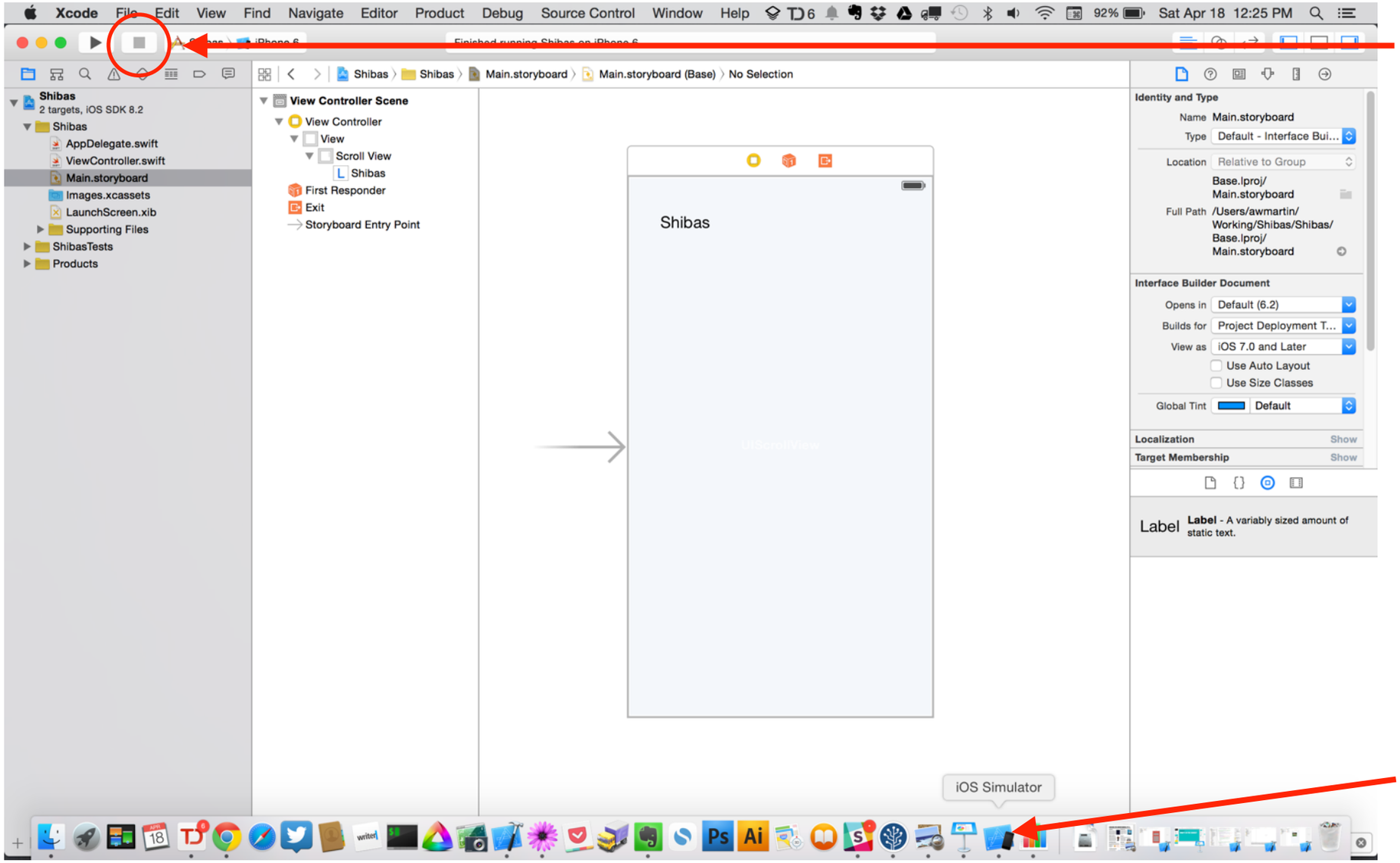
The simulator acts like an iPhone, so scrolling on your Mac's trackpad won't work.

Pretend that your mouse cursor is a finger.

Click on the Simulator window and drag up and down.

Note that the label isn't moving, although we added a "Scroll View."

XCODE TUTORIAL: PHOTO GALLERY

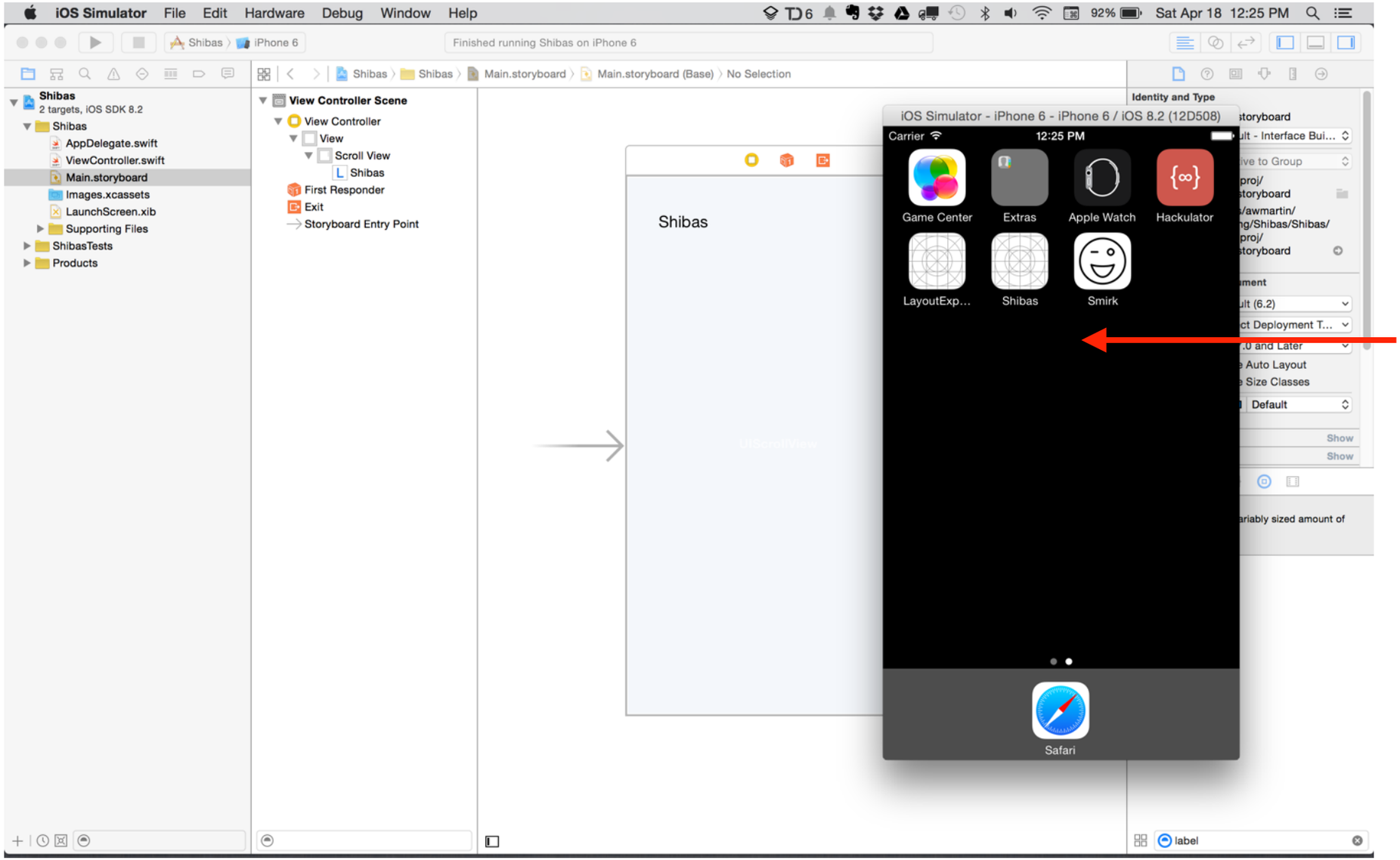


Stop the app by clicking the Stop button in Xcode.

Let's take a quick peek at the Simulator.

Look for the iOS Simulator in your Dock. Click it.

XCODE TUTORIAL: PHOTO GALLERY



The iOS Simulator is exactly like having an iPhone *in the computer!*

We're going to be spending lots of time here.

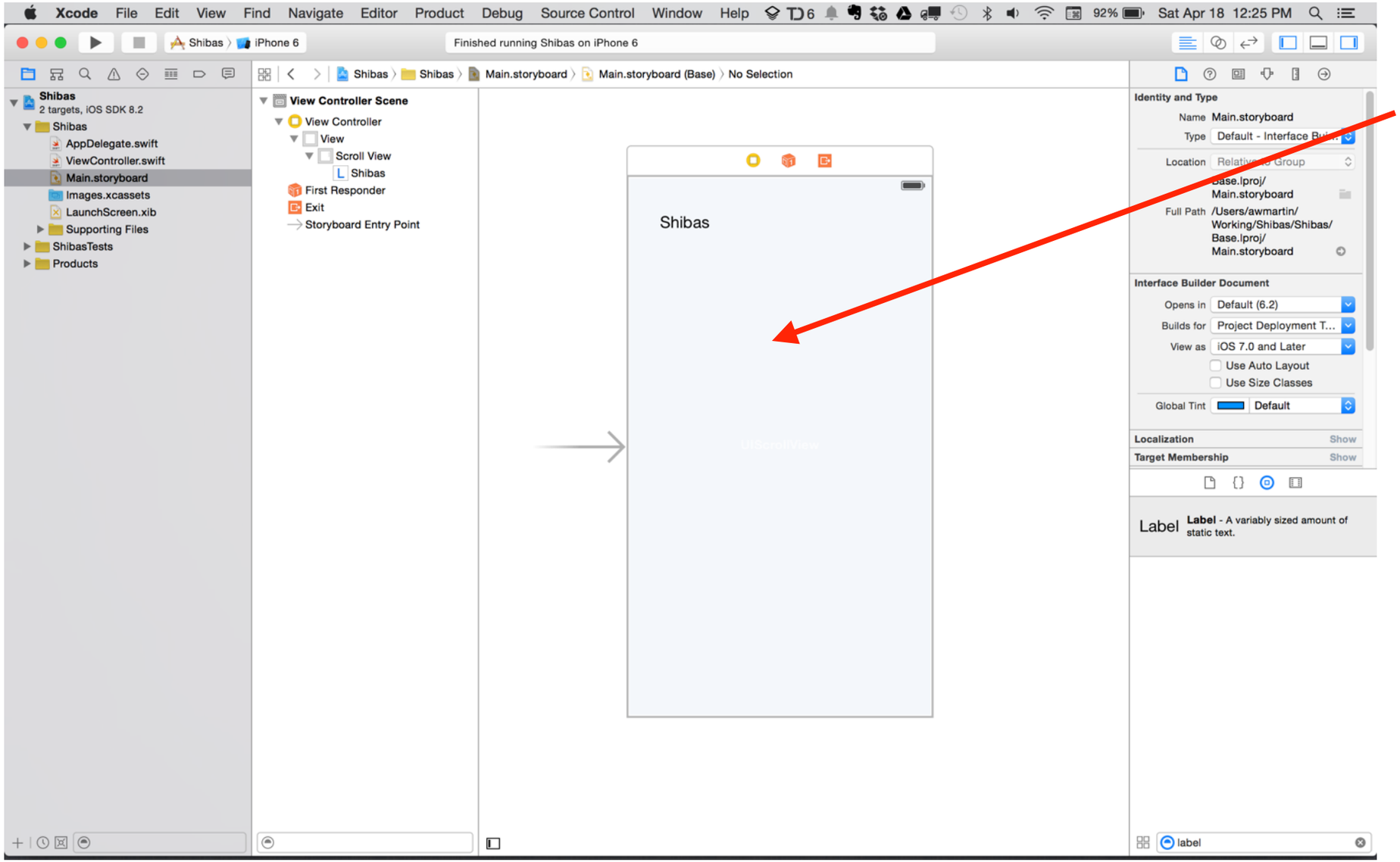
More about the Simulator later.

SCROLLING 101

CREATE A NEW PROJECT: RUNNING THE APP

- Make that darned Scroll View actually scroll like we expect.

XCODE TUTORIAL: PHOTO GALLERY

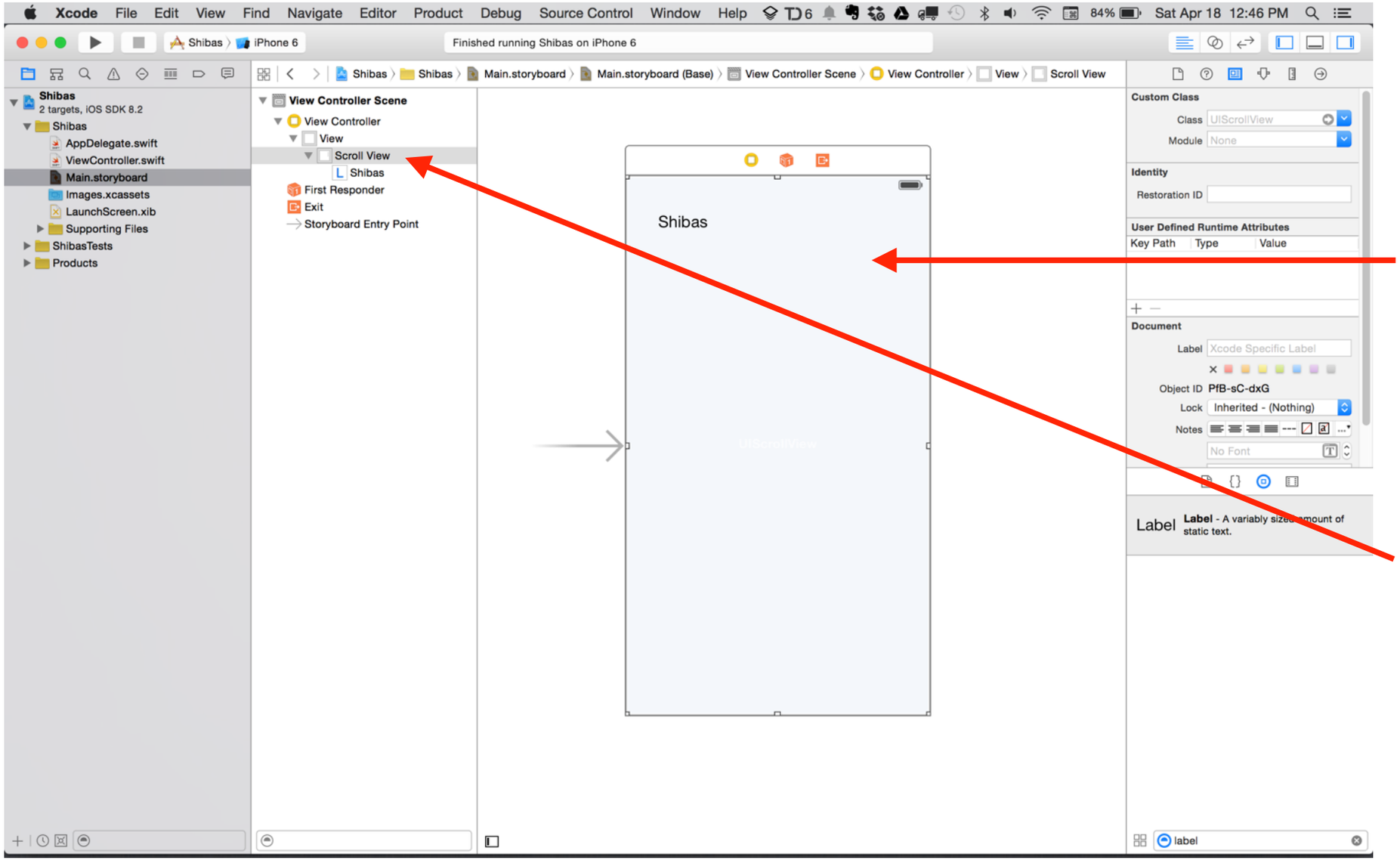


One problem with our app was that the Scroll View wasn't scrolling.

This kind of made sense at the time, since we didn't have enough content to justify scrolling.

But we'll need scrolling to accommodate the photos we're going to add.

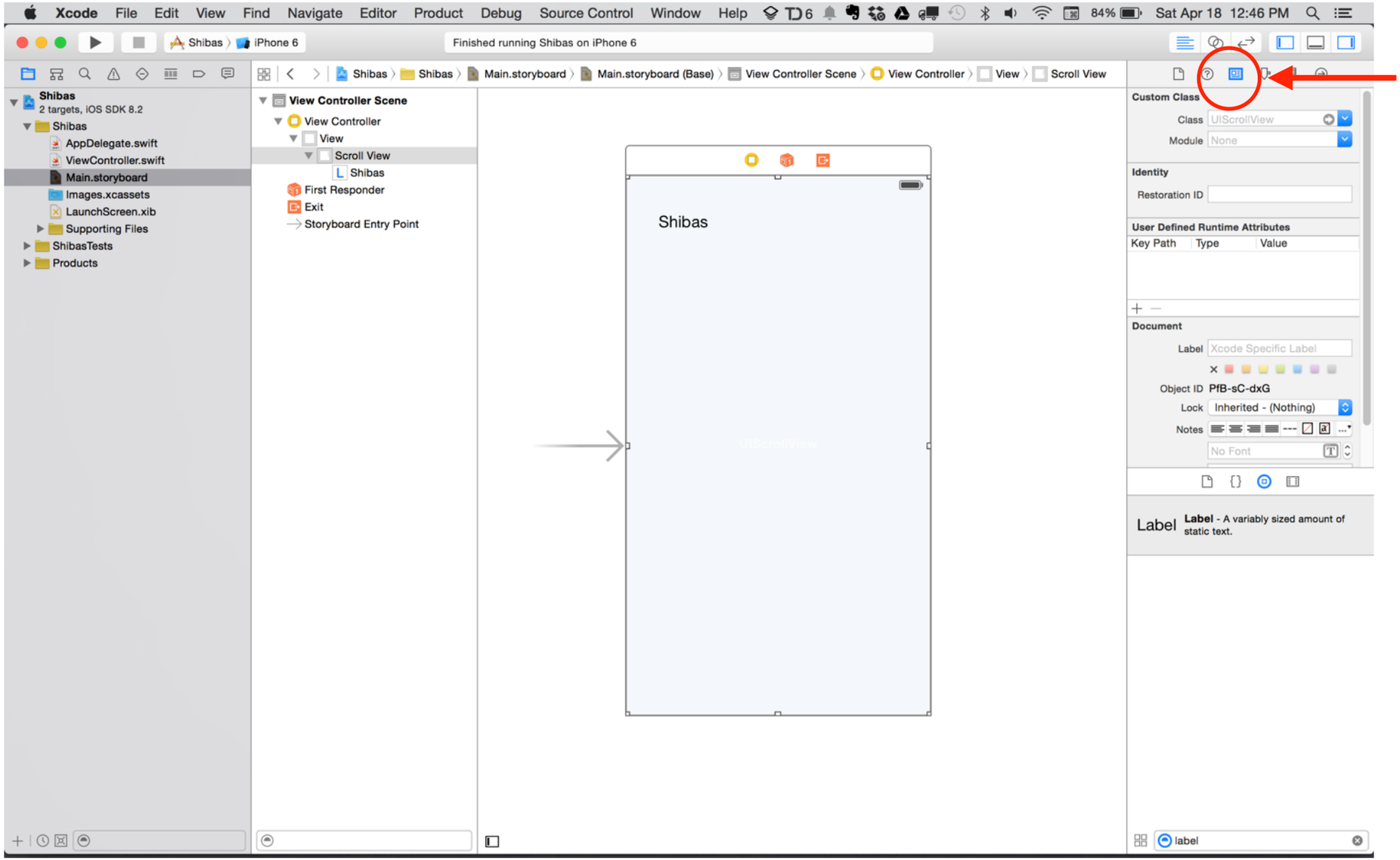
XCODE TUTORIAL: PHOTO GALLERY



Select the Scroll View by clicking here.

Note that it is also highlighted in the Document Outline. This helps to let you know what's selected.

XCODE TUTORIAL: PHOTO GALLERY

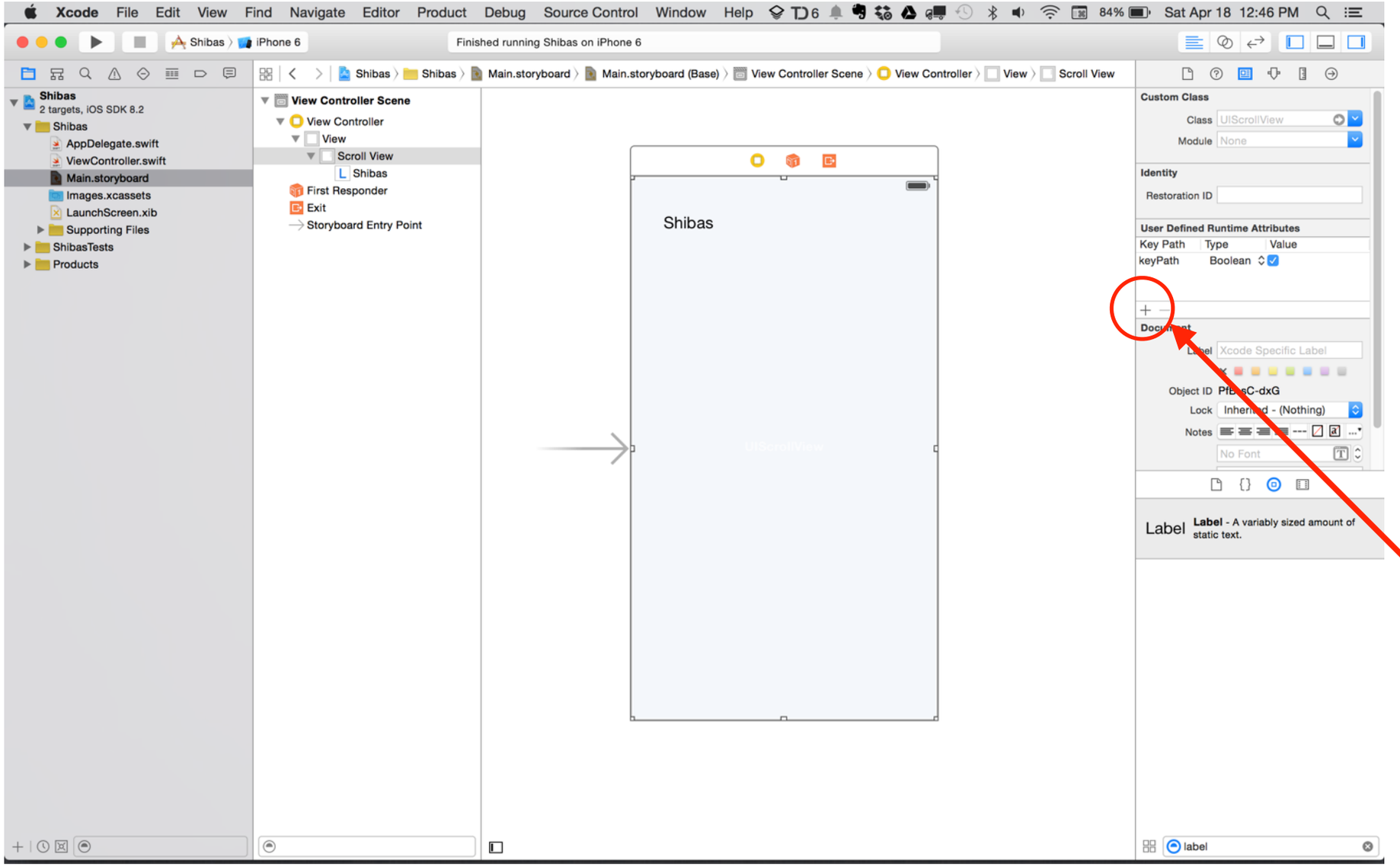


Click on the "Identity Inspector" here.

We're going to practice changing "attributes" of a View using the Inspector panel.

This is a common workflow we'll be using to tweak the behaviors of UI objects.

XCODE TUTORIAL: PHOTO GALLERY



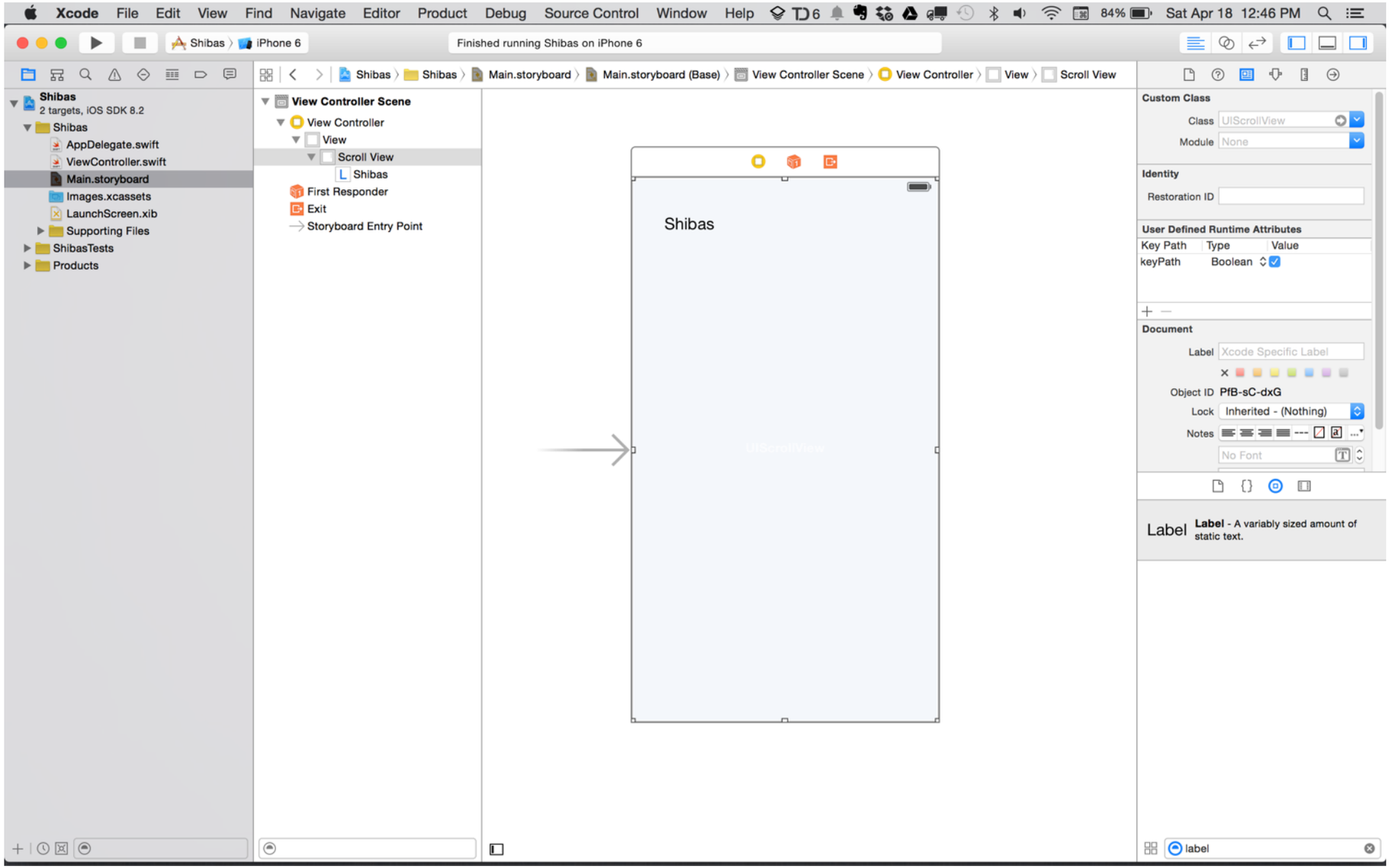
We're going tell the Scroll View the size of its content, the stuff it's supposed to scroll through.

We can do this by adjusting what's called a "Runtime Attribute."

Click the + button to add a new one.

You'll see a new entry pop up in the list above.

XCODE TUTORIAL: PHOTO GALLERY

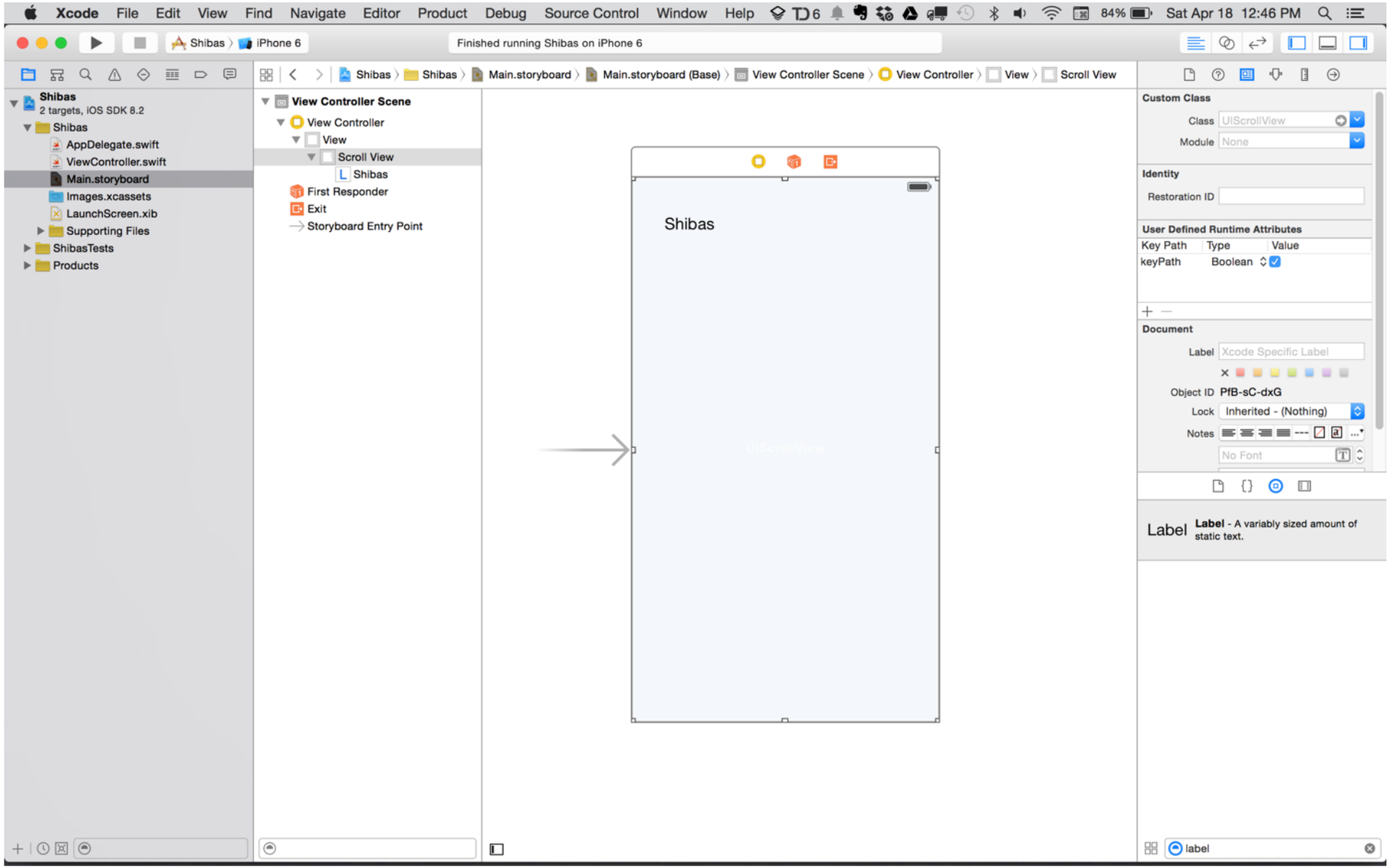


Runtime Attributes are a way of organizing information called "key-value" pairs.

If you think about describing a person, it's similar to:

name = "Janet"
height = 172 cm
...

XCODE TUTORIAL: PHOTO GALLERY



name = “Janet”
height = 172 cm

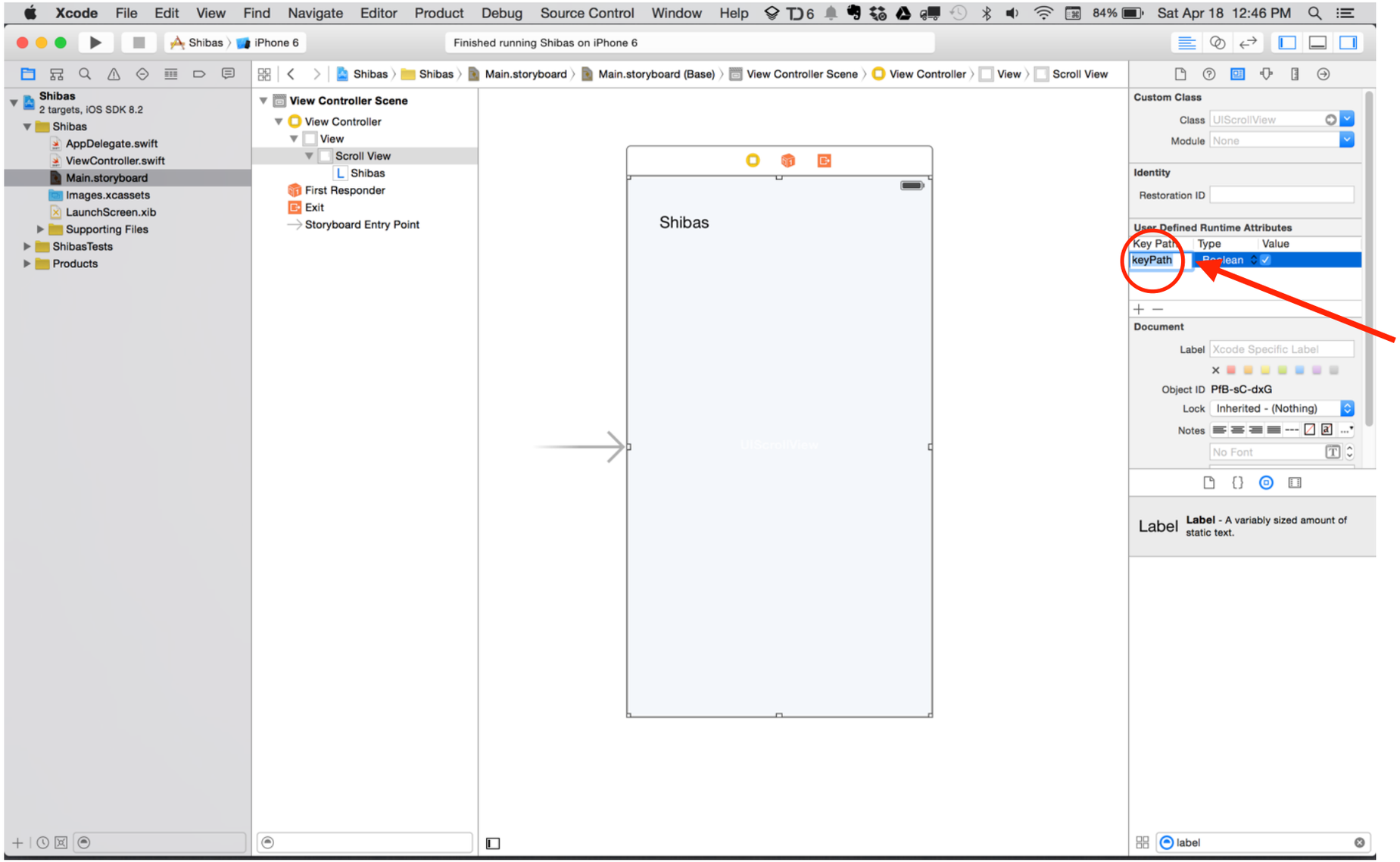
The “keys” are “name”, “height”, ...

The “values” are “Janet”, “172 cm”, ...

Note how 172 cm has units (centimeters) attached to it. This is what Xcode calls a “type.”

It doesn’t make sense to say someone is 172 “grams” tall.

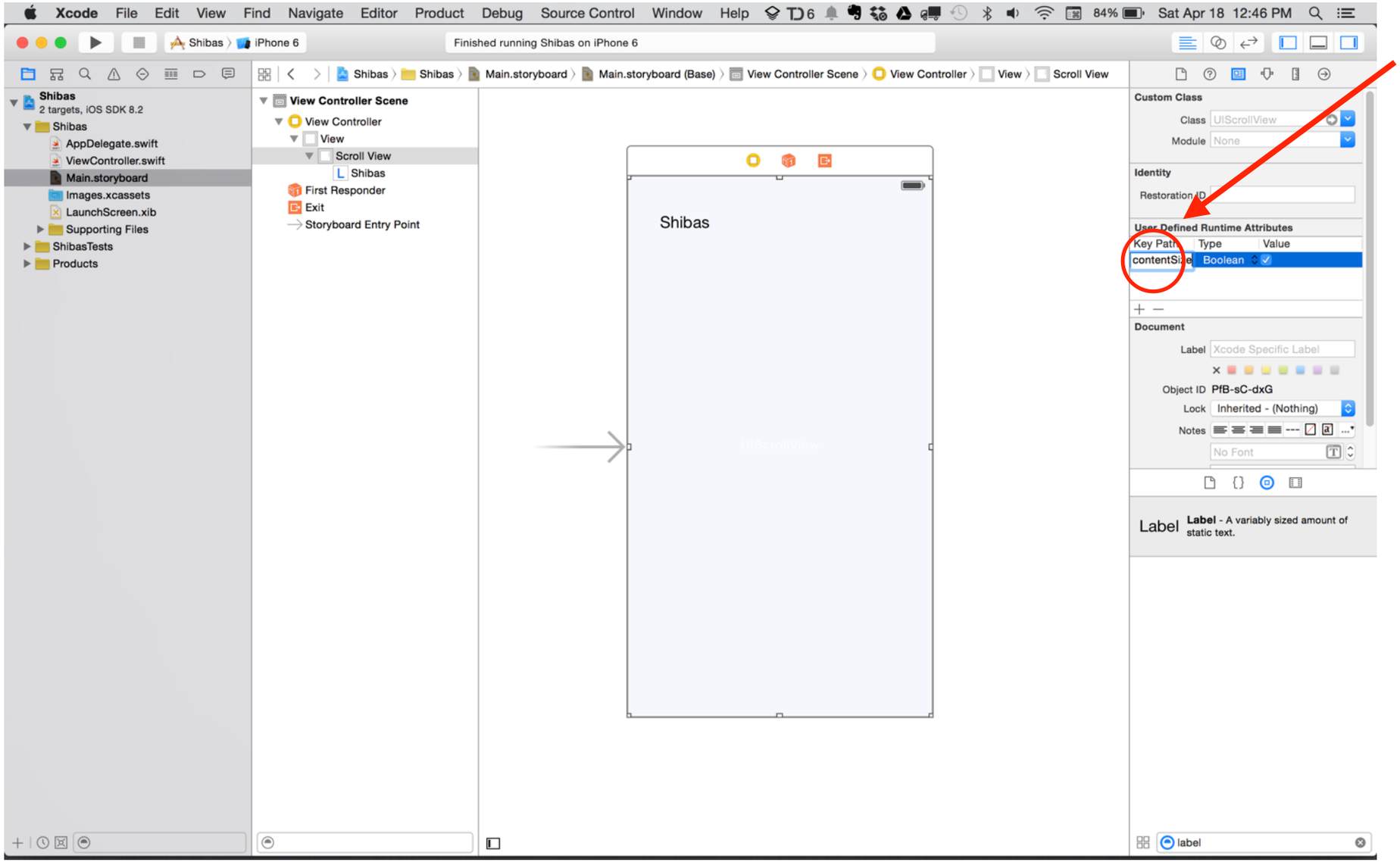
XCODE TUTORIAL: PHOTO GALLERY



We have to tell the Scroll View what attribute we're going to be talking about.

Double-click here to change the key.

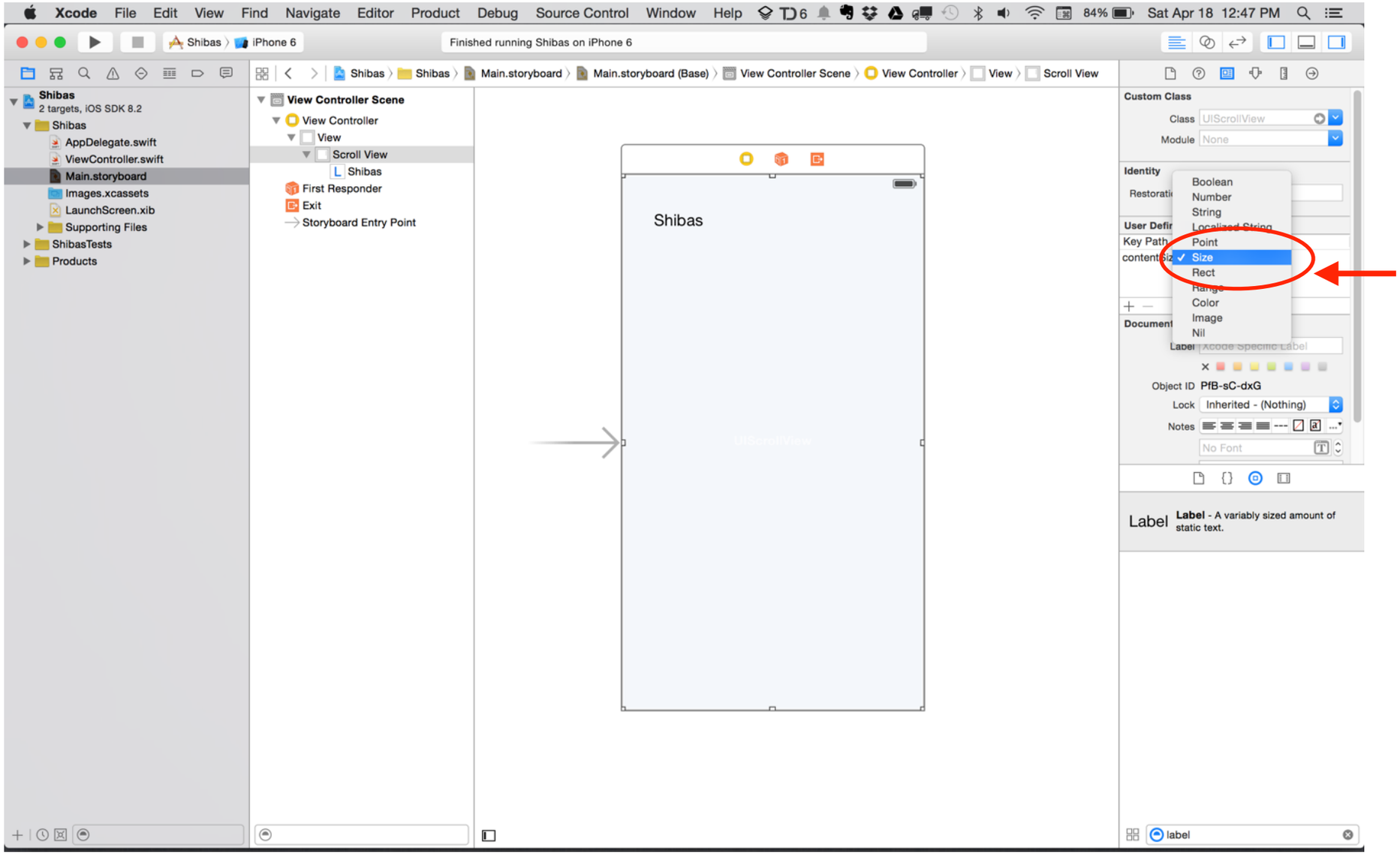
XCODE TUTORIAL: PHOTO GALLERY



Change it to “contentSize” by typing it out.

Press “Return”.

XCODE TUTORIAL: PHOTO GALLERY

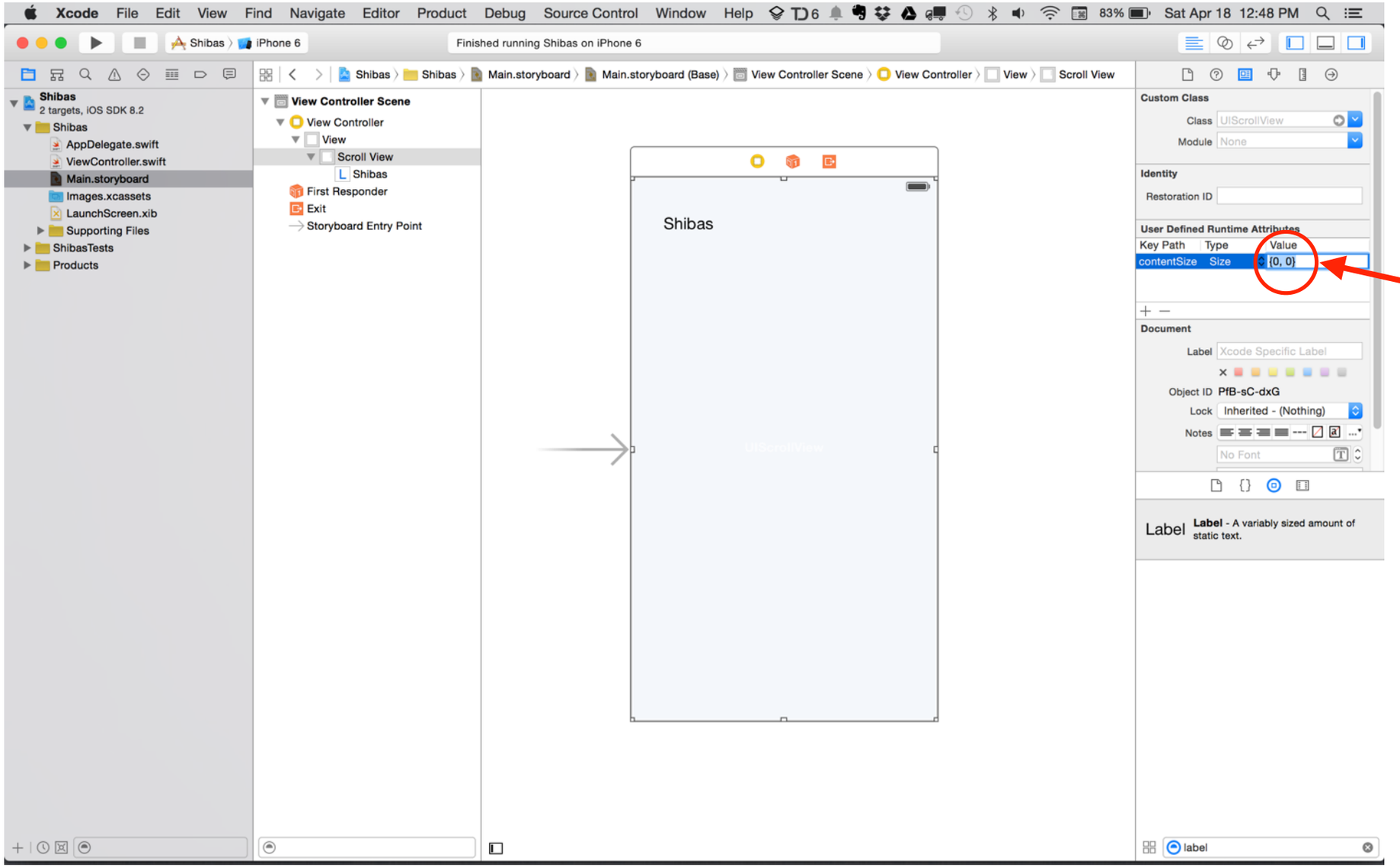


Click on the cell under “Type” and a dropdown should appear.

Click on “Size”.

This is akin to selecting units in any other context (e.g. centimeters).

XCODE TUTORIAL: PHOTO GALLERY

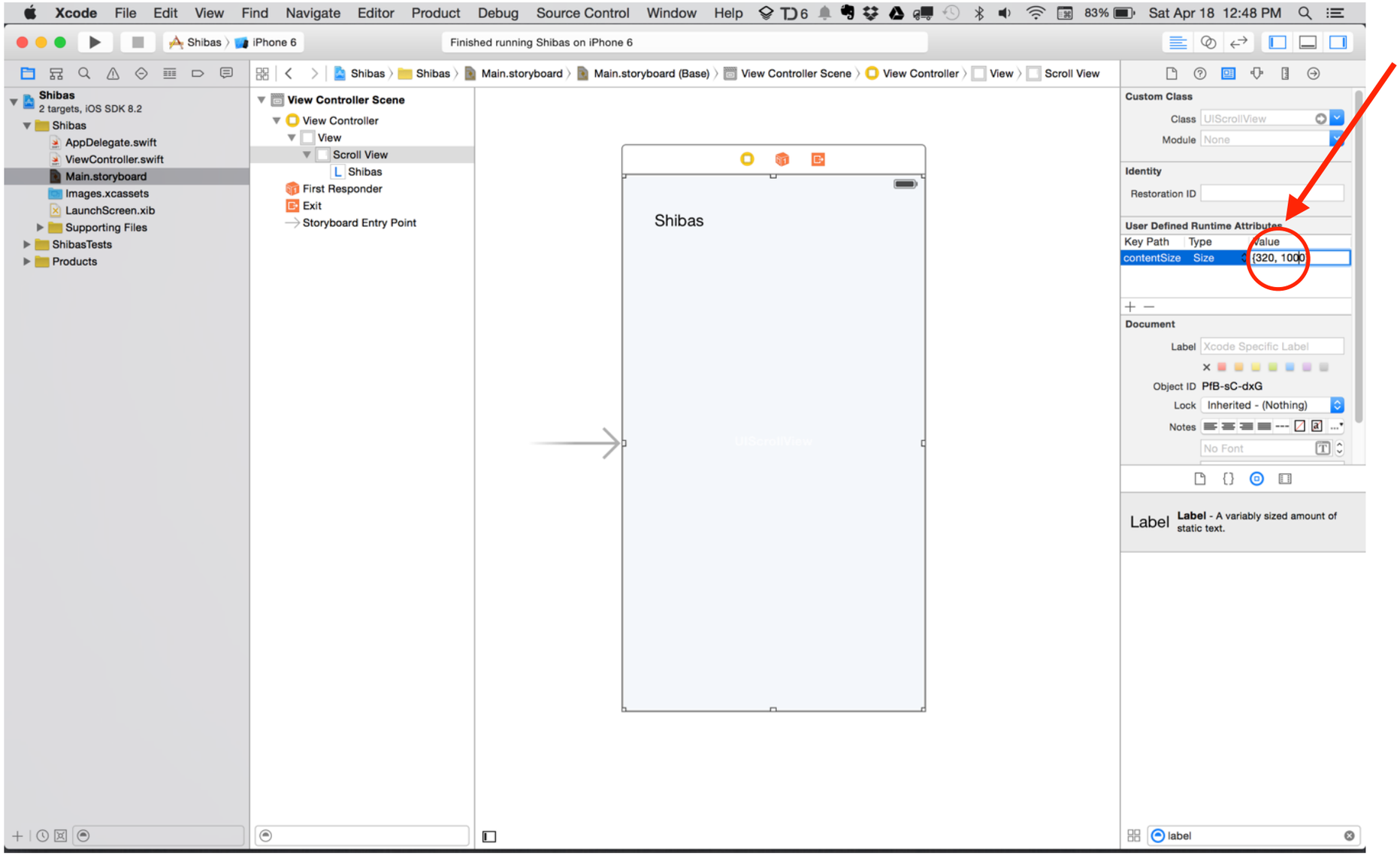


Now we have to tell the Scroll View how "big" the scrollable content should be.

Double click here.

We'll do this by specifying its width and height, like a sheet of paper, with numbers. Don't worry about the units, they're just mysterious Xcode units we'll call "points."

XCODE TUTORIAL: PHOTO GALLERY

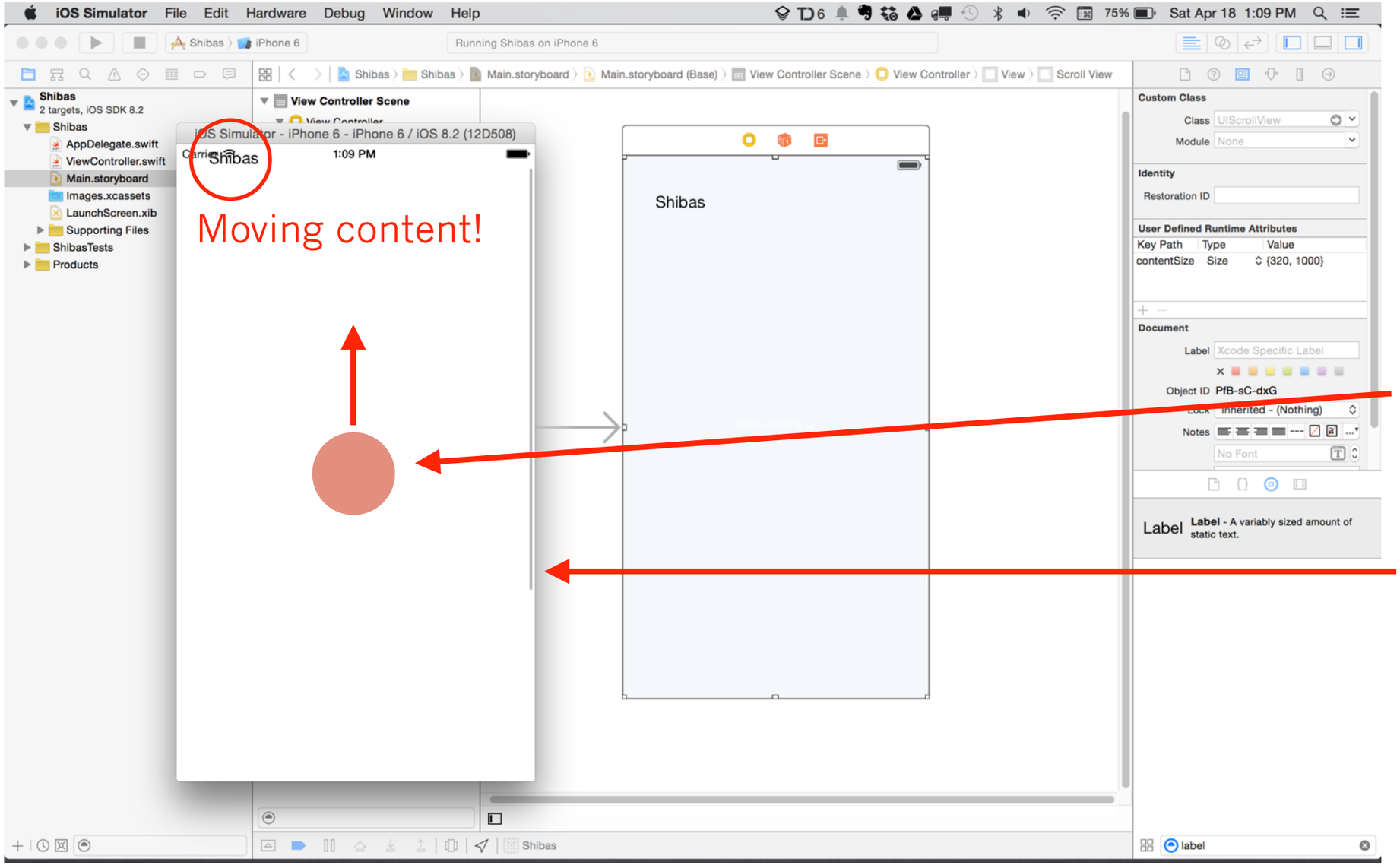


Change the content of this box to {320, 1000} and press Return.

Don't worry about why we're using braces and a comma yet.

Just know that the first number is the width of the "content", this virtual piece of paper inside the Scroll View, and the second is its height.

XCODE TUTORIAL: PHOTO GALLERY



Run the app again by clicking Play.

The Simulator should pop up.

Now you should be able to click-and-drag the content to scroll it.

A scrolling indicator should appear, too.

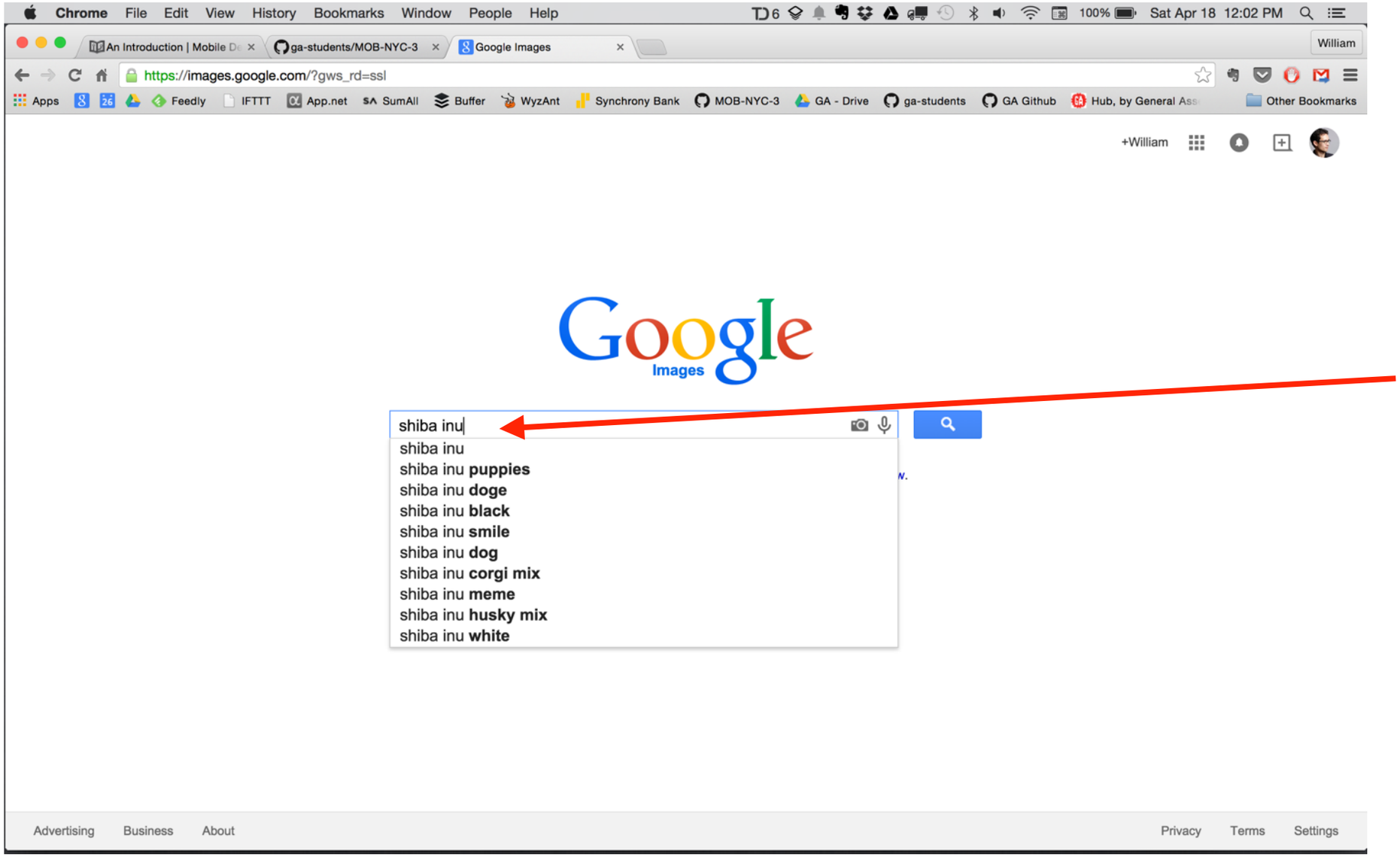
Woohoo!

ADDING PHOTOS

CREATE A NEW PROJECT: ADDING PHOTOS

- Find some media with Google Image search.
- Import those images into the Project.
- Learn how to add those images into the App from the Media Library.
- Learn how to adjust those images with the Inspector.

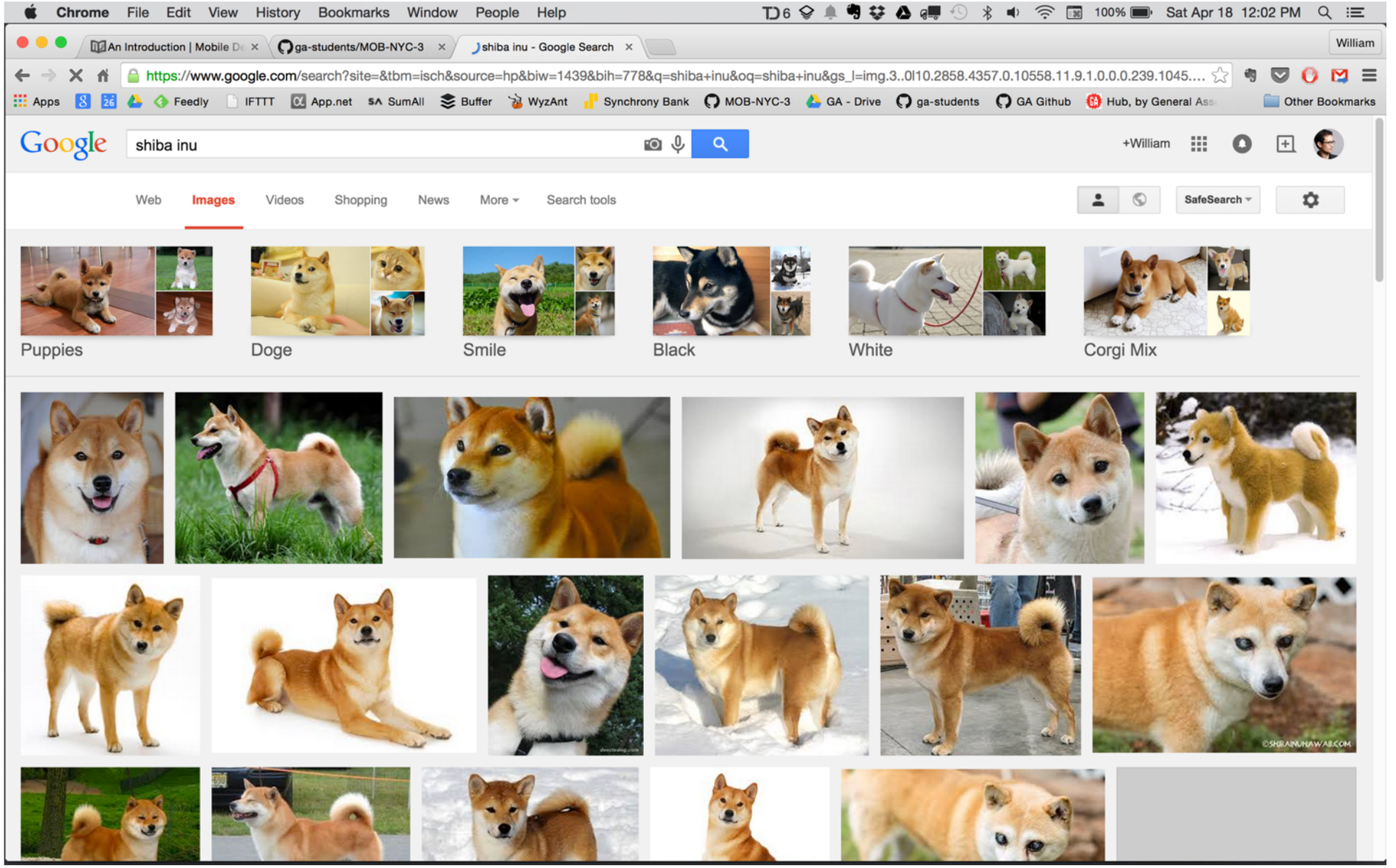
XCODE TUTORIAL: PHOTO GALLERY



Go to images.google.com and search for the photos that you're going to add into the App.

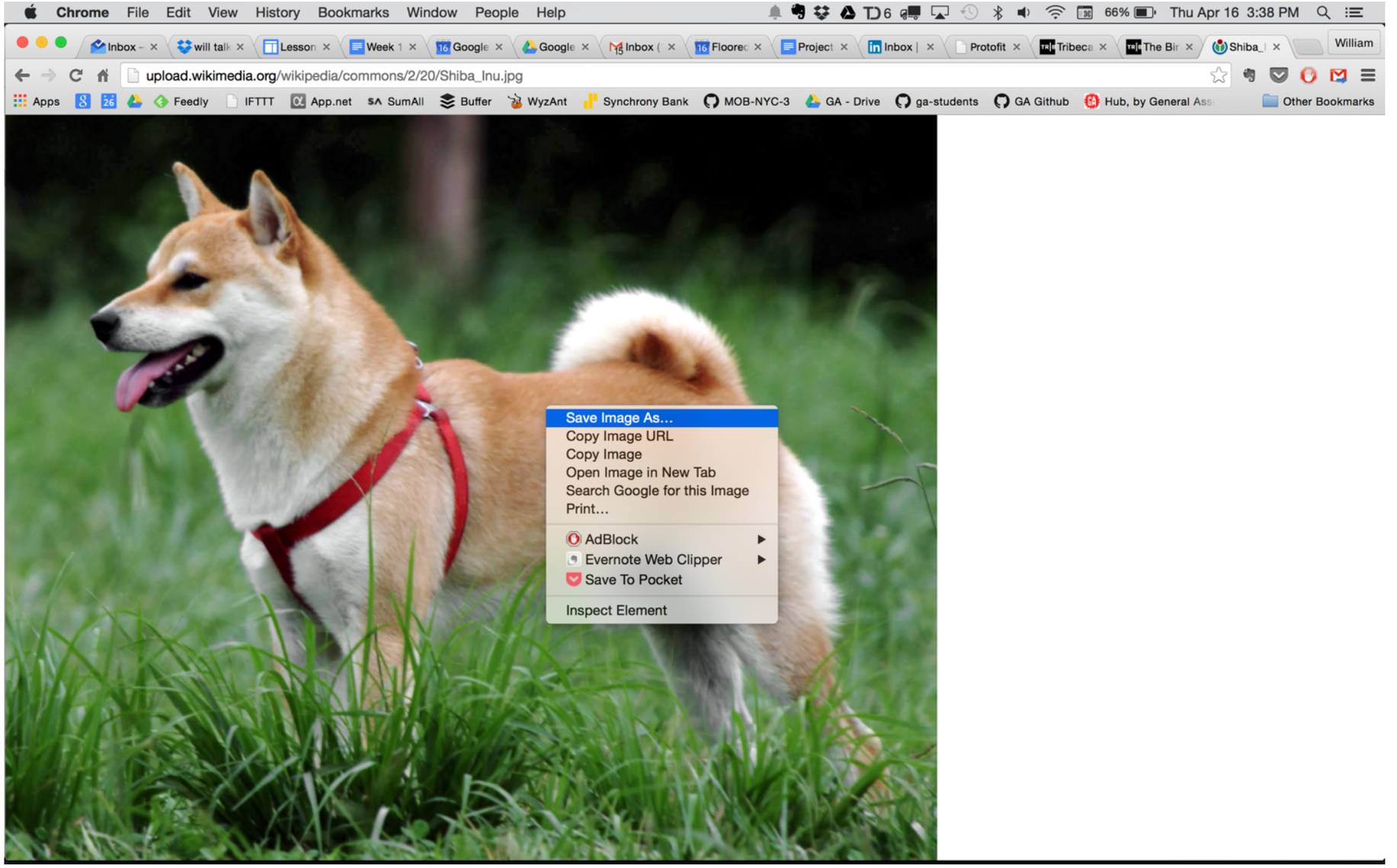
I happen to love shiba inus. Best. Dogs. Ever. :-P

XCODE TUTORIAL: PHOTO GALLERY



Once you find what you're looking for, download a few images...

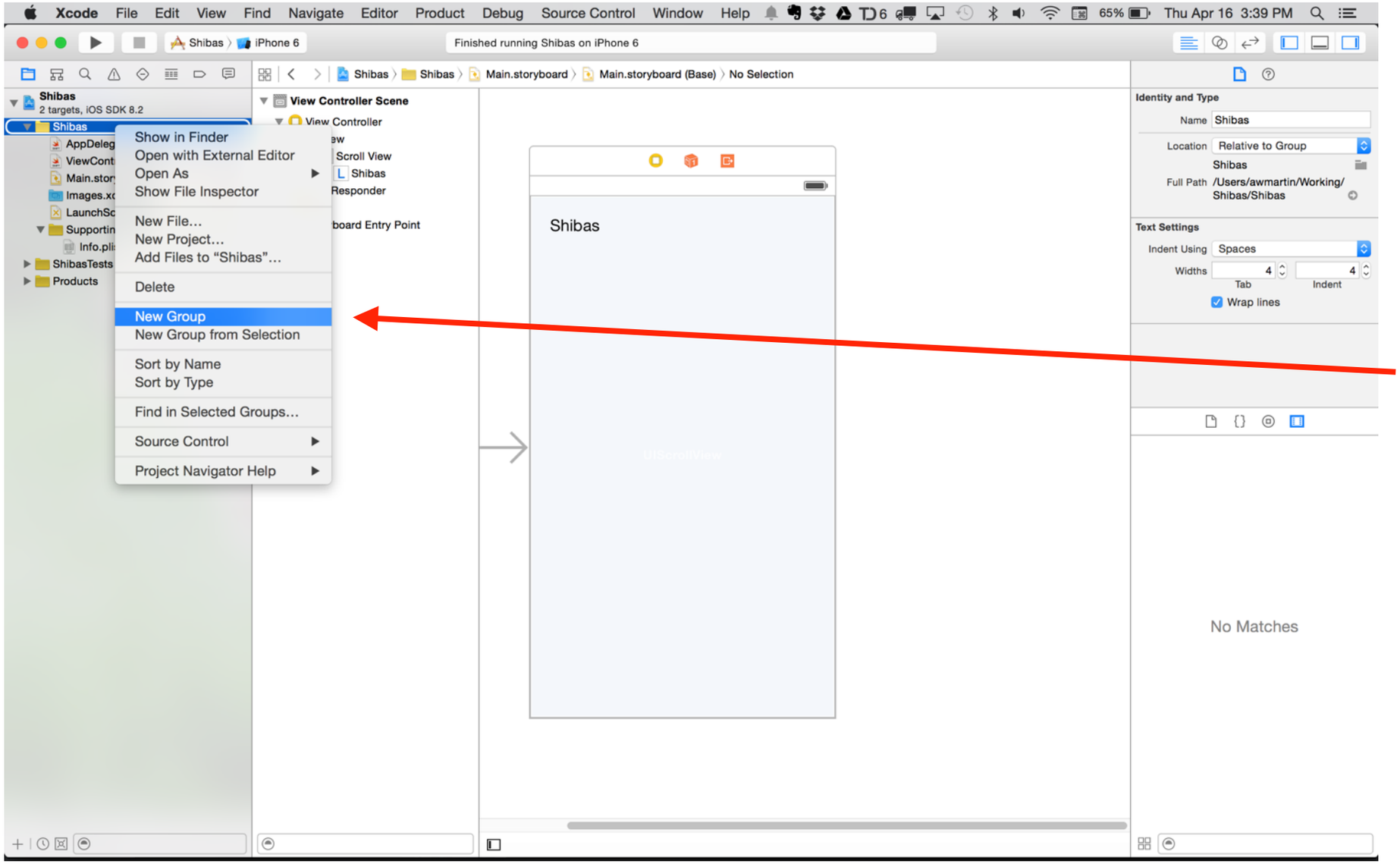
XCODE TUTORIAL: PHOTO GALLERY



... like this.

Save them somewhere convenient on your hard drive. I saved them to my Desktop folder.

XCODE TUTORIAL: PHOTO GALLERY



Go back to Xcode.

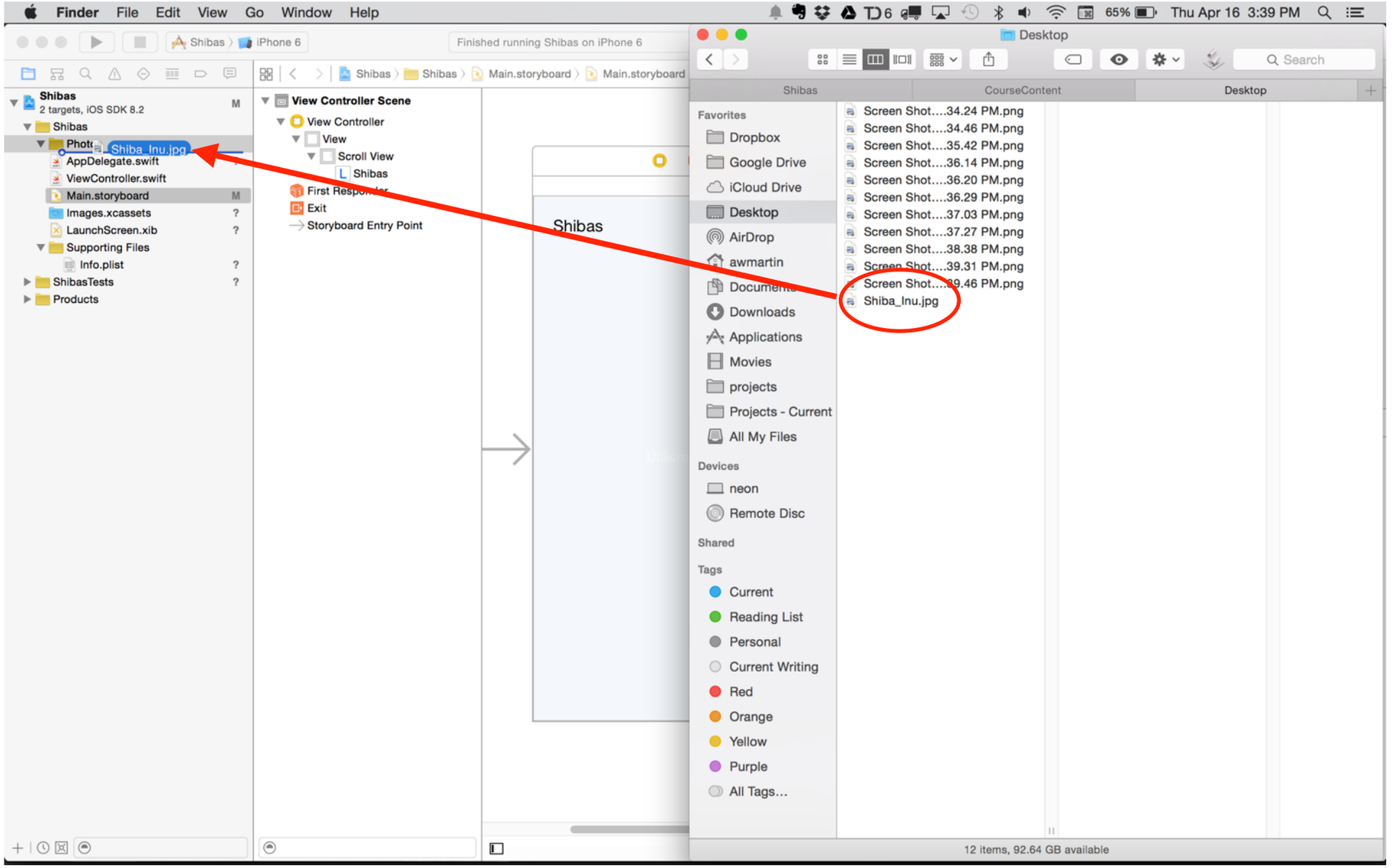
Right-click on the folder in the Navigator Area that bears the name of your app.

Click New Group.

This is a way to organize files in your app, very much like Folders in Mac OS Finder.

Name the group "Photos."

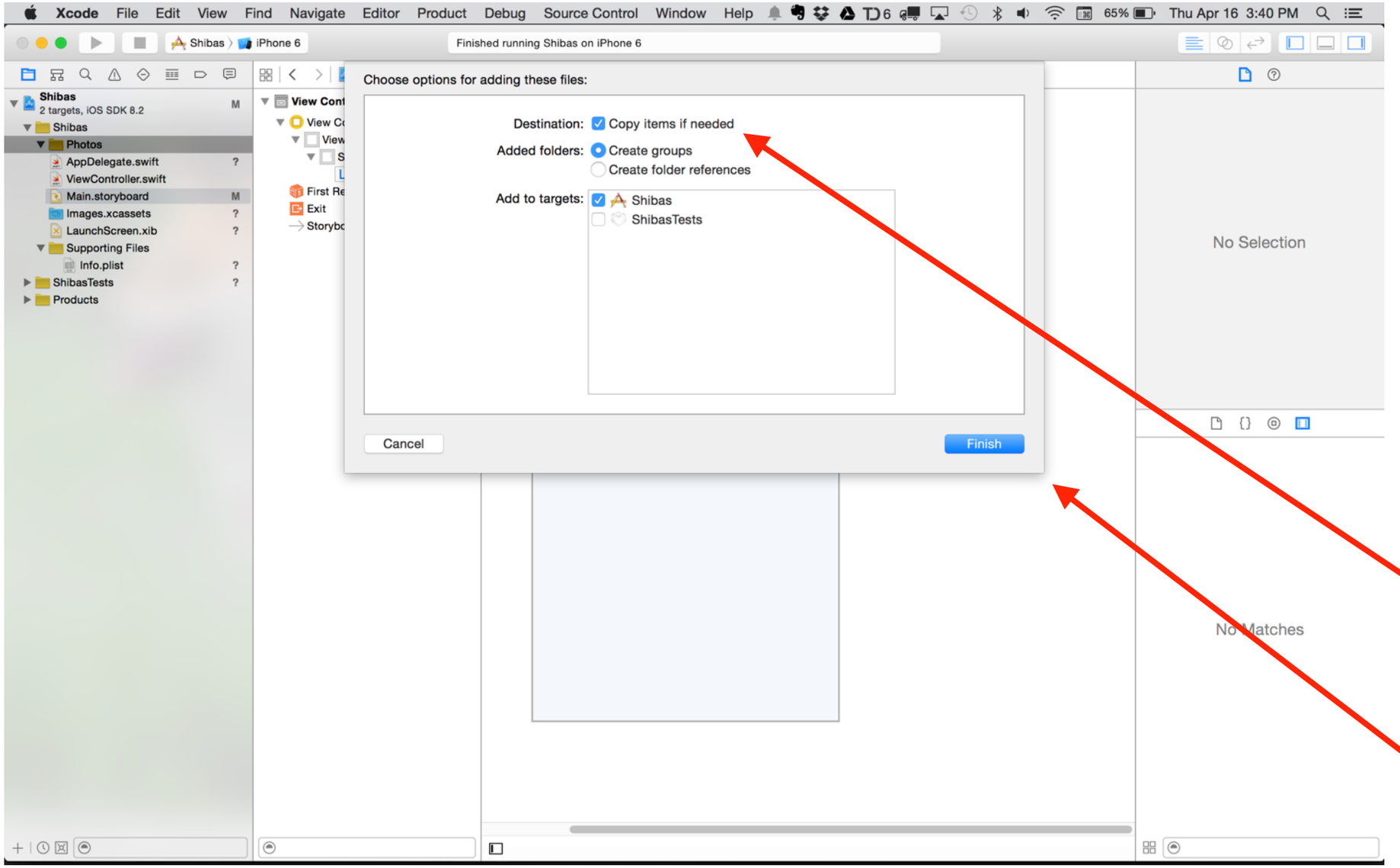
XCODE TUTORIAL: PHOTO GALLERY



Find your photos in a Finder window and overlap the window with Xcode.

Drag a photo from Finder into the Photos group.

XCODE TUTORIAL: PHOTO GALLERY



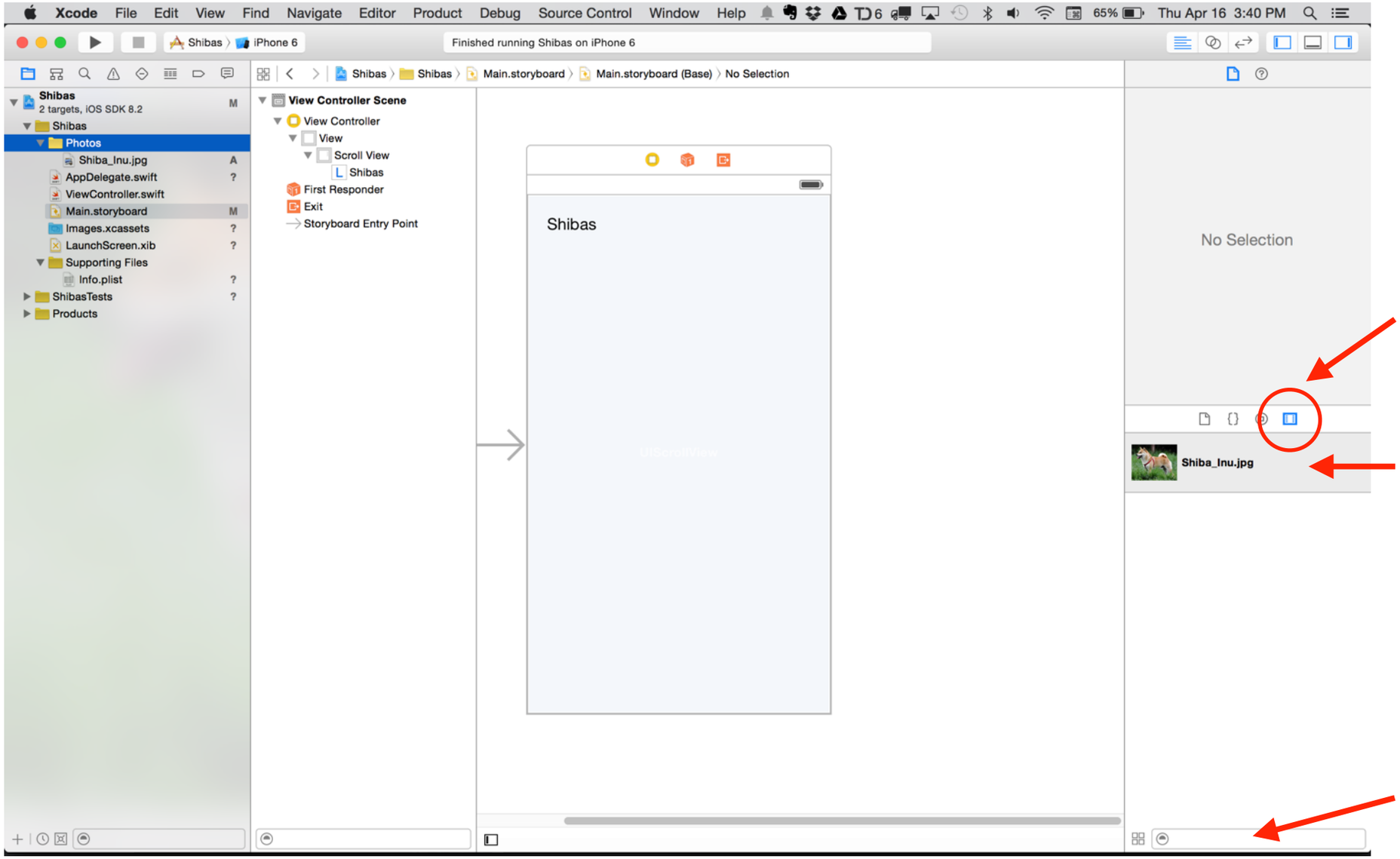
Xcode will ask you some questions about what you want to happen when importing this file into your App.

Use these settings for now, which should be the default.

It's important to have "Copy items if needed" checked.

Click "Finish".

XCODE TUTORIAL: PHOTO GALLERY



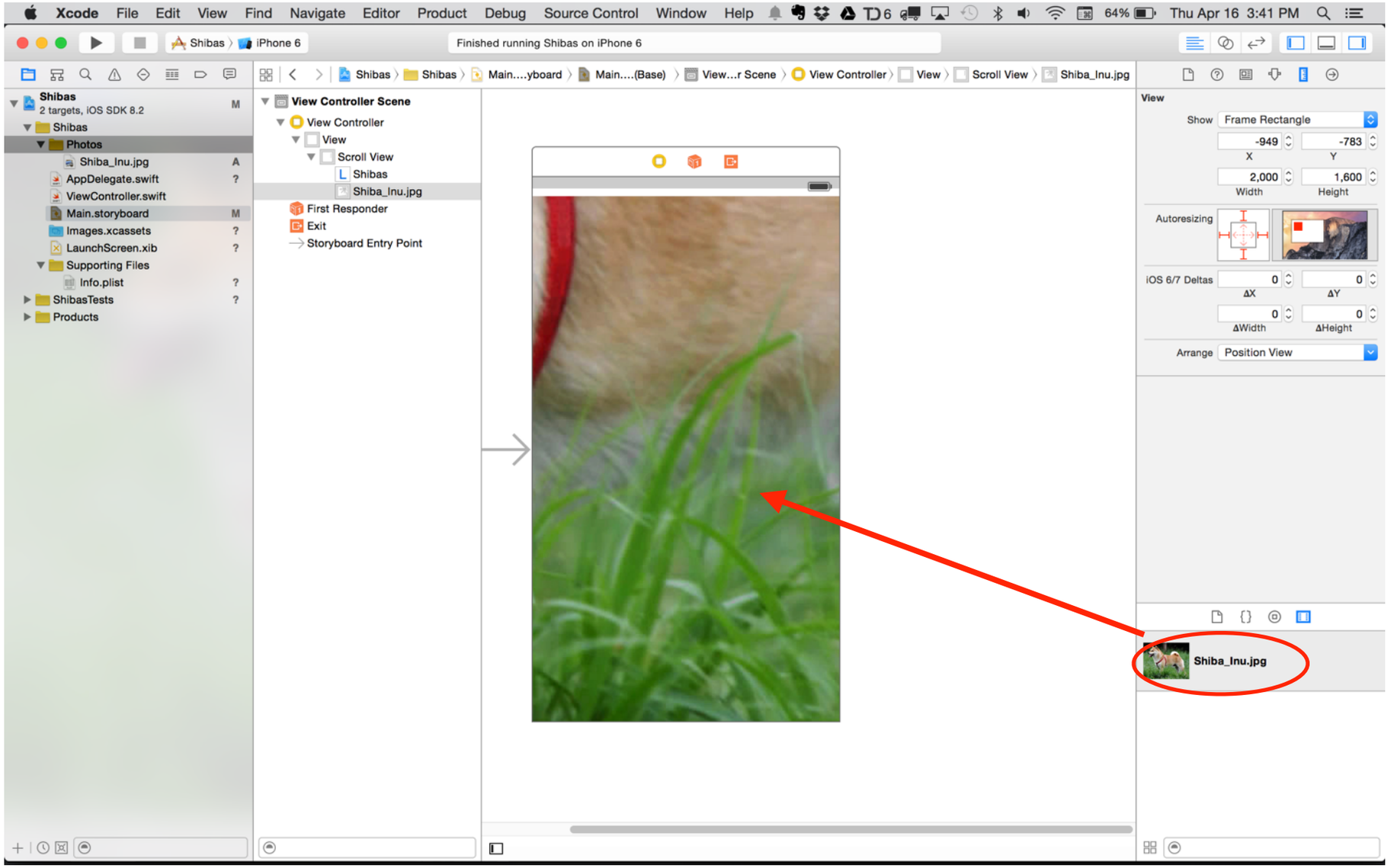
Click on the Media Library tab.

You should see your photo here.

If you don't see it, give Xcode a few seconds to update itself.

Also make sure the search bar is clear.

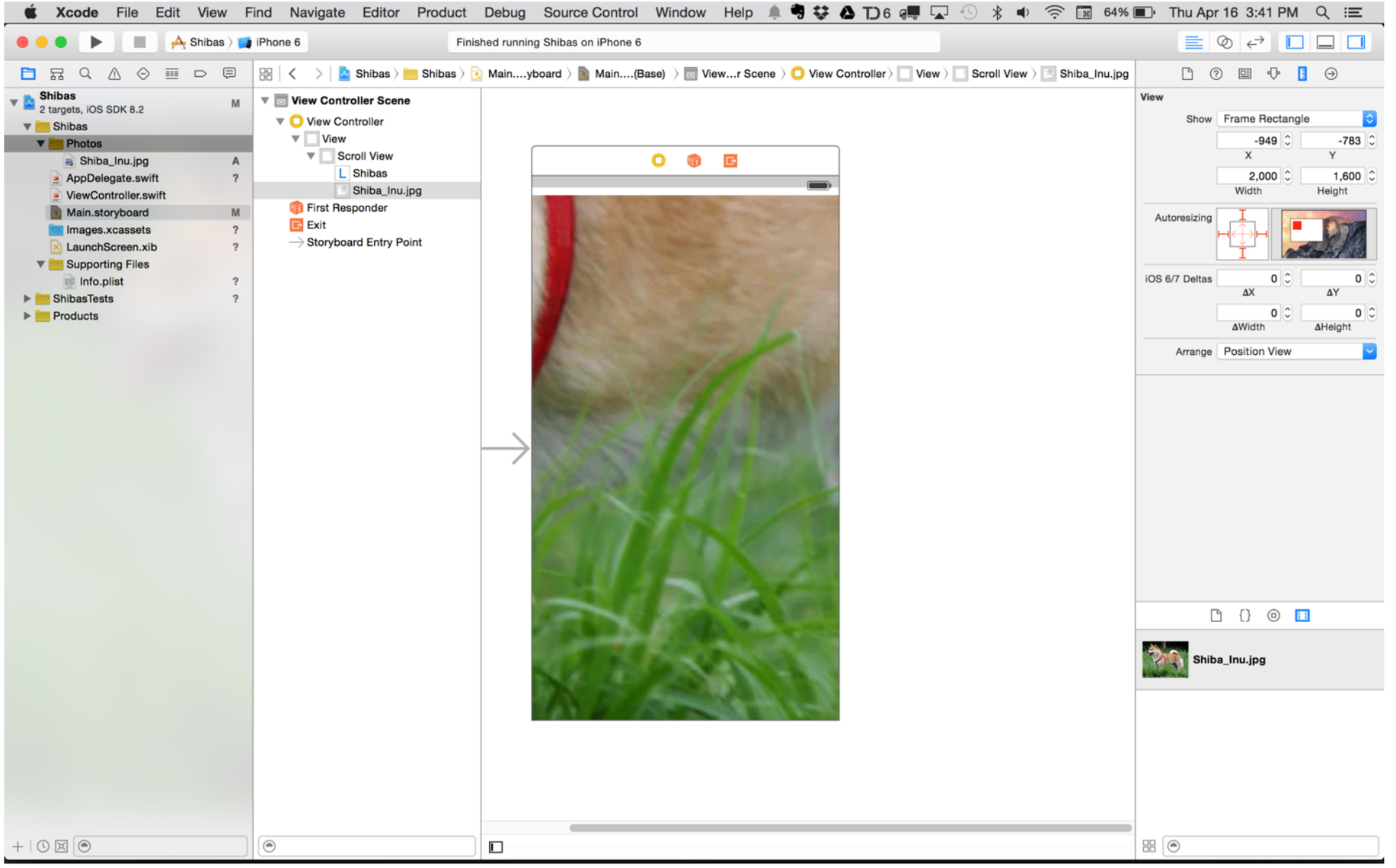
XCODE TUTORIAL: PHOTO GALLERY



Now drag the photo from the Media Library into Scroll View.

If the image is large, it may fill your screen and be quite unwieldy. Just drop it, and we'll deal with it in the next few steps.

XCODE TUTORIAL: PHOTO GALLERY

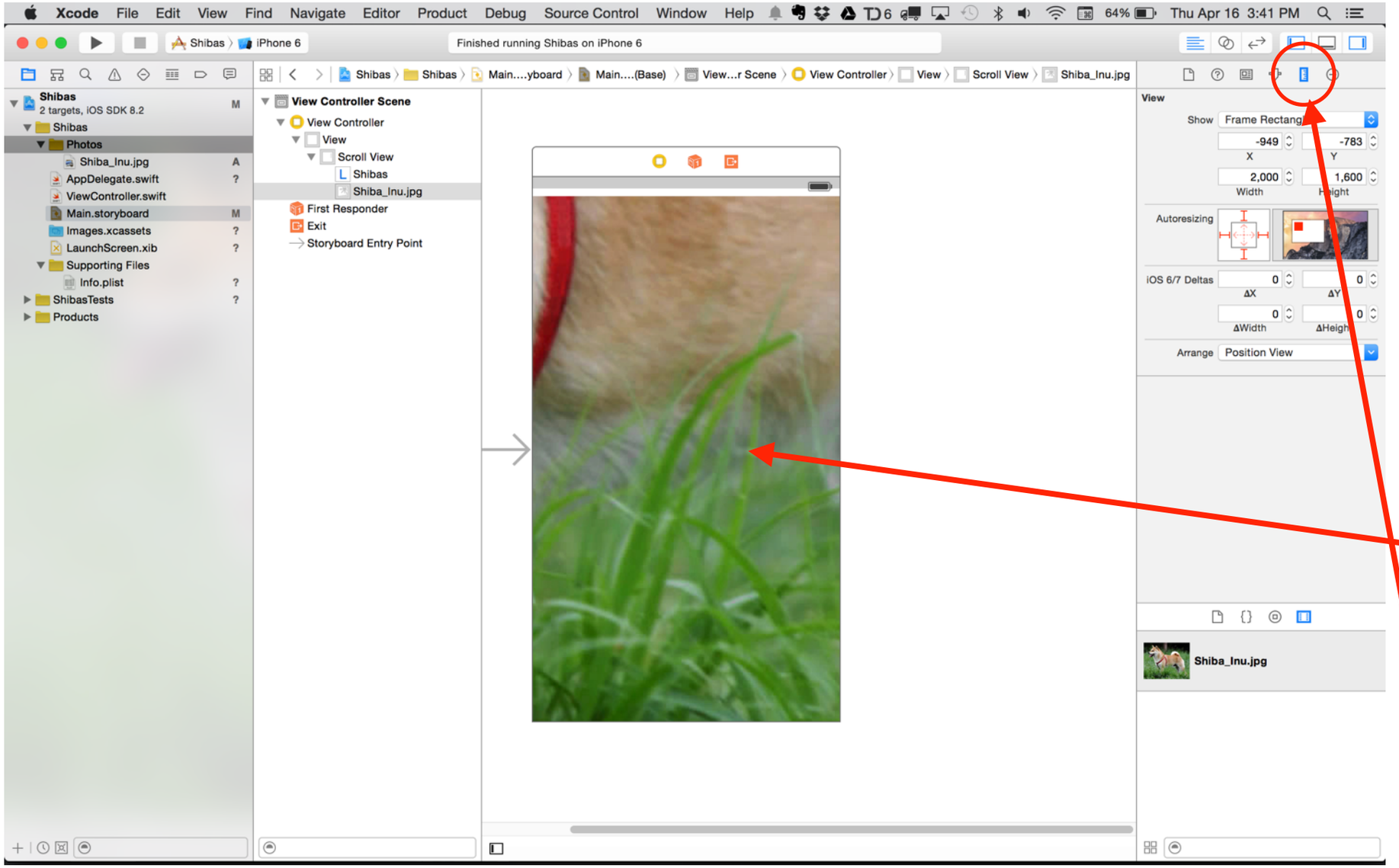


For now our image looks a little strange.

Mine doesn't show the entire image.

The next few steps will show you how to work with this object, called an Image View.

XCODE TUTORIAL: PHOTO GALLERY



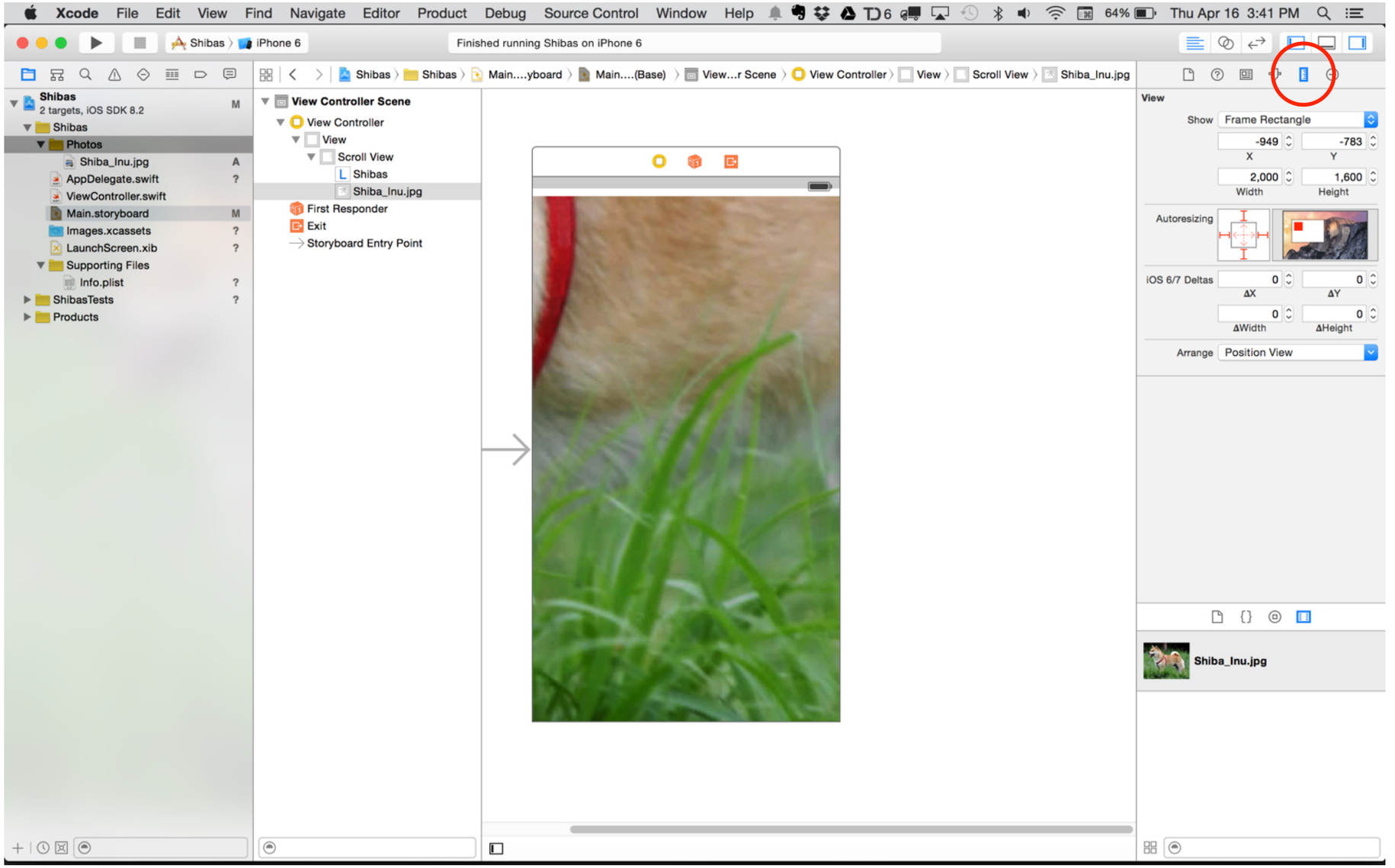
The first thing we want to do is set the size of the Image View.

Think of it as a rectangular window that contains a photograph inside of it.

Click on the Image View first.

Then click on the Size Inspector.

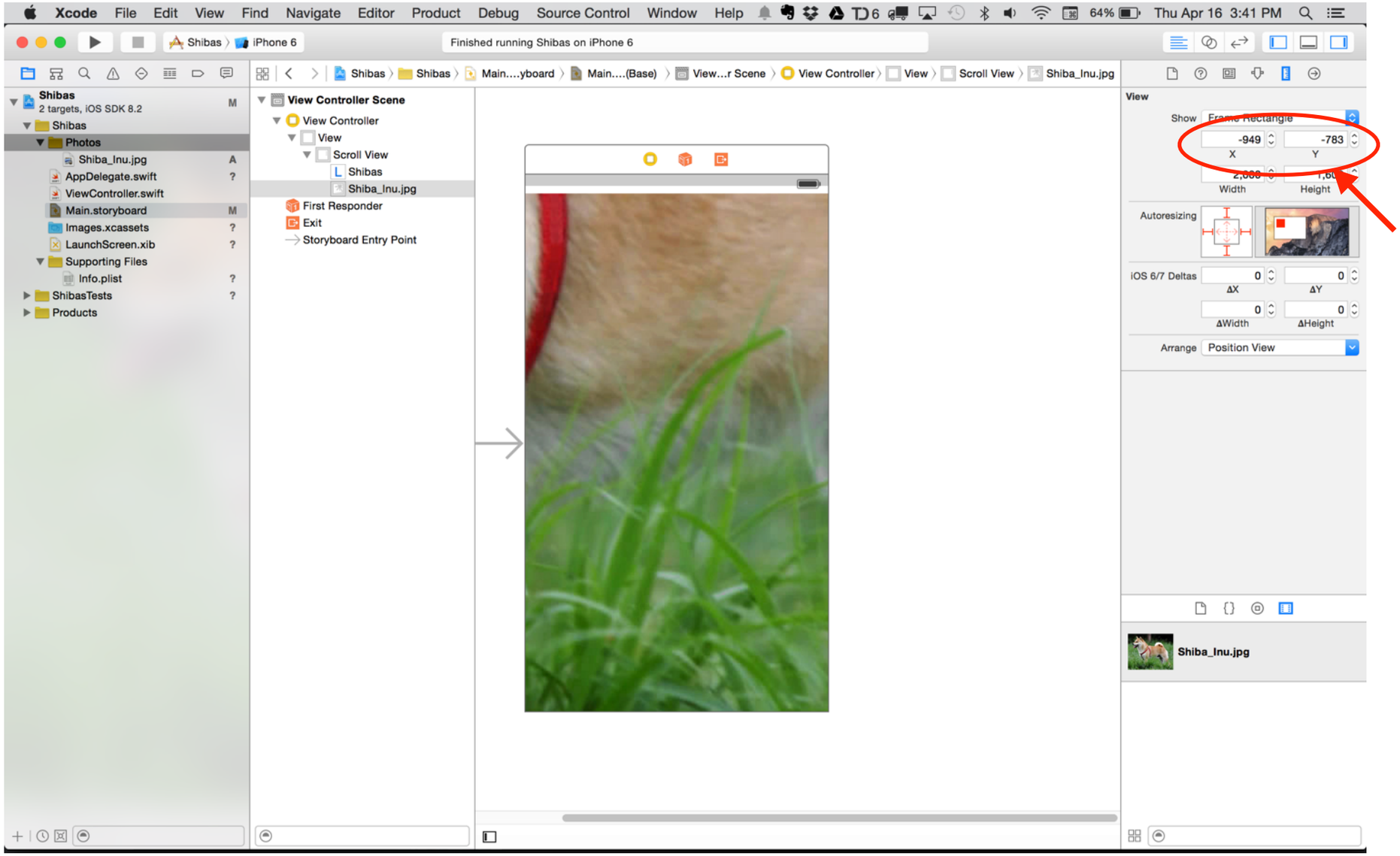
XCODE TUTORIAL: PHOTO GALLERY



The Size Inspector contains information about the geometry of the Image View (or any selected View, really).

We want to go through a process of changing the size to make it manageable in the window on the left, so we can go back to a more familiar drag/drop interaction.

XCODE TUTORIAL: PHOTO GALLERY

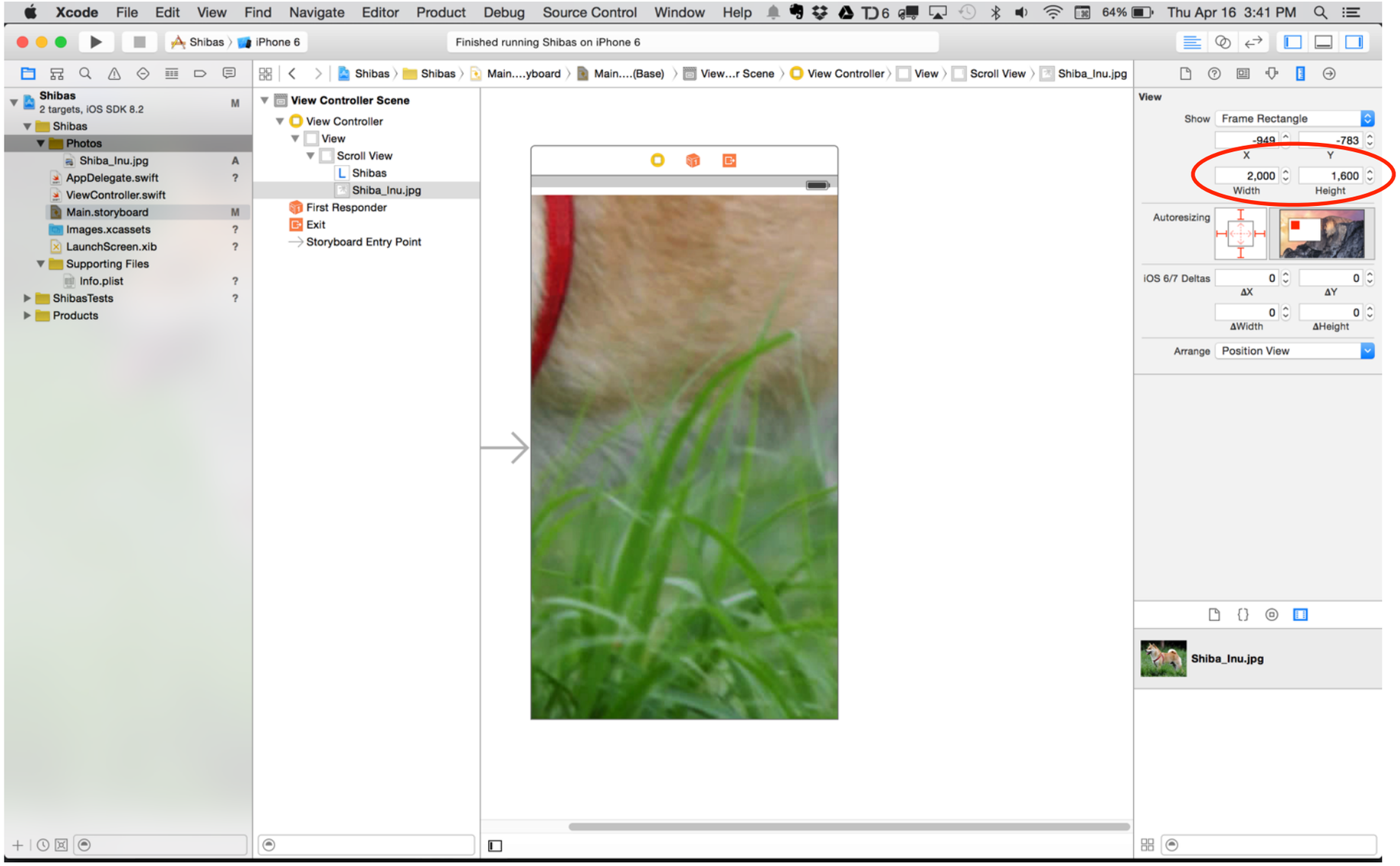


The units are our mysterious “points” again.

The X and Y fields control the location of the upper-left corner of the Image View, relative to the Scroll View’s upper-left corner.

Think of this like a graph or chart that you used to draw in a math or statistics class.

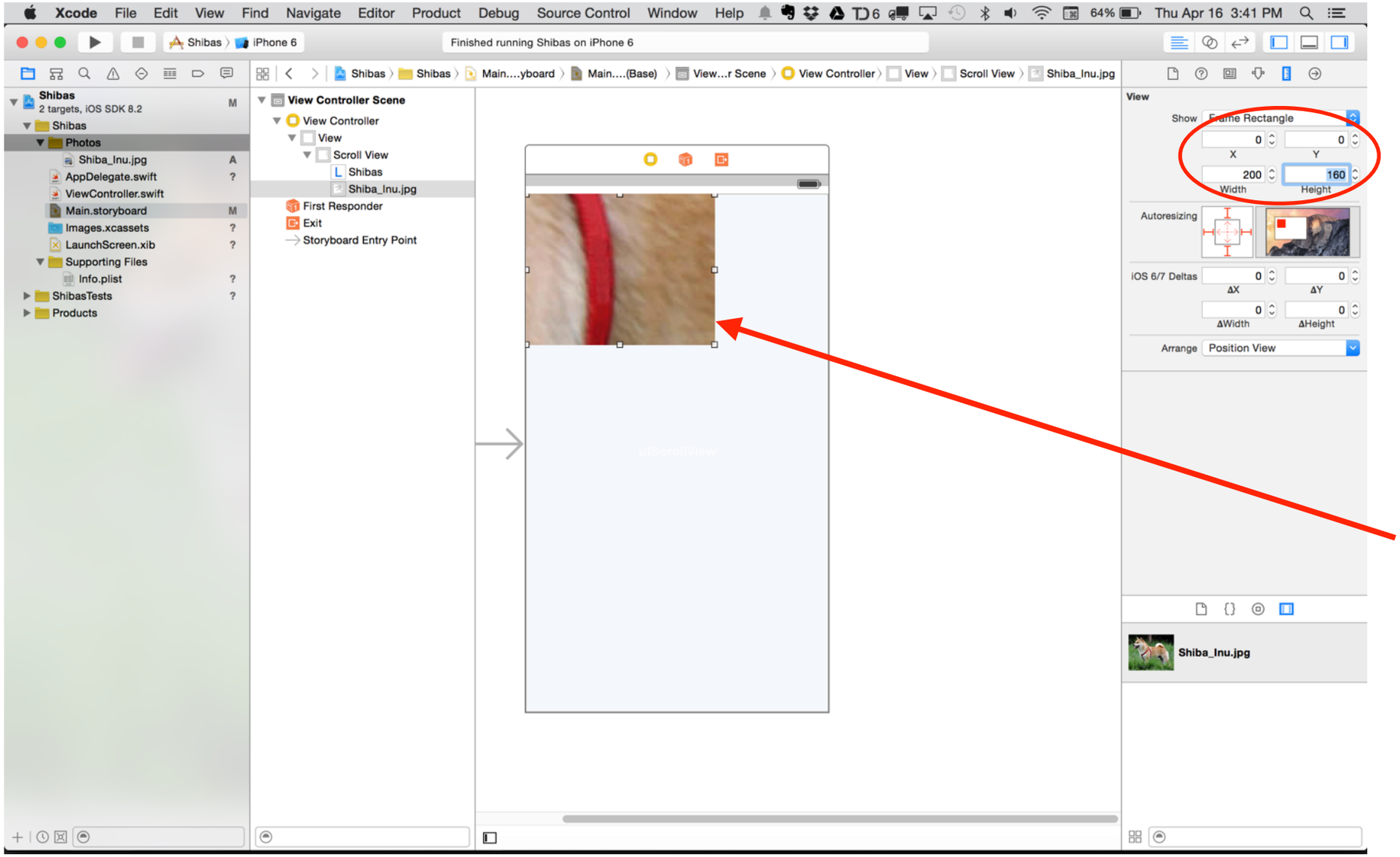
XCODE TUTORIAL: PHOTO GALLERY



Width and Height control the, wait for it..., width and height of the Image View.

Just like the contentSize attribute we set before for the Scroll View's content.

XCODE TUTORIAL: PHOTO GALLERY

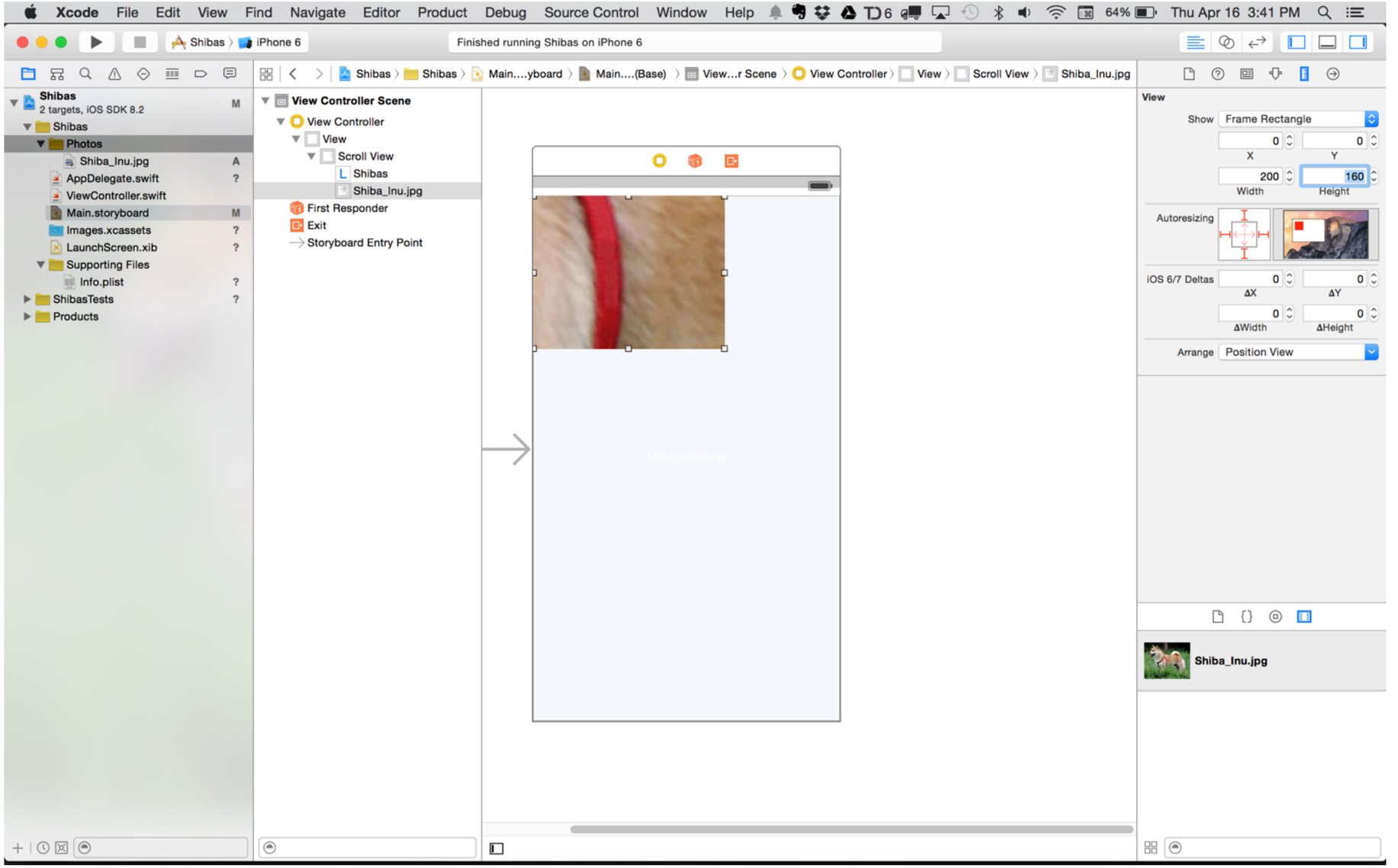


Change the position (X and Y) and size (width and height) to the following values:

X = 0
Y = 0
Width = 200
Height = 160

You should see the Image View move and resize to the upper-left corner of the Scroll View.

XCODE TUTORIAL: PHOTO GALLERY

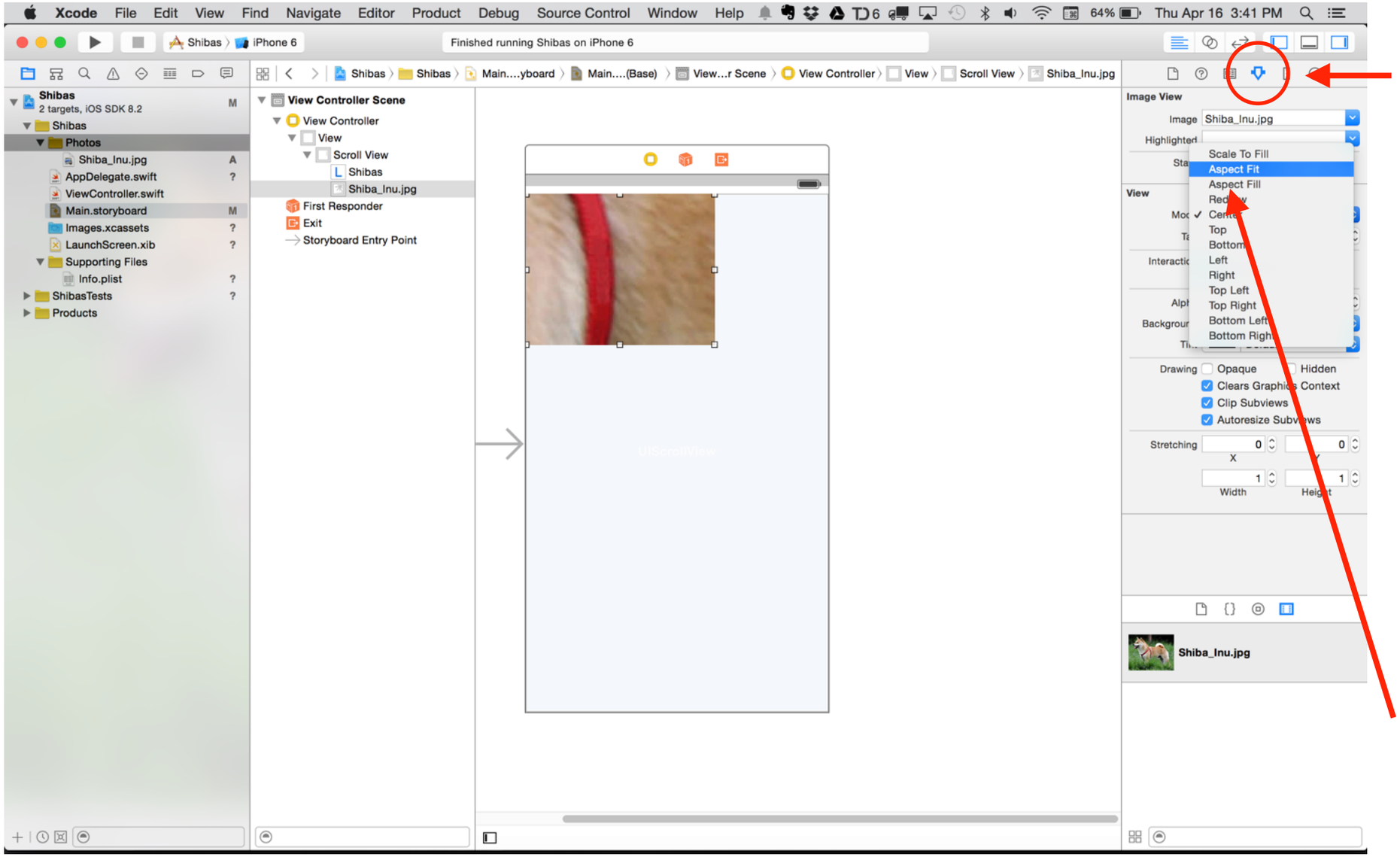


Even though the image is in a manageable place, it still doesn't look right.

It's still cropping the image to the outer bounds of the Image View.

Let's fix this.

XCODE TUTORIAL: PHOTO GALLERY



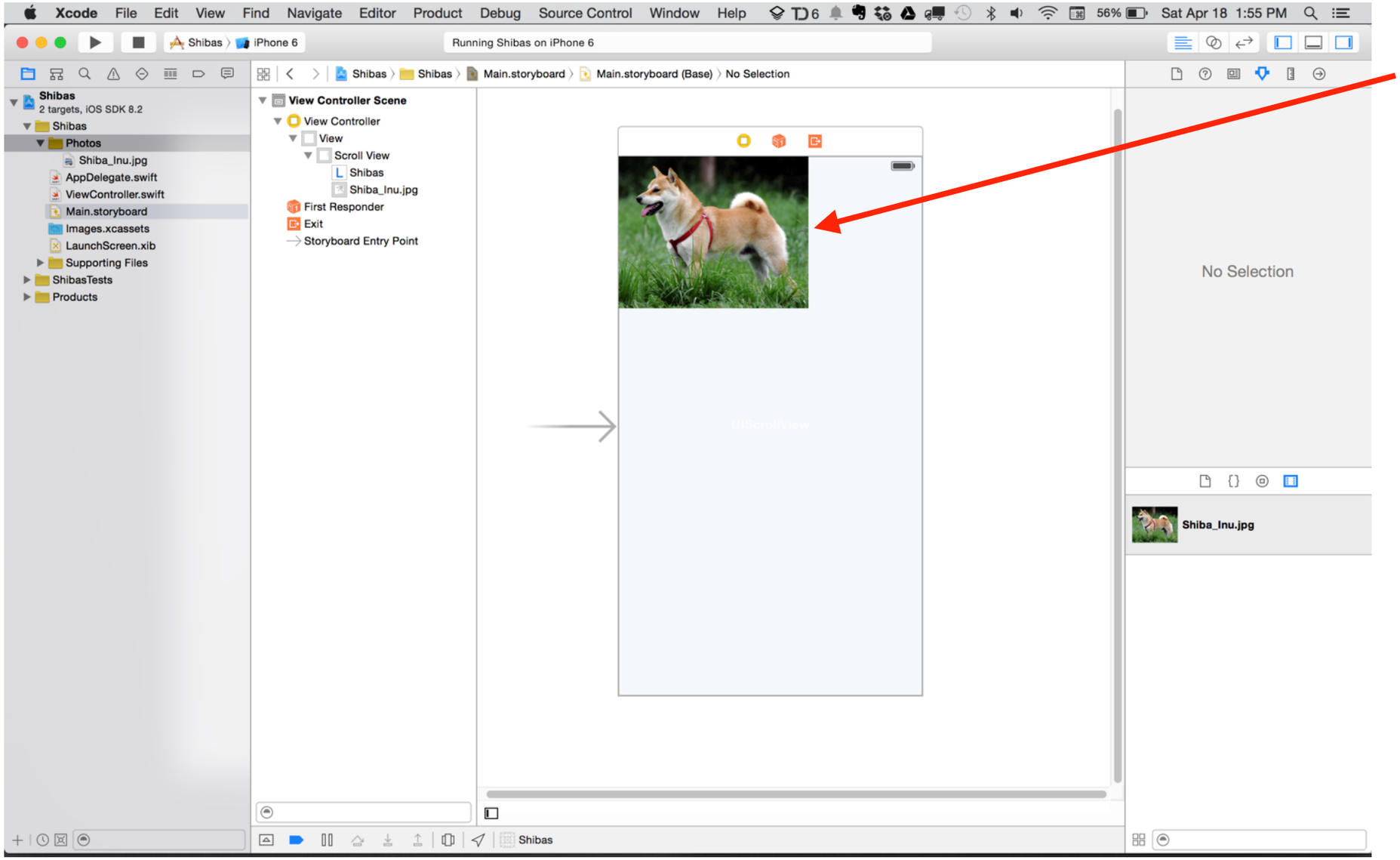
Click on the Attributes Inspector.

This contains more rules and parameters that control how the Image View behaves.

We want to tell it a rule for the relationship between the Image View's bounds and the photograph inside.

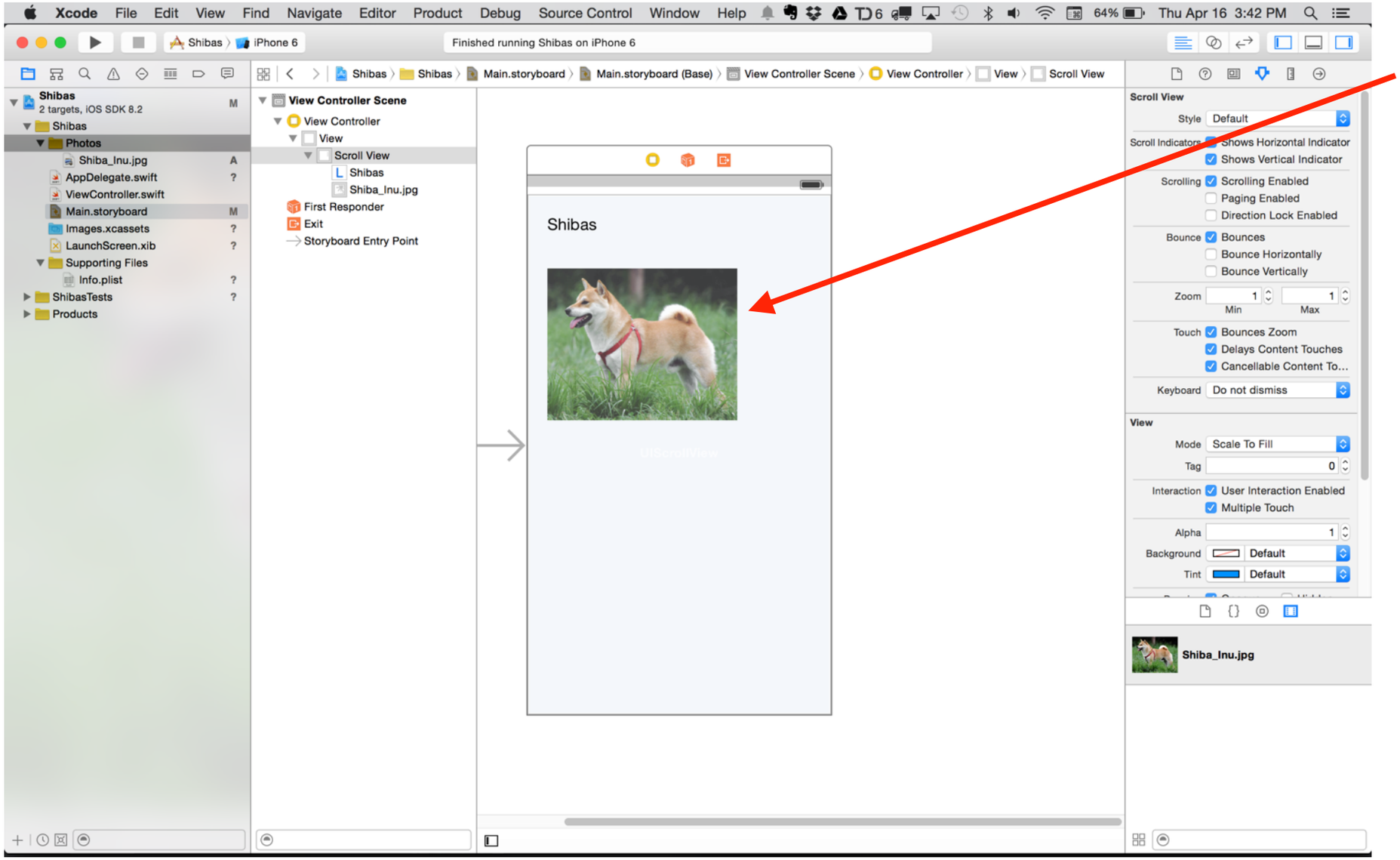
Under View > Mode, select "Aspect Fit.

XCODE TUTORIAL: PHOTO GALLERY



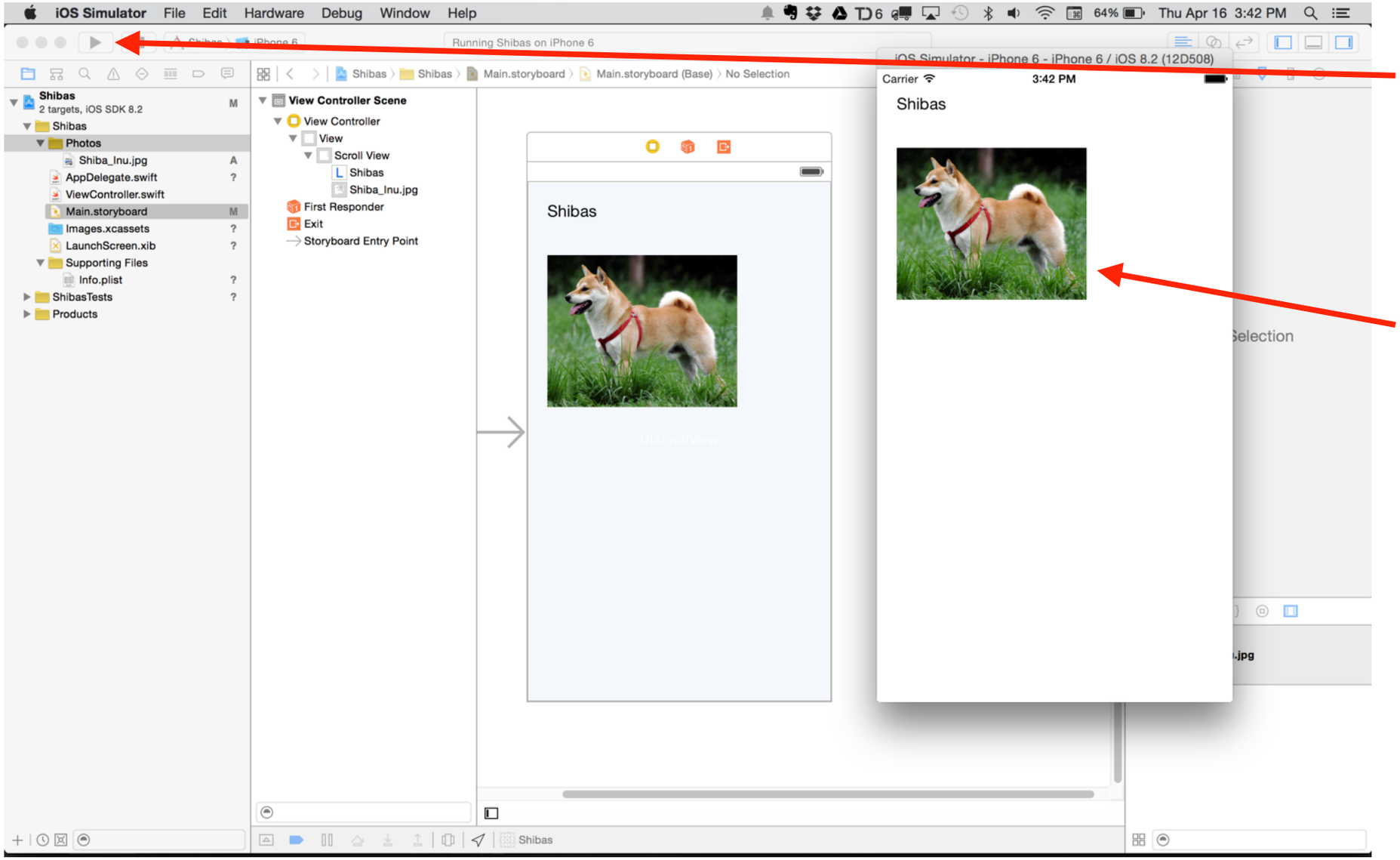
The photograph should wholly appear now!

XCODE TUTORIAL: PHOTO GALLERY



You can now drag it into place, just below the Label.

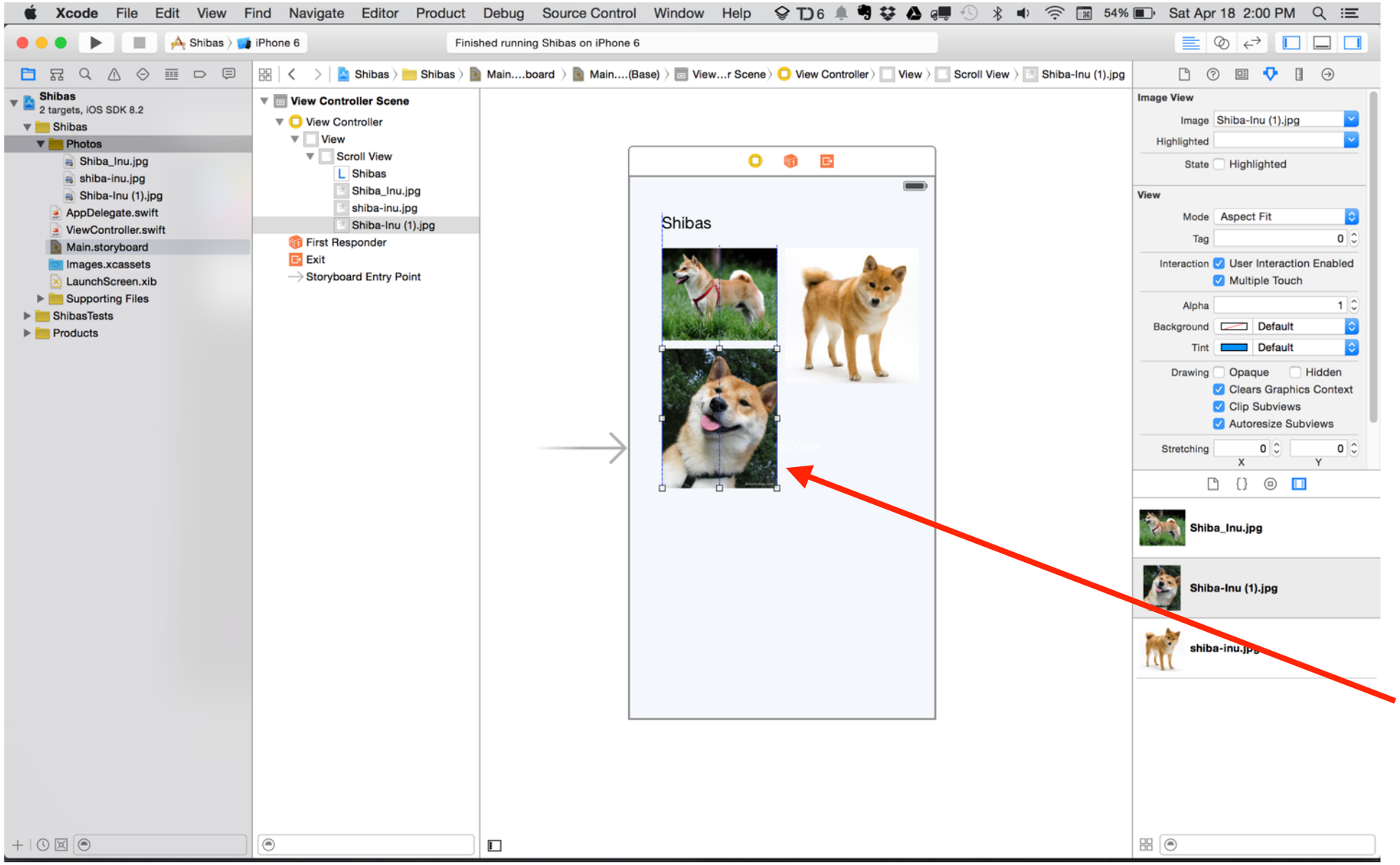
XCODE TUTORIAL: PHOTO GALLERY



Now run the app again.

The Simulator should appear, and you'll be able to scroll through the app as usual, but this time with a photo.

XCODE TUTORIAL: PHOTO GALLERY



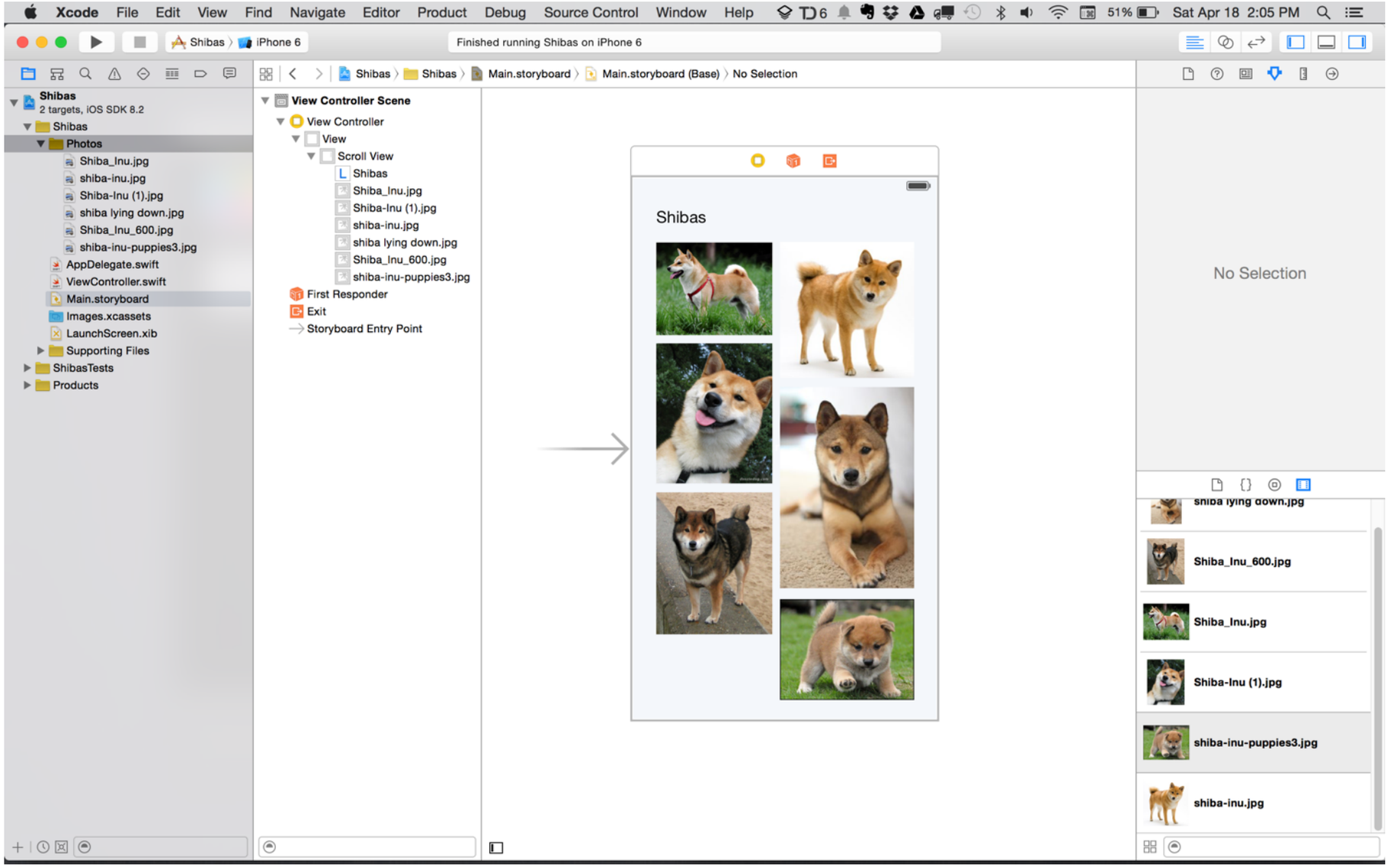
Add more images using the same workflow.

Pro tip: You can select and move images with the arrow keys as well.

Shift+arrow will move the image by 10 points.

Use the guidelines that appear to line up images.

XCODE TUTORIAL: PHOTO GALLERY



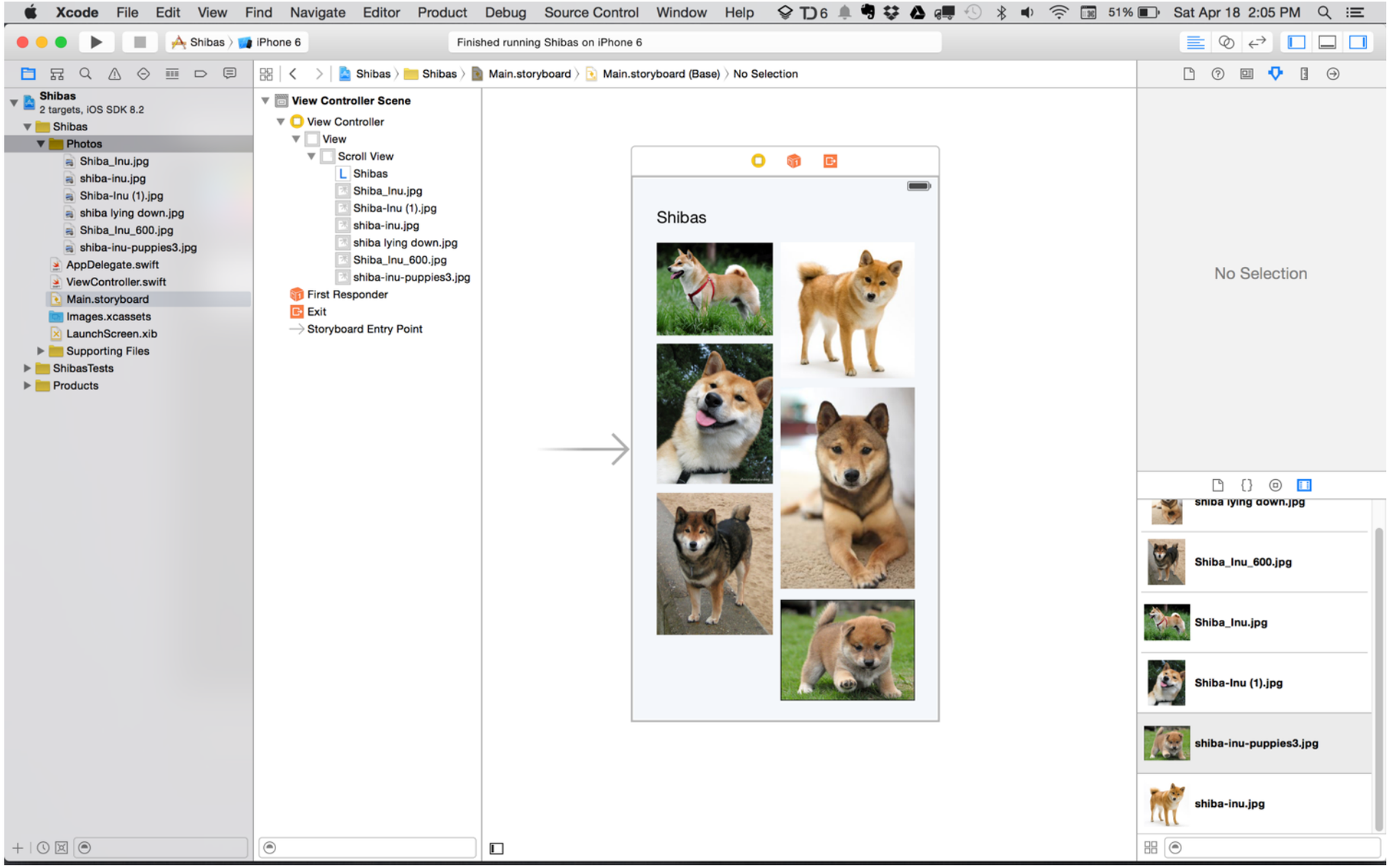
Shift+select multiple Views (images and labels) to drag them together.

REMEMBER:
The goal is to *practice* working with Interface Builder.

Think:
learn-by-playing.

Run, play, stop, move images, run again.

XCODE TUTORIAL: PHOTO GALLERY



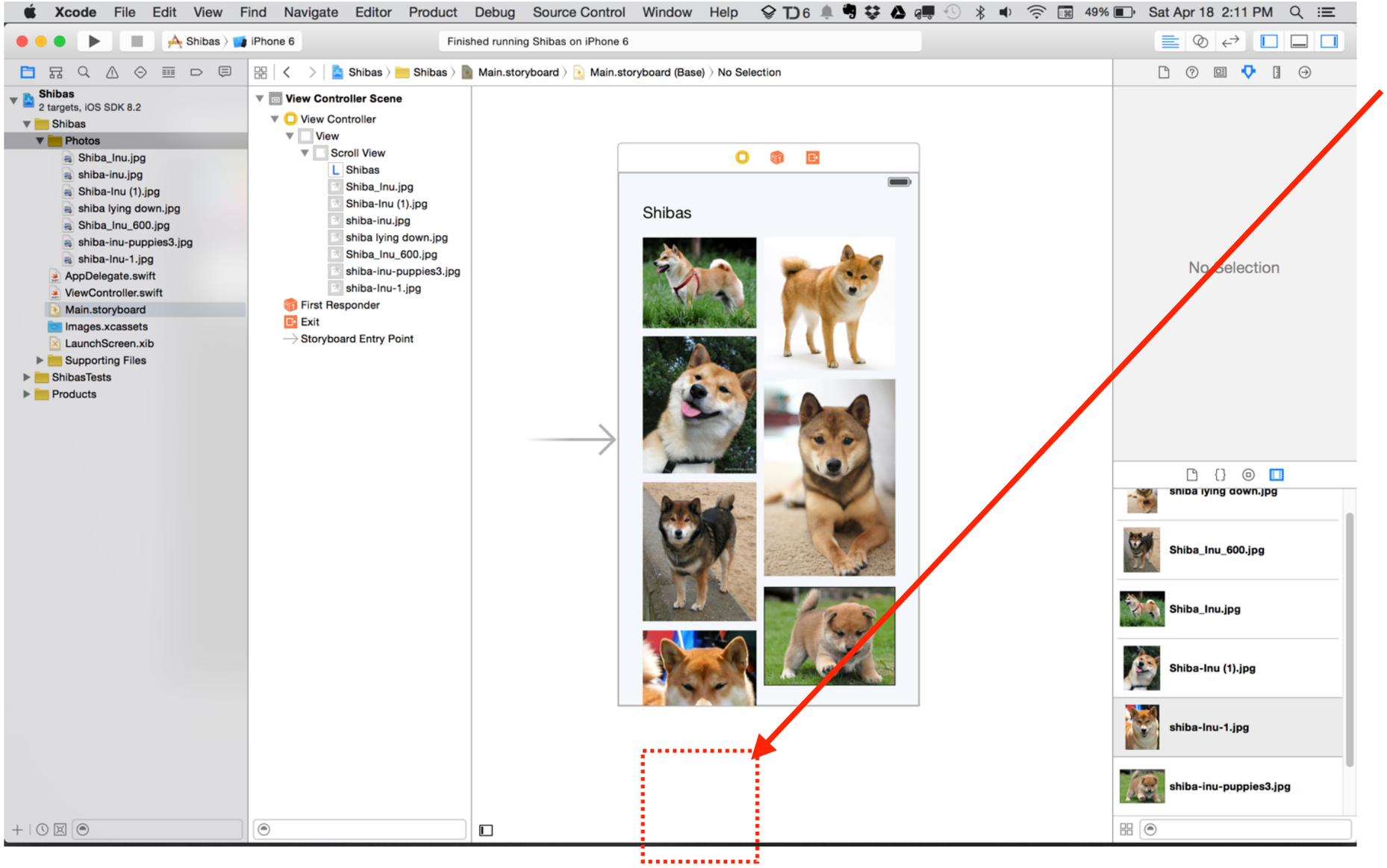
Shift+select multiple Views (images and labels) to drag them together.

REMEMBER:
The goal is to *practice* working with Interface Builder.

Think:
learn-by-playing.

Run, play, stop, move images, run again, stop, add more photos, etc.

XCODE TUTORIAL: PHOTO GALLERY



If you have add images outside of the Scroll View's bounds, you'll have use the Size Inspector.

Change the X and Y values, run the app, scroll down to see where it is, then change X and Y again. Repeat.

This is not a normal workflow, it's a dirty trick to get you to use the Inspector panel more.

REVIEW

CREATE A NEW PROJECT: REVIEW

- You learned to create an Xcode project.
- You should be able to identify the 4 different file types that comprise an Xcode project.
- You should be able to open Interface Builder by selecting the right files.
- Add Views into an App's user interface.
- Navigate the Inspector panel.

CREATE A NEW PROJECT: REVIEW

- Configure Views using the Inspector.
- Add new media from the hard drive into your App.
- Run and stop the app with Xcode.
- Know a little bit about how to use the iOS Simulator.

PRACTICE!

CREATE A NEW PROJECT: PRACTICE

We've glossed over a number of points, not really gone over *why* things work the way they do.

What we've done is given you a critical-path overview to get you producing a working app quickly.

The point of this exercise is to get you familiar with Xcode.

It's critical to go through the steps, repeat, and get familiar with drag/drop and changing Inspector parameters.

Add 10 photos if you can. If you finish early, start over and try again. Maybe even time yourself.

QUESTIONS?

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