

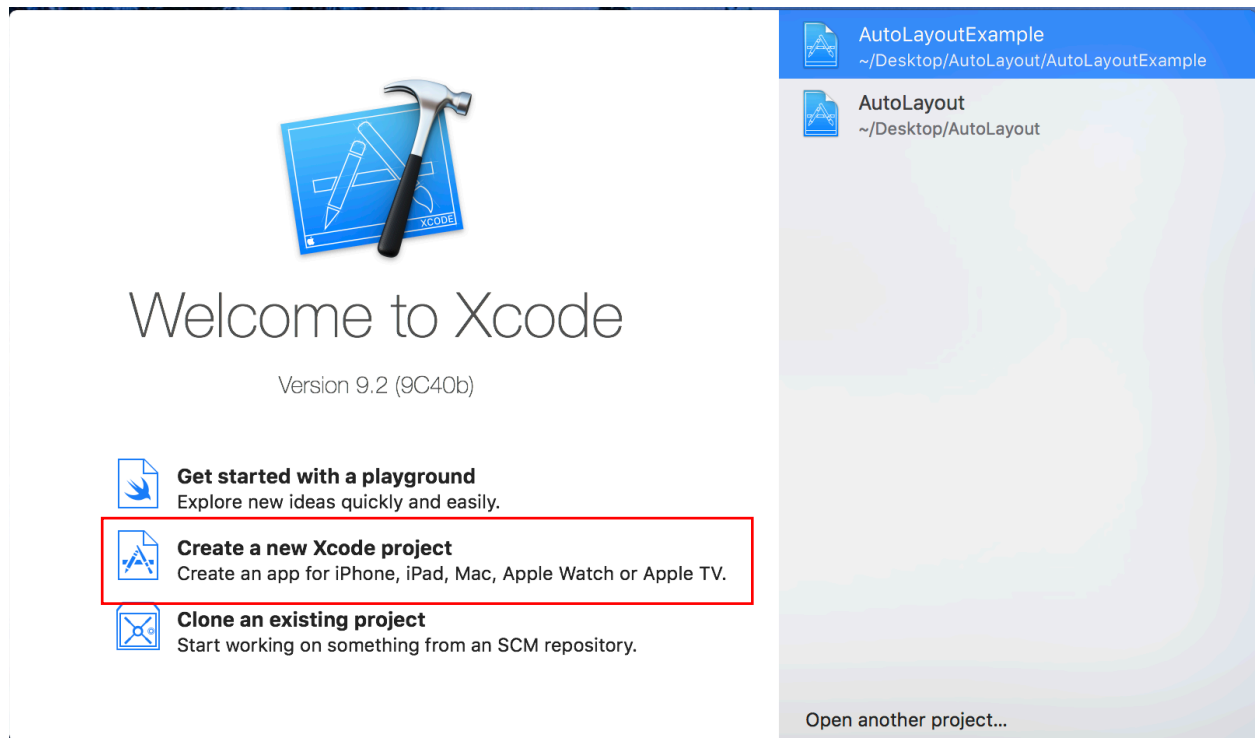
CS 523

Programming the Internet of Things w/iOS

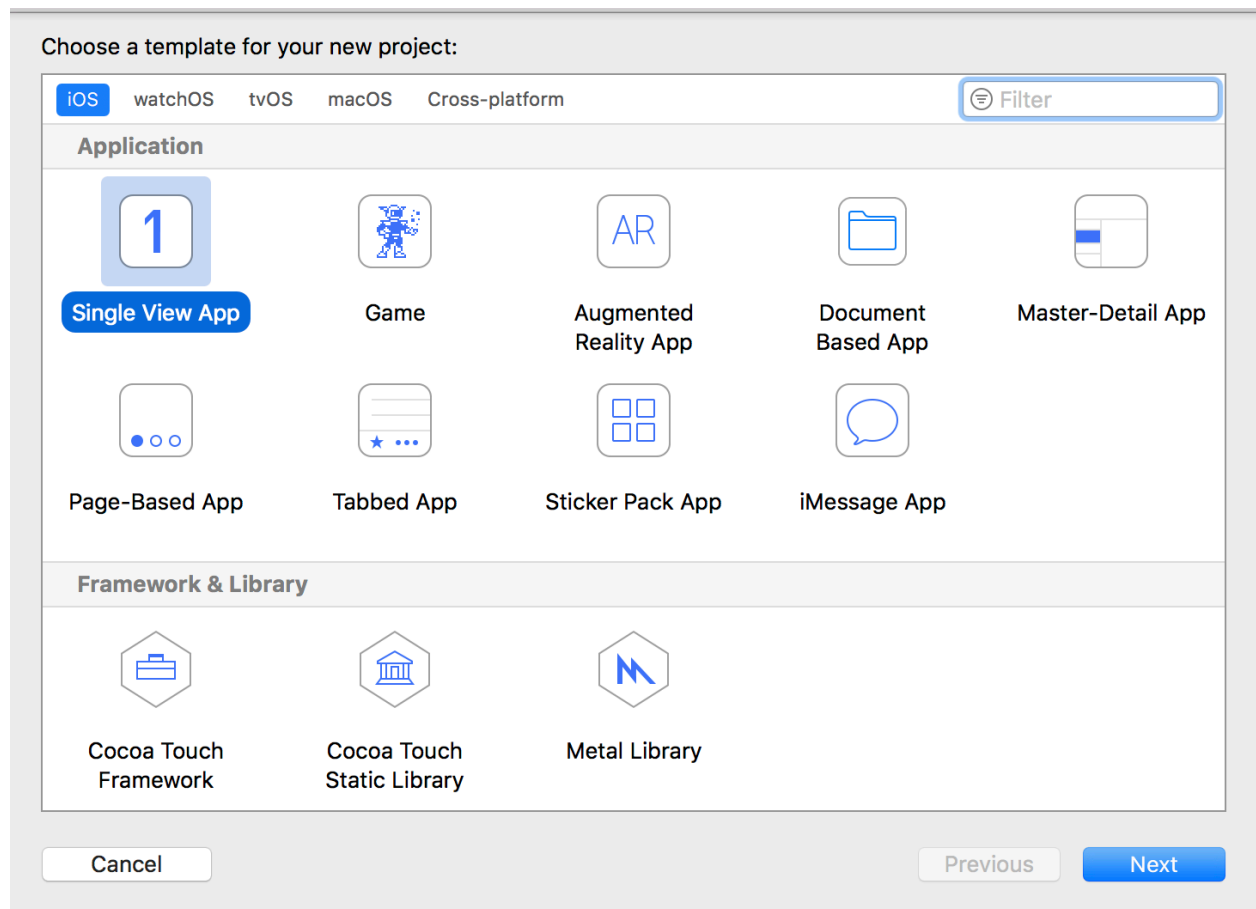
Auto Layout:

For this exercise we are going to create a simple UI that has two labels, a text field and a button. We will position them using constraints.

Start a new Xcode project:



Create a Single View App:



Name it SayHello and then select a folder to save the project in:

Choose options for your new project:

Product Name:

Team:

Organization Name:

Organization Identifier:

Bundle Identifier:

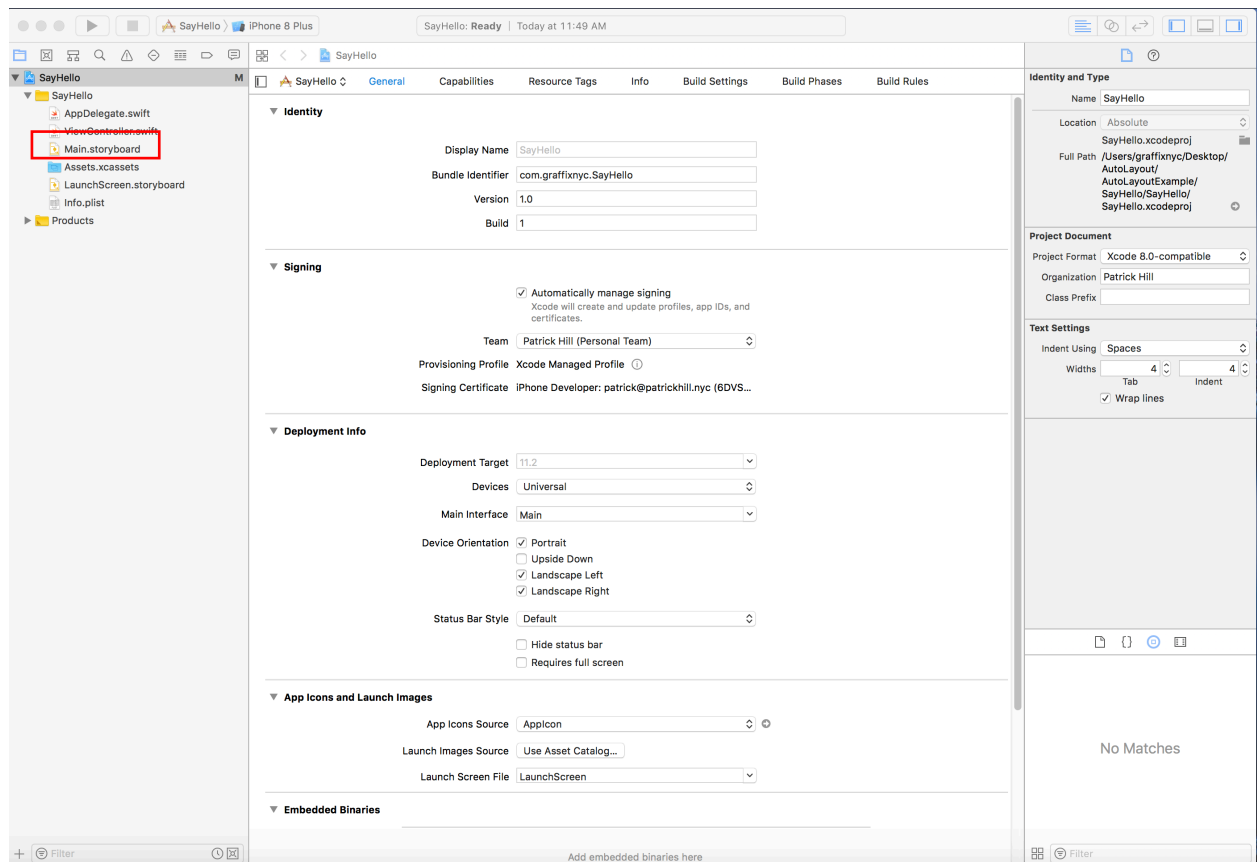
Language:

☐ Use Core Data

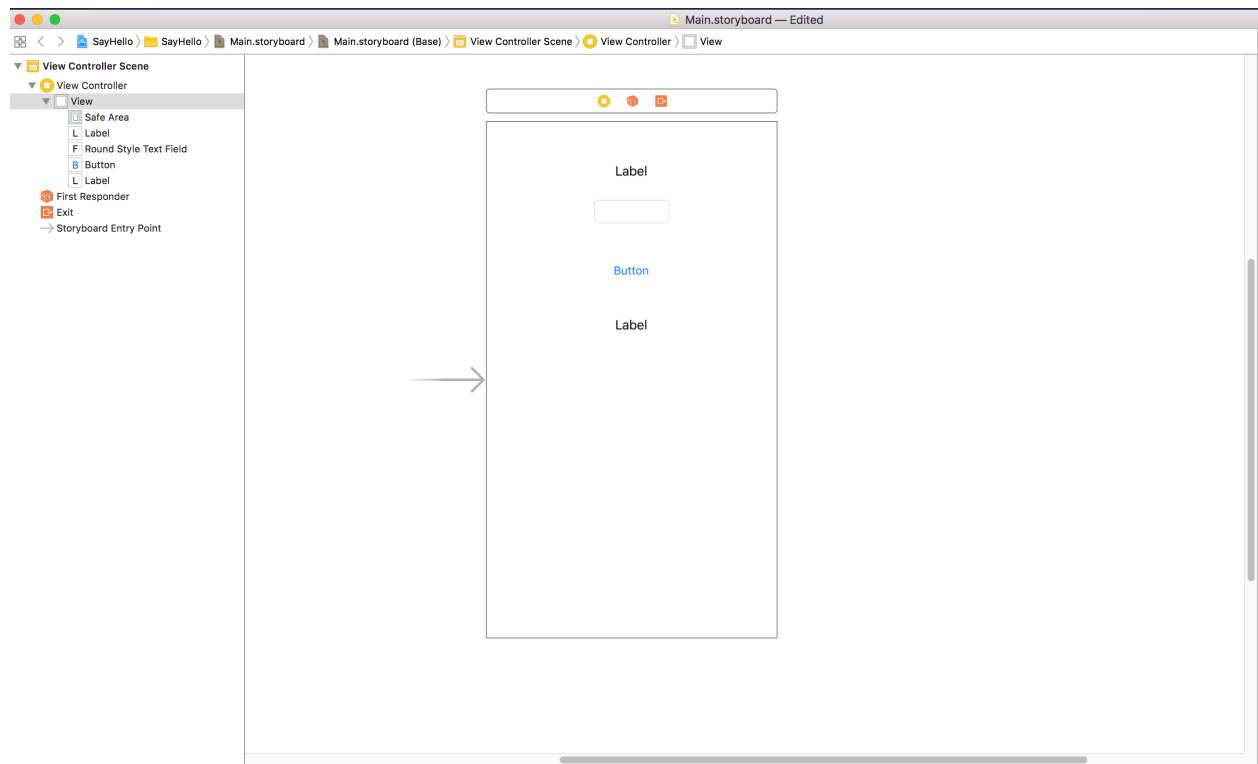
☐ Include Unit Tests

☐ Include UI Tests

Once Xcode opens double click "Main.storyboard" in the project pane.

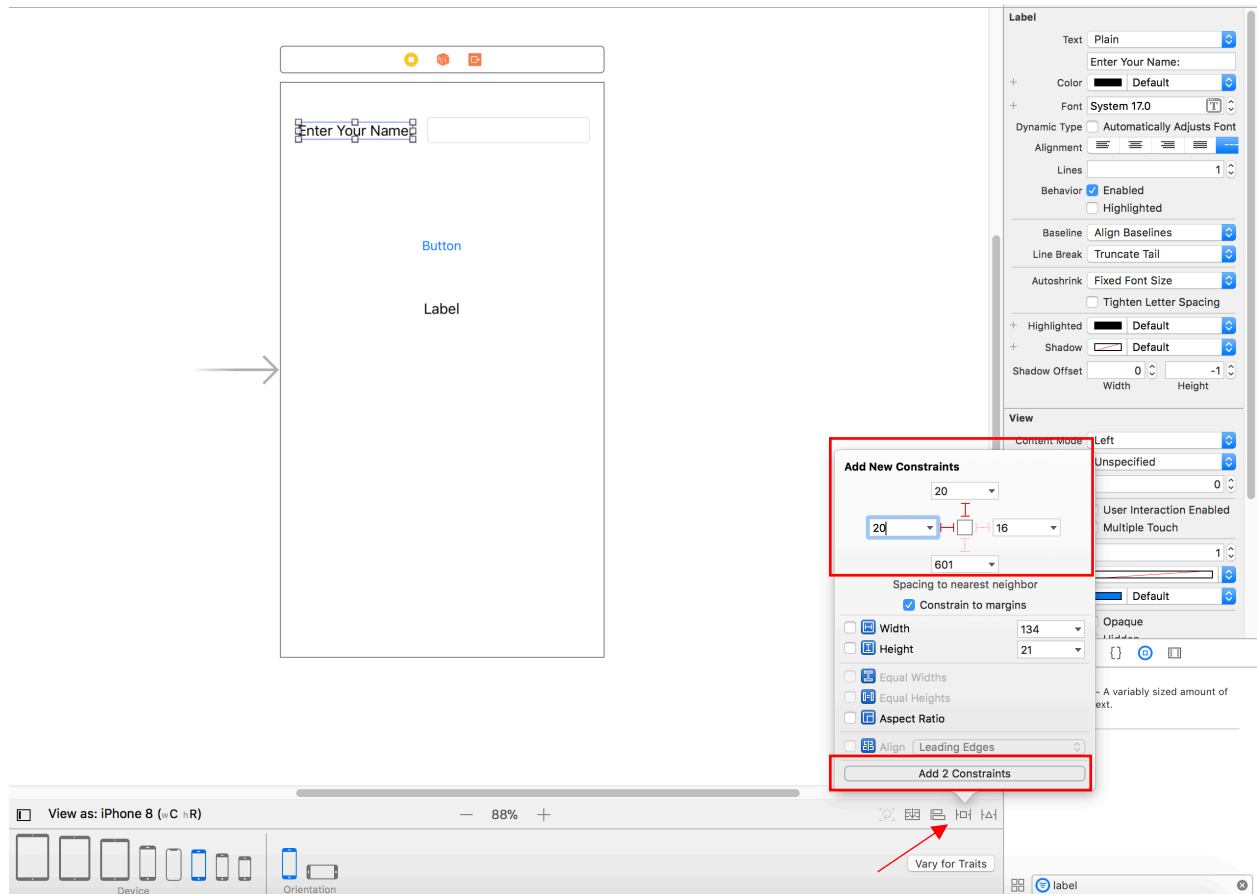


Once you double click Main.storyboard, the Interface builder is displayed. We will add two labels, a text field and a button to the storyboard and lay it out like so:



Now that we have all the controls we need, we will start to add constraints to them.

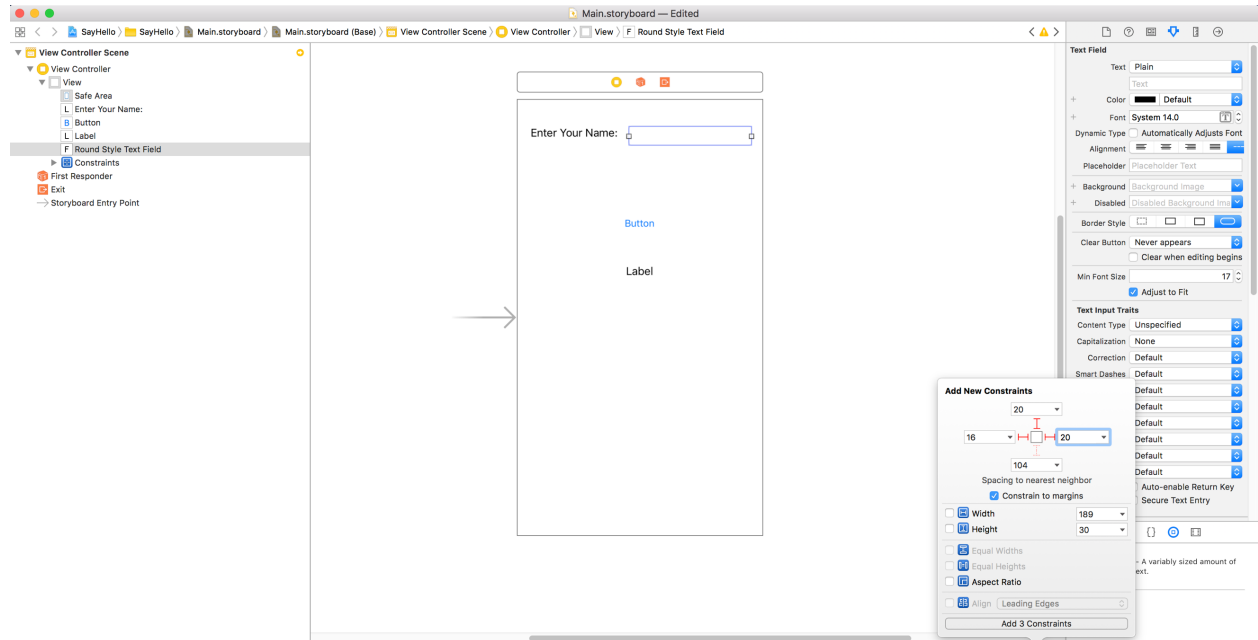
First select the top label and change the text to “Enter Your Name:” and then click the pinning option:



We are going to pin the label to the left-hand side of the screen and to the top of the screen. We are going to pin it 20 points from the left, and 20 points from the top. Click the “Add 2 Constraints” Button and we will see the view is now pinned 20 points from the left-hand side of the screen and 20 points from the top.

The next control we are going to set constraints on is the text field. We are going to position the text field so that it’s 16 points the right of the label, and then have it so the text field expands to 20 points from the right-hand side:

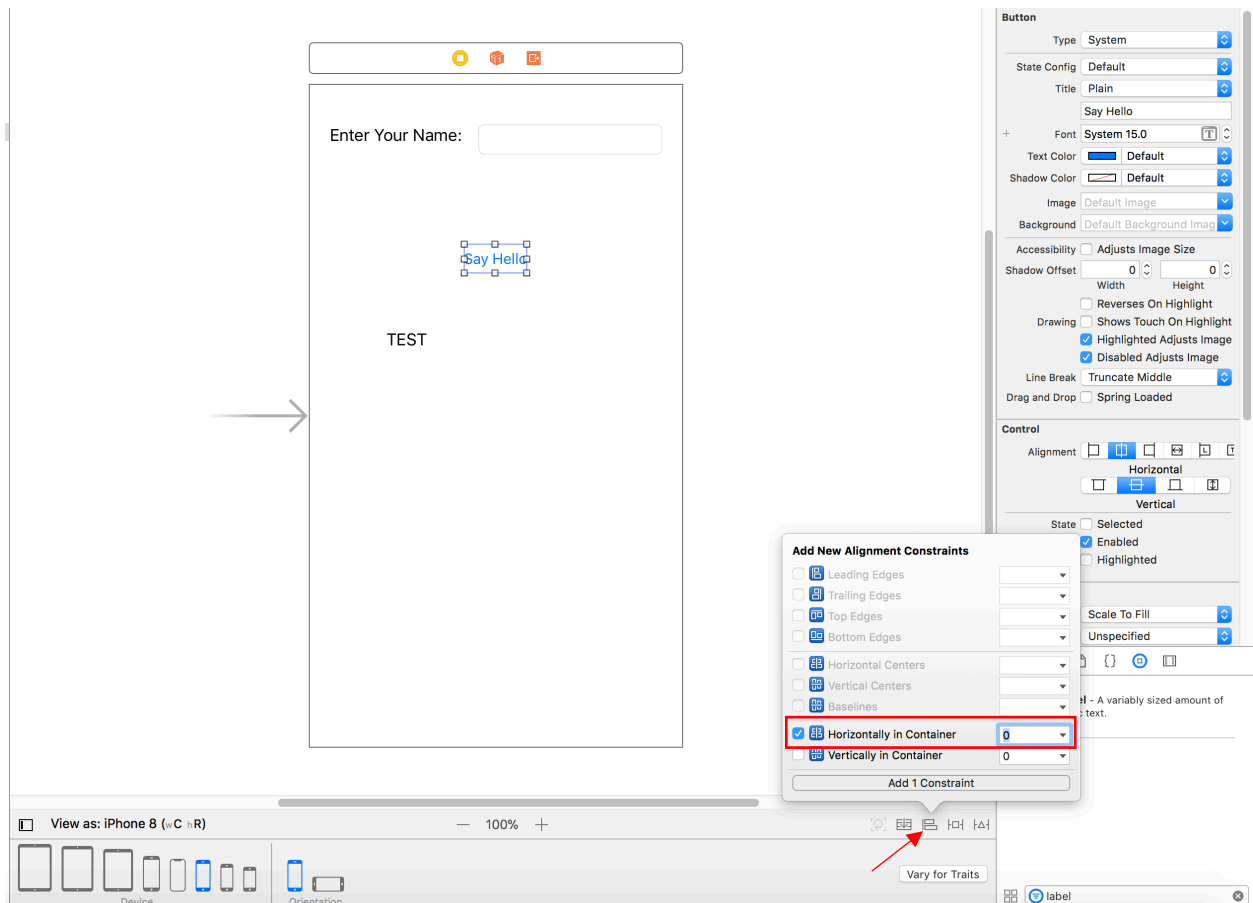
Select the text field and click the pinning option again:



Add a left constraint of 16, a top constraint of 20 (since this will be in line with the label we added constraints to) and a right constraint of 20, and then click the “Add 3 Constraints” button

Now we are going to position the button. For the button we want it to be centered horizontally and then 100 points away from the bottom of the text field.

Select the button and click the align option:

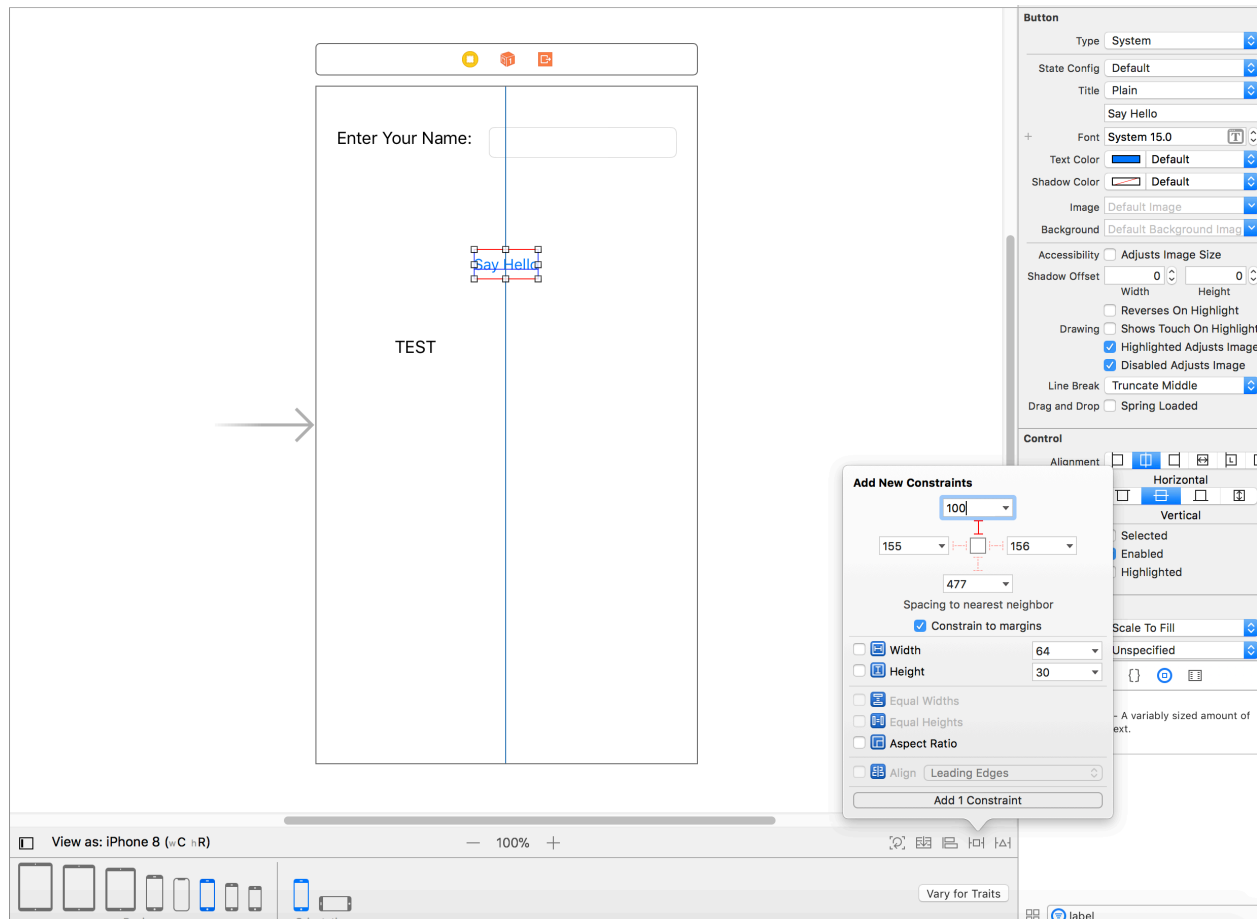


Check “Horizontally in Container” and then click “Add 1 Constraint”

Now the button will be centered horizontally on the screen. We just need to add the constraint to give it 100 points of space below the text field.

Select the pinning option(with the button still selected)

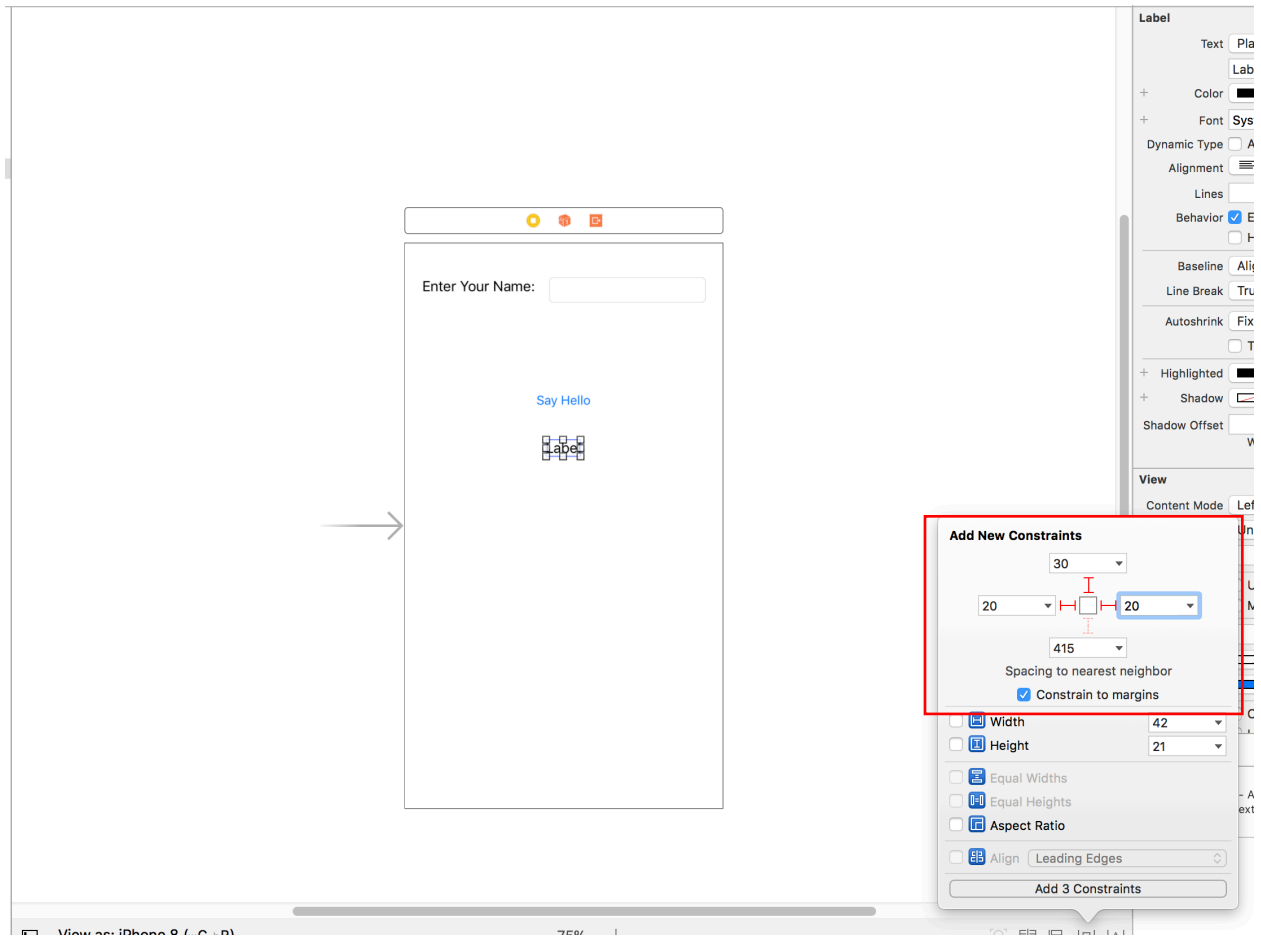




We only need to add one pinning constraint to the button which is its top. We will add 100 points of space between the bottom of the text field and the button. Type 100 in the top constraint and then click “Add 1 constraint”

Now for the last label,

We are going to position it 30 points from the bottom of the button, 20 points from both the left and right edge.

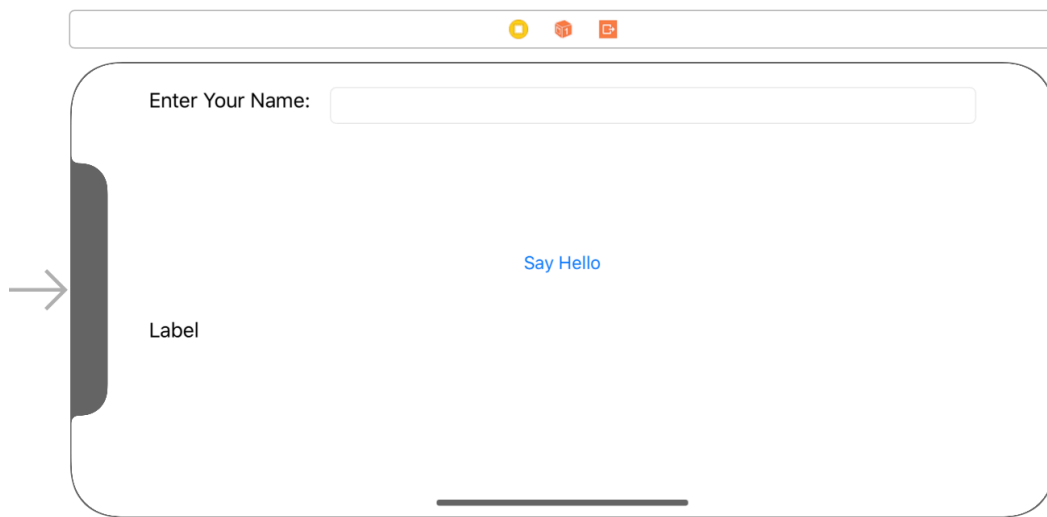


Now this is what our view should look like after we added the constraints:

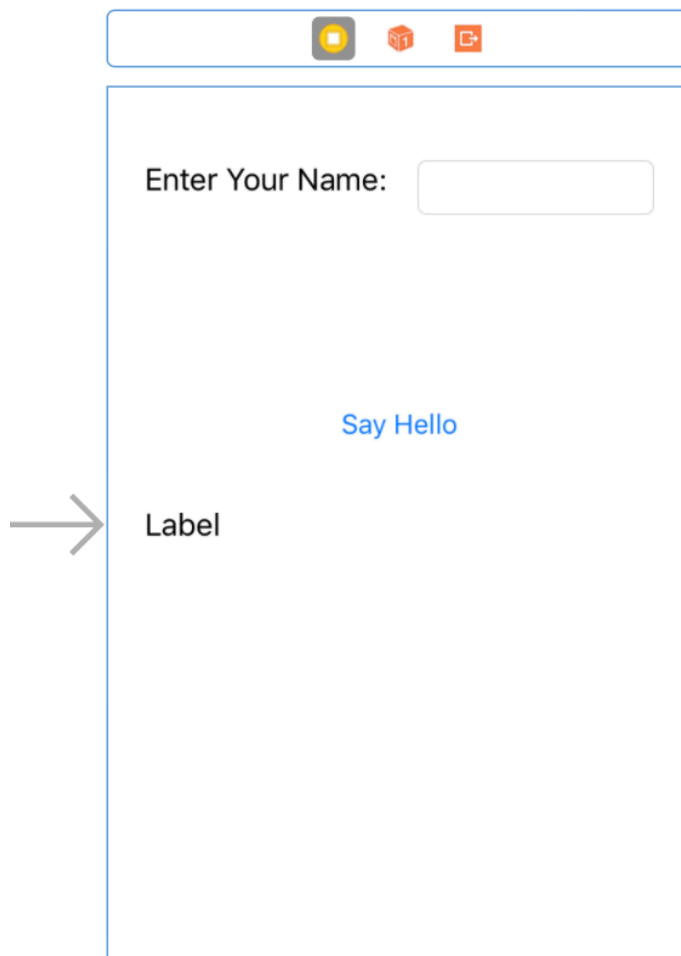


iPhone X

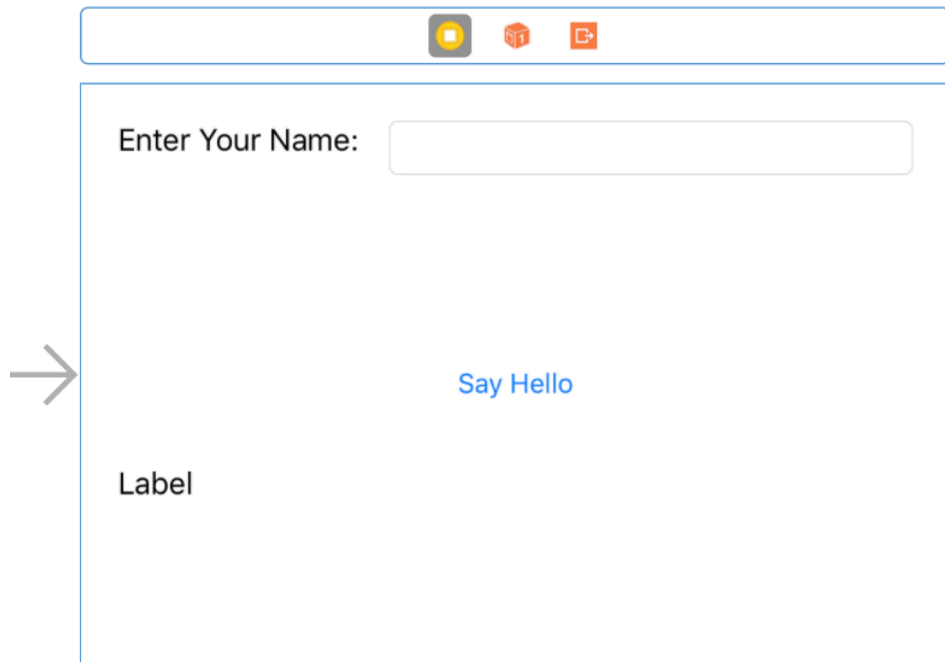
If we view this on other types of devices or other orientations we can see the UI stays pretty consistent throughout



iPhone X Landscape

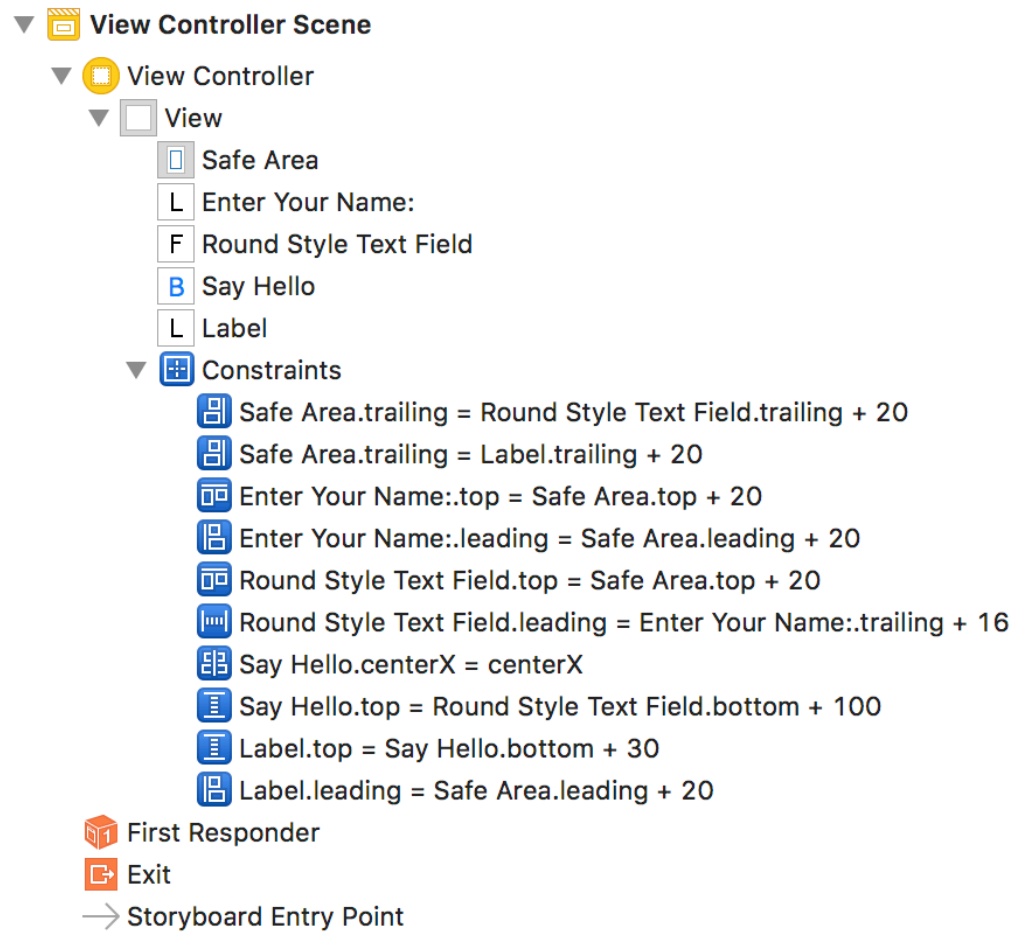


iPhone SE



iPhone SE Landscape.

We can also see that Xcode added the constraints to the view controller:



Now for one final step we are going to remove the text in the label below the button. Double click the label and then just delete the text



Enter Your Name:

Say Hello

Label







Enter Your Name:

Say Hello





Enter Your Name:

Say Hello



So now this is what your final storyboard should look like. Now you have had an introduction on Auto Layout and constraints, you can now build UI's that look good on different screen sizes and orientations. In another lesson we will learn how to create references to the UI controls in the code. So we will build on the Say Hello app further.