Auto Layout & Responsive UIs

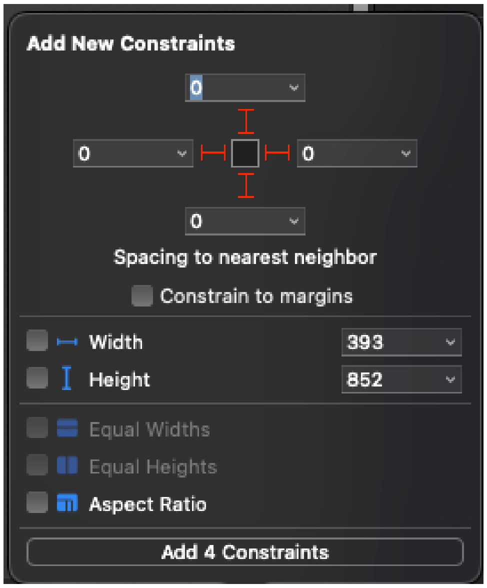
`// Notes by - Om`

Overview

- When we create an UI, it is restricted to the orientation we make it in. If we want it to fit all the possible apple device interfaces then we require `Auto layout` or `constraints`
- `Constraints or pinning` are used to set the distance of the element from the borders
- `Aligning` is used to set the dynamic position of the element relative to the X & Y axes
- `Containers` are used to organize the app elements into sub views and set them relative to them. There are 3 methods of using containers
- `StackViews` - Helps to stack multiple containers/views/elements together so that Xcode knows `how to align these views relative to each other`
  These help to align elements or views - vertically and horizontally together

Pinning or Adding constraints

- Constraints help us to pin the image to the edges using pixels
- This option is available on the bottom right of the page, check if all the values are 0 and then click on all the red lines (dotted before)
- Once they turn solid and red, click on `add 4 constraints`



Add New Constraints

0

0 0

0

Spacing to nearest neighbor

□ Constrain to margins

□ Width 393

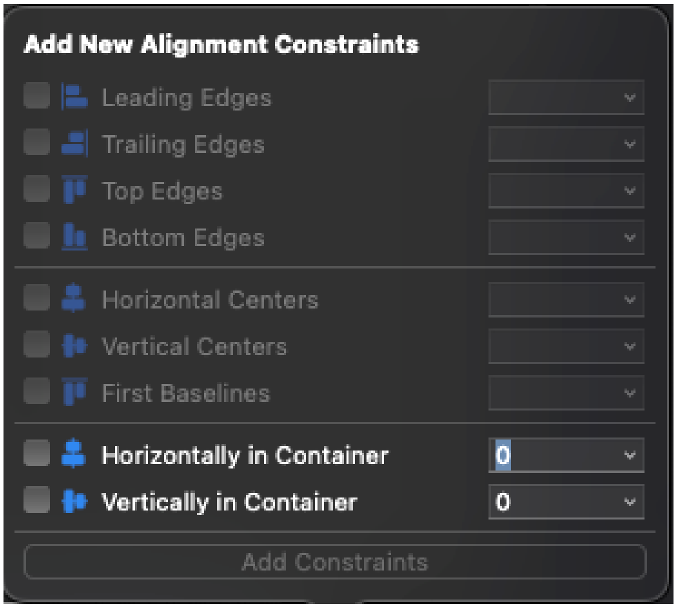
□ Height 852

□ Equal Widths

□ Equal Heights

□ Aspect Ratio

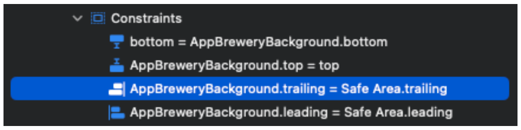
- `Safe Area.trailing` - This limits the background to the areas without any button or control options. Like the battery and other indicators at the top are excluded and the home control on the bottom
- `Superview` - Doesn't exclude any area on the sides
- The right shows the `constraints section` which gives the values for the defined constraints, we can select and change the constraints from the right section
- `Relative to the margin` - Aligns it according to the margin (small width on both sides of the screen)



Add New Alignment Constraints

□ Leading Edges
□ Trailing Edges
□ Top Edges
□ Bottom Edges
□ Horizontal Centers
□ Vertical Centers
□ First Baselines
□ Horizontally in Container 0
□ Vertically in Container 0

Add Constraints



```
Constraints
  bottom = AppBreweryBackground.bottom
  AppBreweryBackground.top = top
  AppBreweryBackground.trailing = Safe Area.trailing
  AppBreweryBackground.leading = Safe Area.leading
```

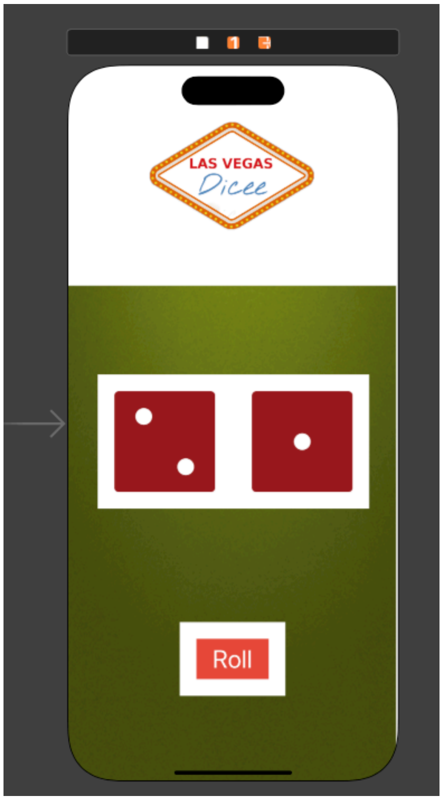
Alignment method

- For the logo if we want to centre it to the middle, instead of the constraints of all the sides which will mess it up in the landscape mode, we need to use the `align` option on the bottom right
- Select `Horizontally in Container` & `Vertically in Container`

Note: We can also combine the `align method` and the `constraint method` for better layout

Containers & Subviews

- Containers allow to group multiple elements in their own space where, the superview for those element is only the container
- There are 3 possible methods to embed elements in containers



3 Methods to embed elements in containers

1. Add a new UIView element and then drag and drop objects into the view from the View Controller space
2. Select the objects or elements we want to embed into the container then click on: Editor -> Embed In → View
3. Select the element - Click on the Embed In option from the bottom right of the screen (near the alignment options)

Stack Views

- Stacks multiple containers/views so that Xcode knows how to organize them relative to each other
- Use the same 3 methods as before to implement a Stack view

- Stack views can also be used to stack multiple elements and arrange them relative to each other