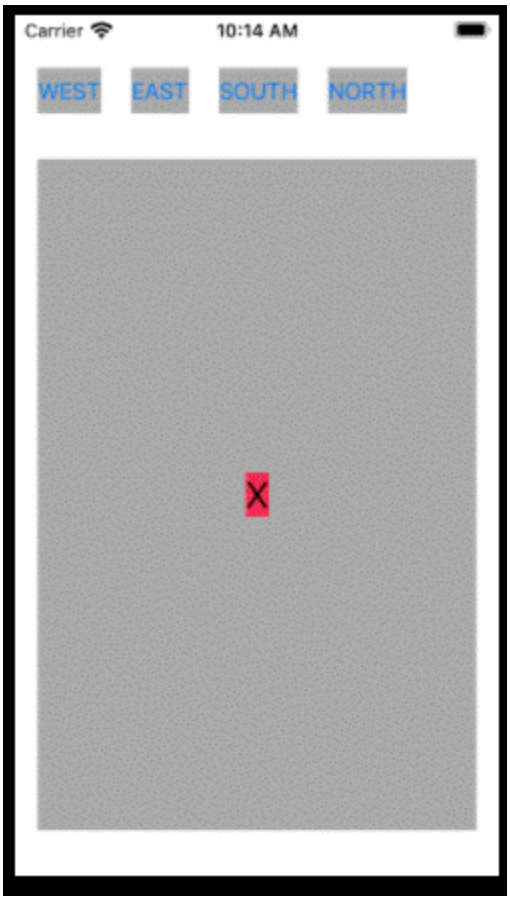
Exercise #4

Creation of Moving Box with Auto Layout Constraints

In this exercise, you will implement a screen layout shown below where there are four side-by-side buttons (UIButton objects), and one 'drawing box' (UIView object) at the center of which one red box (UILabel object) is displayed. When the application is launched, the screen will be displayed on the device.



Here is the specification of the use case you will implement.

1. When the WEST button is clicked, the red box will move 5 pts towards west from the current position.
2. When the EAST button is clicked, the red box will move 5 pts towards east from the current position.
3. When the SOUTH button is clicked, the red box will move 5 pts towards south from the current position.
4. When the NORTH button is clicked, the red box will move 5 pts towards north from the current position.

Implementation of the use case

You can apply what we did in class to implement four buttons and the drawing box. For the moving red box, a little more is involved and here is what you need to do.

1. You will use Storyboard IB to create two Auto Layout constraints to locate the red box at the center of the drawing box.

   ConstraintX =>
   (centerXAnchor of the red box) equals (centerXAnchor of the drawing box)

   ConstraintY =>
   (centerYAnchor of the red box) equals (centerYAnchor of the drawing box)

2. For each button, you will need to implement an IBAction method where you will update the two constraints as follows:

   ConstraintX =>
   (centerXAnchor of the red box) equals (centerXAnchor of the drawing box) + (number of pts away from the center horizontally)

   ConstraintY =>
   (centerYAnchor of the red box) equals (centerYAnchor of the drawing box) + (number of pts away from the center vertically)

   You will perform the following steps for the implementation of each IBAction method.

   - Just like what we have done to access UIView objects created via Storyboard IB from Swift code, you need to create an IBOutlet property for the above two constraint objects so that you can access them from your Swift code.
   - You will also create a couple of properties keeping track of number of pts the red box moves away from the center vertically and horizontally, respectively. In each of the IBAction methods, these two properties should be updated with -5 (for WEST, and NORTH), or +5 (for EAST and SOUTH) and used to derive the new constraints. To update the constraints, you can assign the *constant* property of the two corresponding constraint objects with the updated values of the two properties you created here.