COSC 4355/6355 – Introduction to Ubiquitous Computing

# Exercise 8

November 16, 2017

## Objective

In this exercise, you will learn to use accelerometer and gyroscope.

## Motivation

Sensors are a valuable part of mobile devices. They are useful tools to enhance app experience and bring interactivity to an otherwise mundane app.

## Details

Create a single view iPhone application using Swift as programming language. Name your XCode project "**`Exercise8TeamX`**" (replace *X* with your team number).

**Storyboard Layout**:
You will have one view controller. The view controller has 5 `UIViews`. One view is at the center of the view controller in the shape of a square with height and width of 100. The other 4 views form the 4 borders of the view controller. Each of them has a different color. [*Figure 1*]

**App logic:**

[1 pt.] Initially, the *object* (UIView in the center) is colored red.

[3 pt.] When the user tilts the iPhone, the *object* (view in the center) should move in the direction of the tilt. Use `Timer` function to perform the motion of the *object*. *Hint* - You can multiply the device acceleration to get a reasonable value for the speed of the object.

[2 pt.] When the user double taps on the object, the view should toggle between circle / square. *Hint*: Manipulate UIView's cornerRadius property.

[2 pt.] When the *object* touches the boundary, it should change to the color of the boundary. [*Figure 2, 3*]

[1 pt.] On shaking the device, the background color of the view controller's view should change to a random color.

[1 pt.] Ensure that the object never crosses the boundaries.

## Screenshots

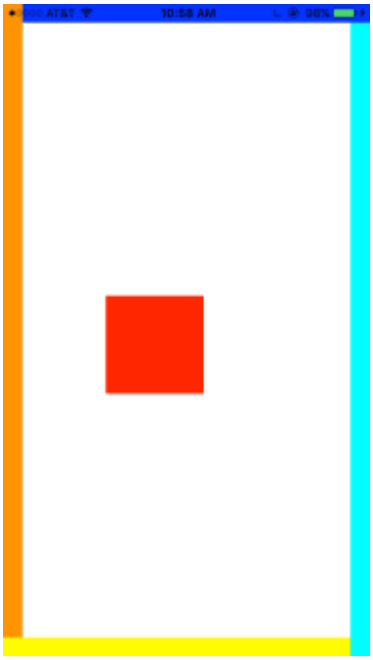

*Figure 1*

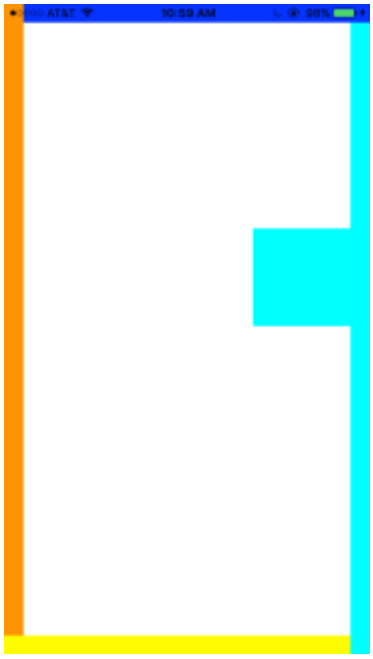

*Figure 2*

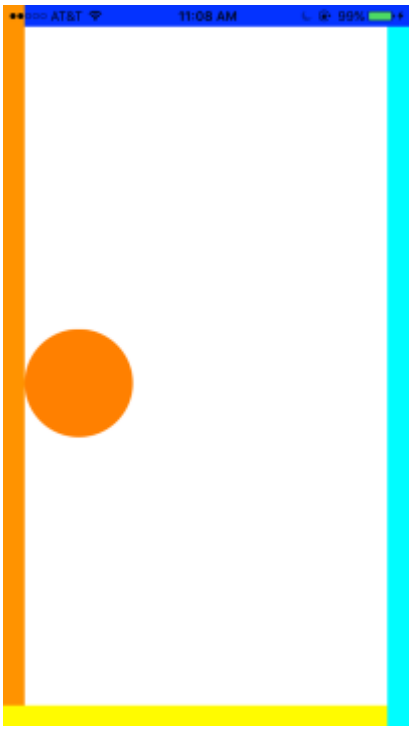


*Figure 3*

## Extra Credit

- Able to drag the object with your finger [1].
- Force touch on the object to toggle the shape [1].
- Change the background color to shades of gray based on the relative altitude (CMAltimeter). Lower altitude should have lighter shade of gray and higher altitude should have darker shade of gray [2].