COSC 4355/6355 – Introduction to Ubiquitous Computing

Exercise 8

November 8, 2018

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. It will be a flying game. Name your XCode project "**`Exercise8TeamX`**" (replace *X* with your team number).

Storyboard Layout:
You will have one view controller. The view controller has 4 `UIViews and 1 Imageview`. Image view is at the center of the view. 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* (Image View in the center) with a Plane image.
[2 pts.] When the user tilts the iPhone, the *object* (Image 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 pts.] When the *object* touches the boundary, change the Image View background color based on the boundary color.
[1 pt.] When the object touches the gray boundary, change the object (Image view) image with car image.
[1 pt.] On shaking the device, the background color of the view controller's view should change to a random color.
[1 pt.] Rotate the image of the Image view like Figure 2.
[2 pts.] Ensure that the object never crosses the boundaries.

Screenshots

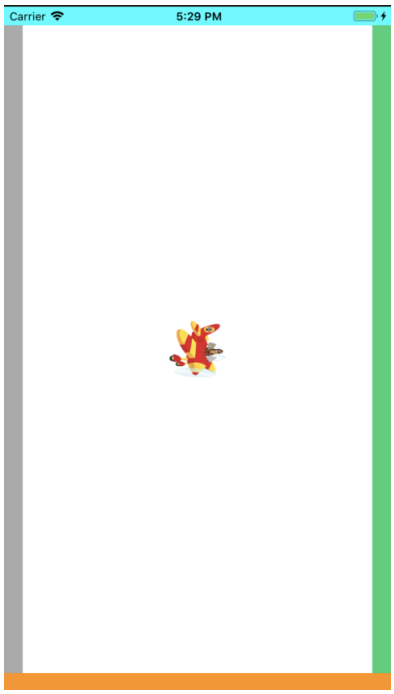

Figure 1

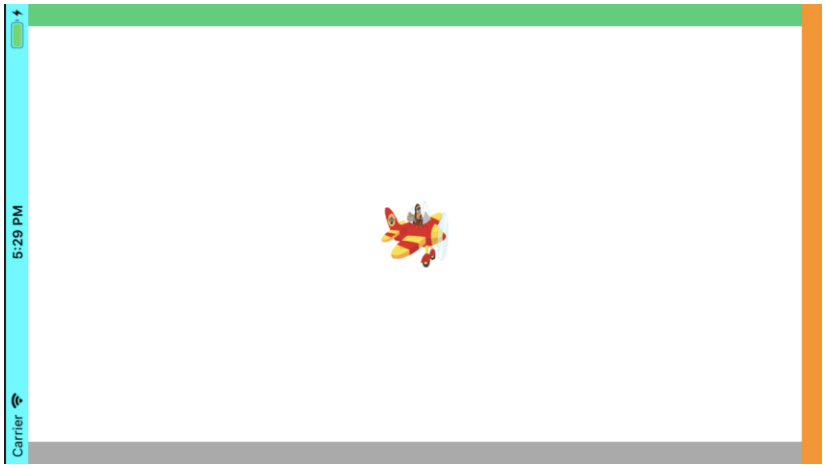

Figure 2

Extra Credit

Note: You will get extra credit, only when you finished all the above features.
[1 pt.] Toggle the object image based on double tap.
[2 pts.] 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.